TM 9-2350-222-20-2-3-3

TECHNICAL MANUAL

ORGANIZATIONAL MAINTENANCE MANUAL

VOLUME III - PART 3

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

Carbon monoxide always comes when something gets hot or bums - 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.

CHANGE
NO. 3

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC 30 September 1991

ORGANIZATIONAL MAINTENANCE MANUAL
VOLUME III – PART 3
MAINTENANCE

TURRET FOR
COMBAT ENGINEER VEHICLE
M728
(2350-00-795-1797) (EIC: ABF)

TM 9-2350-222-20-2-3-3, 15 September 1980, is changed as follows:

1. Make pen and ink changes to cover and page i to add the End Item Code after the NSN as follows: (EIC: ABF).

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

3. New or changed illustrations are indicated by a miniature pointing hand highlighting the change,

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

Remove Pages	Insert Pages
39-9 thru 39-12	39-9 thru 39-12
42-37 and 42-38	42-37 and 42-38
42-39/(42-40 blank)	42-39/(42-40 blank)
42-47 and 42-48	42-47 and 42-48
57–7 and 57-8	57-7 and 57-8

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

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Chief of Staff

Official:

PATRICIA P. HICKERSON
Brigadier General, United States Army
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CHANGE

NO. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D. C.,23 December 1987

ORGANIZATIONAL MAINTENANCE MANUAL

VOLUME III - PART 3
MAINTENANCE

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

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Remove Pages	Insert Pages
i and ii	i and ii
37-1 and 37-2	37-1 and 37-2
37-21 and 37-22	37-21 and 37-22
None	37-22.1 thru 37-22.14
38-1 and 38-2	38-1 and 38-2
38-21 thru 38-29/(38-30 blank)	38-21/(38-22 blank)
39-9 and 39-10	39-9 and 39-10
42-1 and 42-2	42-1 and 42-2
42-9/(42-10 blank)	42-9 and 42-10
None	42-10.1/(42-10.2 blank)
42-23 and 42-24	42-23 and 42-24
42-33/(42-34 blank)	42-33/(42-34 blank)
42-41 thru 42-50	42-41 thru 42-50
43-1 and 43-2	43-1 and 43-2
43-5/(43-6 blank)	43-5 thru 43-9/(43-10 blank)
44-3 and 44-4	44-3 and 44-4
58-11 and 58-12	58-11 and 58-12
59-13 and 59-14	59-13 and 59-14
60-9 and 60-10	60-9 and 60-10
62-5 and 62-6	62-5 and 62-6
62-9/(62-10 blank)	62-9/(62-10 blank)
63-7 and 63-8	63-7 and 63-8
64-9 and 64-10	64-9 and 64-10
64-15 and 64-16	64-15 and 64-16
64-19 and 64-20	64-19 and 64-20
64-23 and 64-24	64-23 and 64-24
64-29 and 64-30	64-29 and 64-30
64-33 and 64-34	64-33 and 64-34
64-39 thru 64-44	64-39 thru 64-44
A-1 thru A-3/(A-4 blank)	A-1 thru A-3/(A-4 blank)
Index 3 thru Index 6	Index 3 thru Index 6
FO-3	FO-3
FO-4	FO-4

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General, United States Army
Chief of Staff

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Brigadier General, United States Army
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CHANGE
No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 27 August 1985

ORGANIZATIONAL MAINTENANCE MANUAL

VOLUME III - PART 3

MAINTENANCE

TURRET FOR

COMBAT ENGINEER VEHICLE, M728

(2350-00-795-1797)

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

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REMOVE PAGES	INSERT PAGES
A and B	NONE
i thru iii/(iv blank)	i thru iii/(iv blank)
37-1 and 37-2	37-1 and 37-2
37-9 and 37-10	37-9 and 37-10
NONE	37-10.1 and 37-10.2
37-43/(37-44 blank) thru 37-46	37-43/(37-44 blank) thru 37-46
37-49 thru 37-52	37-49 thru 37-52
38-13 and 38-14	38-13 and 38-14
40-1 thru 40-4	40-1 thru 40-4
40-15/(40-16 blank)	40-15/(40-16 blank)
40-19 thru 40-22	40-19 thru 40-22
40-27 thru 40-32	40-27 thru 40-32
NONE	40-32.1 thru 40-32.151(40-32.16 blank)
NONE	40-43 thru 40-65/(40-62 blank)
44-1 thru 44-5/(44-6 blank)	44-1 thru 44-5/(44-6 blank)
NONE	50.1-1 thru 50.13 /(50.1-4 blank)
51-1 thru 513/(51-4 blank)	51-1 thru 51-3/(51-4 blank)
NONE	(51.1-4 blank)
52-1/(52-2 blank)	52-1/(52-2 blank)
53-1 thru 53-8	53-1 thru 53-8
55-1 thru 55-5/ 55-6 blank)	55-1 thru 55-5/ 55-6 blank)
56-1/(56-2 blank)	56-1/(56-2 blank)
57-1 and 57-2	57-1 and 57-2
57-23 thru 57-28	57-23 thru 57-28
NONE	57-28.1 thru 57-28.4
58-1 thru 58-16	58-1 thru 58-16
NONE	58-16.1 thru 58-16.4
68-1 and 68-2	68-1 and 68-2
68-9 thru 68-15/(68-16 blank)	68-9 thru 68-20
NONE	68.1-1 thru 68.1-39/(68.1-40 blank)
A-1 thru A-3/(A-4 blank)	A-1 thru A-3/(A-4 blank)

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JOHN A. WICKHAM, JR.
General, United States Army
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The Adjutant General

Distribution:

To be distributed in accordance with DA Form 12-37, Organizational Maintenance requirements for Vehicle, Combat Engineer, Full Tracked, M728.

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

Be careful when working around pressurized parts. Hydraulic fluid under pressure can hurt you.

WARNING

Before charging main accumulator, hydraulic system pressure must be lowered to 0 psi. Hydraulic fluid under pressure can hurt you.

WARNING

Before draining hydraulic system, pressure must be lowered to 0 psi. Hydraulic fluid under pressure can hurt you.

WARNING

Before removing hydraulic tubes, hydraulic system pressure must be lowered to 0 psi. Hydraulic fluid under pressure can hurt you.

WARNING

Before traversing turret, make sure gun will not hit **anything** if turret is traversed. If necessary, move vehicle.

WARNING

Nitrogen under pressure can hurt you. Keep fingers and hands clear of valve while letting out nitrogen. Let nitrogen out slowly.

Technical **Manual**
No. 9-2530-222-20-2-3-3

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

Technical Manual

Organizational Maintenance Manual

Volume III - Part 3
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 9-2350-222-20-2-1, 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 supersedes the turret portion of TM 9-2350-222-20, September 1965, including all changes.

TABLE OF CONTENTS

CHAPTER 37

POWERPACK

Section I. SCOPE

37-1. LIST OF EQUIPMENT ITEMS CONTAINED IN THIS CHAPTER

Section	Equipment Item	Paragraph
2	Manual Elevation Accumulator	37-2
3	Reservoir Oil Strainer	37-5
3.1	Reservoir Liquid Level Sight Gage	37-7.1
4	Ground Strap	37-8
5	Motor Mounting Bracket	37-11
6	Motor Mounting Plate	37-14
6.1	Electric Drive Motor	37-16.1
7	Gunner's Control	37-17

Section II. MANUAL ELEVATION ACCUMULATOR

37-2. MAINTENANCE PROCEDURES INDEX

Equipment Item	Tasks	
	Removal	Installation
Manual Elevation Accumulator	37-3	37-4

37-3. MANUAL ELEVATION ACCUMULATOR REMOVAL PROCEDURE

TOOLS: 9/16 in. open end wrench
1-1/8 in. open end wrench
8 in. adjustable wrench

SUPPLIES: Plugs for hydraulic lines
1 quart container

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

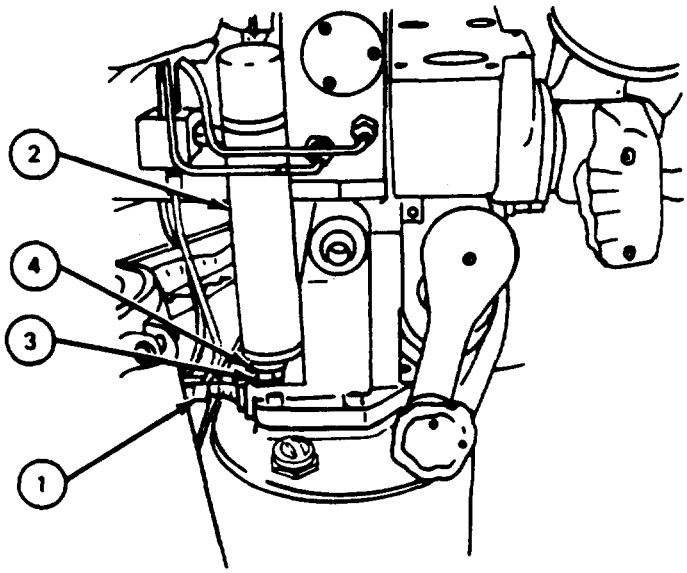
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7
Power Pack	PO-1	15

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Turret traverse lock set to LOCKED

37-3. MANUAL ELEVATION ACCUMULATOR REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
	WARNING Before removing hydraulic tubes or parts, hydraulic system pressure must be lowered to 0 psi. Hydraulic fluid under pressure can hurt you. .
1.	Lower hydraulic system pressure to 0 psi (para 1-18).
2.	Using 9/16" open end wrench, loosen manual depression (M.D.) hydraulic line (1) while holding container in other hand. When hydraulic line is loosened, let hydraulic fluid drain into container. Do not reuse this hydraulic oil.
	NOTE When doing step 3, make sure that accumulator unscrews from adapter.
3.	Using adjustable wrench and 1-1/8" open end wrench, remove accumulator (2) from adapter (3). Remove O-ring (4).
4.	Plug openings in hydraulic line (1) and adapter (3) to keep dirt or any contamination from entering.
	END OF TASK



37-4. MANUAL ELEVATION ACCUMULATOR INSTALLATION PROCEDURE

TOOLS: 9/ 16" open end wrench
1-1/8” open end wrench
8” adjustable wrench

SUPPLIES: Preformed packing

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedure to check oil level

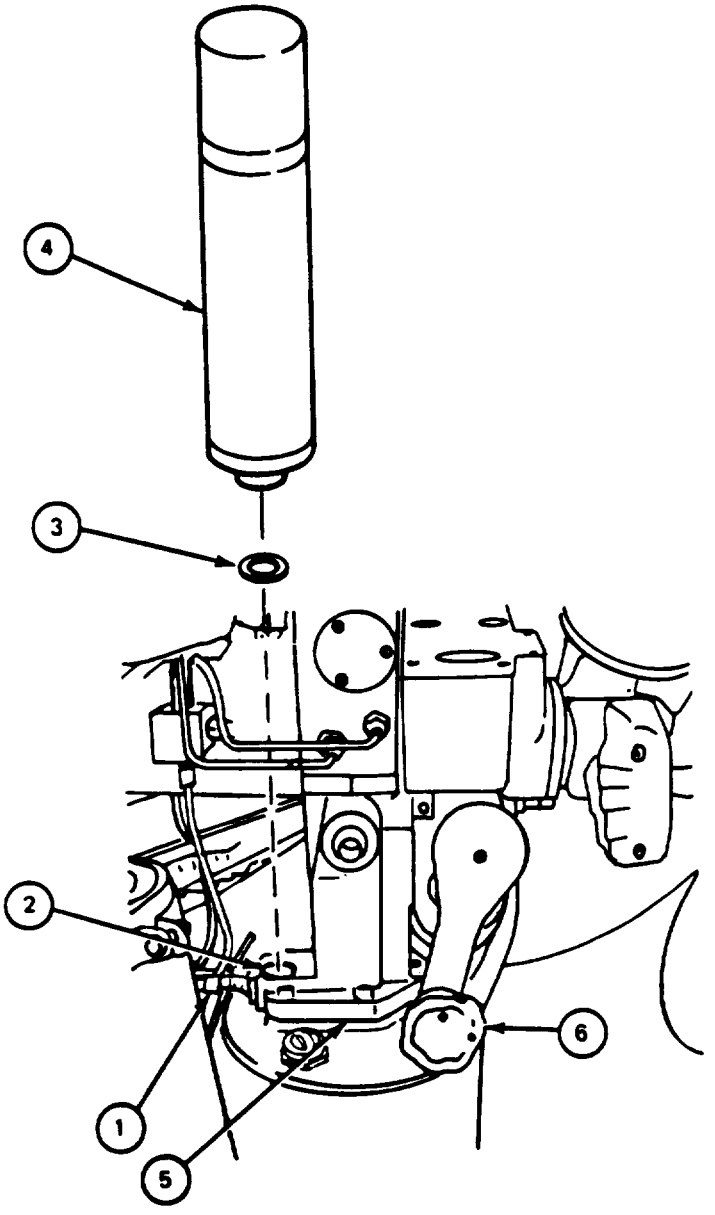
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver’s Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7
Power Pack	FO-1	15

EQUIPMENT CONDITION: Driver’s master control panel MASTER BATTERY switch set to OFF
Turret traverse lock set to LOCKED

FRAME 1

Step	Procedure
1.	Remove plugs from manual depression (M.D.) hydraulic line (1) and adapter (2).
2.	Install new O-ring (3) on accumulator (4).
3.	Using adjustable wrench and 1-1/8" open end wrench, attach accumulator (4) to adapter (2).
4.	Using 9/ 16” open end wrench, attach hydraulic line (1) to riser (5).
5.	Using manual elevation pump handle (6), depress 105-mm gun to maximum depression. Keep turning pump handle in same direction until pump handle can no longer be turned with one hand. Accumulator (4) is now charged.
	NOTE Follow-on Maintenance Action Required: Bleed manual elevation system (para 1-22). Check oil level in reservoir (TM-10).
	END OF TASK


4
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6
1
5

Section 3. RESERVOIR OIL STRAINER

37-5. MAINTENANCE PROCEDURES INDEX

Equipment Item	Tasks	
	Removal	**Installation**
Reservoir Oil **Strainer**	**37-6**	**37-7**

37-6. RESERVOIR OIL STRAINER REMOVAL PROCEDURE

TOOLS: 1-5/8" open end wrench

SUPPLIES: Dry cleaning solvent (item 22, **App. A)**

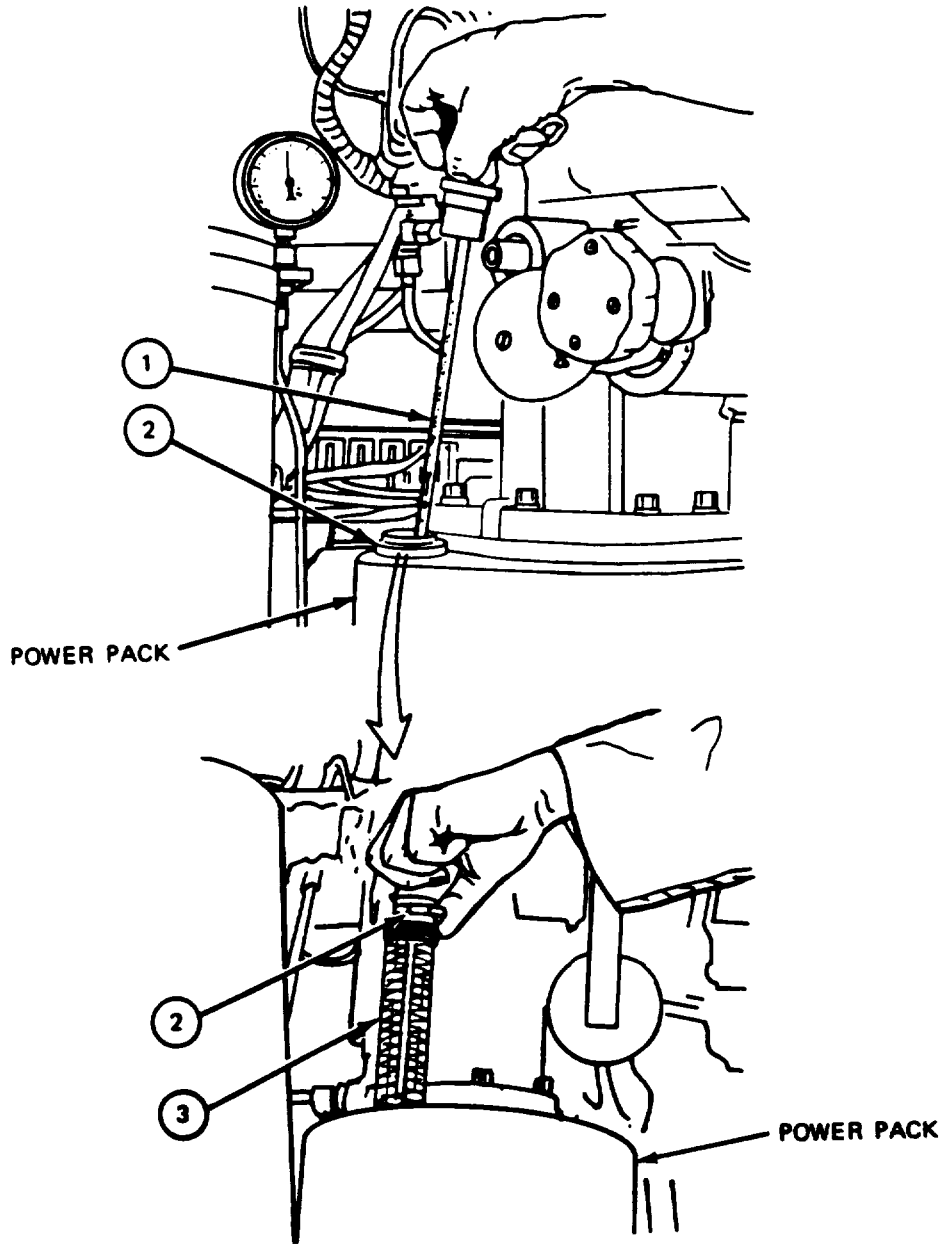
PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Power Pack	FO-1	15

FRAME 1

Step	Procedure
1.	Using hand, remove dipstick (1) from power pack.
2.	Using wrench, unscrew oil strainer nut (2).
3.	Remove oil strainer (3).
	NOTE Follow-on Maintenance Action Required: Clean oil strainer (JPG).
	END OF TASK


1
2
POWER PACK
2
3
POWER PACK

37-7. RESERVOIR OIL STRAINER INSTALLATION PROCEDURE

TOOLS: 1-5/8” open end wrench

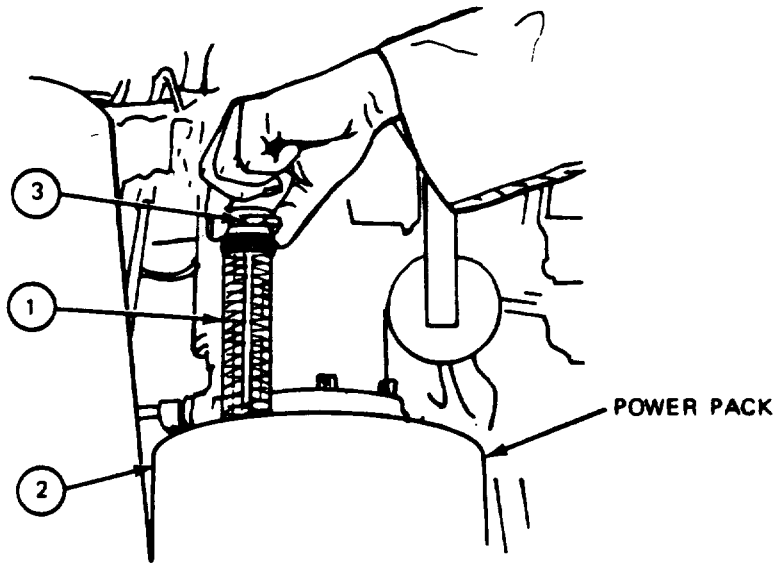
PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Power Pack	FO- 1	15

FRAME 1

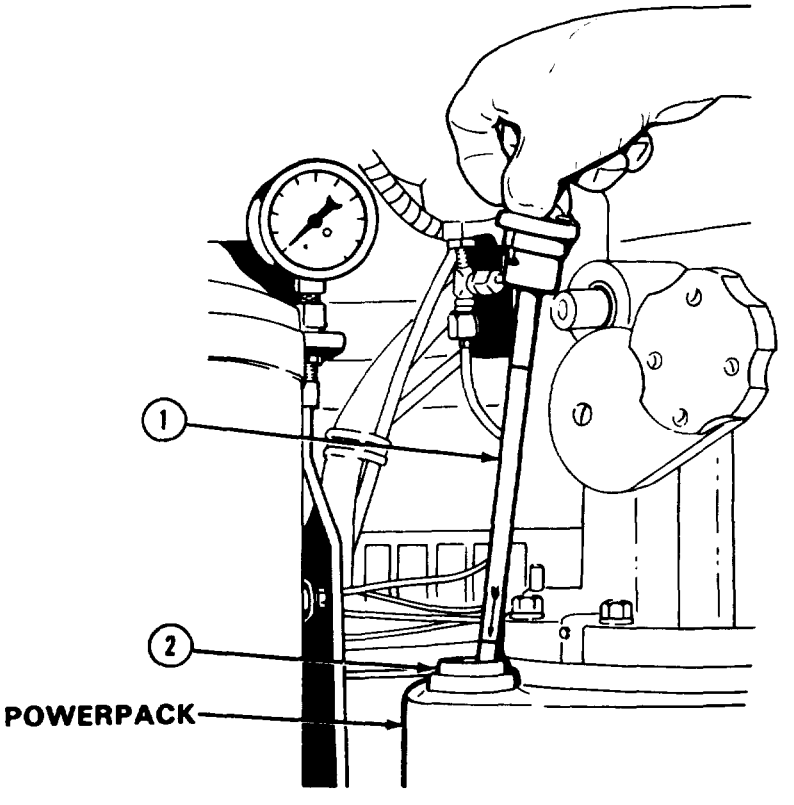
Step	Procedure
1.	**Put oil** strainer (1) into reservoir (2).
2.	Using wrench, screw oil strainer nut (3) into reservoir (2).
	GO TO FRAME 2



37-7. **RESERVOIR OIL STRAINER INSTALLATION PROCEDURE (CONT)**

FRAME 2

STEP	PROCEDURE
1.	Hold top of dipstick (1) with one hand and push straight down into oil strainer (2). **END OF TASK**



Section 3.1 RESERVOIR LIQUID LEVEL SIGHT GAGE

37-7.1. MAINTENANCE PROCEDURE INDEX

Equipment Item	Tasks	
	Removal	Installation
Reservoir Liquid Level Sight Gage	37-7.2	37-7.3

37-7.2. RESERVOIR LIQUID LEVEL SIGHT GAGE REMOVAL

TOOLS: Cross-tip screwdriver (phillips) #3

PERSONNEL: One

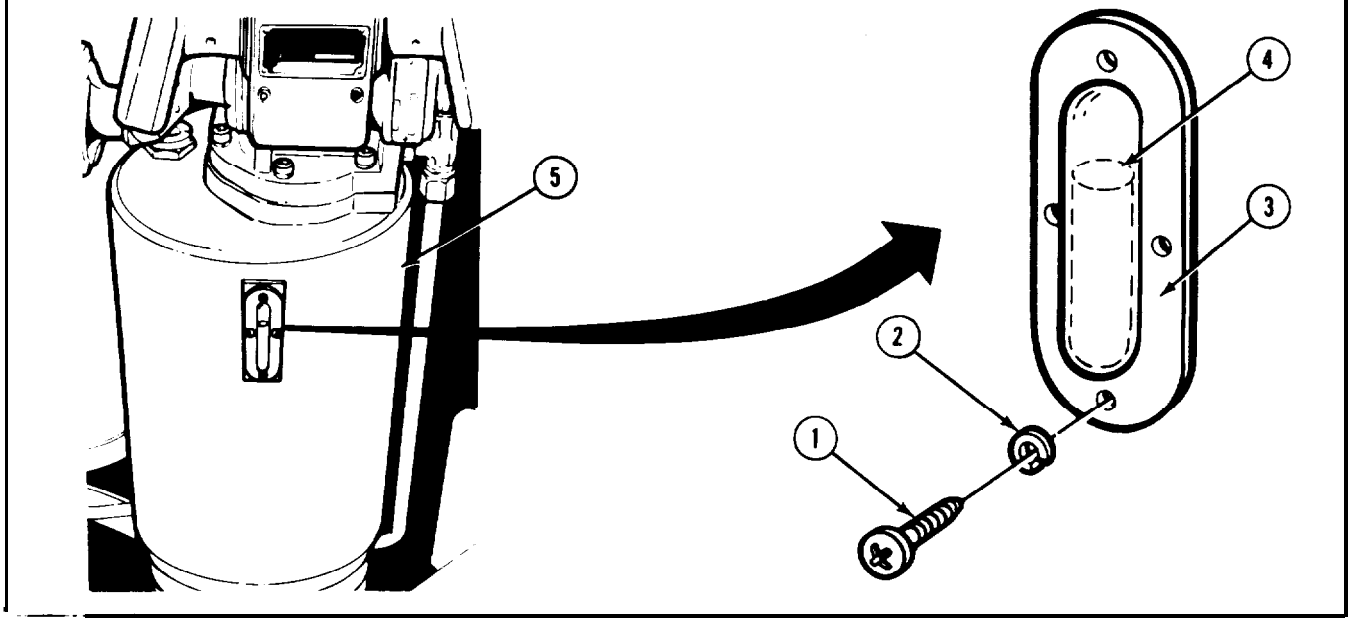
PRELIMINARY PROCEDURE: Drain turret hydraulic system (para 1-21).

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Liquid Level Sight Gage	FO-1	15A

FRAME 1

STEP	PROCEDURE
1.	Using screwdriver, remove four screws (1), and four lockwashers (2).
2,	Remove plate (3) and liquid level gage (4) from reservoir (5).
	END OF TASK



37-7.3. RESERVOIR LIQUID LEVEL SIGHT GAGE INSTALLATION

TOOLS: Cross-tip screwdriver (phillips) #3

SUPPLIES: Sealing compound (item 20, APP. A)

PERSONNEL: One

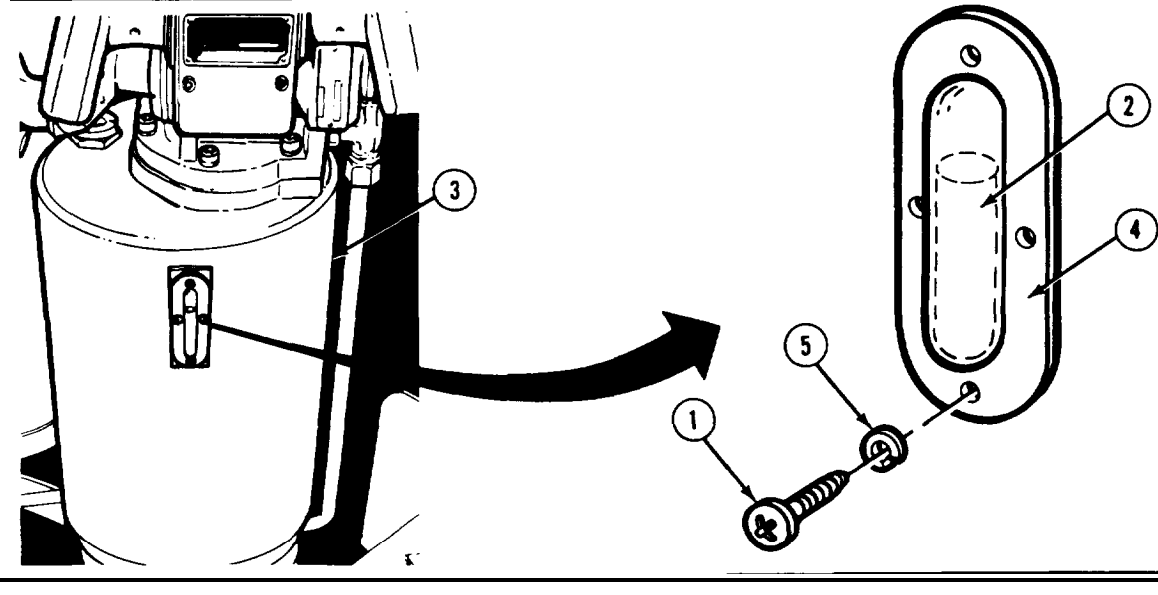
REFERENCE: TM 9-2350-222-12 for procedure to fill hydraulic system

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Liquid Level Sight Gage	FO-1	15A

FRAME 1

STEP	PROCEDURE
1.	Apply sealing compound to four screws (1) and liquid level gage (2) on surfaces in contact with reservoir (3).
2.	Hold liquid level gage (2) and plate (4) in position on reservoir (3).
3.	Using screwdriver, attach level gage (2) and plate (4) to reservoir (3) with four screws (1) and four lockwashers (5).
	NOTE Follow-on Maintenance Action Required: Fill hydraulic system **(LO).**
	END OF TASK



Section 4. GROUND STRAP

37-8. MAINTENANCE PROCEDURES INDEX

Equipment Item	Tasks	
	Removal	Installation
Ground Strap	37-9	37-10

37-9. GROUND STRAP REMOVAL PROCEDURE

TOOLS: 3/4 in. socket (3/8 in. drive)
7/16 in. socket (3/8 in. drive)
3/8 in. drive ratchet
6 in. extension

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedures to:
Traverse turret
Set turret traverse lock to LOCKED

EQUIPMENT LOCATION INFORMATION:

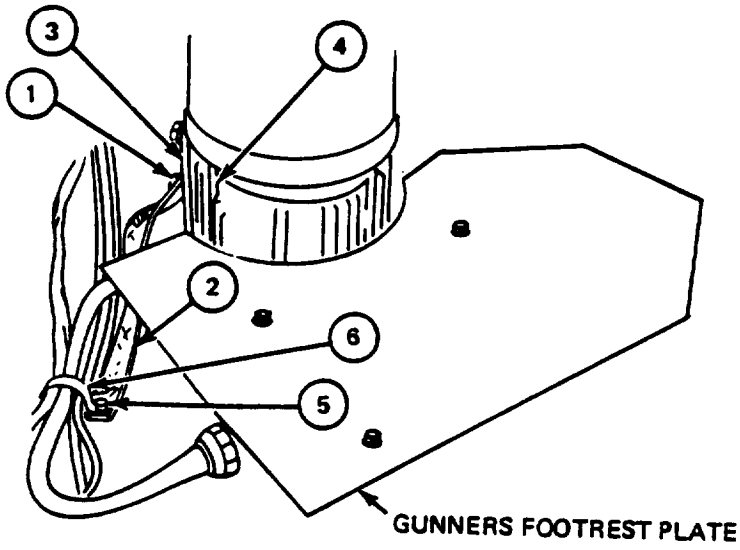
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Power Pack	FO-l	15

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

37-9. GROUND STRAP REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Traverse turret until ground strap screws can be reached from driver's compartment (TM-10).
2.	Set turret traverse lock to LOCKED (TM-10).
3.	Using 3/4" socket wrench, remove screw and lockwasher (1) holding ground strap (2) to mounting bracket (3) in electric drive motor (4).
4.	Using 7/16'" socket wrench, remove screw and lockwasher (5) holding harness clamp (6) and ground strap (2) to turret floor.
	END OF TASK



37-10. GROUND STRAP INSTALLATION PROCEDURE

TOOLS: 3/4" socket (3/8" drive)
7/16" socket (3/8" drive)
3/8" drive ratchet
6" extension (3/8" drive)

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedures to:
Traverse turret
Set turret traverse lock to LOCKED

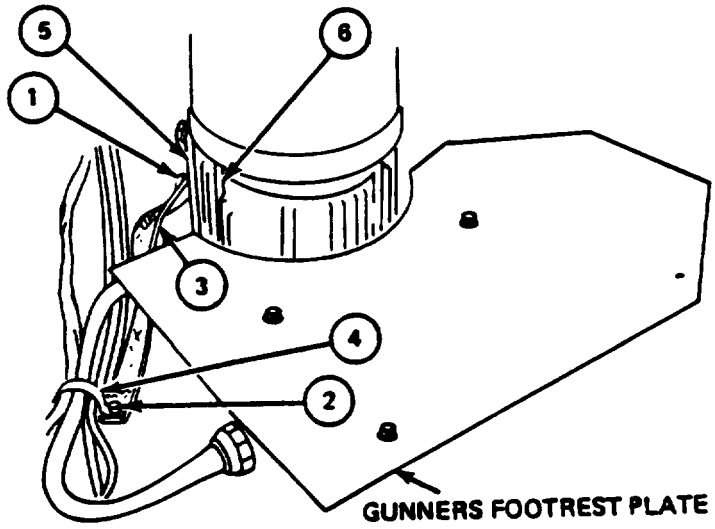
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Power Pack	FO-1	15

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

Step	Procedure
1.	Traverse turret until ground strap screws (1) can be reached from driver's compartment (TM-10).
2.	Set turret traverse lock to LOCKED (TM-10).
3.	Using 7/16" socket wrench, put screw (2) into hole in ground strap (3) and clamp (4) and into turret floor.
4.	Using 3/4" socket wrench, put screw and Iockwasher (1) through hole in ground strap (3) and into hole in mounting bracket (5) in electric drive motor (6).
	END OF TASK


5
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GUNNERS FOOTREST PLATE

Section 5. MOTOR MOUNTING BRACKET

37-11. MAINTENANCE PROCEDURES INDEX

Equipment Item	Tasks: Removal	Tasks: Installation
Motor Mounting Bracket	37-12	37-13

37-12. MOTOR MOUNTING BRACKET REMOVAL PROCEDURE

TOOLS: **3/4" open end wrench**
9/16" socket (3/8" drive)
3/8" drive ratchet
3" extension (3/8" drive)

SUPPLIES: 2" x 4" x 4" wood block

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedures to:
Traverse turret
Set turret traverse lock to LOCKED

EQUIPMENT LOCATION INFORMATION:

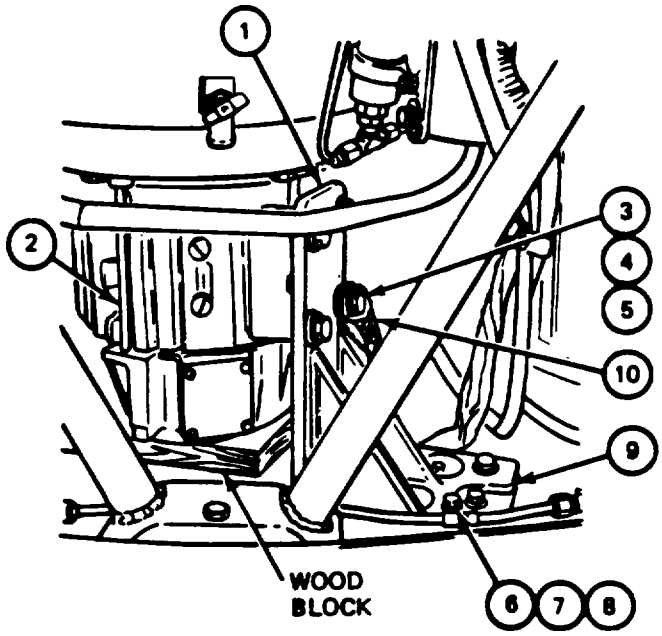
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7
Power Pack	FO-1	15

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

37-12. MOTOR MOUNTING BRACKET REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Traverse turret until motor mounting bracket (1) can be reached from driver's compartment (TM-10).
2.	Set turret traverse lock to LOCKED (TM-10).
	CAUTION The power pack is heavy. Wood support is necessary for removal of mounting bracket.
3.	Place wood block on turret platform under motor (2).
4.	Using 3/4" wrench, remove four screws (3), four lockwashers (4), and four flat washers (5) that hold mounting bracket (1) to power pack motor (2).
5.	Using 9/ 16" socket wrench, remove four screws (6), four Iockwashers (7), and four flat washers (8) that hold mounting bracket (1) on mounting plate (9). Move ground strap (10) out of way.
6.	Remove mounting bracket (1).
	END OF TASK



37-13. MOTOR MOUNTING BRACKET INSTALLATION PROCEDURE

TOOLS: 3/4” open end wrench
9/16" socket (3/8" drive)
3/8” drive ratchet
3“ extension (3/8" drive)

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedures to:
Traverse turret
Set turret traverse lock to LOCKED

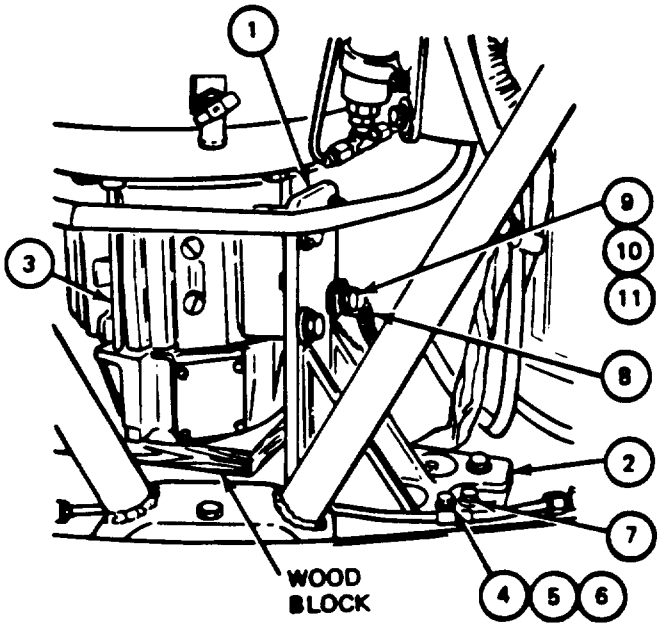
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Turret Traverse Lock	FO-3	7
Power Pack	FO-1	15

PRELIMINARY PROCEDURES: Install motor mounting plate (para 37-16)

FRAME 1

Step	Procedure
1.	Traverse turret until motor mounting bracket (1) can be reached from driver’s compartment (TM- 10).
2.	Set turret traverse lock to LOCKED (TM-10).
3.	Place mounting bracket (1) on mounting plate (2) and against mounting pad on power pack motor (3).
4.	Attach mounting bracket (1), finger tight, to mounting plate (2) with four screws (4). four Iockwashers (5) and four flat washers (6). NOTE Check that mounting bracket (1) sits flat against mounting pad of power pack motor (3). Move power pack motor and mounting bracket to provide a proper fit. The mounting plate (2) can be moved by loosening four screws (7) with socket wrench to provide more adjustment. Tighten screws as required.
5.	Using socket wrench, tighten four screws (4).
6.	Using open end wrench, attach mounting bracket (1) and ground strap (8) to power pack motor (3) with four screws (9), four lockwashers (10) and four flat washers (11).
7.	Remove wood blocks.
	END OF TASK


1
3
9
10
11
8
2
7
WOOD
BLOCK
4
5
6

Section 6. MOTOR MOUNTING PLATE

37-14. MAINTENANCE PROCEDURES INDEX

Equipment Item	Tasks	
	Removal	Installation
Motor Mounting Plate	37-15	37-16

37-15. MOTOR MOUNTING PLATE REMOVAL PROCEDURE

TOOLS: 9/16" open end wrench

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedure to:
Traverse turret
Set turret traverse lock to LOCKED

EQUIPMENT LOCATION INFORMATION:

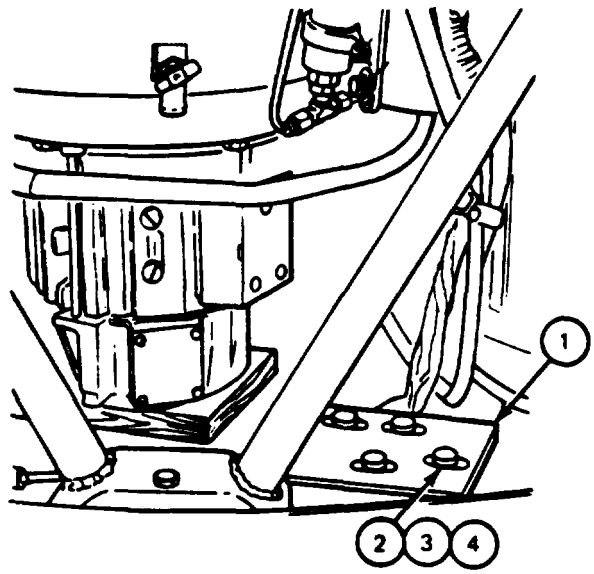
EQUIPMENT	FOLDOUT	CALLOUT
Turret Traverse Lock	FO-3	7
Power Pack	FO-1	15

PRELIMINARY PROCEDURES: Remove motor mounting bracket (para 37-12)

37-15. MOTOR MOUNTING PLATE REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Traverse turret until motor mounting plate (1) can be reached from driver's compartment (TM-10).
2.	Set turret traverse lock to LOCKED (TM-10),
3.	Using wrench, remove four screws (2), four Iockwashers (3 and four washers (4) that hold mounting plate (1) on turret floor.
4.	Remove mounting plate (1).
	END OF TASK



37-16. MOTOR MOUNTING PLATE INSTALLATION PROCEDURE

TOOLS: 9/16" open end wrench

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedures to:
Traverse turret
Set turret traverse lock to LOCKED

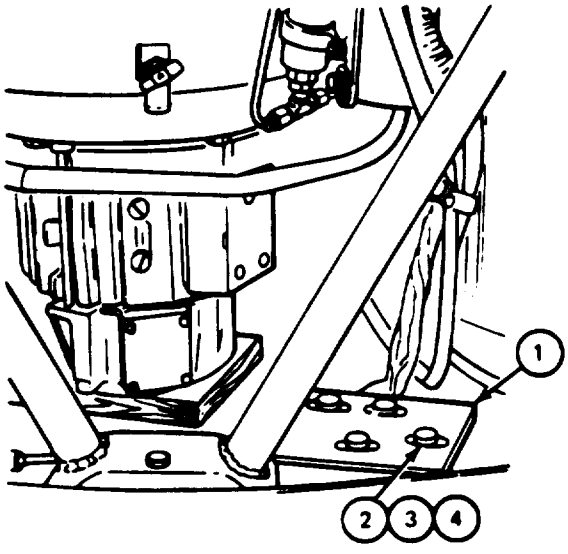
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Turret Traverse Lock	FO-3	7
Power Pack	FO-1	15

37-16. MOTOR MOUNTING PLATE INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Traverse turret **until motor mounting plate (1) can be reached from driver's compartment** (TM-10).
2.	Set turret traverse lock to LOCKED **(TM-10).**
	NOTE The **slots in mounting** plate (1) must be centered with mounting **screws to help put mounting bracket back in** place (para 37-16).
3.	Using wrench, attach mounting plate (1), with slots centered, **to turret floor with four** screws (2), four lockwashers (3), and four flat washers (4).
	NOTE Follow-on Maintenance **Action Required:** **Install motor mounting bracket (para 37-13).**
	END OF TASK



Section 6.1. ELECTRIC DRIVE MOTOR

37-16.1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Tasks: Removal	Tasks: Installation
Electric Drive Motor	37-16.2	37-16.3

37-16.2. ELECTRIC DRIVE MOTOR REMOVAL PROCEDURE

TOOLS: **9/16 in. combination wrench**
Adjustable hook spanner wrench
5/32 in. socket head screw key (Allen wrench)
Hoist **(200** pounds)
Metal scribe

SUPPLIES 2 in. x 2 in. x 6 in. wood blocks (two)
3/4 in. rope sling (used with hoist to lift motor)

PERSONNEL: Three (Including hoist operator)

REFERENCES: TM 9-2350-222-10 for procedures to
Traverse turret
Set turret lock to LOCKED and UNLOCKED

EQUIPMENT LOCATION INFORMATION:

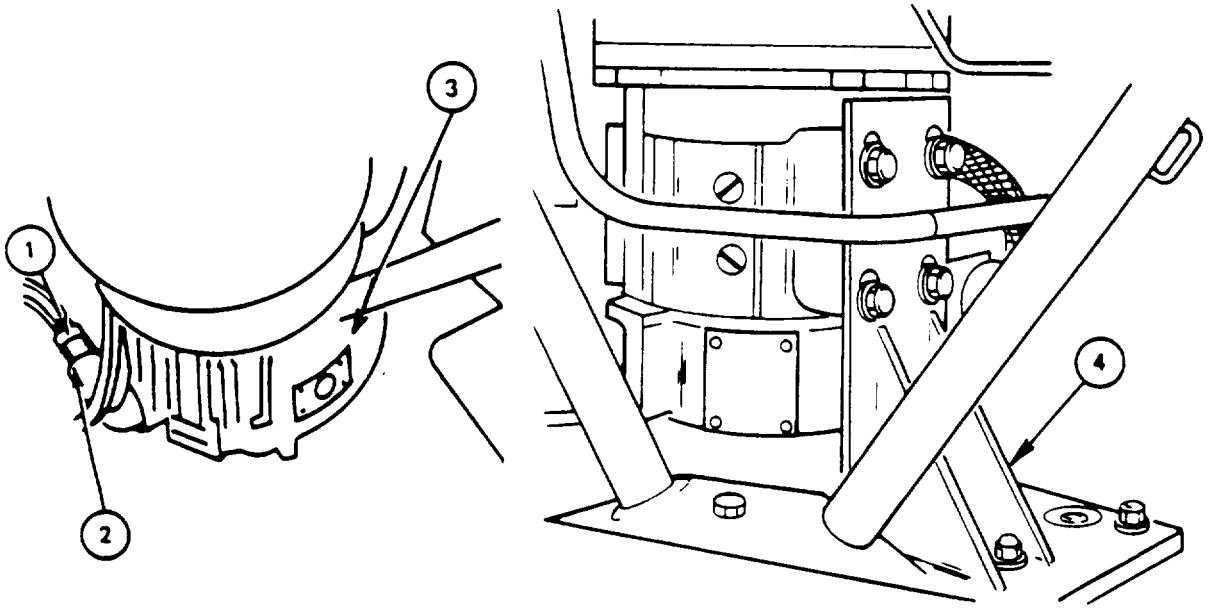
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7
Power Pack	FO-1	15

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's footrest plate removed (para 2-26)
Turret power and searchlight relay box removed (para 9-2)
Turret traverse lock set to UNLOCKED (TM -10)

37-16.2. ELECTRIC DRIVE MOTOR REMOVAL PROCEDURE (CONT)

FRAME 1

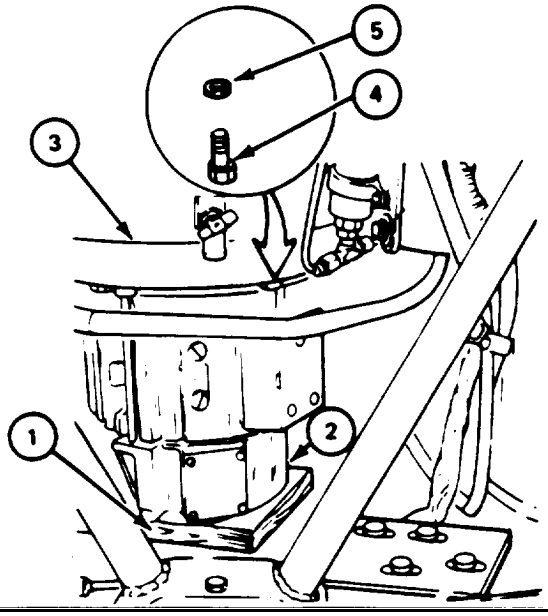
Step	Procedure
1.	Using spanner wrench, disconnect electrical connector (1) from elbow connector (2) on motor (3).
2.	Manually traverse turret until motor mounting bracket (4) can be reached from driver's compartment (TM-10).
3.	Set turret traverse lock to LOCKED (TM-10).
4.	Remove motor mounting bracket (4) (para 37-12).
	GO TO FRAME 2



37-1 6.2. ELECTRIC DRIVE MOTOR REMOVAL PROCEDURE (CONT)

FRAME 2

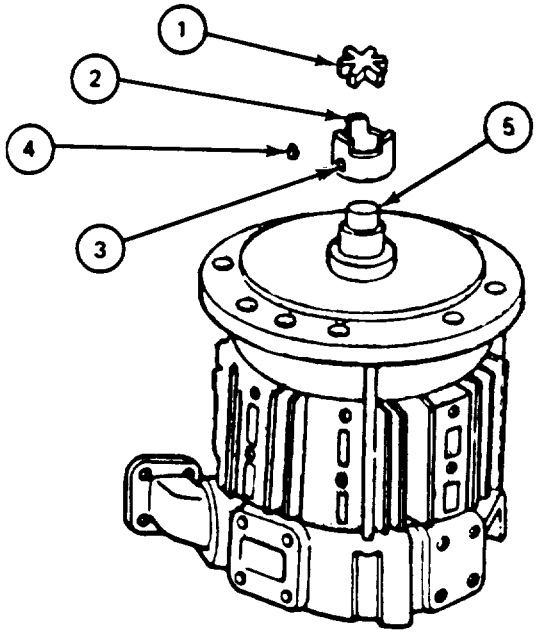
Step	Pocedure
	WARNING Motor weighs about 80 pounds. Do not put fingers under motor. You could be hurt. Two soldiers are needed to remove and lift motor. **CAUTION** Do not put wood blocks (1) under bearing hump at center of motor. Bearing could be damaged.
1.	Place two wood blocks (1) under motor (2).
2.	Using scribe, put line across motor (2) and pump mount (3) to aid installation.
3.	Using 9/16 in. combination wrench, remove four screws (4) and four Iockwashers (5) that attach motor (2) to pump mount (3).
4.	Carefully remove blocks (1) one at a time and lower motor (2).
5.	Slide motor (2) out from under pump mount (3).
	GO TO FRAME 3



37-16.2. ELECTRIC DRIVE MOTOR REMOVAL PROCEDURE (CONT)

FRAME 3

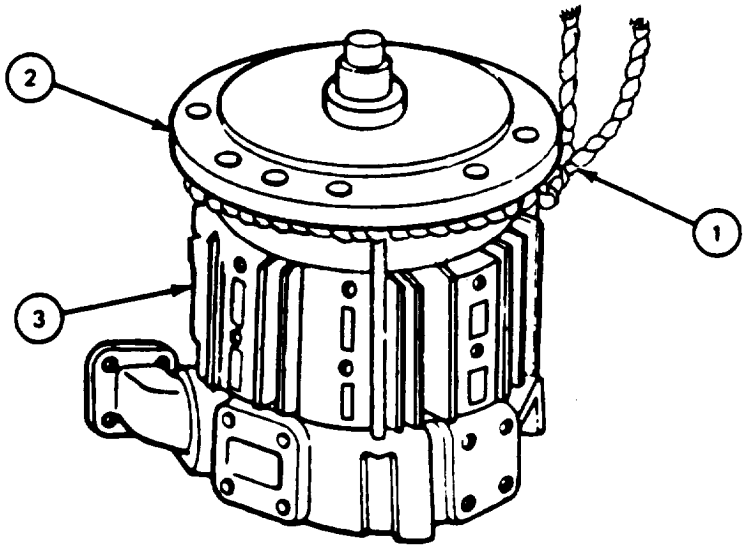
Step	Procedure
1.	Using fingers, remove spider insert (1) from motor coupling (2).
2.	Using Allen wrench, loosen setscrew (3) on side of motor coupling (2).
3.	Remove motor coupling (2) and woodruff key (4) from motor shaft (5).
	GO TO FRAME 4



37-16.2. ELECTRIC DRIVE MOTOR REMOVAL PROCEDURE (CONT)

FRAME 4

Step	Procedure
1.	Tie rope sling (1) under and around motor drive head (2). Secure rope to hoist
	WARNING
	Motor weighs about 80 pounds. Be careful when lifting it. If motor drops or sways, it could hurt you. ‘
2.	Soldier A and Soldier B: Place hoist over cupola hatch.
3.	Soldier C: Hold sides of motor (3).
4.	Soldier A and Soldier B: Using hoist, lift motor out of vehicle.
	END OF TASK



37-16.3. ELECTRIC DRIVE MOTOR INSTALLATION PROCEDURE

TOOLS: Hoist (to lift 200 pounds)
3/8 in. drive ratchet
9/16 in. socket (3/8 in. drive)
Adjustable hook spanner wrench
5/32 in. socket head screw key (Allen wrench)
6 in. steel rule (1/64 in. graduations)
12 in. straight edge (part of combination square)
3/8 in. drive torque wrench (0 to 600 inch-pounds)
8 ounce ball peen hammer

SUPPLIES: 2 in. x 2 in. x 6 in. wood blocks (three)
3/4 in. rope sling (used with hoist to lift motor)
Paper
Pencil

PERSONNEL: Four (including hoist operator)

REFERENCES: TM 9-2350-222-10 for procedures to:
Traverse turret
Set turret traverse lock to LOCKED and UNLOCKED

EQUIPMENT LOCATION INFORMATION:

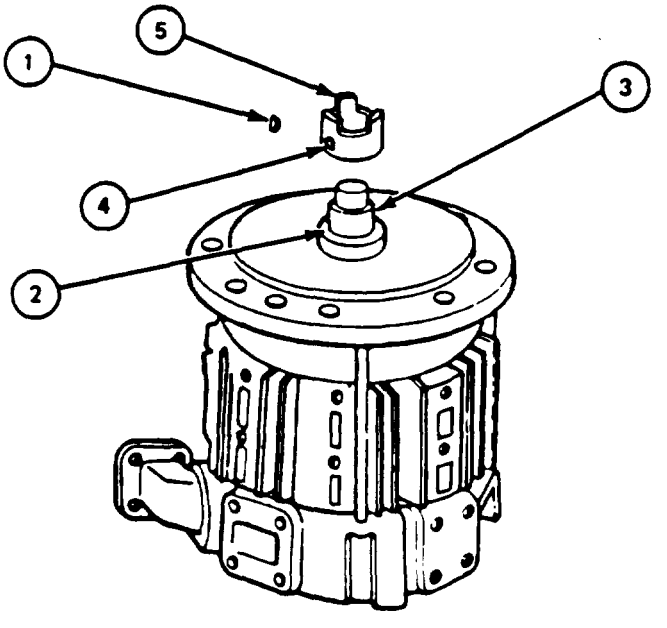
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7
Power Pack	FO-1	15

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Turret traverse lock set to UNLOCKED (TM -10).

37-16.3. ELECTRIC DRIVE MOTOR INSTALLATION PROCEDURE (CONT)

FRAME 1

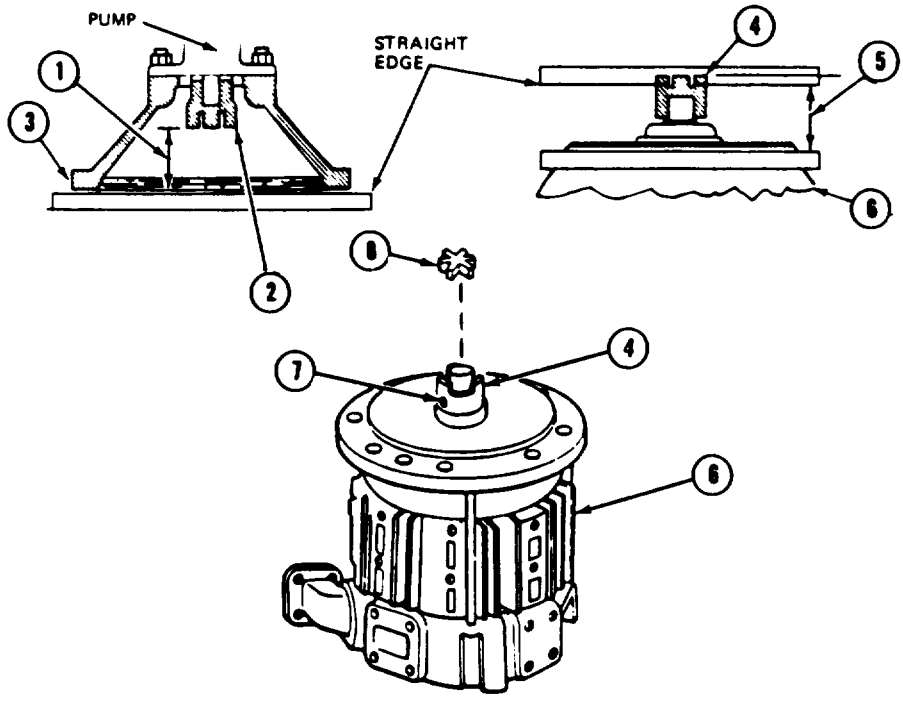
Step	Procedure
1,	Using hammer, tap woodruff key (1) in slot (2) on motor shaft (3).
2.	Using Allen wrench, loosen setscrew (4) in motor coupling (5).
3.	Put motor coupling (5) on motor shaft (3).
	Go TO FRAME 2



37-16.3. ELECTRIC DRIVE MOTOR INSTALLATION PROCEDURE (CONT)

FRAME 2

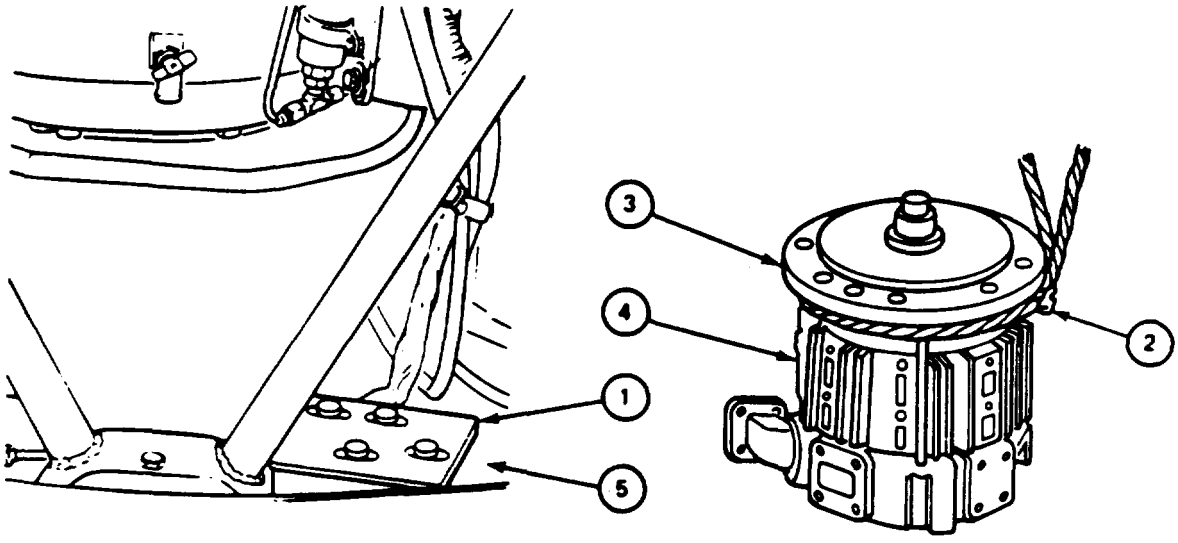
Step	Procedure
1.	Using straight edge and steel rule, measure distance (1) between bottom of pump coupling (2) and bottom of pump mount (3).
2.	Using pencil and paper, write down distance (1) measured in step 1.
3.	Put straight edge in splines of motor coupling (4).
	NOTE Motor coupling (4) must be installed an exact distance (5) from electric drive motor (6) before motor is installed on pump mount (3).
4.	Using steel rule to measure, move motor coupling (4) until distance (5) is between 1/64 in. and 1/32 in. less than distance measured in step 1.
5.	Using Allen wrench, tighten setscrew (7).
6.	Put spider insert (8) in motor coupling (4).
	GO TO FRAME 3



37-16.3. ELECTRIC **DRIVE MOTOR INSTALLATION** PROCEDURE (CONT)

FRAME 3

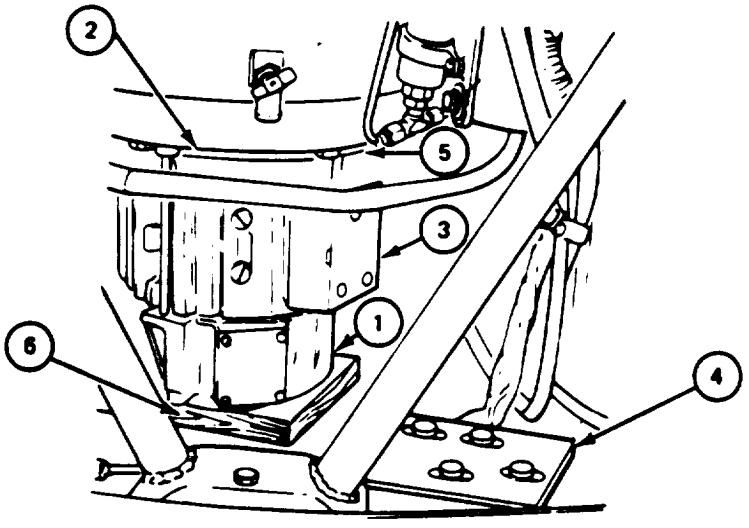
step	Procedure
1.	Soldier A: Manually traverse turret until motor mounting plate (1) can be reached from driver's compartment (TM-10).
2.	Set turret traverse lock to LOCKED (TM -10).
3.	Soldier B: Tie rope sling (2) under and around motor drive head (3). Secure rope to hoist.
	WARNING Motor weighs about 60 pounds. Be careful when lifting and lowering it. If motor drops or sways, it could hurt you.
4.	Soldier B and C Slowly lower motor into vehicle.
5.	Soldier A: Hold motor on sides (4). Guide motor down to turret platform (5).
6.	Remove rope sling (2) from motor (4).
	GO TO FRAME 4



37-16.3. ELECTRIC DRIVE MOTOR INSTALLATION PROCEDURE (CONT)

FRAME 4

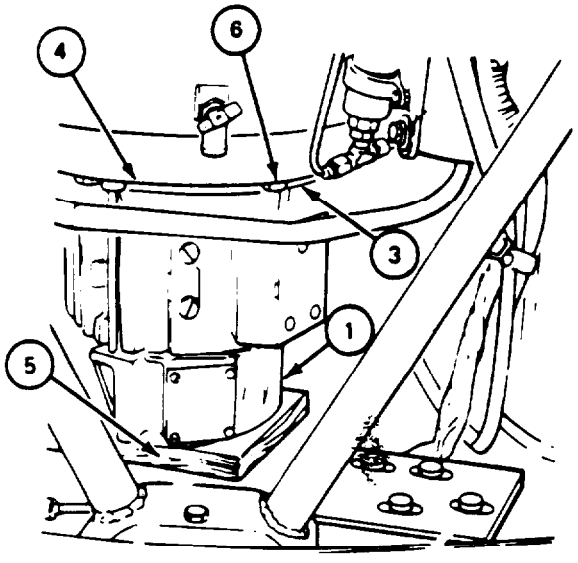
Step	Procedure
	WARNING Be careful to lift motor with knees bent, back straight. Lifting wrong can hurt you.
1.	Soldier A and Soldier B: Slide motor (1) under pump mount (2) with bracket mounting side (3) facing motor mounting plate (4).
	CAUTION Do not put wood blocks under bearing hump at center of motor.
2.	Grab motor under drive head (5). Lift motor up about 2 in. and align scribe marks made during removal.
3.	Soldier C: Slide two wood blocks (6) under motor for support,
4.	Soldier A and Soldier B: Lower motor (1) on wood blocks (6).
	GO TO FRAME 5

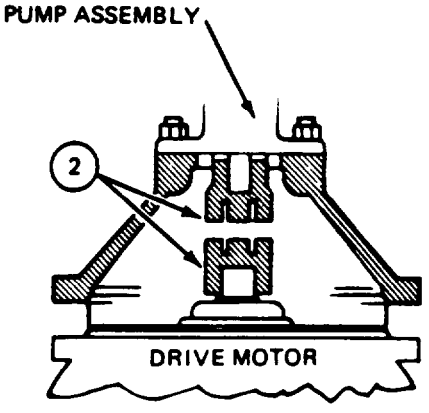


37-16.3. ELECTRIC DRIVE MOTOR INSTALLATION PROCEDURE (CONT)

FRAME 5

Step	Procedure
	CAUTION Motor (1) must be lifted and turned carefully to keep from breaking motor parts.
1.	Soldier A and Soldier B: Lift motor (1) about 1/2 in.
2.	Soldier C: Turn motor (1) until shaft couplings (2) line up.
3.	Soldier A and Soldier B: Lift motor (1) until drive head (3) is flat against pump mount (4).
4.	Soldier C: Slide third wood block (5) under motor (1) to hold it against pump mount (4).
5.	Turn motor (1) until four mounting holes (6) are lined up.
	GO TO FRAME 6

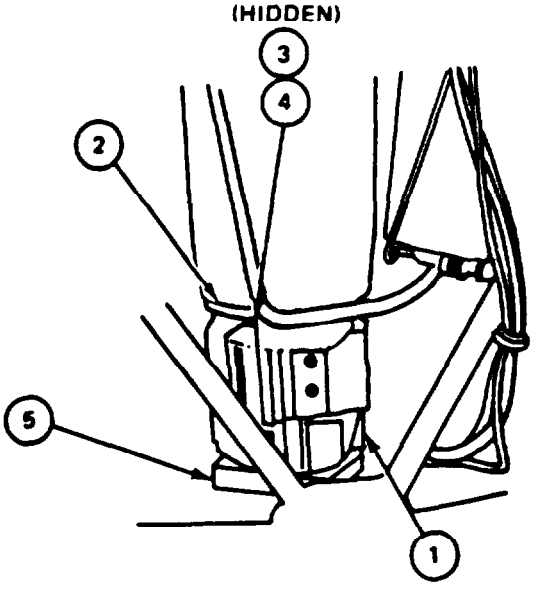




7-16.3. ELECTRIC DRIVE MOTOR INSTALLATION PROCEDURE (CONT)

FRAME 6

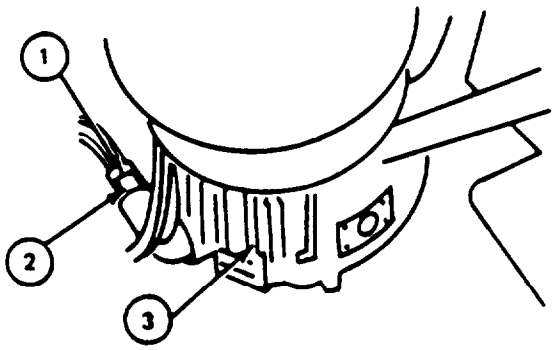
Step	Procedure
1,	Using socket wrench, attach motor (1) to pump mount (2) with four screws (3) and four Iockwashers (4).
	NOTE
	Do step 2 only if power pack was removed from vehicle.
2.	Using torque wrench, tighten four screws (3) to between 205 and 225 inch pounds (23 to 25 Newton meters).
3.	Install motor mounting bracket (para 37-13).
4.	Remove wood blocks (5).
	GO TO FRAME 7



37-16.3. ELECTRIC DRIVE MOTOR INSTALLATION PROCEDURE. (CONT)

FRAME 7

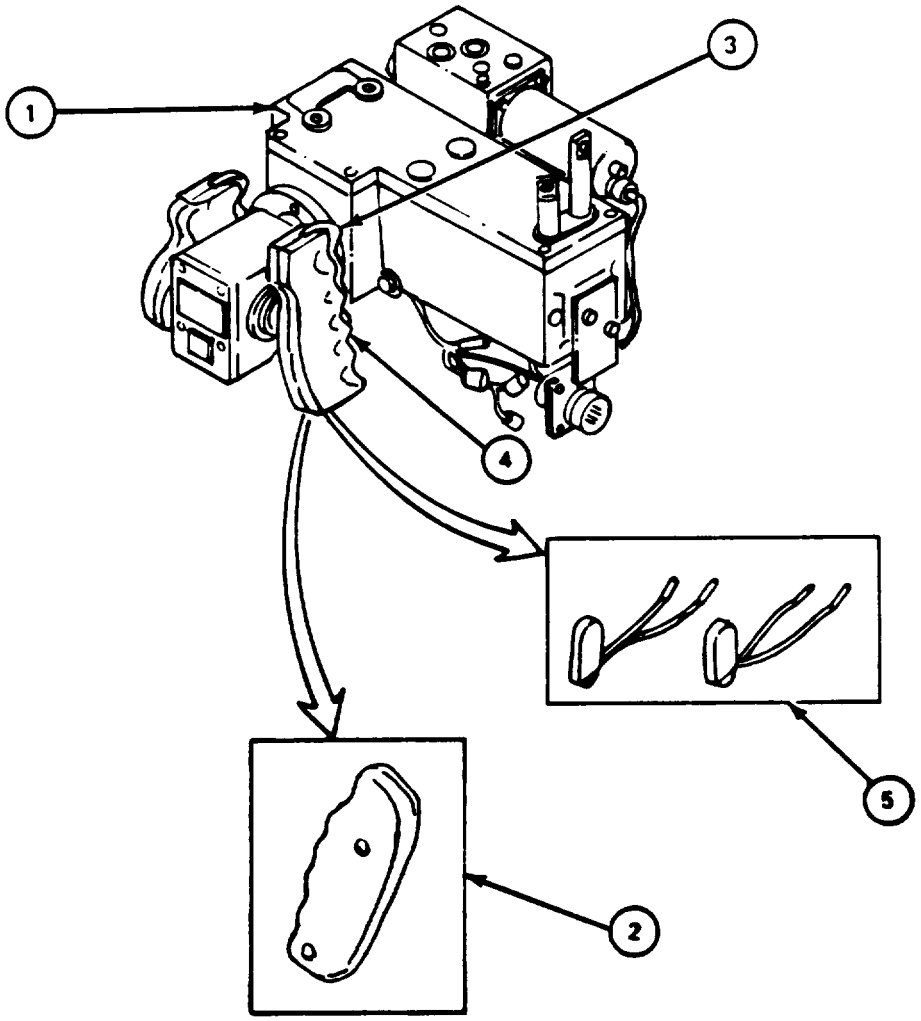
Step	Procedure
1.	Using spanner wrench, connect electrical connector (1) to elbow connector (2) on motor (3). NOTE Follow-on Maintenance Action Required: Install turret power and searchlight relay box (para 9-3). Install gunner's footrest plate (para 2-27). Traverse turret in power mode to make sure motor worksa properly (TM -10). END OF TASK



Section 7. GUNNER'S CONTROL

37-17. MAINTENANCE PROCEDURES INDEX

Equipment Item	Tasks Inspection	Test	Adjustment	Removal	Installation
1. Gunner's Control	...	...	...	37-18	37-19
2. Handle Cover	...	...	...	37-20	37-21
3. Handle Triggers	...	...	37-24	...	...
4. Handle Palm Switch	...	...	37-25	...	...
5. Handle Switches	...	...	...	37-22	37-23


1
3
4
5
2

37-18. GUNNER'S CONTROL REMOVAL PROCEDURE

TOOLS: 1 /2"" combination wrench
3/16" socket head screw key (Allen wrench)
5/8" combination wrench
7/8" combination wrench
Spanner wrench
Slip-joint pliers, conduit style

SUPPLIES: Lint-free cloths (item 15, App. A)

PERSONNEL: One

REFERENCES: JPG for procedures to:
Disconnect electrical connectors
Tag hydraulic tubes
Remove preformed packings

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7
Gunner's Control	FO-1	4
Power Pack	FO-1	15

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Turret traverse lock set to LOCKED

PRELIMINARY PROCEDURES: Remove gunner's control box bracket (para 10-4)

GENERAL INSTRUCTIONS:

CAUTION

Keep dirt from getting in tubes or parts. Dirt can damage equipment.

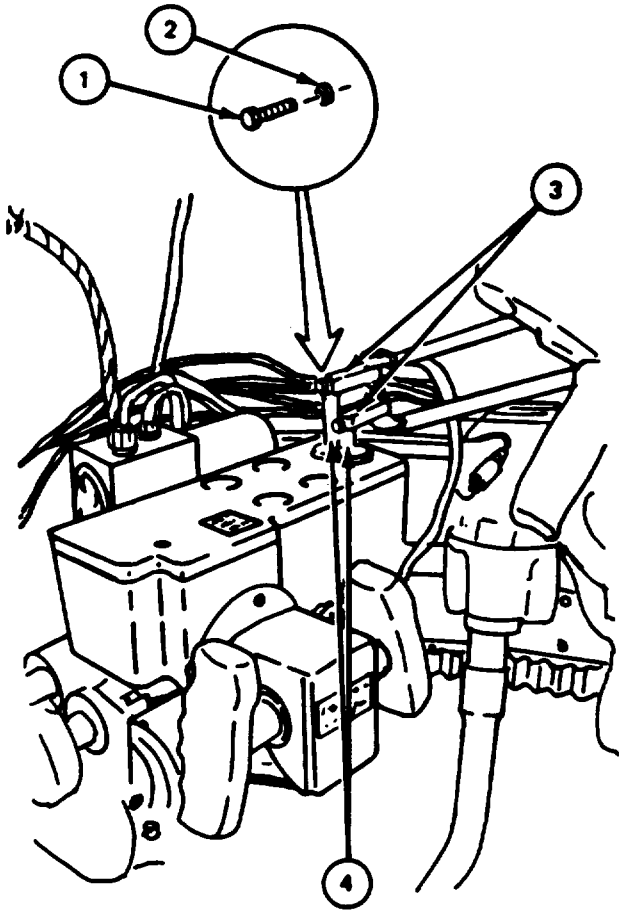
NOTE

Use lint-free cloths to keep hydraulic parts clean.

37-18. GUNNER'S CONTROL REMOVAL PROCEDURE (CONT)

FRAME 1

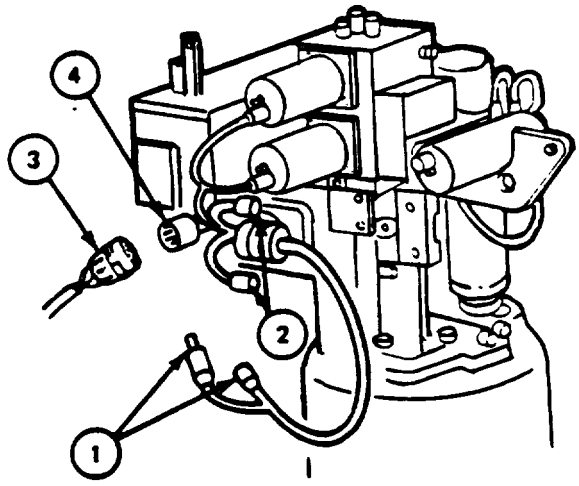
Step	Procedure
	WARNING Hydraulic pressure must be lowered to 0 psi before removal of any hydraulic tubes or parts. Hydraulic fluid under pressure can hurt you.
1.	Lower hydraulic system pressure to 0 psi (para 1-18).
2.	Using Allen wrench, remove two screws (1) and two Iockwashers (2) that attach two commander's control levers (3) to two control shafts (4). GO TO FRAME 2



37-18. GUNNER'S CONTROL PROCEDURE (CONT)

FRAME 2

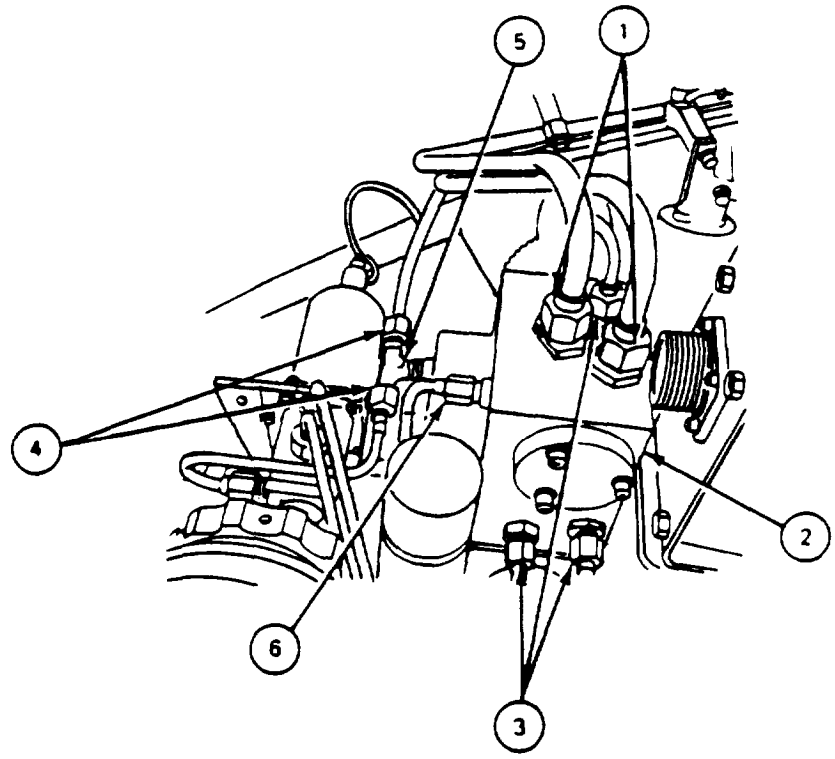
Step	Procedure
1.	Using hands, disconnect two manual elevation pump electrical connectors (1) from two gunner's control wiring harness connectors (2) (JPG).
2.	Using spanner wrench, disconnect electrical connector (3) from wiring harness connector (4) (JPG)
	GO TO FRAME 3



37-18. GUNNER'S CONTROL REMOVAL PROCEDURE (CONT)

FRAME 3

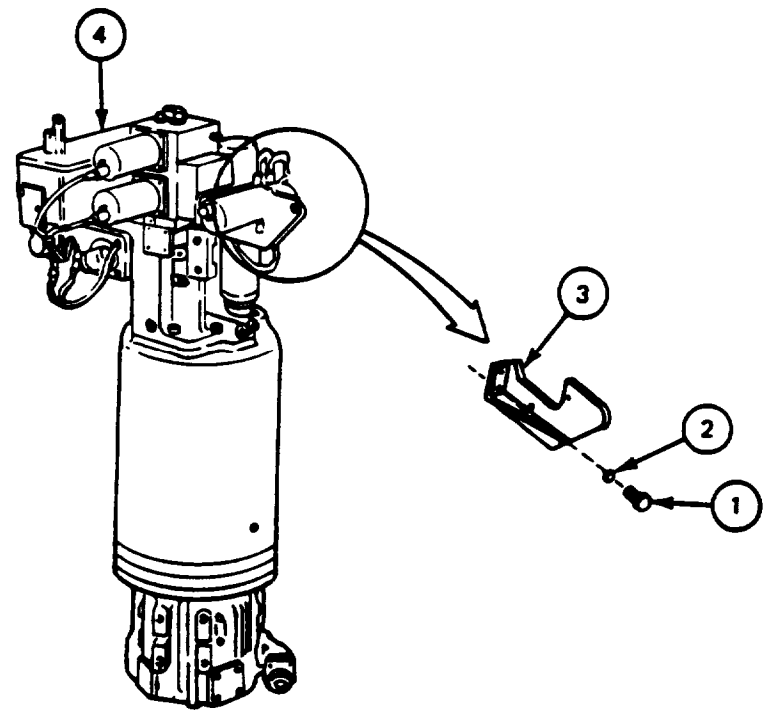
Step	Procedure
1.	Using 7/8" combination wrench, disconnect two tubes (1) from hydraulic valve (2). Tag tubes (JPG).
2.	Using 5/8" combination wrench, disconnect three tubes (3) from hydraulic valve (2). Tag tubes (JPG).
3.	Using 5/8"' combination wrench, disconnect two tubes (4) from tee (5). Tag tubes (JPG).
4.	Using 5/8" combination wrench, disconnect tube (6) from hydraulic valve (2). Tag tubes (JPG).
	GO TO FRAME 4



37-18. GUNNER'S CONTROL REMOVAL PROCEDURE (CONT)

FRAME 4

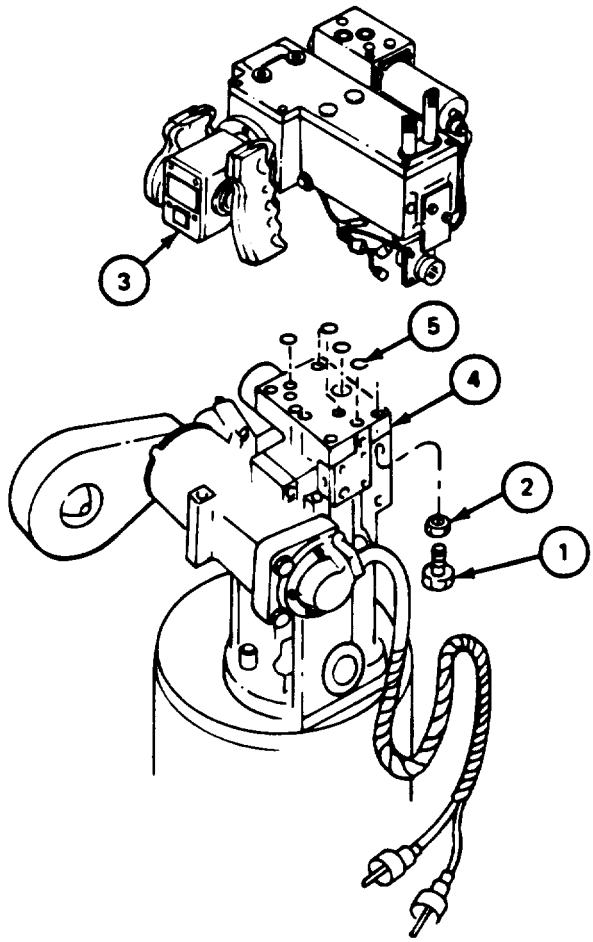
Step	Procedure
1.	Using 1/2" combination wrench, remove two screws (1), two lockwashers (2), and bracket (3) from gunner's control (4). GO TO FRAME 5



37-18. GUNNER'S CONTROL REMOVAL PROCEDURE (CONT)

FRAME 5

Step	Procedure
1.	Using 1/2" combination wrench, remove four screws (1), four lockwashers (2), and gunner's control (3) from riser (4).
2.	Remove four packings (5) from riser (4) (JPG). Throw packings away.
	END OF TASK



37-19. GUNNER'S CONTROL INSTALLATION PROCEDURE

TOOLS: Spanner wrench
1/2" combination wrench
7/8" combination wrench
5/8"" combination wrench
3/8" drive torque wrench (0 to 600 inch-pounds)
1/2" socket (3/8" drive)
Slip-joint pliers, conduit style
3/ 16" socket head screw key (Allen wrench)

SUPPLIES: Lint-free cloths (item 15, App. A)
Preformed packings:
MS 28775-115 (one)
MS 28775-112 (one)
MS 28775-010 (two)

PERSONNEL: One

REFERENCES: JPG for procedures to:
Connect electrical connectors
Use torque wrench
Install preformed packings

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control	FO-1	4

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTIONS:

CAUTION

All hydraulic parts being assembled must be clean. Dirt can damage equipment.

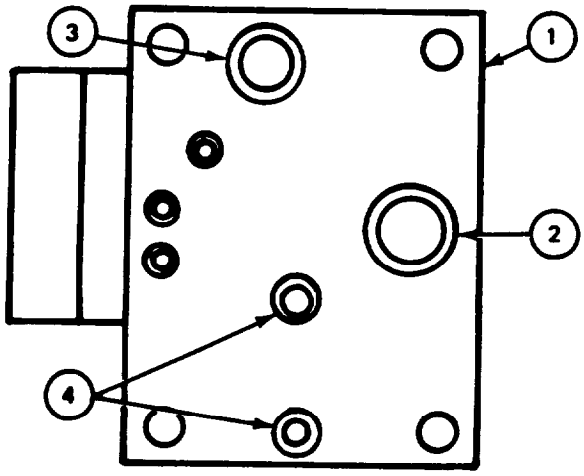
NOTE

Use lint-free cloths to keep hydraulic parts clean.

37-19. GUNNER'S CONTROL INSTALLATION PROCEDURE (CONT)

FRAME 1

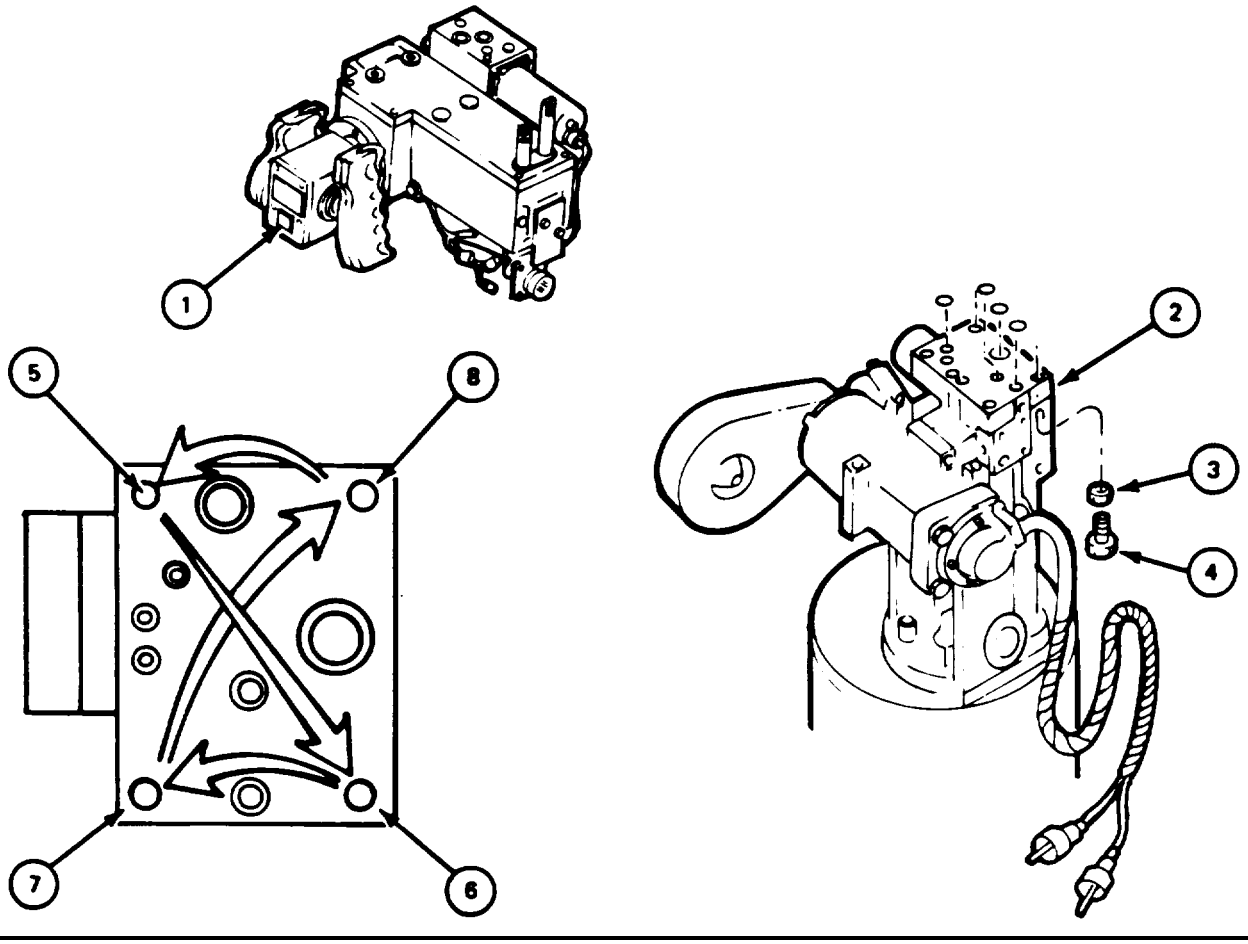
Step	Procedure
1.	Coat packings with hydraulic fluid (JPG).
2.	Put packings in ports of riser (1) as follows (JPG): One MS 28775-115 (2) One MS 28775-112 (3) Two MS 28775-010 (4). GO TO FRAME 2



37-19. GUNNER'S CONTROL INSTALLATION PROCEDURE (CONT)

FRAME 2

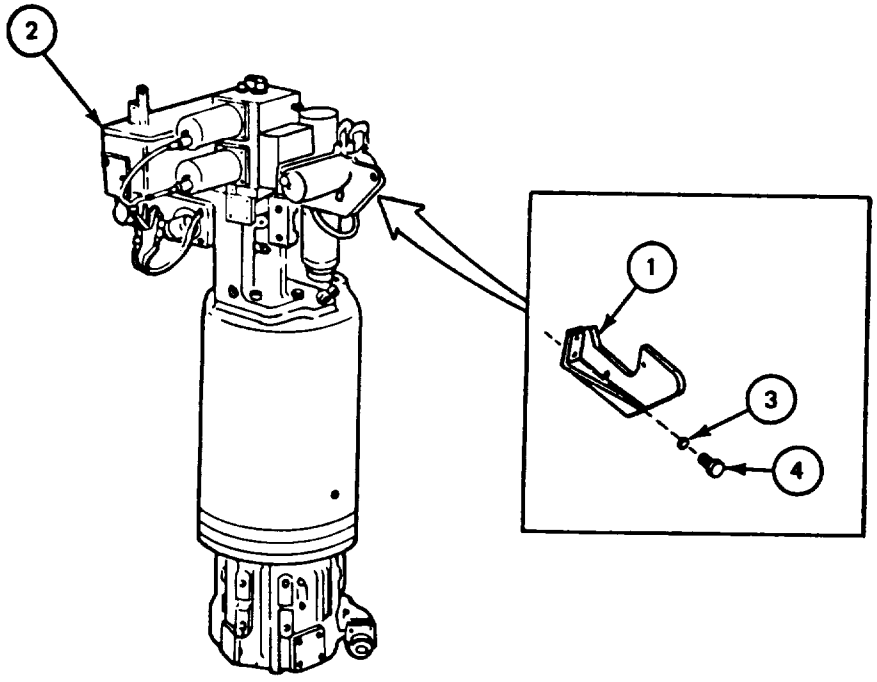
Step	Procedure
1.	Put gunner's control (1) on riser (2).
	CAUTION Tighten and torque in order shown, to prevent damage to parts and packings.
2.	Using 1/2"' combination wrench, install four lockwashers (3) and four screws (4) that attach gunner's control (1) to riser (2). Tighten in following order (5) to (6) to (7) to (8) as shown.
3.	Using torque wrench, tighten four screws (4) to between 158 and 178 inch-pounds. Torque in following order: (5) to (6) to (7) to (8) as shown (JPG).
	GO TO FRAME 3



37-19. GUNNER'S CONTROL INSTALLATION PROCEDURE (CONT)

FRAME 3

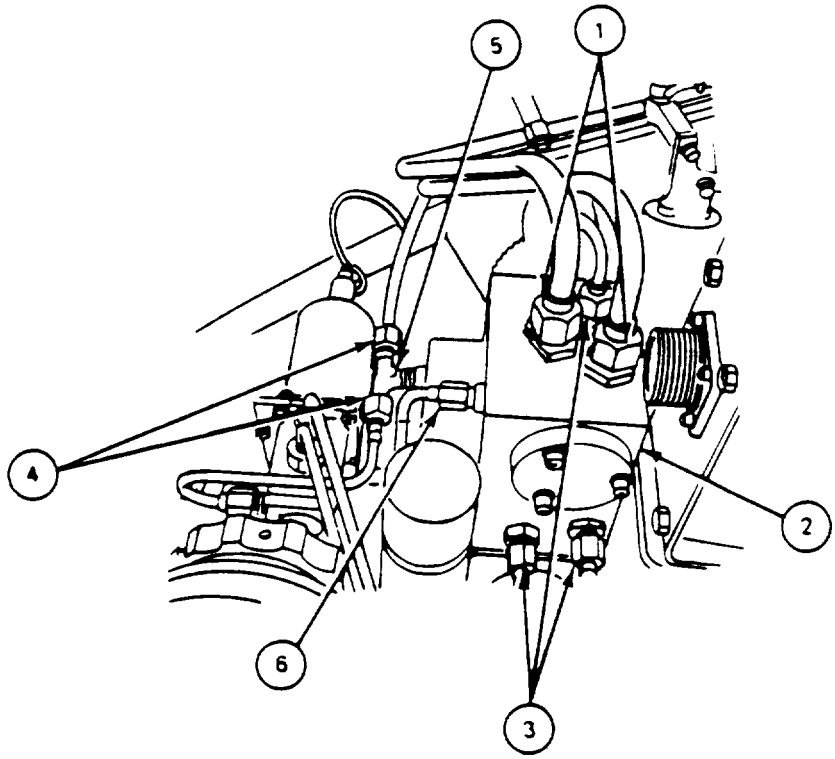
Step	Procedure
1.	Put bracket (1) against gunner's control (2) and line up mounting holes.
2.	using 1/2" combination wrench, attach bracket (1) to gunner's control (2) with two lockwashers (3) and two screws (4).
3.	Install deck clearance valve (para 41-4).
	GO TO FRAME 4



37-19. GUNNER'S CONTROL INSTALLATION PROCEDURE (CONT)

FRAME 4

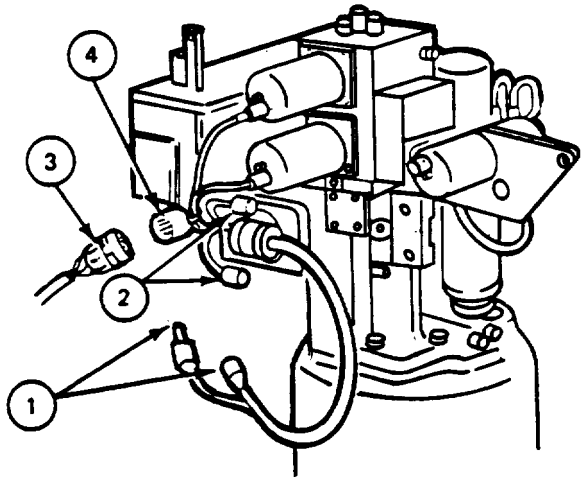
Step	Procedure
1.	Using 7/8" combination wrench, connect two tubes (1) to hydraulic valve (2).
2.	Using 5/8" combination wrench, connect three tubes (3) to hydraulic valve (2).
3.	Using 5/8"' combination wrench, connect two tubes (4) to tee (5).
4.	Using 5/8" combination wrench, connect tube (6) to hydraulic valve (2).
	GO TO FRAME 5



37-19. GUNNER'S CONTROL INSTALLATION PROCEDURE (CONT)

FRAME 5

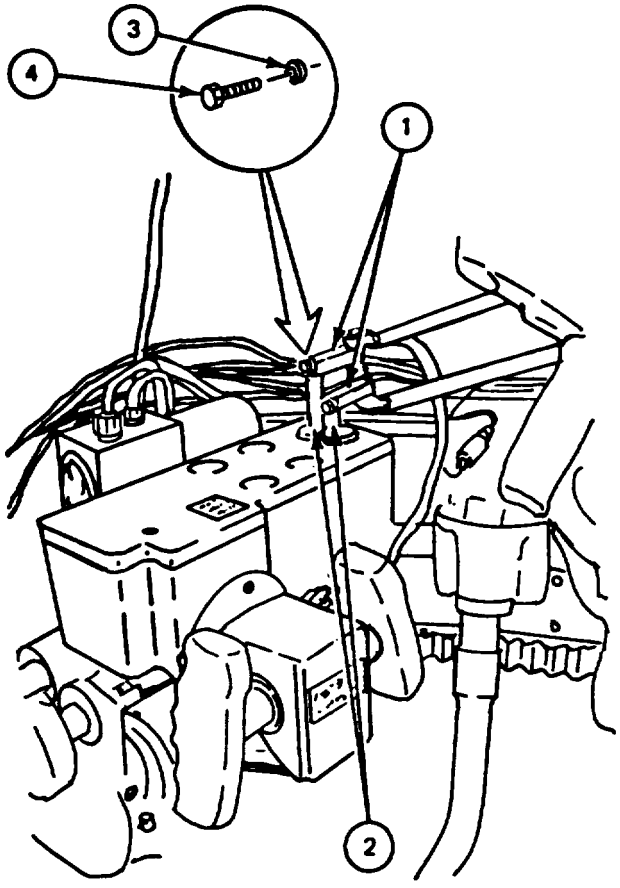
Step	Procedure
1.	Using hands, connect two manual elevation pump electrical connectors (1) to two wiring harness connectors (2) (JPG).
2.	Using spanner wrench, connect electrical connector (3) to wiring harness connector (4) (JPG).
	GO TO FRAME 6



37-19. GUNNER'S CONTROL INSTALLATION PROCEDURE (CONT)

FRAME 6

Step	Procedure
1.	Using Allen wrench, attach commander's control levers (1) to two control shafts (2) with two lockwashers (3) and two screws (4).
2.	Using cloth, clean up spilled hydraulic fluid.
	NOTE Follow-on Maintenance Action Required: Install gunner's control box mounting bracket (para 10-5). Bleed hydraulic system (para 1-22).
	END OF TASK



37-20. HANDLE COVER REMOVAL PROCEDURE

TOOLS: 5/32” socket head screw key (Allen wrench)
Flat tip screwdriver

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver’s Master Control Panel	FO-3	11
Gunner’s Control	FO-1	4
Turret Traverse Lock	FO-3	7

EQUIPMENT CONDITION: Driver’s master control panel MASTER BATTERY switch set to OFF
Gunner’s control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED

GENERAL INSTRUCTIONS:

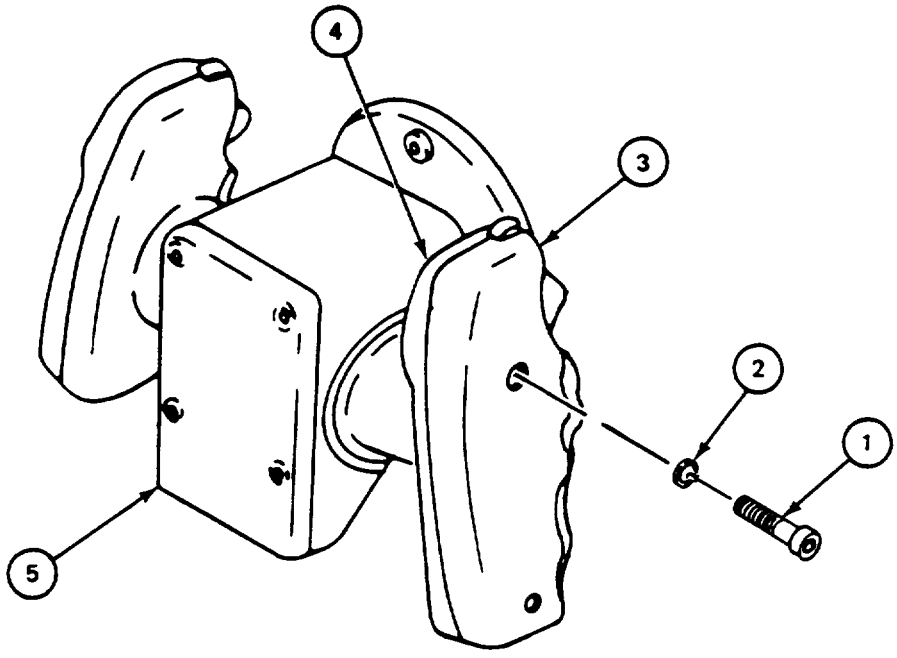
NOTE

This procedure is for removal of either left or right handle cover.

37-20. HANDLE COVER REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Using Allen wrench, remove two screws (1) and two lockwashers (2) that attach handle cover (3) to handle (4) on gunner's control (5).
	NOTE It may be necessary to use screwdriver to separate cover (3) from handle (4).
2.	Remove handle cover (3) from handle (4).
	END OF TASK



37-21. HANDLE COVER INSTALLATION PROCEDURE

TOOLS: 5/32" socket head screw key (Allen wrench)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control	FO-1	4
Turret Traverse Lock	FO-3	7

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED

GENERAL INSTRUCTIONS:

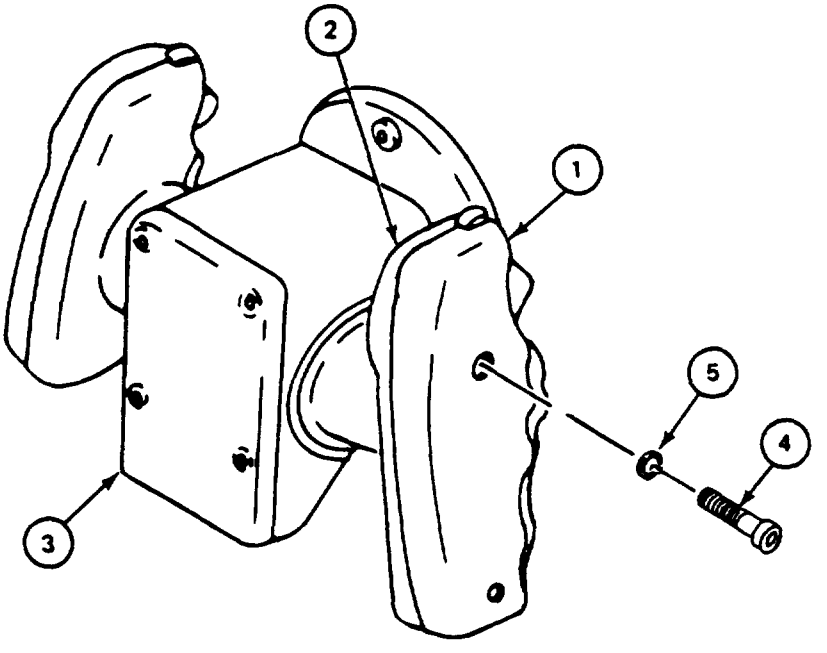
NOTE

This procedure is for installation of either left or right handle cover.

37-21. HANDLE COVER INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Using Allen wrench, attach handle cover (1) to handle (2) on gunner's control (3) with two screws (4) and two lockwashers (5). END OF TASK



37-22. HANDLE SWITCHES REMOVAL PROCEDURE

TOOLS: 5/32 in. socket head screw key (allen wrench)
Flat-tip screwdriver
Diagonal cutting pliers
Soldering iron

SUPPLIES: Nylon cord

PERSONNEL: One

REFERENCES: JPG for procedures to:
Use solder iron
Remove molding compound
Tag wires
TM 9-2350-222-10 for procedure to unload guns

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control	FO-1	4
Turret Traverse Lock	FO-3	7

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED
Guns unloaded (TM-10)

GENERAL INSTRUCTIONS:

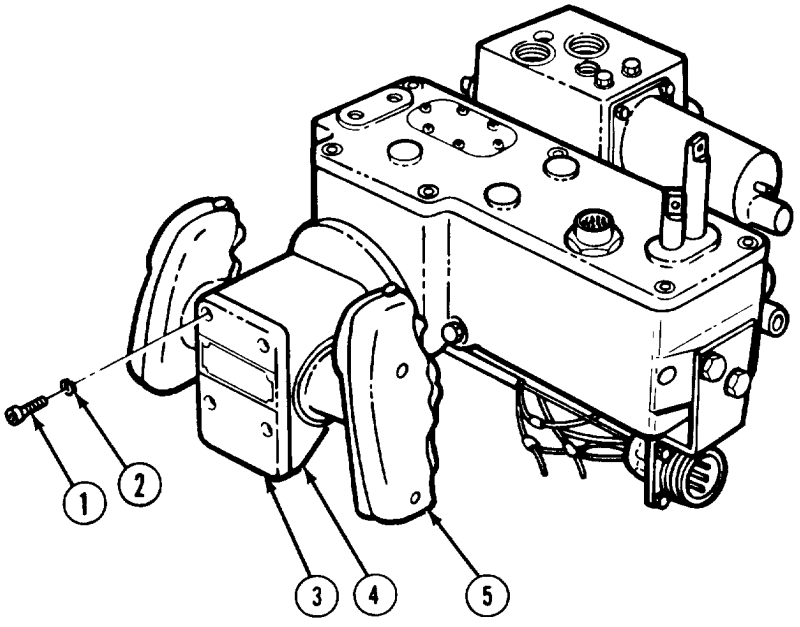
NOTE

This procedure is for removal of switches from either left or right, early or late model handles of gunner's control.

37-22 HANDLE SWITCHES REMOVAL PROCEDURE (CONT)

FRAME 1

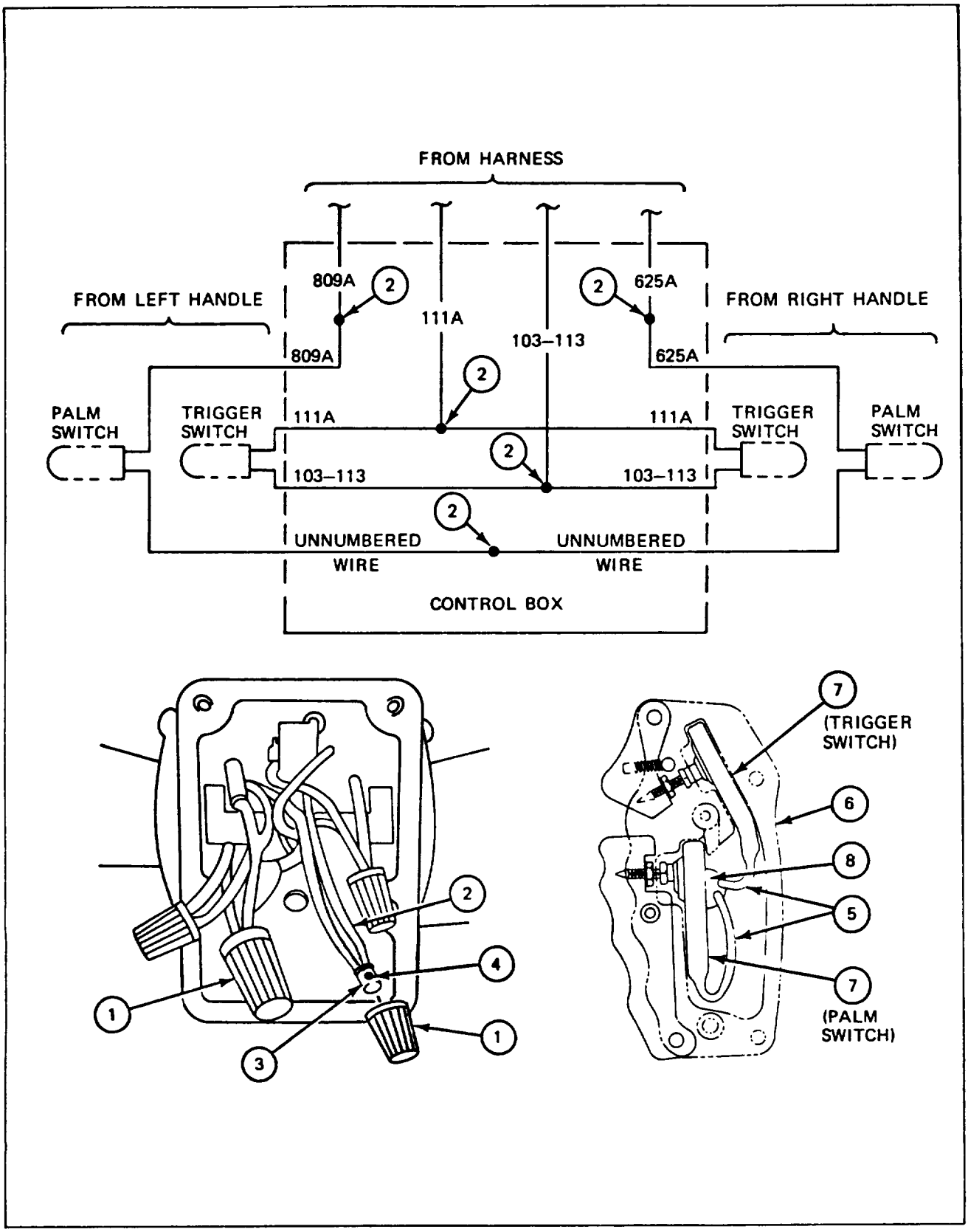
STEP	PROCEDURE
	WARNING Guns must be unloadad. Machine gun, main gun, and ELEV/TRAV POWER and MASTER BATTERY switches must be OFF, or personnel could get hurt or killed.
1.	Using allen wrench, remove four screws (1) and four lockwashers (2) that attach control box cover (3) to control box (4).
2.	Remove cover (3) from control box (4).
3.	Remove handle cover (5) (para 37-20).
	GO TO FRAME 2



37-22. HANDLE SWITCHES REMOVAL PROCEDURE (CONT)

FRAME 2

STEP	PROCEDURE
	NOTE Switches should be removed only as necessary. It may be necessary to cut wires at connector nuts (1) if molding compound in nuts has hardened. The following steps are typical for removal of all handle switches.
1.	Using hands, remove connector nuts (1) from wire connections (2) of switch to be removed.
2.	Remove molding compound from connector nuts (1), inserts (3), and wire connections (2) (JPG).
3.	Remove solder from open end of insert (3) and wire connections (2) (JPG).
4.	Using screwdriver, loosen screws (4) that attach wire connections (2) to inserts (3). Tag wires (JPG).
5.	Tie a suitable length of cord to switch leads of switch to be removed. Cord is used to pull switch leads through handle shaft during switch installation.
	NOTE Only switch wires (5) coming from left or right handle (6) should be removed from inserts (3).
6.	Using hands, lift switch (7) out of handle (6).
7.	Using hands, slowly pull switch wires (5) out of handle shaft hole (8).
	END OF TASK


FROM HARNESS
FROM LEFT HANDLE
FROM RIGHT HANDLE
809A
111A
103–113
625A
PALM SWITCH
TRIGGER SWITCH
UNNUMBERED WIRE
CONTROL BOX
(TRIGGER SWITCH)
(PALM SWITCH)

37-23. HANDLE SWITCHES INSTALLATION PROCEDURE

TOOLS: Flat-tip screwdriver
5/32 in. socket head screw key (allen wrench)
Diagonal cutting pliers
Feeler guage (0.001 in. to 0.017 in.)
Pocket knife
Soldering iron

SUPPLIES: Adhesive (item 3, App. A)
Shim. 0.001 to 0.017, as required (11674300-1, -2, -3)
Nut (8735997) (large)
Nut (8735994) (small)
Insert (8735996) (for large nut)
Insert (8735993) (for small nut)
Brush, artist (8020-00-224-6024)
Screw (8735998) (for large nut)
Screw (8735995) (for small nut)
Solder (item 20.1, App. A)
Sealing compound (item 15A, App. A)

PERSONNEL: One

REFERENCES: JPG for procedures to:
Use soldering iron
Apply sealing compound
Read wiring diagram
Use adhesives
Use feeler gauge
Tag wires
TM 9-2350-222-10 for procedure to unload guns

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control	FO-1	4
Turret Traverse Lock	FO-3	7

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED
Guns unloaded (TM-10)

PRELIMINARY PROCEDURE: Remove handle cover (para 37-20)

GENERAL INSTRUCTIONS:

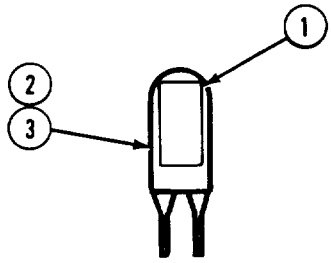
NOTE

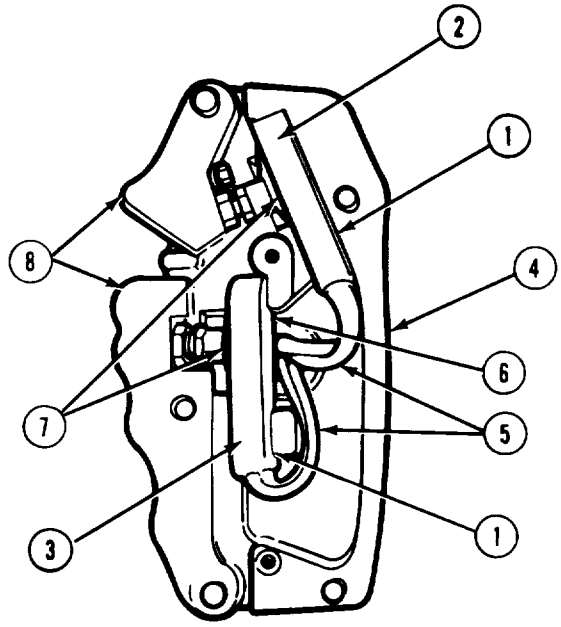
This procedure is for installation of switches in either left or right, early or late model handles of gunner's control.

37-23. HANDLE SWITCHES INSTALLATION PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
	WARNING Guns must be unloaded. Machine gun, main gun, and ELEV/TRAV POWER and MASTER BATTERY switches must be OFF, or personnel could get hurt or killed. NOTE Shims are added to handle switches to provide a snug fit between switch and handle. This prevents switch deflection that causes intermittent switch operation. The following steps are typical for bonding of shim(s) (1) and installation of all handle switches.
1.	Using adhesive and brush, bond enough shims (1) together and to replacement switch (2) or (3) to provide snug fit of 0.001 inch to 0.017 inch between switch and handle (4) (JPG).
2.	Using gauge, measure fit between switch (2) or (3) and handle (4) (JPG).
3.	Using pliers, trim switch leads (5) to 8 inches.
4.	Tag switch leads (5) 1-1/2 inch from trimmed end as follows (JPG): Trigger switch (2): 111A, 103-113. Palm switch (3): 809A (other lead not numbered).
5.	Using cord attached to switch leads (5) during removal, guide switch leads through handle shaft hole (6). Put switch in handle (4) with contact side (7) facing triggers (8).
	GO TO FRAME 2

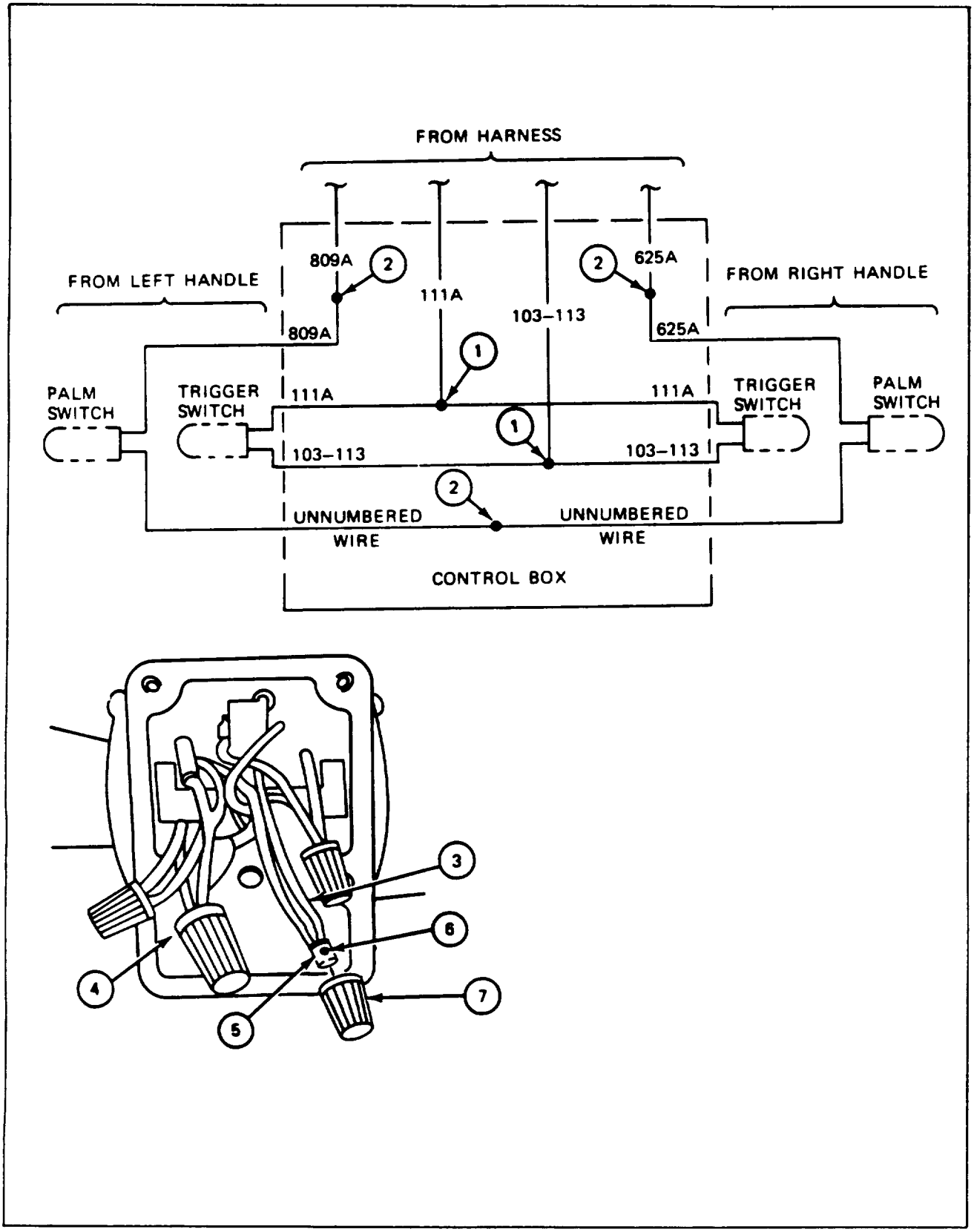

1
2
3


2
1
8
4
6
7
5
3
1

37-23. HANDLE SWITCHES INSTALLATION PROCEDURE (CONT)

FRAME 2

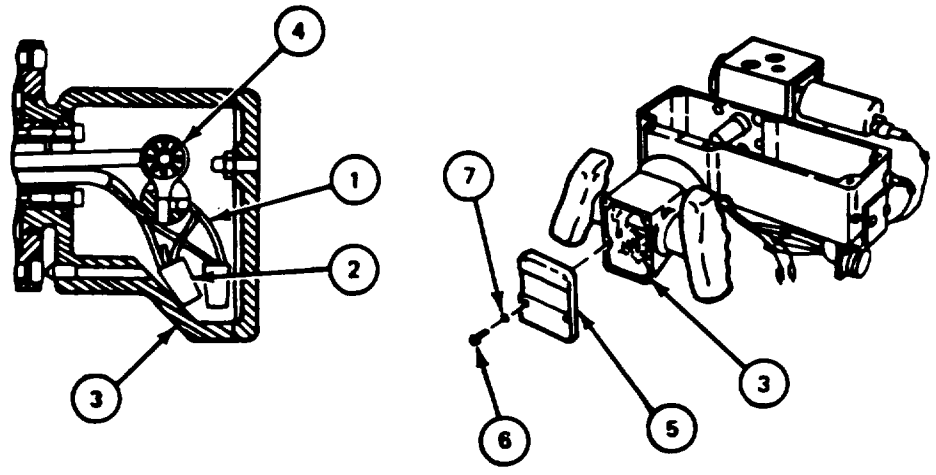
STEP	PROCEDURE
1.	Using wiring diagram and wire tags, find wires to be joined at connections (1) or (2) (JPG).
2.	Using knife, remove approximately 1-1/2 inch insulation from end of wires (3).
	NOTE Larger connector nuts (4), inserts (5), and screws (6) are used for trigger switch connections (1). Replacement nut, insert, end screw are required for wires that were cut off during removal.
3.	Install insert (5) on wires (3) to be joined.
4.	Using screwdriver, tighten screw (6).
5.	Apply solder to wires (3) and open end of insert (5) (JPG).
6.	Using hands, screw connector nut (7) on insert (5).
7.	Apply sealing compound to connector nut (7), insert (5), and wires (3) (JPG).
	GO TO FRAME 3


FROM HARNESS
809A
2
625A
2
FROM LEFT HANDLE
FROM RIGHT HANDLE
111A
103–113
809A
625A
1
PALM SWITCH
TRIGGER SWITCH
111A
111A
TRIGGER SWITCH
PALM SWITCH
1
103–113
103–113
2
UNNUMBERED WIRE
UNNUMBERED WIRE
CONTROL BOX
3
6
4
7
5

37-23. HANDLE SWITCHES INSTALLATION PROCEDURE (CONT)

FRAME 3

Step	Procedure
1.	Bend wires (1) and connector nuts (2) into control box (3). Make sure wires and connector nuts are clear of elevation control linkage (4).
2.	Place control box cover (5) on control box (3).
3.	Using Allen wrench, attach cover (5) to box (3) with four screws (6) and four lockwashers (7).
	NOTE Follow-on Maintenance Action Required: Adjust triggers (para 37-24). Install handle cover (para 37-21).
	END OF TASK



37-24. HANDLE TRIGGERS ADJUSTMENT PROCEDURE

TOOLS: 5/16“ open end wrench
11/32” open end wrench
5/64" socket head screw key (Allen wrench)

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedures to:
Unload guns
Check operation of gun firing circuits

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver’s Master Control Panel	FO-3	11
Gunner’s Control	FO-1	4
Turret Traverse Lock	FO-3	7

EQUIPMENT CONDITION: Driver’s master control panel MASTER BATTERY switch set to OFF
Gunner’s control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED
Guns unloaded (TM-10)

GENERAL INSTRUCTIONS:

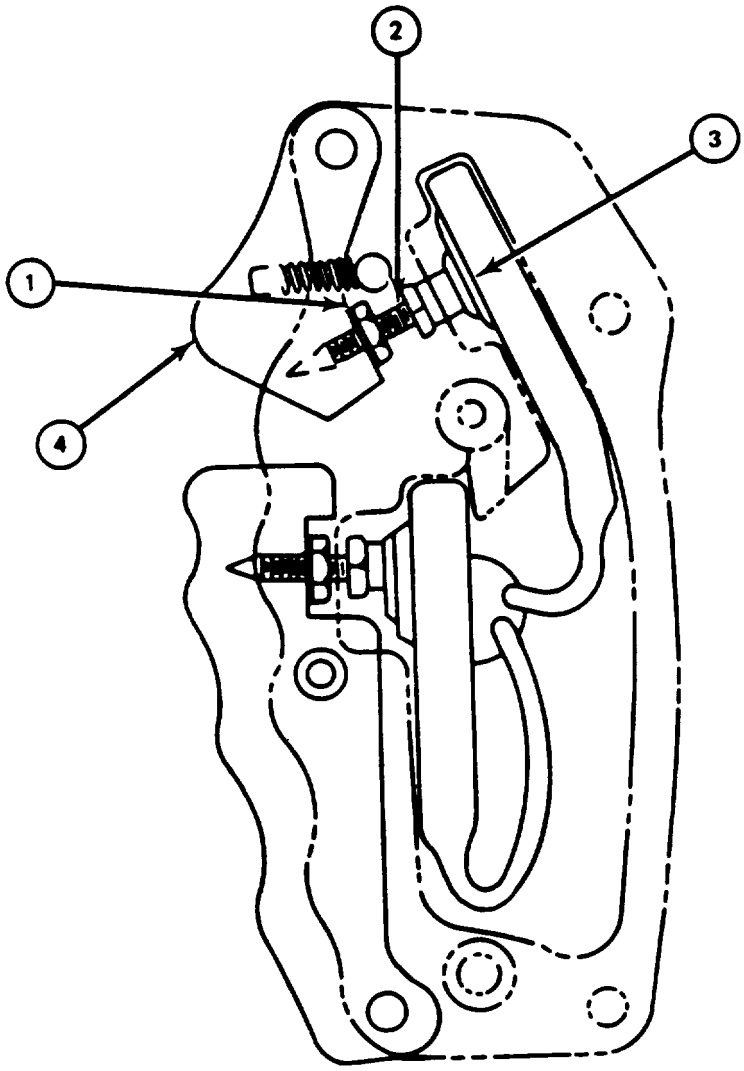
NOTE

This procedure is for adjustment of either left or right handle triggers.

37-24. HANDLE TRIGGERS ADJUSTMENT PROCEDURE (CONT)

FRAME 1

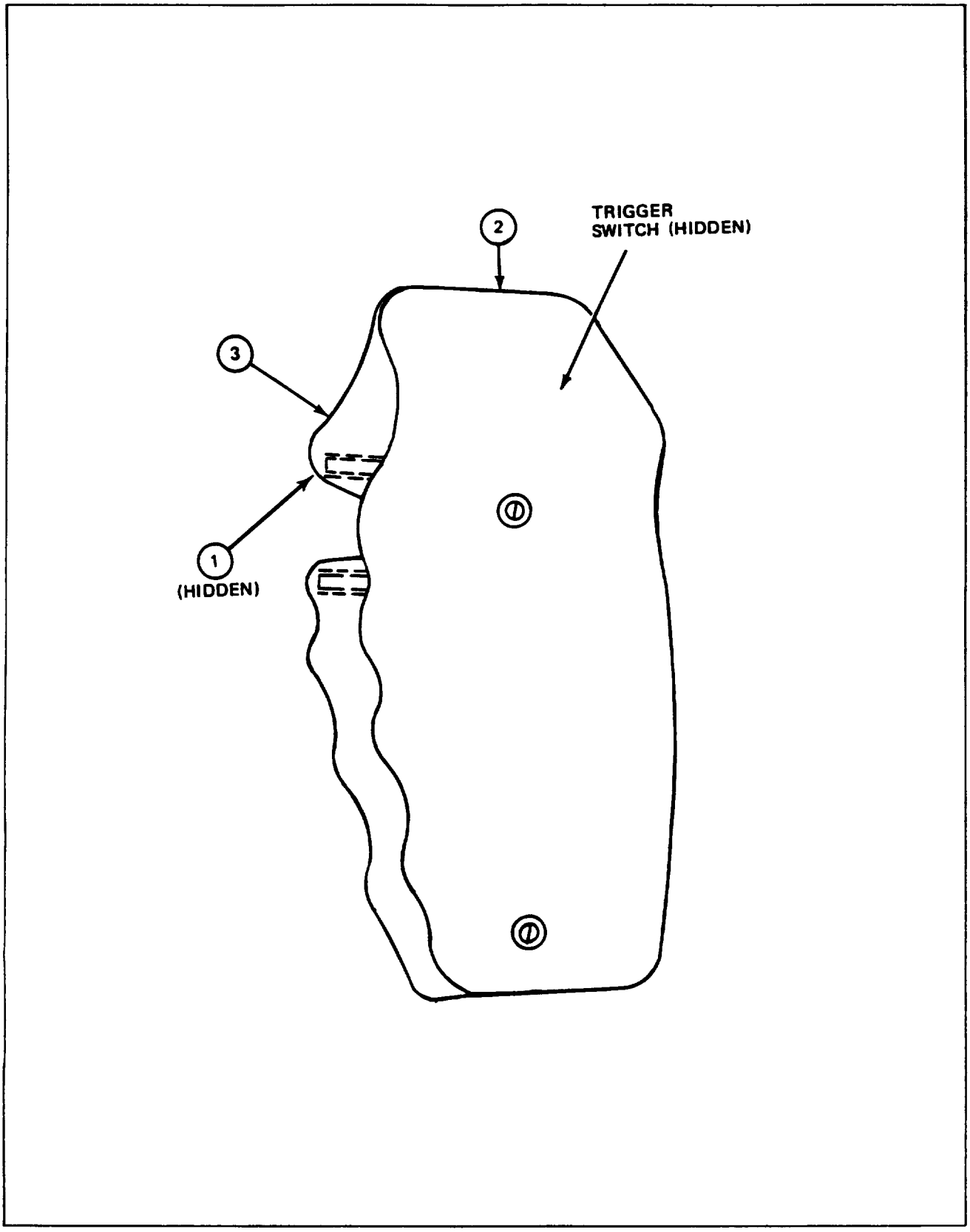
Step	Procedure
	WARNING Guns must be unloaded. Machine gun, main gun. and ELEV/TRAV POWER and MASTER BATTERY switches must be OFF, or personnel could get hurt or killed.
	NOTE This frame is for adjustment of either trigger in early model handle. For adjustment of late model handle triggers, go to frame 2.
1.	Remove handle cover (para 37-20).
2.	Using 11/32” wrench, loosen locknut (1).
3.	Using 5/16" wrench, turn limit screw (2) clockwise until screw does not touch switch (3) when trigger (4) is fully depressed.
4.	While holding trigger (4) fully depressed, using 5/16” wrench, turn screw (2) counterclockwise until a click sound is heard.
5.	Using 5/16" wrench, turn screw (2) counterclockwise an additional 1/5 turn.
6.	While holding screw (2) with 5/16" wrench, using 11/32” wrench, tighten locknut (1).
7.	Install handle cover (para 37-21).
	NOTE Follow-on Maintenance Action Required: Check operation of gun firing circuits (TM-10).
	END OF TASK


2
3
1
4

37-24. HANDLE TRIGGERS ADJUSTMENT PROCEDURE (CONT)

FRAME 2

Step	Procedure
	WARNING Guns must be unloaded. Machine gun, main gun, and ELEV/TRAV POWER and MASTER BATTERY switches must be OFF, or personnel could get hurt or killed.
	NOTE This frame is for adjustment of either trigger in late model handle only.
1.	Using Allen wrench, slowly turn trigger adjustment setscrew (1) clockwise until switch in handle (2) is no longer actuated (no click sound) when trigger (3) is fully depressed.
2.	While holding trigger (3) fully depressed, using Allen wrench, slowly turn setscrew (1) counterclockwise until switch in handle (2) makes a click sound.
3.	Using Allen wrench, turn setscrew (1) counterclockwise an additional 1/5 turn.
	NOTE Follow-on Maintenance Action Required: Check operation of gun firing circuits (TM-10).
	END OF TASK


2
TRIGGER
SWITCH (HIDDEN)
3
1
(HIDDEN)

37-25. HANDLE PALM SWITCH ADJUSTMENT PROCEDURE

TOOLS: 5/16'' open end wrench
11/32" open end wrench
5/64" socket head screw key (Allen wrench)

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedures to:
Unload guns
Check operation of gun firing circuits

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control	FO-1	4
Turret Traverse Lock	FO-3	7

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED
Guns unloaded (TM-10)

GENERAL INSTRUCTIONS:

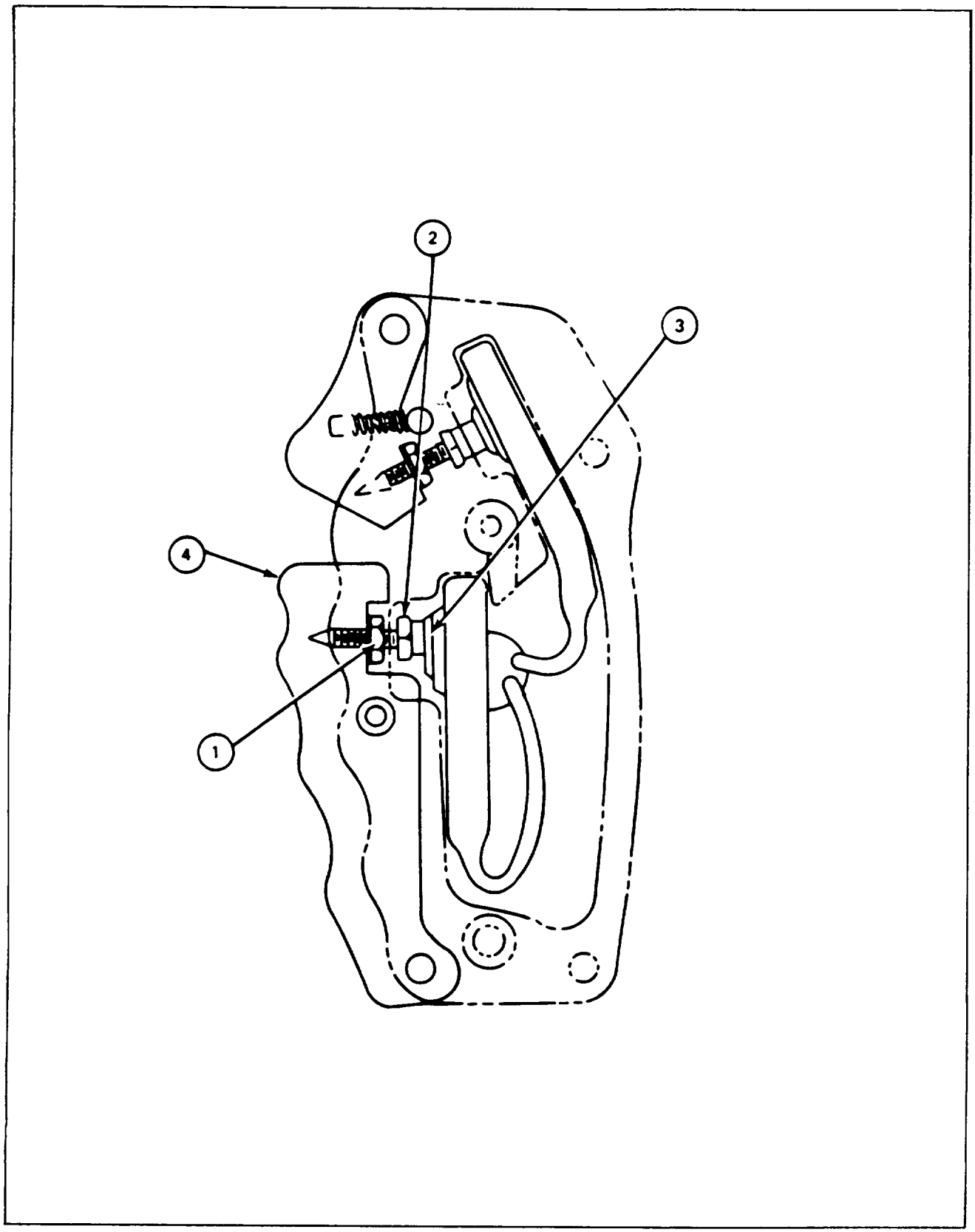
NOTE

This procedure is for adjustment of either left or right handle palm switches.

37-25. HANDLE PALM SWITCH ADJUSTMENT PROCEDURE (CONT)

FRAME 1

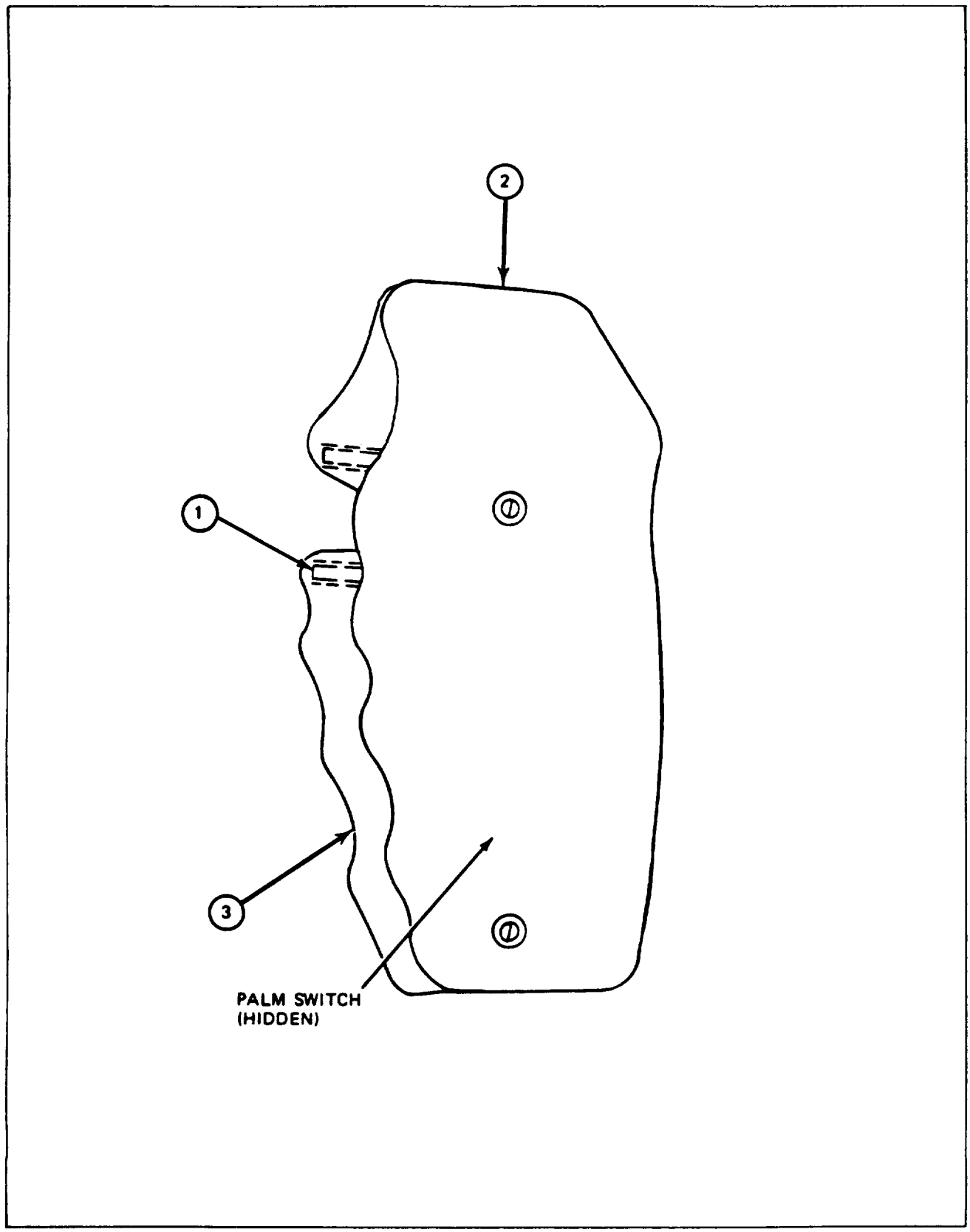
Step	Procedure
	WARNING Guns must be unloaded. Machine gun, main gun. and ELEV/TRAV POWER and MASTER BATTERY switches must be OFF, or personnel could get hurt or killed.
	NOTE This frame is for adjustment of either palm switch in early model handle. For adjustment of late model handle palm switch, go to frame 2.
1.	Remove handle cover (para 37-20).
2.	Using 11/32” wrench, loosen locknut (1).
3.	Using 5/16” wrench, turn limit screw (2) clockwise until screw does not touch switch (3) when palm switch (4) is fully depressed.
4.	While holding palm switch (4) fully depressed, using 5/16“ wrench, turn screw (2) counterclockwise until a click sound is heard.
5.	Using 5/16” wrench, turn screw (2) counterclockwise an additional 1/5 turn.
6.	While holding screw (2) with 5/16” wrench, using 11/32” wrench, tighten locknut (1).
7.	Install handle cover (para 37-21).
	NOTE Follow-on Maintenance Action Required: Check operation of gun firing circuits (TM-10).
	END OF TASK


2
3
4
1

37-25. HANDLE PALM SWITCH ADJUSTMENT PROCEDURE (CONT)

FRAME 2

Step	Procedure
	WARNING Guns must be unloaded. Machine gun, main gun, and ELEV/TRAV POWER and MASTER BATTERY switches must be OFF, or personnel could get hurt or killed.
	NOTE This frame is for adjustment of either palm switch in late model handle only.
1.	Using Allen wrench, slowly turn trigger adjustment setscrew (1) clockwise until palm switch in handle (2) is no longer actuated (no click sound) when palm switch (3) is fully depressed.
2.	While holding palm switch (3) fully depressed, using Allen wrench, slowly turn setscrew (1) counterclockwise until palm switch in handle (2) makes a click sound.
3.	Using Allen wrench, turn setscrew (1) counterclockwise an additional 1/5 turn.
	NOTE Follow-cm Maintenance Action Required: Check operation of gun firing circuits (TM-10).
	END OF TASK



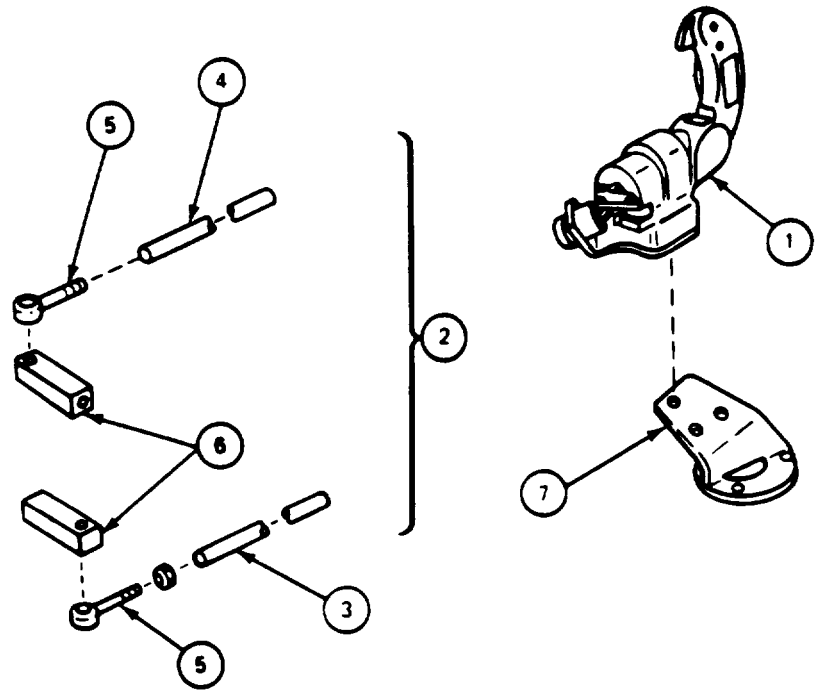
Para 37-25 Cont

CHAPTER 38

COMMANDER'S POWER CONTROL

38-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Adjustment	Tasks Removal	Installation
1. Commander's Control Handle	. . .	38-2	38-3
2. Commander's Control Linkage	38-4	. . .	. . .
3. Traverse Rod	38-11	38-5	38-6
4. Elevation Rod	38-12	38-5	38-6
5. Rod End	. ..	38-5	38-6
6. Lever	. . .	38-7	38-8
7. Commander's Control Handle Mounting Bracket	. . .	38-9	38-10



38-2. COMMANDER'S CONTROL HANDLE REMOVAL PROCEDURE

TOOLS: 1/2" open end wrench
Spanner wrench

PERSONNEL: One

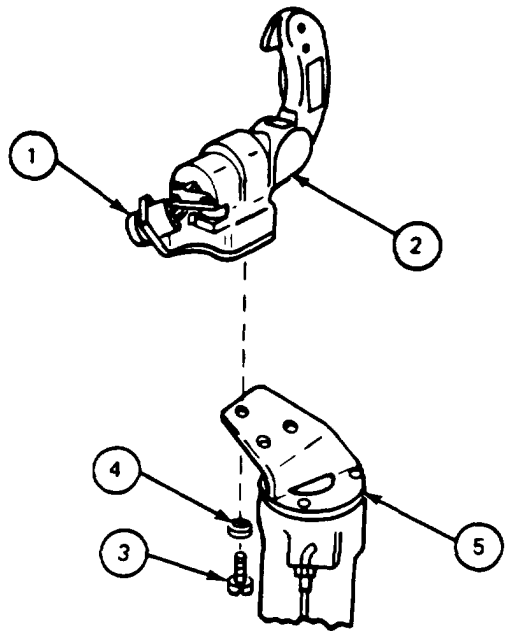
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Commander's Control Handle	FO-2	14

PRELIMINARY PROCEDURES: Remove traverse rod, elevation rod and rod end (para 38-5)

FRAME 1

Step	Procedure
1.	Using spanner wrench, disconnect cable plug from electrical connector (1) on commander's control handle (2).
2.	Using wrench, remove three screws (3), and three lockwashers (4).
3.	Remove commander's control handle (2) from mounting bracket (5).
	END OF TASK



38-3. COMMANDER'S CONTROL HANDLE INSTALLATION PROCEDURE

TOOLS: 1/2" open end wrench
Spanner wrench

PERSONNEL: One

REFERENCES: JPG for procedure to connect electrical connectors

EQUIPMENT LOCATION INFORMATION:

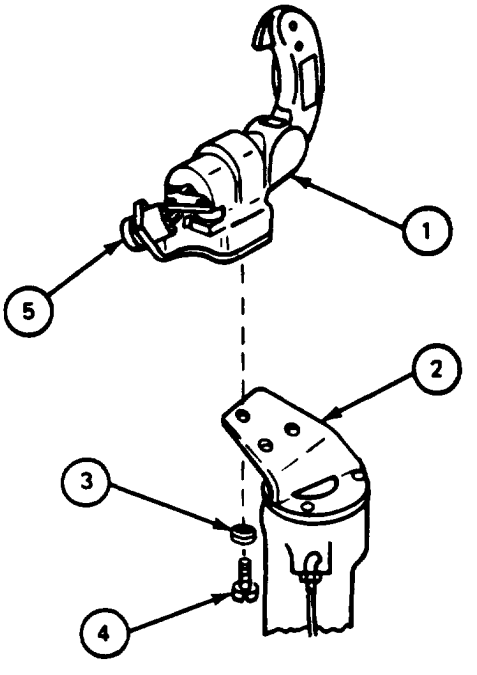
EQUIPMENT	FOLDOUT	CALLOUT
Commander's Control Handle	FO-2	14

PRELIMINARY PROCEDURES: Install commander's control handle mounting bracket (para 38-10)

38-3. COMMANDER'S CONTROL HANDLE INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Put commander's control handle (1) on mounting bracket (2).
2.	Using wrench, attach commander's control handle (1) to mounting bracket (2) with three lockwashers (3) and three screws (4).
3.	Using spanner wrench, connect electrical cable to connector (5) (JPG).
	NOTE Follow-on Maintenance Action Required: Install traverse rod, elevation rod and rod end (para 38-6).
	END OF TASK



38-4. COMMANDER'S CONTROL LINKAGE ADJUSTMENT PROCEDURE

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO- 1	2
Commander's Control Handle	FO-2	14

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to ON
Gunner's control box ELEV/TRAV POWER switch set to ON

GENERAL INSTRUCTIONS:

WARNING

If the elevation and traverse rods are out of adjustment some movement of the gun or turret may occur when the commander's override actuator is depressed. To avoid possible injury, all personnel inside or outside the vehicle should stand clear of the gun.

38-4. COMMANDER'S CONTROL LINKAGE ADJUSTMENT PROCEDURE (CONT)

FRAME 1

Step	Procedure	Normal Indication
1.	Press override switch on commander's control handle and watch direction commander's control handle moves.	If control linkage is properly adjusted, commander's control handle will stay in neutral position. If not, commander's control handle will turn or move forward or rearward.
2.	Release override switch.	Movement, if any, of commander's control handle will stop.
	NOTE If commander's handle turned in a counterclockwise direction in step 1, shorten traverse rod (para 38-11). If commander's handle turned in clockwise direction in step 1, lengthen traverse rod (para 38-11). If commander's handle moved backwards in step 1, shorten elevation rod (para 38-12). If commander's handle moved forward in step 1, lengthen elevation rod (para 38-12). If normal indication was obtained in steps 1 and 2, omit step 3.	
3.	Adjust length of traverse rod or elevation rod as required.	
4.	Set gunner's control box ELEV/TRAV POWER switch to OFF.	
5.	Set driver's master control panel MASTER BATTERY switch to OFF.	
	END OF TASK	

38-5. TRAVERSE ROD, ELEVATION ROD, AND ROD END REMOVAL PROCEDURE

TOOLS: 7/16” open end wrench
3/8” open end wrench
5/16" open end wrench

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

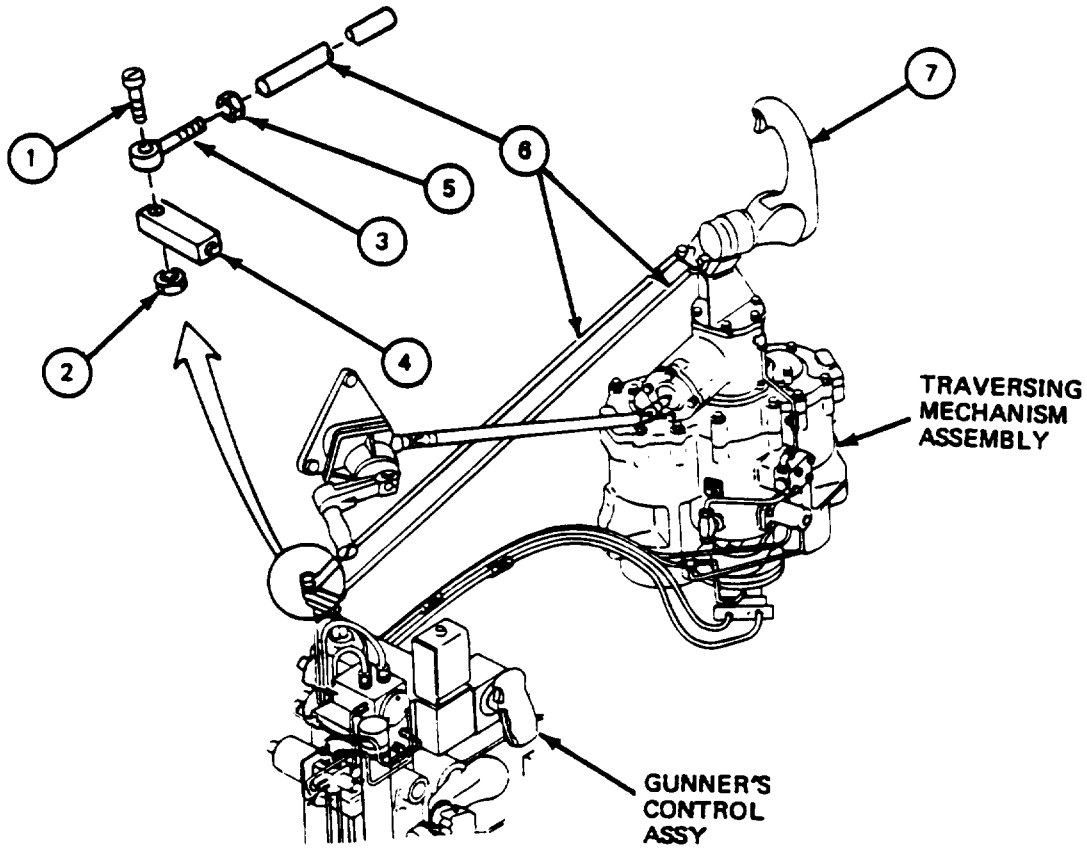
EQUIPMENT	FOLDOUT	CALLOUT
Driver’s Master Control Panel	FO-3	11
Gunner’s Control Box	FO-1	2
Commander’s Control Handle	FO-2	14

EQUIPMENT CONDITION: Driver’s control panel MASTER BATTERY switch set to OFF
Gunner’s control box ELEV/TRAV POWER switch set to OFF

38-5. TRAVERSE ROD, ELEVATION ROD, AND ROD END REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Using 5/ 16” and 3/8” open end wrench, remove two screws (1) and two nuts (2)
2.	Disconnect two rod ends (3) from two levers (4).
3.	Using 7/16“ open end wrench, loosen two jamnuts (5) on two rod ends (3).
4.	Unscrew two rod ends (3) from two control rods (6).
5.	Unscrew two rods (6) from rod ends on commander’s control handle (7).
	END OF TASK



38-6. TRAVERSE ROD, ELEVATION ROD, AND ROD END INSTALLATION PROCEDURE

TOOLS: 3/8" open end wrench
5/ 16" open end wrench
7/ 16" open end wrench

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedure to operate commander's control handles

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Commander's Control Handle	FO-2	14

PRELIMINARY PROCEDURES: Install commander's control handle (para 38-3)
Install lever (para 38-8)

GENERAL INSTRUCTIONS:

NOTE

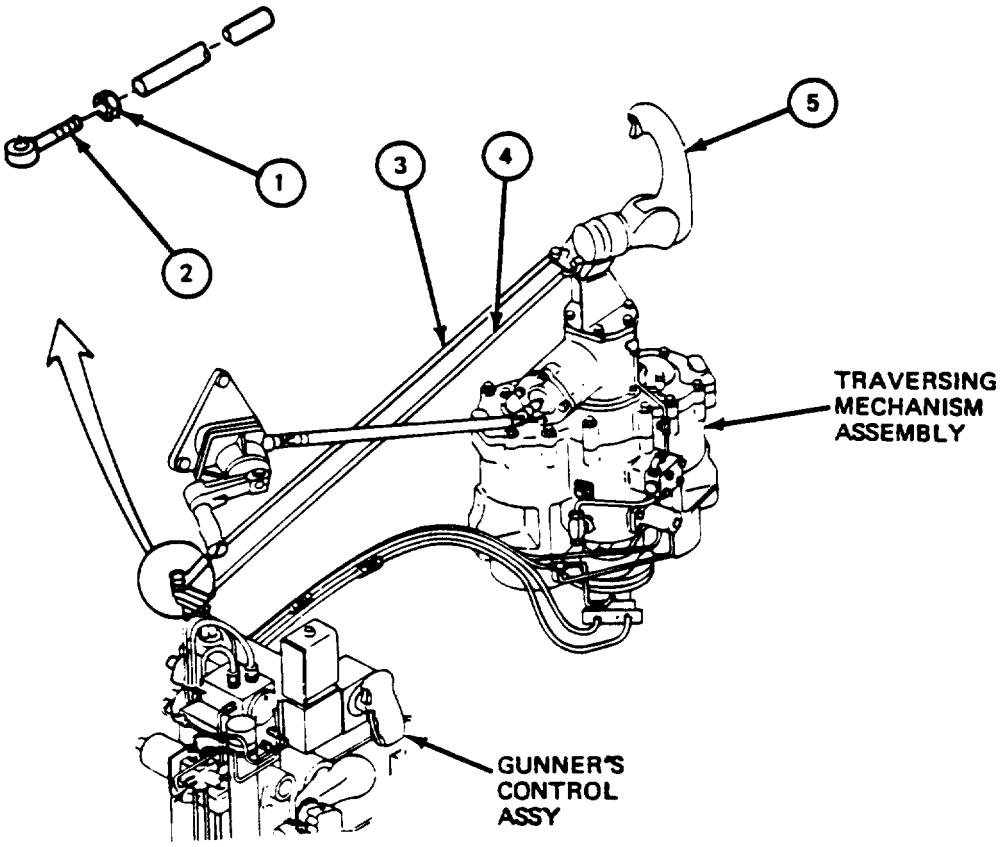
Traverse rod is longer than elevation rod.

38-6. TRAVERSE ROD, ELEVATION ROD, AND ROD END INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Screw two Jamnuts (1) onto two rod ends (2).
2.	Screw rod end (2) into elevation rod (3).
3.	Screw rod end (2) into traverse rod (4).
4.	Screw elevation rod (3) onto rod end in commander's control handle (5).
5.	Screw traverse rod (4) onto rod end in commander's control handle (5).

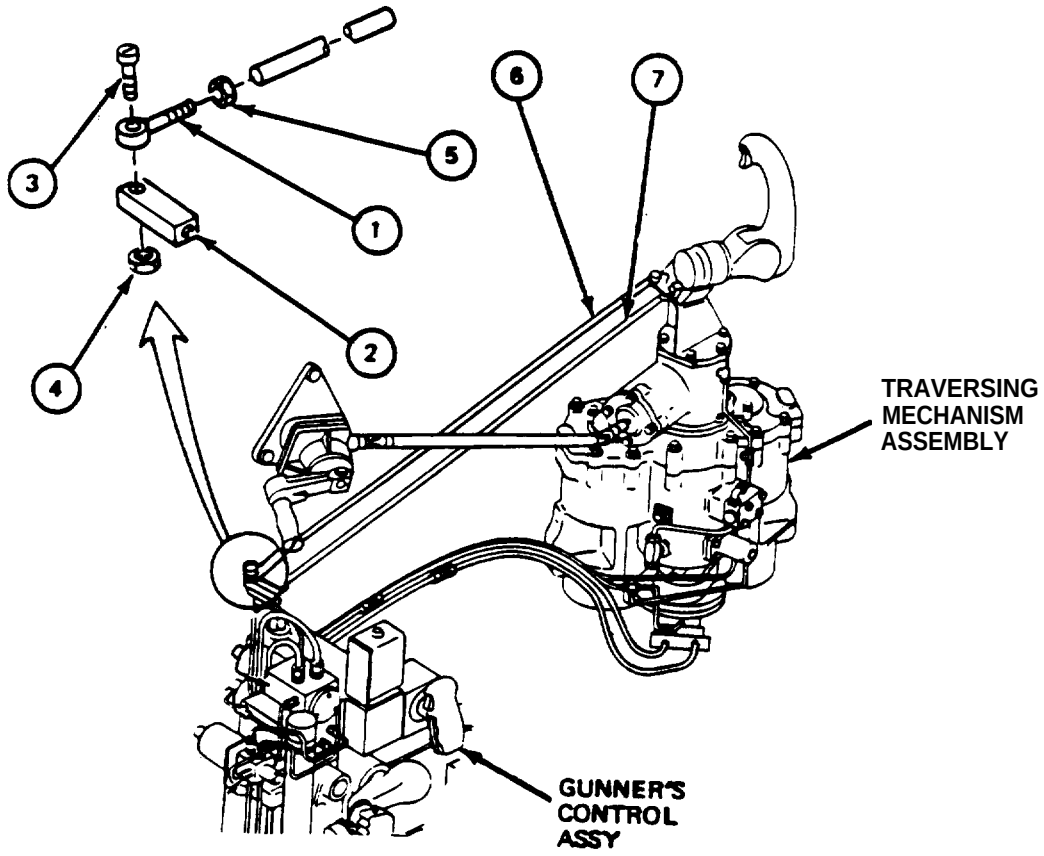
GO TO FRAME 2



38-6. TRAVERSE ROD, ELEVATION ROD, AND ROD END INSTALLATION PROCEDURE (CONT)

FRAME 2

Step	Procedure
1.	Using 3/8” and 5/16" open end wrenches, connect two rod ends (1) to two levers (2) with two screws (3) and two nuts (4).
2.	Using 7/16" open end wrench, tighten two Jamnuts (5).
3.	Adjust rods (6) and (7) (para 38-4).
	NOTE Follow-on Maintenance Action Required: Operate commander’s control handle to make sure it operates properly (TM- 10).
	END OF TASK



38-7. LEVER REMOVAL PROCEDURE

TOOLS: 3/16” socket head screw (Allen wrench)

PERSONNEL: One

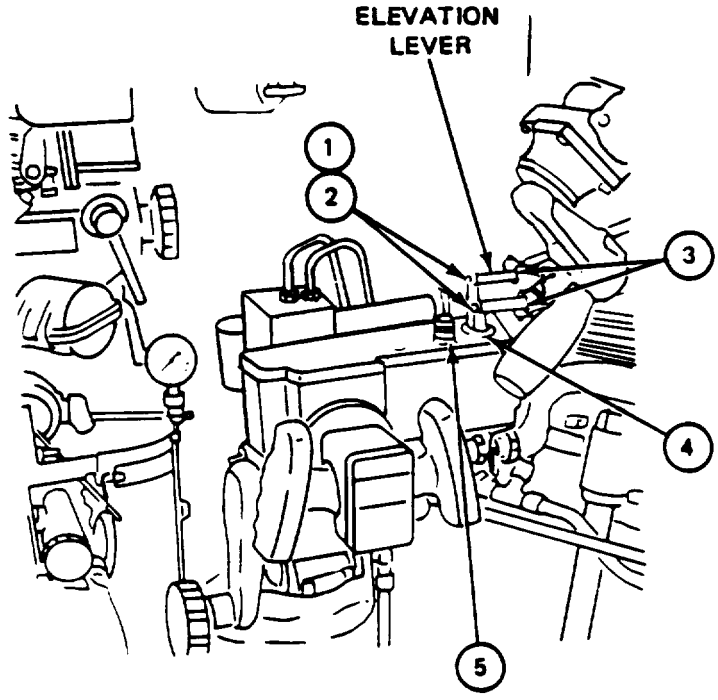
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Commander’s Control Handle	FO-2	14

PRELIMINARY PROCEDURES: Remove traverse rod, elevation rod, and rod end (para 38-5)

FRAME 1

Step	Procedure
1.	Using wrench, remove two screws (1) and two lockwashers (2).
2.	Remove two levers (3) from shafts (4) in gunner’s control (5).
	END OF TASK



38-8. LEVER INSTALLATION PROCEDURE

TOOLS: 3/16 in. socket head screw key (allen wrench)
3/8 in. socket head socket wrench attachment, (3/8 in. drive)
Torque wrench, 3/8 in. drive (0-150 lbs. in.) (0-16.8 NŽm)

PERSONNEL: One

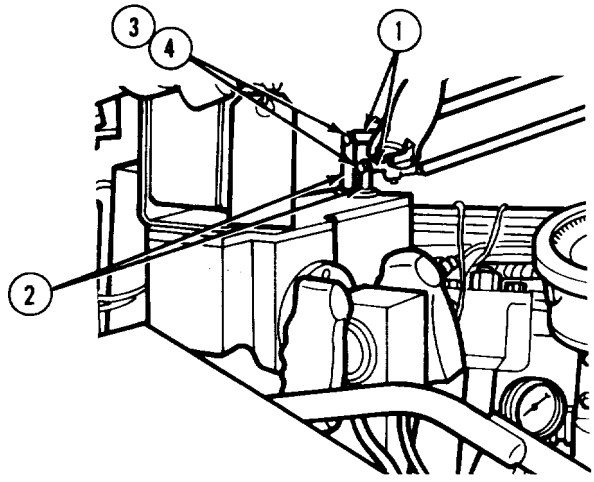
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Commander's Control Handle	FO-2	14

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF.

FRAME 1

STEP	PROCEDURE
1.	Using wrench, attach two levers (1) on two shafts (2) from gunner's control with two screws **(3)** and two Lockwashers **(4).**
2.	Using socket wrench attachment and torque wrench, tighten screws (3) to 80-110 lbs. -in, (8.9 to 12.3 N•m).
	NOTE Follow-on Maintenence Action Required: Install traverse rod, elevation rod, and rod and (para **38-6).**
	END OF TASK



38-9. COMMANDER'S CONTROL HANDLE MOUNTING BRACKET REMOVAL PROCEDURE

TOOL: 7/16 in. open end wrench

PERSONNEL: One

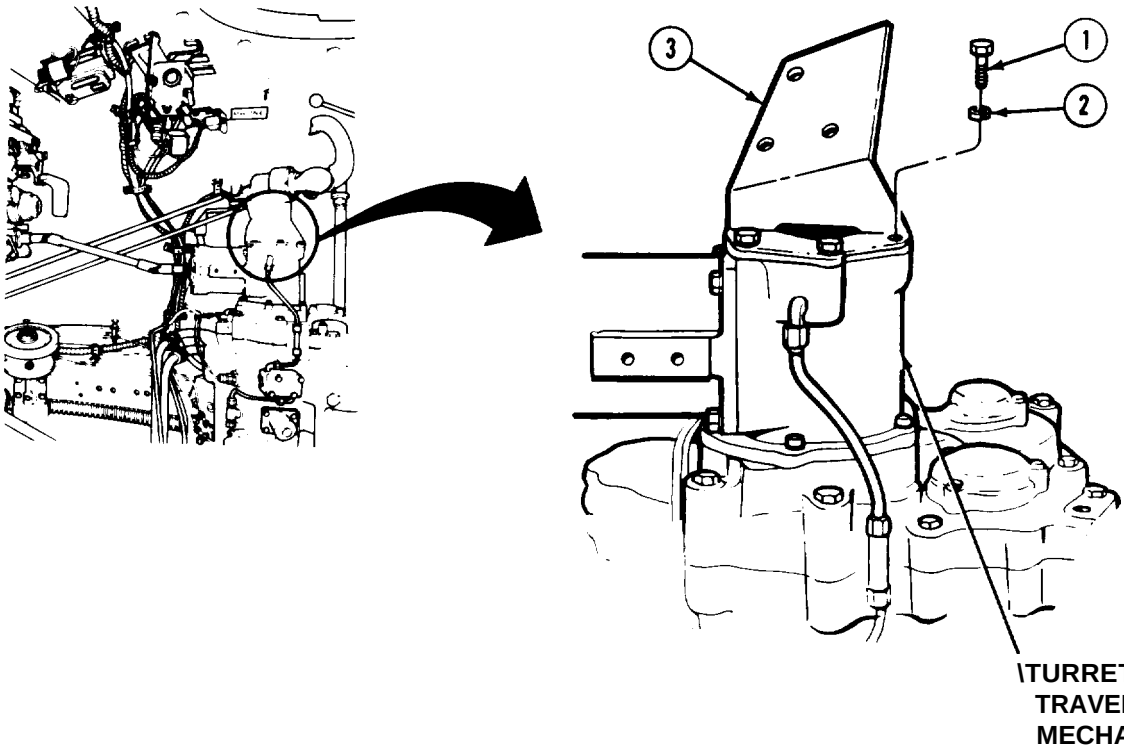
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Commander's Control Handle	FO-2	14

PRELIMINARY PROCEDURES: Remove traverse rod, elevation rod and rod end (para 36-5)
Remove commander's control handle (para 38-2)

FRAME 1

STEP	PROCEDURE
1.	Using wrench, remove six screws (1) and six Iockwashers (2).
2.	Remove bracket (3) from turret traversing mechanism.
	END OF TASK



38-10. COMMANDER'S CONTROL HANDLE MOUNTING BRACKET INSTALLATION PROCEDURE

TOOLS: 7/16" open end wrench

PERSONNEL: One

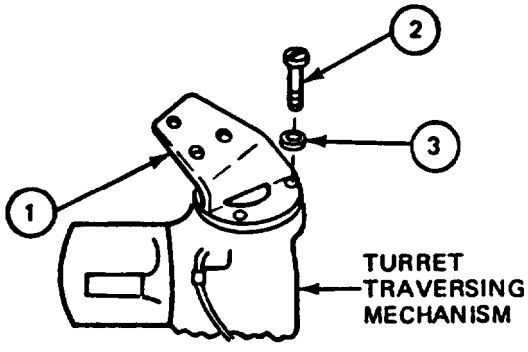
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Turret Traversing Mechanism	FO-2	12

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF

FRAME 1

Step	Procedure
1.	Put bracket (1) in place on turret traversing mechanism.
2.	Using wrench, put in six screws (2) and six lockwashers (3).
	NOTE
	Follow-on Maintenance Action Required:
	Install commander's control handle (para 38-3).
	END OF TASK



38-11. TRAVERSE ROD ADJUSTMENT PROCEDURE

TOOLS: 5/16” socket (3/8” drive)
3/8" open end wrench
7/ 16" open end wrench
3/8" drive ratchet

PERSONNEL: One

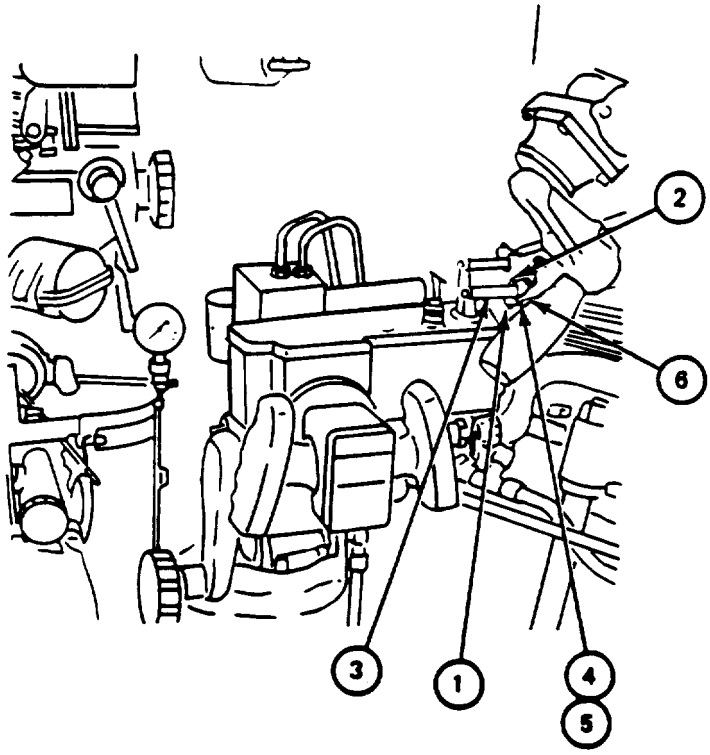
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver’s Master Control Panel	FO-3	11
Gunner’s Control Box	FO- 1	2
Commander’s Control Handle	FO-2	14

EQUIPMENT CONDITION: Driver’s master control Panel MASTER BATTERY switch set to ON
Gunner’s control box ELEV/TRAV POWER switch set to OFF

FRAME 1

Step	Procedure
1.	Using 3/8” open end wrench, remove screw (1) and nut 2).
2.	Disconnect traverse lever (3) from traverse rod end (4).
3.	Using 7/16" open end wrench, loosen jamnut (5).
	NOTE To make traverse rod (6) longer, screw out rod end (4) or to make traverse rod (6) shorter, screw in rod end (4).
4.	Change length of traverse rod (6).
5.	Set gunner’s control box ELEV/TRAV POWER switch to ON.
	GO TO FRAME 2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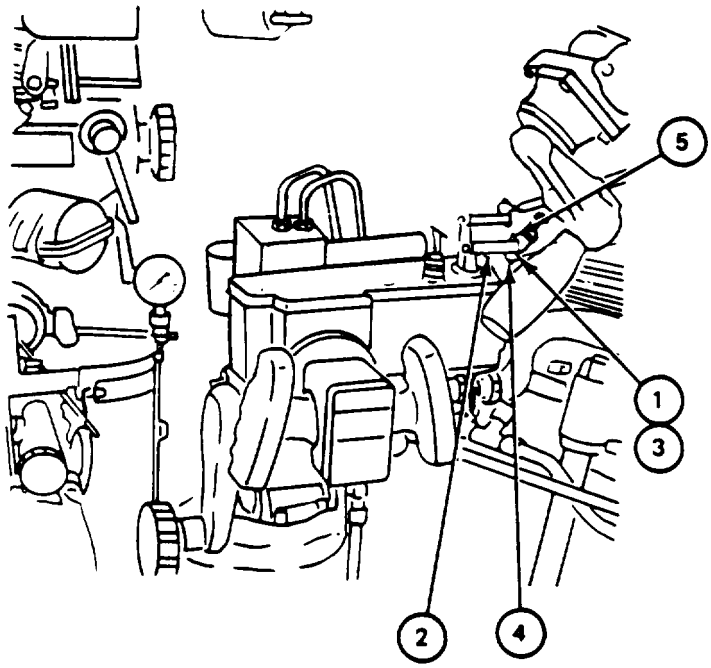
38-11. TRAVERSE ROD ADJUSTMENT PROCEDURE (CONT)

FRAME 2

Step	Procedure	Normal Indication
1.	Hold commander's handle in neutral position, and press override switch on commander's handle.	Traverse lever will move.
2.	Turn traverse rod end (1) either clockwise or counterclockwise until mounting hole in traverse rod end lines up with mounting hole in traverse lever (2).	
3.	Let go of override switch.	Traverse lever will move back to neutral.
4.	Using 7/ 16" open end wrench, tighten jamnut (3) on rod end (1).	
5.	Using 3/ 8'' open end wrench and socket wrench, connect rod end (1) and lever (2) with screw (4) and nut (5).	
6.	Set gunner's control box ELEV/TRAV POWER switch to OFF.	
7.	Set driver's master control panel MASTER BATTERY switch to OFF.	
	END OF TASK	



38-12. ELEVATION ROD ADJUSTMENT PROCEDURE

TOOLS: 5/16" socket (3/8" drive)
3/ 8'' drive ratchet
3/8" open end wrench
7/ 16" open end wrench

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

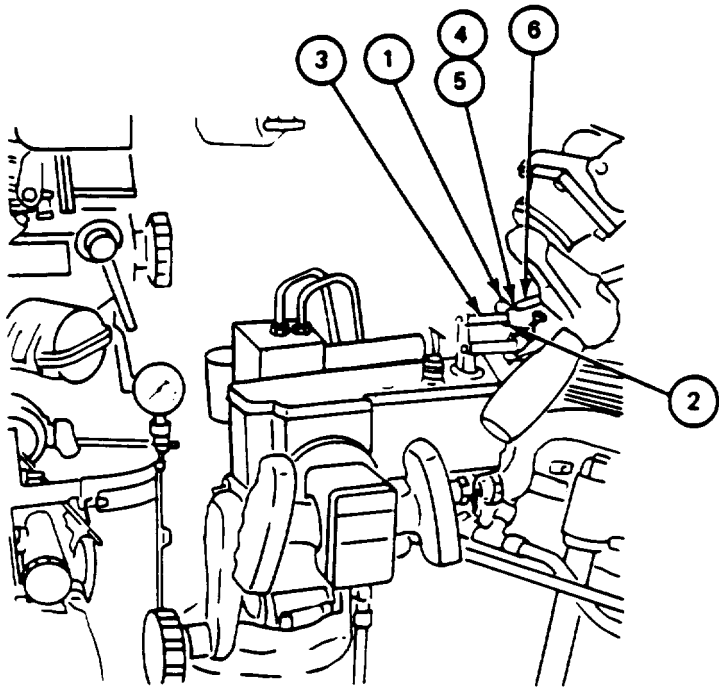
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Commander's Control Handle	FO-2	14

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to ON
Gunner's control box ELEV/TRAV POWER switch set to OFF

38-12. ELEVATION ROD ADJUSTMENT PROCEDURE (CONT)

FRAME 1

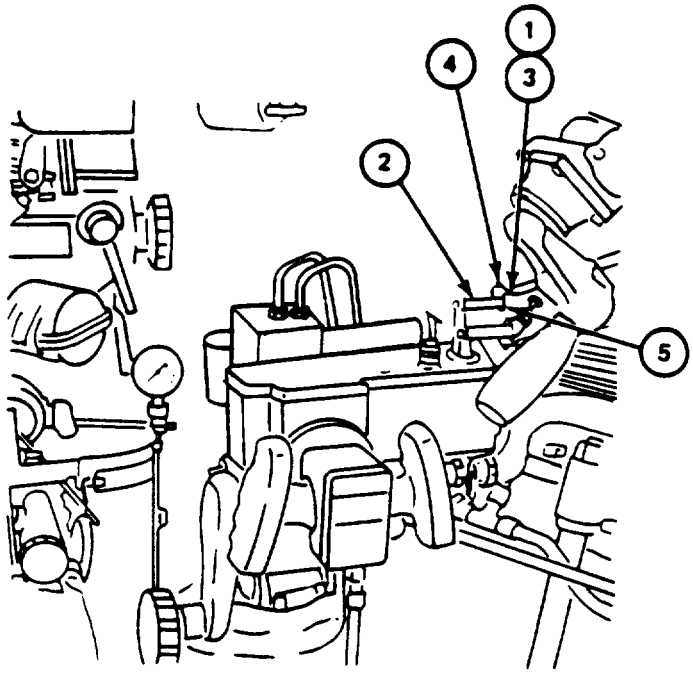
Step	Procedure
1.	Using 3/ 8'' open end wrench and socket wrench, remove screw (1) and nut (2).
2.	Disconnect elevation lever (3) from elevation rod end (4).
3.	Using 7/16" open end wrench, loosen jamnut (5).
	NOTE To make elevation rod (6) Longer. screw out rod end (4), or to make elevation rod (6) shorter, screw in rod end (4).
4.	Change length of elevation rod (6).
5.	Set gunner's control box ELEV/TRAV POWER switch to ON.
	GO TO FRAME 2



38-12. ELEVATION ROD ADJUSTMENT PROCEDURE (CONT)

FRAME 2

Step	Procedure	Normal Indication
1.	Hold commander's handle in neutral position, and press override switch on commander's handle.	Elevation lever will move.
2.	Turn elevation rod end (1) either clockwise or counterclockwise until mounting hole in elevation rod end lines up with mounting hole in elevation lever (2).	
3.	Let go of override switch.	Motion of elevation lever will stop.
4.	Using 7/16" open end wrench, tighten jamnut (3) on rod end (1).	
5.	Using 3/8" open end wrench and socket wrench, connect rod end (1) and lever (2) with screw (4) and nut (5).	
6.	Set gunner's control box ELEV/TRAV POWER switch to OFF.	
7.	Set driver's master control panel MASTER BATTERY switch to OFF.	
	END OF TASK	



CHAPTER 39
ELEVATING MECHANISM

39-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Tasks Removal	Tasks Installation
Elevating Mechanism	39-2	39-3

39-2. ELEVATING MECHANISM REMOVAL PROCEDURE

TOOLS: 1-5/8” socket (3/4” drive) (two)
3/4” drive breaker bar (two)
3/4” brass drift pin punch
2 lb. ball peen hammer
5/8” combination wrench
12” adjustable wrench (two)

SUPPLIES: 1 gallon container
Rags (item 15, App. A)
Wood block (4" x 4" x 30” long)

PERSONNEL: Two

REFERENCES: JPG for procedure to disconnect electrical connectors
TM 9-2350-222-10 for procedures to:
Elevate and depress 165-mm gun
Check equilibrator accumulator nitrogen pressure

EQUIPMENT LOCATION INFORMATION;

EQUIPMENT	FOLDOUT	CALLOUT
Driver’s Master Control Panel	FO-3	11
Gunner’s Control Box	FO-1	2
Turret Traverse Lock	FO-3	7
Elevating Mechanism	F 0 4	8

EQUIPMENT CONDITION: Driver’s master control panel MASTER BATTERY switch set to OFF
Gunner’s control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED

PRELIMINARY PROCEDURES: 165-mm gun leveled (TM-10)

GENERAL INSTRUCTIONS:

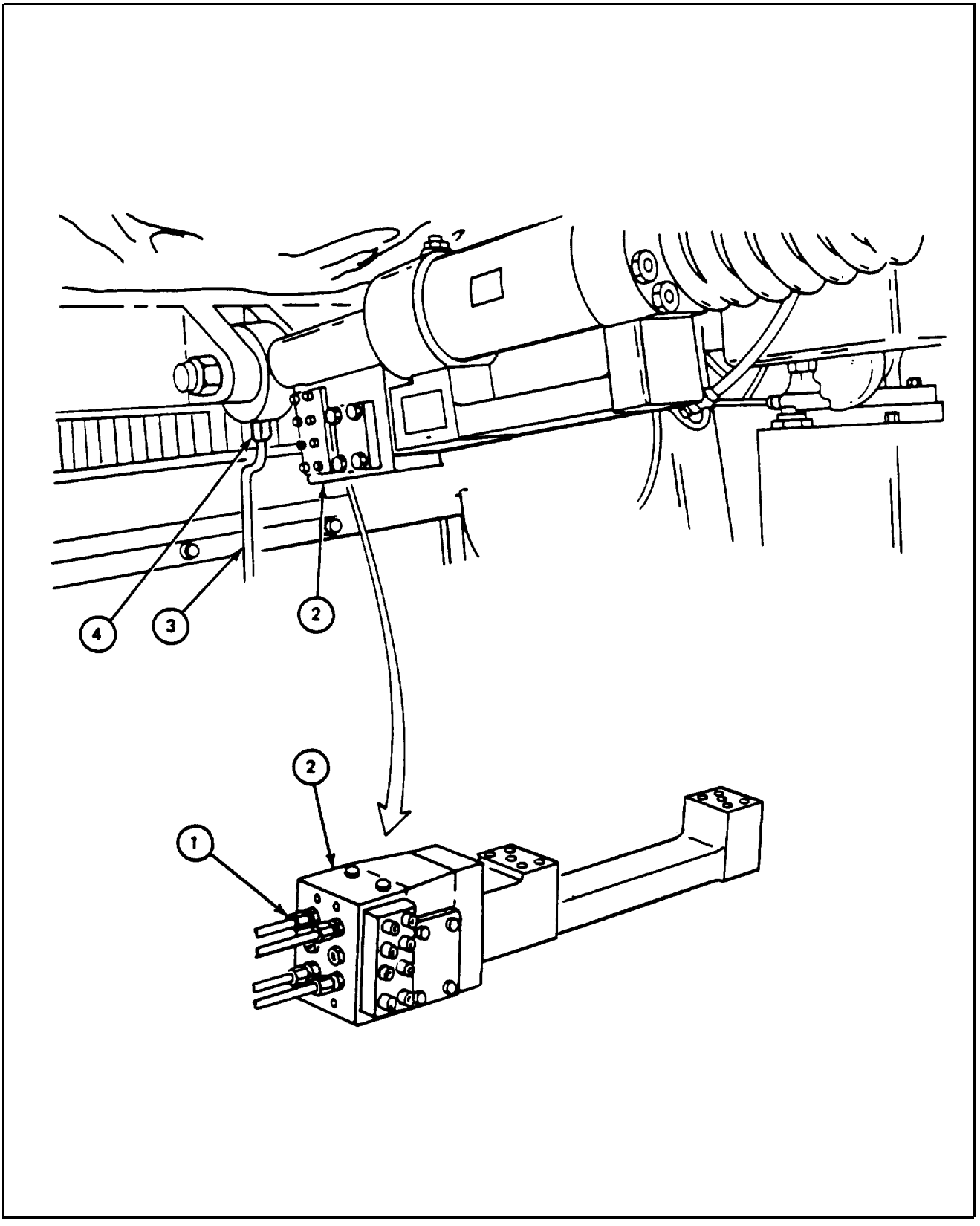
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

39-2. ELEVATING MECHANISM REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Position wood block on turret floor under main gun.
	NOTE
	Main gun should be in level position.
2.	Elevate and depress main gun until wood block is supporting weight of main gun (TM-10).
3.	Reduce pressure in equilibrator system by checking equilibrator accumulator nitrogen pressure (TM-10).
	WARNING
	Before removing hydraulic tubes or parts, hydraulic system pressure must be lowered to 0 psi. Hydraulic fluid under pressure can hurt you.
4.	Lower hydraulic system pressure to O psi (para 1-18).
5.	Using 11/ 16“ and 5/8’” wrenches, remove four hydraulic tubes (1) from locking valve (2) (para 2-68).
6.	Using 11/16" and 5/8” wrenches, remove hydraulic tube (3) from elevating mechanism (4).
	GO TO FRAME 2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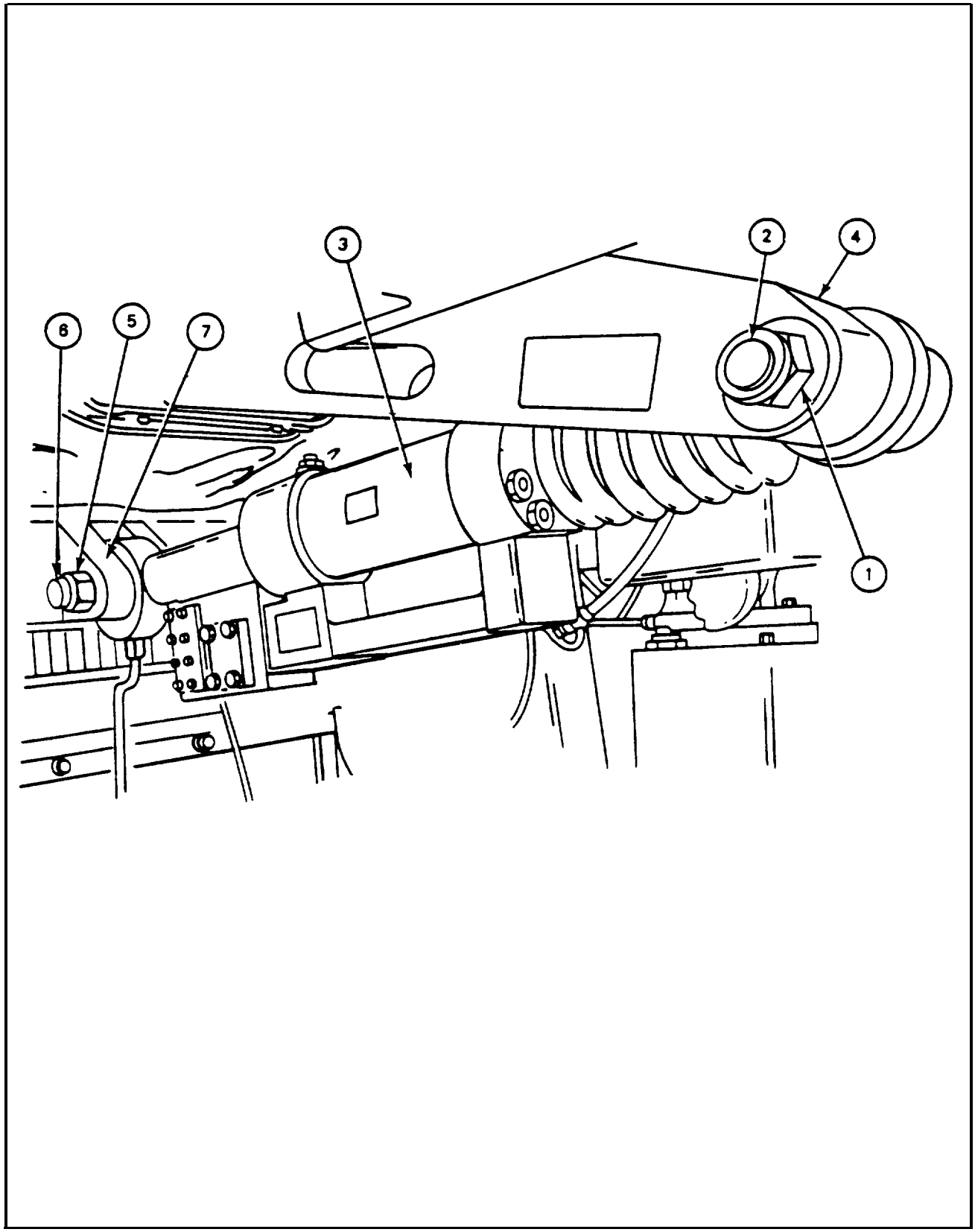
39-2. ELEVATING MECHANISM REMOVAL PROCEDURE (CONT)

FRAME 2

Step	Procedure
1.	Using two breaker bars, remove nut (1) from shear bolt (2). Throw nut away.
	NOTE If shear bolt (2) will not come out, brass punch and hammer are used to loosen shear bolt.
2.	Soldier A: Lift elevating mechanism (3). Soldier B: Remove shear bolt (2).
3.	Soldier A Lower bellows end (4) of elevating mechanism (3).
4.	Using two breaker bars, remove nut (5). Throw nut away.
	WARNING Elevating mechanism (3) is heavy enough to break a foot or toes if it is dropped. Be careful when removing elevating mechanism.
	CAUTION Take care not to drop elevatin mechanism (3). Dropping can cause elevating mechanism to bend or break.
	NOTE If bolt (6) will not come out, brass punch and hammer are used to loosen bolt.
5.	Soldier A: Lift elevating mechanism (3). Soldier B: Remove bolt (6) from elevating mechanism bracket (7).
6.	Soldiers A and B: Remove elevating mechanism (3) from vehicle.
	END OF TASK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39-3. ELEVATING MECHANISM INSTALLATION PROCEDURE

TOOLS: 1-5/8" socket, 3/4" drive
PD 1201 torque wrench
2 lb ball peen hammer
11/ 16" combination wrench
5/8" combination wrench
3/8" combination wrench
Automotive wrench, adjustable

SUPPLIES: Self-locking nut (MS21044N18)

PERSONNEL: Two

REFERENCES: TM 9-2350-222-10 for procedures to:
Balance 165-mm gun
Elevate and depress 165-mm gun

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Turret Traverse Leek	FO-3	7
Elevating Mechanism	F 0 4	8

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF
Turret traverse Ioek set to LOCKED

GENERAL INSTRUCTIONS:

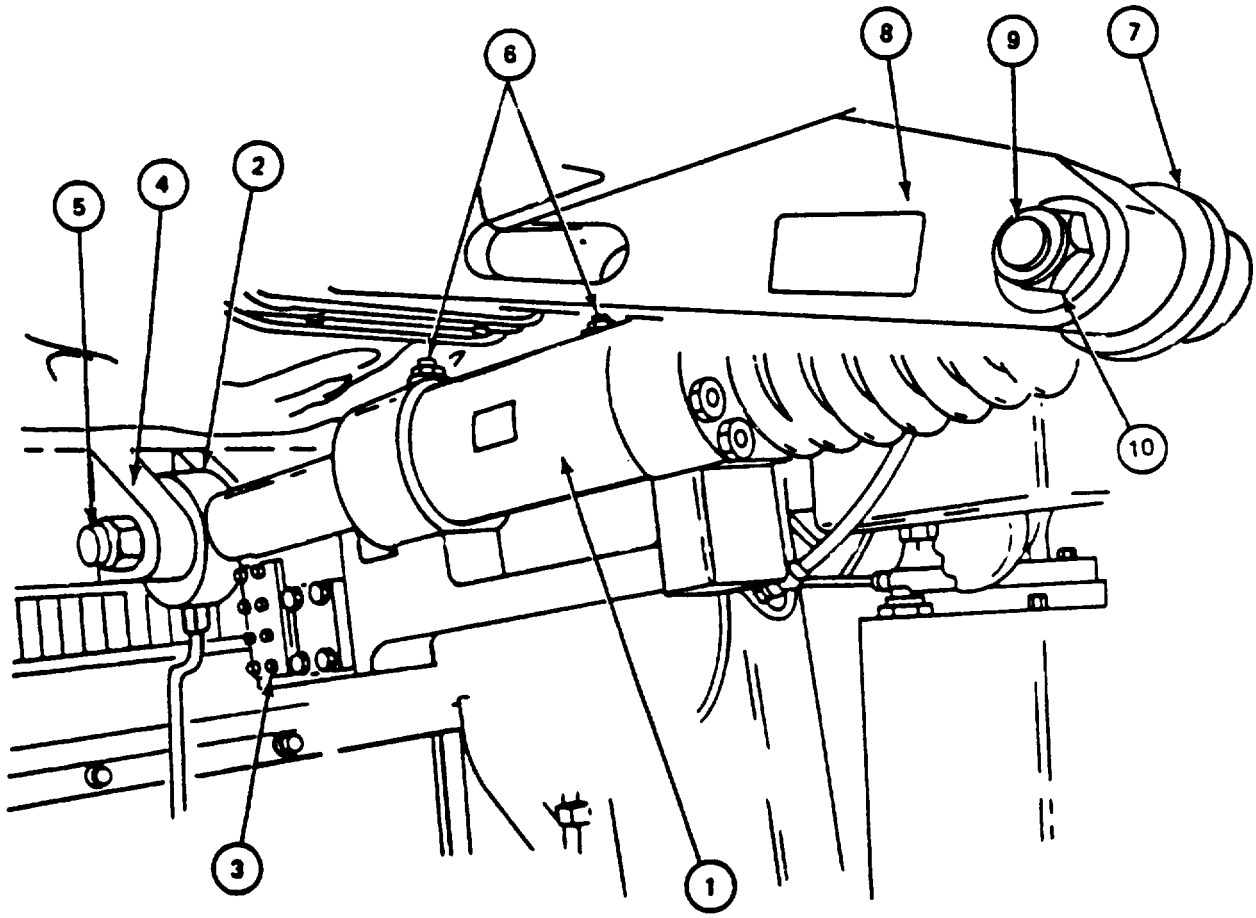
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

39-3. ELEVATING MECHANISM INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
	I WARNING I **The elevating mechanism (1) is heavy** enough to break a **foot or toes if it is dropped. Be careful when installing elevating mechanism.** **CAUTION** **Take care not to drop elevating mechanism (1). Dropping can cause elevating mechanism to bend or break.** **NOTE** It **may be necessary to tap shear bolt (5) with hammer**
1.	**Soldiers A and** B: Put elevating mechanism **(1) in vehicle.**
2.	**Soldier A: Put eye (2) of lock valve (3) end of elevating mechanism (1) in slot in bracket (4).** **Soldier B: Put shear bolt (5} through bracket (4) and eye (2) of elevating mechanism (l).**
3.	**Using 3/8 in. wrench, open two bleeder valves (6).** **NOTE** **Extend piston of elevating mechanism (1) to line up eye (7) with hole in slot in gun mount (8).** **It may be necessary to tap shear bolt (9) with hammer.**
4.	**Soldier A: Put eye (7) of bellows end of elevating mechanism (1) in slot in gun mount (8).** **Soldier** B: **Put shear bolt (9) through gun mount (8) and eye (7) of elevating mechanism (1).**
5.	Put **new nut (10)** on bolt (9) and tighten.
6.	Deleted.
7	**Using 3/8 in. wrench, close two** bleeder **valves (6)**
	GO TO FRAME 2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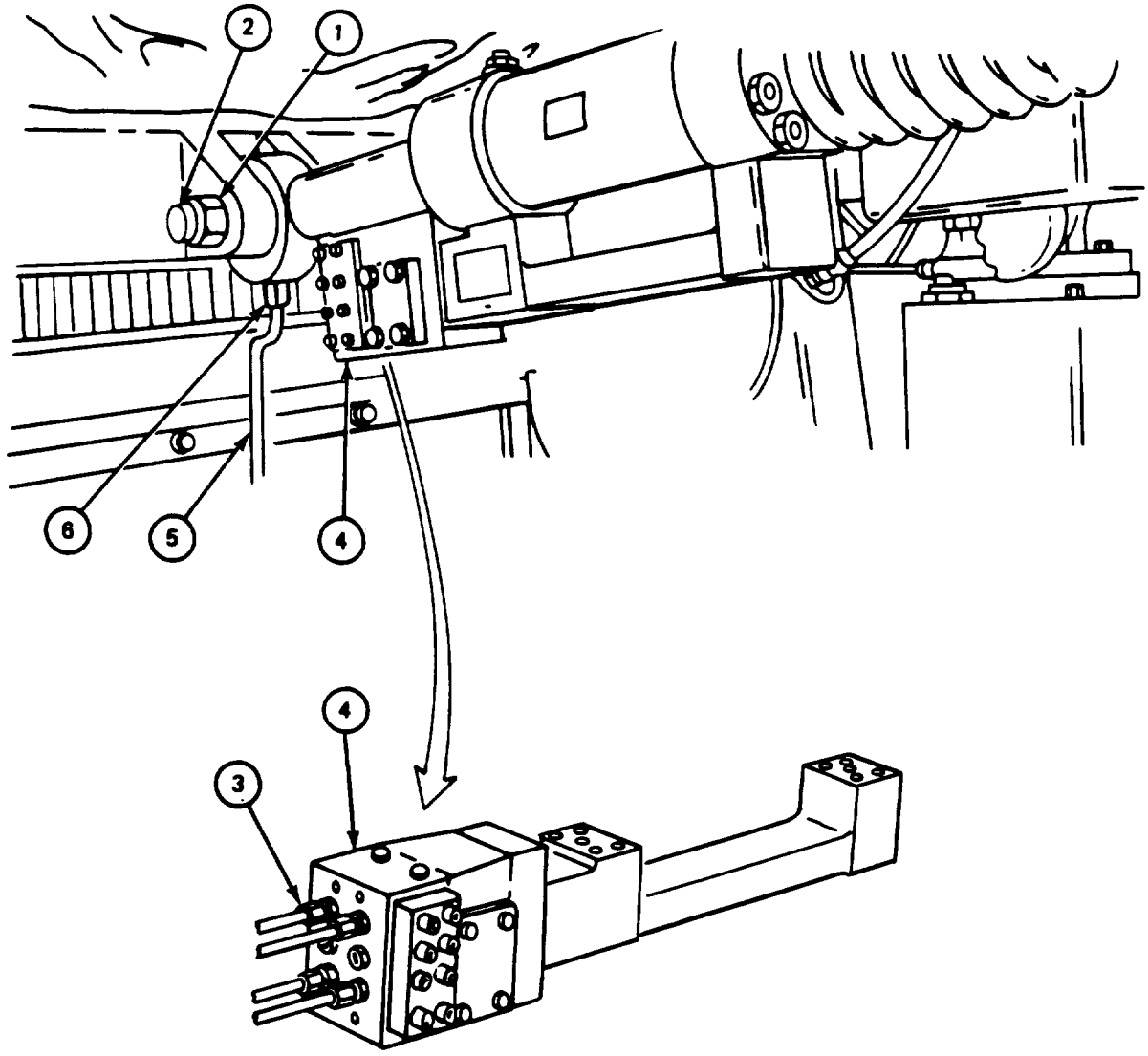
39-3. ELEVATING MECHANISM INSTALLATION PROCEDURE (CONT)

FRAME 2

Step	Procedure
1.	Put new nut (1) on bolt (2) and tighten.
2.	Deleted.
3.	Using 11/16" and 5/8" wrenches, install four hydraulic tubes (3) to lock valve (4) (para 2-69).
4.	Using 11/16" and 5/8'" wrenches, install tube (5) to elevating mechanism (6).
5.	Depress and balance main gun until wood block can be removed from under main gun (TM-10)
6.	Remove wood block.
	NOTE Do following steps if this procedure completes maintenance of hydraulic system. If other maintenance must be done, omit following steps. Follow-on Maintenance Action Required: Bleed turret hydraulic system (para 1-22). Elevate and depress 165-mm gun to make sure elevating mechanism works properly (TM- 10).
	END OF TASK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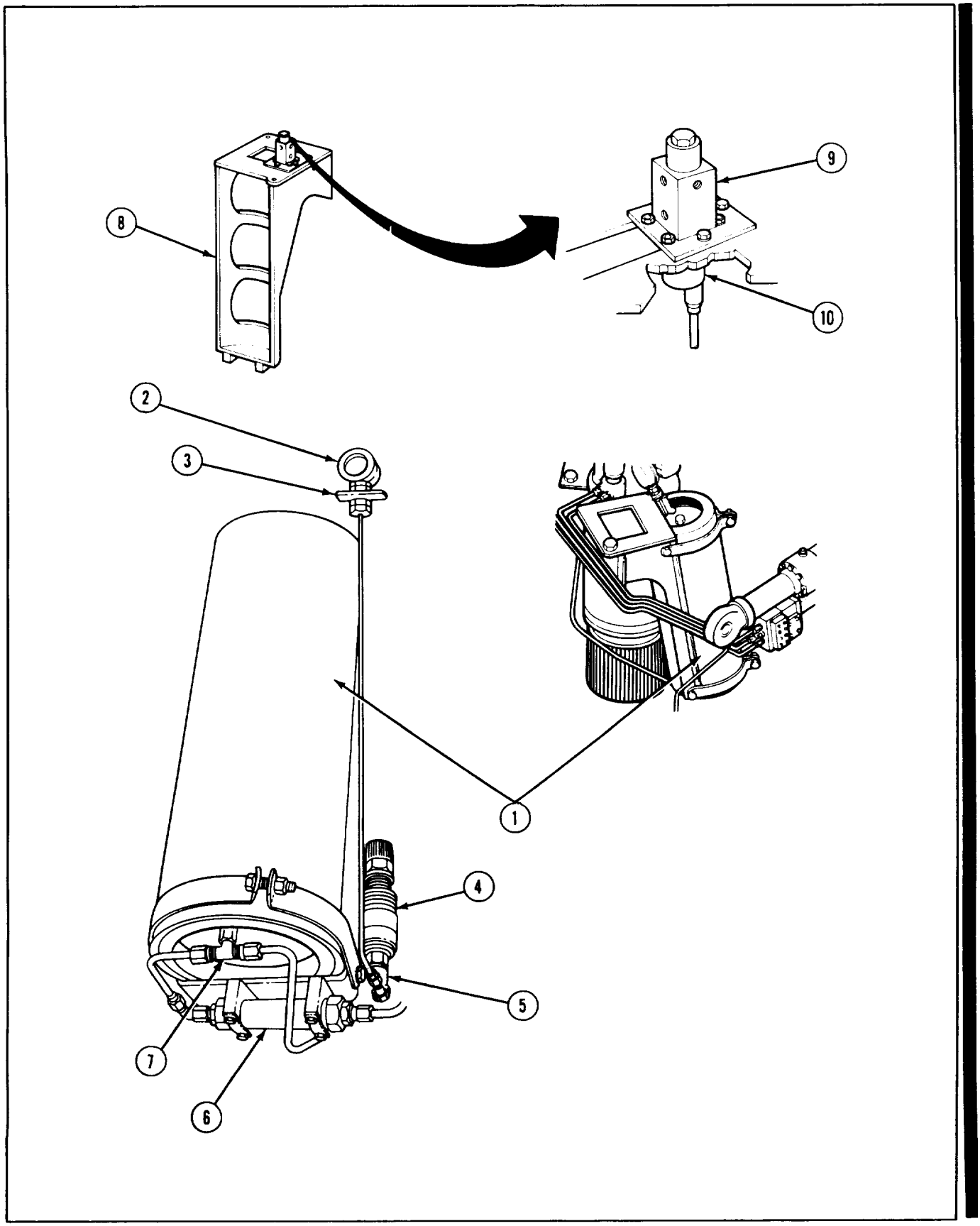
CHAPTER 40

MAIN ACCUMULATOR **AND RELATED PARTS**

40-1. MAINTENANCE PROCEDURES INDEX

Equipment Item		Tasks		
		Test	Removal	Installation
1.	Main Accumulator	. . .	40-2	40-3
2.	Pressure Gauge	. .	40-4	40-5
3.	Pressure Gauge Union	. . .	40-6	40-7
4.	Pressure Switch	. . .	40-8	40-9
5.	Pressure Switch Tee (Early Model)	. . .	40-10	40-11
5.1	Pressure Switch Tee (Late Model)	. . .	40-11.1	40-11.2
6.	Relief Valve	. . .	40-11.3	40-11.4
7.	Accumulator Tee	. . .	40-11.5	40-11.6
8.	Accumulator Support	. . .	40-12	40-13
9.	Elevation Shutoff Valve	40-14	40-15	40-16
10.	Solenoid		40-17	40-18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40-2. MAIN ACCUMULATOR REMOVAL PROCEDURE

TOOLS: 9/16 in. combination wrenches (two)
11/16 in. socket (1/2 in. drive)
1-1/8 in. socket (1/2 in. drive)
1/2 in. drive ratchet
3/8 in. combination wrench
1/16 in. drive pin punch

SUPPLIES: Container
Lint-free cloths (item 15, App. A)

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedures to:
Manually traverse turret
Set turret traverse lock to LOCKED
JPG for procedure to remove packings

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Turret Traverse Lock	FO-3	7
Main Accumulator	FO-1	16

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF

PRELIMINARY PROCEDURES: Remove tube assembly 10911706 (para 2-66)
Remoe tube assembly 10911690 (para 2-68)

GENERAL INSTRUCTIONS:

CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

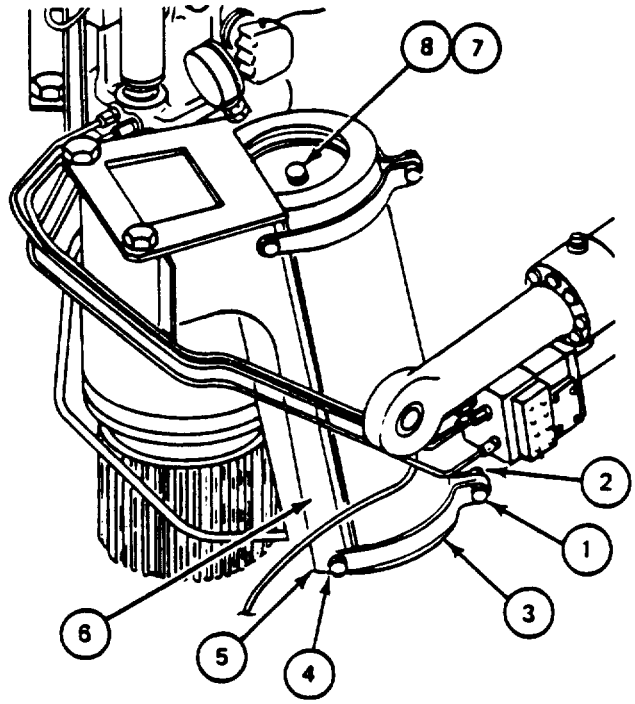
NOTE

Use container and lint-free cloths for oil **spillage.**

40-2. MAIN ACCUMULATOR REMOVAL PROCEDURE (CONT)

FRAME 1

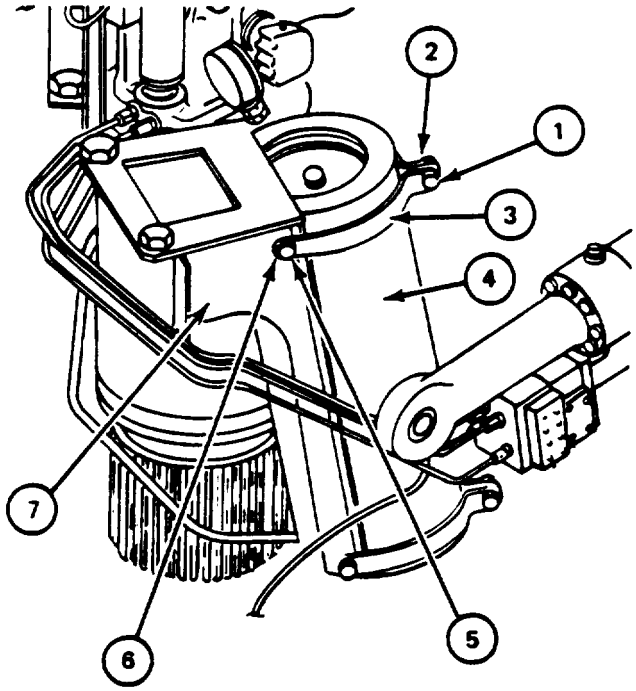
Step	Procedure
1.	Traverse turret until main accumulator can be reached from driver's compartment (TM-10).
2.	Set turret traverse lock to LOCKED (TM-10).
3.	Using two 9/16" wrenches, remove screw (1) and nut (2) that hold lower retaining straps (3) together.
4.	Using 9/16" wrench, remove two screws (4) and two lockwashers (5) that attach lower retaining straps (3) to accumulator support (6).
5.	Using 3/8" combination wrench, remove valve cap (7).
	WARNING Nitrogen under pressure can hurt you. Keep fingers and hands clear of valve while letting out nitrogen. Let nitrogen out slowly.
6.	Using punch, push in valve core (8) until gas pressure is 0 psi.
7.	Using 3/8" combination wrench, put on valve cap (7).
	GO TO FRAME 2



40-2. MAIN ACCUMULATOR REMOVAL PROCEDURE (CONT)

FRAME 2

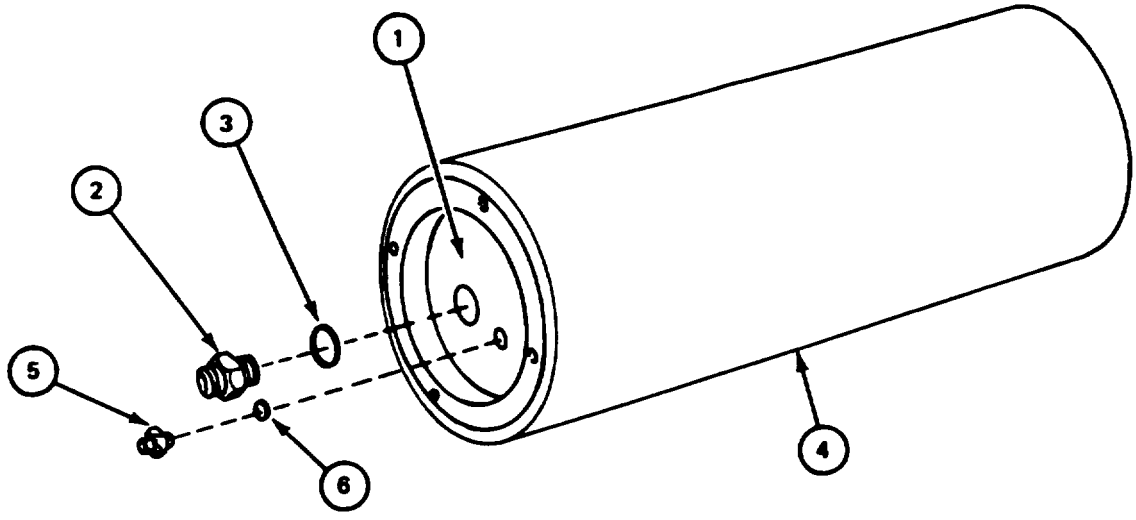
Step	Procedure
1.	Using two 9/16“ wrenches, remove screw (1) and nut (2) that hold upper retaining straps (3) together.
2.	Using 9/16” wrench in one hand and holding accumulator (4) with other hand, remove two screws (5) and two lockwashers (6) that attach upper retaining straps (3) to accumulator support (7).
3.	Remove accumulator (4) from accumulator support (7).
	GO TO FRAME 3



40-2. MAIN ACCUMULATOR REMOVAL PROCEDURE (CONT)

FRAME 3

Sstep	Procedure
	NOTE Do this frame only if accumulator is being replaced. Both end caps are similar, but fluid-end (bottom) cap (1) has two ports while gas-end (top) cap has only one port.
1.	Using l-1/8” socket wrench, remove large reducer (2) from fluid-end (bottom) cap (1) of accumulator (4).
2	Remove packing (3) from reducer (2) (JPG).
3.	Using 11/16’” socket wrench, remove small reducer (5) from fluid-end cap (1).
4.	Remove packing (6) from reducer (5) (JPG).
	END OF TASK



40-3. MAIN ACCUMULATOR INSTALLATION PROCEDURE

TOOLS: 9/ 16" combination wrenches (two)
11/16" socket (1/2" drive)
1-1/8" socket (1/2" drive)
1/2" drive ratchet

SUPPLIES: Preformed packing, MS 28778-4
Preformed packing, MS 28778-10

PERSONNEL: One

REFERENCES: JPG for procedure to install preformed packing
LO 9-2350-222-12 for procedure to fill hydraulic system
TM 9-2350-222-10 for procedures to traverse turret and elevate and depress gun

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Turret Traverse Lock	FO-3	7
Main Accumulator	FO- 1	16

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED

PRELIMINARY PROCEDURES: Install accumulator support (para 40-13)

GENERAL INSTRUCTIONS:

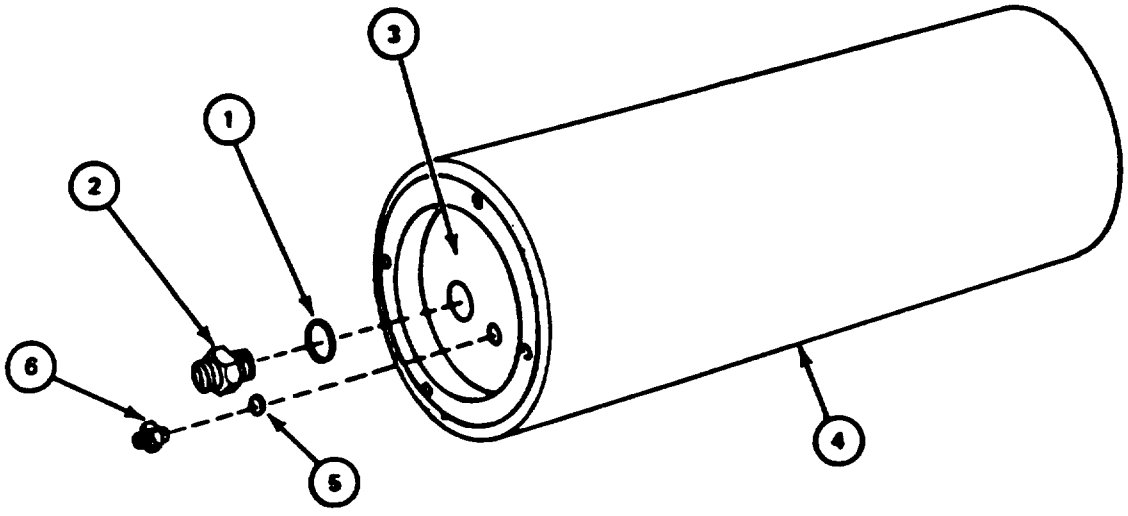
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

40-3. MAIN ACCUMULATOR INSTALLATION PROCEDURE (CONT)

FRAME 1

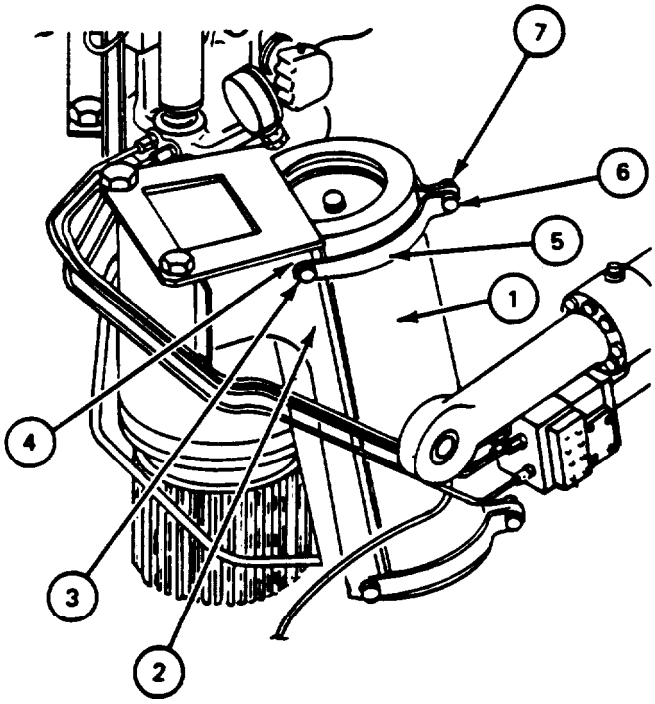
Step	Procedure
	NOTE Do this frame if accumulator was replaced. If accumulator was not replaced, go to Frame 2. Both end caps are similar, but fluid-end (bottom) cap has two ports while gas-end (top) cap has only one port.
1.	Put preformed packing (1) on large reducer (2) (JPG).
2.	Using 1-1/8” socket wrench, put reducer (2) in fluid-end cap (3) of accumulator (4).
3.	Put preformed packing (5) on small reducer (6) (JPG).
4.	Using 11/16” socket wrench, put reducer (6) in fluid-end cap (3).
	GO TO FRAME 2



40-3. MAIN ACCUMULATOR INSTALLATION PROCEDURE (CONT)

FRAME 2

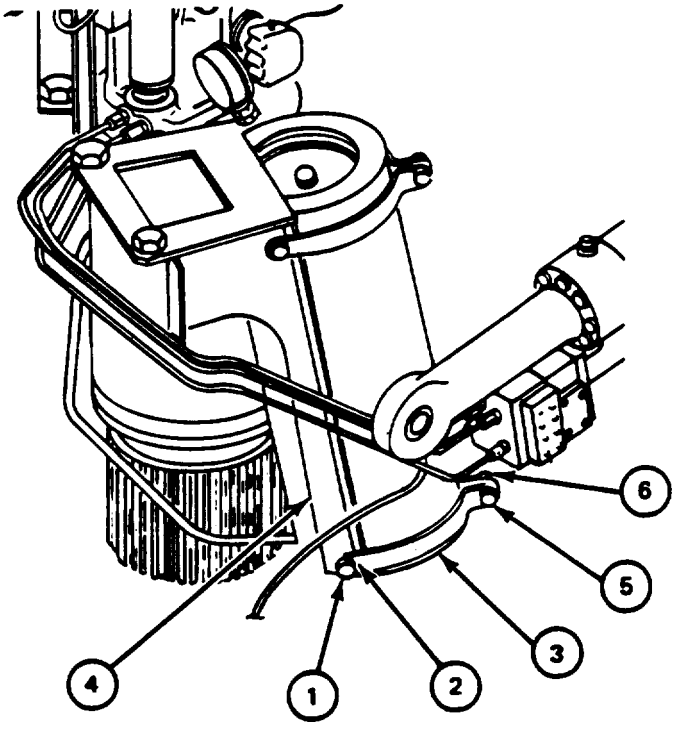
Step	Procedure
1.	Carefully put accumulator (1) on accumulator support (2).
	NOTE Do not tighten upper retaining straps (5). Accumulator (1) may have to be turned when tubing is installed.
2.	Using one hand, hold accumulator (1) on accumulator support (2). With other hand, put in two screws (3) and two Iockwashers (4) that attach upper retaining straps (5) to accumulator support.
3.	Put in screw (6) and nut (7) that hold upper retaining straps (5) together.
	GO TO FRAME 3



40-3. MAIN ACCUMULATOR INSTALLATION PROCEDURE (CONT)

FRAME 3

Step	Procedure
	NOTE Do not tighten lower retaining straps (3). Accumulator may have to be turned when tubing is installed.
1.	Using hands. put in two screws (1) and two Iockwashers (2) that attach lower retaining straps (3) to accumulator support (4).
2.	Put in screw (5) and nut (6) that hold retaining straps (3) together.
	NOTE Follow-on Maintenance Action Required: Install tube assembly 10911690 (para 2-69). Install tube assembly 10911706 (para 2-67). Using two combination wrenches, tighten upper and lower retaining straps (frames 2 and 3). Charge main accumulator (para 1-19). Fill hydraulic system (LO). Bleed air from hydraulic system (para 1-22). Operate turret traversing and elevation systems to make sure hydraulic system works properly (TM- 10).
	END OF TASK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40-4. PRESSURE GAUGE REMOVAL PROCEDURE

TOOLS: 7/8’” open end wrench
11/16" open end wrench

SUPPLIES: Two plugs for pressure gauge and pressure gauge connector
Lint-free cloth (item 15, App. A)
Container

PERSONNEL: One

REFERENCES: JPG for procedure to remove preformed packing

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver’s Master Control Panel	FO-3	11
Gunner’s Control Box	FO-1	2
Turret Traverse Lock	FO-3	7
Main Accumulator	FO-1	16
Pressure Gauge	FO-1	22

EQUIPMENT CONDITION: Driver’s master control panel MASTER BATTERY switch set to OFF
Gunner’s control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED

GENERAL INSTRUCTIONS:

CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

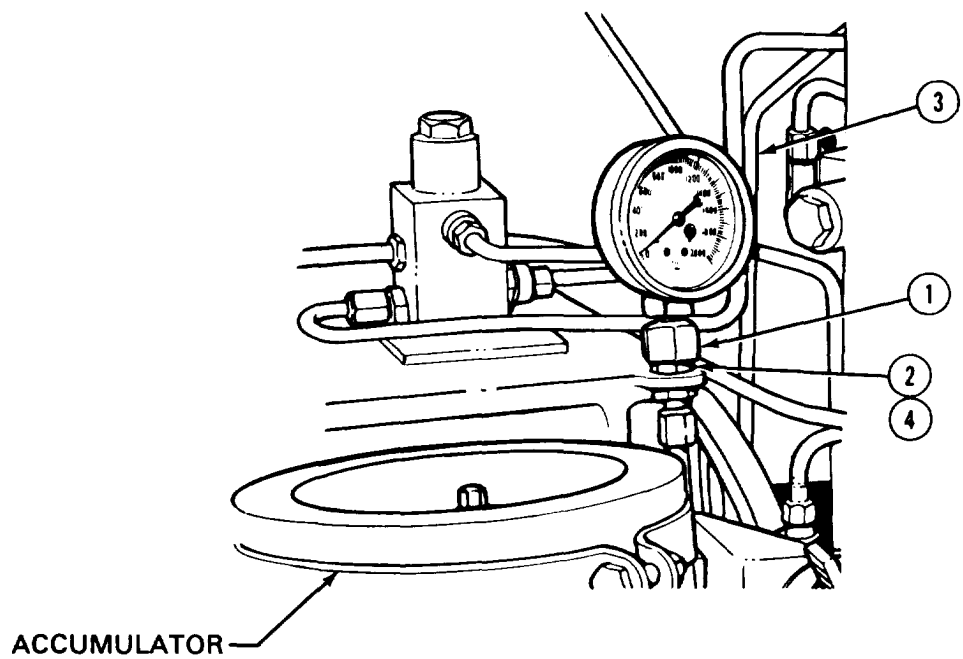
NOTE

Use container and lint-free cloths for oil spillage.

40-4. PRESSURE GAUGE REMOVAL PROCEDURE **(CONT)**

FRAME 1

STEP	PROCEDURE
	WARNING Before removing hydraulic tubes or parts, hydraulic system pressure must be lowered to O psi. Hydraulic fluid under pressure can hurt you.
1.	Lower hydraulic system pressure to 0 psi (para 1-18).
2.	Using 7/8 inch wrench on pressure gauge nut (1) and 11/16 inch wrench on connector (2), remove pressure gauge (3) from connector (2).
3.	Remove preformed packing (4) from connector (2) (JPG).
4.	Put plugs in pressure gauge (3) and connector (2) holes.
	END OF TASK



40-5. PRESSURE GAUGE INSTALLATION PROCEDURE

TOOLS: 7/8” open end wrench
11/16" open end wrench (two)
5/8" open end wrench
9/16" open end wrench

SUPPLIES: Preformed packing. MS 28778-4
Hydraulic fluid (item 9, App. A)

PERSONNEL: One

REFERENCES: JPG for procedure to install preformed packing

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver’s Master Control Panel	FO-3	11
Gunner’s Control Box	FO-1	2
Turret Traverse Lock	FO-3	7
Main Accumulator	FO-1	16

EQUIPMENT CONDITION: Driver’s master control panel MASTER BATTERY switch set to OFF
Gunner’s control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED

GENERAL INSTRUCTIONS:

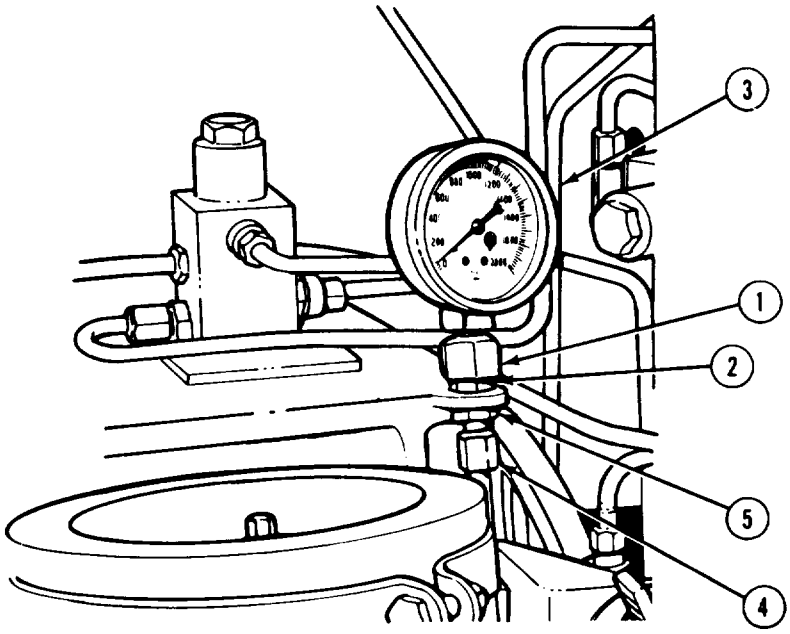
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

40-5. PRESSURE GAUGE INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Remove plugs from pressure gauge nut (1) and connector (2).
2.	Lightly coat preformed packing with hydraulic fluid.
3.	Put preformed packing on connector (2) (JPG).
4.	Using 7/8” wrench on pressure gauge nut (1) and 11/16" wrench on connector (2). attach pressure gauge (3) to connector.
	NOTE Face of pressure gauge (3) must be toward gunner’s seat. If not, do steps 5 through 9. If face of pressure gauge is toward gunner’s seat, omit steps 5 through 9.
5.	Using 9/ 16” or 5/8” wrench on tube assembly nut (4) and 11/16“ wrench on connector (2). loosen tube assembly nut.
6.	Using 11/16“ wrench on connector (2) and 11/16" wrench on nut (5), loosen nut (5).
7.	Turn pressure gauge (3) until face of gauge is toward gunner’s seat.
8.	Using 11/16" wrench on connector (2) and 11/16“ wrench on nut (5), tighten nut.
9.	Using 9/16“ or 5/8 wrench on tube assembly nut (4) and 11/16“ wrench on connector (2), tighten tube assembly nut.
	NOTE Do following tasks if this procedure completes maintenance of hydraulic system. If other maintenance must be done, make sure following tasks are completed after other maintenance. Follow-on Maintenance Action Required: Bleed turret hydraulic system (para 1-22). Check pressure gauge connectors for leaks. Tighten nuts. if necessary.
	END OF TASK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40-6. PRESSURE GAUGE CONNECTOR OR UNION REMOVAL PROCEDURE

TOOLS: 11/16 in. open end wrench (two)

PERSONNEL: One

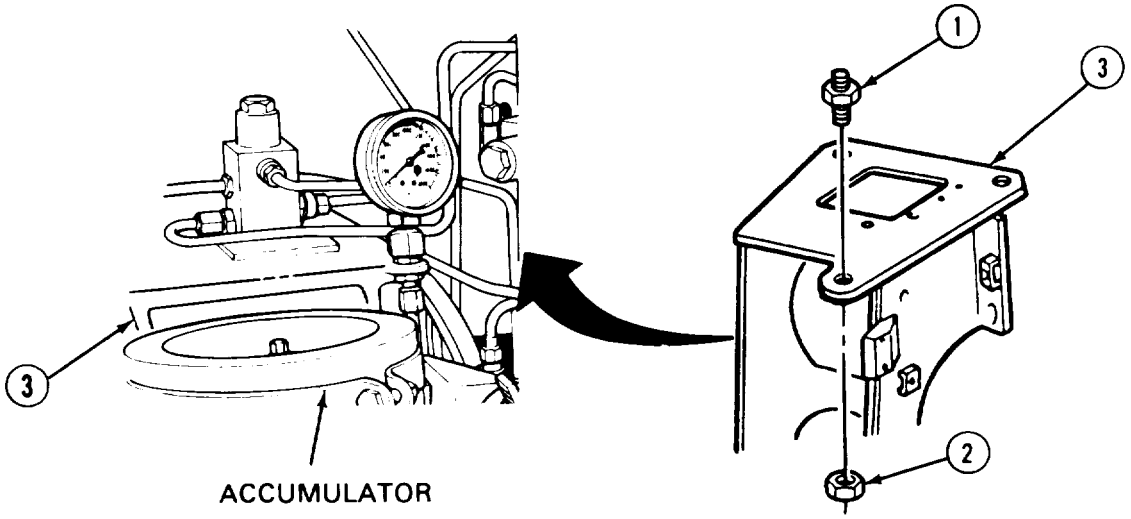
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Main Accumulator	FO-1	16

PRELIMINARY PROCEDURES: Remove pressure gauge (para 40-4)
Remove tube assembly 10911687 (para 2-75)

FRAME 1

STEP	PROCEDURE
1.	Using wrench on pressure gauge connector or union (1) and wrench on nut (2), remove nut (2) from connector (1).
2.	Separate connector or union (1) from accumulator support (3).
	END OF TASK



40-7. PRESSURE GAUGE CONNECTOR OR UNION INSTALLATION PROCEDURE

TOOLS: 11/16 in. open end wrench (two)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Turret Traverse Lock	FO-3	7
Main Accumulator	Fe-I	16

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED

GENERAL INSTRUCTIONS

CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

40-7. PRESSURE GAUGE CONNECTOR OR UNION INSTALLATION PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
1.	Put pressure gauge connector or union (1) in accumulator support (2).
2.	Using wrench on pressure gauge connector or union (1) and wrench on nut (3), attach connector or union to accumulator support (2) with nut.

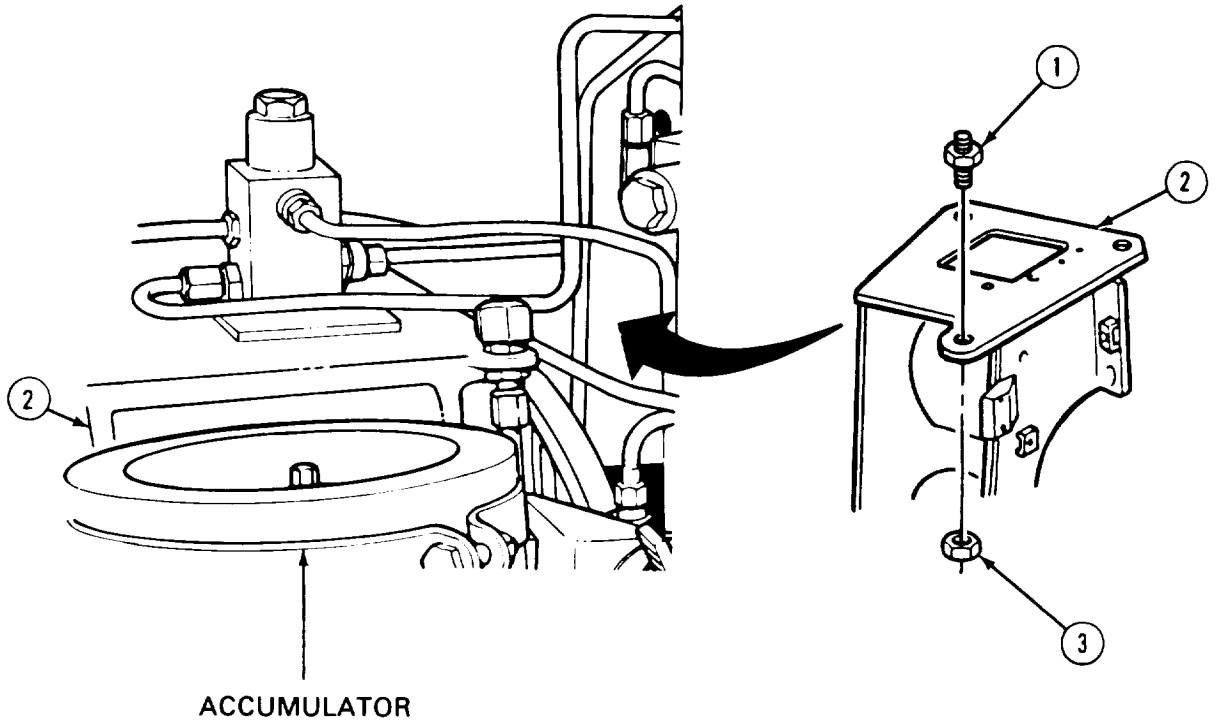
NOTE

Do following tasks if this procedure completes maintenance of hydraulic system. If other maintenance must be done, make sure following tasks are completed after other maintenance.

Follow-on Maintenance Action Required:

Install tube assembly 10911687 (para 2-69).
Install pressure gauge (para 40-5).

END OF TASK



40-8. PRESSURE SWITCH REMOVAL PROCEDURE

TOOLS: 13/16" open end wrench
1/2" open end wrench
1-1/8" open end wrench
5/16" open end wrench

SUPPLIES: Two plugs for pressure switch and pressure switch tee
Container
Lint-free cloths (item 15, App. A)

PERSONNEL: One

REFERENCES: JPG for procedures to:
Disconnect electrical connector
Remove preformed packing
TM 9-2350-222-10 for procedures to
Manually traverse turret
Set turret traverse lock to LOCKED

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Main Accumulator	FO-1	16
Turret Traverse Lock	FO-3	7

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF

GENERAL INSTRUCTIONS:

CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

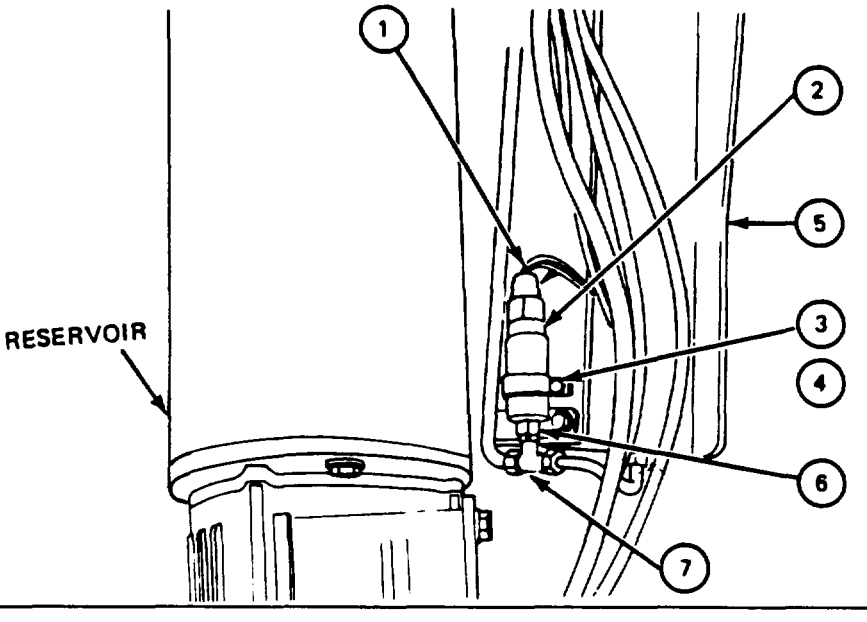
NOTE

Use container and Lint-free cloths for oil spillage.

40-8. PRESSURE SWITCH REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Traverse turret until pressure switch can be reached from driver's compartmernt (TM-10).
2.	Set turret traverse lock to LOCKED (TM-10).
	WARNING Before removing hydraulic tubes or parts, hydraulic system pressure must be lowered to 0 psi. Hydraulic fluid under pressure can hurt you.
3.	Lower hydraulic system pressure to 0 psi (para 1-18).
4.	Using 1-1/8" wrench, disconnect electrical connector (1) from pressure switch (2) (JPG).
5.	Using 5/16" wrench, remove screw (3) holding pressure switch clamp (4) to accumulator support (5).
6.	Remove pressure switch clamp (4) from pressure switch (2).
7.	Using 13/16" wrench on pressure switch hex (6) and 1/2" wrench on body of pressure switch tee (7), remove pressure switch (2) from pressure switch tee (7).
8.	Remove preformed packing from pressure switch tee (7) (JPG).
9.	Plug pressure switch (2) and pressure switch tee (7) holes in two places.
	END OF TASK



40-9. PRESSURE SWITCH INSTALLATION PROCEDURE

TOOLS: 13/16" open end wrench
1/2" open end wrench
5/16" open end wrench

SUPPLIES: Preformed packing, MS 28778-4
Hydraulic fluid (item 9, App. A)

PERSONNEL: One

REFERENCES: JPG for procedures to:
Install preformed packing
Connect electrical connector

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Turret Traverse Lock	FO-3	7
Main Accumulator	FO-1	16

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED

GENERAL INSTRUCTIONS:

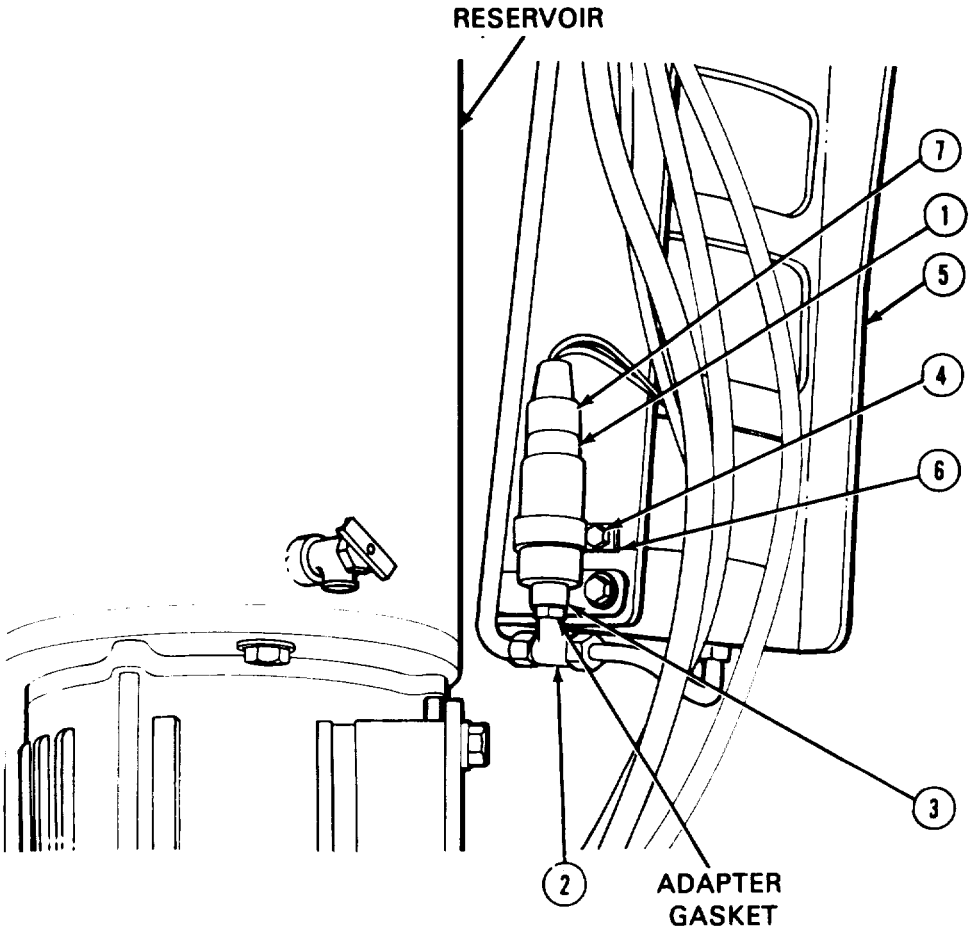
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

40-9. PRESSURE SWITCH INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Remove plugs from pressure switch (1) and pressure switch tee (2).
2.	Lightly coat preformed packing with hydraulic fluid.
3.	Put preformed packing on pressure switch tee (2) (JPG).
4.	Using 13/16” wrench on pressure switch hex (3) and 1/2” wrench on body of pressure switch tee (2), attach pressure switch (1) to pressure switch tee (2).
5.	Put pressure switch clamp (4) on pressure switch (1).
6.	Using 5/16” wrench, attach pressure switch clamp (4) to accumulator support (5) with screw (6).
7.	Connect electrical connector (7) to pressure switch (1) (JPG).
	NOTE Do following tasks if this procedure completes maintenance of hydraulic system. If other maintenance must be done, make sure following tasks are completed after other maintenance. Follow-on Maintenance Action Required: Bleed turret hydraulic system (para 1-22). Check connections for oil leaks.
	END OF TASK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ADAPTER
GASKET

40-10. PRESSURE SWITCH TEE (EARLY MODEL) REMOVAL PROCEDURE

TOOLS: 11/16 in. open end wrench
1/2 in. open end wrench
5/8 in. open end wrench

SUPPLIES: Four plugs for two tube assemblies and pressure switch tee

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Main Accumulator	FO-1	16

PRELIMINARY PROCEDURE: Remove pressure switch (para 40-8)

GENERAL INSTRUCTIONS:

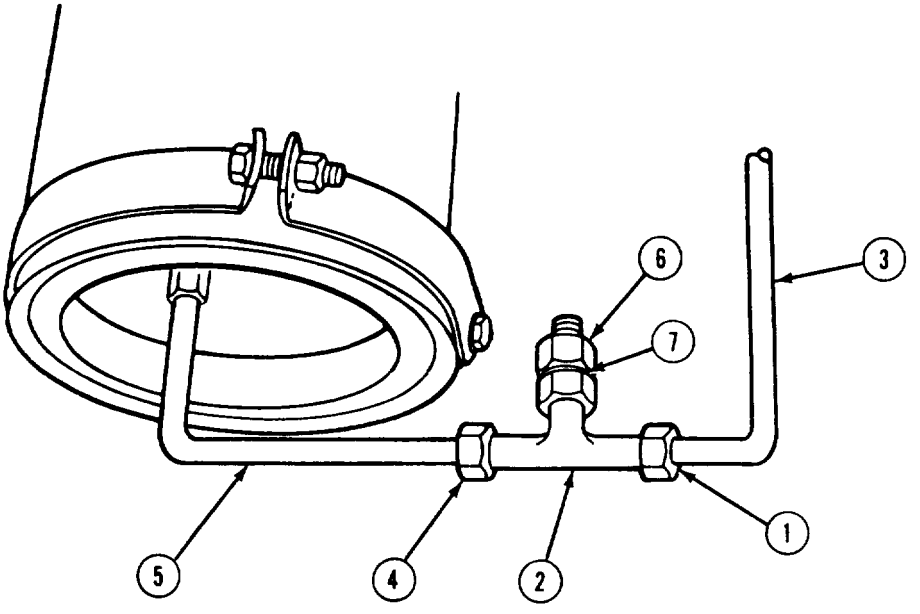
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

40-10. PRESSURE SWITCH TEE (EARLY MODEL) REMOVAL PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
1.	Using 5/8 inch wrench on tube assembly nut (1) and 1/2 inch wrench on body of pressure switch tee (2), remove tube assembly nut from pressure switch tee.
2.	Separate tube assembly (3) from pressure switch tee (2).
3.	Using 5/8 inch wrench on tube assembly nut (4) and 1/2 inch wrench on body of pressure switch tee (2), remove tube assembly nut from pressure switch tee.
4.	Separate pressure switch tee (2) from tube assembly (5).
5.	Using 11/16 inch wrench on nut (6) and 1/2 inch wrench on body of pressure switch tee (2), remove nut from pressure switch tee.
6.	Remove non-metallic washer (7) from pressure switch tee (2).
7.	Put plugs in tube assembly (3) (5) and pressure switch tee (2) holes.
	END OF TASK



40-11. PRESSURE SWITCH TEE (EARLY MODEL) INSTALLATION PROCEDURE

TOOLS: 5/8 in. open end wrench
1/2 in. open end wrench
11/16 in. open end wrench

SUPPLIES: Non-metallic washer, MS28777-4

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Turret Traverse Lock	FO-3	7
Main Accumulator	FO-1	16

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED

GENERAL INSTRUCTIONS:

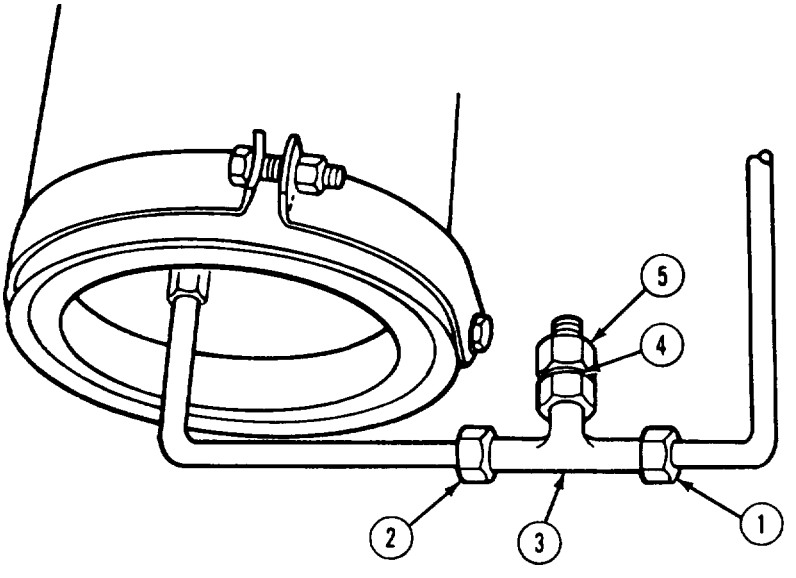
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

40-11. PRESSURE SWITCH TEE (EARLY MODEL) INSTALLATION PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
1.	Remove plugs from tube assembly nuts (1), (2) and pressure switch tee (3) holes.
2.	Put non-metallic washer (4) on pressure switch tee (3).
3.	Using 11/16 inch wrench on nut (5) and 1/2 inch wrench on body of pressure switch tee (3), attach nut to pressure switch tee.
4.	Using 5/8 inch wrench on tube assembly nut (1) and 1/2 inch wrench on body of pressure switch tee (3), attach tube assembly nut to pressure switch tee.
5.	Using 5/8 inch wrench on tube assembly nut (2) and 1/2 inch wrench on body of pressure switch tee (3), attach tube assembly nut to pressure switch tee.
	NOTE **Do following tasks if this procedure completes maintenance of hydraulic system. If other maintenance must be done, make sure following tasks are completed after other maintenance.** **Follow-on Maintenance Action Required:** **Install pressure switch (para 40-9).** **Bleed turret hydraulic system (para 1-22).** **Check connections for oil leaks.**
	END OF TASK



40-11.1. PRESSURE SWITCH TEE (LATE MODEL) REMOVAL PROCEDURE

TOOLS: 9/16 in. open end wrench
1/2 in. open end wrench

SUPPLIES: Four plugs (MS 550117-2) (4 required)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Main Accumulator	FO-1	16

PRELIMINARY PROCEDURE: Remove pressure switch (para 40-8)

GENERAL INSTRUCTIONS:

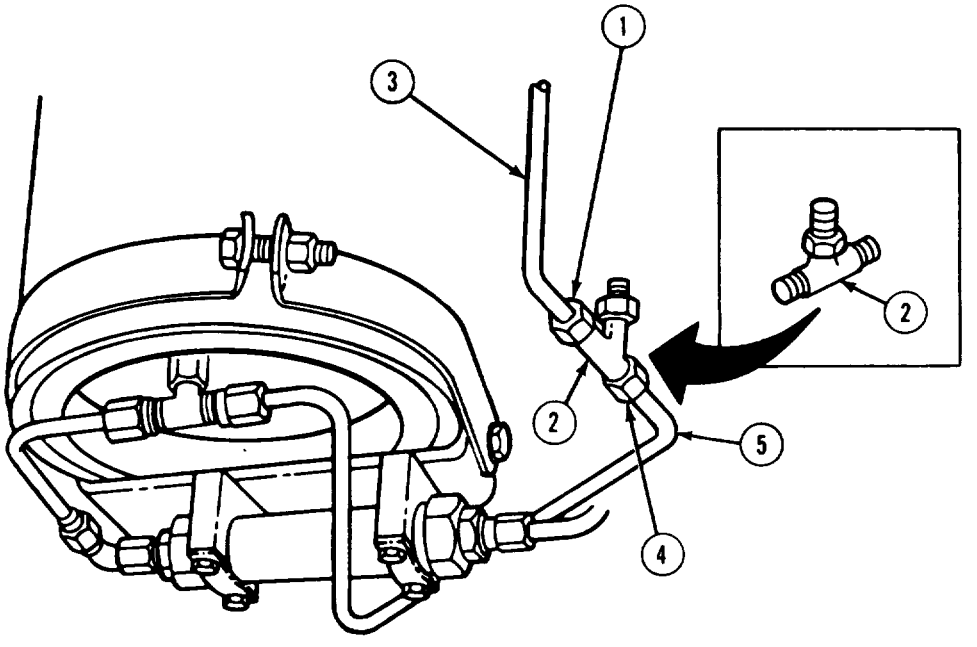
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

40-11.1. PRESSURE SWITCH TEE (LATE MODEL) REMOVAL PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
1.	Using 9/16 inch wrench on tube assembly nut (1) and 1/2 inch wrench on body of pressure switch tee (2), remove tube assembly nut from pressure switch tee (2).
2.	Remove tube assembly (3) from pressure switch tee (2).
3.	Using 9/16 inch wrench on tube assembly nut (4) and 1/2 inch wrench on body of pressure switch tee (2), remove tube assembly nut (4) from pressure switch tee (2).
4.	Remove pressure switch tee (2) from tube assembly (5).
5.	Put plugs in tube assembly nuts (1), (4) and pressure switch tee (2).
	END OF TASK



40-11.2. PRESSURE SWITCH TEE (LATE MODEL) INSTALLATION PROCEDURE

TOOLS: 9/16 in. open end wrench
1/2 in. open end wrench

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Turret Traverse Lock	FO-3	7
Main Accumulator	FO-1	16

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED

GENERAL INSTRUCTIONS:

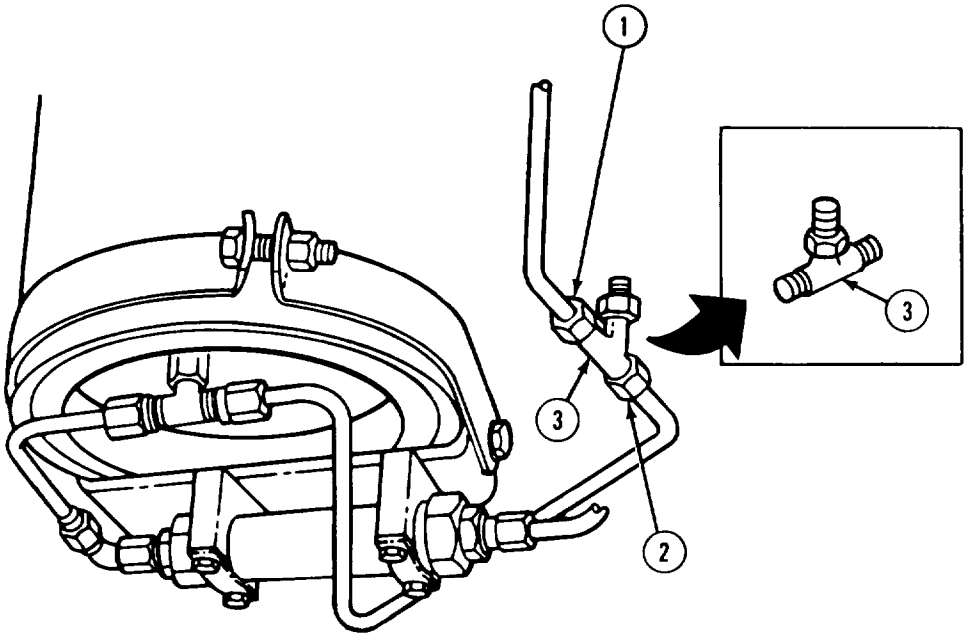
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

40-11.2. PRESSURE SWITCH TEE (LATE MODEL) INSTALLATION PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
1.	Remove plugs from tube assembly nuts (1), (2), and pressure switch tee (3) holes.
2.	Using 9/16 inch wrench on tube assembly nut (1) and 1/2 inch wrench on body of pressure switch tee (3), attach nut (1) to pressure switch tee (3).
3.	Using 9/16 inch wrench on tube assembly nut (2) and 1/2 inch wrench on body of pressure switch tee (3), attach nut (2) to pressure switch tee (3).
	NOTE **Do following tasks if this procedure completes maintenance of hydraulic system. If other maintenance must be done, make sure following tasks are completed after other maintenance.** **Follow-on Maintenance Action Required:** **Install pressure switch (para 40-9).** **Service turret hydraulic system filter (para 2-64).** **Bleed turret hydraulic system (para 1-22).** **Check tuba connections for oil leaks.**
	END OF TASK



40-11.3. RELIEF VALVE REMOVAL PROCEDURE

TOOLS: 9/16 in. open end wrench
13/16 in. open end wrench
7/16 in. open end wrench
1-3/16 in. open end wrench

SUPPLIES: Ten plugs for tube assemblies (MS 5501/7-2)
Container
Lint-free cloths (item 15, App. A)

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedures to:
Manually traverse turret
Set turret traverse lock to LOCKED
JPG for procedure to remove preformed packing

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Turret Traverse Lock	FO-3	7
Main Accumulator	FO-1	16

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF

PRELIMINARY PROCEDURE: Drain turret hydraulic system (para 1-21)

GENERAL INSTRUCTIONS:

CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

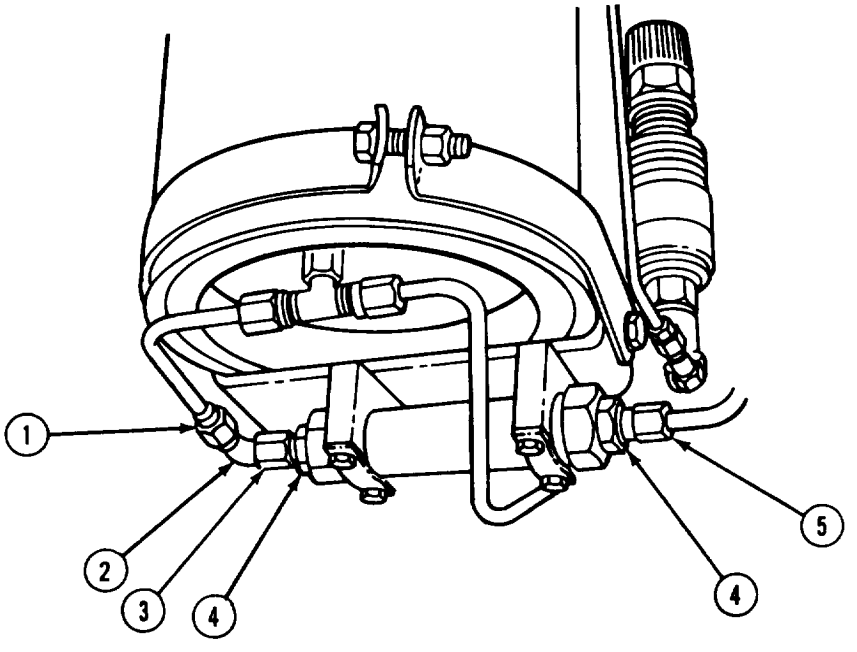
NOTE

Use container and lint-free cloths for oil spillage.

40-11.3. RELIEF VALVE REMOVAL PROCEDURE (CONT)

FRAME 1

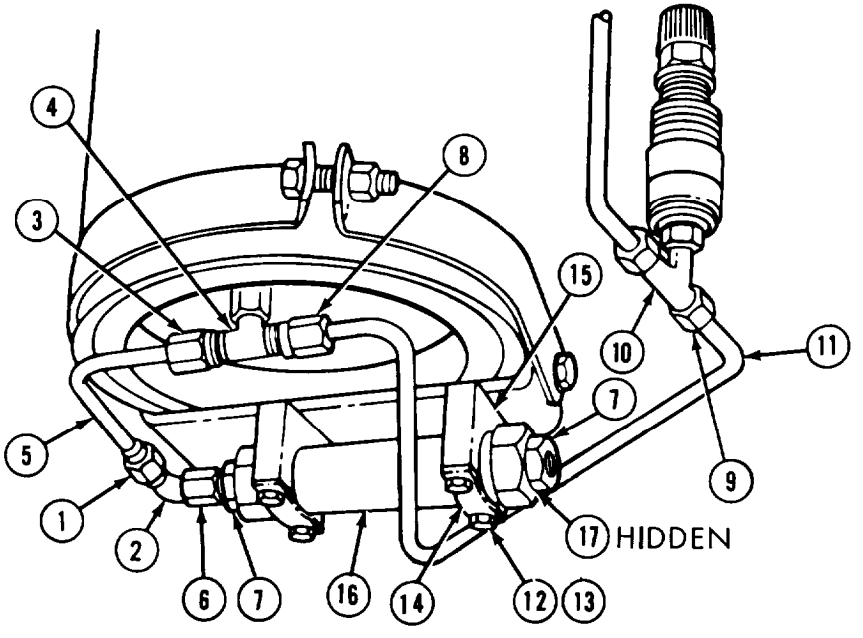
STEP	PROCEDURE
1.	Traverse turret until relief valve can be reached from driver's compartment (TM-10).
2.	Set turret traverse lock to LOCKED (TM-10).
3.	Using 9/16 inch wrench, loosen tube assembly nut (1) from relief valve elbow (2).
4.	Using 9/16 inch wrench on tube assembly nut (3) and 13/16 inch wrench on reducer (4) loosen tube assembly nut (3).
5.	Using 9/16 inch wrench, on tube assembly nut (5) and 13/16 inch wrench on reducer (4). Remove nut (5) from reducer.
	GO TO FRAME 2



40-11.3. RELIEF VALVE REMOVAL PROCEDURE (CONT)

FRAME 2

STEP	PROCEDURE
1.	Remove tube assembly nut (1) from relief valve elbow (2).
2.	Using 9/16 inch wrench, remove tube assembly nut (3) from accumulator tee (4). Remove tube assembly (5).
3.	Using 9/16 inch wrench, remove relief valve elbow nut (6) from reducer (7) and remove relief valve elbow (2) and nut (6).
4.	Using 9/16 inch wrench, remove tube assembly nut (8) from accumulator tee (4).
5.	Using 9/16 inch wrench, remove tube assembly nut (9) from pressure switch tee (10). Remove tube assembly (11).
6.	Using 7/16 inch wrench, remove four screws (12) and four lockwashers (13) holding two straps (14) to accumulator support (15).
7.	Remove two straps (14) and relief valve (16) from accumulator support (15).
8.	Using 1-3/16 inch wrench on relief valve (16) and 13/16 inch wrench on reducer (7), remove two reducers (7) and two preformed packings (17) from relief valve (JPG).
9.	Put plugs in tube assemblies, relief valve (16) reducer (7) and relief valve elbow holes.
	END OF TASK



40-11.4. RELIEF VALVE INSTALLATION PROCEDURE

TOOLS: 9/16 in. open end wrench
13/16 in. open end wrench
7/16 in. open end wrench
1-3/16 in. open end wrench

SUPPLIES: Hydraulic fluid (item 9, App. A)
Two preformed packings

PERSONNEL: One

REFERENCES: JPG for procedure to install preformed packing
LO 9-2350-222-10 for procedure to fill hydraulic reservoir

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Turret Traverse Lock	FO-3	7
Main Accumulator	FO-1	16

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED

GENERAL INSTRUCTIONS:

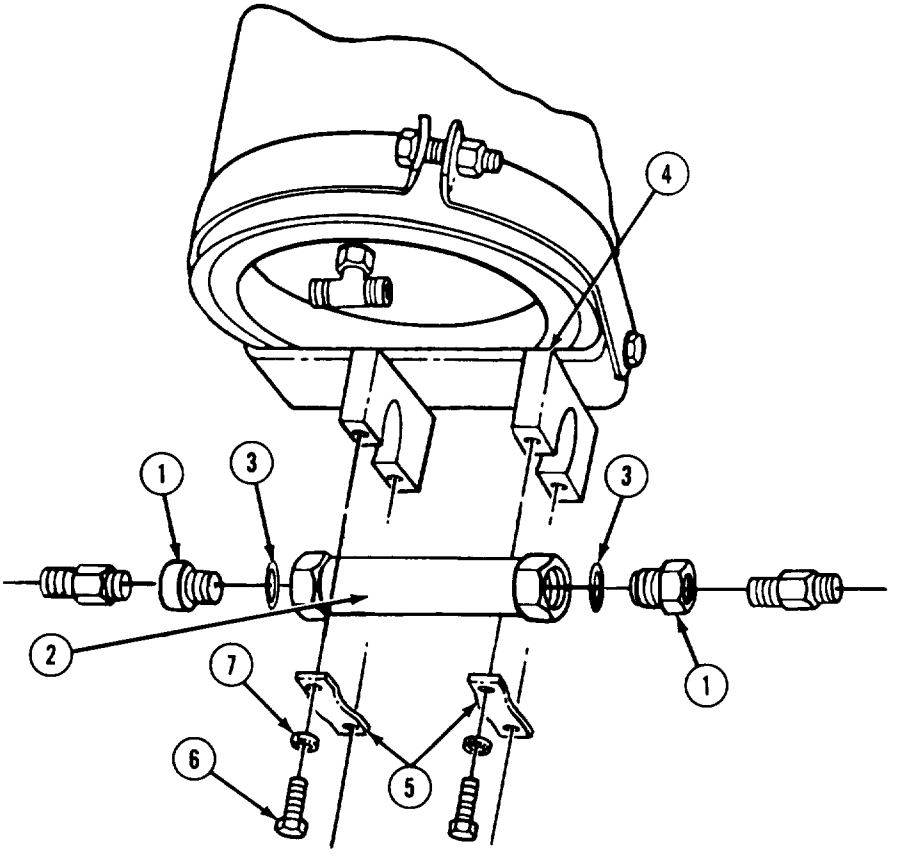
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

40-11.4. RELIEF VALVE INSTALLATION PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
1.	Remove plugs from two reducers (1) and relief valve (2).
2.	Lightly coat two new preformed packings (3) with hydraulic fluid.
3.	Put preformed packings (3) on two reducers (1) (JPG).
4.	Using 1-3/16 inch wrench on relief valve (2) and 13/16 inch wrench on reducers (1), attach two reducers to relief valve.
	CAUTION **Relief valve (2) must be installed with arrow on its side pointing toward power pack control.**
5.	Using 7/16 inch wrench, attach relief valve (2) to accumulator support (4) with two straps (5), four screws (6) and four lockwashers (7).
	GO TO FRAME 2



40-11.4. RELIEF VALVE INSTALLATION PROCEDURE (CONT)

FRAME 2

STEP	PROCEDURE
1.	Remove plugs from tube assembly nut (1) and relief valve elbow (2).
2.	Using 9/16 inch wrench on tube assembly nut (1) and 13/16 inch wrench on reducer (3), attach tube assembly nut to reducer.
3.	Using 7/16 inch wrench on elbow (2) and 9/16 inch wrench on nut (4), attach elbow (2) and nut (4) to reducer (3).
4.	Using 9/16 inch wrench, attach tube assembly nut (5) to elbow (2).
5.	Using 9/16 inch wrench, attach tube assembly nut (6) to accumulator tee (7).
6.	Using 9/16 inch wrench, attach tube assembly nut (8) to accumulator tee (7).
7.	Using 9/16 inch wrench, attach tube assembly nut (9) to pressure switch tee (10),

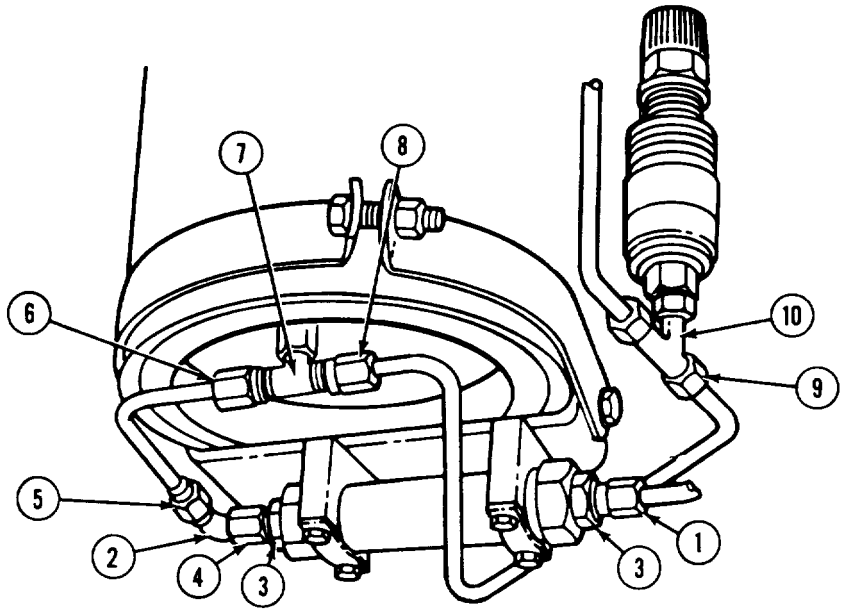
NOTE

Do following tasks if this procedure completes maintenance of the hydraulic system. If other maintenance must be done, make sure following tasks are completed after other maintenance.

Follow-on Maintenance Action Required:

Service turret hydraulic system filter (para 2-64).
Fill turret hydraulic reservoir (LO-12).
Bleed turret hydraulic system (para 1-22).
Check tube connections for oil leaks.

END OF TASK



40-11.5. ACCUMULATOR TEE REMOVAL PROCEDURE

TOOLS: 9/16 in. open end wrench (two)

SUPPLIES: Four plugs for accumulator, accumulator tee and accumulator nipple

PERSONNEL: One

REFERENCES: JPG for procedure to remove preformed packing

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Main Accumulator	FO-1	16

PRELIMINARY PROCEDURES: Remove tube assembly 11676595 (para 2-79.13)
Remove tube assembly 11676278 (para 2-79.13)
Remove tube assembly 11676552 (para 2-79.3)

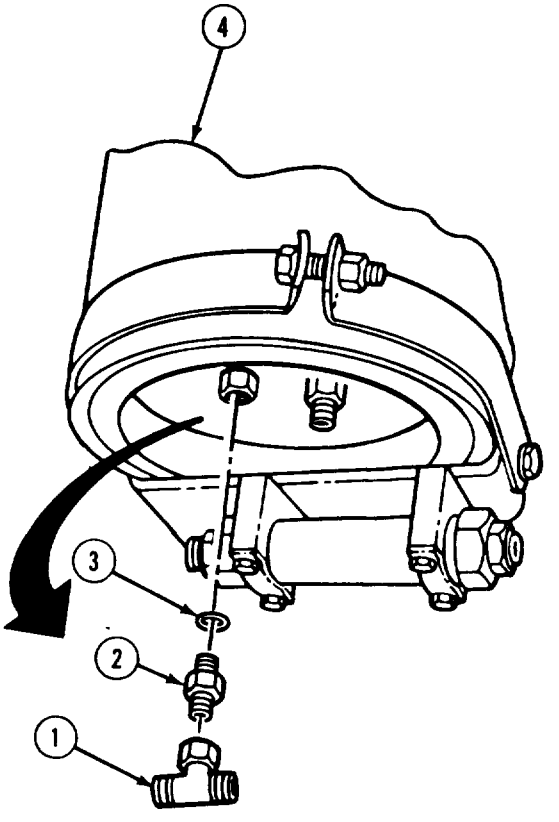
GENERAL INSTRUCTIONS:

CAUTION

Keep dirt from getting in tubing or parts: Dirt can damage equipment.

FRAME 1

STEP	PROCEDURE
1.	Using one wrench on accumulator tee (1) and other wrench on accumulator nipple (2), remove accumulator tee (1) from accumulator nipple (2).
2.	Using wrench, remove accumulator nipple (2) and preformed packing (3) from accumulator (4) (JPG).
3.	Put plugs in accumulator tee (1), accumulator nipple (2), and hole in accumulator (4).
	END OF TASK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40-11.6. ACCUMULATOR TEE INSTALLATION PROCEDURE

TOOLS: 9/16 in. open end wrench (two)

SUPPLIES: Preformed packing (MS 28778-4) (1 Required)
Hydraulic fluid (item 9, App. A)

PERSONNEL One

REFERENCES: JPG for procedure to install preformed packing

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Turret Traverse Lock	FO-3	7
Main Accumulator	FO-1	16

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED

GENERAL INSTRUCTIONS:

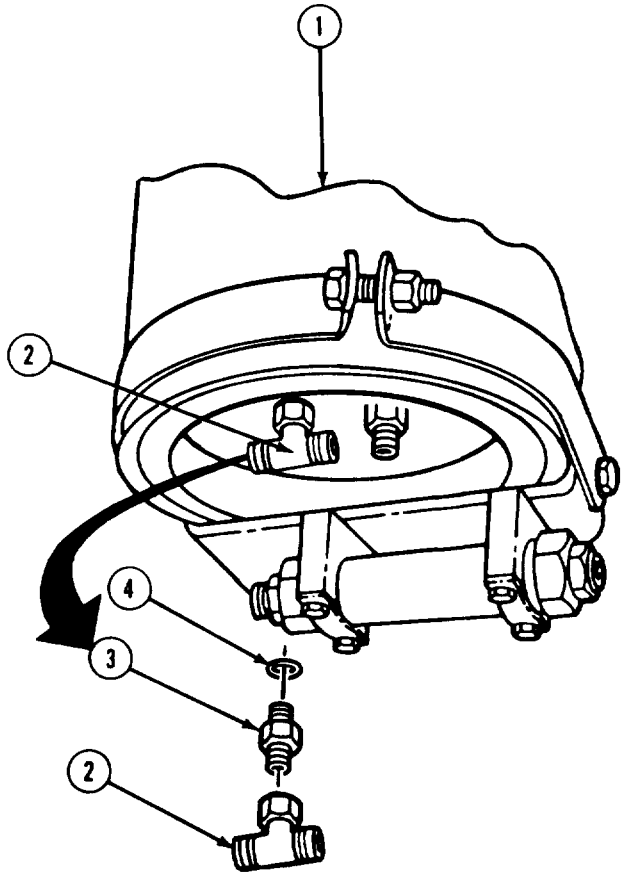
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

40-11.6. ACCUMULATOR TEE INSTALLATION PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
1.	Remove plugs from accumulator (1), accumulator tee (2) and accumulator nipple (3).
2.	Lightly coat new preformed packing (4) with hydraulic fluid.
3.	Put preformed packing (4) on nipple (3) (JPG).
4.	Using wrench, attach nipple (3) to accumulator (1).
5.	Using wrench, attach accumulator tee (2) to accumulator nipple (3).
	NOTE **Do following tasks if this procedure completes maintenance of hydraulic system. If other maintenance must be done, make sure following tasks are completed after other maintenance.** **Follow-on Maintenance Action Required:** **Install tube assembly 11676595 (para 2-79.14).** **Install tube assembly 11676278 (para 2-79.14).** **install tube assembly 11676552 (para 2-79.4).** **Service turret hydraulic system filter (para 2-64).** **Bleed turret hydraulic system (para 1-22).** **Check tube connections for oil leaks.**
	END OF TASK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40-12. ACCUMULATOR SUPPORT REMOVAL PROCEDURE

TOOLS: 7/16” socket (3/8” drive)
9/16” socket (3/8” drive)
3/8” drive ratchet
1-1/8” socket (3/4” drive)
3/4” drive ratchet

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedures to:
Manually traverse turret
Set turret traverse lock to LOCKED

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver’s Master Control Panel	FO-3	11
Gunner’s Control Box	FO-1	2
Turret Traverse Lock	FO-3	7
Main Accumulator	FO-1	16

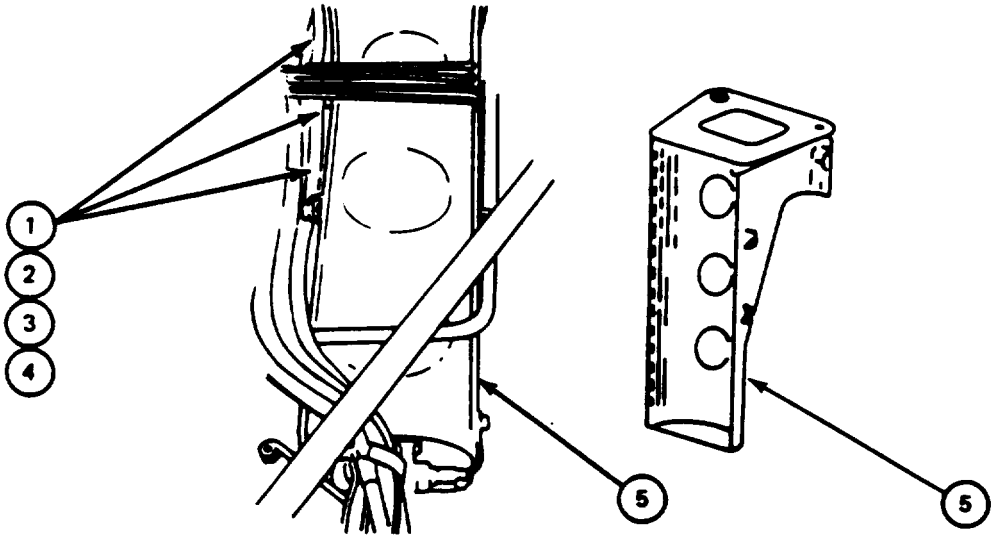
EQUIPMENT CONDITION: Driver’s master control panel MASTER BATTERY switch set to OFF
Gunner’s control box ELEV/TRAV POWER switch set to OFF

PRELIMINARY PROCEDURES:
Remove pressure gauge (para 40-4)
Remove tube assembly 10911687 (para 2-68)
Remove pressure gauge connector (para 40-6)
Remove pressure switch (para 40-8)
Remove pressure switch tee (para 40-10)
Remove tube assembly 10911706 (para 2-66)
Remove tube assembly 10911690 (para 2-68)
Remove main accumulator (para 40-2)

40-12. ACCUMULATOR SUPPORT REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Traverse turret until accumulator support can be reached from driver's compartment (TM-10).
2.	Set turret traverse lock to LOCKED (TM-10).
3.	Using 7/16" socket wrench, remove three screws (1), three lockwashers (2), and three washers (3) that attach three wiring harness clamps (4) to accumulator support (5). GO TO FRAME 2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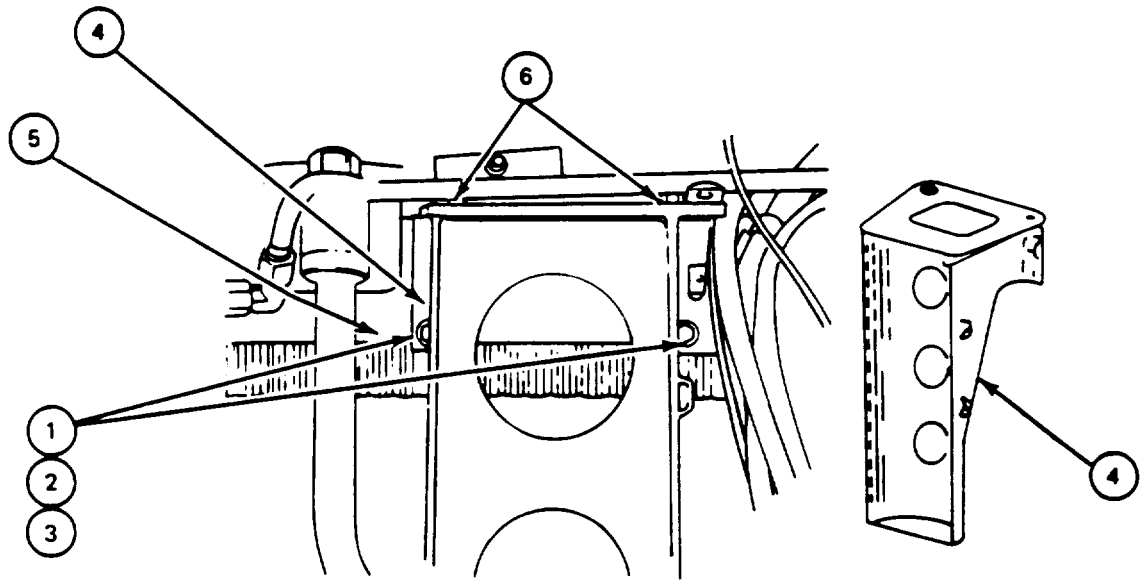
40-12. ACCUMULATOR SUPPORT REMOVAL PROCEDURE (CONT)

FRAME 2

Step	Procedure
1.	Using 9/16" socket wrench, remove two screws (1), two lockwashers (2), and two washers (3) that attach accumulator support (4) to turret (5).
2.	Using 1-1/8"' socket wrench, remove two bolts (6) that attach accumulator support (4) to turret (5).
3.	Carefully remove accumulator support (4).
	END OF TASK



40-13. ACCUMULATOR SUPPORT INSTALLATION PROCEDURE

TOOLS: 7/16” socket (3/8” drive)
9/16” socket (3/8” drive)
3/8” drive ratchet
1-1/8” socket (3/4” drive)
3/4” drive ratchet
3/4” drive torque wrench (0 to 500 foot-pounds)

PERSONNEL: One

REFERENCES: JPG for procedure to use torque wrench

EQUIPMENT LOCATION INFORMATION:

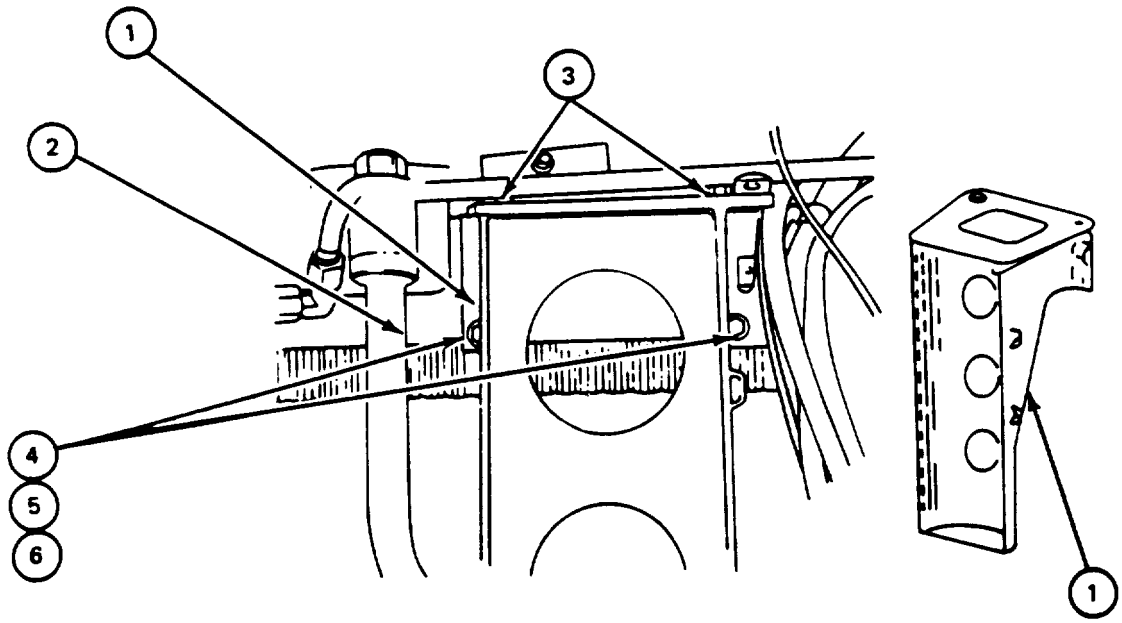
EQUIPMENT	FOLDOUT	CALLOUT
Driver’s Master Control	FO-3	11
Gunner’s Control Box	FO-1	2
Turret Traverse Lock	F0-3	7
Main Accumulator	FO-1	16

EQUIPMENT CONDITION: Driver’s master control panel MASTER BATTERY switch set to OFF
Gunner’s control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED

40-13. ACCUMULATOR SUPPORT INSTALLATION PROCEDURE (CONT)

FRAME 1

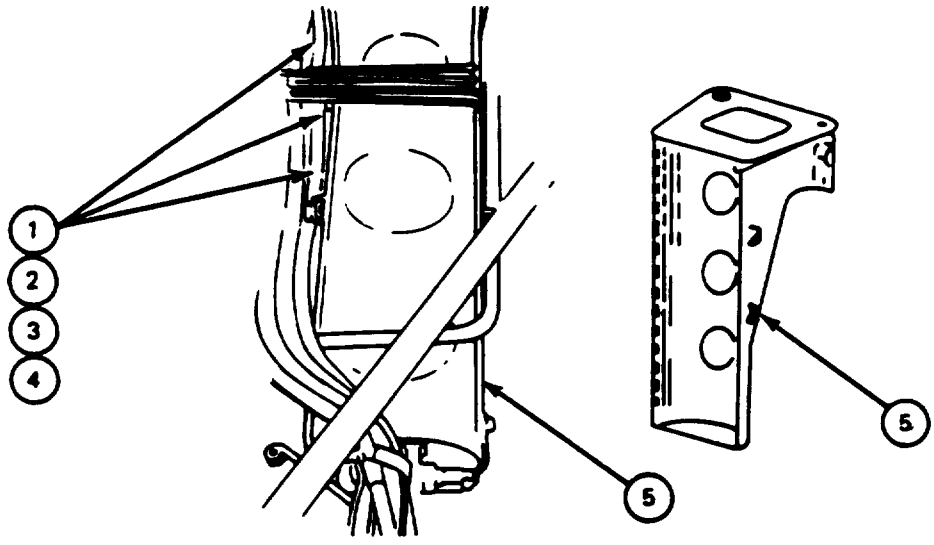
Step	Procedure
1.	Put accumulator support (1) in place on turret (2).
2.	Start two bolts (3) that attach accumulator support (1) to turret (2).
3.	Using 9/16" socket wrench, put in two screws (4), two lockwashers (5), and two washers (6) that attach accumulator support (1) to turret (2).
4.	Using 1-1/8" socket wrench, tighten two bolts (3) that attach accumulator support (1) to turret (2).
5.	Using torque wrench and 1-1/8" socket, torque two bolts (3) to between 300 and 350 foot-pounds (JPG).
	GO TO FRAME 2



40-13. ACCUMULATOR SUPPORT INSTALLATION PROCEDURE (CONT)

FRAME 2

Step	Procedure
1.	Using 7/16" socket wrench, put in three screws (1), three Iockwashers (2), and three washers (3) that attach three wiring harness clamps (4) to accumulator support (5).
	NOTE
	Follow-on Maintenance Action Required: Install main accumulator (para 40-3). Install pressure switch tee {para 40-11). Install pressure switch (para 40-9). Install pressure gauge connector (para 40-7). Install tube assembly 10911687 (para 2-69). Install pressure gauge (para 40-5).
	END OF TASK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40-14. ELEVATION SHUTOFF VALVE TEST PROCEDURE

PERSONNEL Two

REFERENCES: TM 9-2350-222-10 for procedures to:
Take gun out of travel lock
Traverse turret
Elevate and depress gun
Zero elevation quadrant
Set turret traverse lock to LOCKED and UNLOCKED

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Turret Traverse Lock	FO-3	7
Elevation Quadrant	FO-1	18
Azimuth Indicator	FO-1	6
Gunner's Control Handles	FO-1	25

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to UNLOCKED
Gun in travel lock
Azimuth indicator inner scale set to 3200 roils
Elevation quadrant zeroed using M1A1 gunner's quadrant (TM-14)

PRELIMINARY PROCEDURE: Install elevation shutoff valve (para 44-15)

GENERAL INSTRUCTIONS:

WARNING

Do not traverse turret or elevate 105-mm gun unless there is second soldier standing outside vehicle to warn personnel of moving gun. Personnel could be hurt.

NOTE

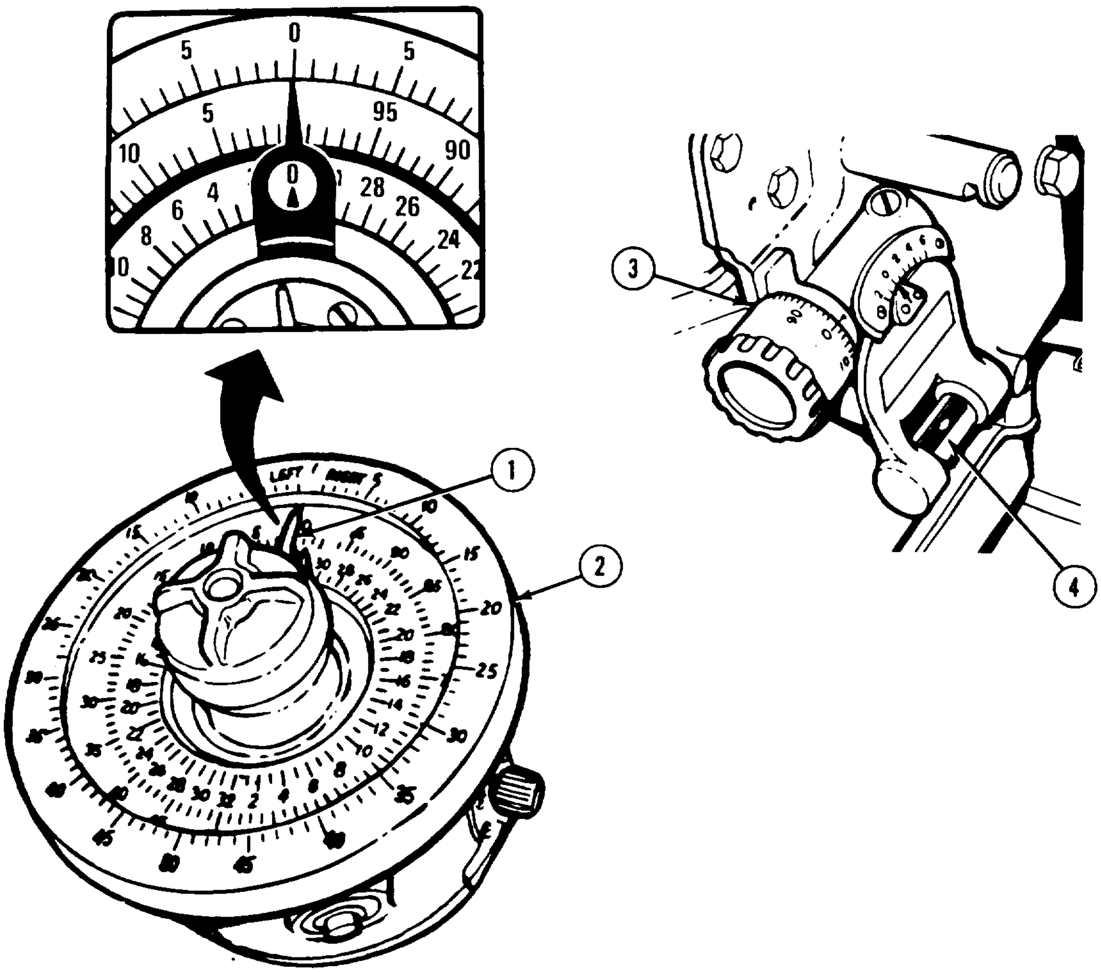
If normal indication is not obtained during test, remove and replace gasket or solenoid as required (para 40-16 and 40-17).

The deck clearance valve solenoid will move during this test and may be checked if required (para 45-2).

40-14. ELEVATION SHUTOFF VALVE TEST PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE	NORMAL INDICATION	PROBABLE FAULT
1.	Take gun out of travel lock (TM-10).	. . .	. . .
2.	Set driver's master control panel MASTER BATTERY switch to ON.	MASTER BATTERY indicator lamp lights.	.
3.	Set gunner's control box ELEV/TRAV POWER switch to ON.	ELEV/TRAV POWER indicator lamp lights.	
		NOTE Do not push down on palm switches when doing step 4.	
4.	Using gunner's control handles, try to elevate 105-mm gun (TM-10).	105-mm gun should not move	Bad solenoid
5.	Using gunner's control handles, traverse turret to left while watching pointers (1) on azimuth indicator (2) for normal indication (TM-10).	Azimuth indicator (2) indicate 0 mils.	
6.	Using red scale, set -177 mils on elevation quadrant (3).	. .	
7.	Using gunner's control handles, depress gun to -177 mils (TM-10).	Elevation quadrant (3) bubble in level vial (4) is centered.	.
8.	Using gunner's control handles, continue to traverse turret left to 1900 mils while watching azimuth indicator (2) (TM-10).	Gun remains at -177 mils until turret reaches 1815 mils (indicated on azimuth indicator) (2); then gun automatically elevates to between 0 and 17 mils (indicated on elevation quadrant (3)).	Bad solenoid
	GO TO FRAME 2		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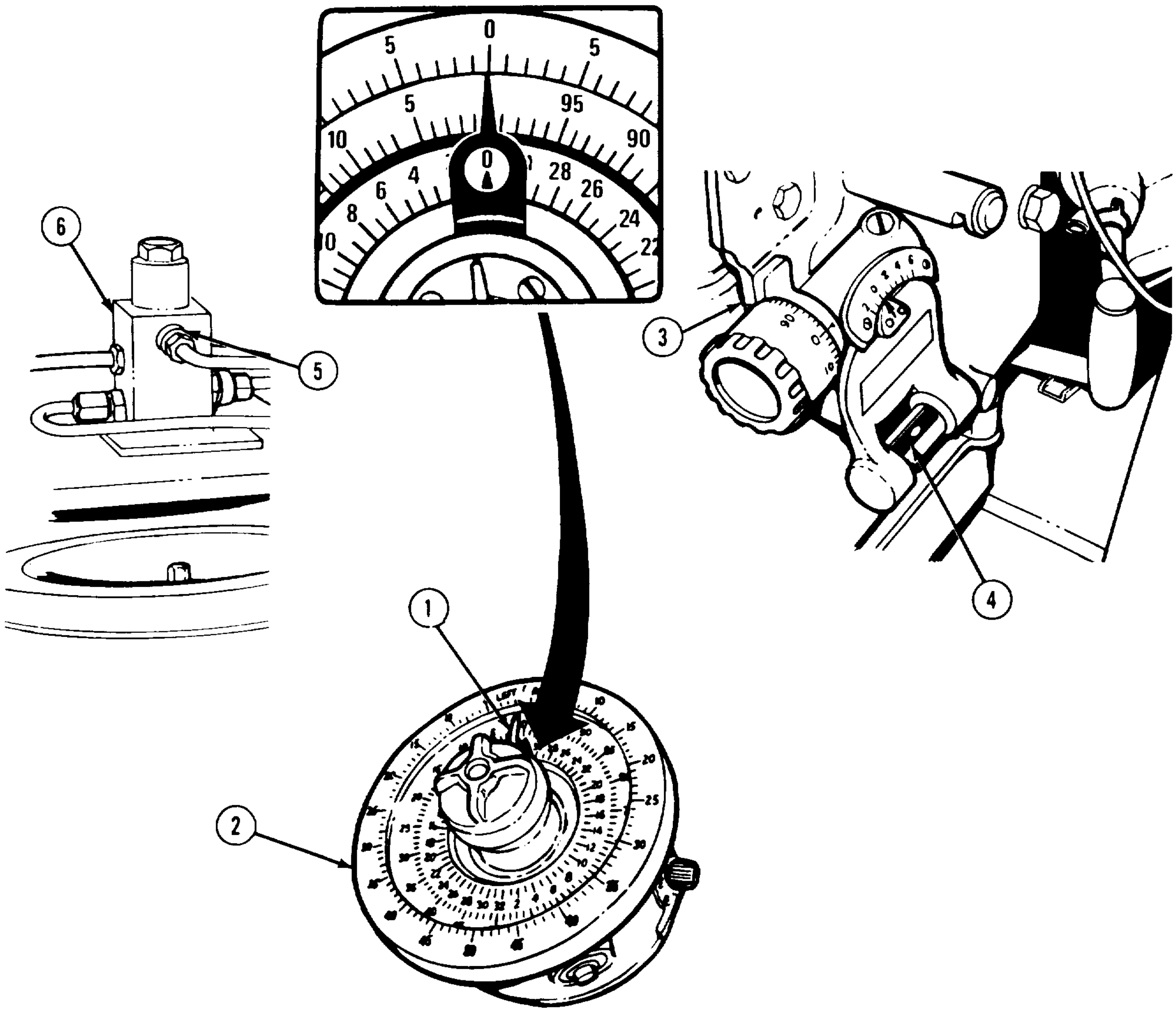
40-14. ELEVATION SHUTOFF VALVE TEST PROCEDURE (CONT)

FRAME 2

STEP	PROCEDURE	NORMAL INDICATION	PROBABLE FAULT
1.	Using gunner's control handles, traverse turret to right while watching pointers (1) on azimuth indicator (2) (TM-10).	Azimuth indicator (2) indicates 0 mils.	. . .
2.	Using red scale set, -177 mils on elevation quadrant (3).	. . .	. . .
3.	Using gunner's control handles, depress gun to -177 mils (TM-10).	Elevation quadrant (3) bubble in level vial (4) is centered.	. . .
4.	Using gunner's control handles, continue to traverse turret right to 1900 mils while watching azimuth indicator (2) (TM-10).	Gun remains at -177 mils until turret reaches 1815 mils (indicated on azimuth indicator) (2); then gun automatically elevates to between 0 and 17 mils (indicated on elevation quadrant) (3).	Bad solenoid
5.	Repeat all steps of frame 1 and steps 1 thru 4 of frame 2. Check for hydraulic fluid at gasket (5) of elevation shutoff valve (6).	One drop or less of hydraulic fluid for every five cycles when elevating gun between interference zone of rear deck.	Bad gasket
6.	Using gunner's control handles, traverse turret to rear while watching azimuth indicator (2) (TM-10).	Azimuth indicator (2) indicates approximately 1600 mils.	.
7.	Set turret traverse lock to LOCKED (TM-10).	. . .	. . .
8.	Set gunner's control box ELEV/TRAV POWER switch to OFF.	. . .	. . .
9.	Set driver's master control panel MASTER BATTERY switch to OFF.		. . .
	END OF TASK		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40-15. ELEVATION SHUTOFF VALVE REMOVAL PROCEDURE

TOOLS: 7/16 in. combination wrench
11/16 in. combination wrench

SUPPLIES: Protective plugs (6 req'd)
Container
Lint-free cloths (item 15, App. A)

PERSONNEL: One

REFERENCES: JPG for procedures to:
Disconnect electrical connectors
Remove preformed packing

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Turret Traverse Lock	FO-3	7
Main Accumulator	FO-1	16

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED

PRELIMINARY PROCEDURES: Remove tube assembly 11654815 (para 2-79.5)
Remove tube assembly 11674062 (para 2-79.11
Remove tube assembly 11654814 (para 2-79.5)

GENERAL INSTRUCTIONS:

CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

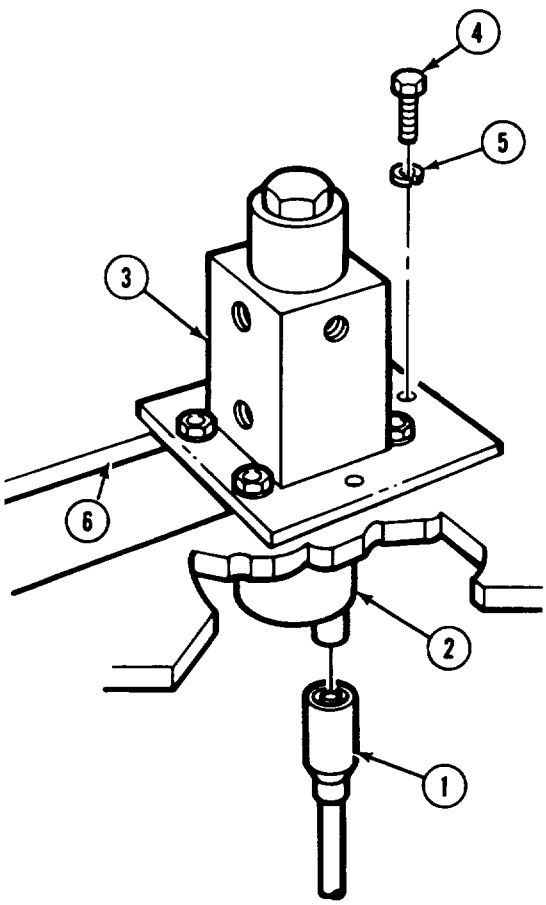
NOTE

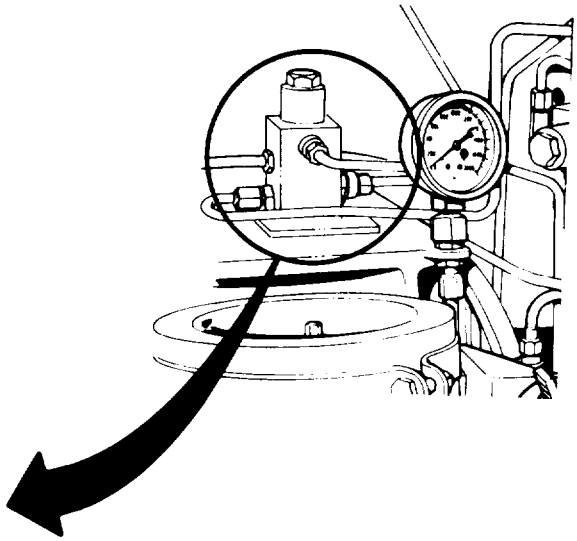
Use container and lint-free cloths for oil spillage.

40-15. ELEVATION SHUTOFF VALVE REMOVAL PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
1.	Disconnect electrical connector (1) from solenoid (2) of elevation shutoff valve (3) (JPG).
2.	Using 7/16-inch wrench, remove two screws (4) and two lockwashers (5) that attach elevation shutoff valve (3) to accumulator support (6).
3.	Remove elevation shutoff valve (3).
	GO TO FRAME 2

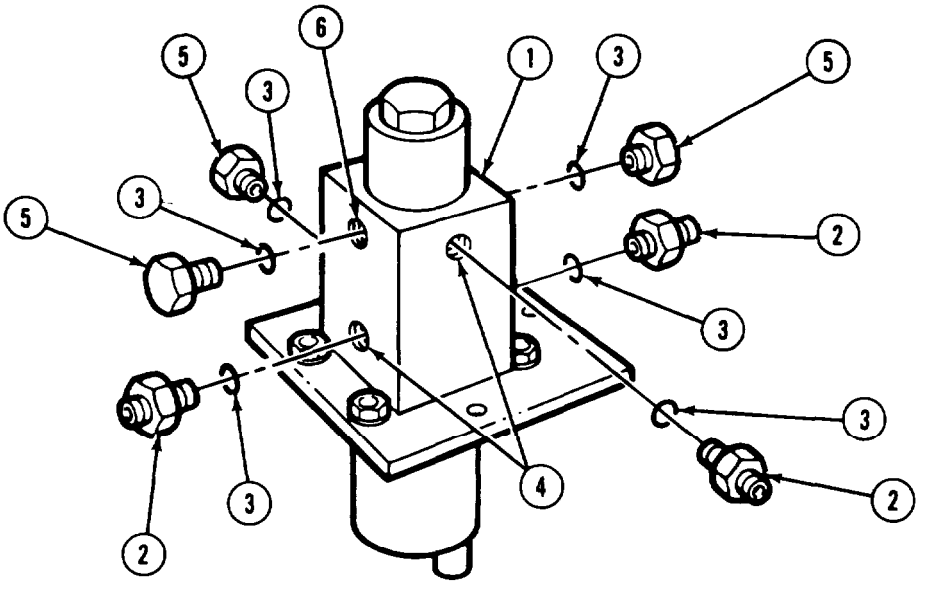




40-15. ELEVATION SHUTOFF VALVE REMOVAL PROCEDURE (CONT)

FRAME 2

STEP	PROCEDURE
	NOTE **Do steps 1 thru 5 if elevation shutoff valve (1) is to be replaced.**
1.	Using 11/ 16 inch wrench, remove three adapters (2) and three packings (3) from three ports (4) of elevation shutoff valve (1).
2.	Remove three packings (3) from three adapters (2) (JPG).
3.	Using 11/16 inch wrench, remove three plugs (5) and three packings (3) from remaining three ports (6) of elevation shutoff valve (1).
4.	Remove three packings (3) from three plugs (5) (JPG).
5.	Put six protective plugs in six ports of elevation shutoff valve (1).
	END OF TASK



40-16. ELEVATION SHUTOFF VALVE INSTALLATION PROCEDURE

TOOLS: 7/16 in. combination wrench
11/16 in. combination wrench

SUPPLIES: Hydraulic fluid (item 9, App. A)
Packings MS28778-4 (6 req'd)

PERSONNEL: One

REFERENCES: JPG for procedures to:
Connect electrical connectors
Install packing
LO 9-2350-222-12 for procedure to fill hydraulic system

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Turret Traverse Lock	FO-3	7
Main Accumulator	FO-1	16

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED

GENERAL INSTRUCTIONS:

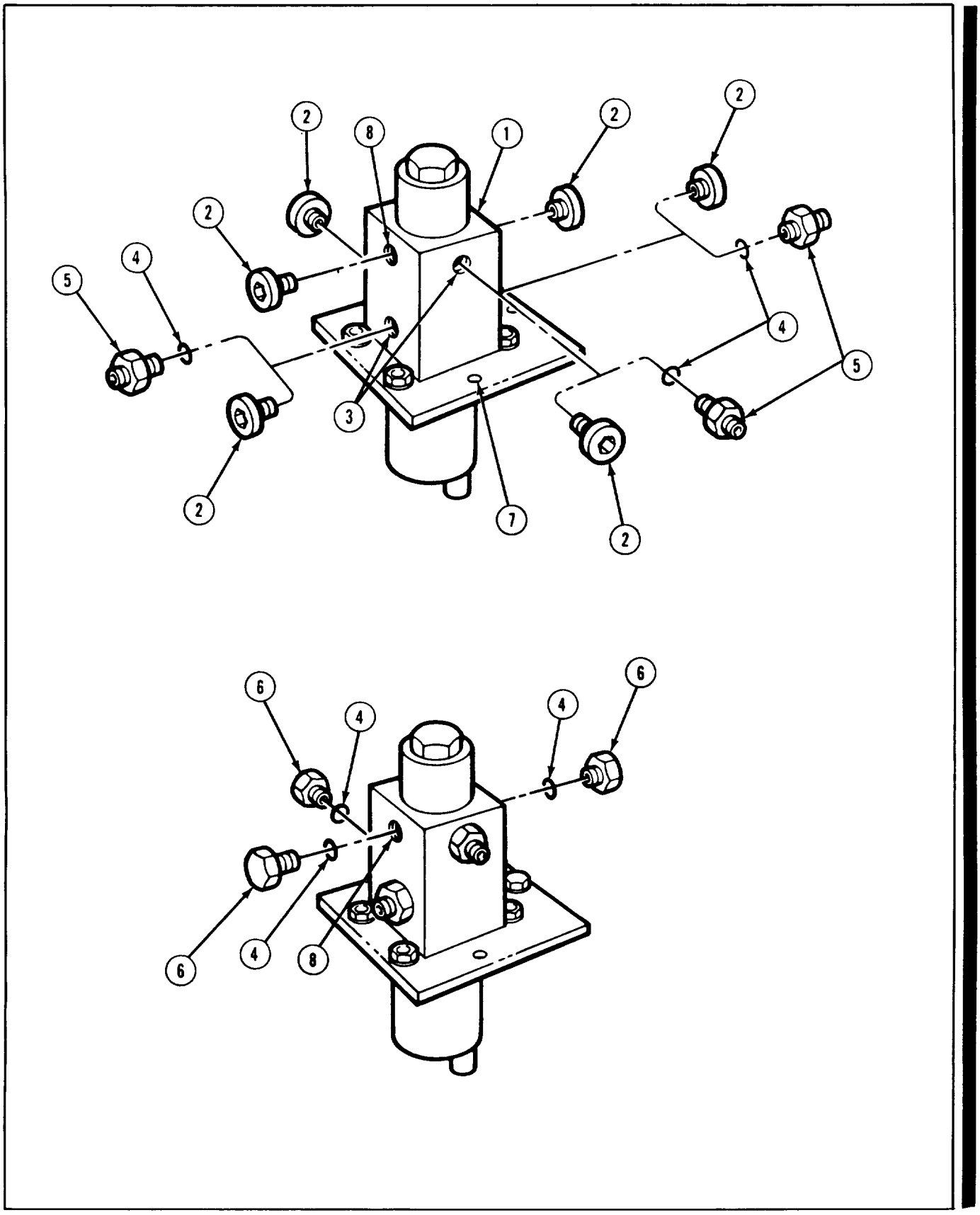
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

40-16. ELEVATION SHUTOFF VALVE INSTALLATION PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
	NOTE **Do steps 1 thru 8 if elevation shutoff valve (1) is to be installed.**
1.	Remove three protective plugs (2) from three ports (3) of elevation shutoff valve (1).
2.	Lightly coat three packings (4) with hydraulic fluid.
3.	Put three packings (4) on three adapters (5) (JPG).
	NOTE **Adapters (5) and plugs (6) must be installed in correct ports for elevation shutoff valve (1) to work properly.**
4.	Using 11/16 inch wrench, put adapter (5) in top port (3) in-line with screw hole (7). Using 11/16 inch wrench, put remaining two adapters (5) in two ports (3).
5.	Remove three remaining protective plugs (2) from three ports (8) of elevation shutoff valve (1).
6.	Lightly coat three packings (4) with hydraulic fluid.
7.	Put three packings (4) on three plugs (6) (JPG).
8.	Using 11/16 inch wrench, put three plugs (6) in remaining three ports (8) of elevation shutoff valve (1).
	GO TO FRAME 2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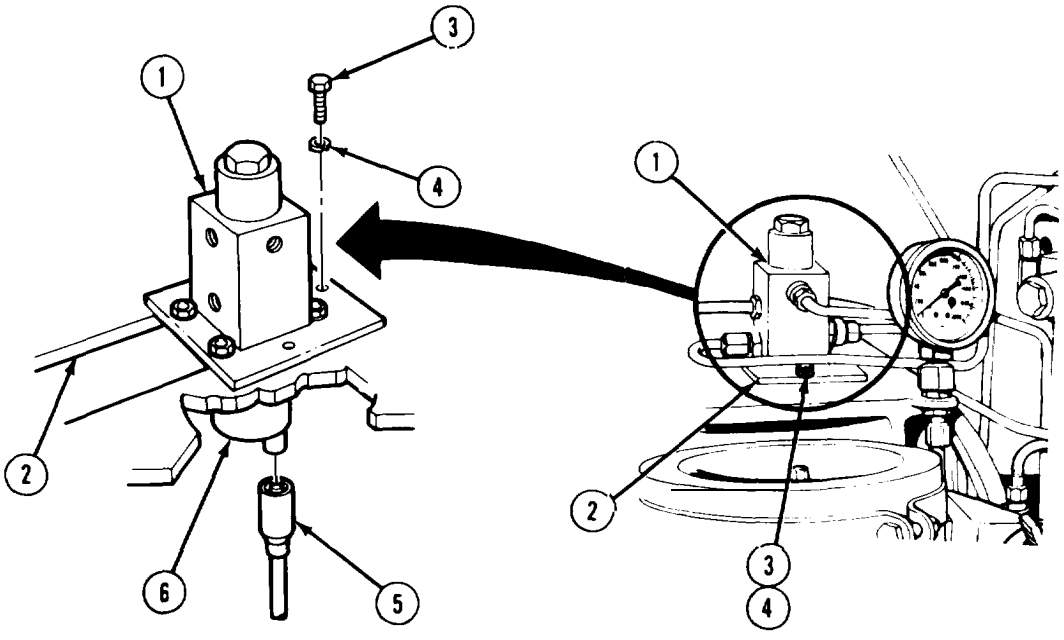
40-16. ELEVATION SHUTOFF VALVE INSTALLATION PROCEDURE (CONT)

FRAME 2

STEP	PROCEDURE
1.	Using 7/16 inch wrench, attach elevation shutoff valve (1) to accumulator support (2) with two screws (3) and two lockwashers (4).
2.	Connect electrical connector (5) to solenoid (6) on elevation shutoff valve (1) (JPG).
	NOTE Do following tasks if this procedure completes maintenance of hydraulic system. If other maintenance must be dons, make sure following tasks are completed after other maintenance. Follow-on Maintenance Action Required: Install tube assembly 11654814 (para 2-79.6). Install tube assembly 11674062 (para 2-79.12). Install tube assembly 11654815 (para 2-79.6). Fill turret hydraulic system (LO). Bleed air from hydraulic system (para 1-22). Test elevation shutoff valve (para 44-14). **END OF TASK**



40-17. SOLENOID REMOVAL PROCEDURE

TOOLS: 5/32 in. hex head socket (3/8 in. drive)
1/8 in. socket head screw key (allen wrench)
3/8 in. combination wrench
3/8 in. drive ratchet
12 in. extension (3/8 in. drive)

PERSONNEL One

REFERENCES: JPG for procedures to disconnect electrical connectors

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Turret Traverse Lock	FO-3	7
Main Accumulator	FO-1	16

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED

PRELIMINARY PROCEDURES: Remove Tube Assembly 11654815 (para 2-79.5)
Remove Tube Assembly 11674062 (para 2-79.11)
Remove Tube Assembly 11654814 (para 2-79.5)

GENERAL INSTRUCTIONS:

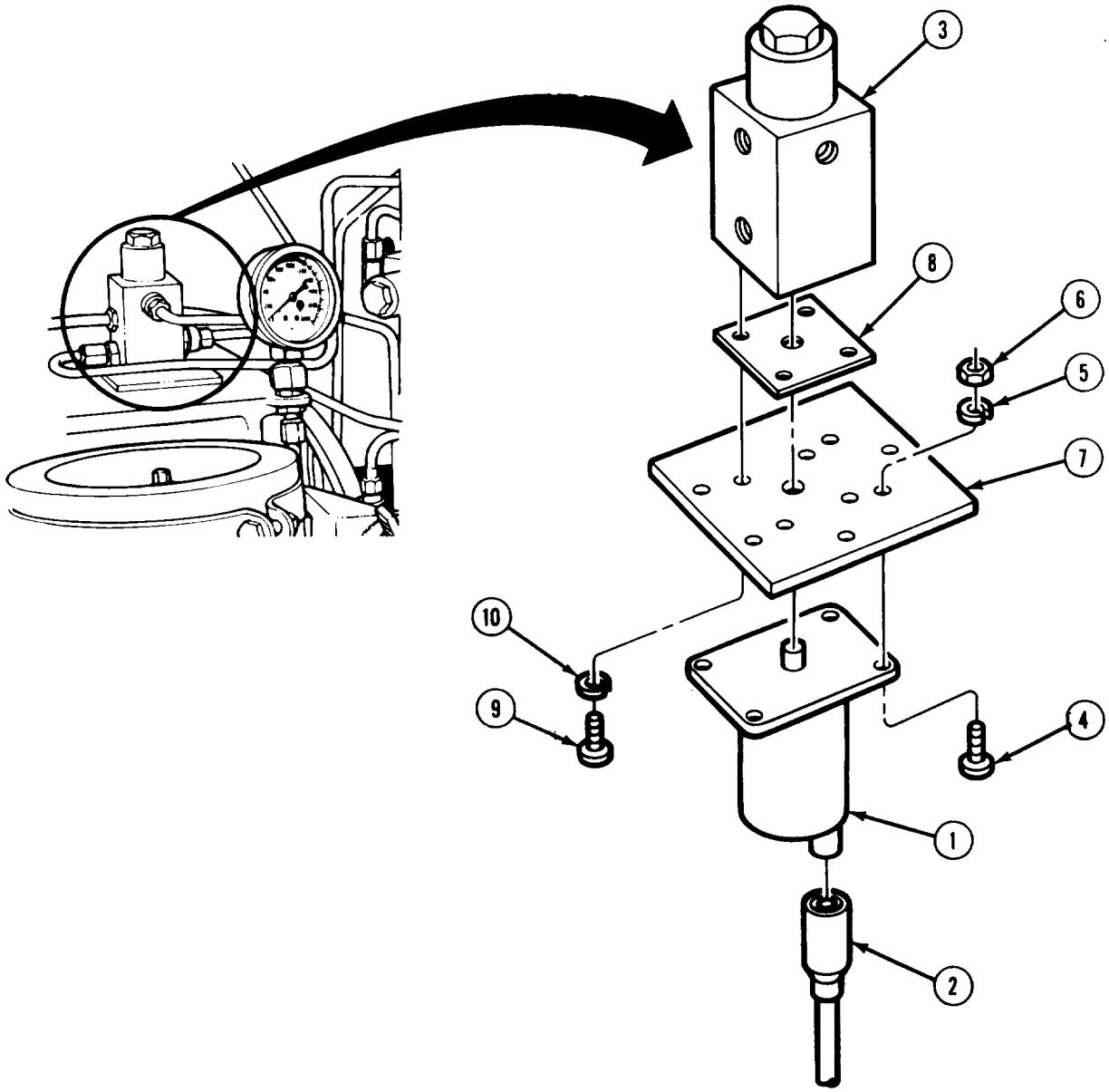
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

40-17. SOLENOID REMOVAL PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
	NOTE Do steps 1 and 2 to replace solenoid (1).
1.	Disconnect electrical connector (2) from solenoid (1) of elevation shutoff valve (3) (JPG).
2.	Using 5/32 inch hex head socket wrench with extension and combination wrench, remove four screws (4), four lockwashers [5), and four nuts (6) that attach solenoid (1) to spacer (7), Remove solenoid (1).
	NOTE Do steps 3 and 4 to replace gasket (8).
3.	Using 1/8 inch allen wrench, remove four screws (9) and four lockwashers (10) that attach spacer (7) and gasket (8) to elevation shutoff valve (3).
4.	Remove spacer (7) and gasket (8) from elevation shutoff valve (3).
	END OF TASK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40-18. SOLENOID INSTALLATION PROCEDURE

TOOLS: **5/32** in. hex head socket (3/8 in. drive)
1/8 in. socket head screw-key (allen wrench)
3/8 in. combination wrench
1/8 in. hex head socket (3/8 in. drive)
3/8 in. drive torque wrench (0 to 150 inch-pounds)
3/8 in. drive ratchet
12 in. extension (3/8 in. drive)

SUPPLIES Gasket, 10916205

PERSONNEL One

REFERENCES: JPG for procedures to:
Connect electrical connectors
Use torque wrench

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Turret Traverse Lock	FO-3	7
Main Accumulator	FO-1	16

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED

GENERAL INSTRUCTIONS:

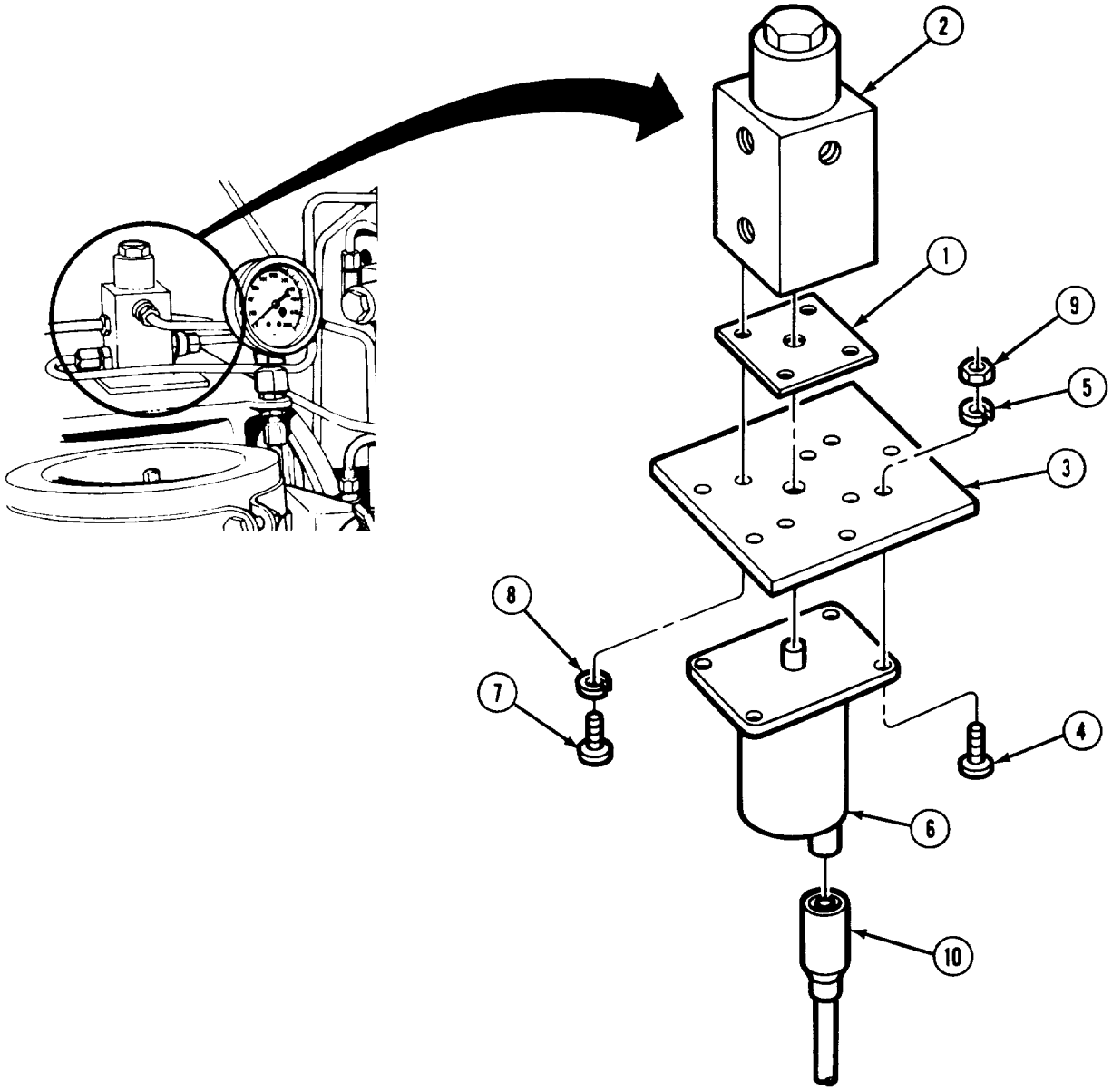
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

40-18. SOLENOID INSTALLATION PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
	NOTE Do steps 1 thru 3 to replace gasket.
1.	Put new gasket (1) on elevation shutoff valve (2).
2.	Using 1/8 inch allen wrench, attach spacer (3) and gasket (1) to elevation shutoff valve (2) with four screws (4) and four lockwashers (5).
3.	Using torque wrench and extension, torque four screws (4) to between 24 and 36 inch-pounds (JPG).
	NOTE Do steps 4 and 5 to replace solenoid (6).
4.	Using 5/32 in. hex head socket wrench with extension and combination wrench, attach solenoid (6) to spacer (3) with four screws (7), four lockwashers (8), and four nuts (9).
5.	Connect electrical connector (10) to solenoid (6) of elevation shutoff valve (2) (JPG).
	NOTE Do following tasks **if this procedure completes maintenance of hydraulic system. If other maintenance must be done, make sure following task is completed after other maintenance.** **Follow-on Maintenance Action Required:** **Install Tube Assembly 11674062 (para 2-79.12)** **Install Tuba Assembly 11654815 (para 2-79.6)** **Test elevation shutoff valve (para 44-14).**
	END OF TASK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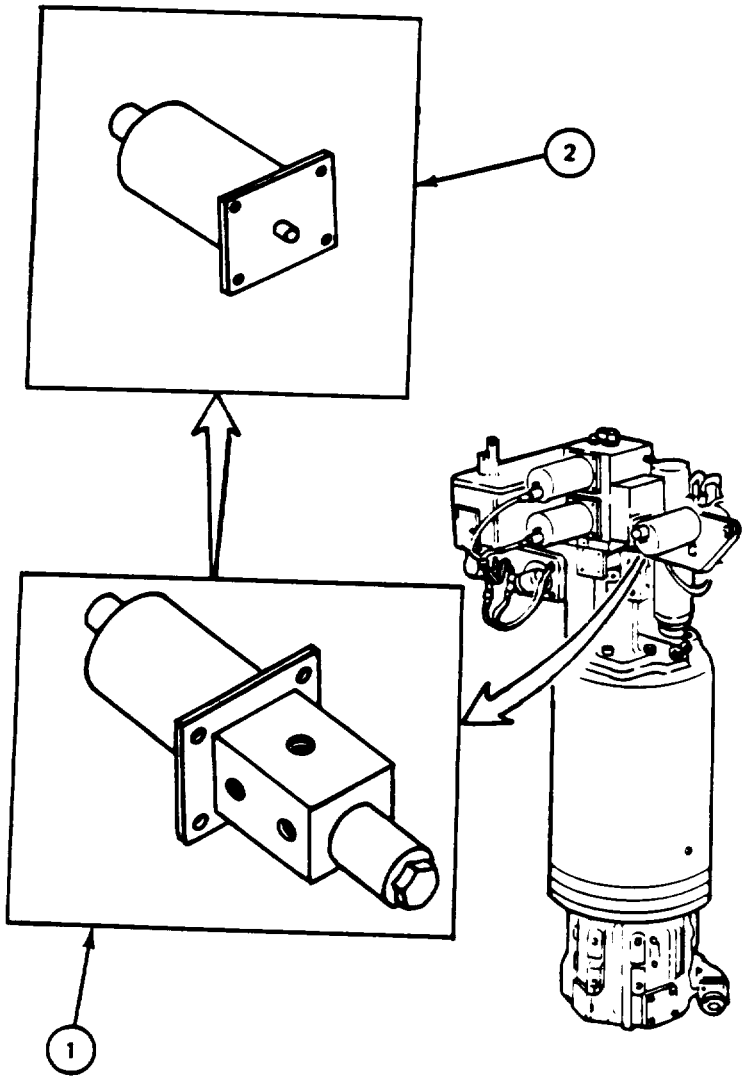
CHAPTER 41

DECK CLEARANCE VALVE

41-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Tasks: Test	Removal	Installation	Disassembly	Assembly
1. Deck Clearance Valve	41-2	41-3	41-4	41-5	41-6
2. Solenoid		41-7	41-8		



41-2. DECK CLEARANCE VALVE TEST PROCEDURE

PERSONNEL: Two

REFERENCES: TM 9-2350-222-10 for procedures to:
Take gun out of and put gun in travel lock
Traverse turret
Elevate and depress gun
TM 9-1290-200-14 for procedure to use gunner's quadrant

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7
Elevation Quadrant	FO-1	18
Azimuth Indicator	FO-1	6
Gunner's Control Box	FO-1	2
Gunner's Control Handles	FO-1	25

EQUIPMENT CONDITION: Turret traverse lock set to UNLOCKED
Elevation quadrant zeroed using M 1A 1 gunner's quadrant (TM-14)
Azimuth indicator inner scale set to 3200 roils

PRELIMINARY PROCEDURES: Install deck clearance valve solenoid (para 41-4)

GENERAL INSTRUCTIONS:

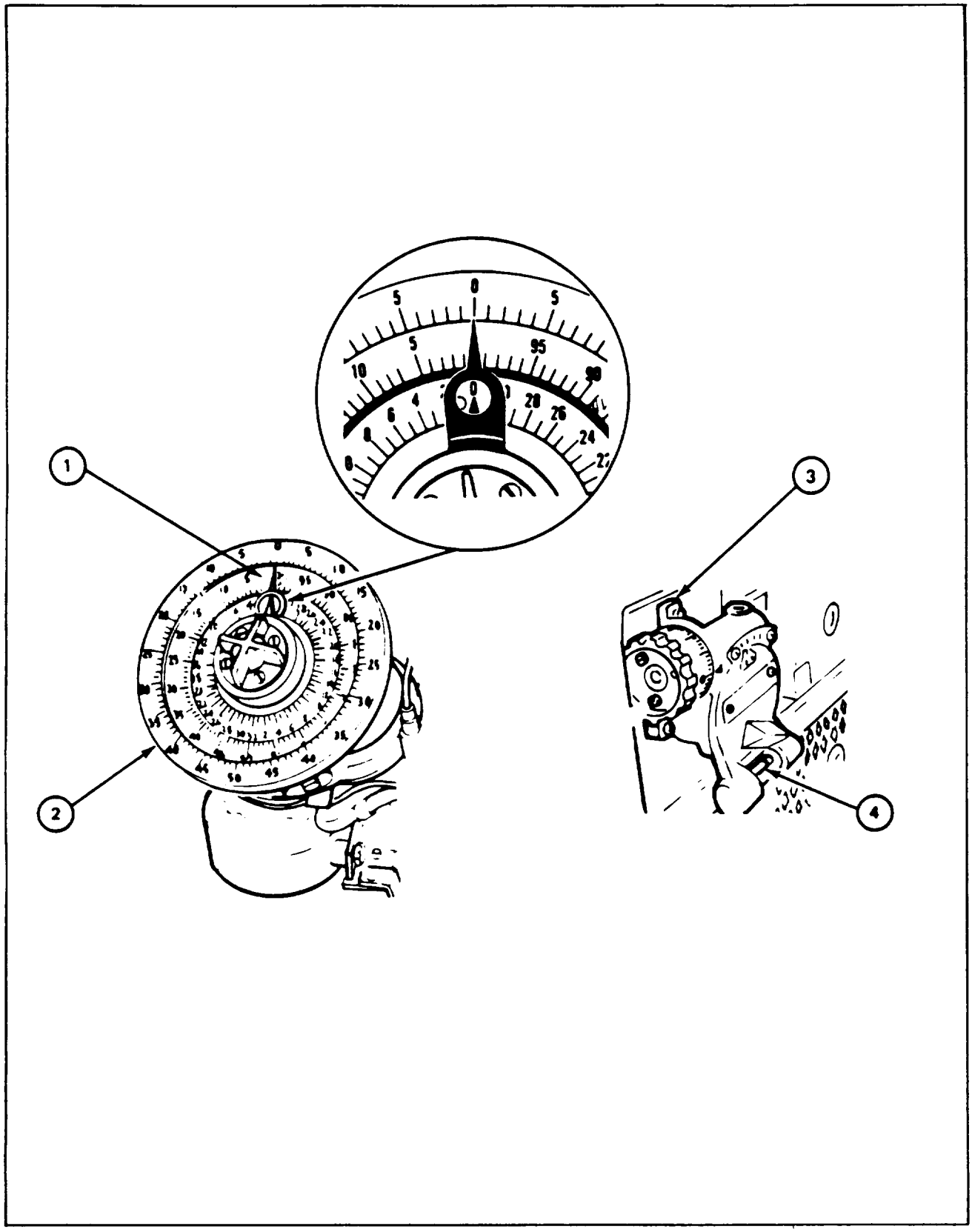
WARNING

Do not traverse turret or elevate 165-mm gun unless there is a second soldier standing outside vehicle to warn personnel of moving gun.

41-2. DECK CLEARANCE VALVE TEST PROCEDURE (CONT)

FRAME 1

Step	Procedure	Normal Indication
1.	Set driver's master control panel MASTER BATTERY switch to ON.	MASTER BATTERY lamp lights
2.	Set gunner's control panel ELEV/TRAV POWER switch to ON.	ELEV/TRAV POWER lamp lights
3.	Using gunner's control handles. traverse turret to front until azimuth indicator pointers (1) reach zero (TM-10).	Azimuth indicator (2) indicates 0 mils
4.	Using red scale, set -177 mils on elevation quadrant (3).	
5.	Using gunner's control handles, depress gun to -177 mils (TM-10).	Elevation quadrant (3) bubble in level vial (4) is centered.
6.	Traverse turret (left) while watching azimuth indicator (TM- 10).	Gun remains at -177 mils until turret reaches 1600 mils as indicated on azimuth indicator (2), then gun automatically elevates to between 0 and 17 mils as indicated on elevation quadrant.
7.	Using gunner's control handles, traverse turret to front (right) until pointers (1) on azimuth indicator return to zero. GO TO FRAME 2	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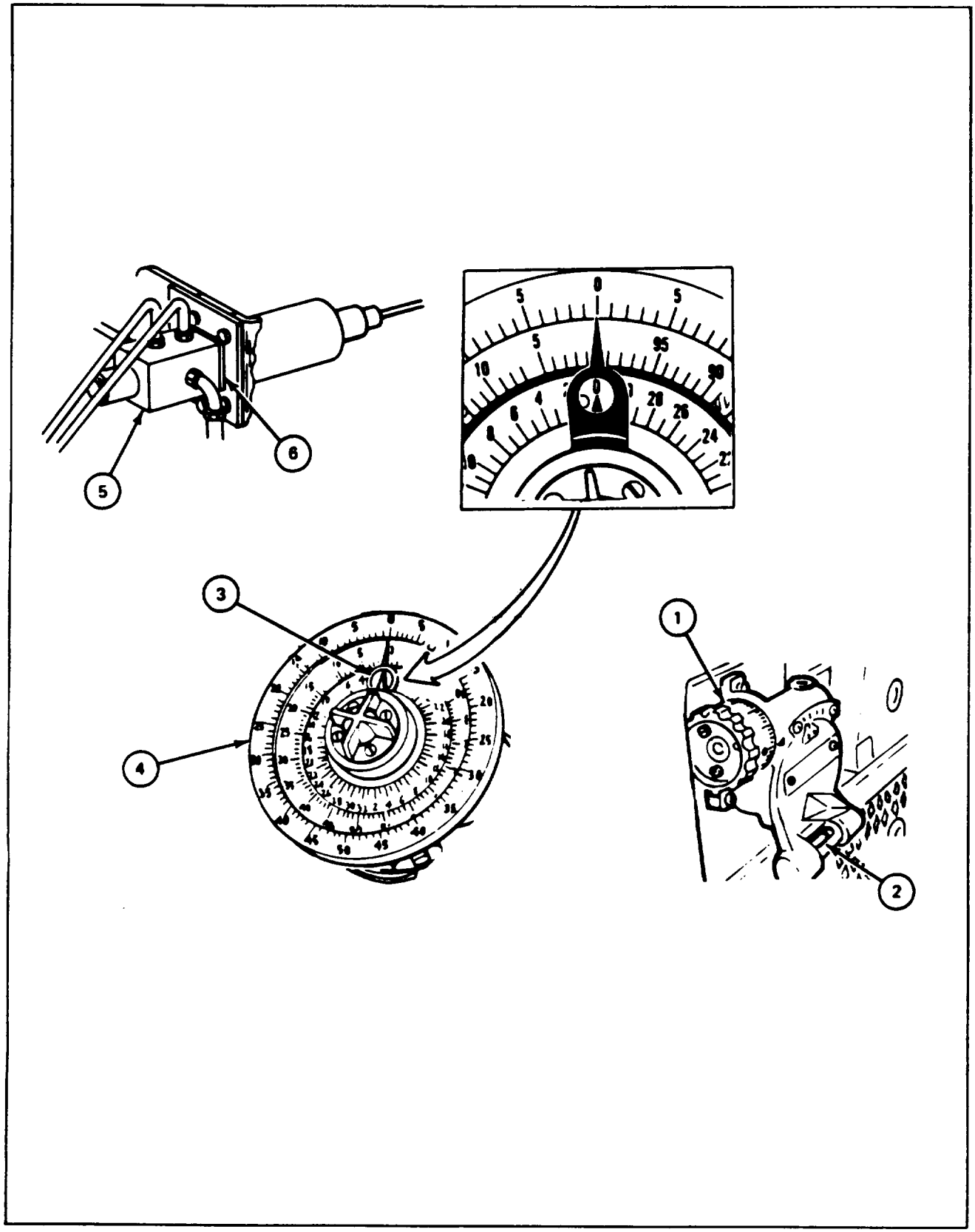
41-2. DECK CLEARANCE VALVE TEST PROCEDURE (CONT)

FRAME 2

Step	Procedure	Normal Indication
1.	Using red scale, set -177 mils on elevation quadrant (1).	
2.	Using gunner's manual elevating handle, depress gun until bubble in level vial (2) on elevation quadrant (1) is centered (TM-10).	
3.	Using gunner's control handles, traverse turret while observing pointers (3) on azimuth indicator (4).	Gun remains at -177 mils until turret reaches 1600 mils as indicated on azimuth indicator (4), then automatically elevates to between 0 and 17 mils as indicated on elevation quadrant (1).
	NOTE Deck clearance valve (5) may leak one drop of hydraulic fluid for every five cycles of elevating gun between interference zone.	
4.	Repeat frames 1 and 2 five times. If valve leaks more than one drop of hydraulic fluid, replace valve gasket (6) (para 41-7 and 41-8).	One drop or less of hydraulic fluid
5.	Using gunner's control handles, traverse turret to rear and place gun in travel lock (TM-10).	
6.	Set gunner's control box ELEV/TRAV POWER switch to OFF.	
7.	Set driver's master control panel MASTER BATTERY switch to OFF.	
	END OF TASK	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41-3. DECK CLEARANCE VALVE REMOVAL PROCEDURE

TOOLS: 7/ 16" combination wrench
9/ 16" combination wrench
5/8” combination wrench
11/16” combination wrench

SUPPLIES: Lint-free cloths (item 15, App. A)
Caps
Plugs

PERSONNEL: One

REFERENCES: JPG for procedures to:
Disconnect electrical connectors
Remove preformed packings

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver’s Master Control Panel	FO-3	11
Gunner’s Control Box	FO-1	2
Turret Traverse Lock	FO-3	7
Power Pack	FO-1	15

EQUIPMENT CONDITION: Driver’s master control panel MASTER BATTERY switch set to OFF
Gunner’s control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED

GENERAL INSTRUCTIONS:

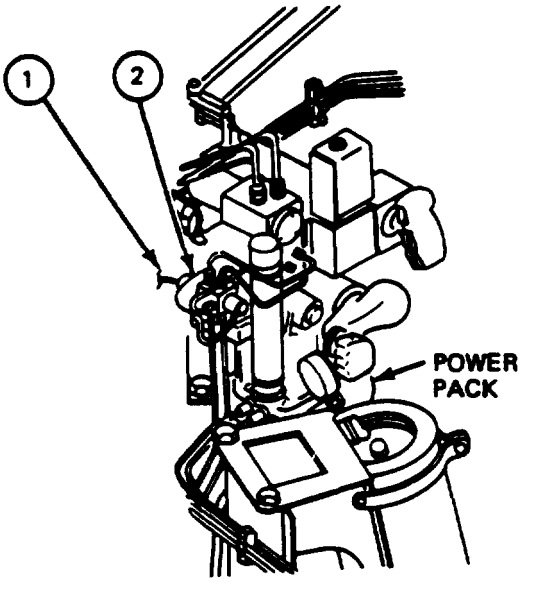
NOTE

Use Iint-free cloths to keep hydraulic parts clean. Use caps and plugs to close tubes and ports.

41-3. DECK CLEARANCE VALVE REMOVAL PROCEDURE (CONT)

FRAME 1

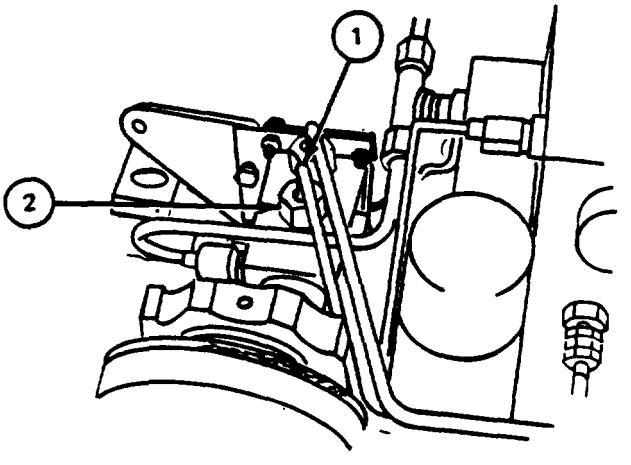
Step	Procedure
	WARNING Before removing hydraulic tubes or parts, hydraulic system pressure must be lowered to 0 psi. Hydraulic fluid under pressure can hurt you.
1.	Lower hydraulic system pressure to 0 psi (para 1-18).
2.	Using hands, disconnect electrical connector (1) from deck clearance valve solenoid (2) (JPG).
	GO TO FRAME 2



41-3. DECK CLEARANCE VALVE REMOVAL PROCEDURE (CONT)

FRAME 2

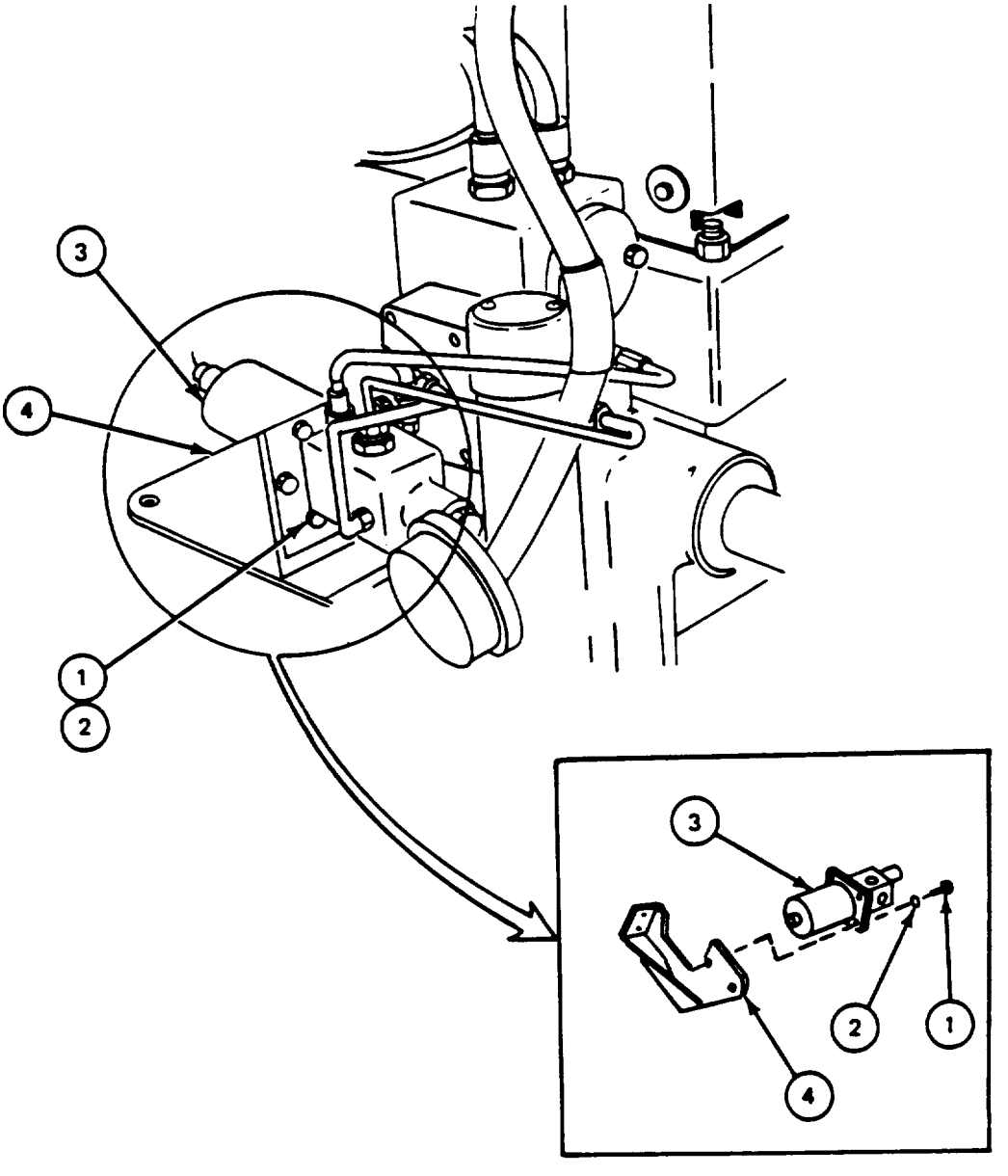
Step	Procedure
1.	Using 5/8” wrench, disconnect six tubes (1) from valve (2). GO TO FRAME 3



41-3. DECK CLEARANCE VALVE REMOVAL PROCEDURE (CONT)

FRAME 3

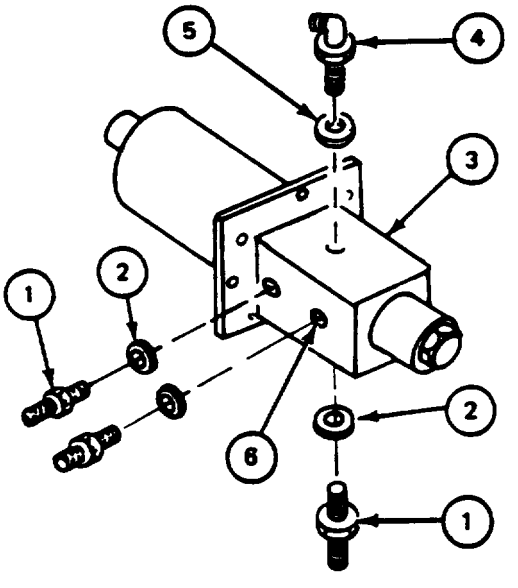
Step	Procedure
1.	Using **7/16**" wrench, remove two screws (1) and two lockwashers (2) that attach deck clearance valve (3) to bracket (4). GO TO FRAME 4



41-3. DECK CLEARANCE VALVE REMOVAL PROCEDURE (CONT)

FRAME 4

Step	Procedure
1.	Using 11/16” wrench, remove adapters (1) and packings (2) from fitting (3) (JPG). Throw packings away.
2.	Using 11/16" wrench, remove elbow (4) and packing (5) from fitting (3) (JPG). Throw packing away.
3.	Using hands, put protective plugs in ports (6) on fitting (3).
	END OF TASK



41-4. DECK CLEARANCE VALVE INSTALLATION PROCEDURE

TOOLS: 7/16“ combination wrench
11/16" combination wrench
5/ 8“ combination wrench
9/16 combination wrench

SUPPLIES: Lint-free cloths (item 15, App. A)
Preformed packing (six) (MS 28778-4)

PERSONNEL: One

REFERENCES: JPG for procedures to
Install preformed packings
Connect electrical connectors

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver’s Master Control Panel	FO-3	11
Gunner’s Control Box	FO-1	2
Turret Traverse Lock	FO-3	7
Power Pack	FO-1	**15**

EQUIPMENT CONDITION: Driver’s master control panel MASTER BATTERY switch set to OFF
Gunner’s control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED

GENERAL INSTRUCTIONS:

CAUTION

All hydraulic parts being assembled must be clean. Dirt can damage hydraulic parts.

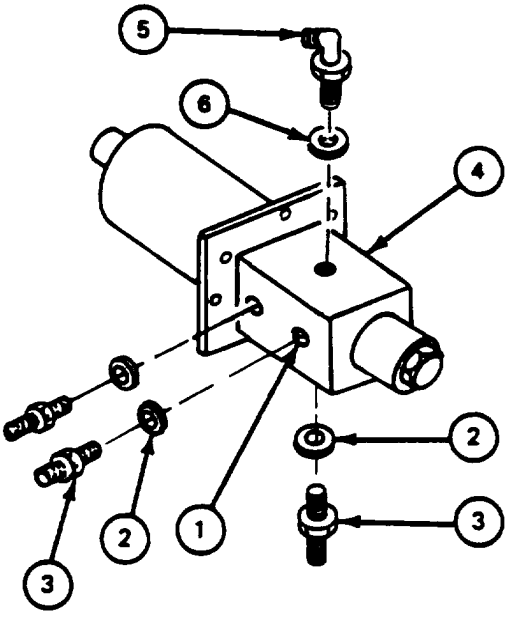
NOTE

Use lint-free cloths to keep hydraulic parts and fittings clean.

41-4. DECK CLEARANCE VALVE INSTALLATION PROCEDURE (CONT)

FRAME 1

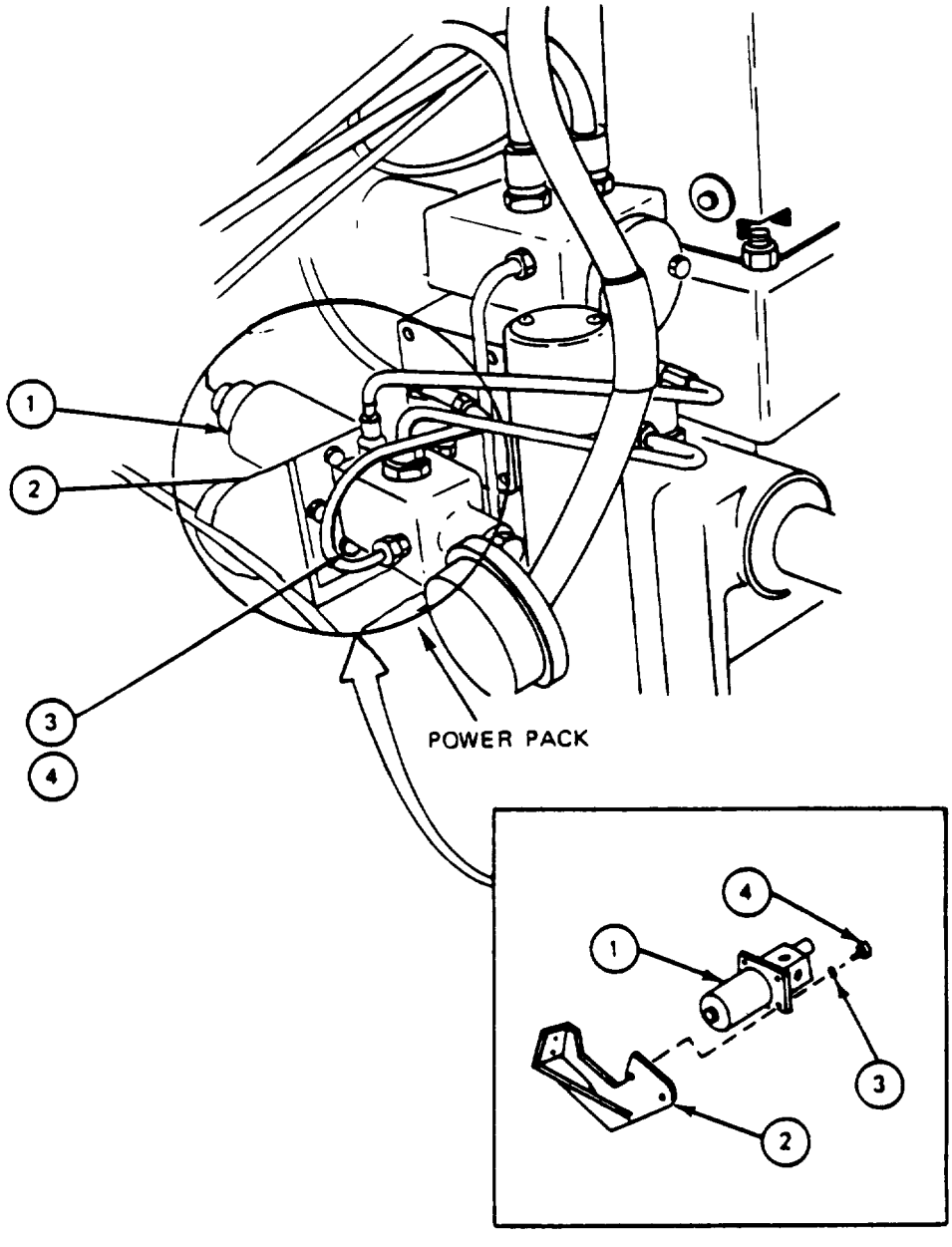
Step	Procedure
1.	Using hands, remove six protective plugs from fitting ports (l).
2.	Using 11/16” wrench, install five packings (2) and four adapters (3) in ports CE, CD, EE, D4, and ED in fitting (4) (JPG).
3.	Using 11/16”’ wrench, install elbow (5) and packing (6) in port A on fitting (4) (JPG).
	GO TO FRAME 2



41-4. DECK CLEARANCE VALVE INSTALLATION PROCEDURE (CONT)

FRAME 2

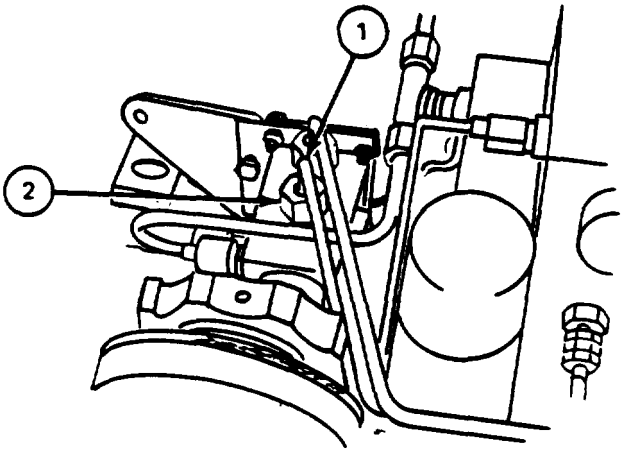
Step	Procedure
1.	Using 7/16" wrench, attach deck clearance valve (1) to bracket (2) with two lockwashers (3) and two screws (4). GO TO FRAME 3



41-4. DECK CLEARANCE VALVE INSTALLATION PROCEDURE (CONT)

FRAME 3

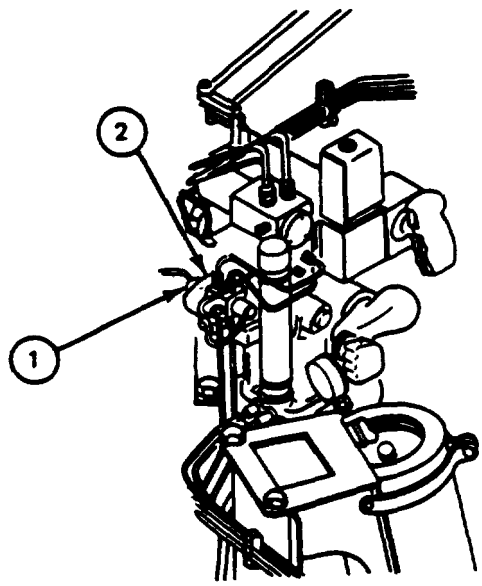
Step	Procedure
1.	Using 5/8" wrench, connect six tubes (1) to deck clearance valve (2). GO TO FRAME 4



41-4. DECK CLEARANCE VALVE INSTALLATION PROCEDURE (CONT)

FRAME 4

Step	Procedure
1.	Connect electrical connector (1) to deck clearance valve solenoid (2) (JPG).
	NOTE
	Follow-on Maintenance Action Required:
	Bleed turret hydraulic system (para 1-22).
	Test deck clearance valve (para 41-2).
	END OF TASK



41-5. DECK CLEARANCE VALVE DISASSEMBLY PROCEDURE

TOOLS: 1/8” socket head screw key (Allen wrench)
5/32" socket head screw key (Allen wrench)
3/ 8" combination wrench
13/16” combination wrench

SUPPLIES: Lint-free cloths (item 15, App. **A)**

PERSONNEL: One

PRELIMINARY PROCEDURES: Remove deck clearance valve (para 41-3)

GENERAL INSTRUCTIONS:

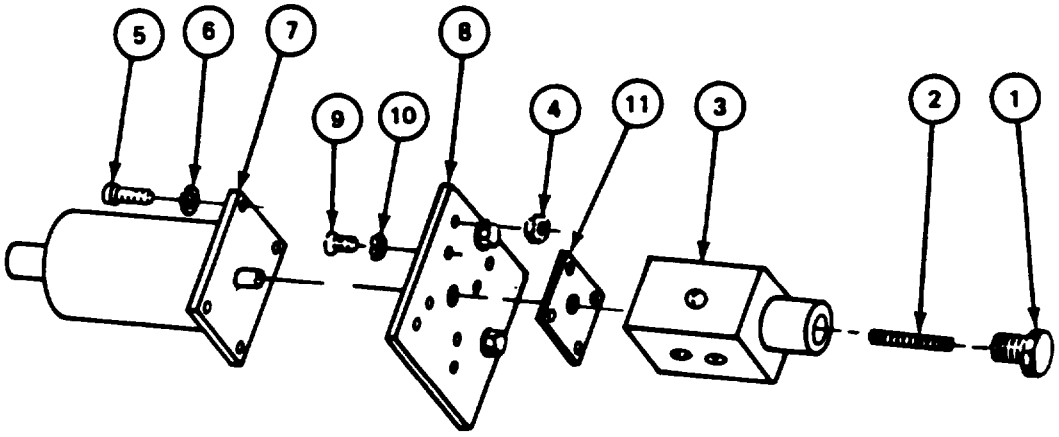
CAUTION

Use cloths to keep parts clean. Dirt can damage equipment.

41-5. DECK CLEARANCE VALVE DISASSEMBLY PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Using 13/16” combination wrench, remove plug (1) and spring (2) from fitting (3).
	CAUTION When removing solenoid (7), be careful not to damage spool inside fitting (3). Do not remove spool.
2.	Using 5/32" Allen wrench and 3/8” combination wrench, remove four nuts (4), four screws (5), and four lockwashers (6) that attach solenoid (7) to spacer (8).
3.	Using 1/8" Allen wrench, remove four screws (9), and four lockwashers (10) that attach spacer (8) and gasket (11) to fitting (3).
	END OF TASK



41-6. DECK CLEARANCE VALVE ASSEMBLY PROCEDURE

TOOLS: 3/8" combination wrench
13/16“ combination wrench
1 /8” socket head screw key (Allen wrench)
5/32“ socket head screw key (Allen wrench)
3/8" drive torque wrench (0 to 150 inch-pounds)
1/8" hex head socket (3/8” drive)

SUPPLIES: Gasket (10916205)
Lint-free cloths (item 15, App. A)

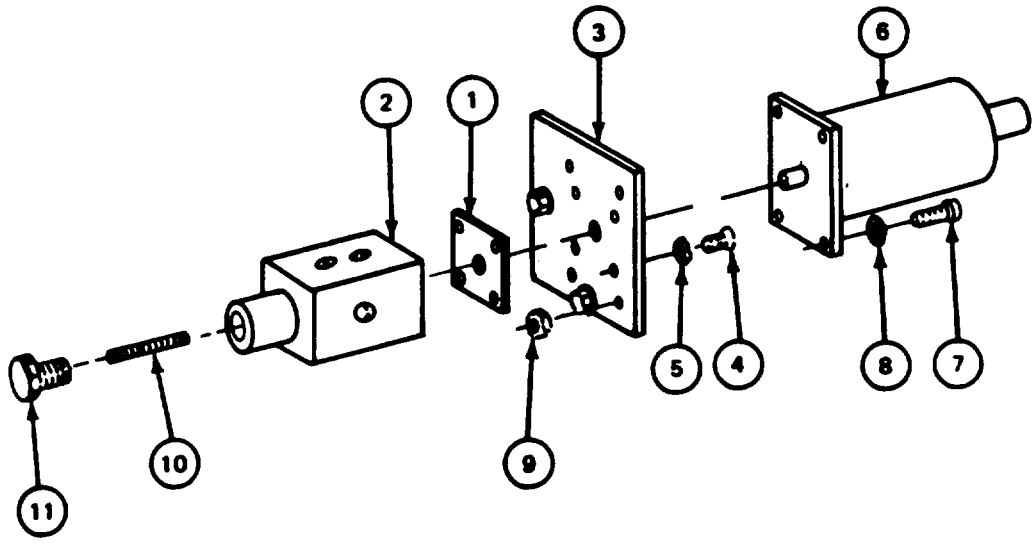
PERSONNEL: One

REFERENCES: JPG for procedure to use torque wrench

41-6. DECK CLEARANCE VALVE ASSEMBLY PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Using 1/8" Allen wrench, attach gasket (1) and fitting (2) to spacer (3) with four screws (4) and four Iockwashers (5).
2.	Using torque wrench and hex head socket, torque four screws (4) to between 24 and 36 inch-pounds (JPG).
3.	Using 5/32" Allen wrench and 3/8” wrench, attach solenoid (6) to spacer (3) with four screws (7), four lockwashers (8), and four nuts (9).
4.	Using 13/16" wrench, secure spring (10) in fitting (2) with plug (11).
	END OF TASK



41-7. SOLENOID REMOVAL PROCEDURE

TOOLS: 3/8” open end wrench
1‘’ open end wrench
1/8” socket head screw key (Allen wrench)
5/32” socket head screw key (Allen wrench)

PERSONNEL: One

REFERENCES: JPG for procedure to disconnect electrical connectors

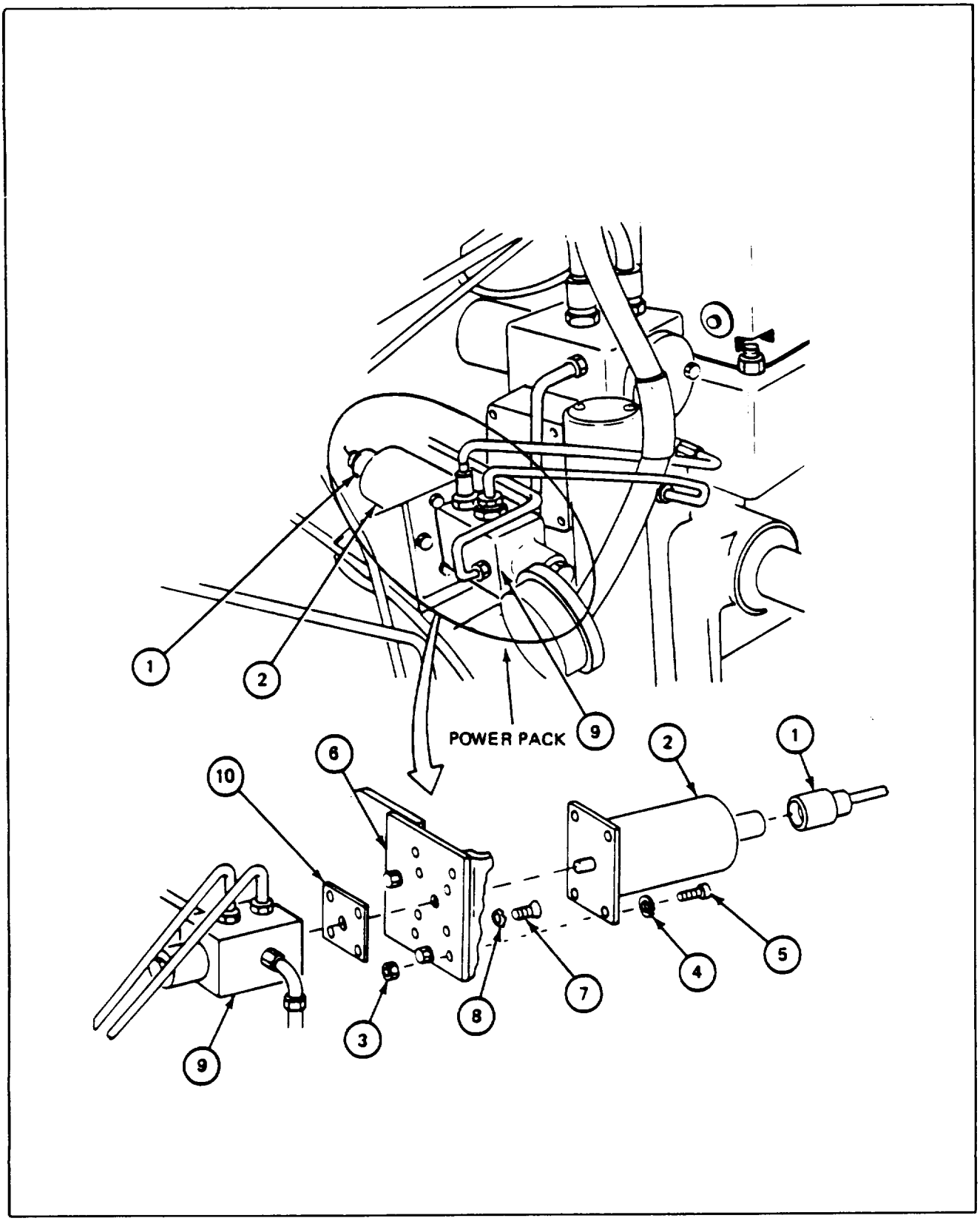
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver’s Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7
Power Pack	FO-1	15

EQUIPMENT CONDITION: Driver’s master control panel MASTER BATTERY switch set to OFF
Turret traverse lock set to LOCKED

FRAME 1

Step	Procedure
	WARNING Before removing hydraulic tubes or parts, hydraulic system pressure must be lowered to O psi. Hydraulic fluid under pressure can hurt you.
1.	Lower hydraulic system pressure to 0 psi (para 1-18).
2.	Disconnect electrical connector (1) from solenoid (2) (JPG).
3.	Using 5/32" Allen wrench and open end wrench, remove four nuts (3), four lockwashers (4), and four socket head screws (5) holding solenoid (2) to spacer (6). Remove solenoid.
4.	Using 1/8” Allen wrench, remove four screws (7) and four lockwashers (8) holding deck clearance valve (9) to spacer (6).
5.	Separate valve (9) from spacer (6). Remove gasket (10).
	END OF TASK


1
2
POWER PACK
9
10
6
2
1
4
5
7
8
3
9

41-8. SOLENOID INSTALLATION PROCEDURE

TOOLS: 3/8'' open end wrench
1/8" socket head screw key (Allen wrench)
5/32" socket head screw key (Allen wrench)
3/8" drive torque wrench (0 to 50 foot-pounds)

PERSONNEL: One

REFERENCES: JPG for procedure to connect electrical connectors

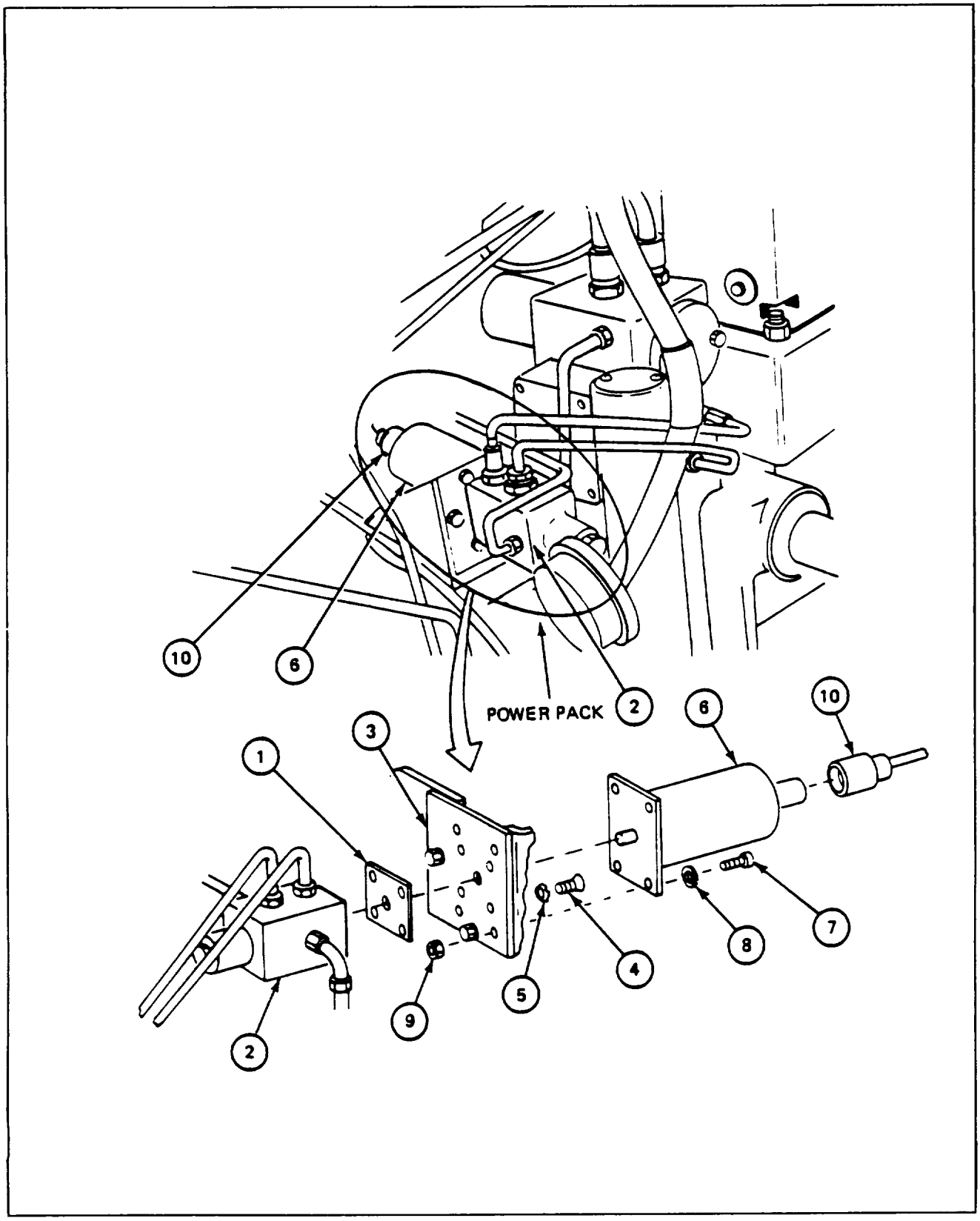
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7
Power Pack	FO-1	15

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Turret traverse lock set to LOCKED

FRAME 1

Step	Procedure
1.	Put new gasket (1) on deck clearance valve (2). Using 1/8" Allen wrench, attach valve to spacer (3) with four screws (4) and four Iockwashers (5).
2.	Using torque wrench, torque four screws (4) to between two and three foot-pounds.
3.	Using 5/32" Allen wrench and open end wrench, attach solenoid (6) to spacer (3) with four screws (7), four lockwashers (8) and four nuts (9).
4.	Connect electrical connector (10) to solenoid (6) (JPG).
	NOTE Follow-on Maintenance Action Required: Do deck clearance valve test procedure (para 41 -2).
	END OF TASK

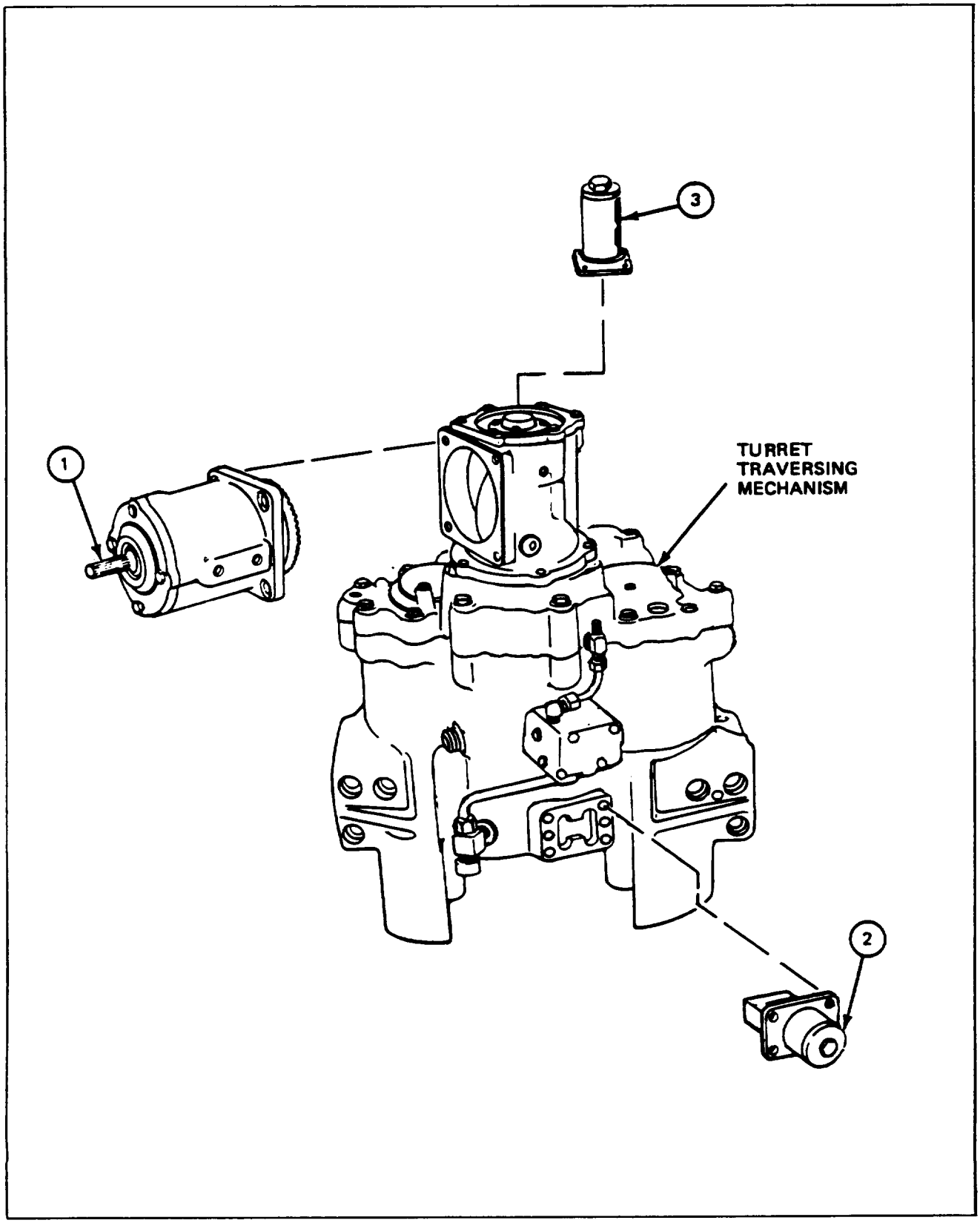

10
6
POWER PACK
2
6
10
3
1
7
8
4
5
9
2

CHAPTER 42

TURRET TRAVERSING MECHANISM

42-1. MAINTENANCE PROCEDURES INDEX

Equipment Item		Tasks						
		Inspection	Test	Adjustment	Removal	Installation	Disassembly	Assembly
1.	No-Bak	. . .	42-3.1 . . .		42-2	42-3		
2.	Pin Lock	42-4	42-5 . . .		42-6	42-7	42-8	42-9
3.	Anti-backlash Mechanism	42-10 . . .		42-13	42-11	42-12	42-11	42-12


3
1
TURRET
TRAVERSING
MECHANISM
2

42-2. NO-BAK REMOVAL PROCEDURE

TOOLS: 9/16" combination wrench

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7
Turret Traversing Mechanism	FO-2	12

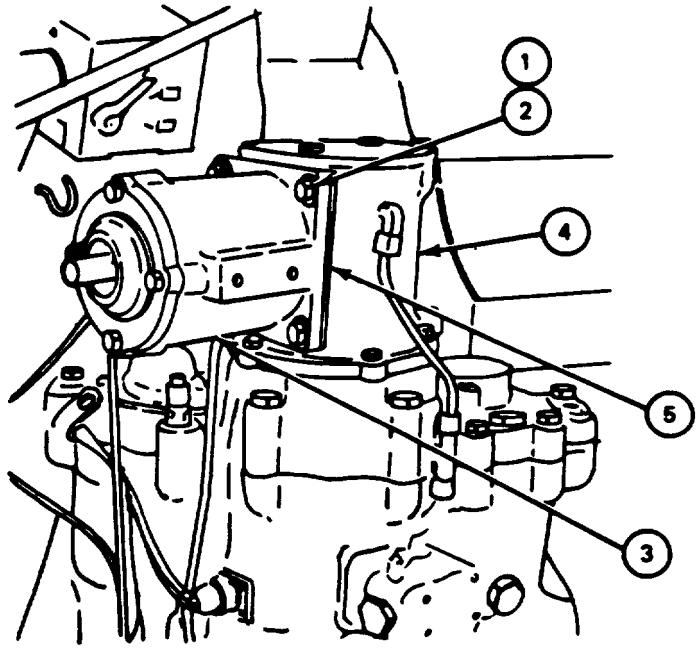
EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Turret traverse lock set to LOCKED

PRELIMINARY PROCEDURES: Remove hand traversing drive (para 43-2)

42-2. NO-BAK REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Using wrench, remove four screws (1) and four lockwashers (2), that attach no-bak (3) to clutch (4).
2.	Remove no-bak (3) and shims (5). Keep shims for installation.
3.	Check bevel gear for wear, burrs or damage. If bevel gear shows signs of wear or damage, notify support maintenance.
	END OF TASK



42-3. NO-BAK INSTALLATION PROCEDURE

TOOLS: Socket (5120-00-627-8018)
3/8" drive ratchet
9/16"' socket (3/8" drive)
3/8" drive torque wrench (0 to 250 inch-pounds)

SUPPLIES: Shims (87340 11) as required

PERSONNEL: One

REFERENCES: JPG for procedure to use torque wrench
TM 9-2350-222-10 for procedures to:
Traverse turret
Set turret traverse lock to LOCKED and UNLOCKED

EQUIPMENT LOCATION INFORMATION:

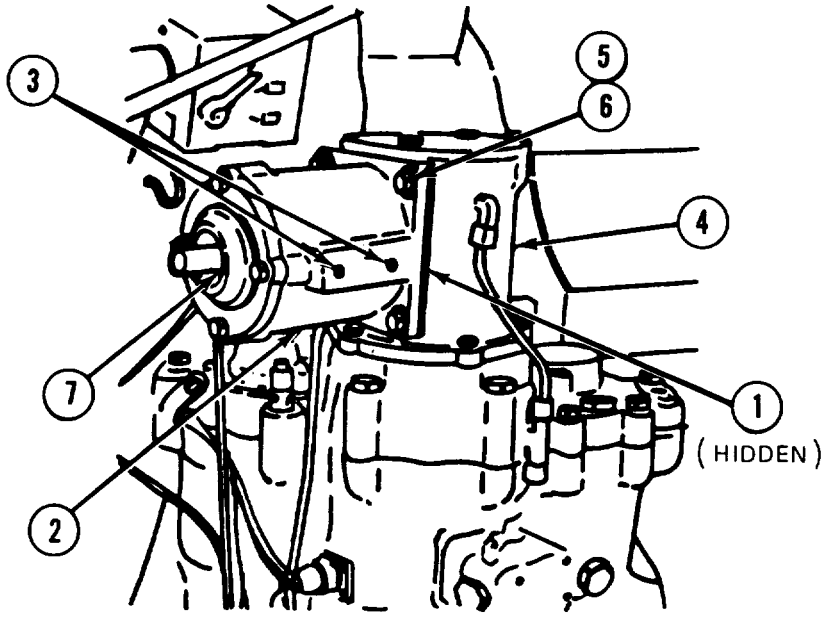
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7
Turret Traversing Mechanism	FO-2	12

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Turret traverse lock set to LOCKED

42-3. NO-BAK INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
	NOTE If same no-bak is to be installed, use same number of shims (1) from removal. If new no-bak is to be installed, use five shims (1).
1.	Put shims (1) and no-bak (2), with screw holes (3) to right, on clutch (4).
2.	Using socket wrench, attach no-bak (2) to clutch (4) with four screws (5) and four lockwashers (6).
3.	Set turret traverse lock to UNLOCKED (TM-10).
	NOTE If binding of bevel gears does not occur, remove one shim (1) at a time, and recheck until binding does occur. When binding occurs, add one shim and again check for binding.
4.	Using splined socket wrench, turn no-bak shaft (7) in both directions and check for binding.
5.	Set turret traverse lock to LOCKED (TM-10).
6.	Using torque wrench, torque screws (5) to between 204 and 228 inch-pounds (JPG).
	NOTE Follow-on Maintenance Action Required: Install hand traversing drive (para 43-3). Traverse turret manually and in power mode to make sure no-bak operates properly (TM-10).
	END OF TASK


3
5
6
4
7
1
(HIDDEN)
2

42-3.1. NO-BAK TORQUE TEST PROCEDURE

TOOLS: Torque socket (NSN 5120-00-627-8018) (7383534)
3/8" drive torque wrench (0 to 150 inch-pounds) (NSN 5120-00-230-6380)
Vise caps (NSN 5120-00-221-1506)
Machinist's vise (NSN 5120-00-293-1439)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7
Turret Traversing Mechanism	FO-2	12

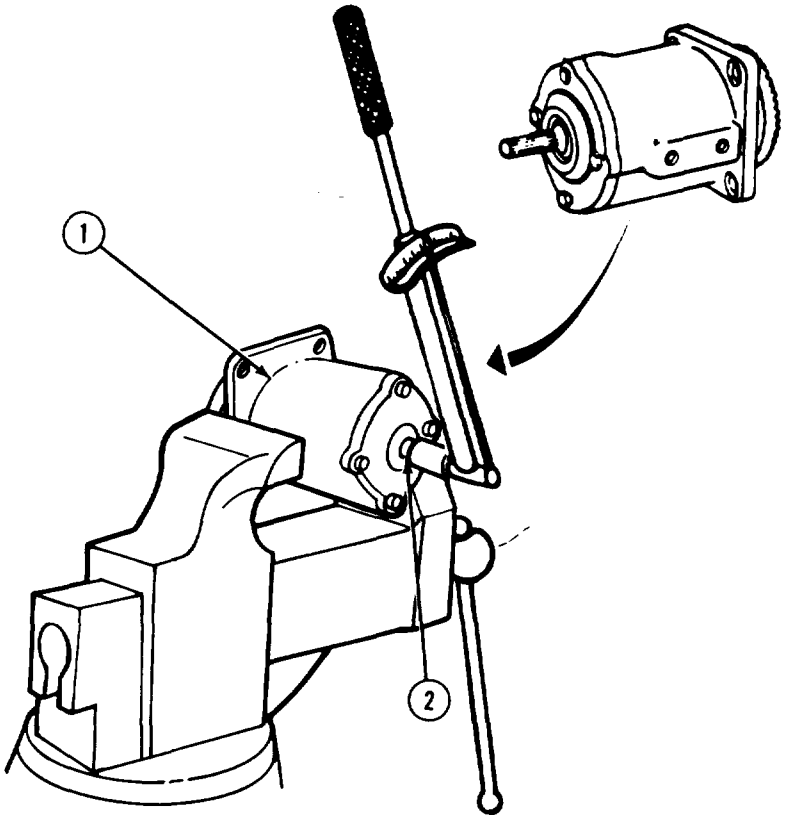
EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Turret traverse lock set to LOCKED

PRELIMINARY PROCEDURE: Remove no-bak (para 42-2)

42-3.1 NO-BAK TORQUE TEST PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
1.	Place no-bak (1) in capped vise.
2.	**Using torque wrench and socket, apply torque to splined input shaft (2). If torque required to turn shaft (2) is greater than 22 inch-pounds (2.5 Newton meters), notify direct support maintenance.**
	END OF TASK



42-4. PIN LOCK INSPECTION PROCEDURE

PERSONNEL: One

REFERENCES: JPG for procedure to inspect and repair parts

PRELIMINARY PROCEDURES: Disassemble pin lock (para 42-8)

GENERAL INSTRUCTIONS:

NOTE

If part is bad, order repair part or next higher assembly, as required.

42-4. PIN LOCK INSPECTION PROCEDURE (CONT)

FRAME 1

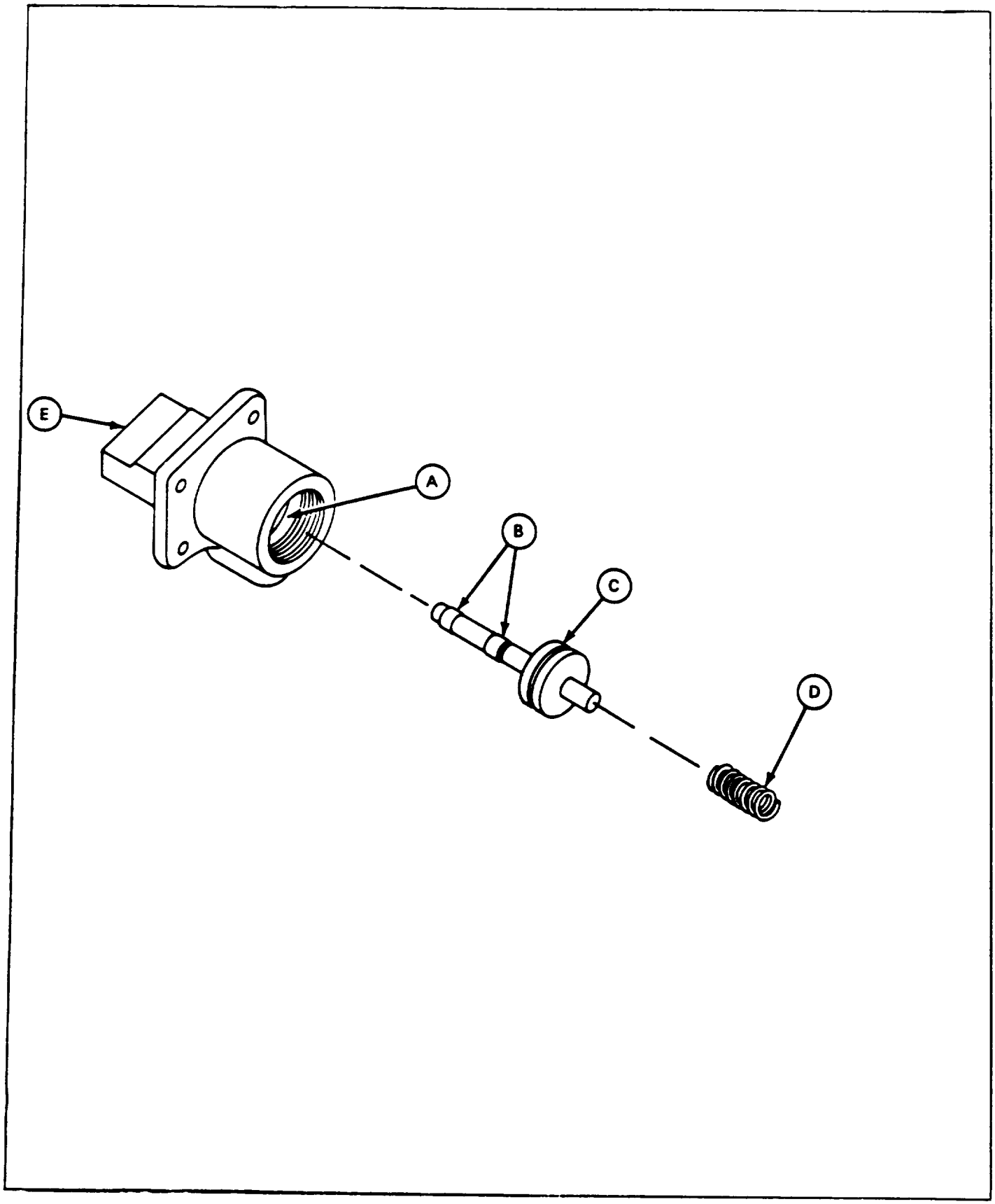
Step	Procedure
	SUPPORT SHOP WORK
1.	Take pin lock housing, piston, and spring to shop where inspection equipment and spring tester are available.
2.	Make dimensional check.

Reference Letter	Point of Measurement	Measurement
A	ID of housing (piston end)	1.315 to 1.320
B	OD of piston (rod end)	0.3730 to 0.3740
c	OD of piston	1.301 to 1.303
D	Free length of compression spring	1.437 to 1.438
D	Load required to compress spring to 13/16"	9 to 11 lb
E	ID of housing (rod end)	0.3750 to 0.3755

NOTE

Tag parts that are out of tolerance.

3.	After support shop work, return pin lock housing, piston, and spring to turret shop.
	END OF TASK


E
A
B
C
D

42-5. PIN LOCK TEST PROCEDURE

TEST EQUIPMENT M3 oil pump
Pressure gauge (109468 19) (NSN 6685-00-754-4111)
Adapter (MS 51819-5) (NSN 4730-00-911-5705)
Adapter (MS 518 16-3) (NSN 4730-00-557-7466)
Tee (MS 5 1841-3) (NSN 4730-00-801-6663)
Adapter (MS 5 1856-2) (Two)
Preformed packing (MS 28778-4) (three)
Test tubes (fabricated tool, App. B)
Suitable tools and pressure cap

SUPPLIES: Hydraulic fluid (item 9, App. A)
Small fluid container
Lint-free cloth (item 15, App. A)

PERSONNEL: One

REFERENCES: JPG for procedures to:
Use M3 oil pump

PRELIMINARY PROCEDURES: Remove pin lock (para 42-6)
Assemble pin lock (para 42-9)

GENERAL INSTRUCTIONS:

WARNING

Be careful when working around pressurized parts. Hydraulic fluid under pressure can hurt you.

NOTE

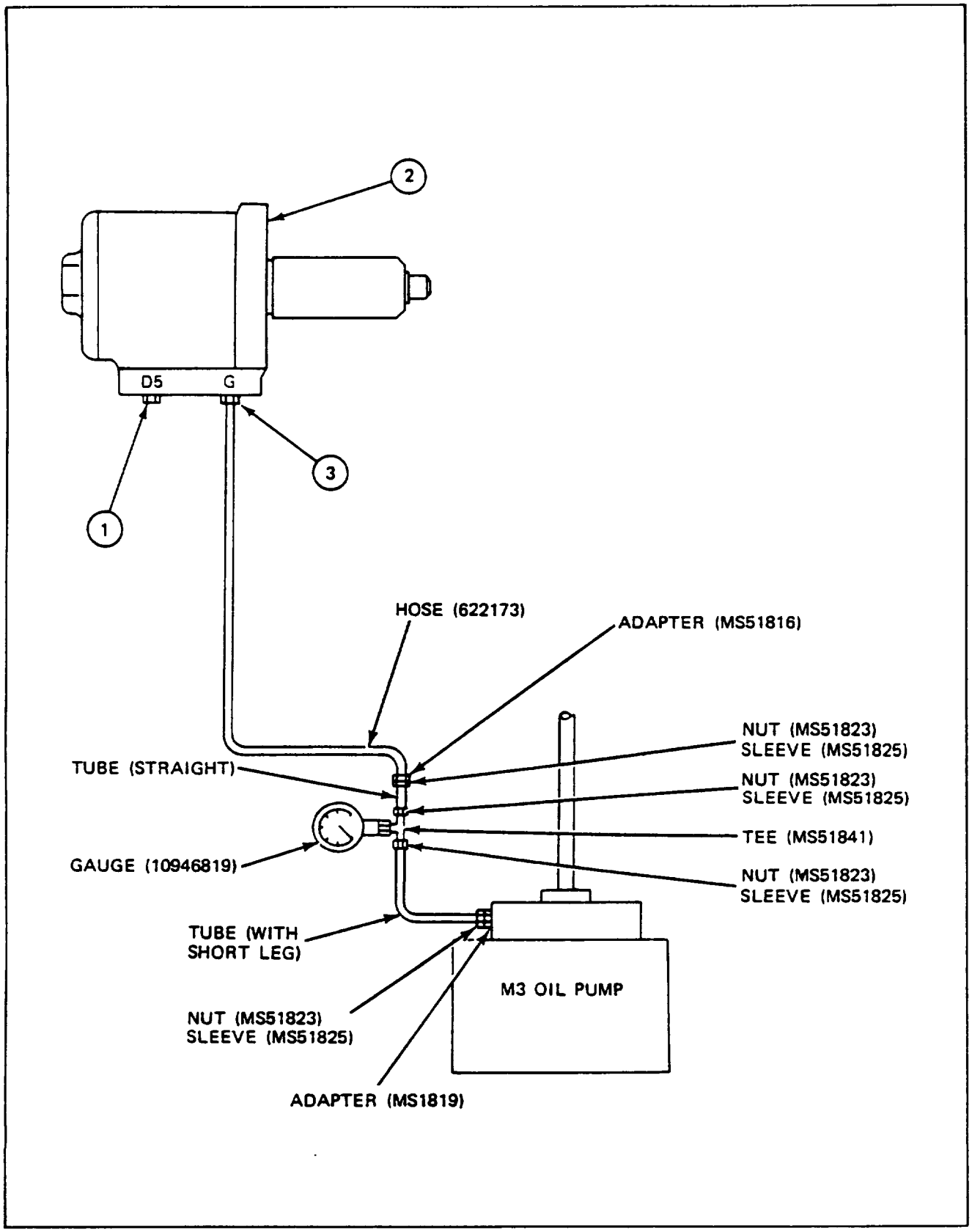
If normal indication (no leakage and smooth piston movement) is not obtained, pin lock is bad. Disassemble bad pin lock (para 42-8).

Suitable fittings, preformed packings, and tools should be used to connect test equipment to parts being tested.

42-5. PIN LOCK TEST PROCEDURE (CONT)

FRAME 1

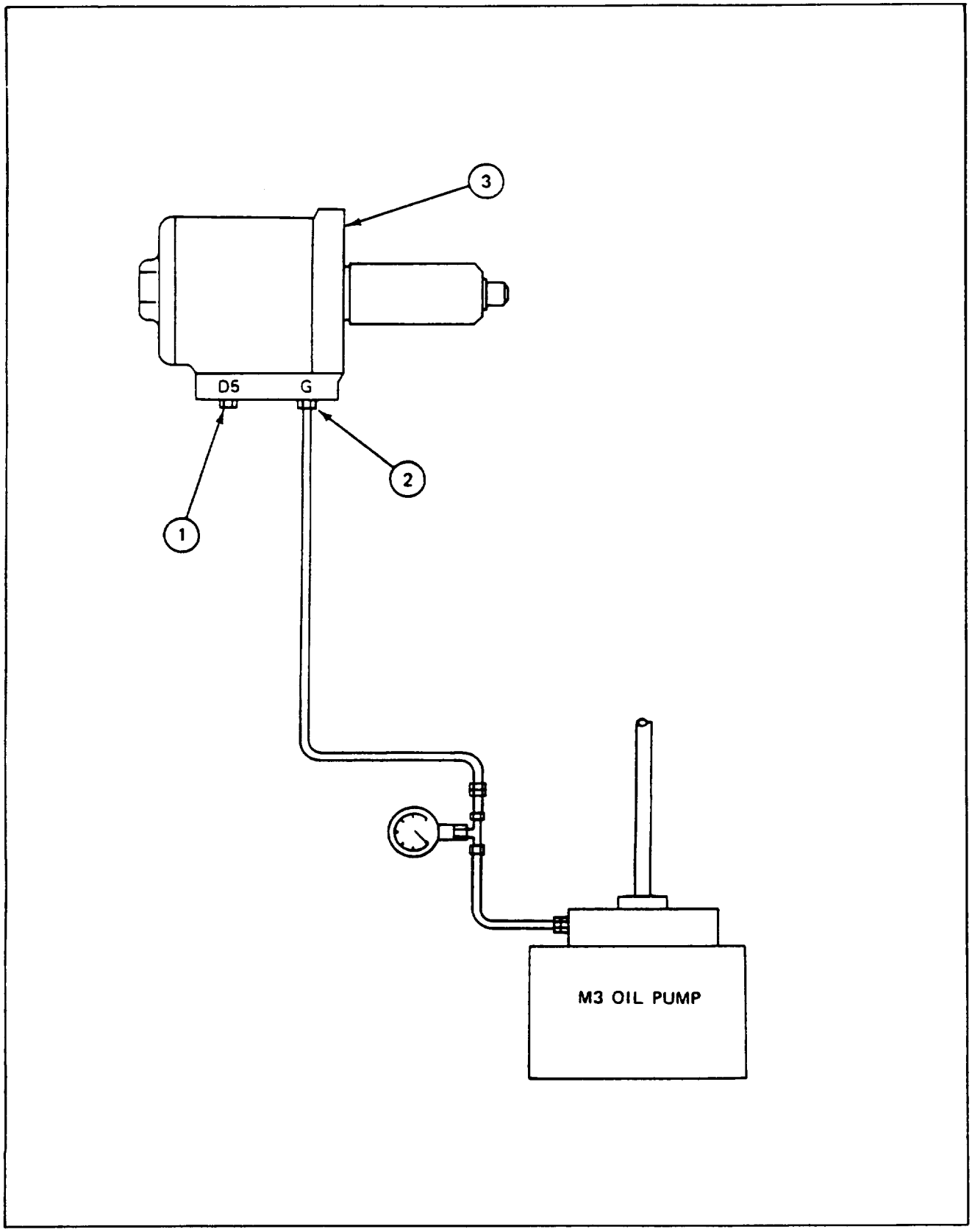
Step	Procedure
1.	Assemble M3 oil pump with pressure gauge.
2.	Connect M3 oil pump to port marked D5 (1) on pin lock (2)
3.	Put cap on port G (3) on pin lock(2).
4.	Using M3 oil pump, pressurize pin lock (2) to between 225 and 250 psi (JPG).
5.	Check pin lock (3) for any leakage. No leakage allowed.
6.	Using M3 oil pump. reduce pressure to 0 psi (JPG).
7.	Remove cap from port G (3) of pin lock (2).
8	Remove M3 oil pump from port D5 (1) and put on port G (3) of pin lock (2).
9.	Put cap on part D5 (1) of pin lock (2).
	GO TO FRAME 2


2
D5
G
3
1
HOSE (622173)
ADAPTER (MS51816)
NUT (MS51823)
SLEEVE (MS51825)
TUBE (STRAIGHT)
NUT (MS51823)
SLEEVE (MS51825)
TEE (MS51841)
GAUGE (10946819)
NUT (MS51823)
SLEEVE (MS51825)
TUBE (WITH
SHORT LEG)
M3 OIL PUMP
NUT (MS51823)
SLEEVE (MS51825)
ADAPTER (MS1819)

42-5. PIN LOCK TEST PROCEDURE (CONT)

FRAME 2

Step	Procedure
1.	Using M3 Oil pump, pressurize pin lock (1) to between 225 and 250 psi (JPG).
2.	Check pin lock (1) for any leakage. No leakage allowed.
3.	Using M3 oil pump. reduce pressure to 0 psi (JPG).
4.	Remove cap from port D5 (2) of pin lock (1).
5.	Using M3 oil pump, pressurize pin lock (1) to between 50 and 60 psi and then reduce pressure to 0 psi (JPG).
6.	Check pin lock (1) for smooth piston movement as piston moves in and out.
7.	Repeat steps 5 and 6 at least 25 times.
	NOTE M3 oil pump pressure should be at 0 psi.
8.	Remove M3 oil pump from port G (3) of pin lock (1).
9.	Disassemble M3 oil pump and remove pressure gauge.
	NOTE If normal indication (no leakage and smooth piston movement) was obtained in frames 1 and 2, pin lock is good.
	END OF TASK


3
D5
G
2
1
M3 OIL PUMP

42-6. PIN LOCK REMOVAL PROCEDURE

TOOLS: 11/16" open end wrench
3/4” open end wrench
7/16” socket (3/8” drive)
3/8”’ drive ratchet
5“ extension (3/8" drive)
O-ring extractor kit

SUPPLIES: Caps (for adapters)
Plugs (for tubes)
Small container (for waste hydraulic fluid)
Lint-free cloths (item 15, App. A)
Container (for lubricating oil)

PERSONNEL: One

REFERENCES: JPG for procedure to remove preformed packing

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver’s Master Control Panel	F0-3	11
Turret Traverse Lock	FO-3	7
Turret Traversing Mechanism	FO-2	12

EQUIPMENT CONDITION: Driver’s master control panel MASTER BATTERY switch set to OFF
Turret traverse lock set to LOCKED

GENERAL INSTRUCTIONS:

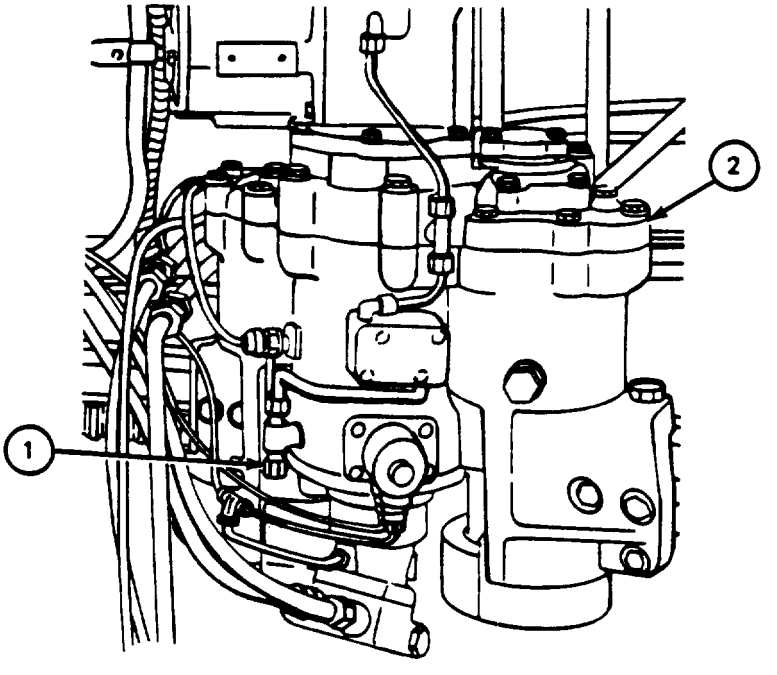
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment. Use lint-free cloth to clean up oil spillage. Put plugs in tubes and caps on adapters to keep out dirt.

42-6. PIN LOCK REMOVAL PROCEDURE (CONT)

FRAME 1

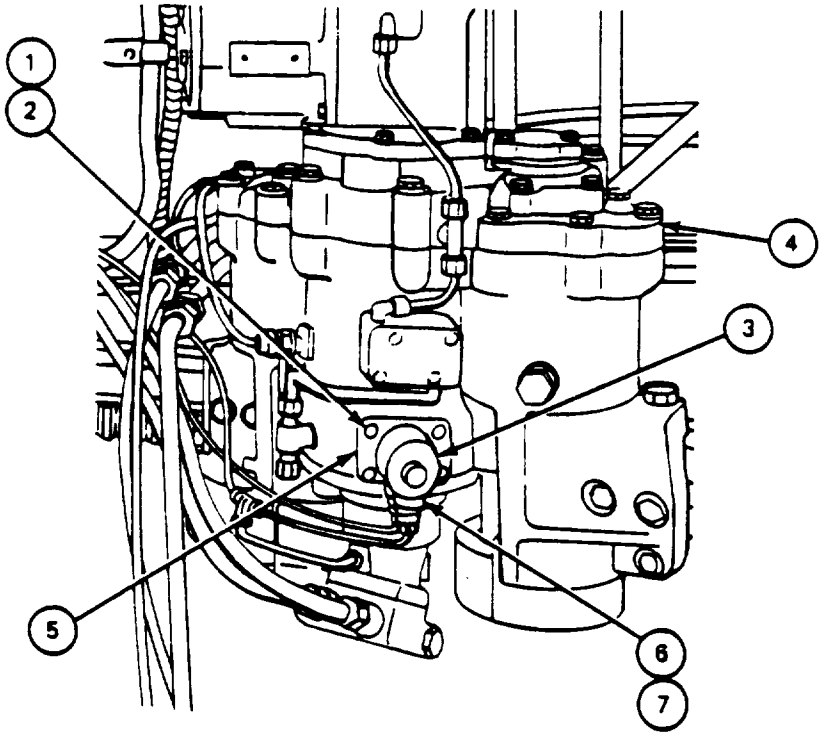
Sep	Procedure
	WARNING Before removing hydraulic tubes or parts, hydraulic system pressure must be lowered to O psi. Hydraulic fluid under pressure can hurt you.
1.	Lower hydraulic system pressure to 0 psi (para 1-18).
2.	Using 3/4" wrench and container, remove drain plug (1) from turret traversing mechanism (2) and drain oil. Clean and replace drain plug.
	NOTE Do not remove adapters or tees during tube removal.
3.	Remove pin lock to power pack tube (para 2-68).
4.	Remove pin lock to tee tube (para 2-68).
	GO TO FRAME 2



42-6. PIN LOCK REMOVAL PROCEDURE (CONT)

FRAME 2

Step	Procedure
1.	Using socket wrench, remove four screws (1) and four lockwashers (2) that attach pin lock (3) to turret traversing mechanism (4).
2.	Using hands, remove pin lock (3) and gasket (5) from turret traversing mechanism (4).
	NOTE Do steps 3 and 4 if pin lock (3) is to be replaced.
3.	Using 11/16" wrench, remove two adapters (6) and two packings (7).
4.	Using O-ring extractor tool, remove two packings (7) from adapters (6) (JPG). Throw two packings away.
	END OF TASK



42-7. PIN LOCK INSTALLATION PROCEDURE

TOOLS: 3/8" drive ratchet
11/16" open end wrench
7/16" socket (3/8" drive)
3/8" drive torque wrench (0 to 150 inch-pounds) (NSN 5120-00-230-6380)
5" extension (3/8" drive)
O-ring extractor kit

SUPPLIES: Hydraulic fluid (item 9, App. A)
Mounting gasket, 7972969
Preformed packing MS 28778-4 (two)

PERSONNEL: One

REFERENCES: LO 9-2350-222-12 for procedure to add oil
TM 9-2350-222-10 for procedure to traverse turret

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7
Turret Traversing Mechanism	FO-2	12

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Turret traverse lock set to LOCKED

PRELIMINARY PROCEDURES: Test pin lock (para 42-5)

GENERAL INTSTRUCTIONS:

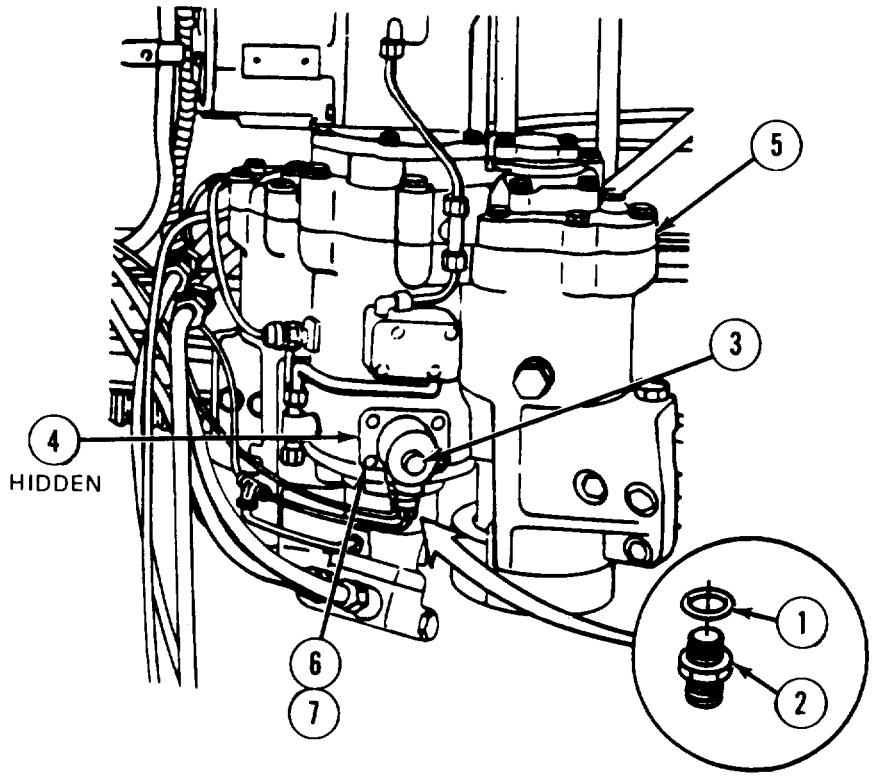
CAUTION

Keep hydraulic tubes and parts free of dirt. Dirt can damage hydraulic system or parts.

42-7. PIN LOCK INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
	NOTE **Do** steps 1 and 2 if new pin lock is to be installed.
1.	Using hands, coat two packings (1) with hydraulic fluid and put on two adapters (2).
2.	Using 11/16 in. wrench, put two adapters (2) with two packings (1) in pin lock (3).
3.	Using hands, put gasket (4) and pin lock (3) on turret traversing mechanism (5).
4.	Using socket wrench, attach pin lock (3) to turret traversing mechanism (5) with four screws (6) and four Iockwashers (7),
5.	Using torque wrench, torque four screws (6) to between 40 and 50 inch pounds (5 to 6 Newton meters).
	GO TO FRAME 2



42-7. PIN LOCK INSTALLATION PROCEDURE (CONT)

FRAME 2

Step	Procedure
1.	Connect tube between hydraulic motor tee and pin lock (para 2-69).
2.	Connect tube between power pack and pin lock (para 2-69).
	NOTE Do the following tasks if this procedure completes the maintenance of hydraulic or traversing mechanism system. If other maintenance must be done, make sure the following tasks are completed after other maintenance. Follow-on Maintenance Action Required: Fill traversing mechanism with oil (LO). Fill power pack to proper level (LO). Traverse turret three turns to bleed air from system (TM-10). Check for leaks and repair as required. Traverse turret manually and in power mode to make sure pin lock works properly (TM-10).
	END OF TASK

42-8. PIN LOCK DISASSEMBLY PROCEDURE

TOOLS: 3/4" socket (3/8" drive)
3/8" drive ratchet
Vise (soft jaws)
1/4" drift pin punch
O-ring extractor kit

SUPPLIES: Lint-free cloth (item 15, App. A)
Cleaning-solvent (item 21, App. A)

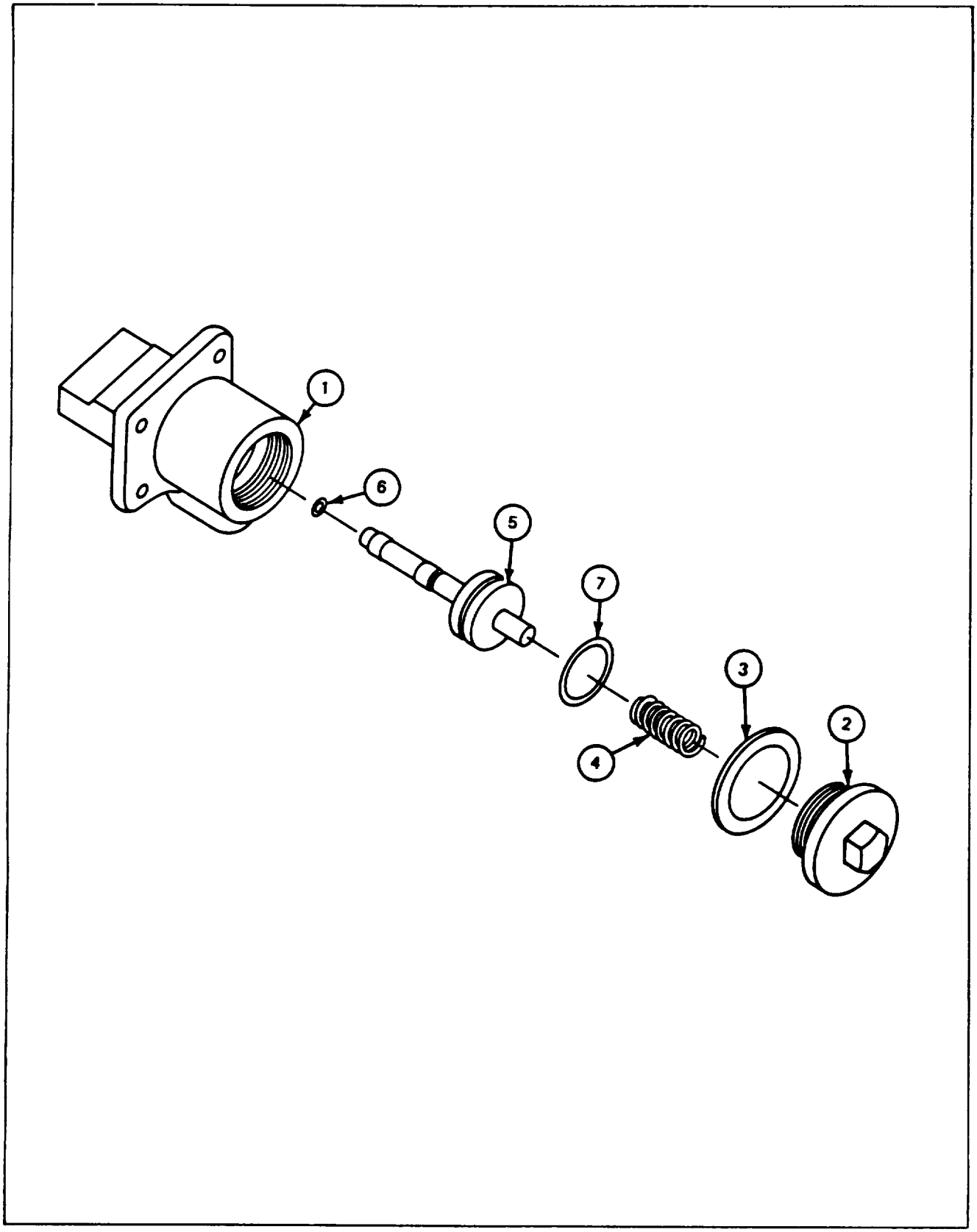
PERSONNEL: One

REFERENCES: JPG for procedures to:
Remove preformed packing
Clean and inspect mechanical components

PRELIMINARY PROCEDURES: Remove pin lock (para 42-6)
Test pin lock (para 42-5)

FRAME 1

Step	Procedure
1.	Put pin lock housing (1) in shop vise.
2.	Using socket wrench, remove cover (2), gasket (3) and spring (4).
3.	Remove gasket (3) from cover (2). Throw gasket (3) away.
	NOTE It may be necessary to use punch to help push piston (5) from housing (1).
4.	Remove piston (5) from housing (1).
5.	Using O-ring extractor tool, remove two packings (6) and (7) from piston (5) (JPG).). Throw packings away.
6.	Remove pin lock housing (1) from shop vise.
	NOTE Follow-on Maintenance Action Required: Clean and inspect pin lock (JPG). Do detailed inspection of pin lock (para 42-4).
	END OF TASK


1
6
5
7
3
2
4

42-9. PIN LOCK ASSEMBLY PROCEDURE

TOOLS: 3/4'' socket (3/8'' drive)
3/8" drive ratchet
Vise (soft jaw)
O-ring extractor kit

SUPPLIES: Pin lock parts kit (5703501)
Hydraulic fluid (item 9, App. A)
Lint-free cloth (item 15, App. A)

PERSONNEL: One

REFERENCES: JPG for procedure to install preformed packing

GENERAL INSTRUCTIONS:

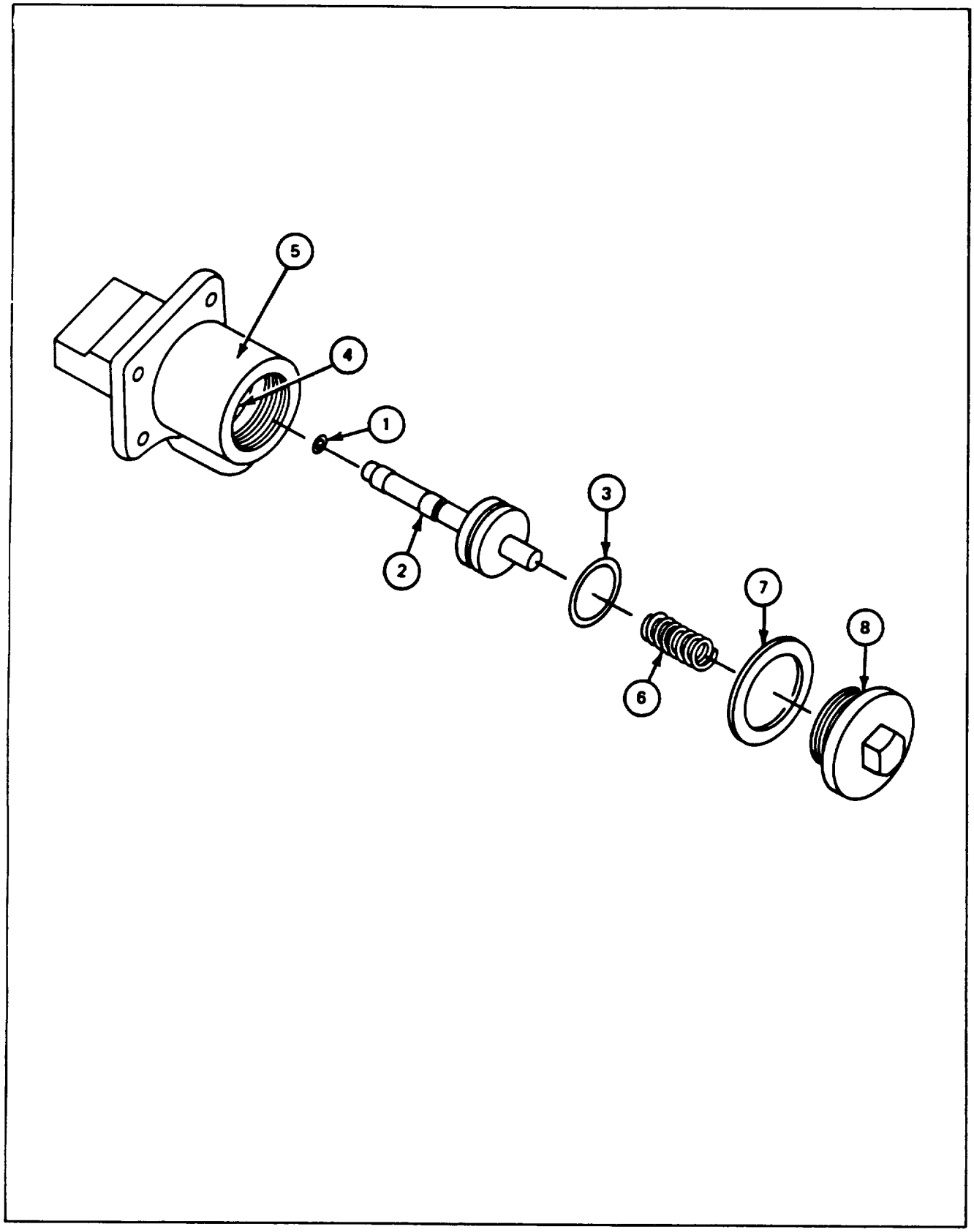
CAUTION

Keep hydraulic tubes and parts free of dirt. Dirt can damage hydraulic system or parts.

42-9. PIN LOCK ASSEMBLY PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Coat new preformed packing (1) with hydraulic fluid.
2.	Using O-ring extractor tool, put new packing (1) on small end of piston (2) (JPG).
3.	Coat new packing (3) and housing bore (4) with hydraulic fluid.
4.	Using O-ring extractor tool, put new packing (3) on piston (2) (JPG).
	CAUTION Use care not to damage preformed packings (1 and 2) during installation.
5.	Put pin lock housing (5) in shop vise.
6.	Put piston (2) into housing (5).
7.	Put spring (6) on piston (2) shaft.
8.	Coat gasket (7) with hydraulic fluid. Put gasket on cover (8).
	CAUTION Spring must be compressed to install cover (8) and gasket (7). Use hand pressure on cover(8) to keep from damaging threads on cover(8) or housing (5).
9.	Put cover (8) over spring (6) and using socket wrench, screw cover into housing.
10.	Remove pin leek housing (5) from shop vise.
	NOTE Follow-on Maintenance Action Required: Test pin lock (para 42-5).
	END OF TASK


5
4
1
2
3
7
8
6

42-10. ANTI-BACKLASH MECHANISM INSPECTION PROCEDURE

PERSONNEL: One

PRELIMINARY PROCEDURES: Disassemble anti-backlash mechanism (para 42-13)

GENERAL INSTRUCTIONS:

NOTE

If part is bad, order repair part or next higher assembly, as required.

42-10. ANTI-BACKLASH MECHANISM INSPECTION PROCEDURE (CONT)

FRAME 1

Step	Procedure
	SUPPORT SHOP WORK
1.	Take spring, bearing, and bearing guide to shop where inspection equipment and spring tester are available.
2.	Make dimensional check.

Reference Letter	Point of Measurement	Measurement
A	Free length of backlash screw spring	2.4800 to 2.5200
A	Load required to compress spring to 1.78 in.	180 to 220 lb
B	OD of bearing	1.1246 to 1.1250
C	ID of backlash bearing guide measured from bottom	1.250 to 1.260
D	ID of bearing	0.4997 to 0.5000

NOTE

Tag parts that are out of tolerance.

3.	After support shop work, return spring, bearing, and guide to turret shop.
	END OF TASK

42-11. ANTI-BACKLASH MECHANISM REMOVAL AND DISASSEMBLY PROCEDURE

TOOLS: 3/ 16" socket head screw key (Allen wrench)
3/4" open end wrench
Flat tip screwdriver

SUPPLIES: Lint-free cloth (item 15, App. A)
Cleaning solvent (item 21, App. A)

PERSONNEL: One

REFERENCES: JPG for procedure to clean and inspect mechanical components

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7
Turret Traversing Mechanism	FO-2	12

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Turret traverse lock set to LOCKED

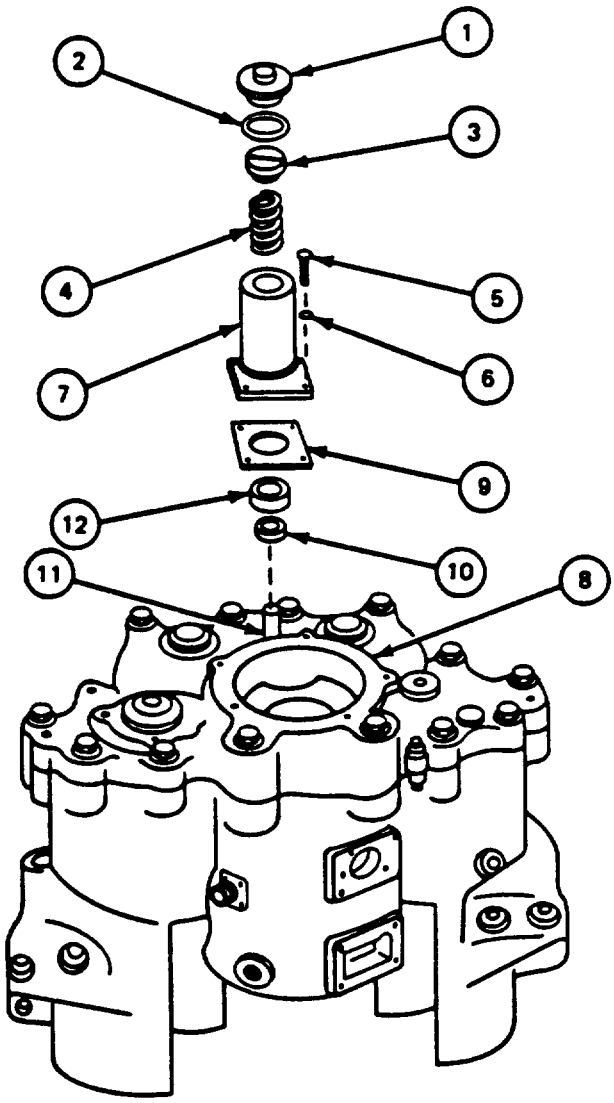
NOTE

Disassembly of anti-backlash mechanism is done with this removal procedure.

42-11. ANTI-BACKLASH MECHANISM REMOVAL AND DISASSEMBLY PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Using open end wrench, remove housing cover (1) and gasket (2). Throw gasket away.
2.	Using screwdriver, remove adjusting screw (3) and spring (4).
3.	Using Allen wrench, remove four screws (5) and four lockwashers (6) holding housing (7) to turret traversing mechanism mounting surface (8).
4.	Using hand, remove housing (7).
5.	Remove mounting gasket (9) from housing (7). Throw mounting gasket away.
	NOTE Bearing (10) may come off backlash gear shaft (11) with removal of guide (12).
6.	Remove guide (12) from backlash gear shaft (11).
7.	Push bearing (10) out of guide (12).
	NOTE Follow-on Maintenance Action Required: Clean and inspect anti-backlash mechanism (JPG). Do detailed inspection of anti-backlash mechanism (para 42-10).
	END OF TASK


1
2
3
4
5
6
7
8
9
10
11
12

42-12. ANTI-BACKLASH MECHANISM ASSEMBLY AND INSTALLATION PROCEDURE

TOOLS: 3/ 16" socket head screw key (Allen wrench)
3/4" open end wrench

SUPPLIES: Gasket (7972963)
Gasket (7972968)

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedure to traverse turret

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7
Turret Traversing Mechanism	FO-2	12

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Turret traverse lock set to LOCKED

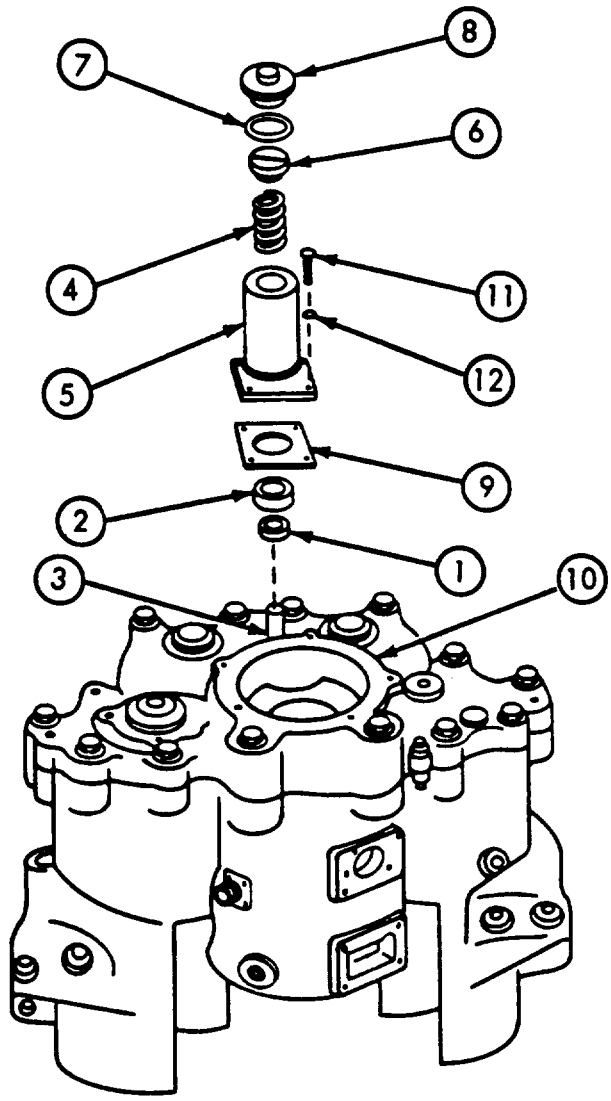
GENERAL INSTRUCTIONS:

NOTE

Assembly of anti-backlash mechanism is done with this installation procedure.

FRAME 1

Step	Procedure
1.	Place bearing (1) in guide (2).
2.	Place guide (2) with bearing (1) on floating shaft (3).
3.	Install spring (4) in housing (5). Using screwdriver, install adjusting screw (6) in housing (5) until top of Screw is 5/16 – 1/32 inch below top edge of the housing.
4.	Install new gasket (7) on housing cover (8). Using open end wrench, install housing cover on housing (5).
5.	Place new mounting gasket (9) on traversing gear mounting surface (10).
6.	Using Allen wrench, attach housing (5) to turret traversing mechanism mounting surface (10) with four screws (11) and four Iockwashers (12).
	NOTE Follow-on Maintenance action Required: Adjust anti-backlash mechanism (para 42-13). Traverse turret manually and in power mode to make sure anti-– backlash mechanism works properly (TM-10).
	END OF TASK


8
7
6
4
11
5
12
9
2
1
3
10

42-13. ANTI-BACKLASH MECHANISM ADJUSTMENT PROCEDURE

TOOLS: V-blocks clamp (NSN 5120-00-672-2609) (8762133)
5/16 in. combination wrench
6 in. machinist steel rule
External retaining ring pliers
Feeler gauge
Shim (NSN 4910-00-875-7934) (10893984)
Socket head screw key set (Allen wrench set)

SUPPLIES: Pen
Paper

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedures to:
Traverse turret
Set turret traverse lock to LOCKED and UNLOCKED

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traversing Mechanism	FO-2	12
Turret Traverse Lock	FO-3	7

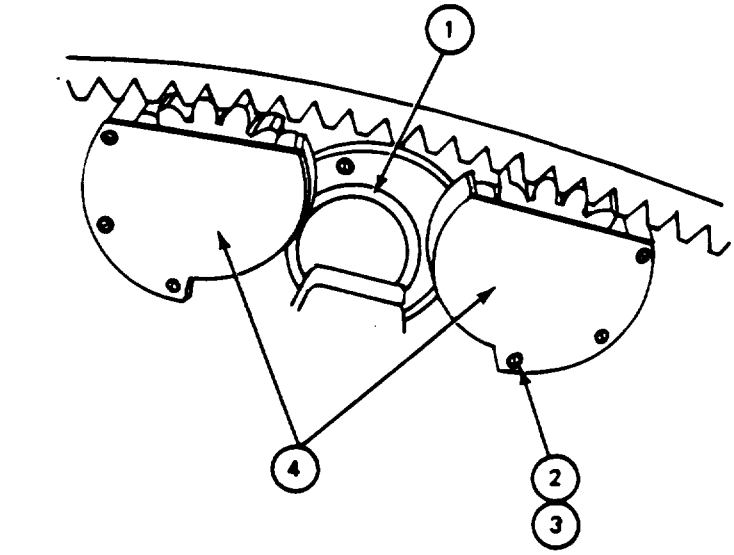
EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

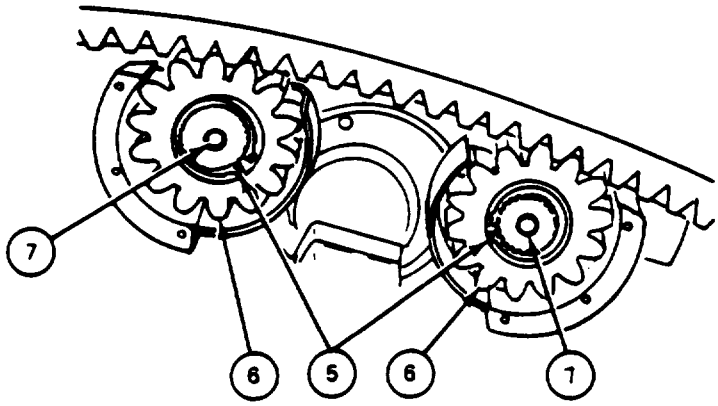
PRELIMINARY PROCEDURE: Remove anti-backlash mechanism (para 42-11)

42-13. ANTI-BACKLASH MECHANISM ADJUSTMENT PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Traverse turret until traversing gear box (1) can be reached from driver's compartment (TM-10).
2.	Set turret traverse lock to LOCKED (TM- 10).
3.	Using combination wrench, remove six screws (2) and six Iockwashers (3) that attach two pinion drive guard plates (4) to traversing gearbox (1).
4.	Remove guard plates (4).
	WARNING Hold pinion gear in place while removing retaining ring. Pinion gear is heavy and can hurt you if dropped.
5.	Using pliers, remove one retaining ring (5) that attaches one pinion gear (6) to output shaft (7).
6.	Remove pinion gear (6) from output shaft (7).
7.	Repeat steps 5 and 6 for other pinion gear (6).
	GO TO FRAME 2

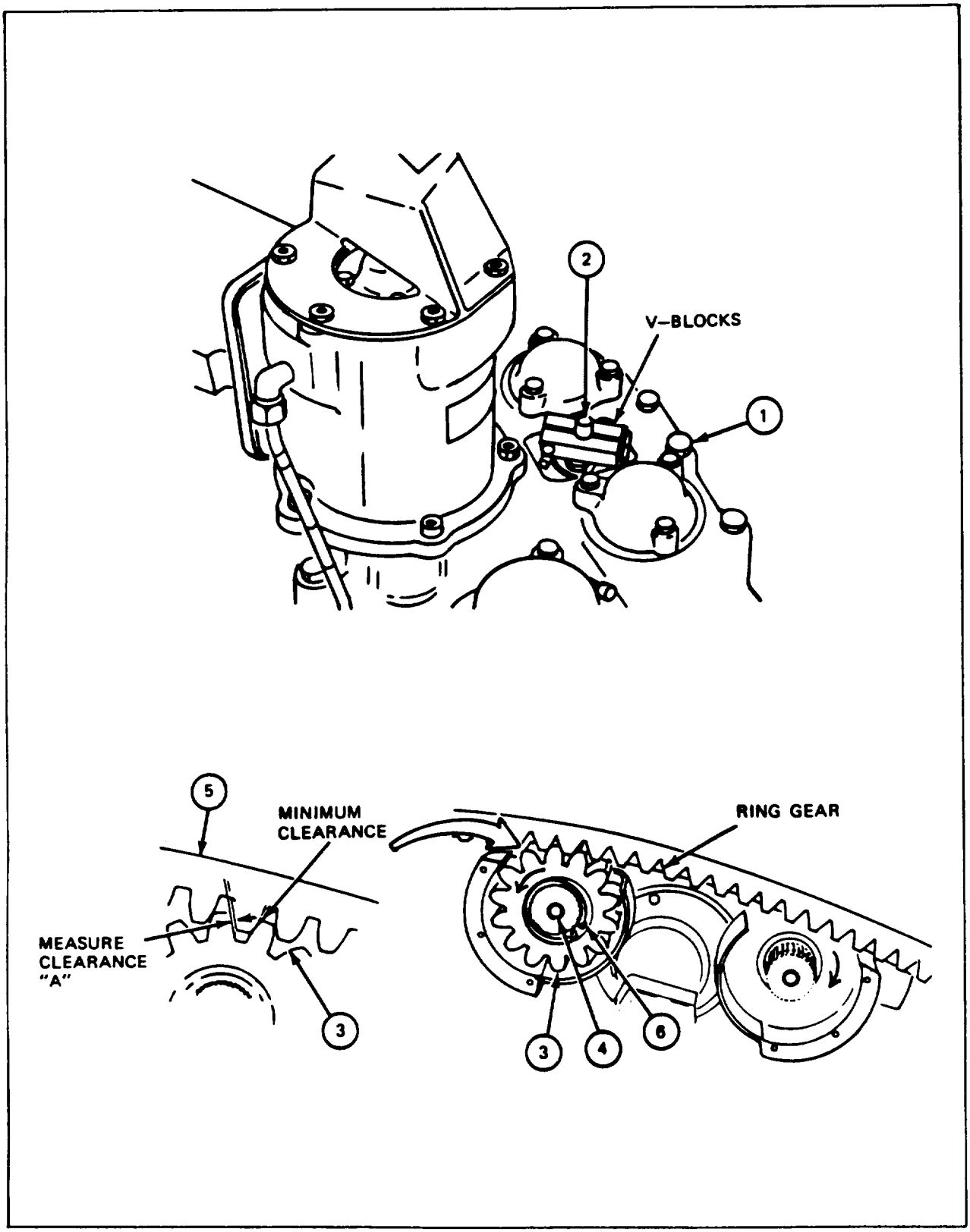

1
4
2
3


7
6
5
6
7

42.13. ANTI-BACKLASH MECHANISM ADJUSTMENT PROCEDURE (CONT)

FRAME 2

Step	Procedure
1.	Rotate hand traversing drive both ways to make sure gears are not binding in the traversing mechanism (1) watching anti-backlash shaft (2) to find bottom of travel.
2.	Using hands, lift shaft (2) upward and release. Shaft (2) will drop to its bottom position.
3.	Using combination wrench, clamp V-blocks to shaft (2) so V-block is flush with top of traversing mechanism (1).
	NOTE Minimum clearance is obtained by rotating pinion gear (3) one spline at a time around the output shaft (4), until space between pinion gear tooth and turret ring gear tooth is smallest. When installing pinion gears to obtain minimum clearance, pinion gears should be rotated away from each other to the outside (see arrows in illustration).
4.	Using hands, put pinion gear (3) on left output shaft (4) with minimum clearance between pinion gear and turret ring gear (5).
5.	Using pliers, attach pinion gear (3) to left output shaft (4) with retaining ring (6).
6.	Using feeler gauge, measure clearance A between pinion gear (3) and turret ring gear (5).
7.	Using pen and paper, record measurement.
8.	Using pliers, remove retaining ring (6) that attaches pinion gear (3) to left output shaft (4).
9.	Remove pinion gear (3) from left output shaft (4).
	GO **TO FRAME 3**


2
V-BLOCKS
1
5
MINIMUM
CLEARANCE
RING GEAR
MEASURE
CLEARANCE
"A"
3
3
4
6

42-13. ANTI-BACKLASH MECHANISM ADJUSTMENT PROCEDURE (CONT)

FRAME 3

Step	Procedure
1.	Determine from table (A) in which range measurement recorded in frame 2, step 7 falls.

Table (A) Measured Clearance A (inches) / **Table (B) Raise Floating Shaft (inches)**

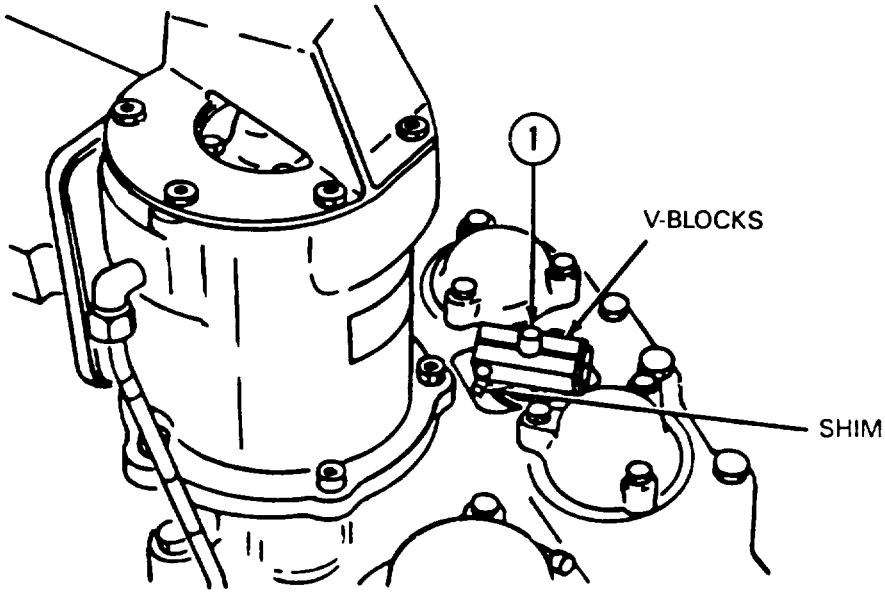
Table (A)	Table (B)
0.020 to 0.050	13/32 to 7/16
0.051 to 0.070	5/16 to 11/32
0.071 to 0.090	7/32 to 1/4
0.091 to 0.120	3/32 to 1/8

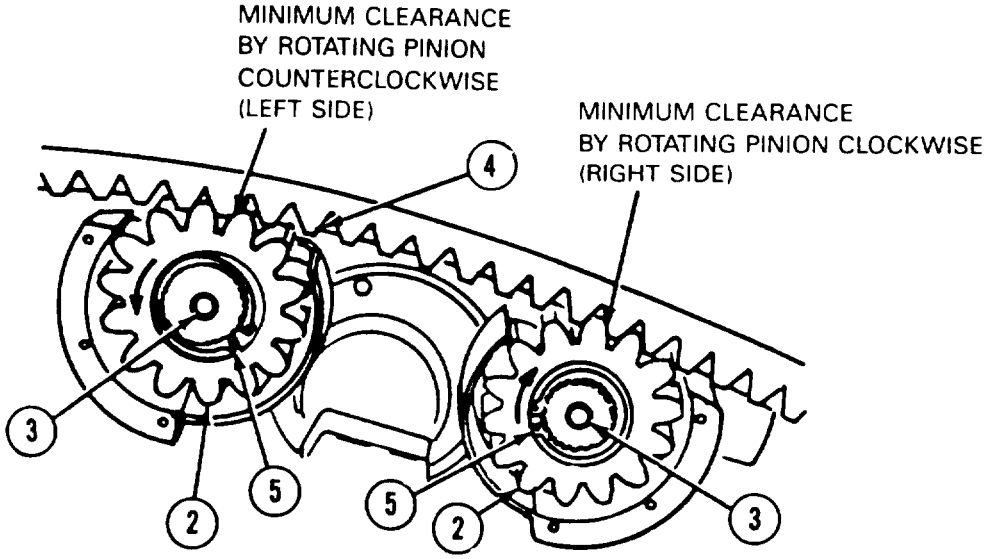
2.	Using pen and paper, record matching value from table (B).
3.	Using hands, raise V-blocks with shaft (1) and put Allen wrench or shim of thickness determined from step 2 under V-blocks.

NOTE

Minimum clearance is obtained by rotating pinion gear (2) one spline at a time around output shaft (3) until space between pinion gear tooth and turret ring gear is smallest.

4.	Using hands, put pinion gear (2) on left output shaft (3) with minimum clearance between pinion gear and turret ring gear (4).
5.	Using pliers, attach pinion gear (2) to left output shaft (3) with retaining ring (5).
6.	Repeat steps 4 and 5 for right pinion gear (2).
	GO TO FRAME 4

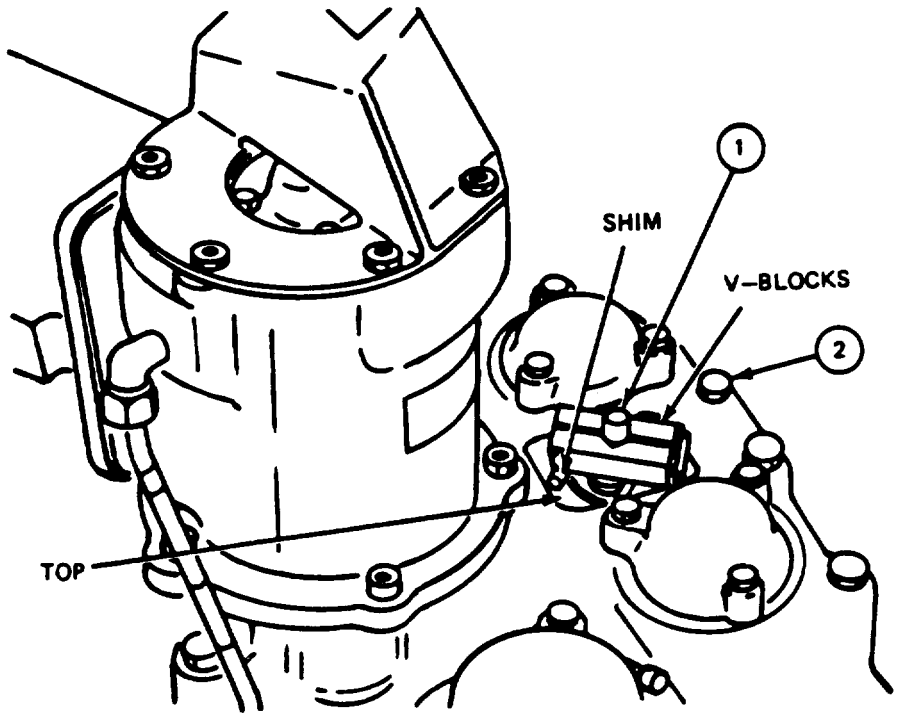

1
V-BLOCKS
SHIM


MINIMUM CLEARANCE
BY ROTATING PINION
COUNTERCLOCKWISE
(LEFT SIDE)
MINIMUM CLEARANCE
BY ROTATING PINION CLOCKWISE
(RIGHT SIDE)
4
3
2
5
5
2
3

42-13. ANTI-BACKLASH MECHANISM ADJUSTMENT PROCEDURE (CONT)

FRAME 4

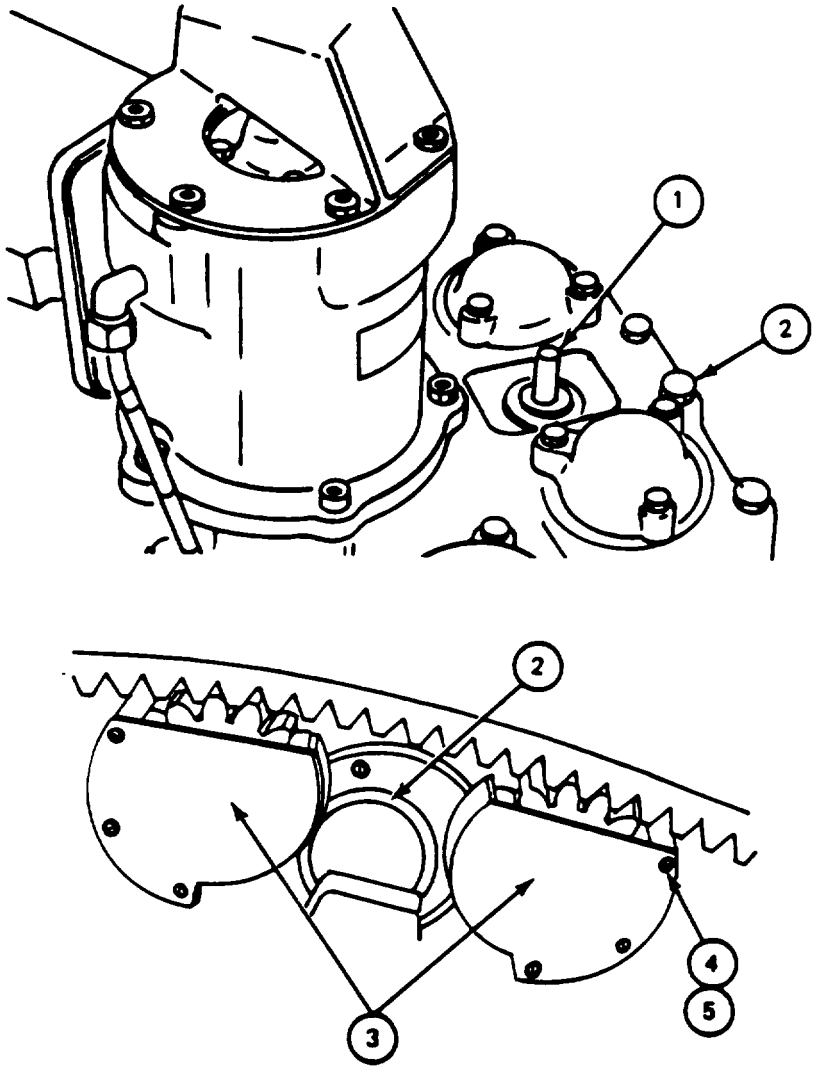
Step	Procedure
1.	using hands, remove Allen wrench or shims from under V-blocks. If shaft (1) with V-blocks drops, repeat frame 1, step 5 through frame 3, step 6.
2.	Using steel rule, carefully measure distance from top of shaft (1) to top of traversing mechanism (2).
3.	Using pen and paper, record measurement.
4.	Using wrench, remove V-blocks from shaft (l).
5.	Install anti-backlash mechanism (para 42-12).
6.	Set turret traverse lock to UNLOCKED (TM-10).
7.	Manually traverse turret one complete turn (TM-10).
8.	Remove anti-backlash mechanism (para 48-11).
	GO TO FRAME 5


1
SHIM
V-BLOCKS
2
TOP

42-13. ANTI-BACKLASH MECHANISM ADJUSTMENT PROCEDURE (CONT)

FRAME 5

Step	Procedure
1.	Rotate hand traversing drive slightly and watch anti-backlash shaft (1) to find bottom travel.
2.	Using steel rule, carefully measure distance from top of shaft (1) to top of traversing mechanism (2).
3.	Using pen and paper, record measurement.
4.	If measurement from frame 4, step 3 is more than 0.040 in. greater than measurement of step 3, repeat frame 1, step 5 through frame 5, step 3.
5.	Using wrench, attach two guard plates (3) to traversing mechanism (2) with six screws (4) and six lockwashers (5).
	NOTE Follow-on Maintenance Action Required: Install anti-backlash mechanism (para 42-12).
	END OF TASK


1
2
2
3
4
5

CHAPTER 43
HAND TRAVERSING DRIVE

43-1. MAINTENANCE PROCEDURE INDEX

Equipment Item	Tasks: Removal	Tasks: Installation
Hand Traversing Drive	43-2	43-3
Turret Hand Traversing Drive Shaft - Rivet	43-4	43-5

43-2. HAND TRAVERSING DRIVE REMOVAL PROCEDURE

TOOLS: **9/16" combination wrench**

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

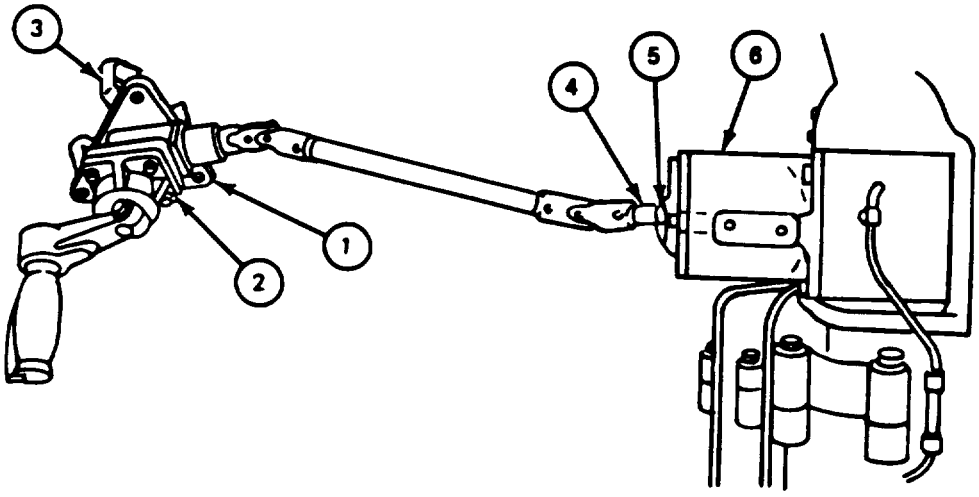
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Hand Traversing Drive	FO-1	3

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

43-2. HAND TRAVERSING DRIVE REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
	WARNING Take care not to drop hand traversing drive as it could break toes or feet, or break or bend equipment.
1.	Using wrench, remove three screws (1) that attach hand traversing drive (2) to mounting bracket (3).
2.	Remove hand traversing drive (2).
3.	Using one hand, lower hand traversing drive (2). Using other hand, slide adapter (4) off splined shaft (5) of no-bak (6).
	END OF TASK



43-3. HAND TRAVERSING DRIVE INSTALLATION PROCEDURE

TOOLS: 9/16" combination wrench

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedure to manually traverse turret

EQUIPMENT LOCATTON INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Hand Traversing Drive	FO-1	3

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTIONS:

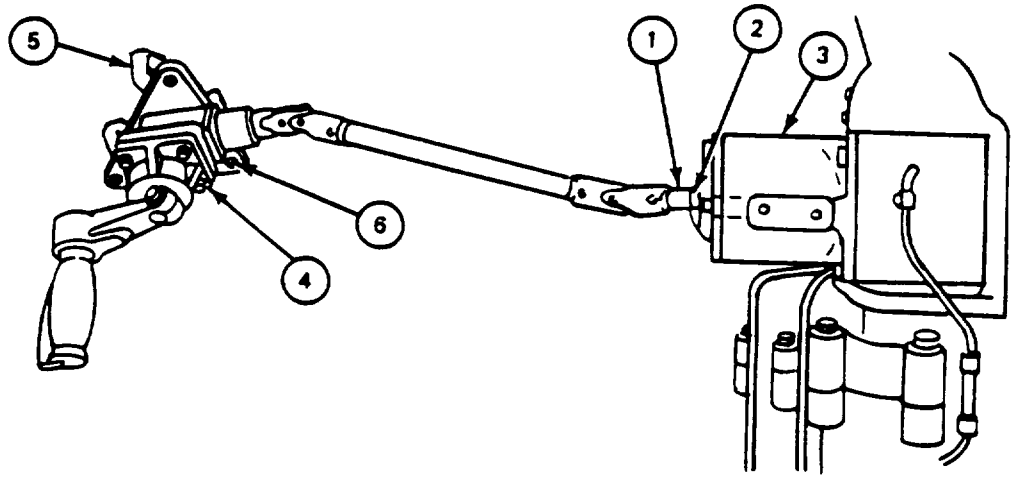
CAUTION

Keep dirt from getting in parts. Dirt can damage equipment.

43-3. HAND TRAVERSING DRIVE INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
	WARNING Take care not to drop hand traversing drive, as it could break toes or feet, or break or bend equipment.
1.	Using one hand, slide adapter (1) on to splined shaft (2) of no-bak (3). Using other hand, raise hand traversing drive (4) to mounting bracket (5).
2.	Using wrench, attach hand traversing drive to mounting bracket (5) with three screws (6).
	NOTE Follow-on Maintenance Action Required: Manually traverse turret to make sure hand traversing drive works properly (TM- 10).
	END OF TASK



43-4. TURRET HAND TRAVERSING DRIVE SHAFT - RIVET REMOVAL PROCEDURE

TOOLS:
5/32 in. drive pin punch
1 pound ball peen hammer
Cold chisel (3/8 in. wide cut, 5 in. lg)
Flat file
Machinist's vise (NSN 5120-00-293-1439)
Vise caps (NSN 5120-00-221-1506)

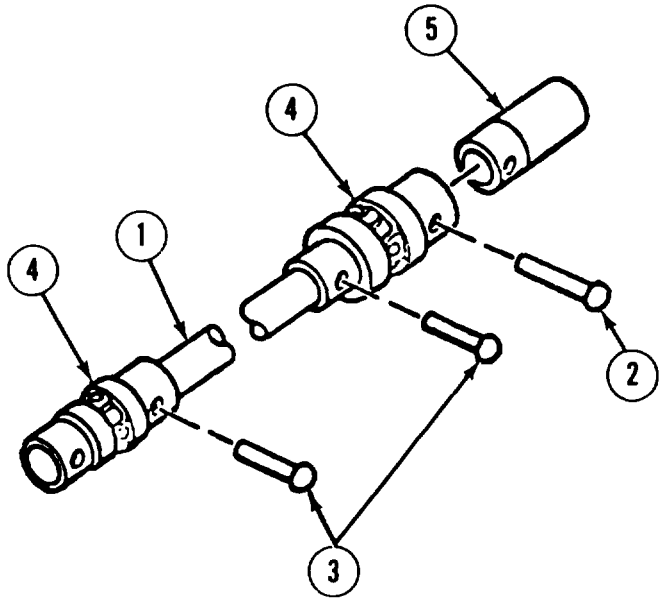
PERSONNEL: One

PRELIMINARY PROCEDURE: Remove hand traversing drive (para 43-2)

43-4. TURRET HAND TRAVERSING DRIVE SHAFT - RIVET REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Put drive shaft tube (1) in capped vise.
2.	Using hammer, chisel. tile. and punch, remove rivets (2), (3) that attach universal Joints (4) on adapter (5) and shaft tube (1).
	END OF TASK



43-5. TURRET HAND TRAVERSING DRIVE SHAFT - RIVET INSTALLATION PROCEDURE

TOOLS: 1 pound ball peen hammer
Machinist's vise (NSN 5120-00-293-1439)

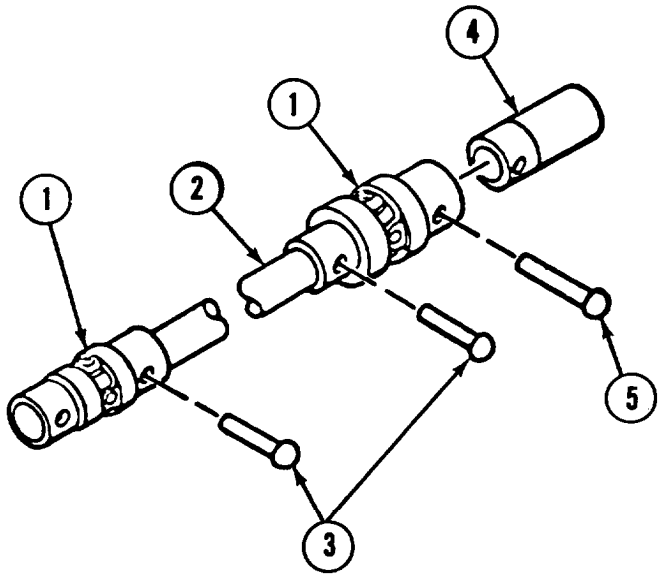
SUPPLIES: Rivets (102661) (three)

PERSONNEL: One

43-5. TURRET HAND TRAVERSING DRIVE SHAFT - RIVET INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Put universal joints (1) on drive shaft tube (2). Line up holes.
2.	Using hammer and vise, attach universal joints (1) with rivets (3).
3.	Put adapter (4) on universal joint (1) as shown. Line up holes.
4.	Using hammer and vise, attach adapter (4) with rivet (5).
	END OF TASK



CHAPTER 44

TURRET TRAVERSE LOCK

44-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Tasks	
	Removal	Installation
Turret Traverse Lock	44-2	44-3

44-2. TURRET TRAVERSE LOCK REMOVAL PROCEDURE

TOOLS: 15/16 in. socket (1/2 in. drive)
1/2 in. drive hinged handle
Wire cutters

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

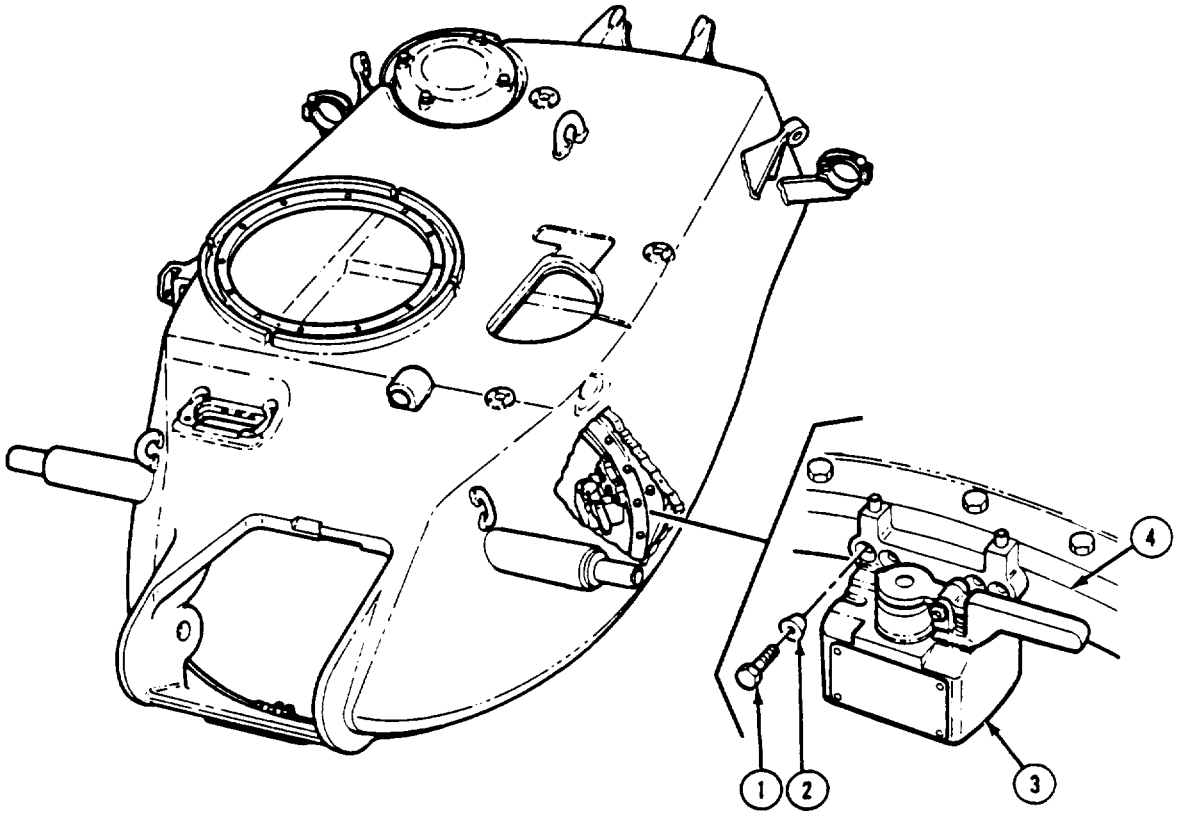
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

PRELIMINARY PROCEDURE: Remove loader's seat (para 22-2)

FRAME 1

STEP	PROCEDURE
1.	Cut lockwire on four screws (1) (if present).
2.	Using socket wrench, remove four screws (1) and four dowels (2) that attach turret traverse lock (3) to turret race (4).
3.	Remove turret traverse lock (3) from turret race (4).
	END OF TASK


1
2
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4

44-3. TURRET TRAVERSE LOCK INSTALLATION PROCEDURE

TOOLS: 15/16 in. socket (1/2 in. drive)
1/2 in. drive torque wrench (0 to 250 foot-pounds)
1/2 in. drive hinged handle
Wire cutters
Needle nose pliers

PERSONNEL: One

SUPPLY: Lockwire (MS20995C47-25)

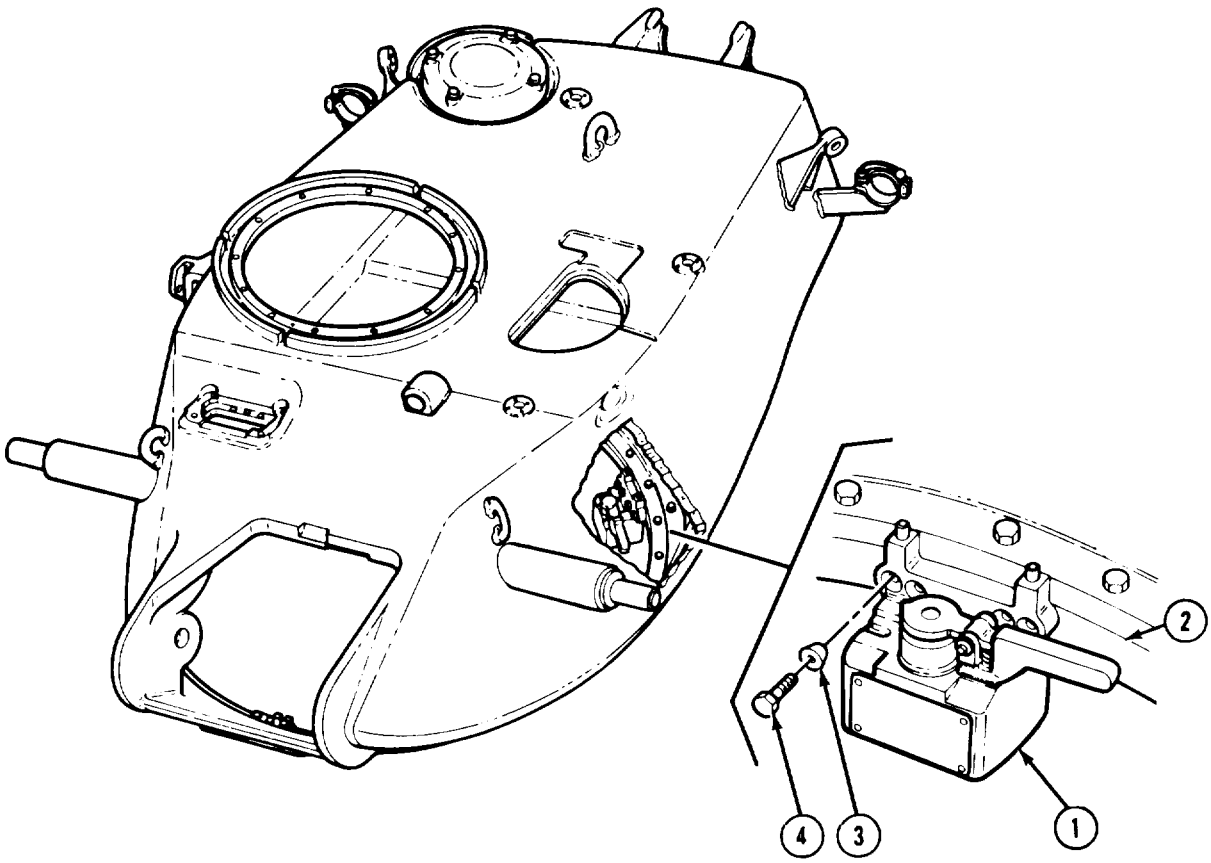
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

Step	Procedure
1.	Place turret traverse lock (1) in position on turret race (2).
2.	Using socket wrench, attach turret traverse lock (1) to turret race (2) with four dowels (3) and four screws (4).
3.	Using torque wrench, torque four screws (4) to between 180 and 200 foot pounds (244 to 271 Newton meters).
4.	Install lockwire.
	NOTE Follow-on Maintenance Action Required: Install loader's seat (para 22-3).
	END OF TASK


2
4
3
1

CHAPTER 45

AZIMUTH INDICATOR

45-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Tasks Removal	Tasks Installation	Tasks Adjustment
Azimuth Indicator M28E2	45-2	45-3	45-4

45-2. AZIMUTH INDICATOR M28E2 REMOVAL PROCEDURE

TOOLS: 7/8" combination wrench
3/4" socket (1/2" drive)
1/2" drive hinged handle
5" extension (1/2" drive)

PERSONNEL: One

REFERENCES: JPG for procedure to disconnect electrical connectors

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Azimuth Indicator	FO-1	6

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTIONS:

WARNING

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

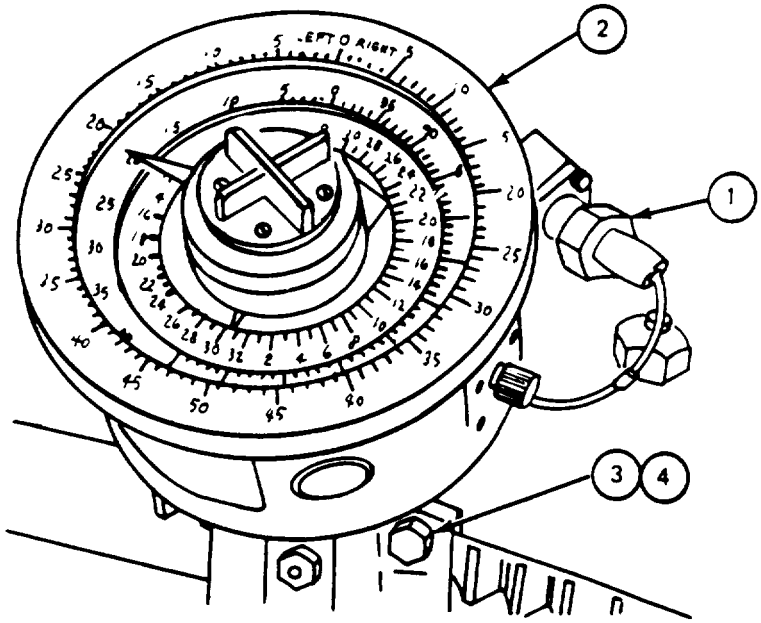
All maintenance must be done at depot level only, except replacement of lamps or replacement of whole indicator unit.

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

45-2. AZIMUTH INDICATOR M28E2 REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Using combination wrench, disconnect electrical connector (1) from azimuth indicator (2) (JPG).
	CAUTION Take care not to drop azimuth indicator (2). This can damage it.
2.	Using socket wrench, remove four screws (3) and four lockwashers (4) that attach azimuth indicator (2) to turret. Remove azimuth indicator.
	END OF TASK



45-3. AZIMUTH INDICATOR M28E2 INSTALLATION PROCEDURE

TOOLS: 7/8" combination wrench
3/4" socket (1/2" drive)
1/2" drive hinged handle
5" extension (1/2" drive)

SUPPLIES: Lubricant (item 11, App. A)

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedures to:
Traverse turret
Set turret traverse lock to LOCKED
JPG for procedure to connect electrical connectors

EQUIPMENT LOCATION INFORMATION:

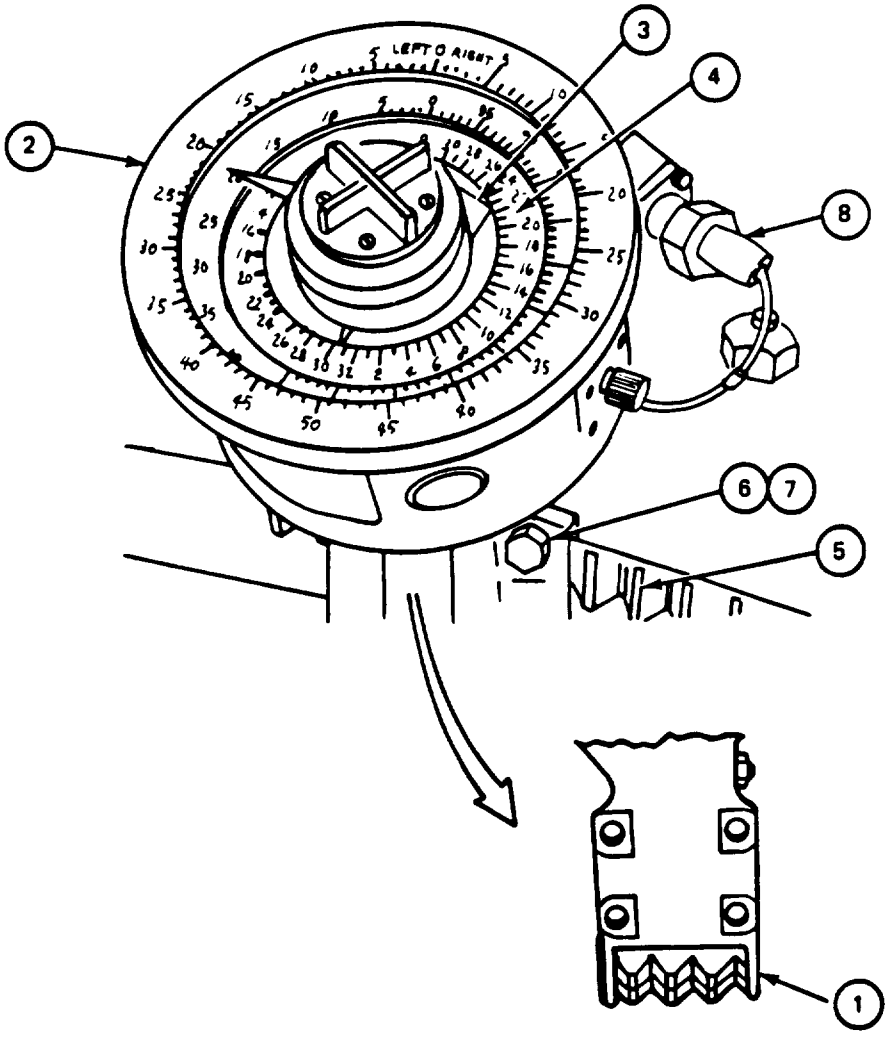
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Azimuth Indicator	FO-1	6

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

45-3. AZIMUTH INDICATOR M28E2 INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
	NOTE Gun pointed directly forward may be determined by aligning vertical scribe marks on gun muzzle with center line scribe mark located on the front slope of hull.
1.	Traverse turret until main gun is pointed directly forward (TM-10).
2.	Turret traverse lock set to LOCKED (TM-10).
3.	Put light coat of lubricant on drive gear (1) of azimuth indicator (2).
4.	Turn drive gear (1) of azimuth indicator (2) until directional pointer (3) is at 32 on azimuth scale (4).
5.	Place azimuth indicator (2) in turret and mesh drive gear (1) with turret ring gear (5).
6.	Using socket wrench, attach azimuth indicator (2) to turret with four screws (6) and four lockwashers (7).
7.	Using wrench, connect electrical connector (8) to azimuth indicator (2) (JPG).
	NOTE Follow-on Maintenance Action Required: Do azimuth indicator M28E2 backlash adjustment (para 45-4).
	END OF TASK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45-4. AZIMUTH INDICATOR M28E2 BACKLASH ADJUSTMENT PROCEDURE

TOOLS: 11/16" combination wrench
Flat tip screwdriver

PERSONNEL: One

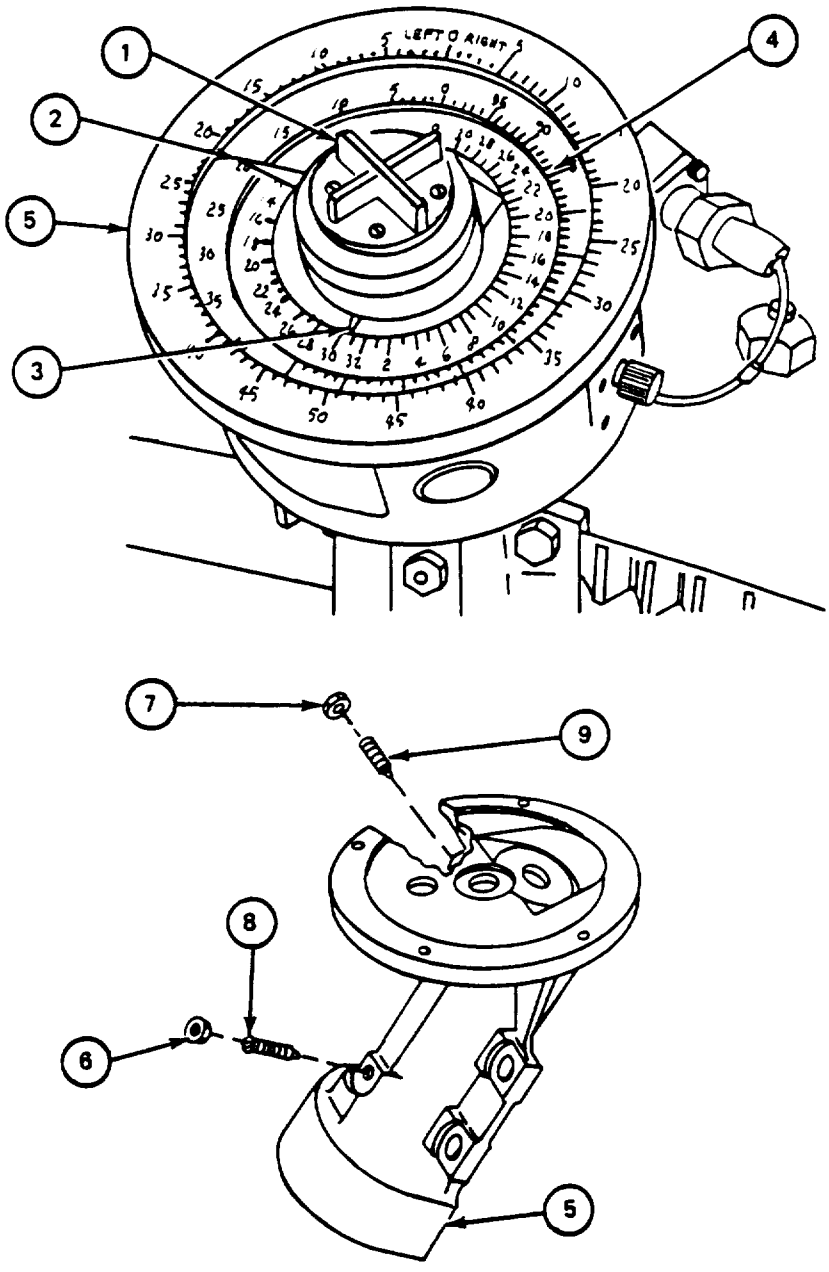
REFERENCES: TM 9-2350-222-10 for procedures to:
Traverse turret
Set turret traverse lock to UNLOCKED

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Azimuth Indicator	FO-1	6

FRAME 1

Step	Procedure
1.	Turret traverse lock set to UNLOCKED (TM-10).
2.	Traverse gun in clockwise direction and sight on definite point without over-traversing (TM-10).
3.	Depress resetter knob (1) and set micrometer pointer (2) and azimuth pointer (3) at zero on micrometer scale (4) of azimuth indicator (5). Release resetter knob.
4.	Traverse gun in counterclockwise direction and sight on same definite point without over-traversing (TM-10).
5.	Micrometer pointer (2) will indicate good backlash when reading is between 0.5 mil plus (left) or 0.5 mil minus (right) of zero on micrometer scale (4).
	NOTE For bad backlash, do the following steps 6, 7 and 8. For good backlash, your task is ended.
6.	Using wrench, loosen two nuts (6) and (7) on azimuth indicator (5).
7.	Using screwdriver, turn two screws (8) and (9) until micrometer pointer indicates good backlash on micrometer scale (4) (step 5).
8.	Using screwdriver, hold two screws (8) and (9) in position and using wrench, tighten two nuts (6) and (7) on azimuth indicator (5).
	END OF TASK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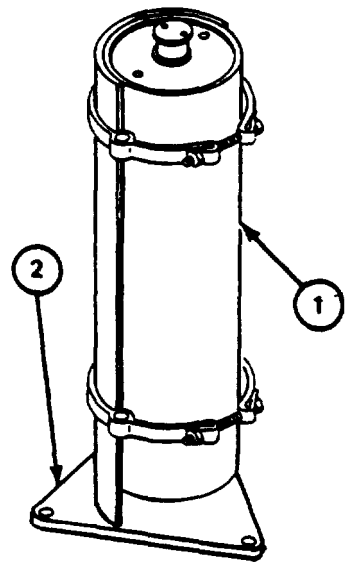
CHAPTER 46

EQUILIBRATOR ACCUMULATOR AND SUPPORT

46-1. MAINTENANCE PROCEDURES INDEX

	Equipment Item	Tasks Removal	Tasks Installation
1.	Equilibrator Accumulator	46-2	46-3
2.	Equilibrator Accumulator Support	46-4	46-5



46-2. EQUILIBRATOR ACCUMULATOR REMOVAL PROCEDURE

TOOLS: 5/8" open end wrench
13/16" open end wrench
Slip-joint pliers
1/8" flat tip screwdriver
7/16" combination wrench

SUPPLIES: Rags (item 15, App. A)
Dust plug
Dust cap

PERSONNEL One

REFERENCES: TM 9-2350-222-10 for procedure to elevate 165-mm gun

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Equilibrator Accumulator	FO-4	10
Equilibrator Pressure Gauge	FO-1	8
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Turret Traverse Lock	FO-3	7

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED
165-MM gun elevated to maximum elevation (TM-10)

GENERAL INSTRUCTIONS:

CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

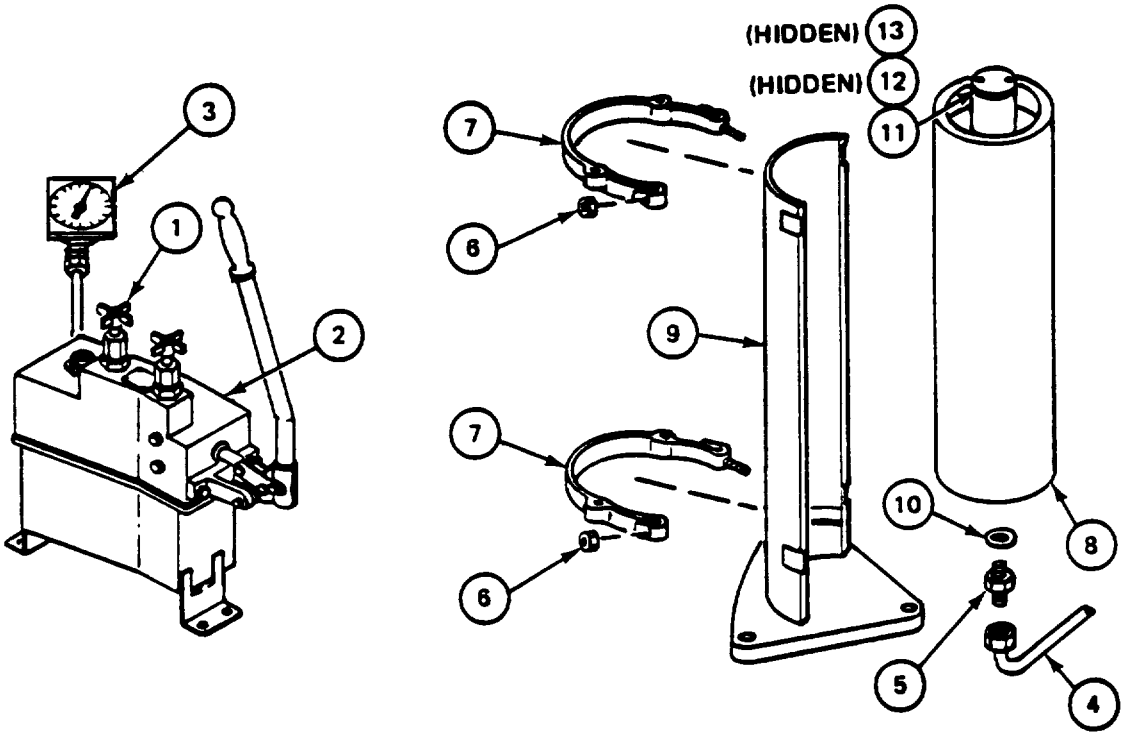
NOTE

Use rags to clean up spilled hydraulic fluid.

46-2. EQUILIBRATOR ACCUMULATOR REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
	WARNING Make sure 165 mm gun is at maximum elevation before doing step 1 to prevent injury.
1.	Open drain valve (1) on equilibrator charging manifold (2) until pressure gauge (3) on equilibrator hydraulic system drops to zero. Close drain valve (1).
2.	Using 5/8” and 13/16” wrenches, remove tube nut (4) from reducer (5) (para 1-23).
3.	Using 7/16” combination wrench, remove two nuts (6) holding two clamps (7) and equilibrator accumulator (8) to support (9).
4.	Remove two clamps (7) and equilibrator accumulator (8) from support (9).
	NOTE Do steps 5 through 10 if equilibrator accumulator (8) is to be replaced.
5.	Using 13/16” wrench, remove reducer (5) and preformed packing (10) from equilibrator accumulator (8). Throw away preformed packing (10).
6.	Remove protective cap (11) from top of equilibrator accumulator (8).
7.	Remove air cap (12) from charging valve (13).
8.	Using screwdriver, push down on charging valve (13) pin until all nitrogen pressure is removed.
9.	Put air cap (12) on charging valve (13).
10.	Put protective cap (11) on top of equilibrator accumulator (8).
11.	Put dust plug or dust cap on equilibrator accumulator (8) and dust plug on tube nut (4).
	END OF TASK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46-3. EQUILIBRATOR ACCUMULATOR INSTALLATION PROCEDURE

TOOLS: 5/8" open end wrench
13/16" open end wrench
7/16" combination wrench

SUPPLIES: Rags (item 15, App. A)
Preformed packing (MS28778-6)
Hydraulic fluid (item 9, App. A)

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedure to operate equilibrator hydraulic system
TM 9-2350-222-12 for procedure to fill equilibrator hydraulic system

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Turret Traverse Lock	FO-3	7
Equilibrator Accumulator	FO-4	10

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED

GENERAL INSTRUCTIONS:

CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

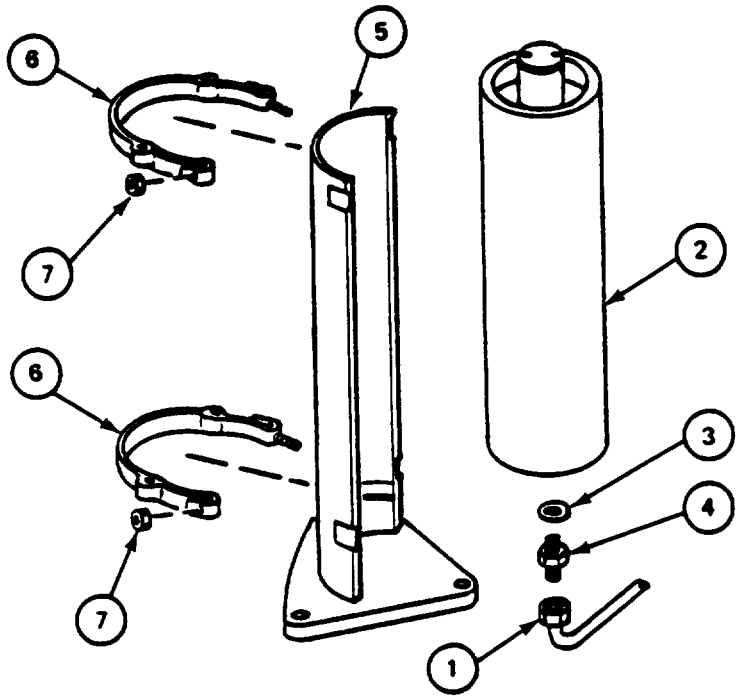
NOTE

Use rags to clean up spilled hydraulic fluid.

46-3. EQUILIBRATOR ACCUMULATOR INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Remove dust cap from tube nut (1) and dust plug or dust cap from equilibrator accumulator (2).
	NOTE Do steps 2 through 6 if equilibrator accumulator (2) was replaced.
2.	Lightly coat preformed packing (3) with hydraulic fluid.
3.	Put preformed packing (3) on reducer (4).
4.	Using 13/16" wrench, attach preformed packing (3) and reducer (4) to equilibrator accumulator (2) (para 1-24).
5.	Using 7/16" combination wrench, attach equilibrator accumulator (2) to accumulator support (5) with two straps (6) and two nuts (7).
6.	Using 5/8" and 13/16" wrenches, attach tube assembly nut (1) to reducer (4) (para 1-24).
	NOTE Follow-on Maintenance Action Required: Charge equilibrator accumulator with nitrogen if equilibrator accumulator was replaced (para 1-26). Fill equilibrator system (TM-12). Operate equilibrator hydraulic system to make sure it works properly (TM-10). Check for leakage and repair as required.
	END OF TASK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46-4. EQUILIBRATOR ACCUMULATOR SUPPORT REMOVAL PROCEDURE

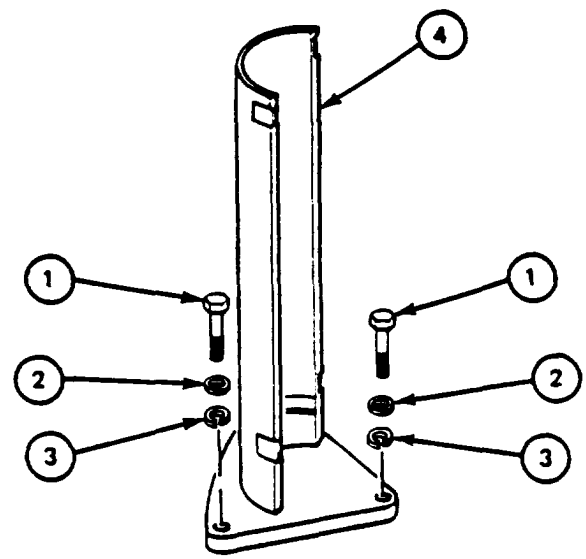
TOOLS: 9/16” socket (3/8” drive)
3/8” drive ratchet

PERSONNEL: One

PRELIMINARY PROCEDURES: Remove equilibrator accumulator (para 46-2)

FRAME 1

Step	Procedure
1.	Using socket wrench, remove three screws (1), three lockwashers (2), and three flat washers (3) holding support (4) to turret platform.
2.	Remove support (4) from turret platform.
	END OF TASK

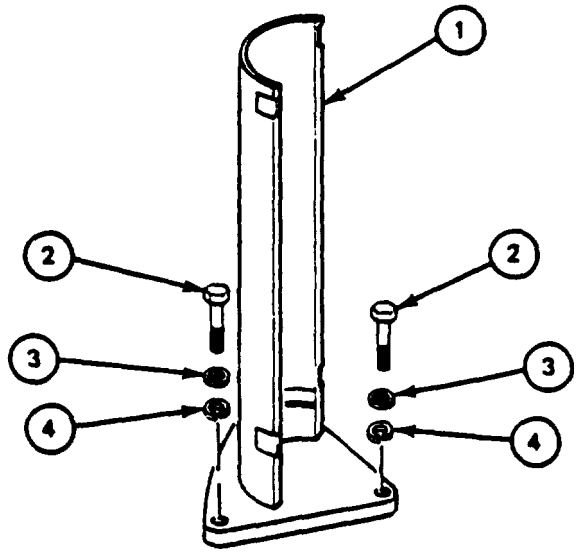


46-5. EQUILIBRATOR ACCUMULATOR SUPPORT INSTALLATION PROCEDURE

TOOLS: 9/16” socket (3/8” drive)
3/8” drive ratchet

FRAME 1

Step	Procedure
1.	Using socket wrench, attach accumulator support (1) to turret platform with three screws (2), three lockwashers (3), and three flat washers (4).
	NOTE
	Follow-on Maintenance Action Required:
	Install equilibrator accumulator (para 46-3).
	END OF TASK

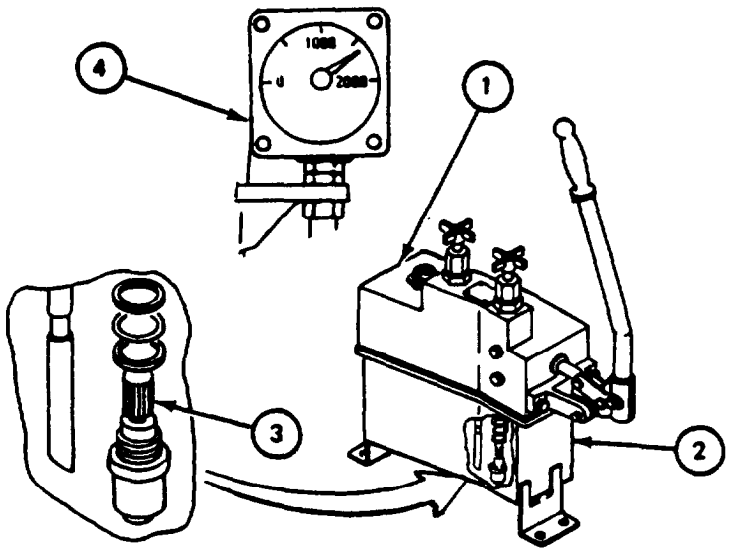


CHAPTER 47

EQUILIBRATOR CHARGING MANIFOLD AND RELATED PARTS

47-1. MAINTENANCE PROCEDURES INDEX

	Equipment Item	Tasks Removal	Tasks Installation
1.	Equilibrator Charging Manifold	47-2	47-3
2.	Equilibrator Reservoir	47-4	47-5
3.	Equilibrator Filter Element	47-6	47-7
4.	Equilibrator Pressure Gauge	47-8	47-9



47-2. EQUILIBRATOR CHARGING MANIFOLD REMOVAL PROCEDURE

TOOLS: 9/16” socket wrench (3/8” drive)
3/8” drive ratchet
6” extension (3/8” drive)
7/16” combination wrench
5/8” combination wrench

SUPPLIES: Rags (item 15, App. A)
Protective caps and plugs for hydraulic lines

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedure to elevate main gun

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver’s Master Control Panel	FO-3	11
Gunner’s Control Box	FO-1	2
Equilibrator Charging Manifold	FO-1	10

EQUIPMENT CONDITION: Driver’s master control panel MASTER BATTERY switch set to OFF
Gunner’s control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED
Gun elevated to maximum elevation (TM-10)

GENERAL INSTRUCTIONS:

CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

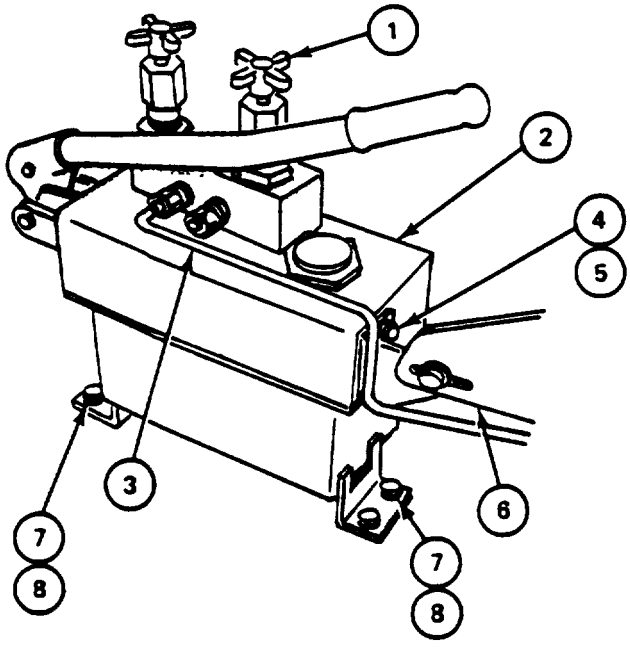
NOTE

Use rags to clean up spilled hydraulic fluid.

47-2. EQUILIBRATOR CHARGING MANIFOLD REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
	WARNING Be sure gun is at maximum elevation before relieving pressure in equilibrator.
1.	Open drain valve (1) on manifold (2).
2.	Using 5/8” wrench, remove hydraulic tube (3) from manifold (2).
3.	Put cap on tube (3), and plug in manifold part.
4.	Using 7/16” wrench, remove two screws (4) and two lockwashers (5) that attach foot guard (6) to manifold (2).
5.	Using socket wrench, remove four screws (7) and four lockwashers (8) that attach manifold to turret platform.
6.	Remove manifold (2).
	END OF TASK



47-3. EQUILIBRATOR CHARGING MANIFOLD INSTALLATION PROCEDURE

TOOLS: 9/16" socket wrench (3/8" drive)
3/8" drive ratchet
6" extension (3/8" drive)
7/16" combination wrench
5/8" combination wrench

SUPPLIES: Rags (item 15, App. A)

PERSONNEL: One

REFERENCES: TM 9-2350-22-10 for procedures to:
Check equilibrator hydraulic system fluid level
Elevate 165-mm gun
Balance equilibrator

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Equilibrator Charging Manifold	FO-1	10

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED
Gun elevated to maximum elevation (TM-10)

GENERAL INSTRUCTIONS:

CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

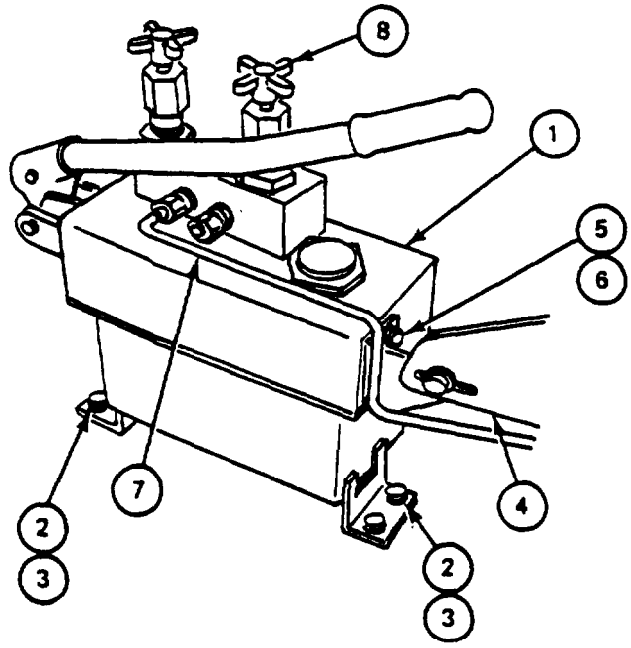
NOTE

Use rags to clean up spilled hydraulic fluid.

47-3. EQUILIBRATOR CHARGING MANIFOLD INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Put manifold (1) in place on turret platform.
2.	Using 7/16” wrench, attach manifold (1) to turret platform with four screws (2) and four lockwashers (3).
3.	Using socket wrench, attach foot guard (4) to manifold (1) with two screws (5) and two lockwashers (6).
4.	Remove cap from tube (7), and plug from manifold (1) port.
5.	Using 5/8” wrench, tighten tube (7) in manifold (1) port.
6.	Close drain valve (8) on manifold (1).
	NOTE Follow-on Maintenance Action Required: Check hydraulic system fluid level (TM-10). Balance equilibrator (TM-10).
	END OF TASK



47-4. EQUILIBRATOR RESERVOIR REMOVAL PROCEDURE

TOOLS: 5/32” socket head screw key (Allen wrench)

SUPPLIES: Rags (item 15, App. A)
Putty knife
Container

PERSONNEL: One

PRELIMINARY PROCEDURES: Remove equilibrator charging manifold (para 47-2)

GENERAL INSTRUCTIONS:

CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

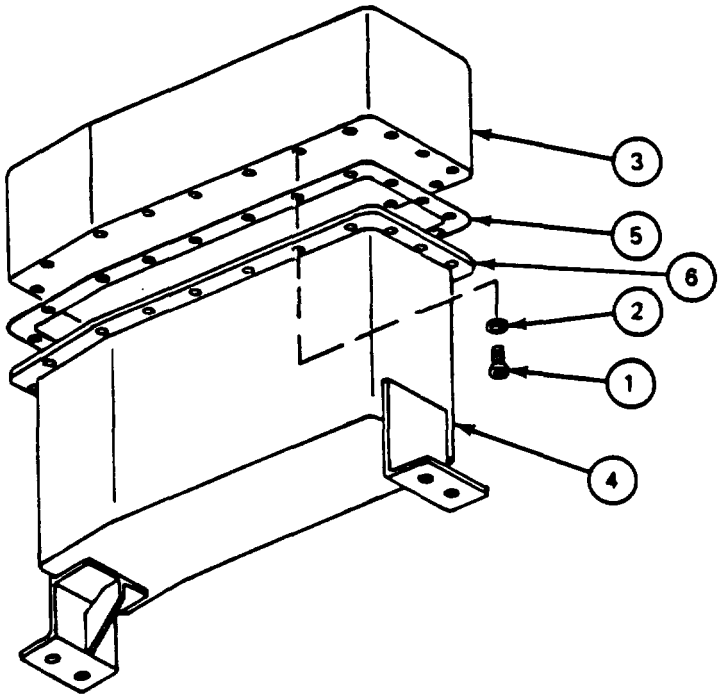
NOTE

Use rags to clean up spilled hydraulic fluid.

47-4. EQUILIBRATOR RESERVOIR REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Using Allen wrench, remove 20 screws (1) and 20 flat washers (2) that attach manifold (3) to reservoir (4).
2.	Remove manifold (3) from reservoir (4).
3.	Pour hydraulic fluid from reservoir (4) into container.
4.	Using putty knife, scrape gasket (5) from reservoir flange (6).
5.	Throw away old gasket.
	END OF TASK



47-5. EQUILIBRATOR RESERVOIR INSTALLATION PROCEDURE

TOOLS: 5/32” socket head screw key (Allen wrench)

SUPPLIES: Rags (item 15, App. A)
Gasket (10951631)

PERSONNEL: One

GENERAL INSTRUCTIONS:

CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

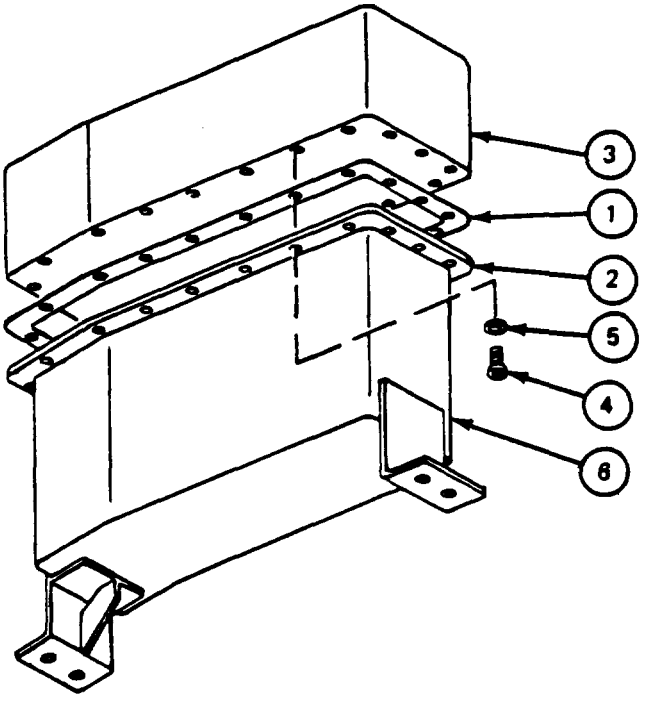
NOTE

Use rags to cleanup spilled hydraulic fluid.

47-5. EQUILIBRATOR RESERVOIR INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Put new gasket (1) on top of reservoir flange (2).
2.	Put manifold (3) on top of gasket (1).
3.	Using Allen wrench, tighten 20 screws (4) and 20 flat washers (5) that attach manifold (3) to reservoir (6).
	NOTE Follow-on Maintenance Action Required: Install equilibrator charging manifold (para 47-3).
	END OF TASK



47-6. EQUILIBRATOR FILTER ELEMENT REMOVAL PROCEDURE

TOOLS: Diagonal cutting pliers
Long round nose pliers
12” adjustable wrench
O-ring extractor kit

SUPPLIES: Rags (item 15, App. A)

PERSONNEL: One

REFERENCES: JPG for procedure to remove O-rings

PRELIMINARY PROCEDURES: Remove equilibrator charging manifold (para 47-2)
Remove reservoir (para 47-4)

GENERAL INSTRUCTIONS:

CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

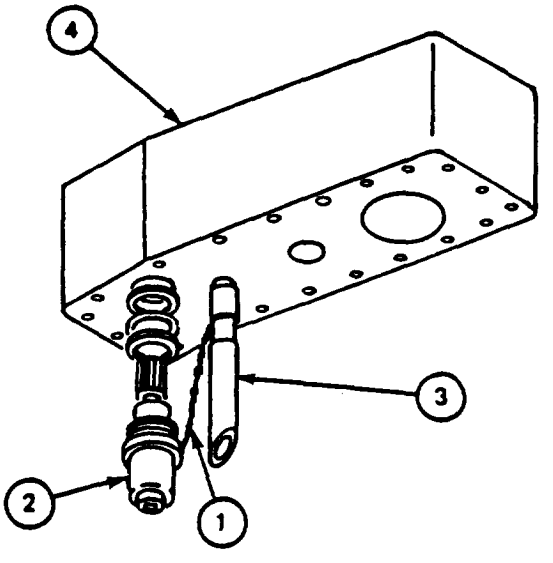
NOTE

Use rags to clean up spilled hydraulic fluid.

47-6. EQUILIBRATOR FILTER ELEMENT REMOVAL PROCEDURE FILTER (CONT)

FRAME 1

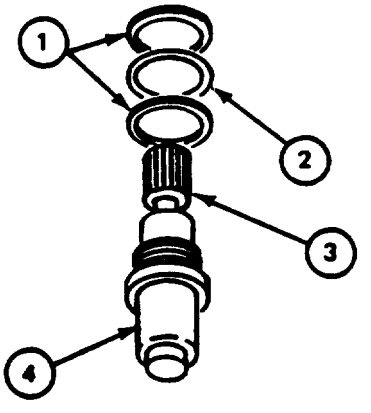
Step	Procedure
1.	Using diagonal cutting pliers, cut lockwire (1) between filter housing (2) and inlet tube (3) on manifold (4).
2.	Using long round nose pliers, take lockwire (1) off filter housing (2) and inlet tube (3).
3.	Using wrench, remove filter housing (2) from manifold (4).
	GO TO FRAME 2



47-6. EQUILIBRATOR FILTER ELEMENT REMOVAL PROCEDURE FILTER (CONT)

FRAME 2

Step	Procedure
1.	Using O-ring extractor tool, remove two retainers (1), packing (2), and filter element (3) from filter housing (4) (JPG).
2.	Throw away old retainers (1), packing (2), and filter element (3).
	END OF TASK



47-7. EQUILIBRATOR FILTER ELEMENT INSTALLATION PROCEDURE

TOOLS: Long round nose pliers
Slip joint pliers
12" adjustable wrench
O-ring extractor kit

SUPPLIES: Hydraulic fluid, small amount (item 9, App. A)
Retainers (MS 28782-21) (two)
Preformed packing (MS 28775-216)
Filter element (7084204)
Dry cleaning solvent (Item 22, App. A)
Lockwire
Rags (item 15, App. A)

PERSONNEL: One

REFERENCES: JPG for procedures to:
Install O-rings
Install Iockwire

GENERAL INSTRUCTIONS:

CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

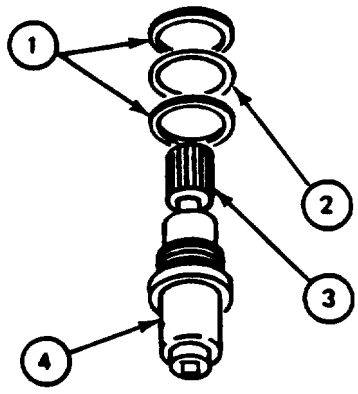
NOTE

Use rags to clean up spilled hydraulic fluid. Use dry cleaning solvent to clean filter housing.

47-7. EQUILIBRATOR FILTER ELEMENT INSTALLATION PROCEDURE (CONT)

FRAME 1

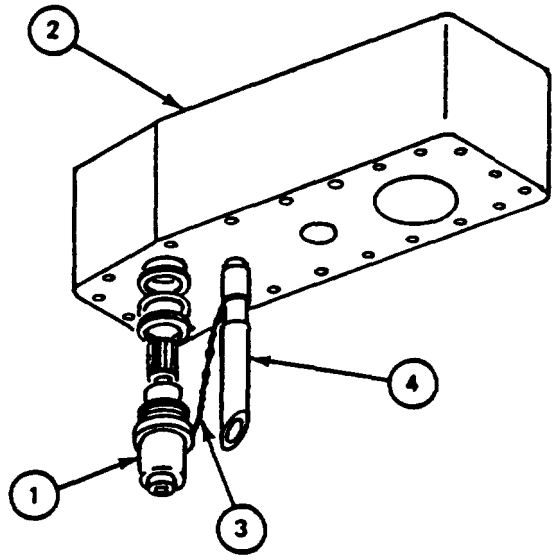
Step	Procedure
1.	Lubricate two retainers (1) and packing (2) with hydraulic fluid (JPG).
2.	Put filter element (3) in filter housing (4).
3.	Using O-ring extractor tool, put two retainers (1) and packing (2) on filter housing (4) (JPG).
	GO TO FRAME 2



47-7. EQUILIBRATOR FILTER ELEMENT INSTALLATION PROCEDURE (CONT)

FRAME 2

Step	Procedure
1.	Using wrench, tighten assembled filter housing (1) into manifold (2).
2.	Using long round nose pliers, attach lockwire (3) to filter housing (1) (JPG).
3.	Using slip joint pliers, twist lockwire (3) up to inlet tube (4) (JPG).
4.	Using long round nose pliers, attach lockwire (3) to inlet tube (4) (JPG).
	NOTE Follow-on Maintenance Action Required: Install reservoir (para 47-5). Install equilibrator charging manifold (para 47-3).
	END OF TASK



47-8. EQUILIBRATOR PRESSURE GAUGE REMOVAL PROCEDURE

TOOLS: 7/8" open end wrench
11/16" open end wrench
Slip joint pliers

SUPPLIES: Rags (item 15, App. A)
Dust plugs
Dust caps

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedure to elevate 165 mm gun

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Equilibrator Pressure Gauge	FO-1	8
Turret Traverse Lock	FO-3	7

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED
165-MM gun elevated to maximum elevation (TM-10)

GENERAL INSTRUCTIONS:

CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

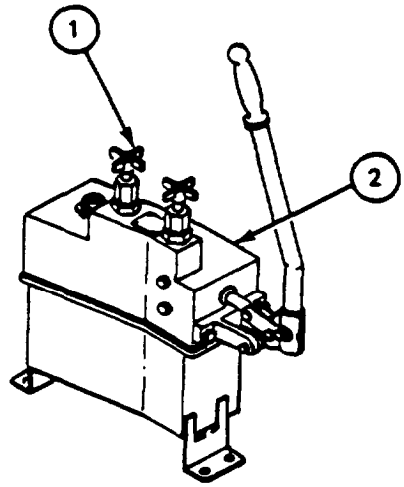
NOTE

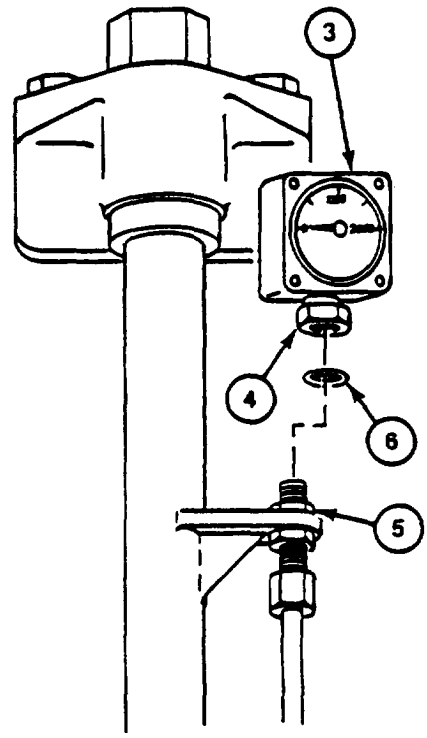
Use rags to clean up spilled hydraulic fluid.

47-8. EQUILIBRATOR PRESSURE GUAGE REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
	WARNING Make sure 165-MM gun is elevated to maximum elevation before going step 1 to prevent injury.
1.	Open drain valve (1) on equilibrator charging manifold (2) until pressure guage (3) on equilibrator hydraulic system drops to zero. Close drain valve (1).
2.	Using 7/8” wrench on pressure gauge nut (4) and 11/16” wrench on connector (5), remove pressure gauge (3) from connector (5).
3.	Remove preformed packing (6) from connector (5).
4.	Throw preformed packing (6) away.
5.	Put dust plug in pressure gauge nut (4) and dust cap on connector (5).
	END OF TASK





47-9. EQUILIBRATOR PRESSURE GAUGE INSTALLATION PROCEDURE

TOOLS: 7/8" open end wrench
11/16" open end wrench

SUPPLIES: Rags (item 15, App. A)
Preformed packing (MS 28778-4)
Hydraulic fluid (item 9, App. A)

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedure to operate equilibrator hydraulic system
TM 9-2350-222-12 for procedure to fill equilibrator hydraulic system

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Equilibrator Pressure Gauge	FO-1	8
Turret Traverse Lock	FO-3	7

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED

GENERAL INSTRUCTIONS:

CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

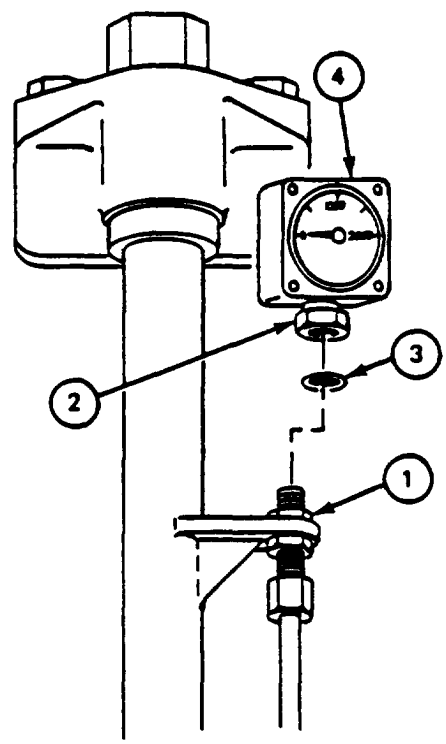
NOTE

Use rags to clean up spilled hydraulic fluid.

47-9. EQUILIBRATOR PRESSURE GAUGE INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Remove dust cap from connector (1) and dust plug from pressure gauge nut (2).
2.	Lightly coat preformed packing (3) with hydraulic fluid.
3.	Put preformed packing (3) on connector (1).
4.	Using 7/8" wrench on pressure gauge nut (2) and 11/16" wrench on connector (1), attach pressure gauge (4) to connector (1).
	NOTE Follow-on Maintenance Action Required: Fill equilibrator hydraulic system (TM-12). Operate equilibrator hydraulic system to make sure it works properly (TM-10). Check for leakage and repair as required.
	END OF TASK



CHAPTER 48

LIGHT SOURCE CONTROL (ELEVATION QUADRANT)

48-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Tasks	
	Removal	Installation
Light Source Control	48-2	48-3

48-2. LIGHT SOURCE CONTROL (ELEVATION QUADRANT) REMOVAL PROCEDURE

TOOLS: 7/16” combination wrench

PERSONNEL: One

REFERENCES: JPG for procedure to disconnect eIectrical connectors

EQUIPMENT LOCATION INFORMATION:

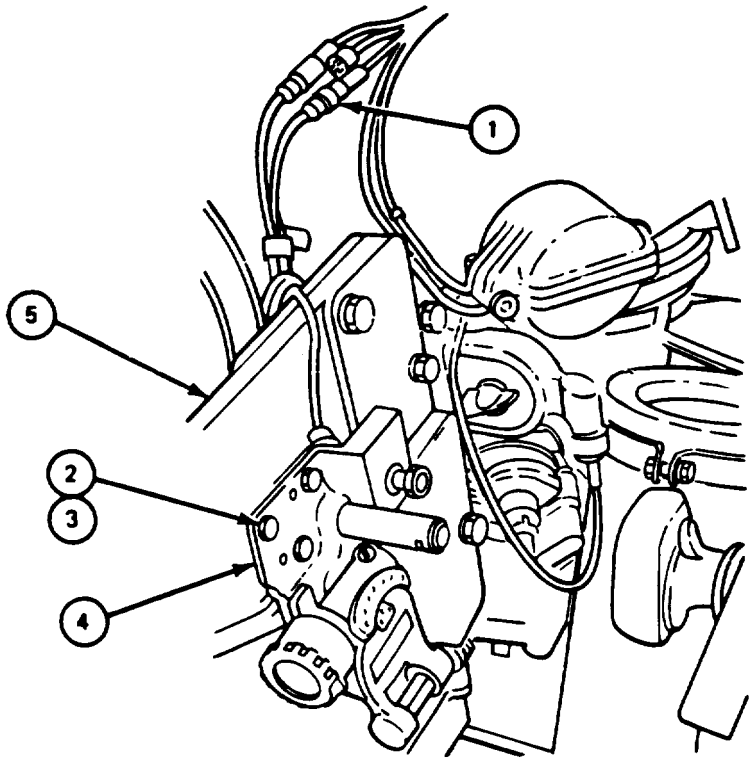
EQUIPMENT	FOLDOUT	CALLOUT
Driver’s Master Control Panel	FO-3	11
Elevation Quadrant	FO-1	18

EQUIPMENT CONDITION: Driver’s master control panel MASTER BATTERY switch set to OFF

48-2. LIGHT SOURCE CONTROL (ELEVATION QUADRANT) REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Disconnect electrical connector (1) from vehicle wiring harness (JPG).
2.	Using wrench, remove three screws (2) and three lockwashers (3) that attach light source control (4) to gunner's guard (5).
3.	Remove light source control (4).
	NOTE Do step 4 only if light source control is bad.
4.	Remove elevation quadrant M13A3 (para 54-2).
	END OF TASK



48-3. LIGHT SOURCE CONTROL (ELEVATION QUADRANT) INSTALLATION PROCEDURE

TOOLS: 7/16” combination wrench

PERSONNEL: One

REFERENCES: JPG for procedure to connect electrical connectors
TM 9-2350-222-10 for procedure to operate light source control (elevation quadrant)

EQUIPMENT LOCATION INFORMATION:

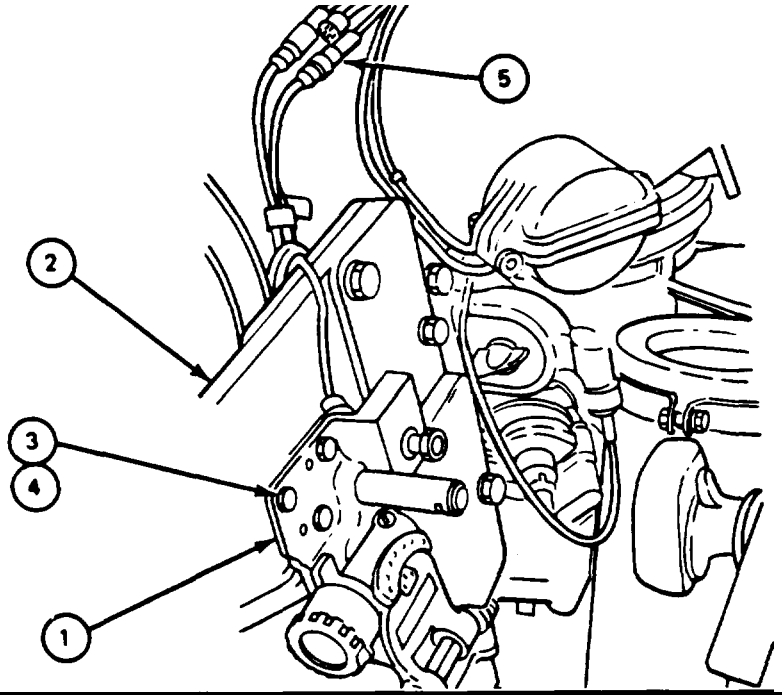
EQUIPMENT	FOLDOUT	CALLOUT
Driver’s Master Control Panel	FO-3	11
Elevation Quadrant	FO-1	18

EQUIPMENT CONDITION: Driver’s master control panel MASTER BATTERY switch set to OFF

48-3. LIGHT SOURCE CONTROL (ELEVATION QUADRANT) INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Put light source control (1) on gunner's guard (2).
2.	Using wrench, attach light source control (1) to gunner's guard (2) with three screws (3) and three Iockwashers (4).
3.	Connect electrical connector (5) to vehicle wiring harness (JPG).
	NOTE Do step 4 only if light source control (1) was replaced.
4.	Install elevation quadrant M13A3 (para 54-3).
	NOTE Follow-on Maintenance Action Required: Operate light source control (elevation quadrant) to make sure it works properly (TM-10). Do elevation quadrant M13A3 adjustment (para 54-4).
	END OF TASK



CHAPTER 49

COMMANDER'S PERISCOPE LINK

49-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Tasks			
	Removal	Installation	Disassembly	Assembly
Commander's Periscope Link	49-2	49-3	49-4	49-5

49-2. COMMANDER'S PERISCOPE LINK REMOVAL PROCEDURE

TOOLS: 7/16" combination wrench

PERSONNEL: One

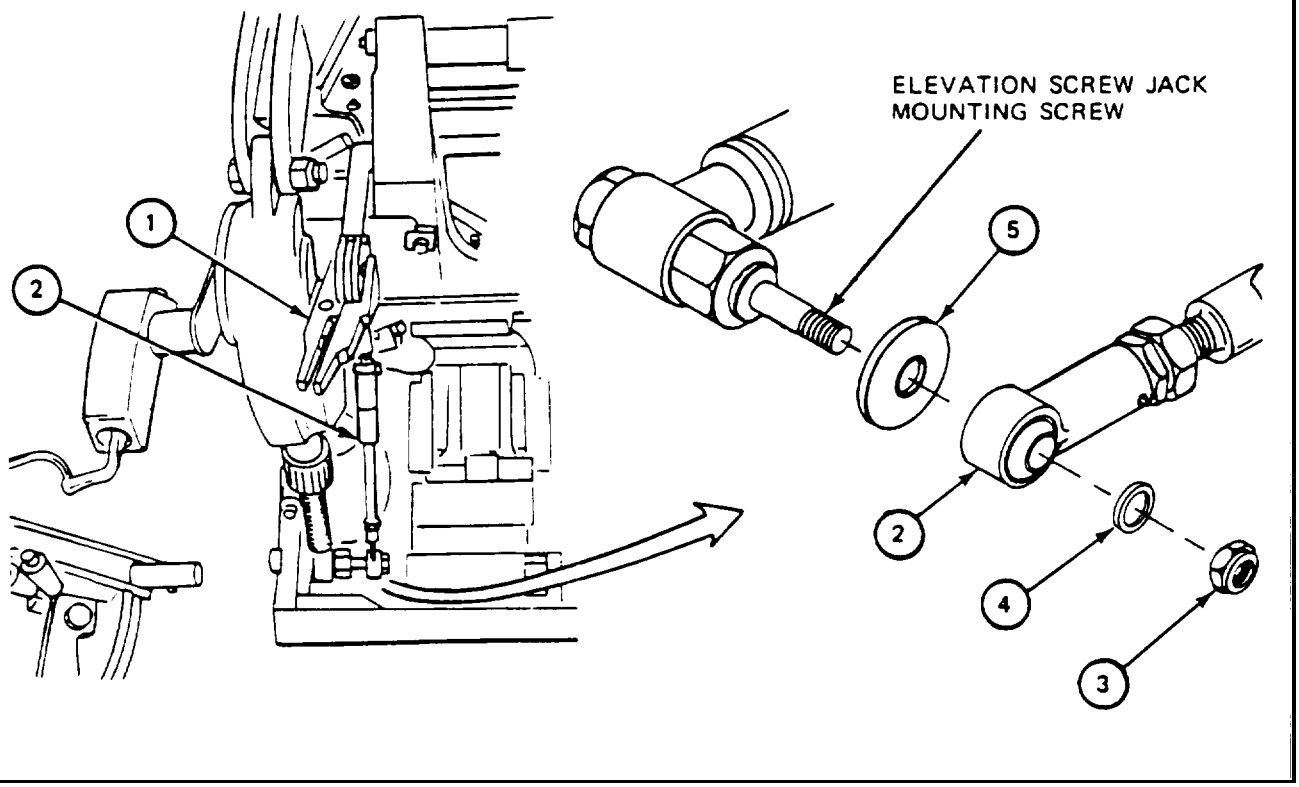
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Commander's Periscope	FO-2	16

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

Step	Procedure
1.	Squeeze quick-disconnect clamp (1) and remove periscope link (2) from periscope.
2.	Using 7/16" wrench, remove self-locking nut (3) and small flat washer (4) from elevation screw jack mounting screw.
3.	Remove periscope link (2) and large flat washer (5).
	END OF TASK



49-3. COMMANDER'S PERISCOPE LINK INSTALLATION PROCEDURE

TOOLS: 5/32" socket head screw key (Allen wrench)
7/16" combination wrench
Long round nose pliers
8" adjustable wrench

SUPPLIES: Self-locking nut (MS 21044-N8)
Lockwire

PERSONNEL One

REFERENCES: JPG for procedure to install Iockwire

EQUIPMENT LOCATION INFORMATION:

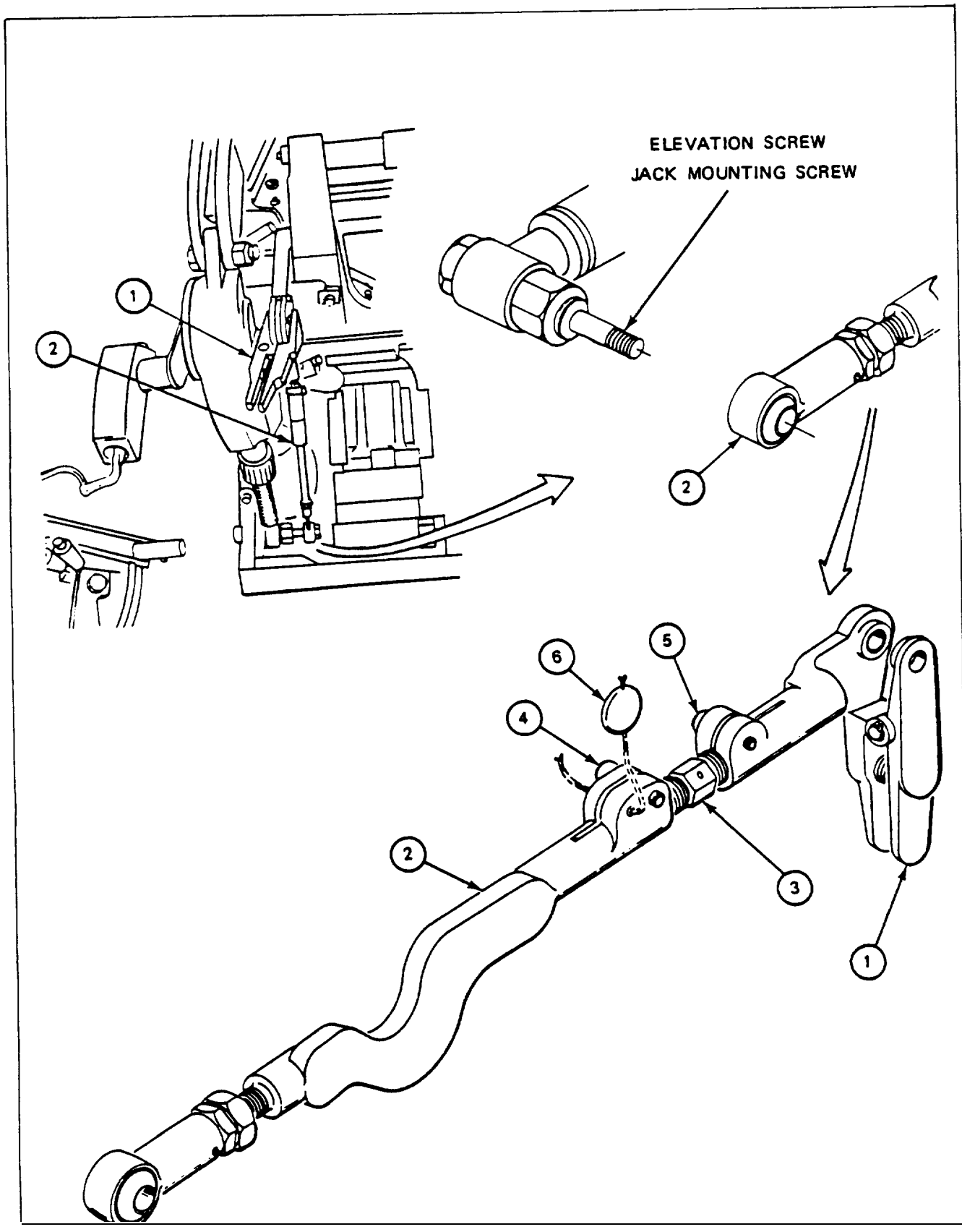
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Commander's Periscope	FO-2	16

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

49-3. COMMANDER'S PERISCOPE LINK INSTALLATION PROCEDURE (CONT)

FRAME 1

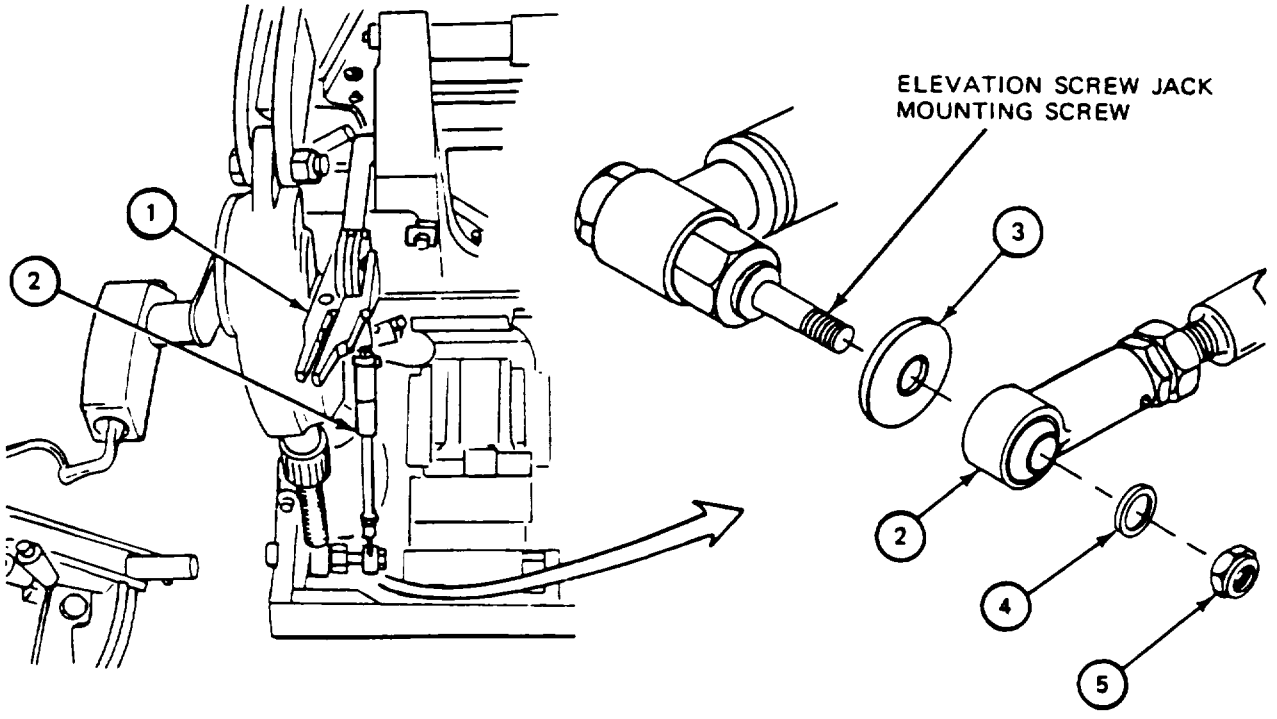
Step	Procedure
	NOTE Procedure in this frame should be done only to adjust length of link as follow-on maintenance action for commander's periscope link assembly procedure (para 49-5). If link is proper length, go to Frame 2.
1.	Squeeze clamp (1) and attach link (2) to periscope.
2.	Hold link (2) in mounting position.
3.	Using adjustable wrench, turn stud (3) until link (2) lines up with elevation screw jack mounting screw.
4.	Squeeze clamp (1) and remove link (2) from periscope.
5.	Using Allen wrench, tighten screw (4) and screw (5).
6.	Using pliers, install lockwire (6) (JPG).
	GO TO FRAME 2


ELEVATION SCREW
JACK MOUNTING SCREW
1
2
2
6
5
4
2
3
1

49-3. COMMANDER'S PERISCOPE LINK INSTALLATION PROCEDURE (CONT)

FRAME 2

Step	Procedure
1.	Squeeze clamp (1) and attach link (2) to periscope.
2.	Put large washer (3), link (2), and small washer (4) on elevation screw jack mounting screw.
3.	Using combination wrench, install new self-locking nut (5) on elevation screw jack mounting screw.
	END OF TASK



49-4. COMMANDER'S PERISCOPE LINK DISASSEMBLY PROCEDURE

TOOLS: 1/16" drive pin punch
8 ounce ball peen hammer
8" adjustable wrench
Diagonal cutting pliers
Long round nose pliers
5/32" socket head screw key (Allen wrench)
Retaining ring pliers

PERSONNEL One

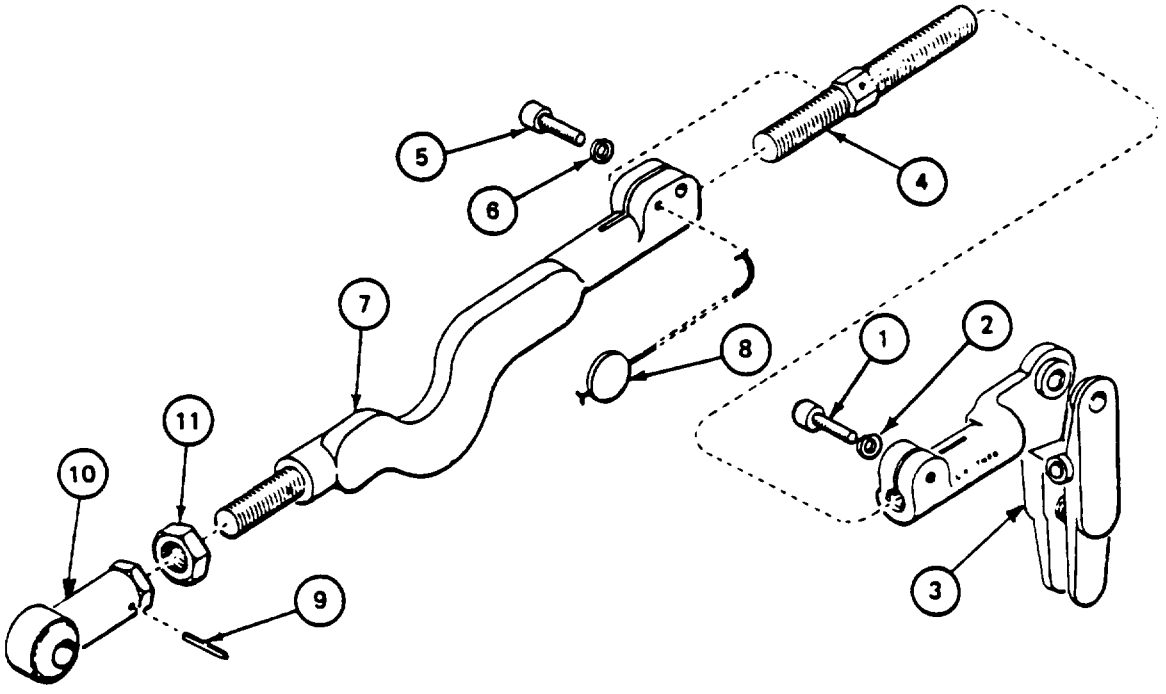
REFERENCES: JPG for procedures to:
Remove spring pin
Remove lockwire
Remove retaining ring

PRELIMINARY PROCEDURES: Remove commander's periscope link (para 49-2)

49-4. COMMANDER'S PERISCOPE LINK DISASSEMBLY PROCEDURE (CONT)

FRAME 1

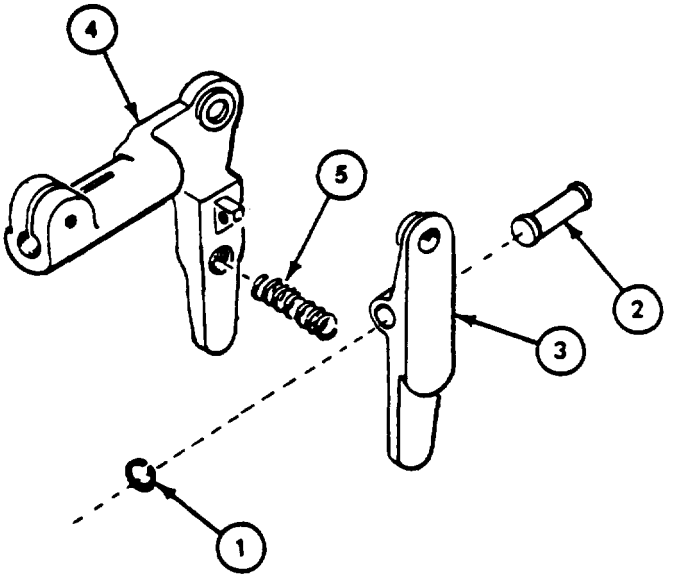
Step	Procedure
1.	Using Allen wrench, remove screw (1) and Iockwasher (2) from clamp (3).
2.	Turn clamp (3) clockwise until clamp comes off stud (4).
3.	Using Allen wrench, remove screw (5) and lockwasher (6) from rod (7).
4.	Using diagonal cutting pliers and long round nose pliers, remove lockwire (8) (JPG).
5.	Turn stud (4) counterclockwise until stud comes off rod (7).
6.	Using hammer and punch, remove spring pin (9) from rod end (10) and rod (7) (JPG).
7.	Using wrench, remove rod end (10) and nut (11) from rod (7).
	GO TO FRAME 2



49-4. COMMANDER'S PERISCOPE LINK DISASSEMBLY PROCEDURE (CONT)

FRAME 2

Step	Procedure
1.	Using retaining ring pliers, remove retaining ring (1) from pin (2) (JPG).
2.	Remove pin (2) from lever (3) and clamp (4).
3.	Separate lever (3), clamp (4), and spring (5).
	END OF TASK



49-5. COMMANDER'S PERISCOPE LINK ASSEMBLY PROCEDURE

TOOLS: Retaining ring pliers
8' adjustable wrench
1/16" drive pin punch
8 ounce ball peen hammer

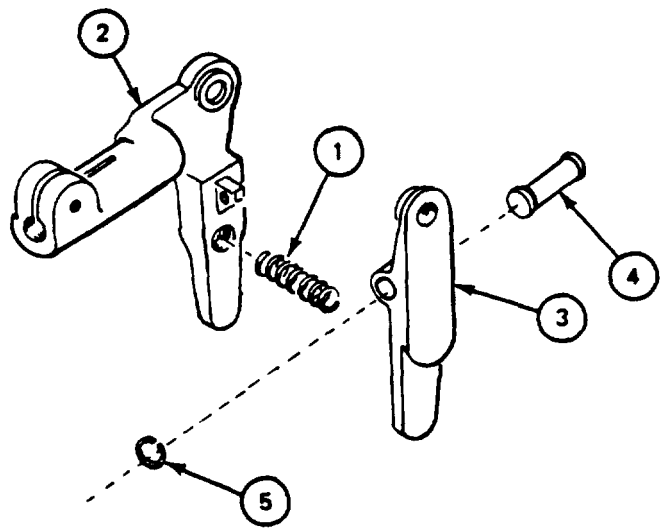
PERSONNEL: One

REFERENCES: JPG for procedures to:
Install retaining ring
Install spring pin

49-5. COMMANDER'S PERISCOPE LINK ASSEMBLY PROCEDURE (CONT)

FRAME 1

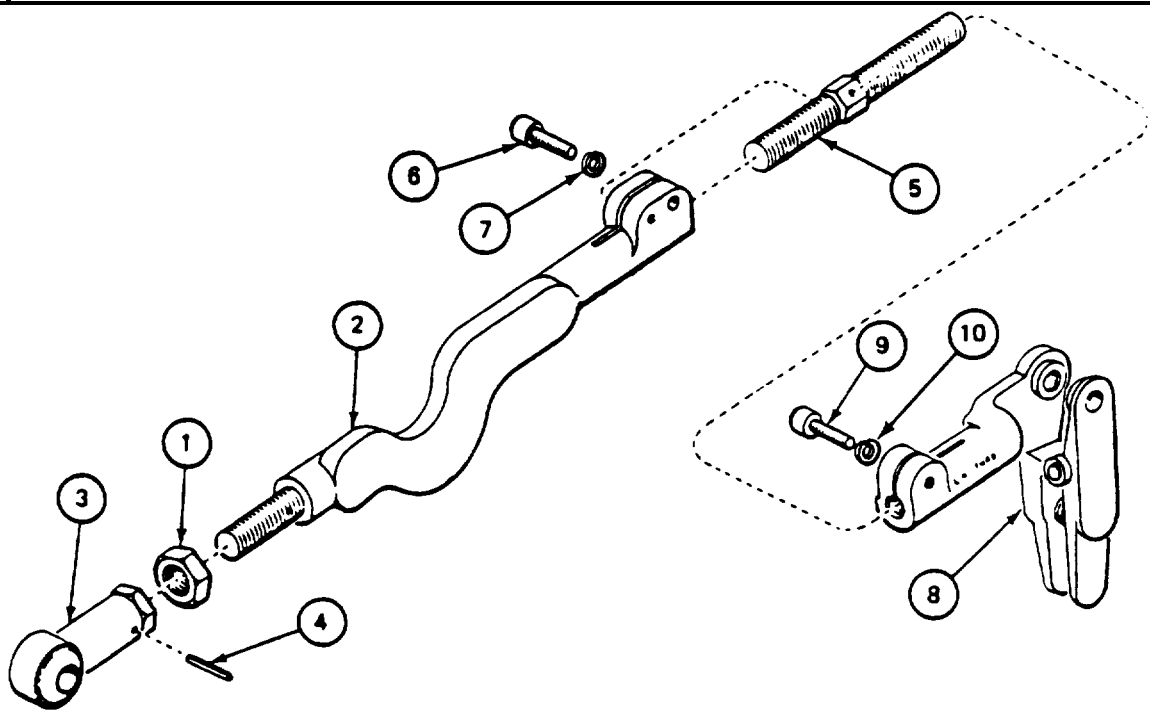
Step	Procedure
1.	Install spring (1) in clamp (2).
2.	Hold lever (3) in mounting position on clamp (1). Squeeze spring (1) until pin hole in clamp (2) lines up with pin hole in lever (3). Hold clamp (2) and lever (3) in this position.
3.	Slide pin (4) through matching holes in lever (3) and clamp (2).
4.	Using retaining ring pliers, attach pin (4) to lever (3) and clamp (2) with retaining ring (5) (JPG).
	GO TO FRAME 2



49-5. COMMANDER'S PERISCOPE LINK ASSEMBLY PROCEDURE (CONT)

FRAME 2

Step	Procedure
1.	Screw nut (1) all the way on rod (2).
2.	Screw rod end (3) on rod (2) until pin holes in rod end (3) and rod (2) are lined up.
3.	Using punch and hammer, attach rod end (3) to rod (2) with spring pin (4) (JPG).
4.	Screw stud (5) into rod (2).
5.	Install screw (6) and lockwasher (7) in rod (2) finger tight.
	NOTE Clamp (8) should be turned counterclockwise in step 6.
6.	Install clamp (8) on stud (5).
7.	Install screw (9) and lockwasher (10) in clamp (8) finger tight.
	NOTE Follow-on Maintenance Action Required: Install commander's periscope link (para 49-3).
	END OF TASK



CHAPTER 50.1

COMMANDER'S M30 INSTRUMENT LIGHT CLAMP

50.1-1 MAINTENANCE PROCEDURE INDEX

Equipment Item	Tasks	
	Removal	Installation
Commander's M30 Instrument Light Clamp	50.1-2	50.1-3

50.1-2 COMMANDER'S M30 INSTRUMENT LIGHT CLAMP REMOVAL

TOOLS: Cross-tip screwdriver (Phillips) #2

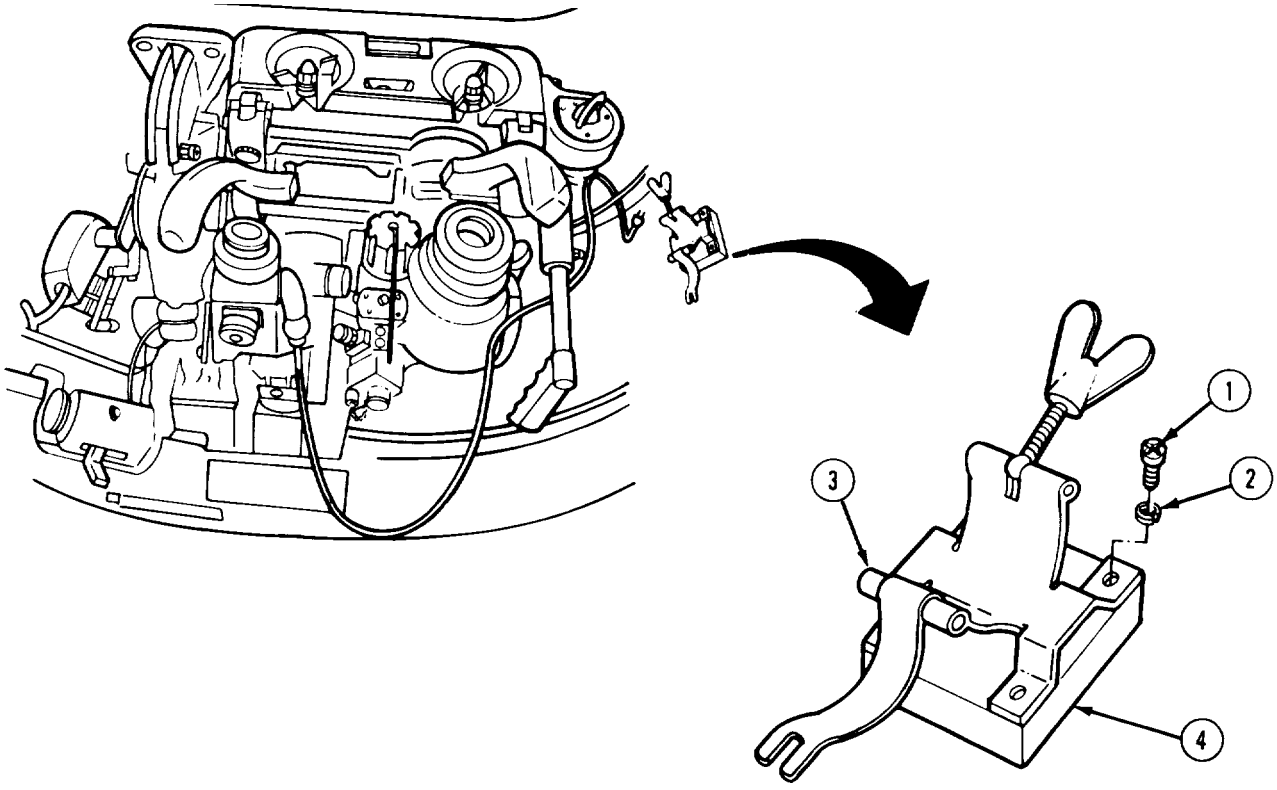
PERSONNEL: One

REFERENCE: TM 9-2350-222-10

PRELIMINARY PROCEDURE: Remove commander's M30 instrument light (TM-10).

FRAME 1

STEP	PROCEDURE
1,	Using screwdriver, remove four screws (1) and four lockwasher (2).
2.	Remove clamp (3) and block (4) from cupola wall.
	END OF TASK



50.1-3 COMMANDER'S M30 INSTRUMENT LIGHT INSTALLATION

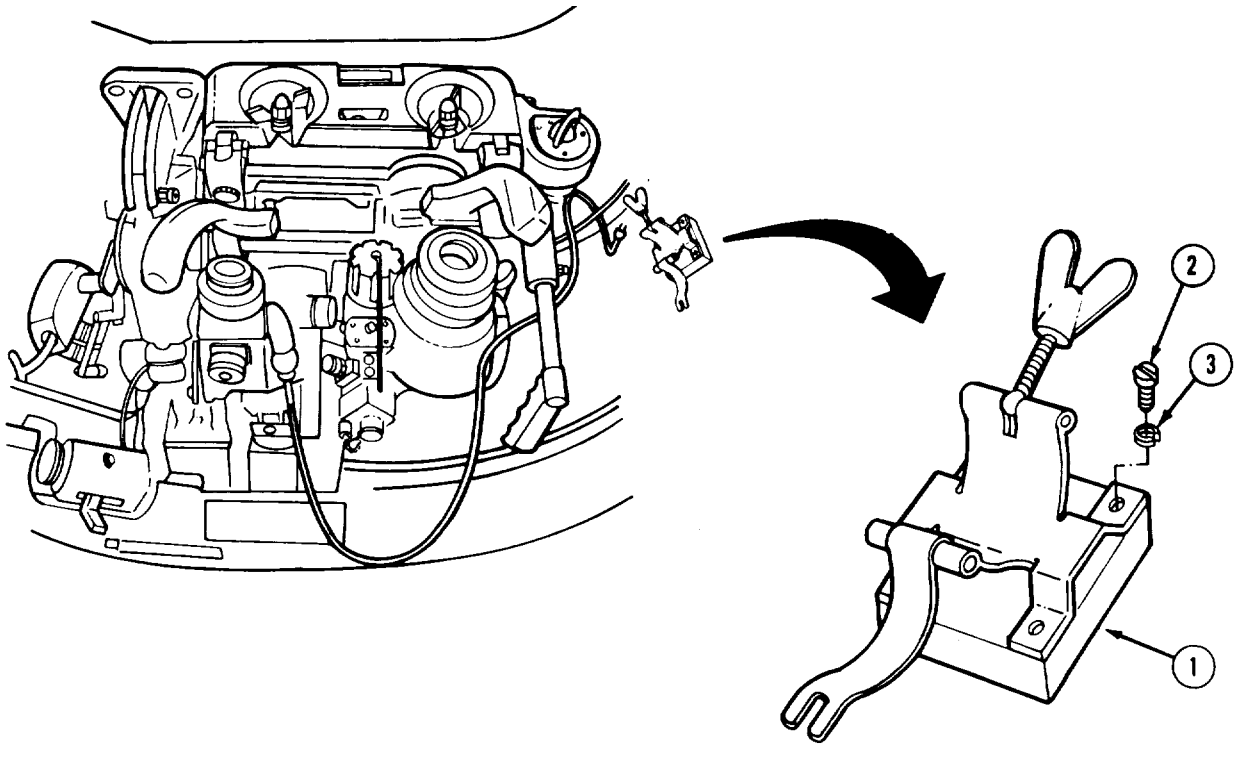
TOOLS: Cross-tip screwdriver (Phillips) #2

PERSONNEL: One

REFERENCE: TM 9-2350-222-10 for procedure to install commander's M30 Instrument Light

FRAME 1

STEP	PROCEDURE
1.	Hold clamp (1) in mounting position on turret wall,
2.	Using screwdriver, attach clamp (1) to cupola wall with four screws (1) and four lockwashers (3).
	NOTE Follow-on Maintenance Action Required: Install commander's M30 instrument Iight (TM-10).
	END OF TASK



CHAPTER 51

GUNNER'S PERISCOPE MOUNT M118/M118E1 HEADREST

51-1. MAINTENANCE PROCEDURE INDEX

Equipment Item	Tasks	
	Removal	Installation
Gunner's Periscope Mount Ml18/M118E1 Headrest	51-2	51-3

51-2. GUNNER'S PERISCOPE MOUNT M118/M118E1 HEADREST REMOVAL PROCEDURE

TOOLS: 1/16 in. socket head screw key (Allen wrench)
Flat tip screwdriver

PERSONNEL: One

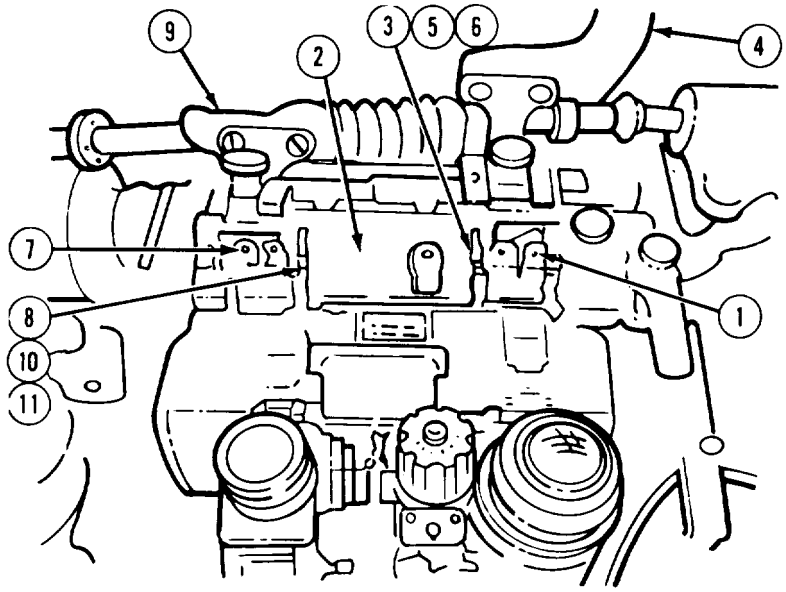
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Gunner's Periscope Mount M118/M118E1	FO-1	29

FRAME 1

STEP	PROCEDURE
1.	Using Allen wrench, loosen two setscrews (1) on mount (2) that lock two pivot screws (3) for right side headrest (4).
2.	Using screwdriver, remove two pivot screws (3), two spring washers (5), and two flat washers (6) that attach right side headrest (4) to mount (2). Remove headrest.
3.	Using Allen wrench, loosen two setscrews (7) on mount (2) that lock two pivot screws (8) for left side headrest (9).
4.	Using screwdriver, remove two pivot screws (8), two spring washers (10), and two flat washers (11) that attach left side headrest (9) to mount (2). Remove headrest.

END OF TASK



51-3. GUNNER'S PERISCOPE MOUNT M118/M118E1 HEADREST INSTALLATION PROCEDURE

TOOLS: 1/16 in. socket head screw key (Allen wrench)
Flat tip screwdriver

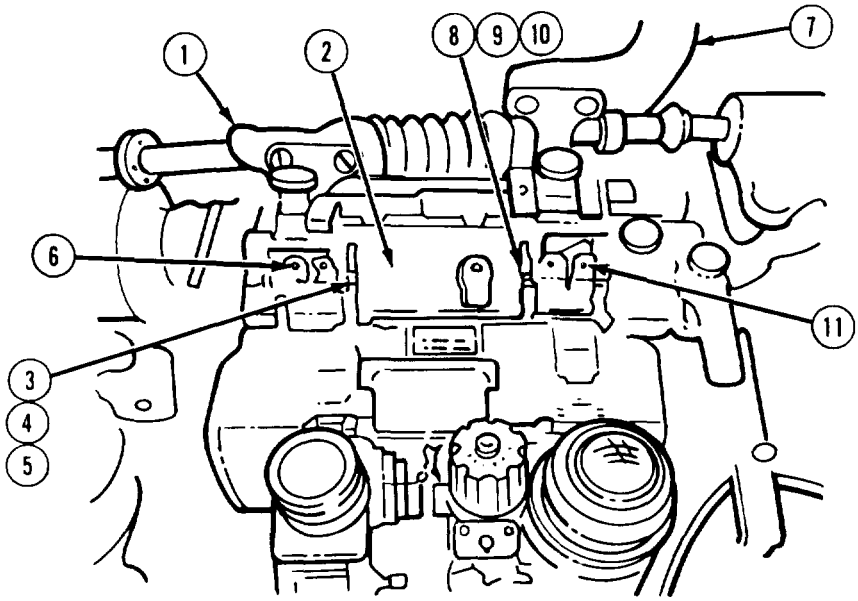
PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Gunner's Periscope Mount M118/M118E1	FO-1	29

FRAME 1

STEP	PROCEDURE
1.	Using screwdriver, attach left side headrest (1) to mount (2) with two pivot screws (3), two spring washers (4), and two flat washers (5).
2.	Using Allen wrench, tighten two setscrews (6) on mount (2) that lock two pivot screws (3) for left side headrest (1).
3.	Using screwdriver, attach right side headrest (7) to mount (2) with two pivot screws (8), two spring washers (9), and two flat washers (10).
4.	Using Allen wrench, tighten two setscrews (11) on mount (2) that lock two pivot screws (8) for right side headrest (7).
	END OF TASK



CHAPTER 51.1

GUNNER'S M30 INSTRUMENT LIGHT CLAMP

51.1-1 MAINTENANCE PROCEDURE INDEX

Equipment Item	Tasks	
	Removal	Installation
Gunner's M30 Instrument Light Clamp	51.1-2	51.1-3

51.1-2 GUNNER'S M30 INSTRUMENT LIGHT CLAMP REMOVAL

TOOLS: Cross-tip screwdriver (Phillips) #2

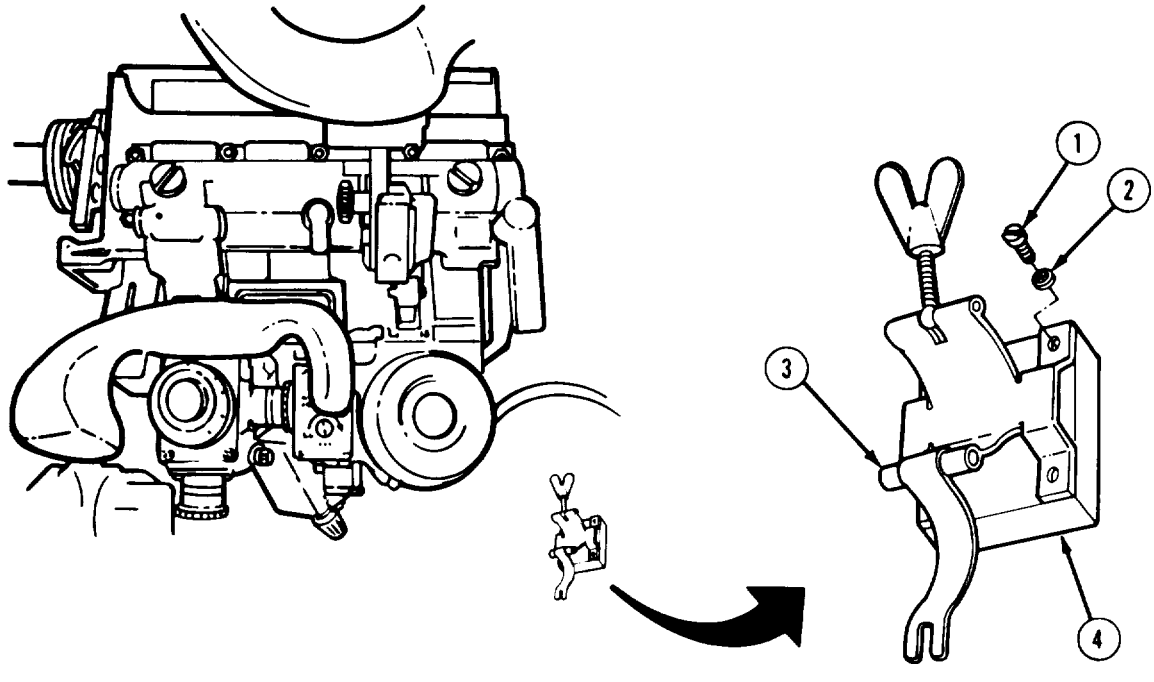
PERSONNEL One

REFERENCE TM 9-2350-222-10

PRELIMINARY PROCEDURE: Remove gunner's M30 instrument light (TM-1O).

FRAME 1

STEP	PROCEDURE
1.	Using screwdriver, remove four screws (1), and four lockwasher (2).
2.	Remove clamp (3) and block (4) from turret wall.
	END OF TASK



51.1-3. GUNNER'S M30 INSTRUMENT LIGHT CLAMP INSTALLATION

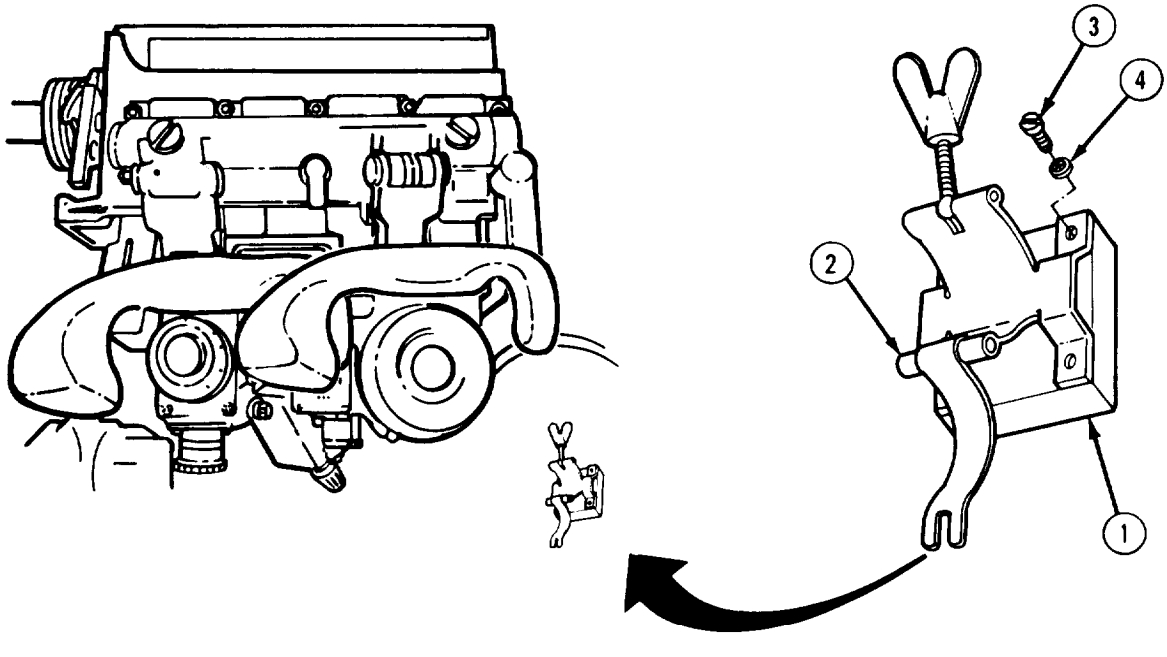
TOOLS: Cross-tip screwdriver (Phillips) #2

PERSONNEL: One

REFERENCE: TM 9-2350-222-10 for procedure to install gunner's M30 instrument light

FRAME 1

STEP	PROCEDURE
1.	Hold block (1) and clamp (2) in mounting position on turret wall.
2.	Using screwdriver, attach block (1) and clamp (2) to turret wall with four screws (3) and four lockwashers (4).
	NOTE **Follow-on Maintenance Action Required:** **Install gunner's M30 instrument light (TM-10).**
	END OF TASK



CHAPTER 52

M32C/M32CE1 PERISCOPE

52-1. **Procedures to remove and install the M32C/M32CE1 periscope are in TM 9-2350-222-10.**

CHAPTER 53

M36/M36E1 PERISCOPE LIGHT SOURCE CONTROL

53-1. MAINTENANCE PROCEDURE INDEX

Equipment Item	Tasks			
	Removal	Installation	Disassembly	Assembly
M36/M36E1 Periscope Light Source Control	53-2	53-3	53-4	53-5

53-2. M36/M36E2 PERISCOPE LIGHT SOURCE CONTROL REMOVAL PROCEDURE

TOOLS: 3/16 in. socket head screw key (Allen wrench)
7/16 in. socket (3/8 in. drive)
3/8 in. drive ratchet
6 in. extension (3/8 in. drive)

PERSONNEL: One

REFERENCES: JPG for procedure to disconnect electrical connectors

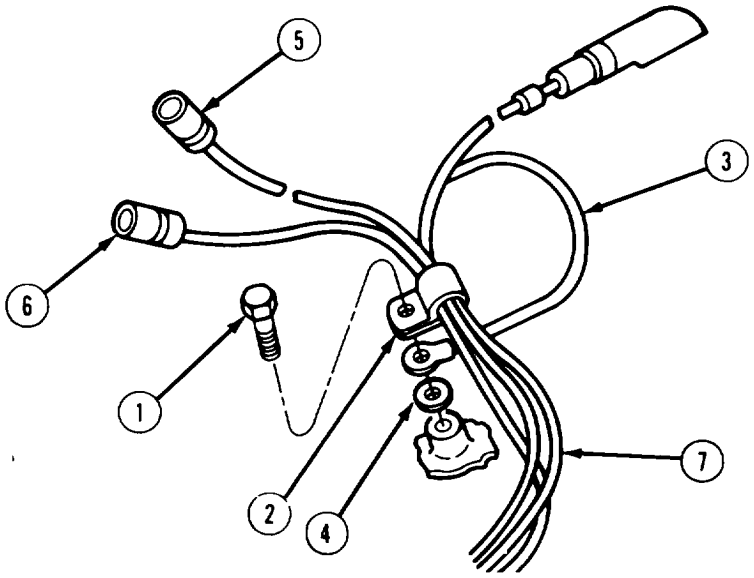
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Commander's Periscope	FO-2	16
Driver's Master Control Panel	FO-3	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF.

FRAME 1

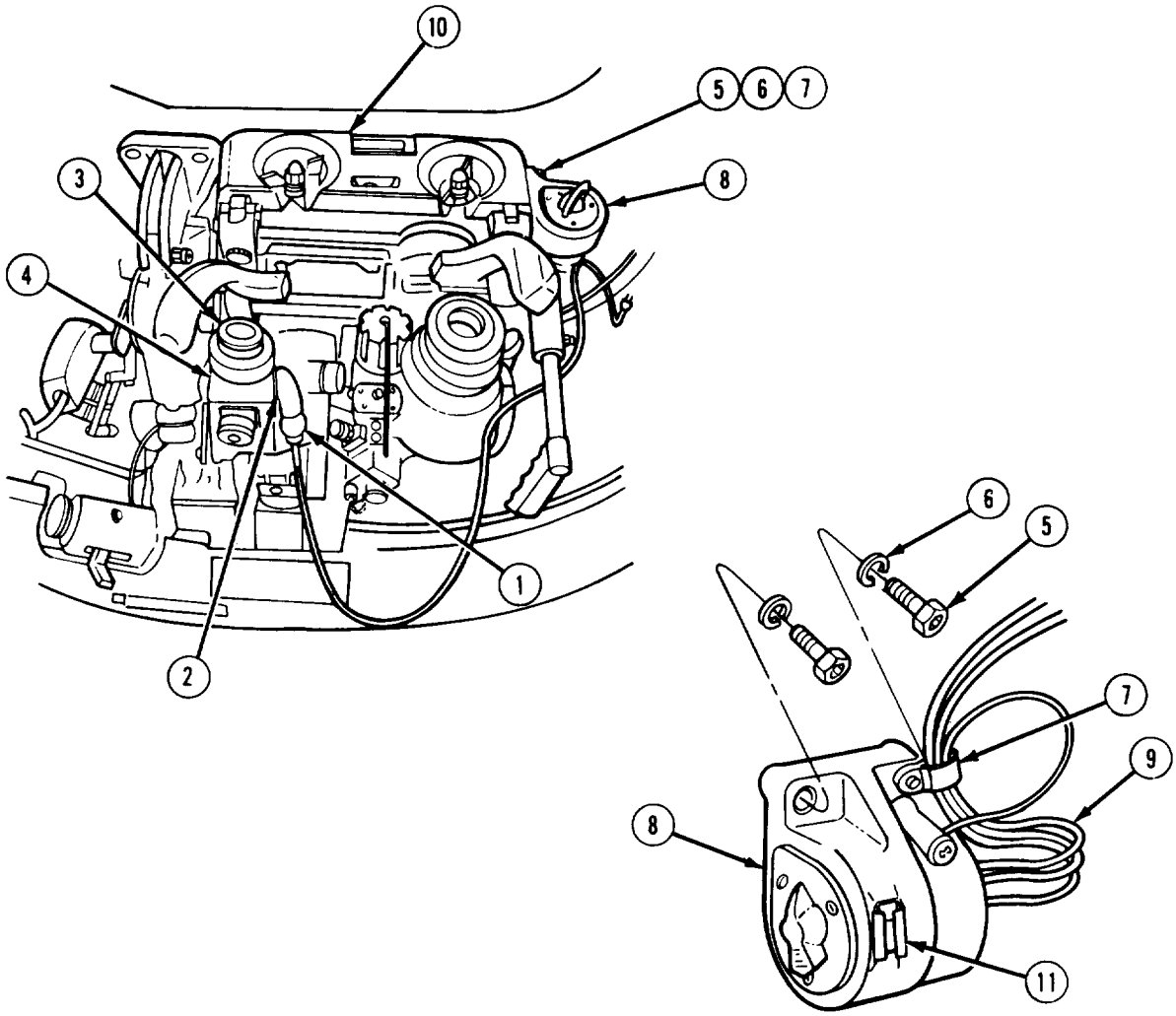
STEP	PROCEDURE
1.	Using socket wrench, remove screw (1) that attaches clamp (2), ground wire (3), and lockwasher (4) to cupola ceiling.
2.	Disconnect two electrical connectors (5) and (6) from vehicle electrical connectors (JPG).
3.	Remove light source control wiring (7) from clamp (2).
	GO TO FRAME 2



53-2. M36/M36E1 PERISCOPE LIGHT SOURCE CONTROL REMOVAL PROCEDURE (CONT)

FRAME 2

STEP	PROCEDURE
1.	Remove electrical lamp housing (1) from dovetail slot (2) on left eyepiece housing (3) of periscope (4).
2.	Using Allen wrench, remove two socket head capscrews (5), two lockwashers (6), and clamp (7) that attaches light control source (8) and electrical wiring (9) to M119 periscope mount (10). Remove light source control.
3.	Attach electrical lamp housing (1) to dovetail slot (11) of light source control (8) for storage.
	END OF TASK



53-3. M36/M36E1 PERISCOPE LIGHT SOURCE CONTROL INSTALLATION PROCEDURE

TOOLS: 3/16 in. socket head screw key (Allen wrench)
7/16 in. socket (3/8 in. drive)
3/8 in. drive ratchet
6 in. extension (3/8 in. drive)

PERSONNEL: One

REFERENCES: JPG for procedure to connect electrical connectors

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Commander's Periscope	FO-2	16

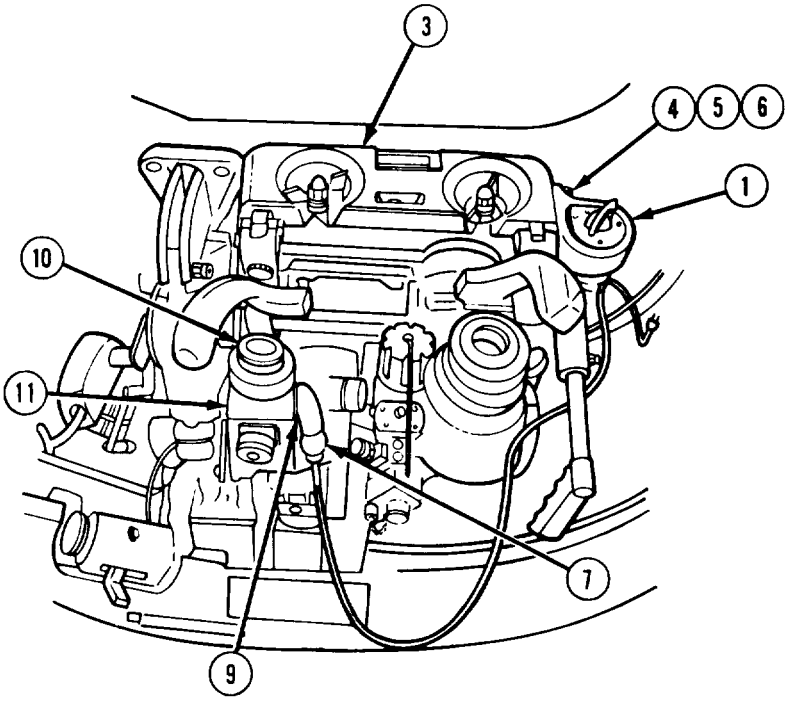
EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

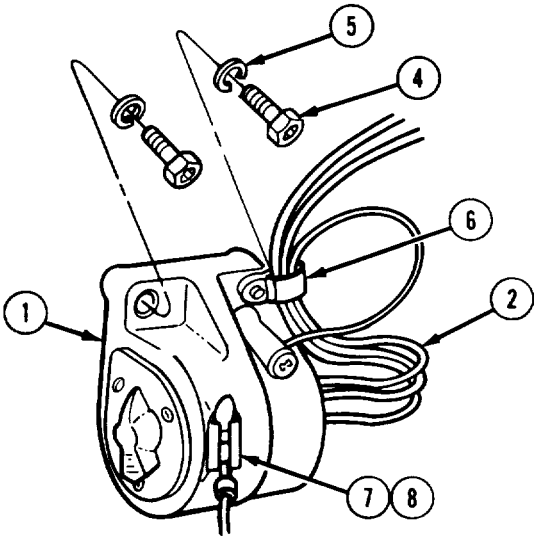
FRAME 1

PROCEDURE

1. Using Allen wrench, attach light source control (1) and electrical wiring (2) to M119 periscope mount (3) with two socket head capscrews (4), two lockwashers (5) and clamp (6).
2. Remove electrical lamp housing (7) from storage location on dovetail slot (8) of light control source (1).
3. Attach electrical lamp housing (7) to dovetail slot (9) on left eyepiece housing (10) of periscope (11).

GO TO FRAME 2

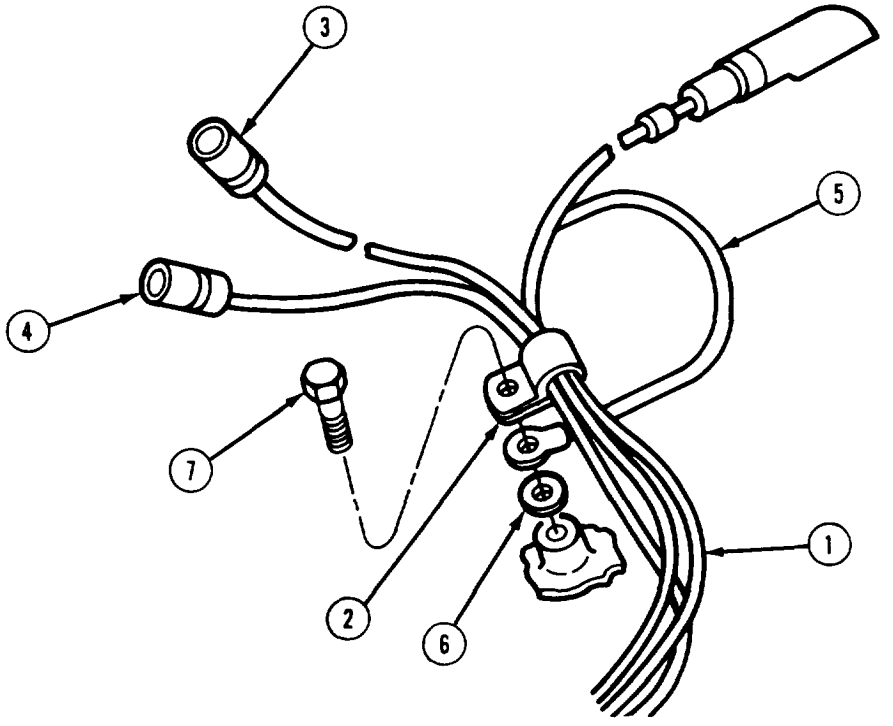

3
4
5
6
1
10
11
7
9


5
4
6
1
2
7
8

53-3. M36/M36E1 PERISCOPE LIGHT SOURCE CONTROL INSTALLATION PROCEDURE (CONT)

FRAME 2

STEP	PROCEDURE
1.	Put light source control wiring (1) in clamp (2).
2.	Connect two electrical connectors (3) and (4) to vehicle electrical connectors (JPG).
3.	Using socket wrench, attach ground wire (5) and lockwashers (6) to ceiling with screw (7).
	END OF TASK



53-4. M36/M36E1 PERISCOPE LIGHT SOURCE CONTROL DISASSEMBLY PROCEDURE

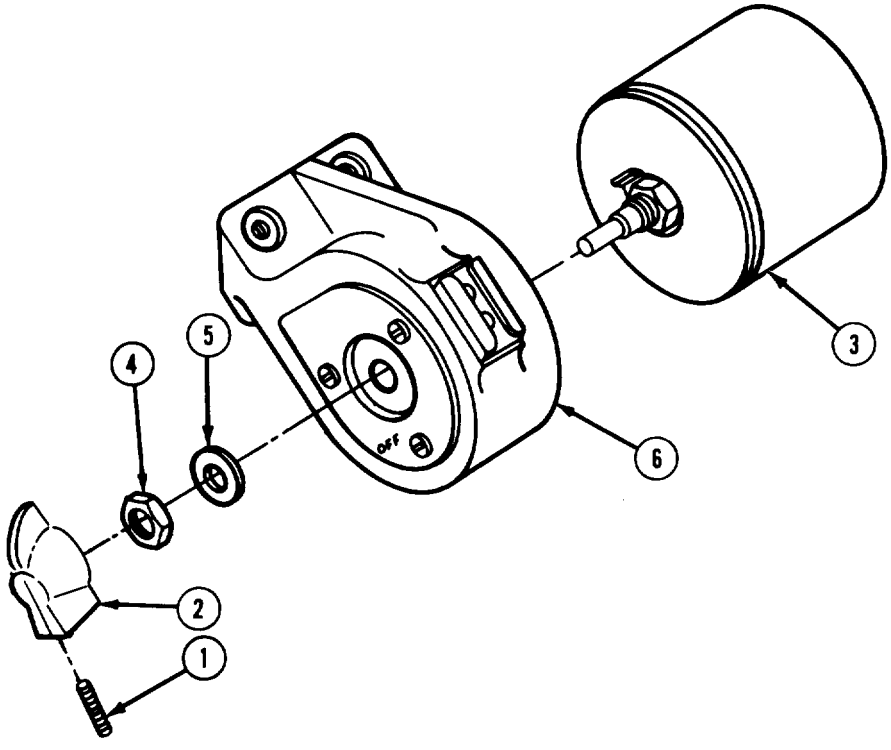
TOOLS: 5/64 in. socket head screw key (Allen wrench)
Round nose pliers

PERSONNEL: One

PRELIMINARY PROCEDURE: Remove M36/M36E1 periscope light source control (para 53-2)

FRAME 1

STEP	PROCEDURE
1.	Using Allen wrench, remove screw (1) from knob (2).
2.	Pull knob (2) off shaft of rheostat (3).
3.	Using pliers, remove nut (4) and washer (5) from rheostat (3).
4.	Remove rheostat (3) from housing (6).
	END OF TASK



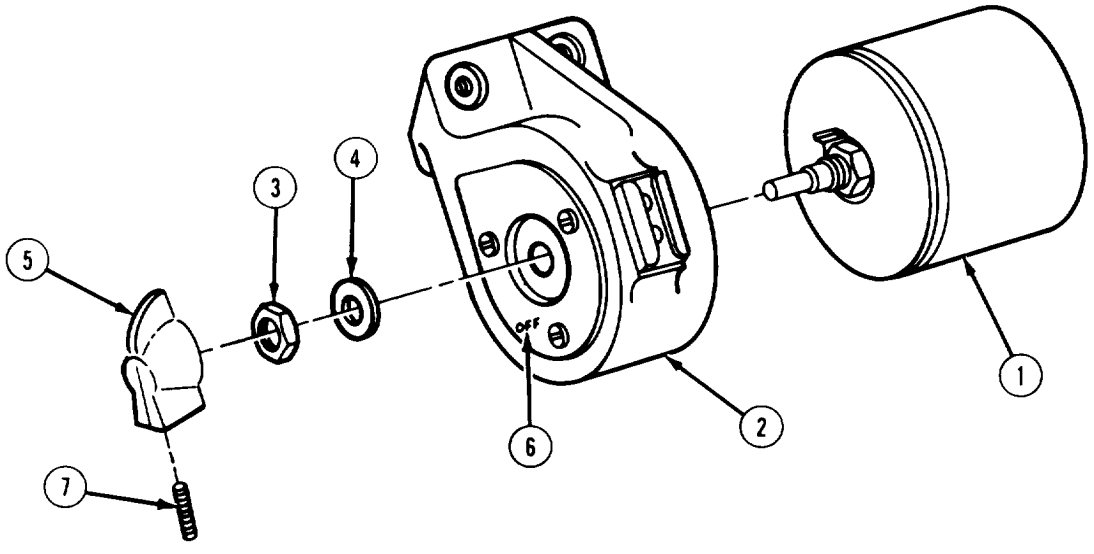
53-5. M36/M36E1 PERISCOPE LIGHT SOURCE CONTROL ASSEMBLY PROCEDURE

TOOLS: 5/64 in. socket head screw key (Allen wrench)
Round nose pliers

PERSONNEL: One

FRAME 1

STEP	PROCEDURE
1.	Using pliers, attach rheostat (1) to housing (2) with nut (3) and washer (4).
2.	Turn shaft of rheostat (1) all the way counterclockwise.
3.	Slide knob (5) on shaft of rheostat (1). Line up pointer on knob (5) with OFF mark (6) on housing (2). Hold knob (5) in this position.
4.	Using allen wrench, attach knob (5) to shaft of rheostat (1) with screw (7).
	NOTE **Follow-on Maintenance Action Required:** **Install M36/M36E1 periscope light source control (para 53-3).**
	END OF TASK



CHAPTER 54

ELEVATION QUADRANT M13A3

54-1. MAINTENANCE PROCEDURE INDEX

Equipment Item	Tasks Removal	Installation	Adjustment
Elevation Quadrant M13A3	54-2	54-3	54-4

54-2. ELEVATION QUADRANT M13A3 REMOVAL PROCEDURE

TOOLS: Flat tip screwdriver

PERSONNEL: One

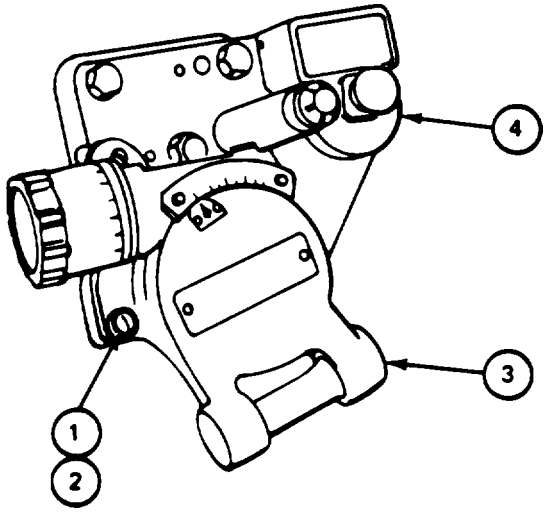
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Elevation Quadrant	FO- 1	18

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

Step	Procedure
1.	Using screwdriver, remove three screws (1) and three lockwashers (2) that attach elevation quadrant (3) to light source control (4). Remove elevation quadrant. END OF TASK



54-3. ELEVATION QUADRANT M13A3 INSTALLATION PROCEDURE

TOOLS: Flat tip screwdriver

PERSONNEL: One

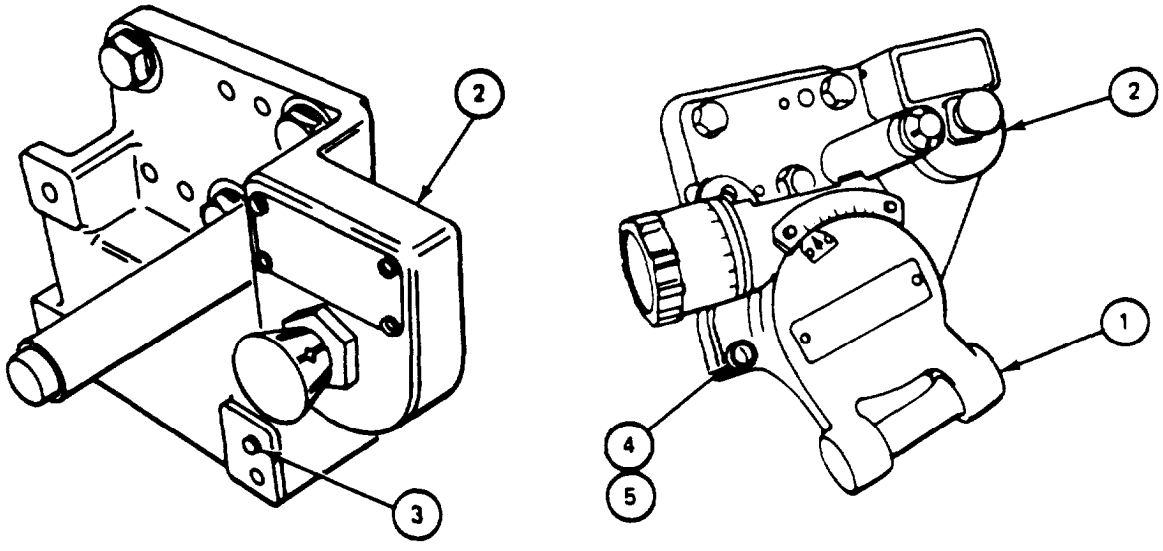
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Elevation Quadrant	FO-1	18

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

Step	Procedure
1.	Check mounting surfaces of elevation quadrant (1) and light source control (2) for paint chips and other dirt.
2.	Put elevation quadrant (1) on two locating pins (3) of light source control (2).
3.	Using screwdriver, attach elevation quadrant (1) to light source control (2) with three screws (4) and three Iockwashers (5).
	NOTE Follow-on Maintenance Action Required: Do elevation quadrant M13A3 adjustment (para 54-4).
	END OF TASK



54-4. ELEVATION QUADRANT M13A3 ADJUSTMENT PROCEDURE

TOOLS: Flat tip screwdriver

PERSONNEL: One

REFERENCES: TM 9-1290-200-14 for procedure to level gun using gunner's quadrant

EQUIPMENT LOCATION INFORMATION:

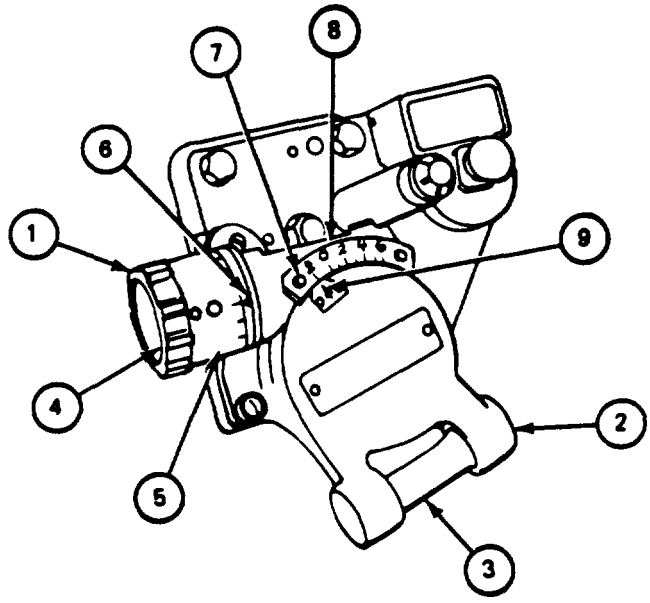
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Elevation Quadrant	FO- 1	18

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

54-4. ELEVATION QUADRANT M13A3 ADJUSTMENT PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Position or make sure tank is on level ground.
2.	Level gun using M1A1 gunner's quadrant (TM-14).
3.	Turn micrometer knob (1) on elevation quadrant (2) until bubble in level vial (3) is centered.
4.	While holding micrometer knob (1) and using screwdriver, loosen three screws (4) that attach micrometer knob (1) to elevation quadrant (2).
5.	Using screwdriver, tap micrometer knob (1) slightly and slip micrometer scale (5) zero to indicator mark (6).
6.	While holding micrometer knob (1) and using screwdriver, tighten three screws (4).
7.	Using screwdriver, loosen two screws (7) that attach elevation scale (8) to elevation quadrant (2).
8.	Slip elevation scale (8) zero to indicator mark (9).
9.	Using screwdriver, tighten two screws (7).
	END OF TASK



CHAPTER 55

INFINITY SIGHT WITH LIGHT SOURCE CONTROL

55-1. MAINTENANCE PROCEDURE INDEX

Equipment Item	Tasks	
	Removal	Installation
Infinity Sight with Light Source Control	55-2	55-3

55-2. INFINITY SIGHT WITH LIGHT SOURCE CONTROL REMOVAL PROCEDURE

TOOLS: 3/8 in. drive ratchet
5/16 in. hex head socket (3/8 in. drive)

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedure to remove gunner's periscope M32C/M32CE1
JPG for procedure to disconnect electrical connectors

EQUIPMENT LOCATION INFORMATION:

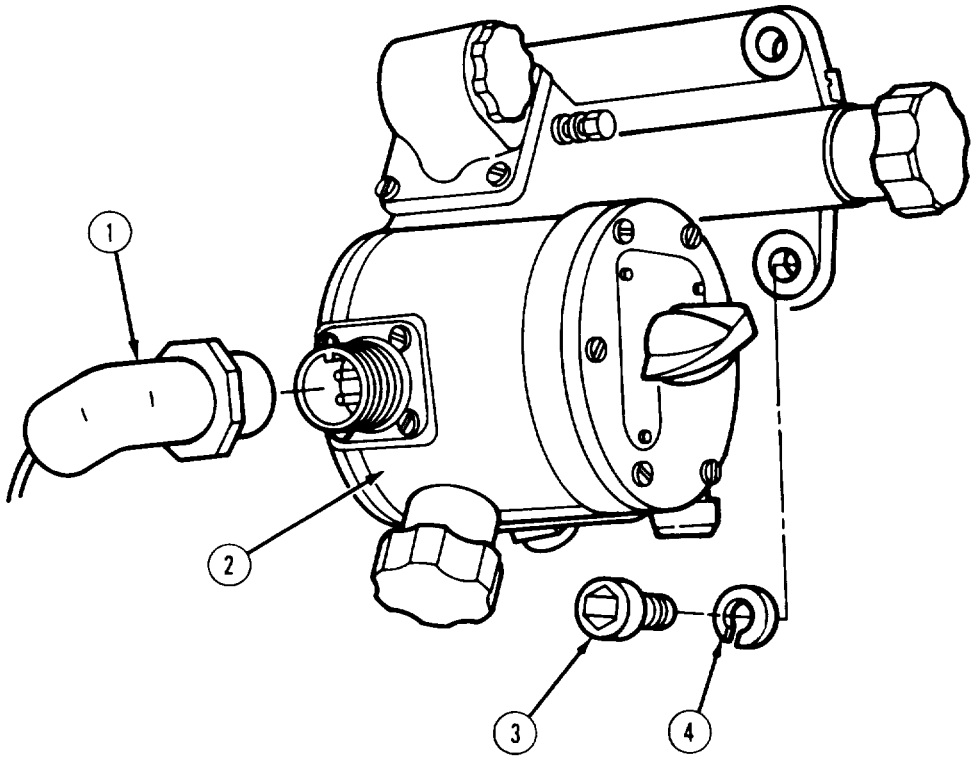
EQUIPMENT	FOLDOUT	CALLOUT
Gunner's Periscope Mount M118/M118E1	FO-1	29
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2

EQUIPMENT CONDITION: Gunner's periscope M32C/M32CE1 removed (TM-10)
Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF

55-2. INFINITY SIGHT WITH LIGHT SOURCE CONTROL REMOVAL PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
1.	Disconnect electrical connector (1) from infinity sight (2) (JPG).
	NOTE **While the last screw is being taken out in step 2, hold the infinity sight (2) with one bend.**
2.	Using socket wrench, remove three screws (3) and three lockwashers (4) that attach infinity sight (2) to gunner's periscope mount M118/M118E1.
3	Remove infinity sight (2) from gunner's periscope mount M118/M118E1.
	END OF TASK



55-3. INFINITY SIGHT WITH LIGHT SOURCE CONTROL INSTALLATION PROCEDURE

TOOLS: 3/8 in. drive ratchet
5/16 in. hex head socket (3/8 in. drive)

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedure to install gunner's periscope M32C/M32CE21
JPG for procedure to connect electrical connectors

EQUIPMENT LOCATION INFORMATION:

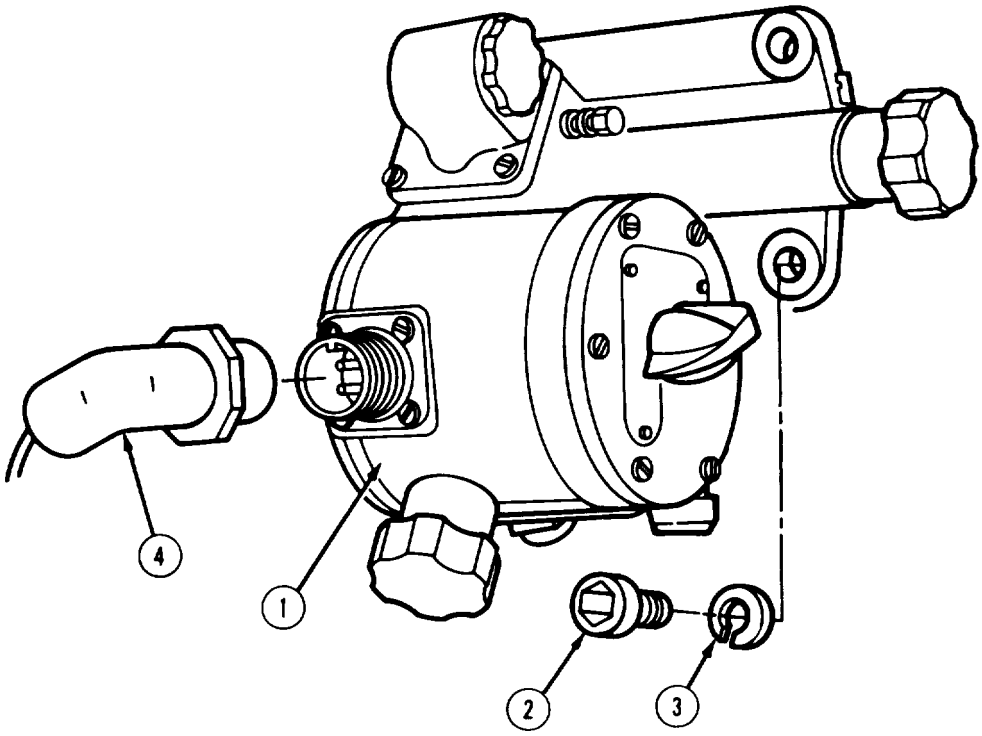
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Gunner's Periscope Mount M118/M118E1	FO-1	29

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF

55-3. INFINITY SIGHT WITH LIGHT SOURCE CONTROL INSTALLATION PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
1.	Put infinity sight (1) in place on gunner's periscope mount M118/M118E1 and hold it there with one hand.
2.	Using socket wrench, attach infinity sight (1) to gunner's periscope mount M118/M118E1, with three screws (2) and three lockwashers (3)
3.	Connect electrical connector (4) to infinity sight (1) (JPG).
	NOTE **Follow-on Maintenance Action Required:** **Install gunner's periscope M32C/M32CE1 (TM-10).**
	END OF TASK



CHAPTER 56

M36/M36E1 PERISCOPE

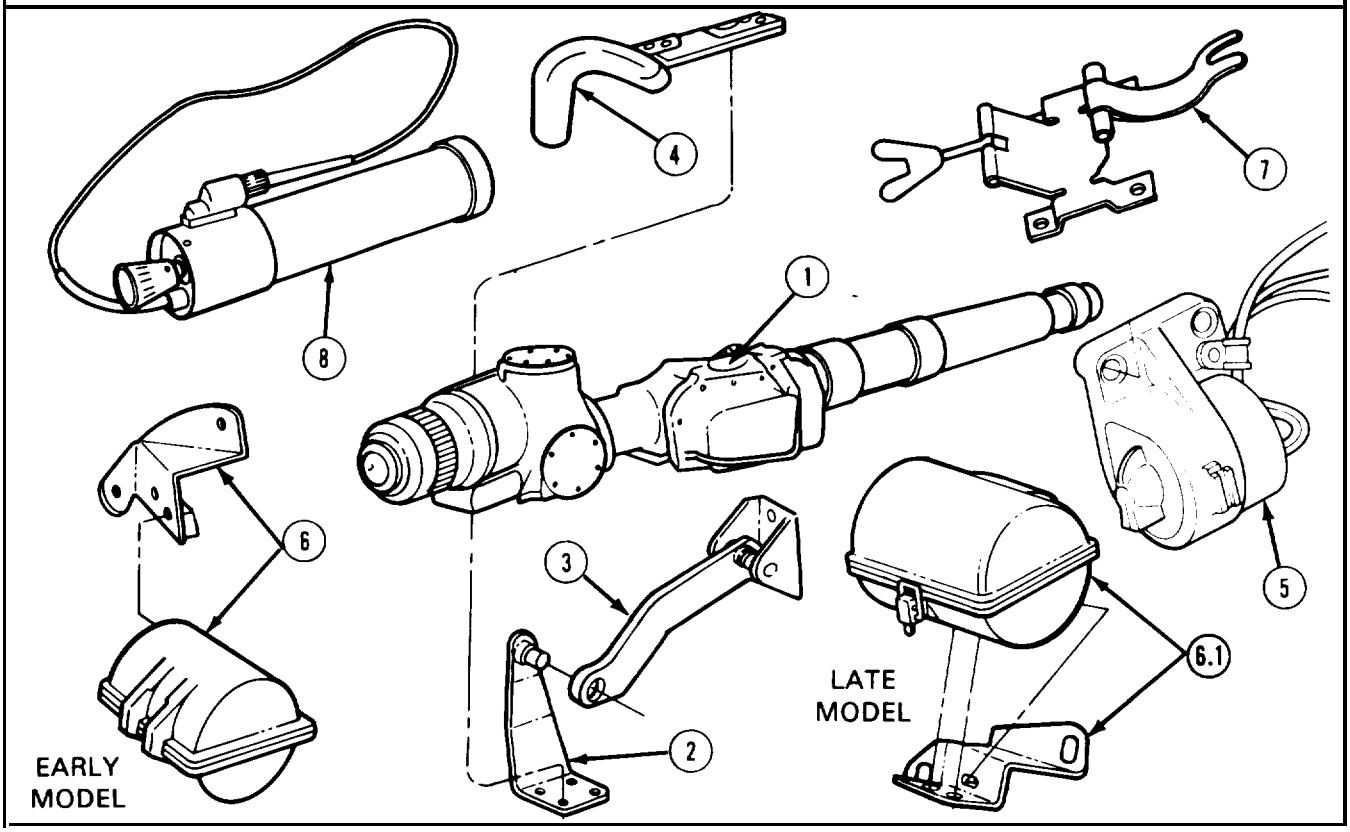
56-1. Procedures to remove and install the M36/M36E1 periscope are in TM 9-2350-222-10.

CHAPTER 57

ARTICULATED TELESCOPE M105F

57-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Tasks				
	Removal	Installation	Disassembly	Assembly	Repair
1. Articulated Telescope M105F	57-2	57-3			
2. Eyepiece Hanger	57-4	57-5			
3. Link Hanger	57-6	57-7			
4. Headrest	57-8	57-9			
5. Telescope Light Source Control	57-10	57-11	57-16	57-17	
6. Filter Box and Mounting Bracket (Early Model)	57-12	57-13			
6.1 Filter Box and Mounting Bracket (Late Model)	57-13.1	57-13.2			
7. Clamp	57-14	57-15			
8. M50 Instrument Light	TM-10	TM-10			



57-2. ARTICULATED TELESCOPE MI 05F REMOVAL PROCEDURE

TOOLS: 1/8” socket head screw key (Allen wrench)
5/16” socket head screw key (Allen wrench)
7/16” socket (3/8” drive)
3/8” drive ratchet
16” extension (3/8” drive)

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedure to elevate gun

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver’s Master Control Panel	FO-3	11
Gunner’s Control Box	FO-1	2
Articulated Telescope M105F	FO-1	26

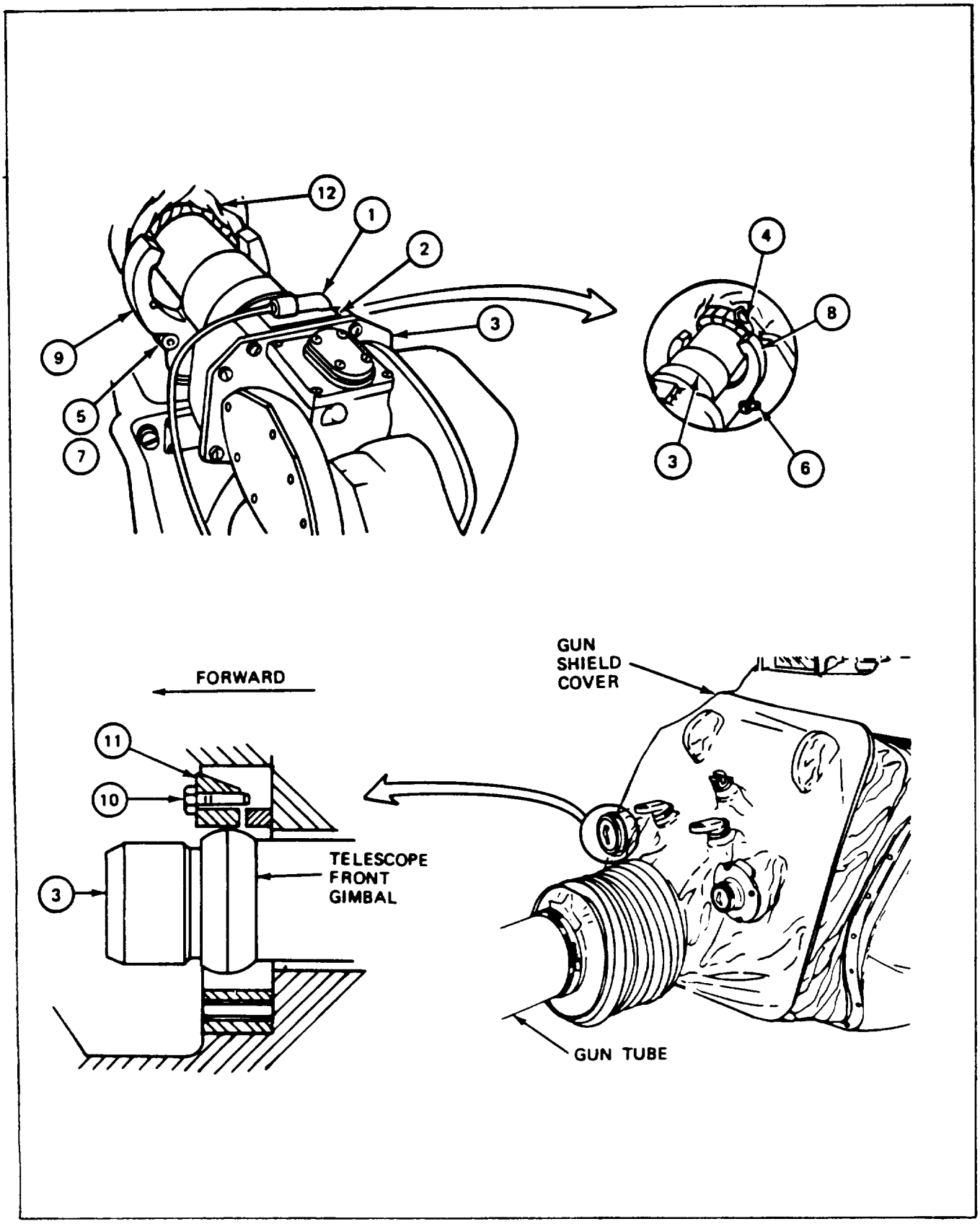
EQUIPMENT CONDITION: Driver’s master control panel MASTER BATTERY switch set to OFF
Gunner’s control box ELEV/TRAV POWER switch set to OFF
Gun elevated (TM-10)

PRELIMINARY PROCEDURES: Remove eyepiece hanger (para 57-4)

57-2. ARTICULATED TELESCOPE M105F REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Slide lamp housing (1) from right to left and remove from slot (2) on telescope (3).
2.	Loosen strap (4) that clamps ballistic shield around telescope (3) tube.
	NOTE A nylon locking plug in sleeve nut (5) is held against threaded end of socket head capscrew (6) by a setscrew (7). The setscrew can only be reached with telescope(3) removed. If capscrew (6) feels too loose in sleeve nut, do step 5.
3.	Using 5/16" Allen wrench, loosen socket head capscrew (6) in right side holder (8) to open left side holder (9).
	NOTE A bolt (10 and wedge (11), located approximately 16 inches inside the gun shield cover, holds telescope (3) firmly during vehicle operation and gun firing. If telescope (3) cannot be removed easily in step 4 and feels like it is held back at front gimbal, use socket wrench to slightly loosen bolt (10) and wedge (11).
4.	Pull telescope (3) from opening in gun shield (12) and through opening in holder (8) and (9). Remove telescope.
5.	Using 1/8" Allen wrench, tighten setscrew (7) slightly to increase pressure of nylon plug against threaded end of socket head capscrew (6).
	END OF TASK



Para 57-2 Cont

57-3. ARTICULATED TELESCOPE MI 05F INSTALLATION PROCEDURE

TOOLS: 5/16” socket head screw key (Allen wrench)
7/16" socket (3/8" drive)
3/8" drive ratchet
16" extension (3/8" drive)

PERSONNEL: One

REFERENCES: TM 750-116 for procedure on usc of purging kit and dry nitrogen tank
TM 9-2350-222-10 for procedures to:
Elevate and lower gun
Boresight gun w ith telescope

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver’s Master Control Panel	FO-3	11
Gunner’s Control Box	FO-1	2
Articulated Telescope M105F	FO-1	26

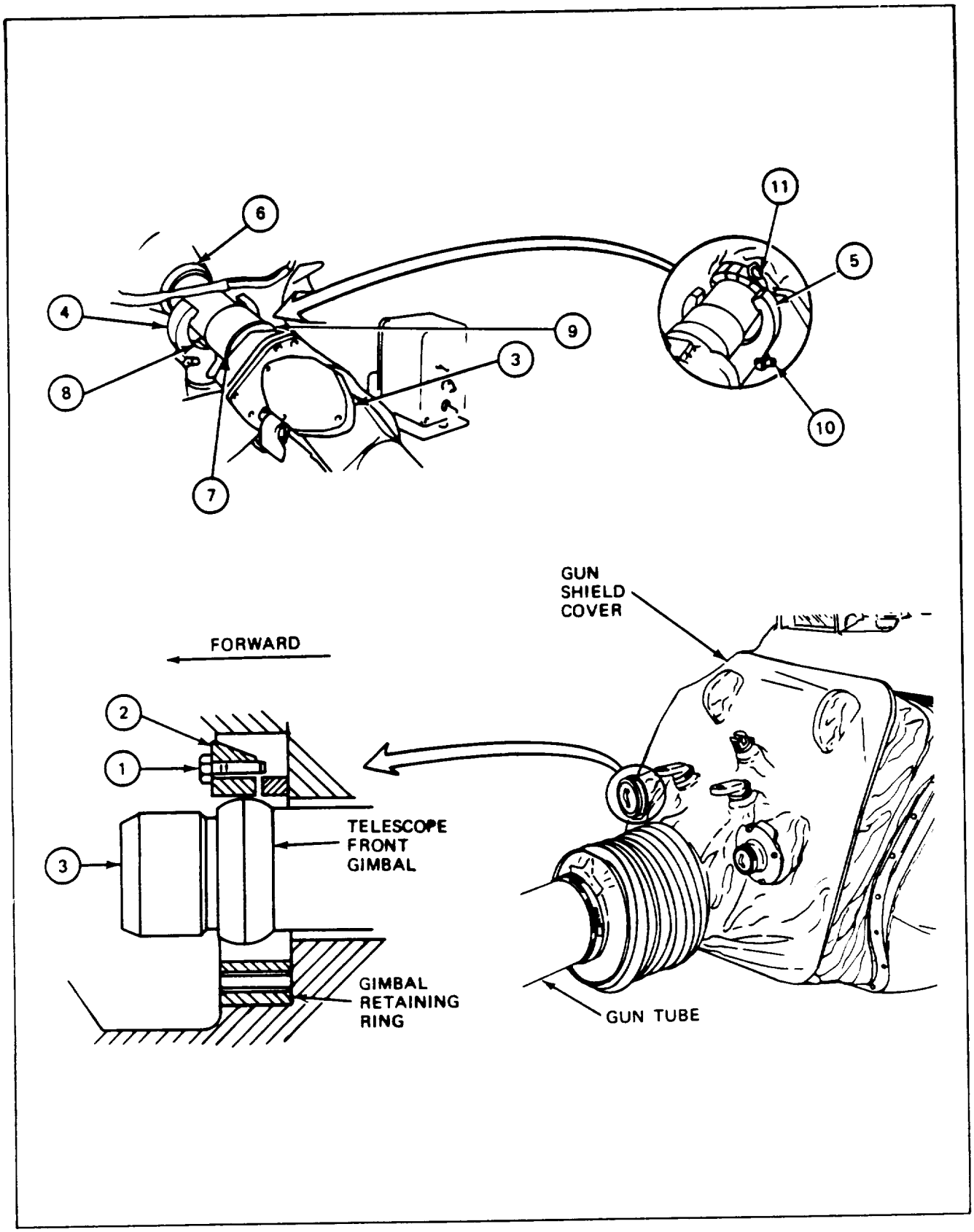
EQUIPMENT CONDITION: Driver’s master control panel MASTER BATTERY switch set to OFF
Gunner’s control box ELEV/TRAV POWER switch set to OFF
Gun elevated (TM-10)

GENERAL INSTRUCTIONS: Purge and charge telescope as required (TM 750-116)

57-3. ARTICULATED TELESCOPE M105F INSTALLATION PROCEDURE (CONT)

FRAME 1

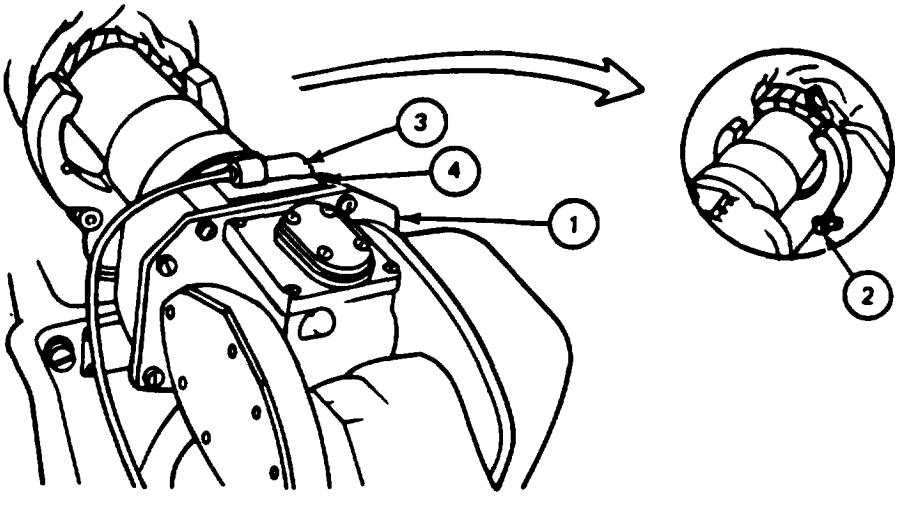
Step	Procedure
	NOTE Bolt (1) and wedge (2) located approximately 16 inches inside the gun shield cover, hold telescope (3) firmly to prevent movement during vehicle operation and gun firing. If bolt was loosened during telescope removal (para 57-2), go to step 2.
1.	Using socket wrench, slightly loosen bolt (1) and wedge (2) so that telescope (3) front gimbal will seat properly in gimbal retaining ring when telescope is installed.
2.	Put telescope (3) through opening of holder (4) and (5) and opening in gun shield (6).
3.	Line up pin (7) on telescope (3) with slot (8) in holder (4).
4.	Center clamping surface (9) of telescope (3) with holder (4) and (5).
5.	Using 5/16" Allen wrench, tighten socket head capscrew (10) in right side holder (5) to hold telescope (3).
	CAUTION Do not tighten bolt (1) and wedge (2) too much. It will cause damage to bolt during operations. Telescope (3) should be able to be removed without having to loosen bolt and wedge. This will also allow for slight rotation of telescope during boresighting operations.
6.	Using socket wrench. tighten bolt (1) and wedge (2) to 30-35 in. lbs.
7.	Tighten strap (11) to clamp ballistic shield around telescope (3) tube.
	GO TO FRAME 2


6
4
8
7
9
3
11
5
10
GUN
SHIELD
COVER
FORWARD
2
1
3
TELESCOPE
FRONT
GIMBAL
GIMBAL
RETAINING
RING
GUN TUBE

57-3. ARTICULATED TELESCOPE M105F INSTALLATION PROCEDURE (CONT)

FRAME 2

Step	Procedure
1.	Look into telescope (1) and make sure top cross is straight. If top cross is not straight, loosen socket head capscrew (2), using 5/16” Allen wrench, and turn telescope to straighten top cross. Tighten capscrew.
2.	Slide electrical lamp housing (3) from left to right into slot (4) on telescope (1).
	NOTE Follow-on Maintenance Action Required: Install eyepiece hanger (para 57-5). Check for proper operation of telescope with gun movement (TM-10). If replacement telescope was installed, do boresight procedure (TM-10).
	END OF TASK



57-4. EYEPIECE HANGER REMOVAL PROCEDURE

TOOLS: 1/2" socket (3/8" drive)
3/8" drive ratchet

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedure to elevate gun

EQUIPMENT LOCATION INFORMATION:

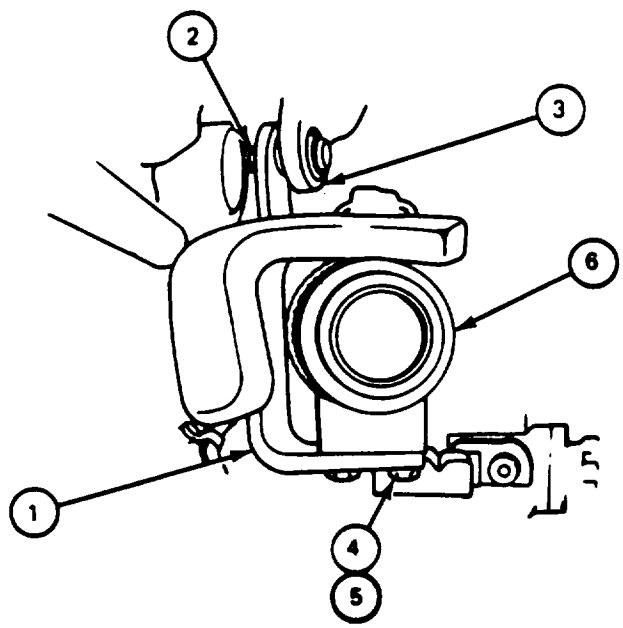
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Articulated Telescope M105F	FO-1	26

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF
Gun elevated (TM-10)

57-4. EYEPIECE HANGER REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Hold eyepiece hanger (1) with one hand. Using other hand. press quick-disconnect pin plunger (2) and slide link (3) off eyepiece hanger.
2.	Lower telescope eyepiece.
3.	Using socket wrench, remove four screws (4) and four lockwashers (5) that attach eyepiece hanger (1) to telescope (6). Remove eyepiece hanger.
	END OF TASK



57-5. EYEPIECE HANGER INSTALLATION PROCEDURE

TOOLS: 1/2" socket (3/8" drive)
3/8" drive ratchet

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedure to elevate gun

EQUIPMENT LOCATION INFORMATION:

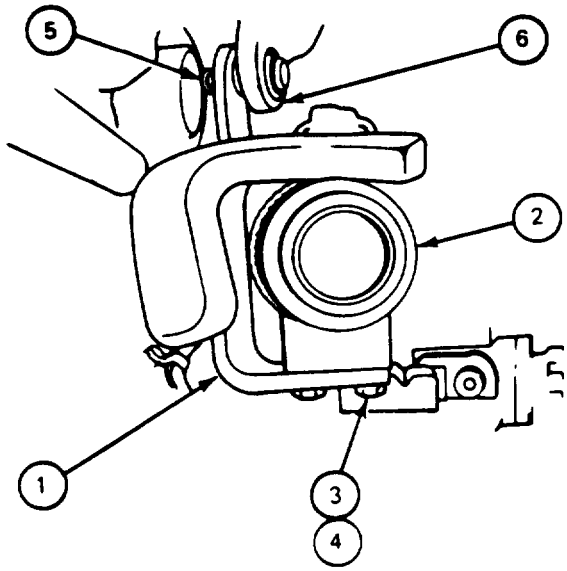
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Articulated Telescope M105F	FO-1	26

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF
Gun elevated (TM-10)

PRELIMINARY PROCEDURES Install link hanger (para 57-7)

FRAME 1

Step	Procedure
1.	Using socket wrench, attach eyepiece hanger (1) to telescope (2) with four screws (3) and four lockwashers (4).
2.	Raise and hold eyepiece hanger (1) with one hand. Using other hand, press quick-disconnect pin plunger (5) and slide pin onto link (6).
	END OF TASK



57-6. LINK HANGER REMOVAL PROCEDURE

TOOLS: 9/16" combination wrench (two)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

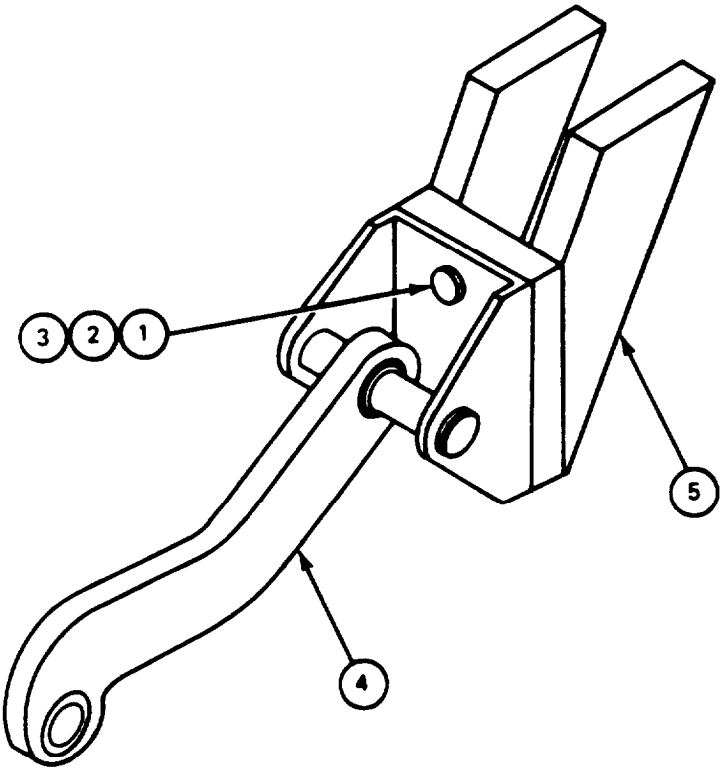
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Articulated Telescope M105F	FO-1	26

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF

PRELIMINARY PROCEDURES: Remove eyepiece hanger (para 57-4)

FRAME 1

Step		Procedure
1.		Using two wrenches, remove two screws (1), two lockwashers, (2), and two nuts (3) that attach link hanger (4) to bracket (5) on turret roof. Remove link hanger. **END OF TASK**



57-7. LINK HANGER INSTALLATION PROCEDURE

TOOLS: 9/16” combination wrench (two)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

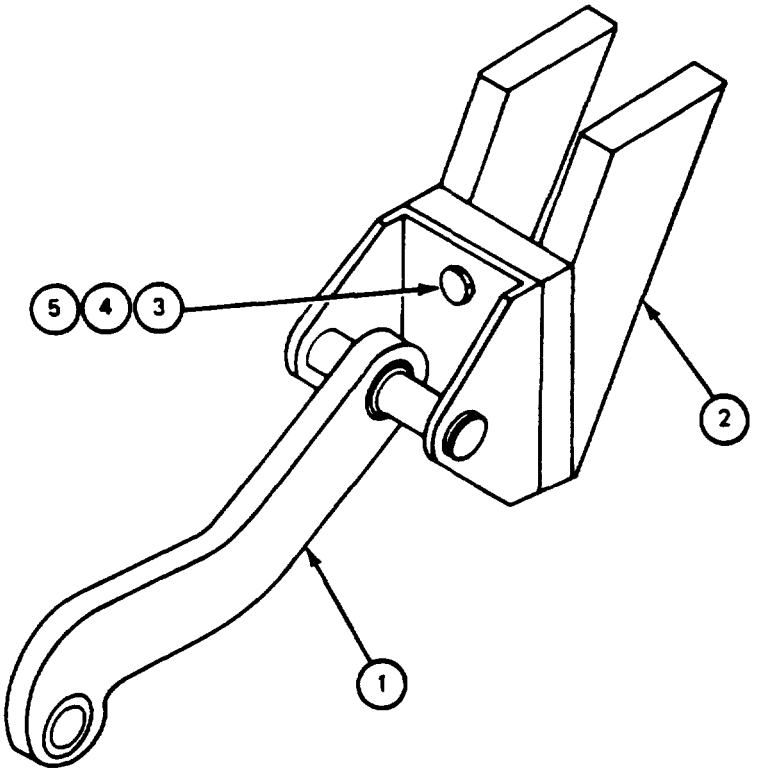
EQUIPMENT	FOLDOUT	CALLOUT
Driver’s Master Control Panel	FO-3	11
Gunner’s Control Box	FO-1	2
Articulated Telescope M105F	FO-1	26

EQUIPMENT CONDITION: Driver’s master control panel MASTER BATTERY switch set to OFF
Gunner’s control box ELEV/TRAV POWER switch set to OFF

57-7. LINK HANGER INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Using two wrenches, attach link hanger (1) to bracket (2) on turret roof with two screws (3), two lockwashers (4), and two nuts (5). NOTE Follow-on Maintenance Action Required: Install eyepiece hanger (para 57-5). **END OF TASK**



57-8. HEADREST REMOVAL PROCEDURE

PERSONNEL: One

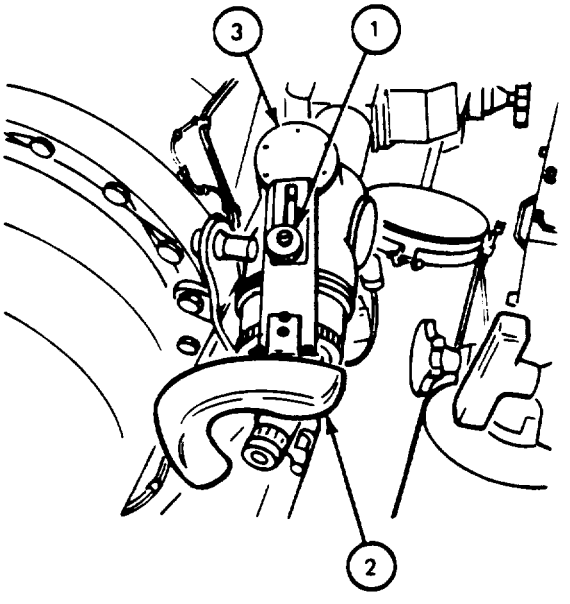
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Articulated Telescope M105F	FO-1	26

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

Step	Procedure
1.	Using hand, remove adjusting knob (1) that attaches headrest (2) to telescope (3). Remove headrest.
	END OF TASK



57-9. HEADREST INSTALLATION Procedure

PERSONNEL: One

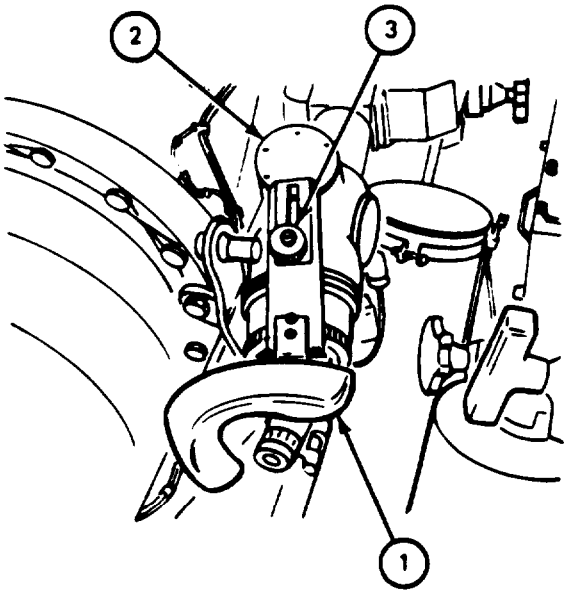
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Articulated Telescope M 105F	FO- 1	26

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

Step	Procedure
1.	Using hands, attach headrest (1) to telescope (2) with adjusting knob (3). END OF TASK



57-10. TELESCOPE LIGHT SOURCE CONTROL REMOVAL PROCEDURE

TOOLS: 5/16” socket (3/8” drive)
7/16” socket (3/8” drive)
3/8” drive ratchet
6” extension (3/8” drive)

PERSONNEL: One

REFERENCES: JPG for procedure to disconnect electrical connectors

EQUIPMENT LOCATION INFORMATION:

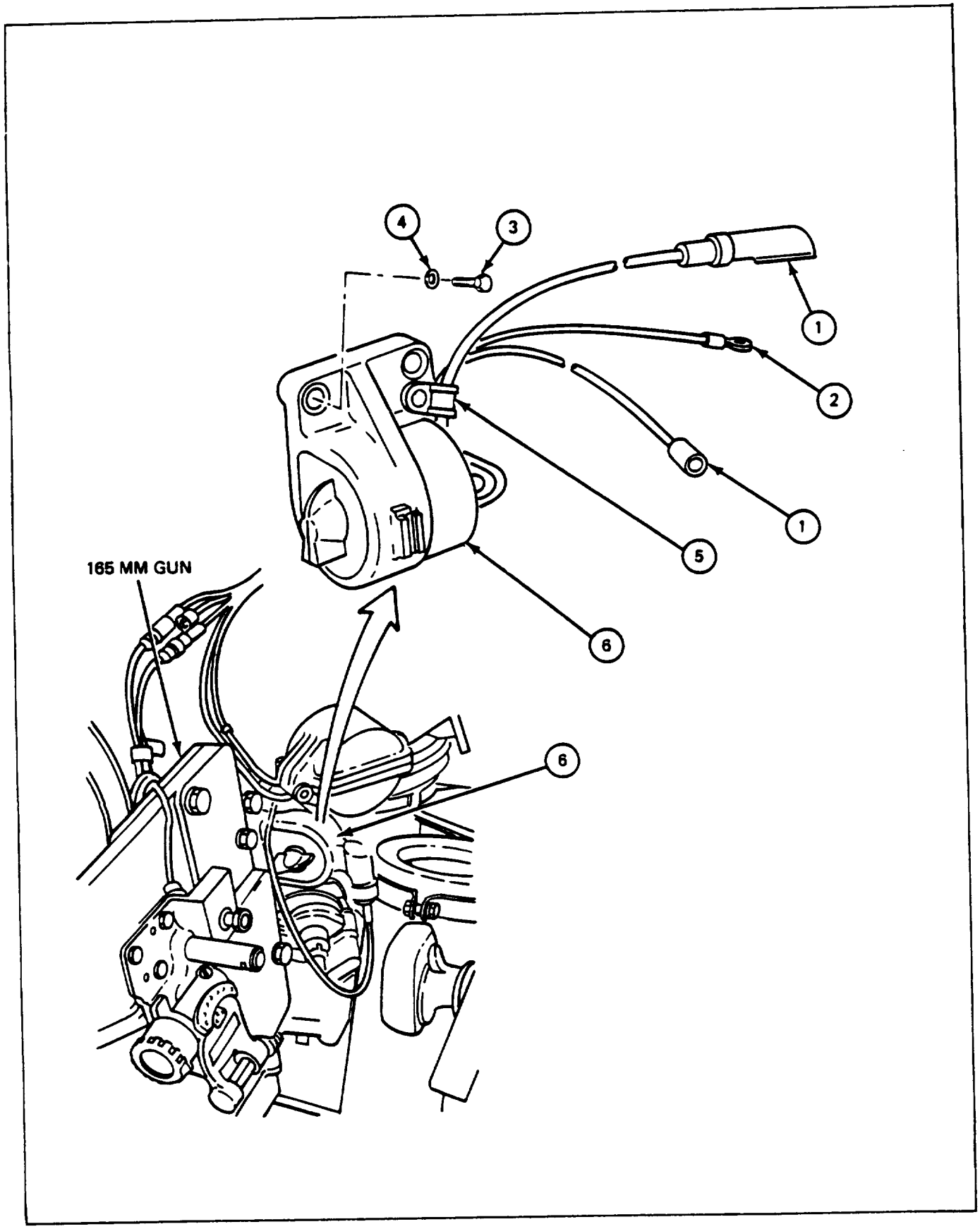
EQUIPMENT	FOLDOUT	CALLOUT
Driver’s Master Control Panel	FO-3	11
165-mm Gun	F0-4	6

EQUIPMENT CONDITION: Driver’s master control panel MASTER BATTERY switch set to OFF

57-10. TELESCOPE LIGHT SOURCE CONTROL REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Disconnect electrical connectors (1) (JPG).
2.	Using 7/16” socket wrench, disconnect ground wire (2).
3.	Using 5/16” socket wrench, remove two screws (3), two lockwashers (4) and clamp (5).
4.	Remove telescope light source control (6).
	END OF TASK


4
3
1
2
1
5
6
165 MM GUN
6

57-11. TELESCOPE LIGHT SOURCE CONTROL INSTALLATION PROCEDURE

TOOLS: 5/16" socket (3/8" drive)
7/16" socket (3/8" drive)
3/8" drive ratchet
6" extension (3/8" drive)

PERSONNEL: One

REFERENCES: JPG for procedure to connect electrical connectors

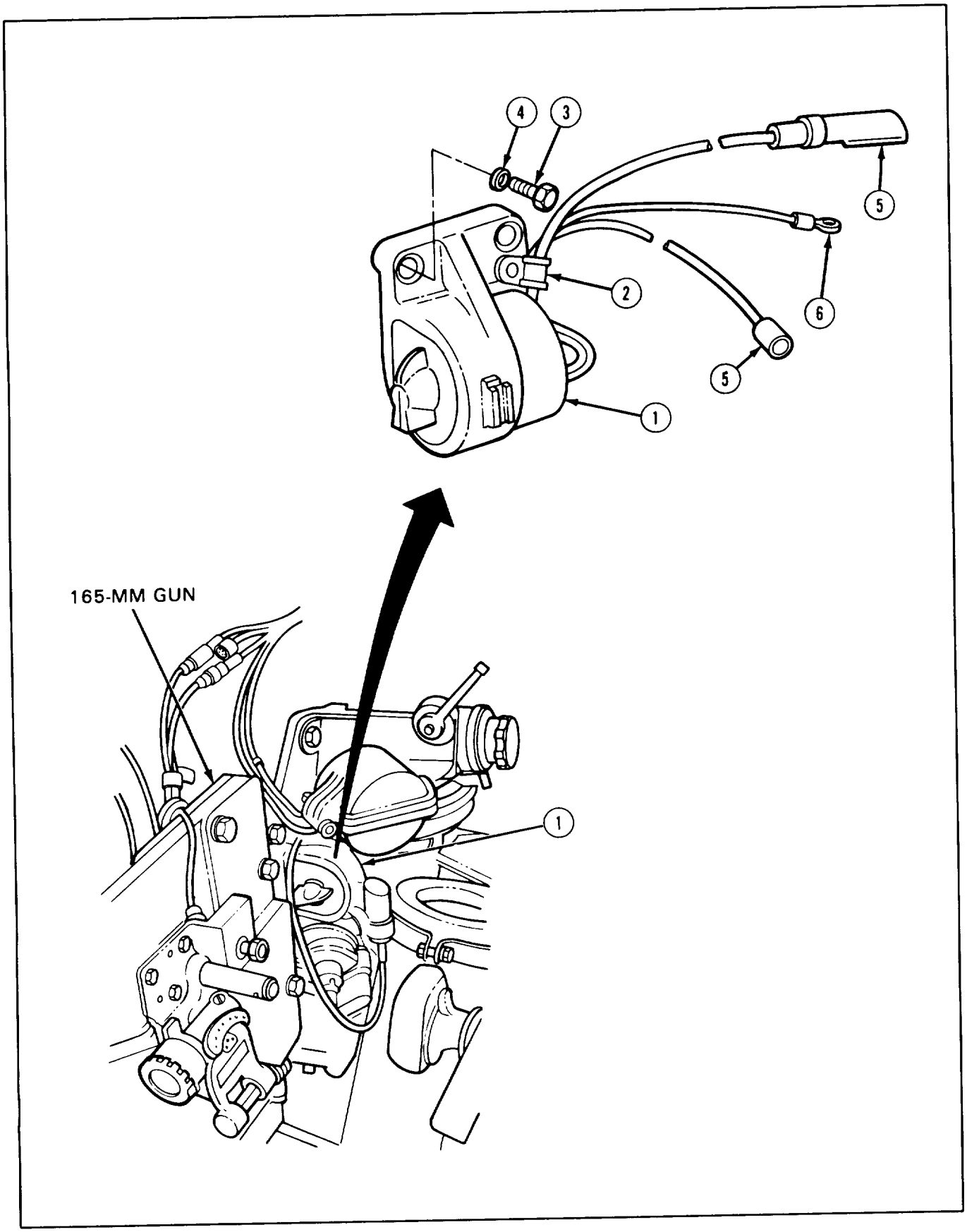
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
165-mm Gun	F0-4	6

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

Step	Procedure
1.	Using 5/16" socket wrench, attach telescope light source control (1) and clamp (2) in place with two screws (3) and two Iockwashers (4).
2.	Connect electrical connectors (5) (JPG).
3.	Using 7/16" socket wrench, connect ground wire (6).
	END OF TASK


4
3
5
2
6
5
1
165-MM GUN
1

57-12. FILTER BOX AND MOUNTING BRACKET REMOVAL PROCEDURE (EARLY MODEL)

TOOLS: 3/4 in. combination wrench

PERSONNEL: One

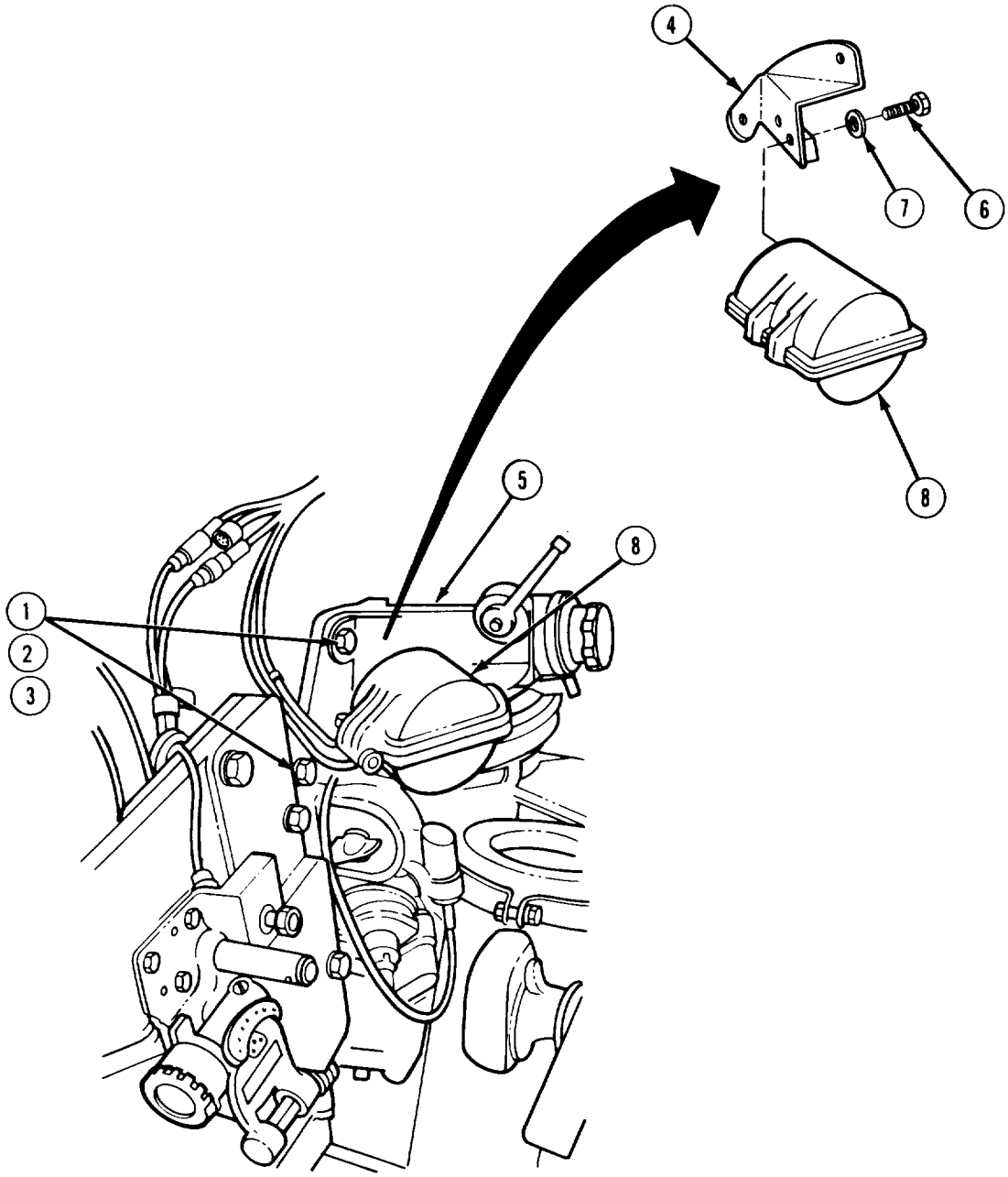
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
165-mm Gun	FO-4	6

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

STEP	PROCEDURE
1.	Using wrench, remove two screws (1), two flat washers (2), and two lockwashers (3) holding filter box mounting bracket (4) on articulated telescope M105F (5).
2.	Using wrench, remove two screws (6) and two lockwashers (7) holding filter box (8) to mounting bracket (4).
	END OF TASK



EARLY MODEL

57-13. FILTER BOX AND MOUNTING BRACKET INSTALLATION PROCEDURE (EARLY MODEL)

TOOLS: 3/4 in. combination wrench

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

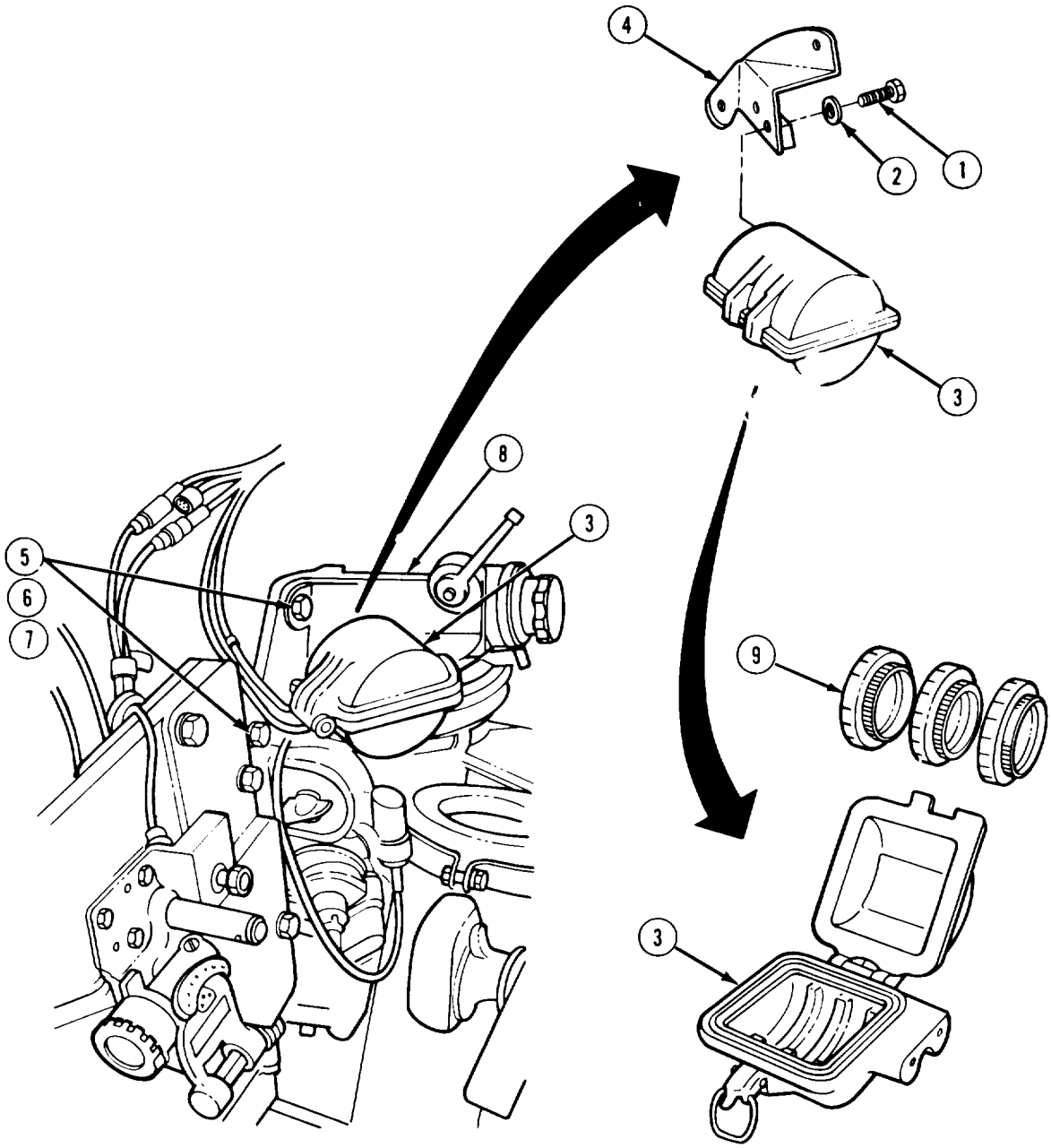
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
165-mm Gun	FO-4	6

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

STEP	PROCEDURE
1.	Using wrench, put in two screws (1) and two lockwashers (2) holding filter box (3) to mounting bracket (4).
2.	Using wrench, put in two screws (5), two flat washers (6) and two lockwashers (7) holding filter box mounting bracket (4) to articulated telescope M105F (8).
	END OF TASK

57-13.1 Repair of filter box (3) consists of replacing filters (9) (Early Model).



EARLY MODEL

57-13.2 FILTER BOX AND MOUNTING BRACKET REMOVAL PROCEDURE (LATE MODEL)

TOOLS: 7/16 in. combination wrench
3/4 in. combination wrench

PERSONNEL: One

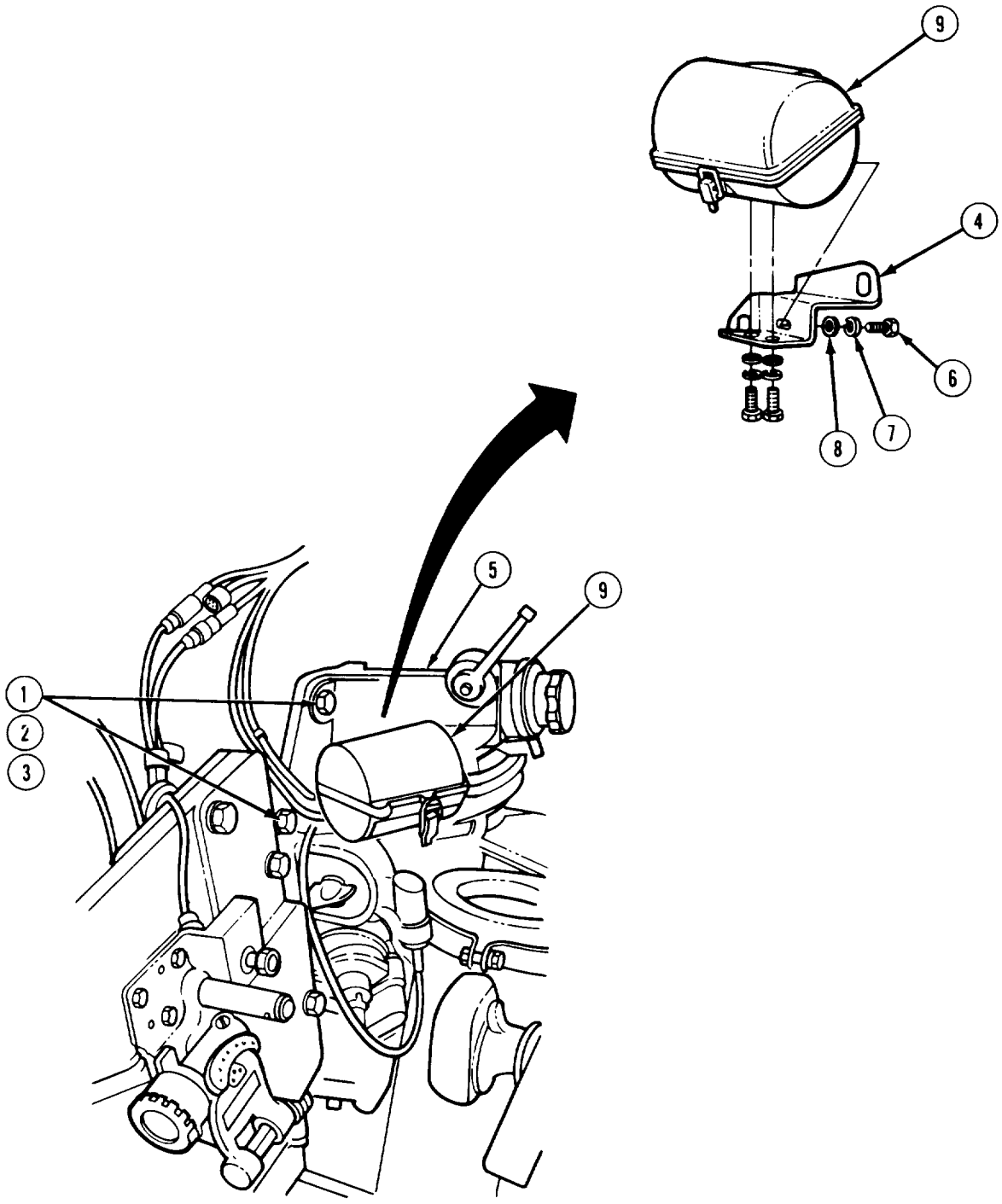
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
165-mm Gun	FO-4	6

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

STEP	PROCEDURE
1.	Using 3/4 inch wrench, remove two screws (1), two flat washers (2), and two lockwashers (3) holding filter box mounting bracket (4) on articulated telescope M105F (5).
2.	Using 7/16 inch wrench, remove three screws (6), three lockwashers (7), and three washers (8), holding filter box (9) to mounting bracket (4).
	END OF TASK



LATE MODEL

57-13.3 FILTER BOX AND MOUNTING BRACKET INSTALLATION PROCEDURE (LATE MODEL)

T00LS: 7/16 in. combination wrench
3/4 in. combination wrench

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

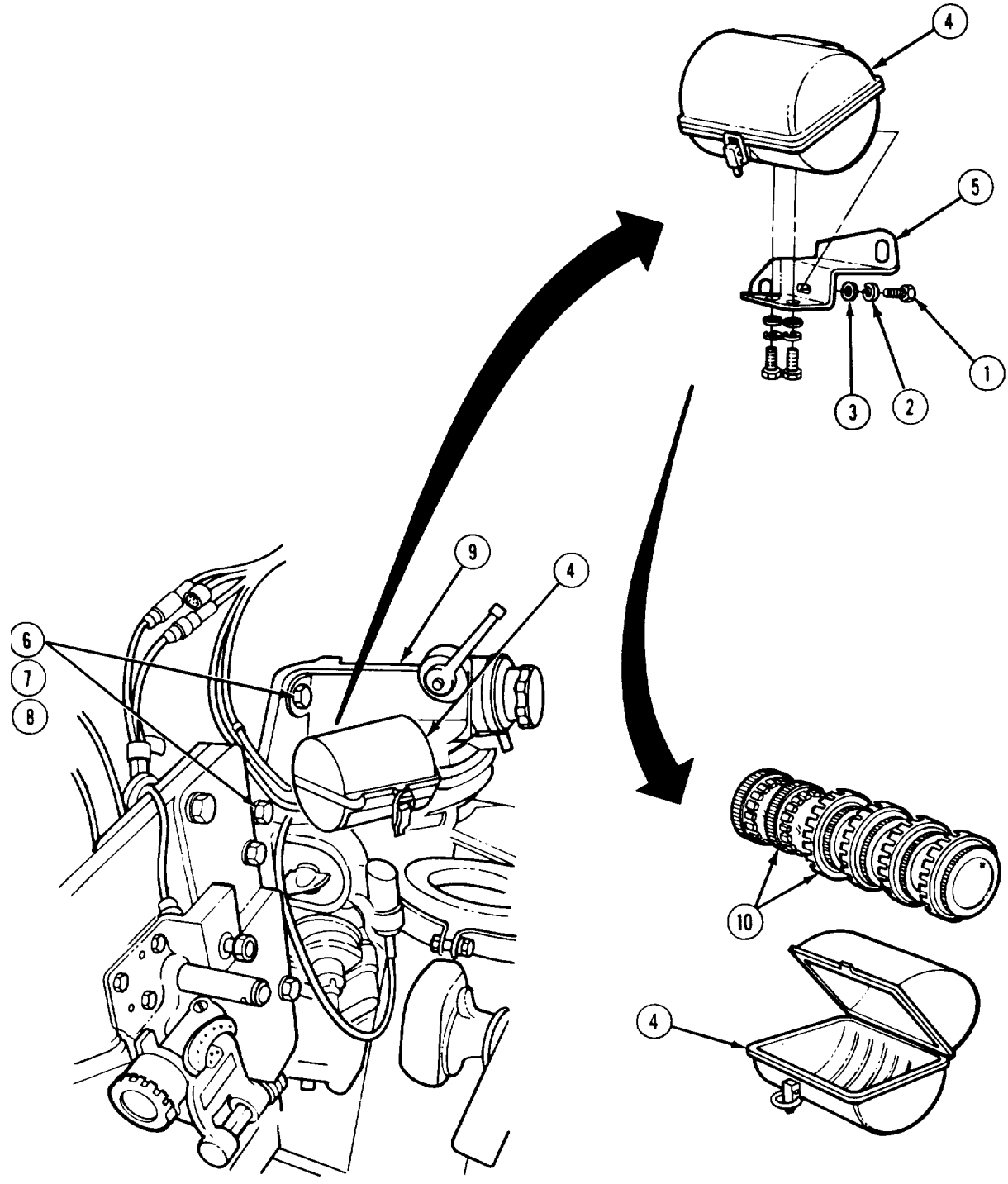
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
165-mm Gun	FO-4	6

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

STEP	PROCEDURE
1.	Using 7/16 inch wrench, put in three screws (1), three lockwashers (2), and three washers (3) holding filter box (4) to mounting bracket (5).
2.	Using 3/4 inch wrench, put in two screws (6), two flat washers (7) and two lockwashers (8) holding filter box mounting bracket (5) to articulated telescope M105F (9).
	END OF TASK

57-1 3.4 Repair of filter box (4) consists of replacing filters (10) (Late Model).



LATE MODEL

57-14. CLAMP REMOVAL PROCEDURE

T00LS: 3/8 in. flat tip screwdriver

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedure to remove M50 instrument light

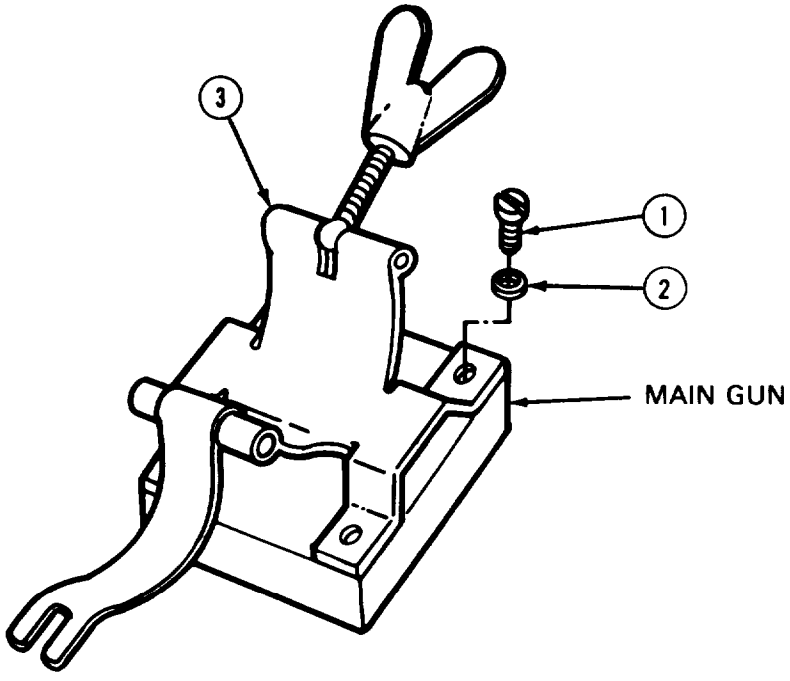
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Articulated Telescope M105F	FO-1	28

QUIPMENT CONDITION: M50 instrument light removed (TM-10).

FRAME 1

STEP	PROCEDURE
1.	Using screwdriver, remove four screws (1), four Lockwashers (2), and clamp (3) from main gun.
	END OF TASK



57-15. CLAMP INSTALLATION PROCEDURE

TOOLS: 3/8” flat tip screwdriver

PERSONNEL: One

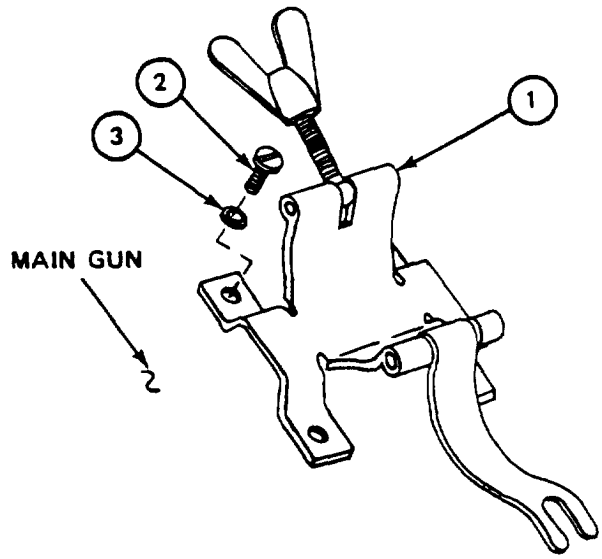
REFERENCES: TM 9-2350-222-10 for procedure to install M50 instrument light

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Articulated Telescope M105F	FO-1	28

FRAME 1

Step	Procedure
1.	Using screwdriver, attach clamp (1) to main gun with four screws (2) and four lockwashers (3). NOTE Follow-on Maintenance Action Required: Install M50 instrument light (TM-10). END OF TASK



57-16. TELESCOPE LIGHT SOURCE CONTROL DISASSEMBLY PROCEDURE

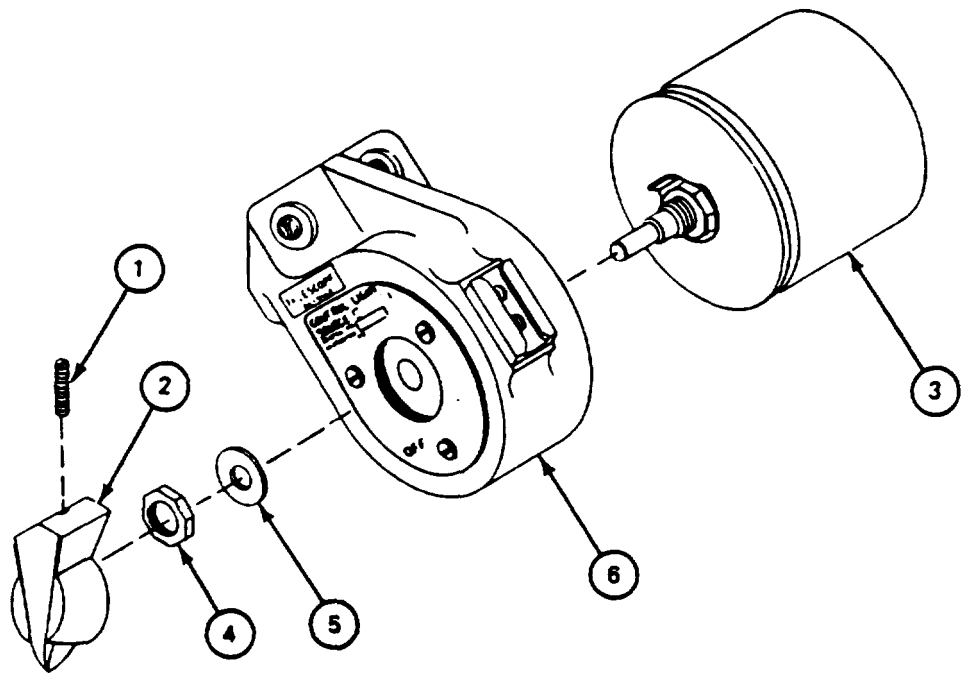
TOOLS: 5/64" socket head screw key (Allen wrench)
Round nose pliers

PERSONNEL: One

PRELIMINARY PROCEDURES: Remove telescope light source control (para 56-10)

FRAME 1

Step	Procedure
1.	Using Allen wrench remove screw (1) from knob (2).
2.	Pull knob (2) off shaft of rheostat (3).
3.	Using pliers, remove nut (4) and washer (5) from rheosat (3).
4.	Remove rheostat (3) from housing (6).
	END OF TASK



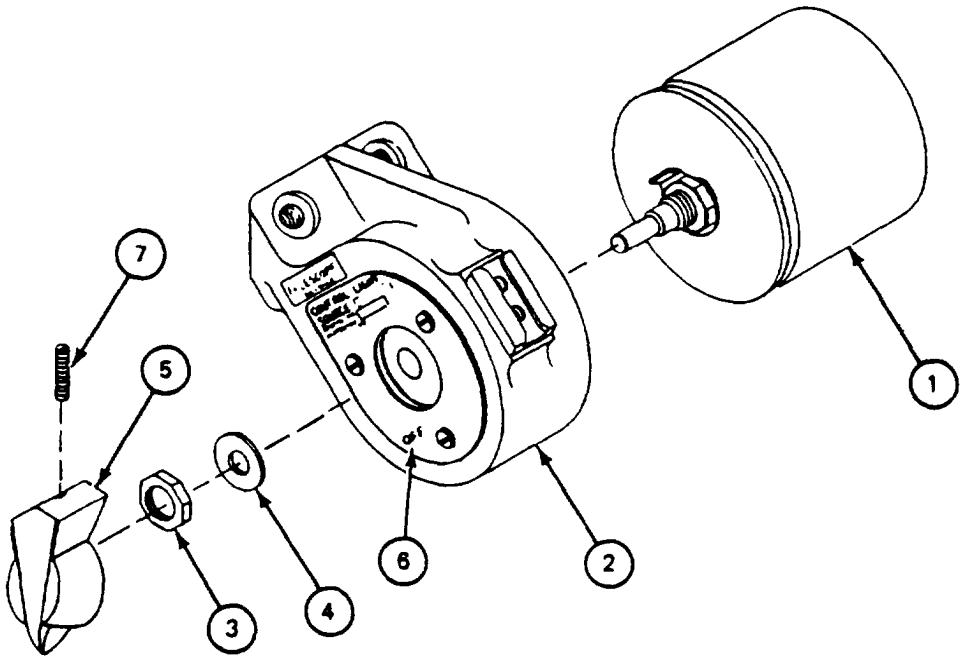
57-17. TELESCOPE LIGHT SOURCE CONTROL ASSEMBLY PROCEDURE

TOOLS: 5/64" socket head screw key (Allen wrench)
Round nose pliers

PERSONNEL: One

FRAME 1

Step	Procedure
1.	Using pliers, attach rheostat (1) to housing (2) with nut (3) and washer (4).
2.	Turn shaft of rheostat (1) all the way counterclockwise.
3.	Slide knob (5) on shaft of rheostat (1). Line up pointer on knob (5) with OFF mark (6) on housing (2). Hold knob (5) in this position.
4.	Using screwdriver, attach knob (5) to shaft of rheostat (1) with screw (7).
	NOTE Follow-on Maintenance Action Required: Install telescope light source control (para 56-11).
	END OF TASK

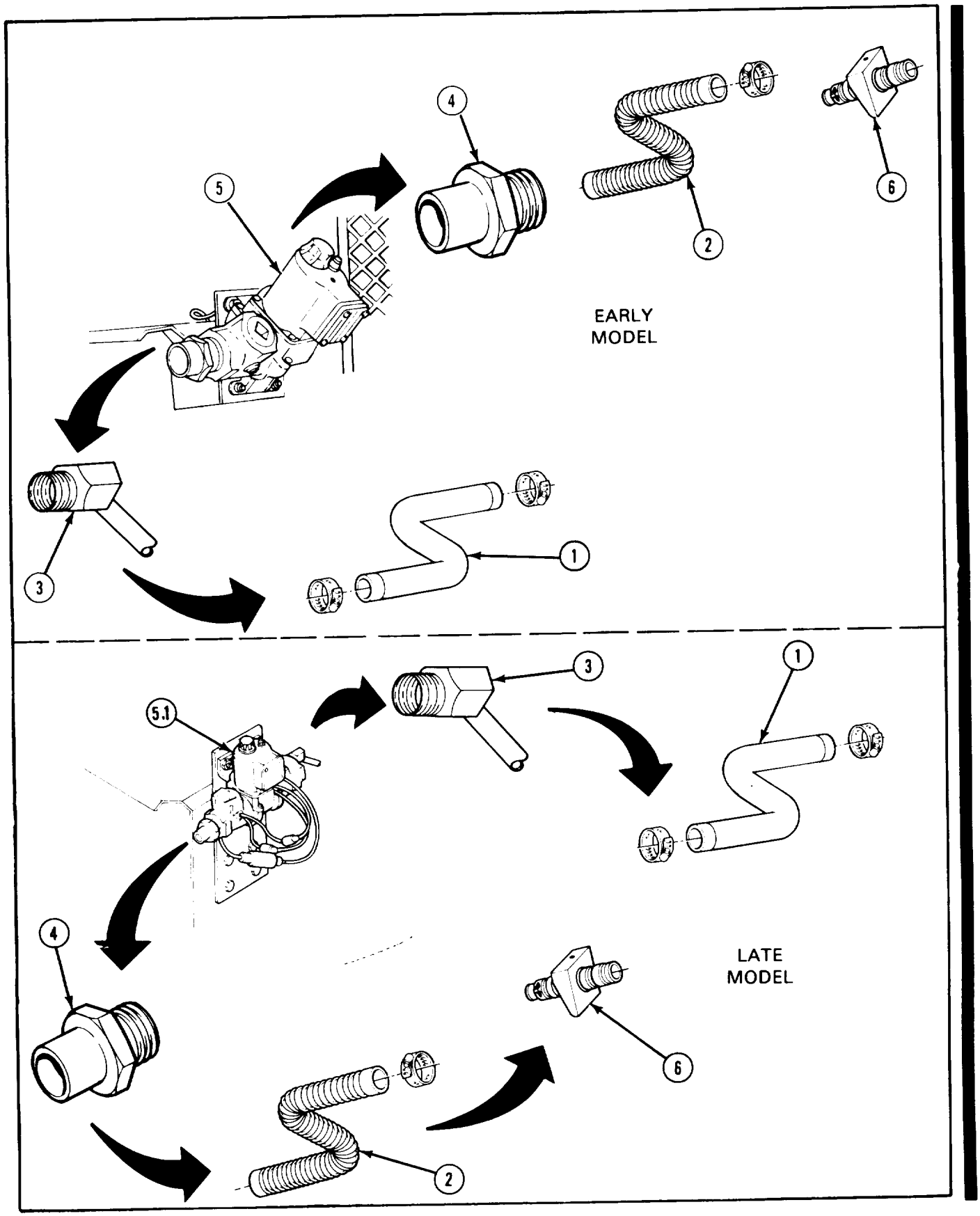


CHAPTER 58

COMMANDER'S ELECTRIC AIR FILTER HEATER

58-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Tasks			
	Removal	Installation	Disassembly	Assembly
1. Commander's Filter Hose	58-2	58-3	...	...
2. Commander's Air Duct Hose	58-4	58-5	...	...
3. Commander's Heater Elbow	58-6	58-7	...	...
4. Commander's Heater Adapter	58-6	58-7	...	...
5. Commander's Electric Air Filter Heater (Early Model)	58-8	58-9	...	...
5.1 Commander's Electric Air Filter Heater (Late Model)	58-9.1	58-9.2	. . .	...
6 Orifice Connector	58-10	58-11	58-12	58-13


4
5
2
6
EARLY
MODEL
3
1
5.1
3
1
4
LATE
MODEL
6
2

58-2. COMMANDER'S FILTER HOSE REMOVAL PROCEDURE

TOOLS: Flat tip screwdriver

PERSONNEL: One

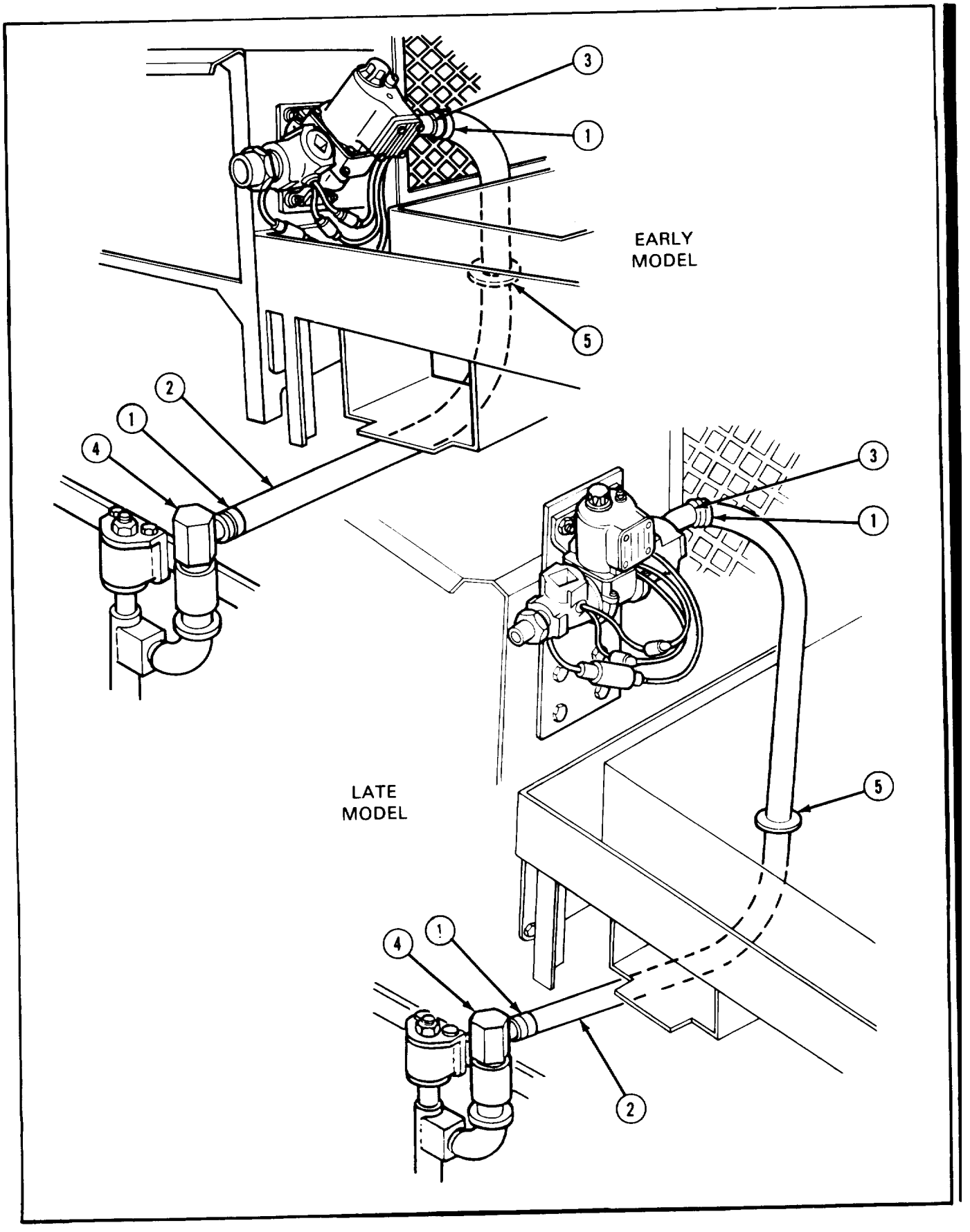
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Commander's Electric Air Filter Heater	FO-2	10

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

STEP	PROCEDURE
1.	Using screwdriver, loosen two clamps (1) around commander's filter hose (2).
2.	Remove commander's filter hose (2) and two clamps (1) from elbow (3) and adapter (4).
3.	Pull commander's filter hose (2) through grommet (5) in oddment tray.
	END OF TASK


3
1
5
EARLY
MODEL
2
1
4
3
1
LATE
MODEL
5
4
1
2

58-3. COMMANDER'S FILTER HOSE INSTALLATION PROCEDURE

T0OLS: Flat tip screwdriver

PERSONNEL: One

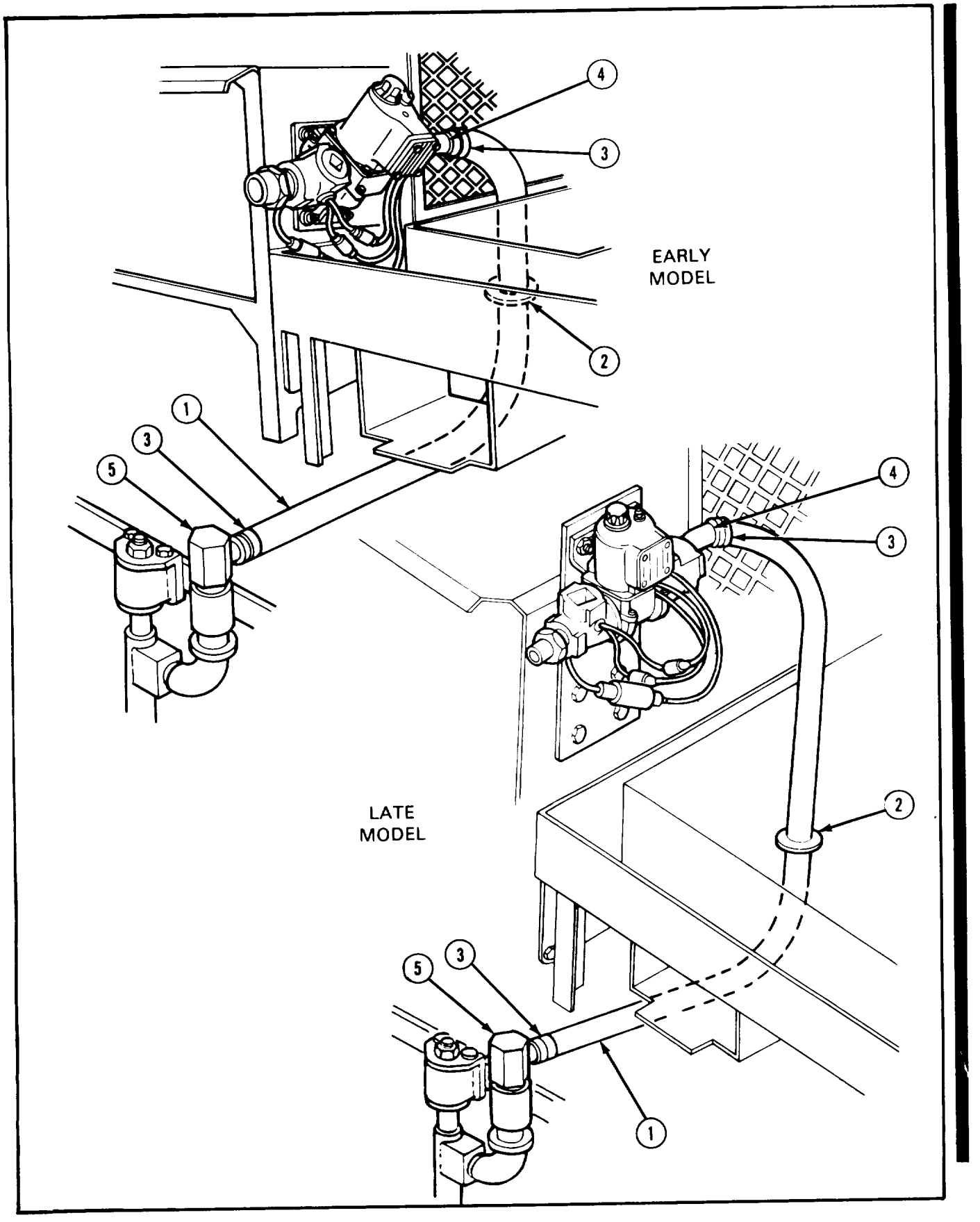
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Commander's Electric Air Filter Heater	FO-2	10

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

STEP	PROCEDURE
1.	Put commander's filter hose (1) through grommet (2) in oddment tray.
2.	Place one clamp (3) on each end of commander's filter hose (1).
3.	Slide one end of commander's filter hose (1) on elbow (4) and other end of elbow (5).
4.	Using screwdriver, tighten two clamps (3).
	END OF TASK


4
3
2
EARLY
MODEL
1
3
5
4
3
2
LATE
MODEL
5
3
1

58-4. COMMANDER'S AIR DUCT HOSE REMOVAL PROCEDURE

TOOLS: Flat-tip screwdriver

PERSONNEL: One

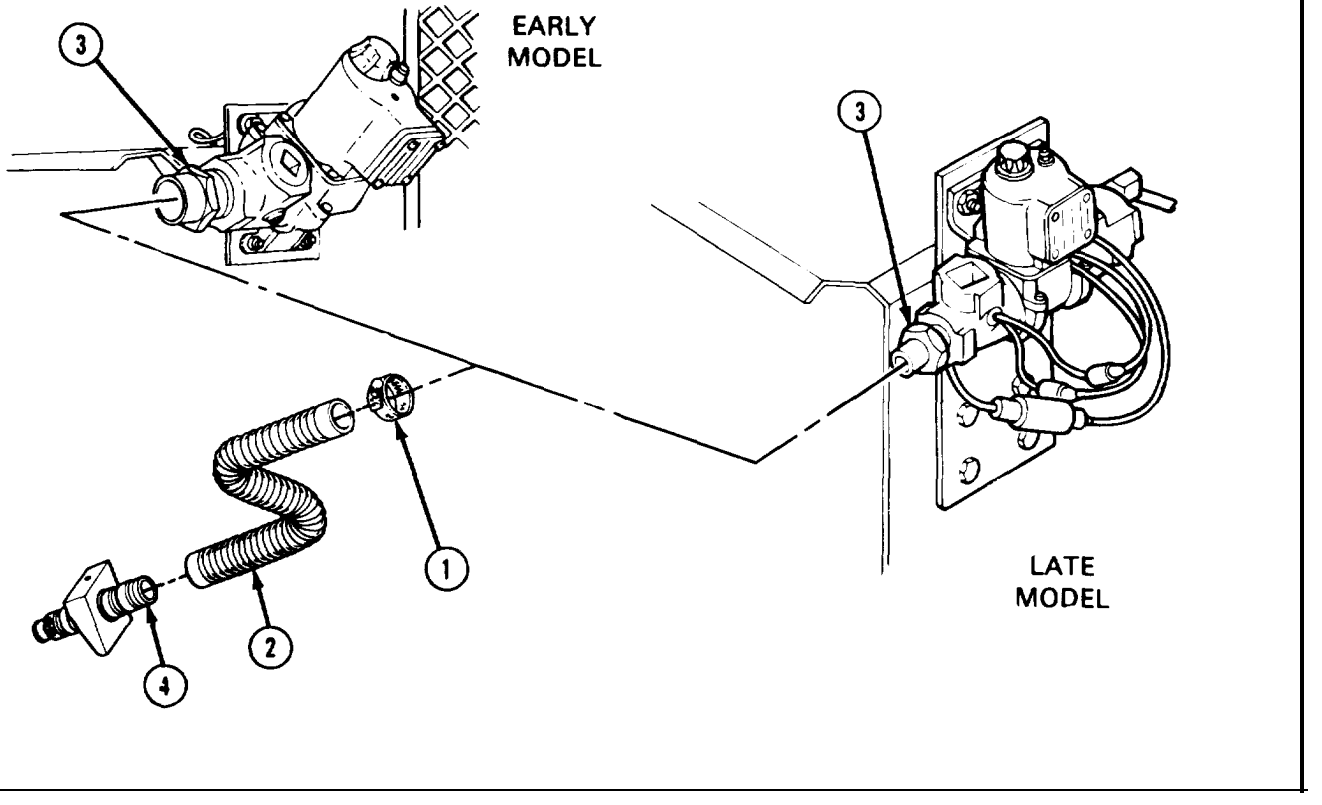
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Commander's Electric Air Filter Heater	FO-2	10

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

STEP	PROCEDURE
1.	Using screwdriver, loosen one clamp (1) on each end of air duct hose (2).
2.	Pull clamp (1) and hose (2) off commander's air filter heater adapter (3) and off hose connector (4).
	END OF TASK



58-5. COMMANDER'S AIR DUCT HOSE INSTALLATION PROCEDURE

TOOLS: Flat-tip screwdriver

PERSONNEL: One

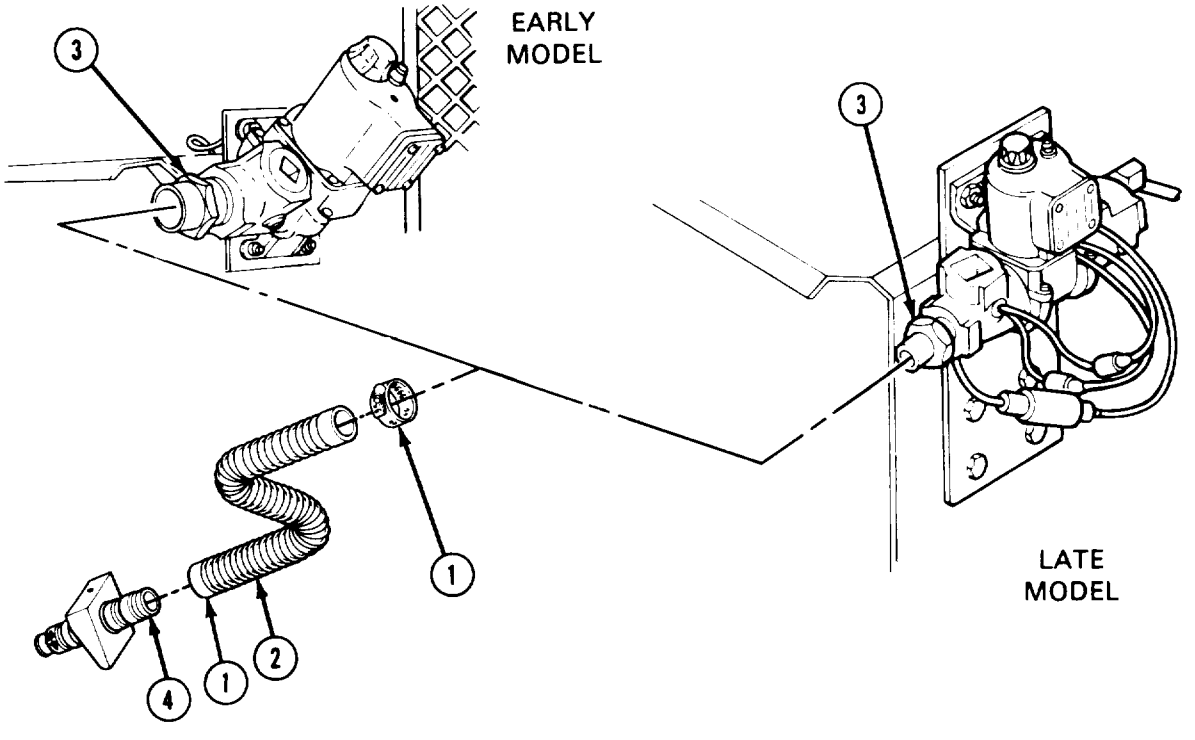
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Commander's Electric Air Filter Heater	FO-2	10

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

STEP	PROCEDURE
1.	Slide one clamp (1) on each end of hose (2).
2.	slide hose (2) onto adapter (3) and hose connector (4).
3.	Using screwdriver tighten two clamps (1) tight
	END OF TASK



58-6. COMMANDER'S HEATER ELBOW AND ADAPTER REMOVAL PROCEDURE

TOOLS: 1-3/8 in. open end wrench
1-1/2 in. open end wrench

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Commander's Electric Air Filter Heater	FO-2	10

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

PRELIMINARY PROCEDURES: Remove commander's electric air filter heater (para. 58-8)

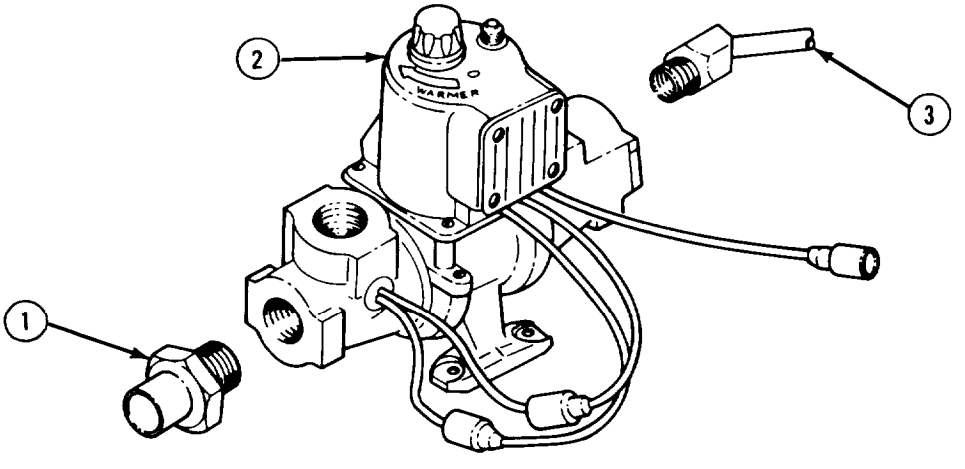
GENERAL INSTRUCTIONS:

NOTE

The commander's heater elbow and adapter should be removed and saved if the commander's heater is to be installed. These parts can be used again.

FRAME 1

STEP	PROCEDURE
1.	Using 1-1/2 inch wrench, remove adapter (1) from commander's heater (2).
2.	Using 1-3/8 inch wrench, remove elbow (3) from commander's heater (2).
	END OF TASK



58-7. COMMANDER'S HEATER ELBOW AND ADAPTER INSTALLATION PROCEDURE

TOOLS: 1-3/8 in. open end wrench
1-1 /2 in. open end wrench

PERSONNEL: One

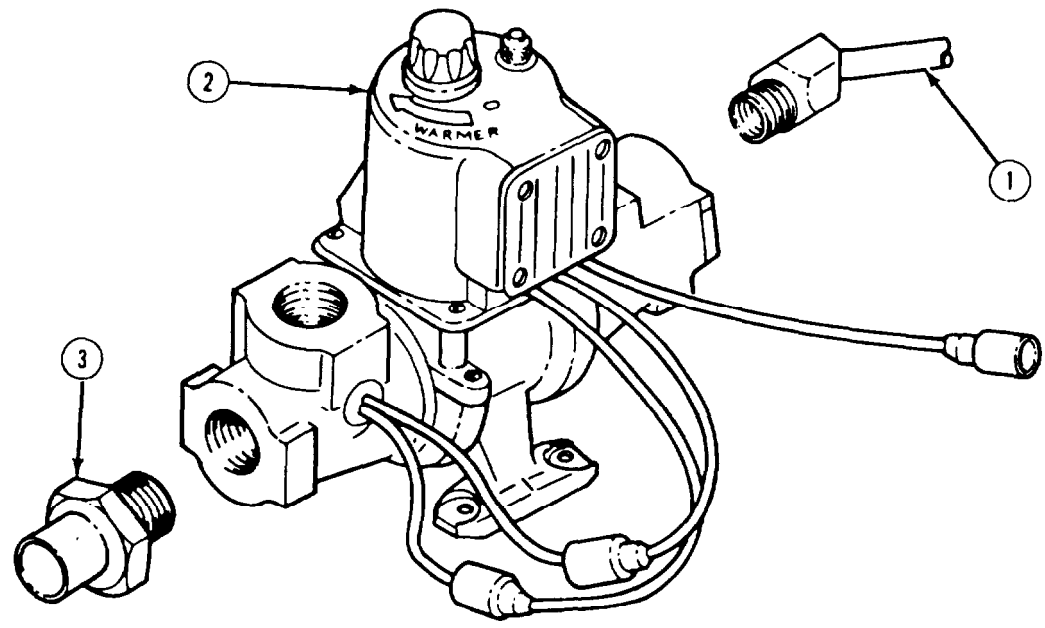
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Commander's Electric Air Filter Heater	FO-2	10

EQUIPMENT CONDITION Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

STEP	PROCEDURE
1.	Apply a coat of pipe sealant (item 25.1. App. A) to elbow's thread surface. Using 1-3/8" wrench, put elbow (1) on inlet end of Commander's Heater (2).
2.	Apply a coat of grease (item 12, App. A) to adapter's thread surface. Using 1-1/2" wrench, put adapter (3) on inlet end of Commander's Heater (2).
	END OF TASK



58-8. COMMANDER'S ELECTRIC AIR FILTER HEATER REMOVAL PROCEDURE (EARLY MODEL)

TOOLS: 7/16 open end wrench

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control panel	FO-3	11
Commander's Electric Air Filter Heater	FO-2	10

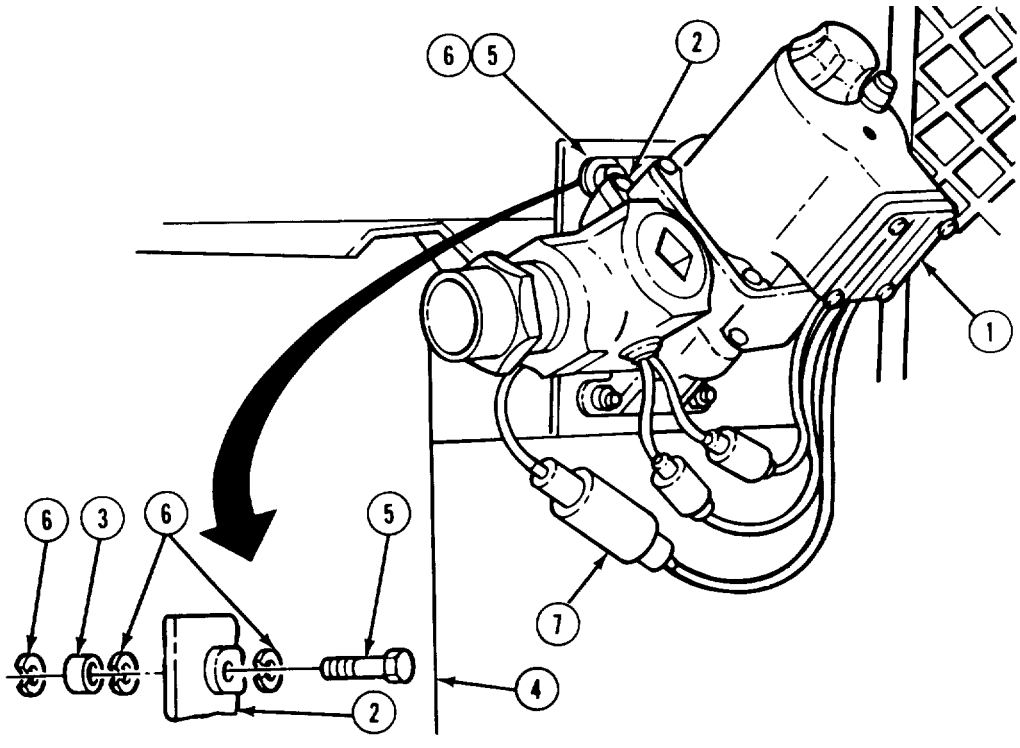
EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

PRELIMINARY PROCEDURES: Remove commander's air duct hose (para 58-4)
Remove commander's filter hose (para 58-2)

58-9. COMMANDER'S ELECTRIC AIR FILTER HEATER INSTALLATION PROCEDURE (EARLY MODEL) (CONT)

FRAME 1

STEP	PROCEDURE
1.	Using wrench, attach commander's electric air filter heater (1) to mounting plate (2), and four spacers (3) to radio guard (4) with four screws (5) and twelve lockwashers (6).
2.	Connect electrical connector (7) (JPG).
	NOTE **Follow-on Maintenance Action Required:** **Install commander's heater elbow and adapter (para 58-7).** **Install commander's filter hose (pare 58-3) and commander's air duct hose (para 58-5).** **Operate commander's air filter heater to make sure it works properly (TM-10).**
	END OF TASK



58-9.1. COMMANDER'S ELECTRIC AIR FILTER HEATER REMOVAL PROCEDURE (LATE MODEL)

TOOLS: Cross-tip screwdriver
7/16 in. open end wrench

PERSONNEL: One

REFERENCES: JPG for procedure to disconnect electrical connectors

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Commander's Electric Air Filter Heater	FO-2	10

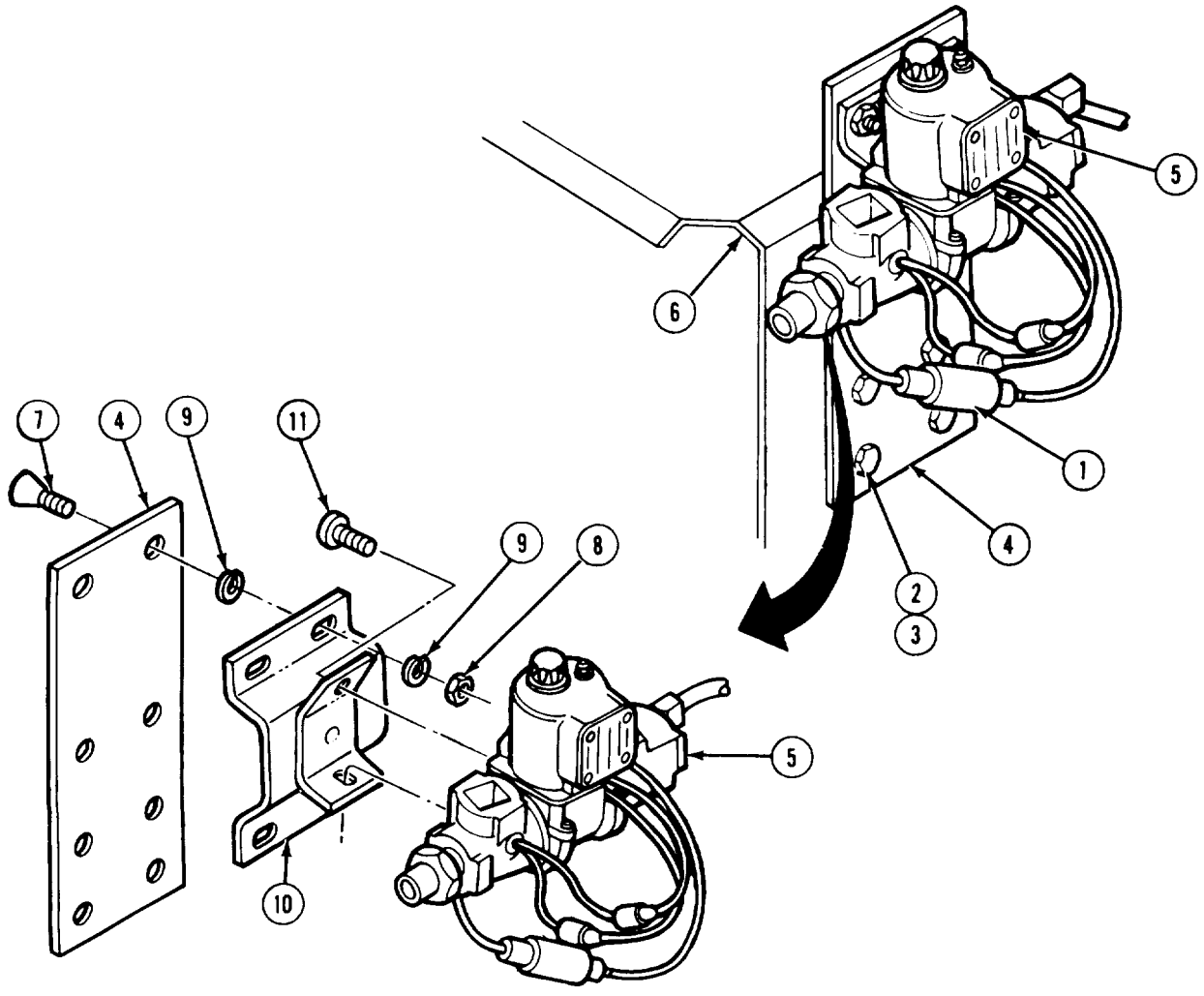
EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

PRELIMINARY PROCEDURES: Remove commander's air duct hose (para 58-4)
Remove commander's filter hose (para 58-2)

58-9.1. COMMANDER'S ELECTRIC AIR FILTER HEATER REMOVAL PROCEDURE (LATE MODEL) (CONT)

FRAME 1

STEP	PROCEDURE
1.	Disconnect electrical connector (1) (JPG).
2.	Using wrench, remove four screws (2) and Iockwashers (3), holding mounting plate (4) and commander's air filter heater (5), to radio mounting guard (6).
3.	Using screwdriver and wrench, remove four screws (7), nuts (8). and eight lockwashers (9) securing mounting plate (4) and bracket (10).
4.	Using screwdriver, remove two screws (11) securing bracket (10) to commander's air filter heater (5)
	END OF TASK



58-9.2. COMMANDER'S ELECTRIC AIR FILTER HEATER INSTALLATION PROCEDURE (LATE MODEL)

TOOLS: Cross-tip screwdriver
7/16 in. open end wrench

PERSONNEL: One

REFERENCES: JPG for procedure to connect electrical connectors
TM 9-2350-222-10 for procedure to operate commander's electric air filter heater

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Commander's Electric Air Filter Heater	FO-2	10

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

PRELIMINARY PROCEDURE: Install commander's heater elbow and adapter (para 58-7)

50-9.2. COMMANDER'S ELECTRIC AIR FILTER HEATER INSTALLATION PROCEDURE (LATE MODEL) (CONT)

FRAME 1

STEP	PROCEDURE
1.	Position bracket (1) on commander's air filter heater (2).
2.	Using screwdriver, install two screws (3).
3.	Using screwdriver and wrench, attach bracket (1) to mounting plate (4) with four screws (5). nuts (6). and eight lockwashers (7).
4.	Using wrench, attach mounting plate (4) to radio guard (8), with four screws (9) and lockwashers (10).
5.	Connect electrical connector (11) (JPG).

NOTE

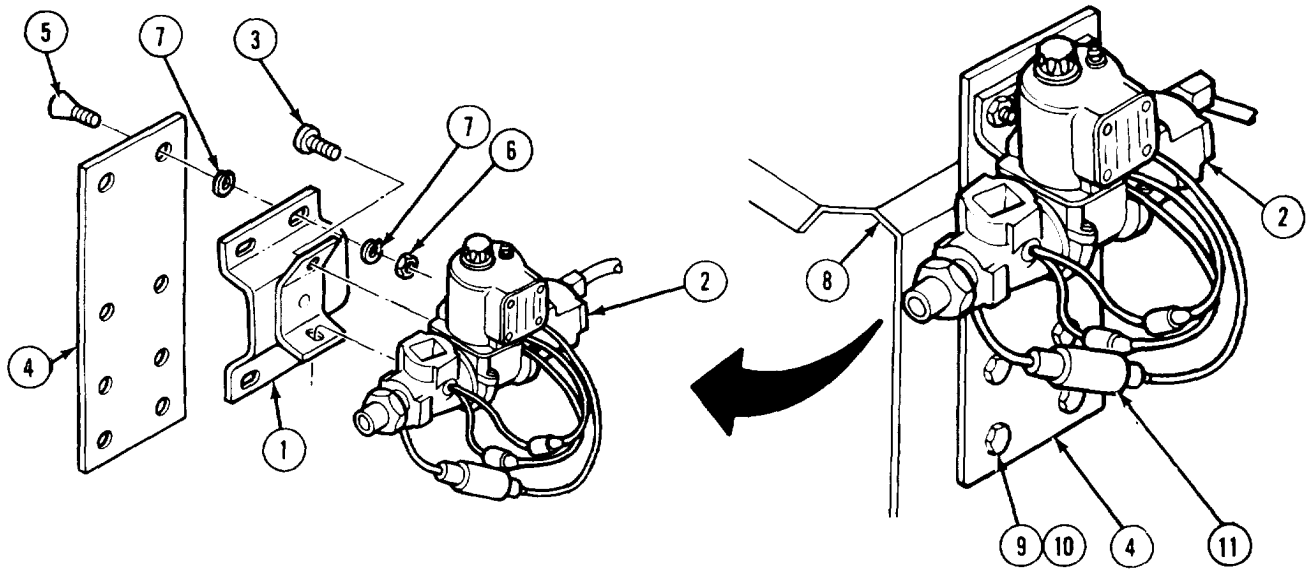
Follow-on Maintenance Action Required:

Install commander's heater elbow and adapter (para 58-7).

Install commander's filter hose (para 58-3) and commander's air duct hose (para 58-5).

Operate commander's air filter heater to make sure it works properly (TM-10).

END OF TASK



58-10. ORIFICE CONNECTOR REMOVAL PROCEDURE

TOOL: External retaining ring pliers

PERSONNEL: One

REFERENCE: JPG for procedure to use retaining ring pliers

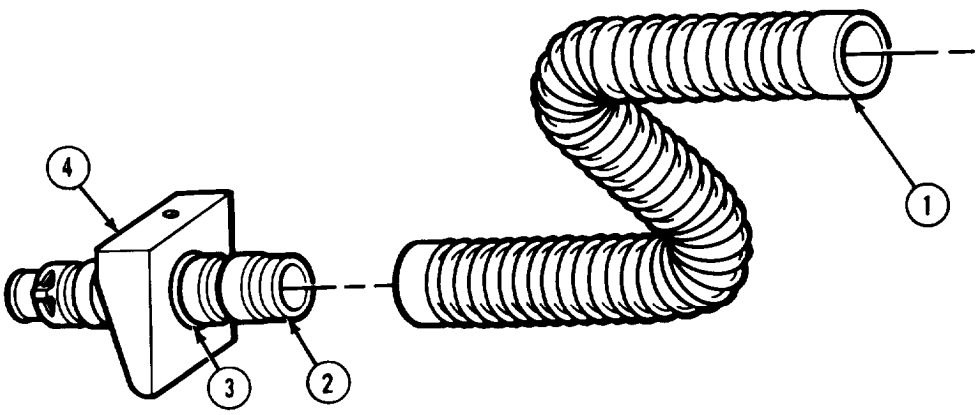
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Commander's Electric Air Filter Heater	FO-2	10

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

STEP	PROCEDURE
1.	Pull quick disconnect coupling (1) off orifice connector (2).
2.	Using retaining ring pliers, remove retaining ring (3) from orifice connector (2) (JPG).
3.	Remove orifice connector (2) from bracket (4).
	END OF TASK



58-11. ORIFICE CONNECTOR INSTALLATION PROCEDURE

TOOLS: External retaining ring pliers

PERSONNEL: One

REFERENCES: JPG for procedure to use retaining ring pliers.

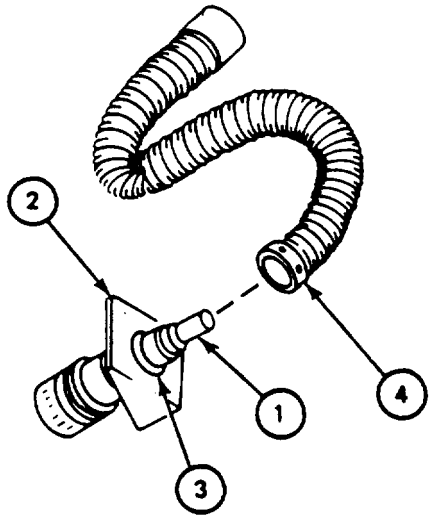
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Commander's Electric Air Filter Heater	FO-2	10

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

Step	Procedure
1.	Using retaining ring pliers, attach orifice connector (1) to bracket (2) with retaining ring (3) (JPG).
2.	Push quick disconnect coupling (4) on orifice connector (1).
	END OF TASK



58-12. ORIFICE CONNECTOR DISASSEMBLY PROCEDURE

TOOLS: Flat tip screwdriver
Stiff bristled brush
Scraper

SUPPLIES: Dry cleaning solvent (item 22, App. A)

PERSONNEL: One

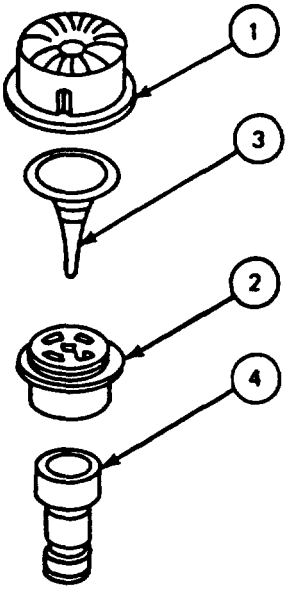
REFERENCES: JPG for procedure to clean parts

PRELIMINARY PROCEDURES: Remove orifice connector (para 58-10)

58-12. ORIFICE CONNECTOR DISASSEMBLY PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Using screwdriver, separate outlet valve cover (1) from outlet valve seat (2). Remove outlet valve cover fro-m outlet valve seat.
	NOTE
	Connector (4) and outlet valve seat (2) are sealed together.
2.	Using hands, pull outlet valve disc (3) from outlet valve seat (2).
	NOTE
	Follow-on Maintenance Action Required:
	Clean all parts (JPG).
	END OF TASK



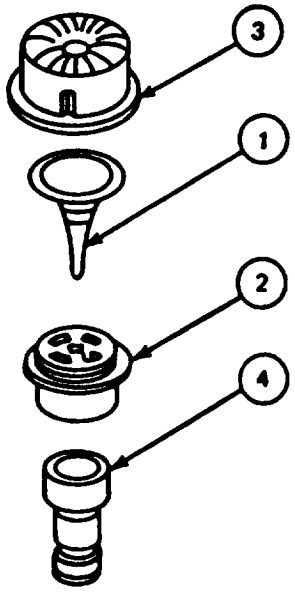
58-13. ORIFICE CONNECTOR ASSEMBLY PROCEDURE

SUPPLIES: Water

PERSONNEL: One

FRAME 1

Step	Procedure
	NOTE Connector (4) and outlet valve seat (2) are sealed together.
1.	Wet small end of outlet valve disc (1) with water.
2.	Using hands, push small end of outlet valve disc (1) in outlet valve seat (2) until outlet valve disc rests flat on outlet valve seat.
3.	Put outlet valve cover (3) on outlet valve seat (2).
	NOTE Follow-on Maintenance Action Required: Install orifice connector (para 58-11).
	END OF TASK

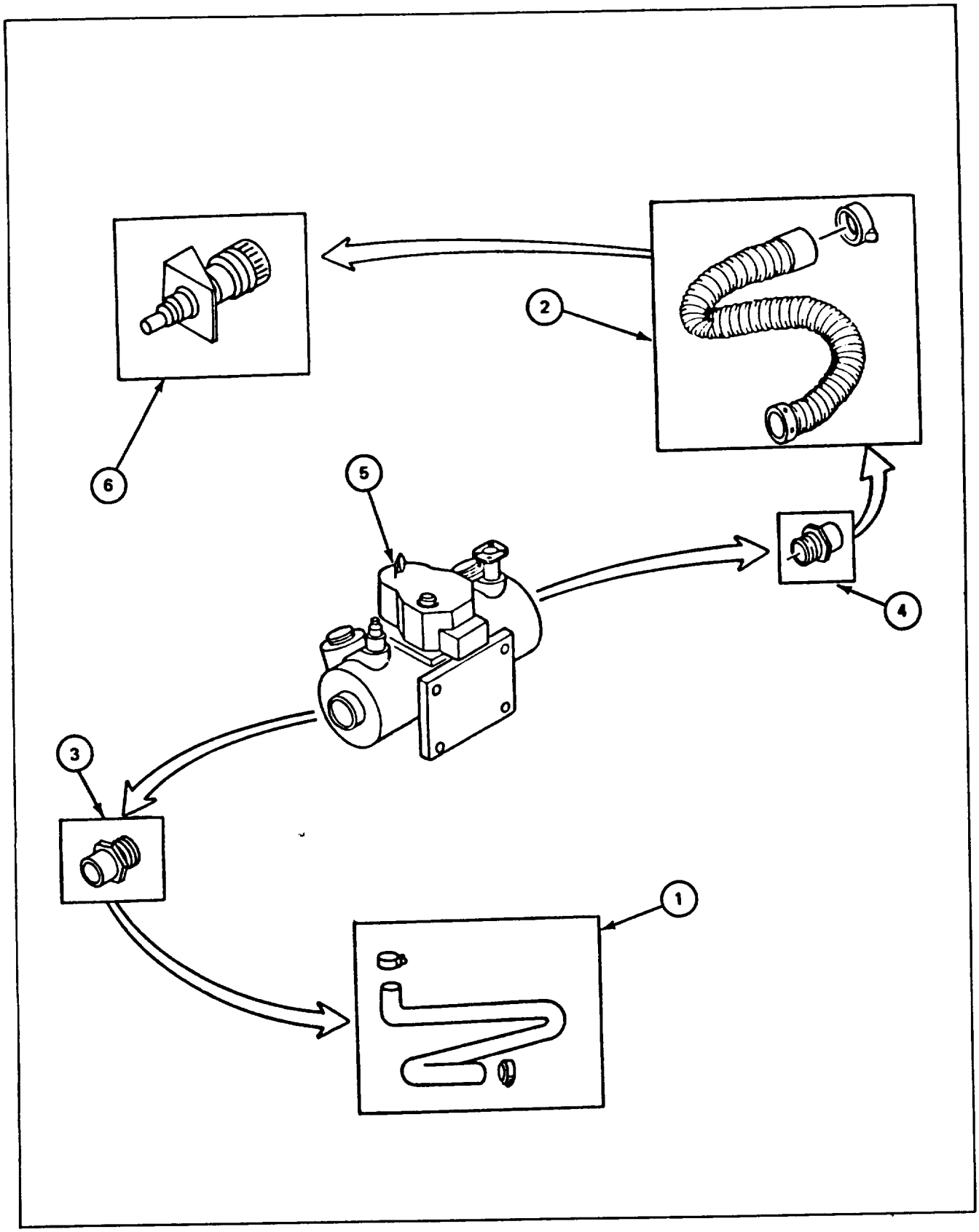


CHAPTER 59

GUNNER'S ELECTRIC AIR FILTER HEATER

59-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Tasks			
	Removal	Installation	Disassembly	Assembly
1. Gunner's Filter Hose	59-2	59-3	. . .	. . .
2. Gunner's Air Duct Hose	59-4	59-5	. . .	. . .
3. Gunner's Heater Inlet Adapter	59-6	59-7	. . .	. . .
4. Gunner's Heater Outlet Adapter	59-6	59-7	. . .	. . .
5. Gunner's Electric Air Filter Heater	59-8	59-9	. . .	. . .
6. Orifice Connector	59-10	59-11	59-12	59-13


6
2
5
4
3
1

59-2. GUNNER'S FILTER HOSE REMOVAL PROCEDURE

TOOLS: Flat tip screwdriver

PERSONNEL: One

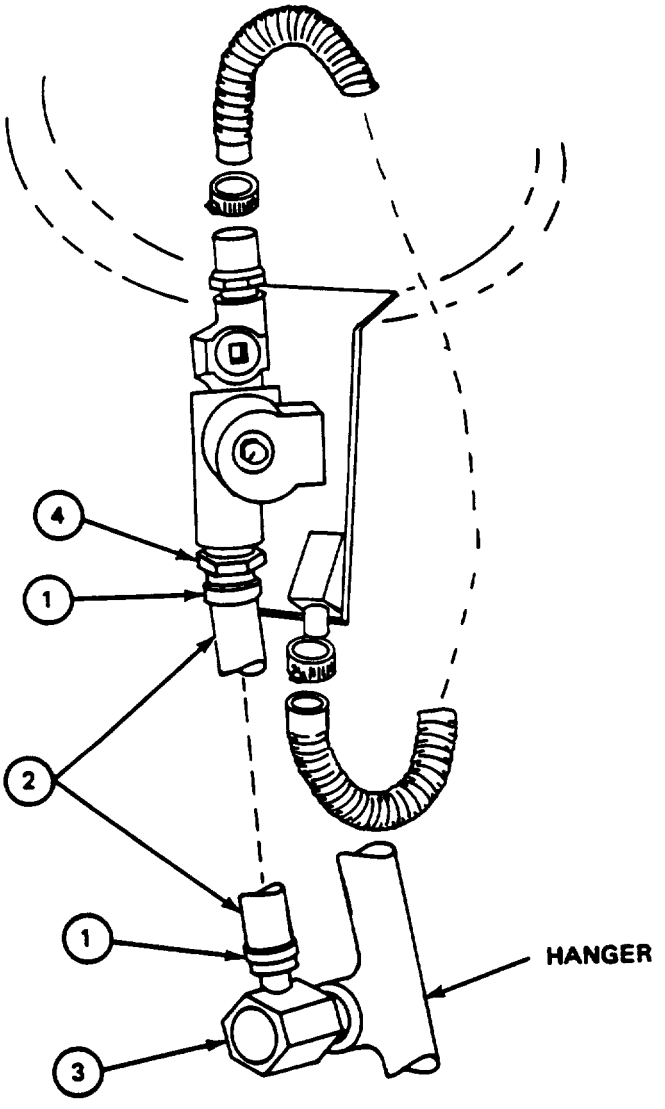
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Electrical Slipring	FO-4	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

Step	Procedure
1.	Using screwdriver, loosen two clamps (1) around gunner's filter hose (2).
2.	Remove gunner's filter hose (2) and two clamps (1) from elbow (3) and adapter (4).
	END OF TASK


4
1
2
1
3
HANGER

59-3. GUNNER'S FILTER HOSE INSTALLATION PROCEDURE

TOOLS: Flat tip screwdriver

PERSONNEL: One

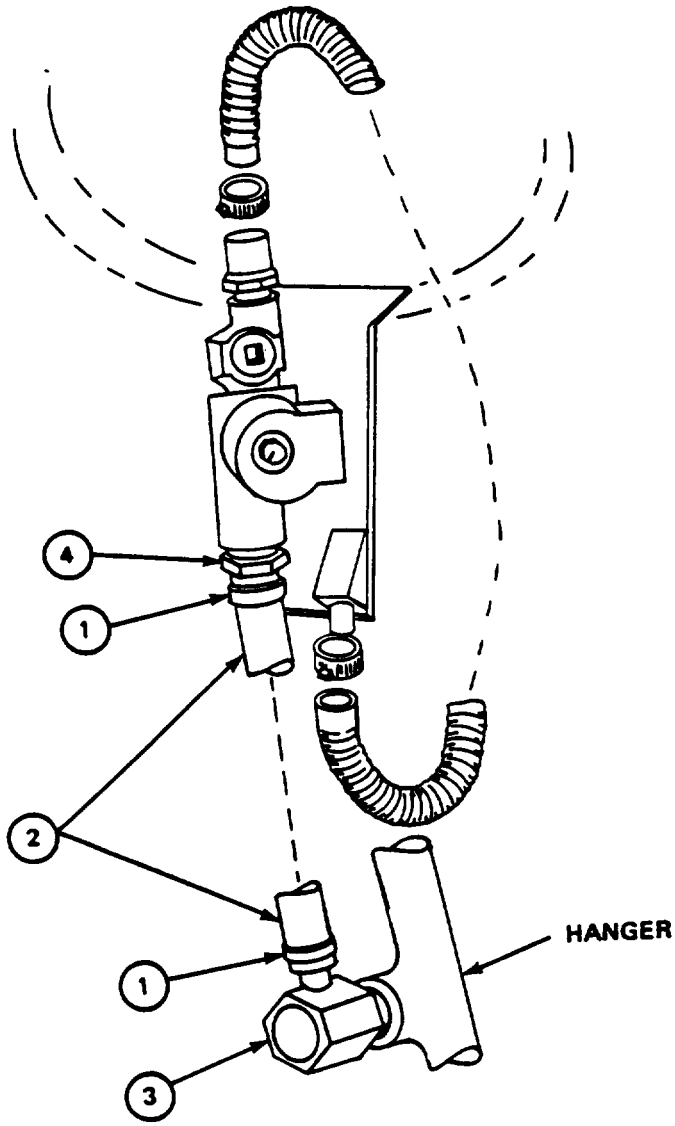
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Electrical Slipring	FO-4	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

Step	Procedure
1.	Place one clamp (1) on each end of gunner's filter hose (2).
2.	Slide gunner's filter hose (2) onto elbow (3) and adapter (4).
3.	Using screwdriver, tighten two clamps (1).
	END OF TASK


4
1
2
1
3
HANGER

59-4. GUNNER'S AIR DUCT HOSE REMOVAL PROCEDURE

TOOLS: Needle nose pliers

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

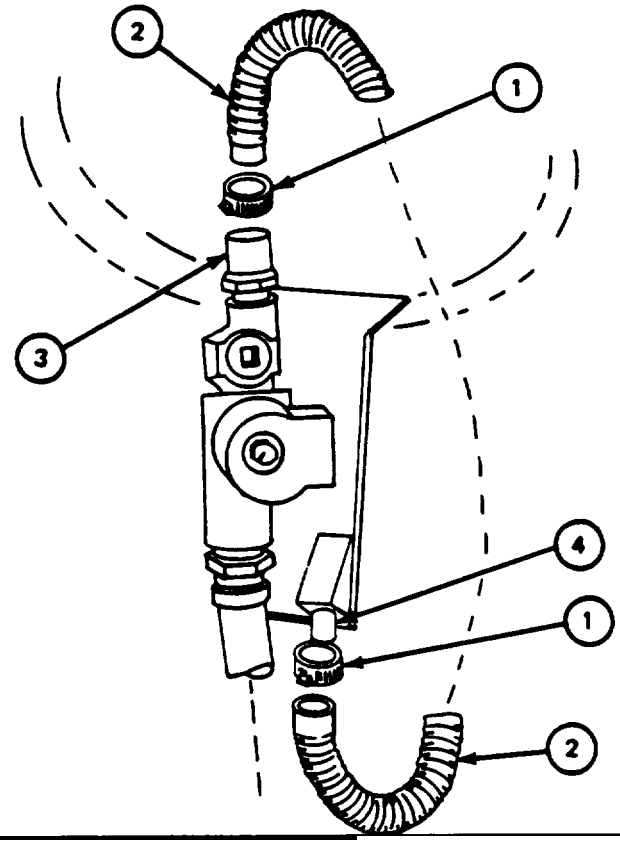
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Electrical Slipring	FO-4	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

Step	Procedure
1.	Using pliers, loosen one clamp (1) on each end of air duct hose (2).
2.	Pull clamps (1) and hose (2) off gunner's air filter heater adapter (3) and off hose connector (4).

END OF TASK



59-5. GUNNER'S AIR DUCT HOSE INSTALLATION PROCEDURE

TOOLS: Needle nose pliers

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION

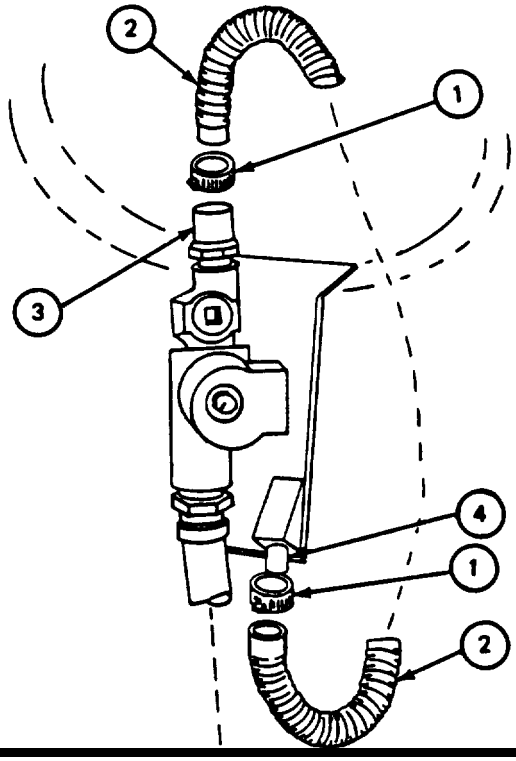
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Electrical Slipring	F0-4	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

Step	Procedure
1.	Slide one clamp (1) on each end of hose (2).
2.	Slide hose (2) onto adapter (3) and on hose connector (4).
3.	Using pliers, squeeze clamp (1) tight.

END OF TASK



59-6. GUNNER'S HEATER INLET AND OUTLET ADAPTER REMOVAL PROCEDURE

TOOLS: 1-1/2" open end wrench

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Electrical Slipring	FO-4	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

PRELIMINARY PROCEDURES: Remove gunner's filter hose (para 59-2)
Remove gunner's air duct hose (para 59-4)

GENERAL INSTRUCTIONS:

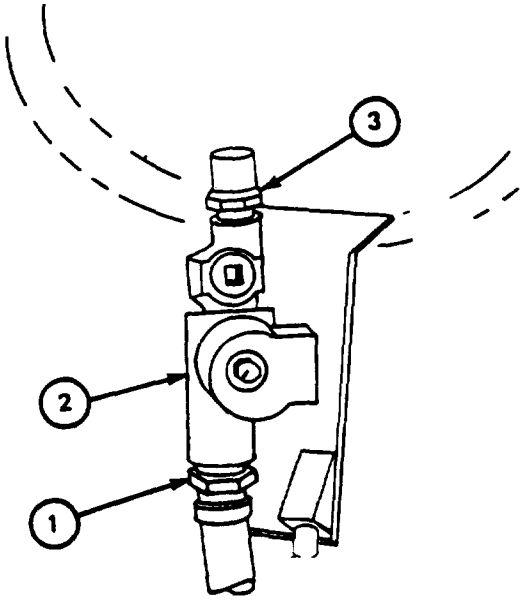
NOTE

The gunner's heater elbow and adapter should be removed and saved if a new heater is to be installed. These parts can be used again.

59-6. GUNNER'S HEATER INLET AND OUTLET ADAPTER REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Using wrench, remove adapter (1) from gunner's heater (2).
2.	Using wrench, remove adapter (3) from gunner's heater (2).
	END OF TASK



59-7. GUNNER'S HEATER INLET AND OUTLET ADAPTER INSTALLATION PROCEDURE

TOOLS: 1-1/2" open end wrench

PERSONNEL One

EQUIPMENT LOCATION INFORMATION:

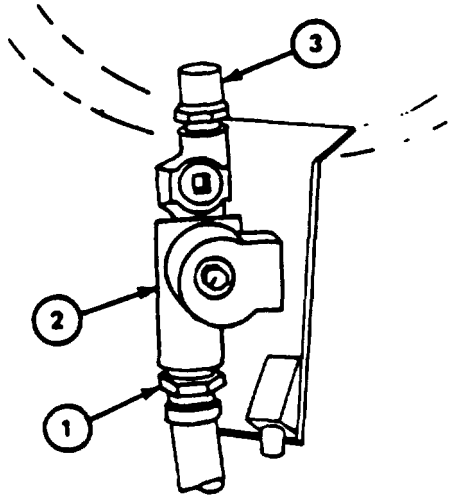
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Electrical Slipring	F0-4	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

59-7. GUNNER'S HEATER INLET AND OUTLET ADAPTER INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Apply a coat of pipe sealant (item 25.1, App. A) to elbows thread surface. Using 1-3/8" wrench, put elbow (1) on inlet end of Gunner's Heater (2).
2.	Apply a coat of grease (item 12, App. A) to adapter's thread surface. Using 1-1/2" wrench, put adapter (3) on outlet end of Gunner's Heater (1).
	NOTE Follow-on Maintenance Action Required: Install gunner's filter hose (para 59-3). Install gunner's aim duct hose(para 59-5).
	END OF TASK



59-8. GUNNER'S ELECTRIC AIR FILTER HEATER REMOVAL PROCEDURE

TOOLS: 7/16" combination wrench
7/16" socket (3/8" drive)
6" extension (3/8" drive)
3/8" drive ratchet
3/4" drive breaker bar
1-1/8" socket (3/4" drive)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Gunner's Electric Air Filter Heater	FO-1	7
Driver's Master Control Panel	FO-3	11

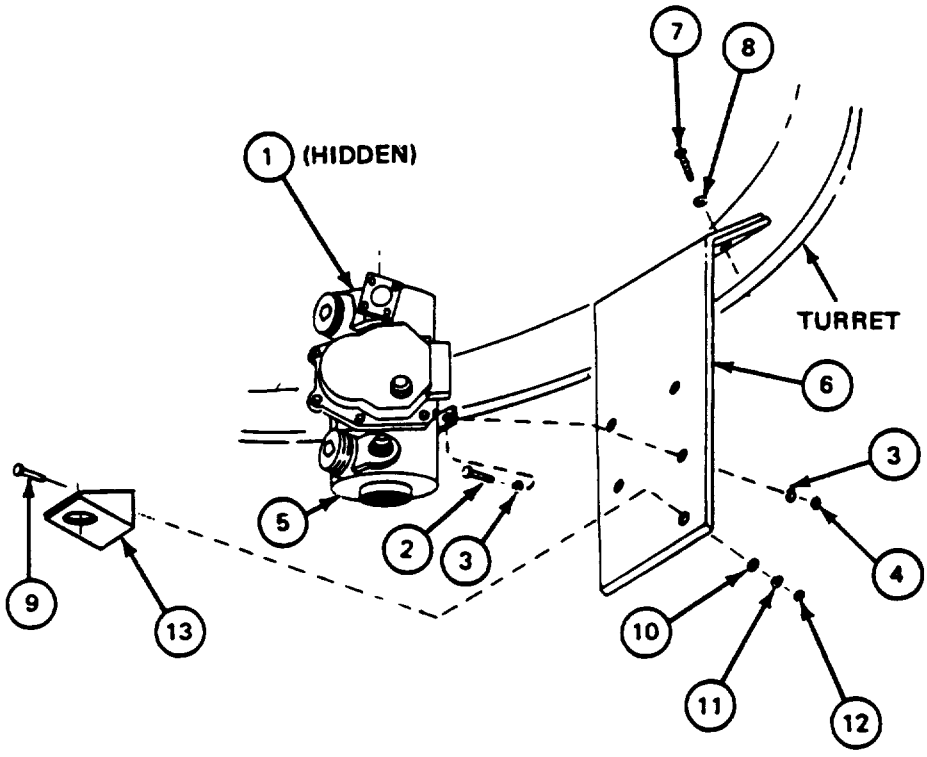
EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

PRELIMINARY PROCEDURES: Remove gunner's heater adapters (para 59-7)

59-8. GUNNER'S ELECTRIC AIR FILTER HEATER REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Disconnect electrical connector (1) (JPG).
2.	Using combination wrench and 7/16" socket wrench, remove four screws (2), eight lockwashers (3), and four nuts (4) holding gunner's heater (5) to bracket (6).
	NOTE Do steps 3 and 4 only if bracket (6) is to be removed.
3.	Using 1-1/8" socket wrench, remove two screws (7) and two washers (8) holding bracket (6) to turret.
4.	Using combination wrench and 7/16" socket wrench, remove screw (9), lockwasher (10), flat washer (11) and nut (12) holding bracket (13) to bracket (6).
	END OF TASK



59-9. GUNNER'S ELECTRIC AIR FILTER HEATER INSTALLATION PROCEDURE

TOOLS: 3/4" drive torque wrench (0 to 450 foot-pounds)
7/16" combination wrench
7/16" socket (3/8" drive)
3/8" drive ratchet
6" extension (3/8" drive)
1-1/8" socket (3/4" drive)

PERSONNEL: One

REFERENCES: JPG for procedures to:
Use torque wrench
Connect electrical connectors
TM 9-2350-222-10 for procedure to operate gunner's electric air filter heater

EQUIPMENT LOCATION INFORMATION:

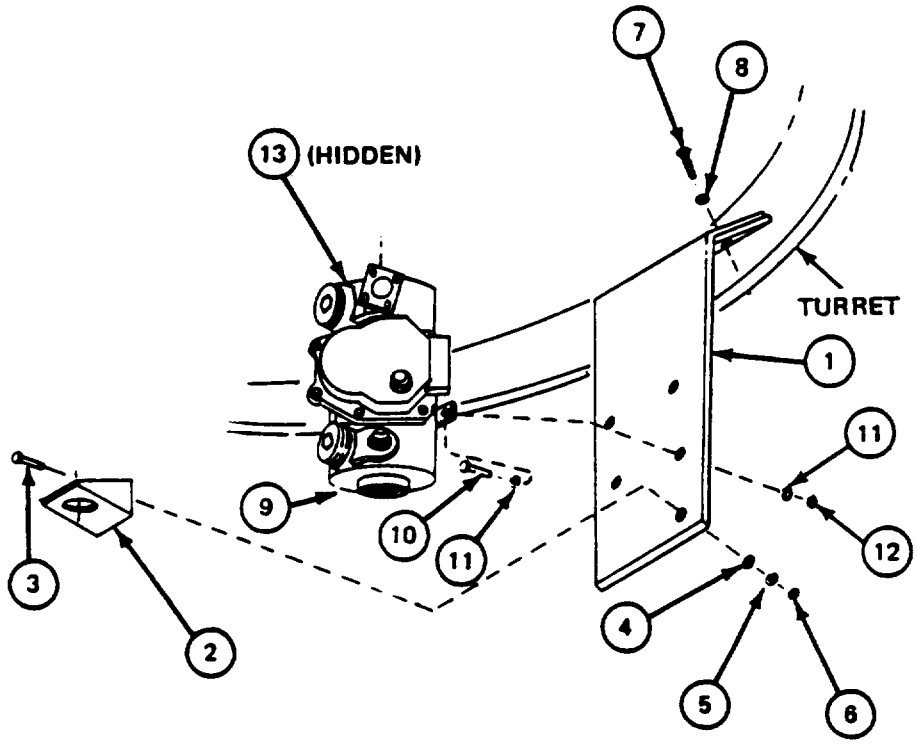
EQUIPMENT	FOLDOUT	CALLOUT
Gunner's Electric Air Filter Heater	FO-1	7
Driver's Master Control Panel	FO-2	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

59-9. GUNNER'S ELECTRIC AIR FILTER HEATER INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
	NOTE If bracket (1) was removed (para 59-9), do steps 1 and 2. Otherwise, go to step 3.
1.	Using combination wrench and 7/16" socket wrench, attach bracket (2) to bracket (1) with screw (3), lockwasher (4), flat washer (5) and nut (6).
2.	Using torque wrench, attach bracket (1) to turret with two screws (7), two washers (8), and tighten to 300 foot-pounds (JPG).
3.	Using combination wrench and 7/16" socket wrench, attach gunner's heater (9) to bracket (1) with four screws (10), eight lockwashers (11), and four nuts (12).
4.	Connect electrical connector (13) to gunner's heater (9) (JPG).
	NOTE Follow-on Maintenance Action Required Install gunner's heater adapters (para 59-7). Install gunner's filter hose (para 59-3) and gunner's air duct hose (para 59-5). Operate gunner's electric air filter heater to make sure it works properly (TM-10).
	END OF TASK


7
8
13 (HIDDEN)
TURRET
1
11
12
9
10
11
3
2
4
5
6

59-10. ORIFICE CONNECTOR REMOVAL PROCEDURE

TOOLS: External retaining ring pliers

PERSONNEL: One

REFERENCES: JPG for procedure to use retaining ring pliers

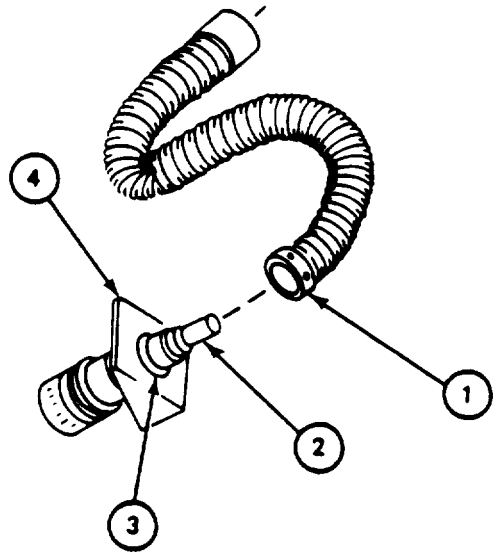
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Electrical Slipring	FO-4	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

Step	Procedure
1.	Pull quick disconnect coupling (1) off orifice connector (2).
2.	Using retaining ring pliers, remove retaining ring (3) from orifice connector (2) (JPG).
3.	Remove orifice connector (2) from barcket (4).
	END OF TASK


4
1
2
3

59-11. ORIFICE CONNECTOR INSTALLATION PROCEDURE

TOOLS: External retaining ring pliers

PERSONNEL: One

REFERENCES: JPG for procedure to use retaining ring pliers

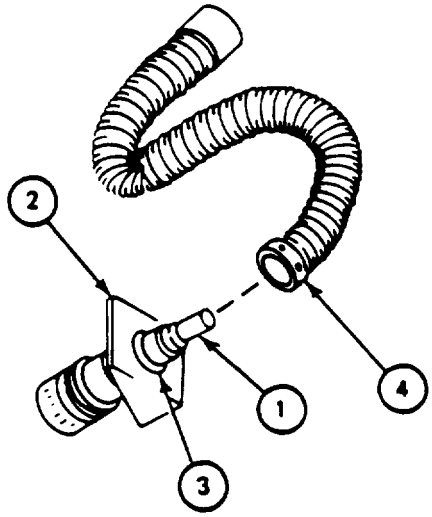
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Electrical Slipring	FO-4	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

Step	Procedure
1.	Using retaining ring pliers, attach orifice connector (1) to bracket (2) with retaining ring (3) (JPG).
2.	Push quick disconnect coupling (4) on orifice connector (1).
	END OF TASK


2
1
4
3

59-12. ORIFICE CONNECTOR DISASSEMBLY PROCEDURE

TOOLS: Flat tip screwdriver
Stiff bristled brush
Scraper

SUPPLIES: Dry cleaning solvent (item 22, App. A)

PERSONNEL: One

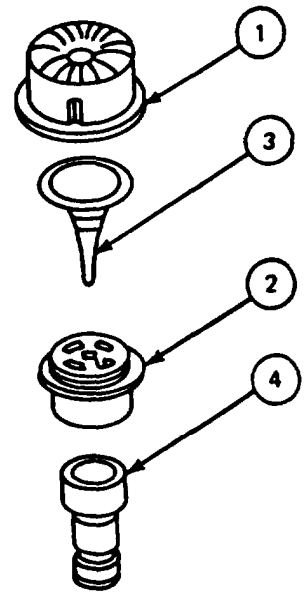
REFERENCES: JPG for procedure to clean parts

PRELIMINARY PROCEDURES: Remove orifice connector (para 59-10)

59-12. ORIFICE CONNECTOR DISASSEMBLY PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Using screwdriver, separate outlet valve cover (1) from outlet valve seat (2). Remove outlet valve cover from outlet valve seat.
	NOTE Connector (4) and outlet valve seat (2) are sealed together.
2.	Using hands, pull outlet valve disc (3) from outlet valve seat (2).
	NOTE Follow-on Maintenance Action Required: Clean all parts (JPG).
	END OF TASK



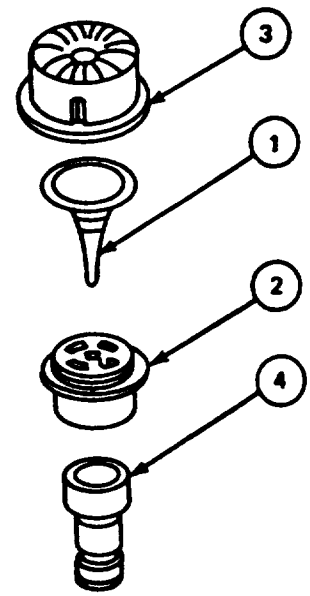
59-13. ORIFICE CONNECTOR ASSEMBLY PROCEDURE

SUPPLIES: Water

PERSONNEL: One

FRAME 1

Step	Procedure
	NOTE Connector (4) and outlet valve seat (2) are sealed together.
1.	Wet small end of outlet valve disc (1) with water.
2.	Using hands, kpush small end of outlet valve disc (1) in outlet valve seat (2) until outlet valve disc rests flat on outlet valve seat.
3.	Put outlet valve cover (3) on outlet valve seat (2).
	NOTE Follow-on Maintenance Action Required: Install orifice connector (para 59-11).
	END OF TASK

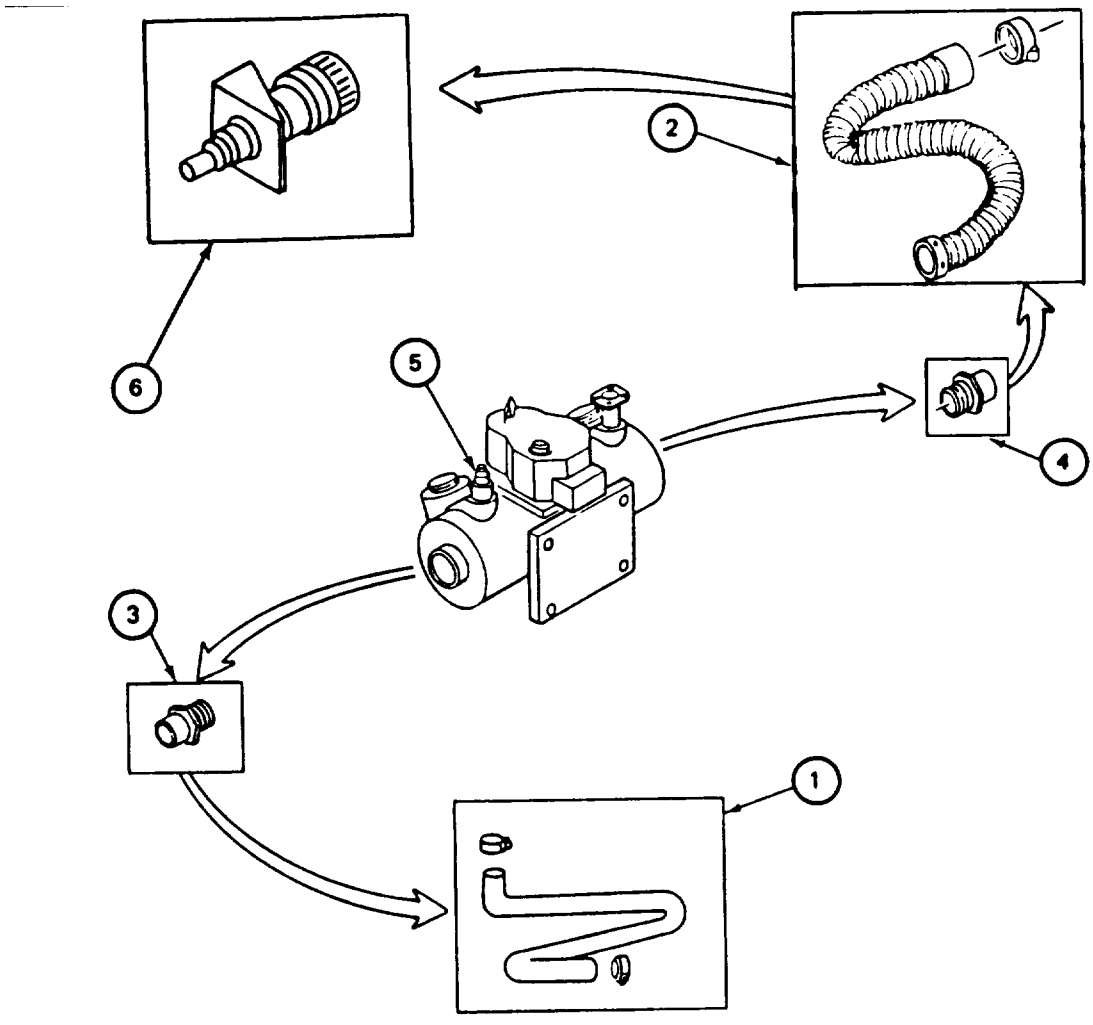


CHAPTER 60

LOADER'S ELECTRIC AIR FILTER HEATER

60-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Tasks			
	Removal	Installation	Disassembly	Assembly
1. Loader's Filter Hose	60-2	60-3	. . .	. . .
2. Loader's Air Duct Hose	60-4	60-5	. . .	. . .
3. Loader's Heater Inlet Adapter	60-6	60-7	. . .	. . .
4. Loader's Heater Outlet	60-6	60-7	. . .	. . .
5. Loader's Electric Air	60-8	60-9	. . .	. . .
6. Orifice Connector	60-10	60-11	60-12	60-13



60-2. LOADER'S FILTER HOSE REMOVAL PROCEDURE

TOOLS: Flat tip screwdriver

PERSONNEL: One

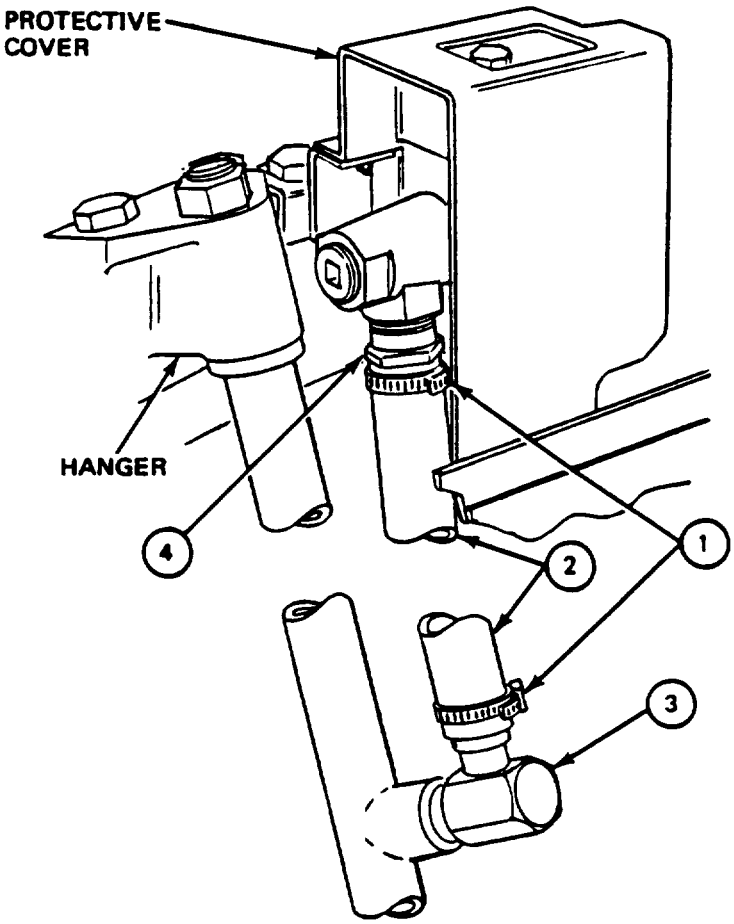
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Loader's Electric Air Filter Heater	FO-4	17

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

Step	Procedure
1.	Using screwdriver, loosen two clamps (1) around loader's filter hose (2).
2.	Remove loader's filter hose (2) and two clamps (1) from elbow (3) and adapter (4).
	END OF TASK


PROTECTIVE COVER
HANGER
1
2
3
4

60-3. LOADER'S FILTER HOSE INSTALLATION PROCEDURE

TOOLS: Flat tip screwdriver

PERSONNEL: One

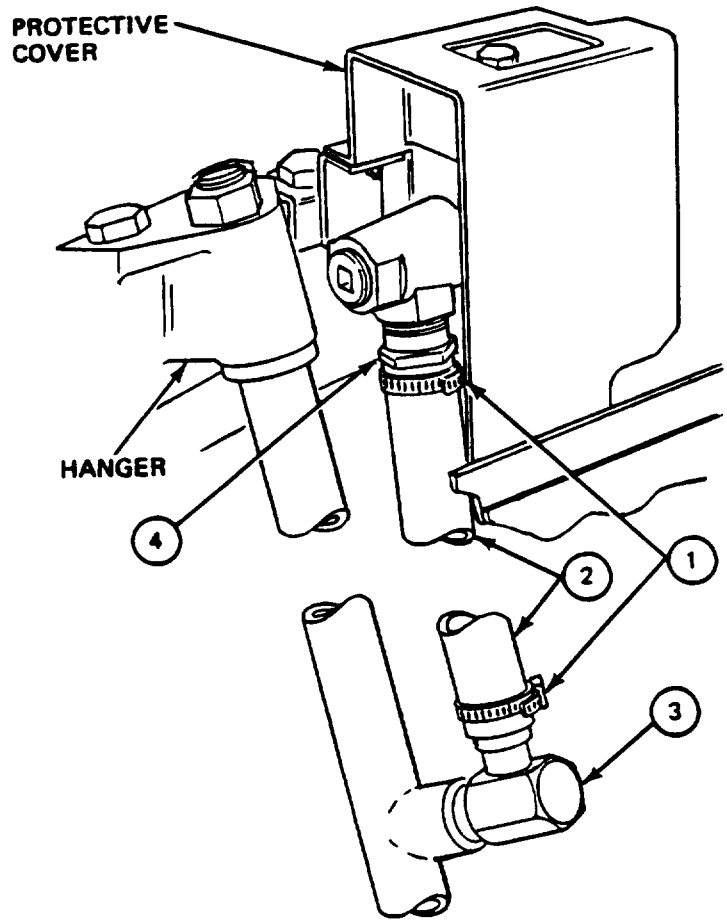
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Loader's Electric Air Filter Heater	FO-4	17

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

Step	Procedure
1.	Place one clamp (1) on each end of loader's filter hose (2).
2.	Slide loader's filter hose (2) on elbow (3) and adapter (4).
3.	Using screwdriver, tighten two clamps (1).
	END OF TASK


PROTECTIVE COVER
HANGER
4
2
1
3

60-4. LOADER'S AIR DUCT HOSE REMOVAL PROCEDURE

TOOLS: Round nose pliers

PERSONNEL: One

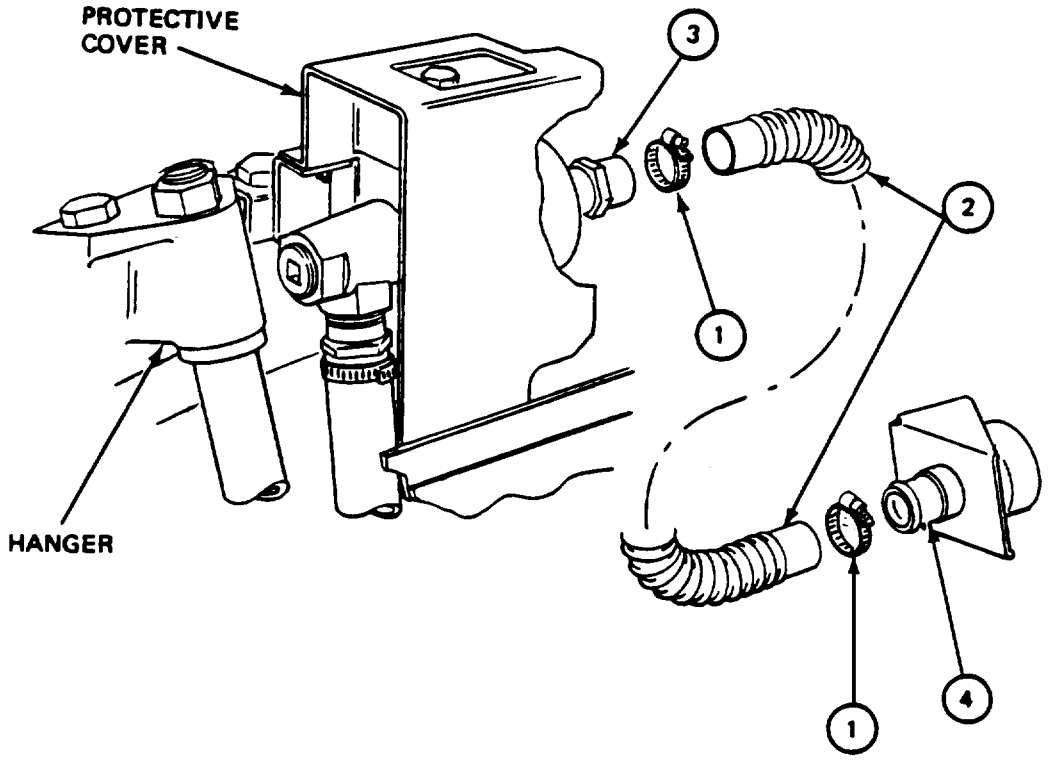
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Loader's Electric Air Filter Heater	F0-4	17

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

Step	Procedure
1.	Using pliers, loosen one clamp (1) on each end of air duct hose (2).
2.	Pull clamp (1) and hose (2) off loader's air filter heater adapter (3) and off hose connector (4).
	END OF TASK



60-5. LOADER'S AIR DUCT HOSE INSTALLATION PROCEDURE

TOOLS: Needle nose pliers

PERSONNEL: One

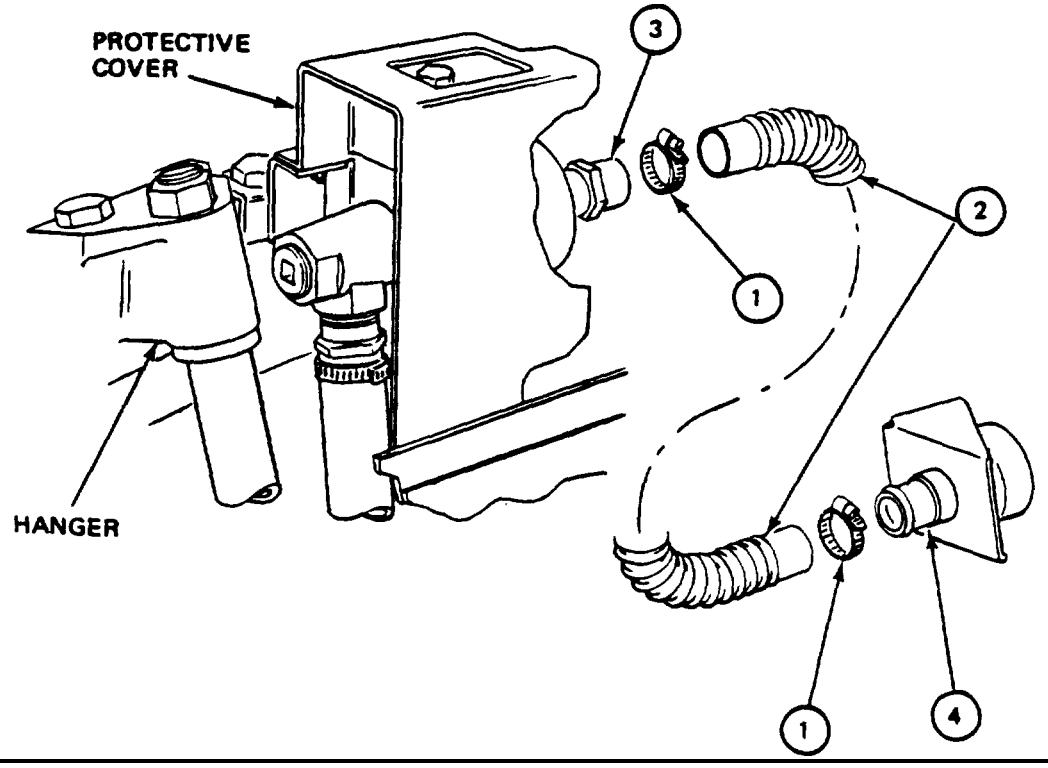
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	F0-3	11
Loader's Electric Air Filter Heater	FO-4	17

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

Step	Procedure
1.	Slide one clamp (1) on each end of hose (2).
2.	Slide hose (2) on adapter (3) and on hose connector (4).
3.	Using pliers, squeeze two clamps (1) tight.
	END OF TASK



60-6. LOADER'S HEATER INLET AND OUTLET ADAPTER REMOVAL PROCEDURE

TOOLS: 1-1/2" open end wrench

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Loader's Electric Air Filter Heater	FO-4	17

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

PRELIMINARY PROCEDURES: Remove loader's filter hose (para 60-2)
Remove loader's air duct hose (para 60-4)

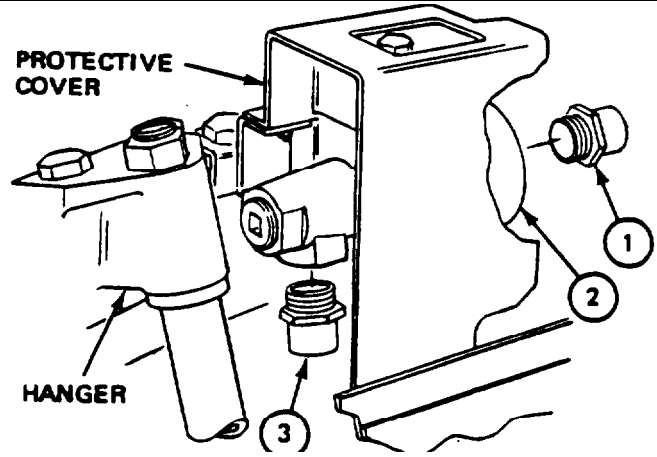
GENERAL INSTRUCTIONS:

NOTE

The loader's heater adapter should be removed and saved if a new heater is to be installed. Adapters can be used again.

FRAME 1

Step	Procedure
1.	Using wrench, remove adapter (1) from loader's heater (2).
2.	Using wrench, remove adapter (3) from loader's heater (2).
	END OF TASK



60-7. LOADER'S HEATER INLET AND OUTLET INSTALLATION PROCEDURE

TOOLS: 1-1/2" open end wrench

PERSONNEL: One

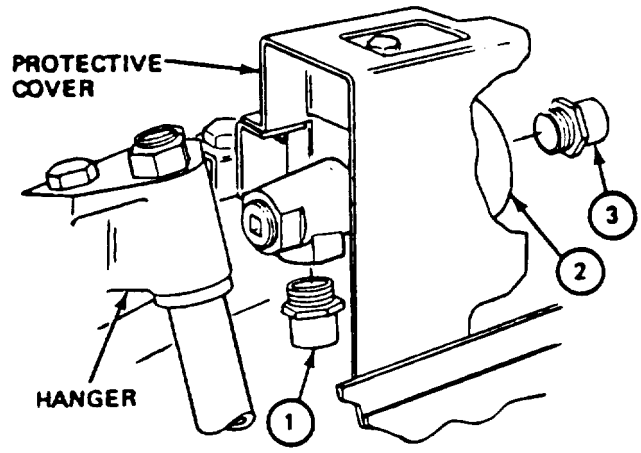
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Loader's Electric Air Filter Heater	FO-4	17

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

Step	Procedure
1.	Apply a coat of grease (item 12, App.A) to adapter's thread surface. Using 1-1/2" wrench put adapter (1) on inlet end of loaders heater (2).
2.	Apply a coat of grease (item 12, App. A) to adapter's thread surface. Using 1-1/12" wrench, put adapter (3) on outlet end of loader's heater (2).
	NOTE Follow-on Maintenance Action Required: Install loader's filter hose (para 60-3). Install loader's air duct hose (para 60-5).
	END OF TASK



60-8. LOADER'S ELECTRIC AIR FILTER HEATER REMOVAL PROCEDURE

TOOLS: 7/16" open end wrench
7/16" socket (3/8" drive)
3/8" drive ratchet
6" extension (3/8" drive)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Loader's Electric Air Filter Heater	F0-4	17

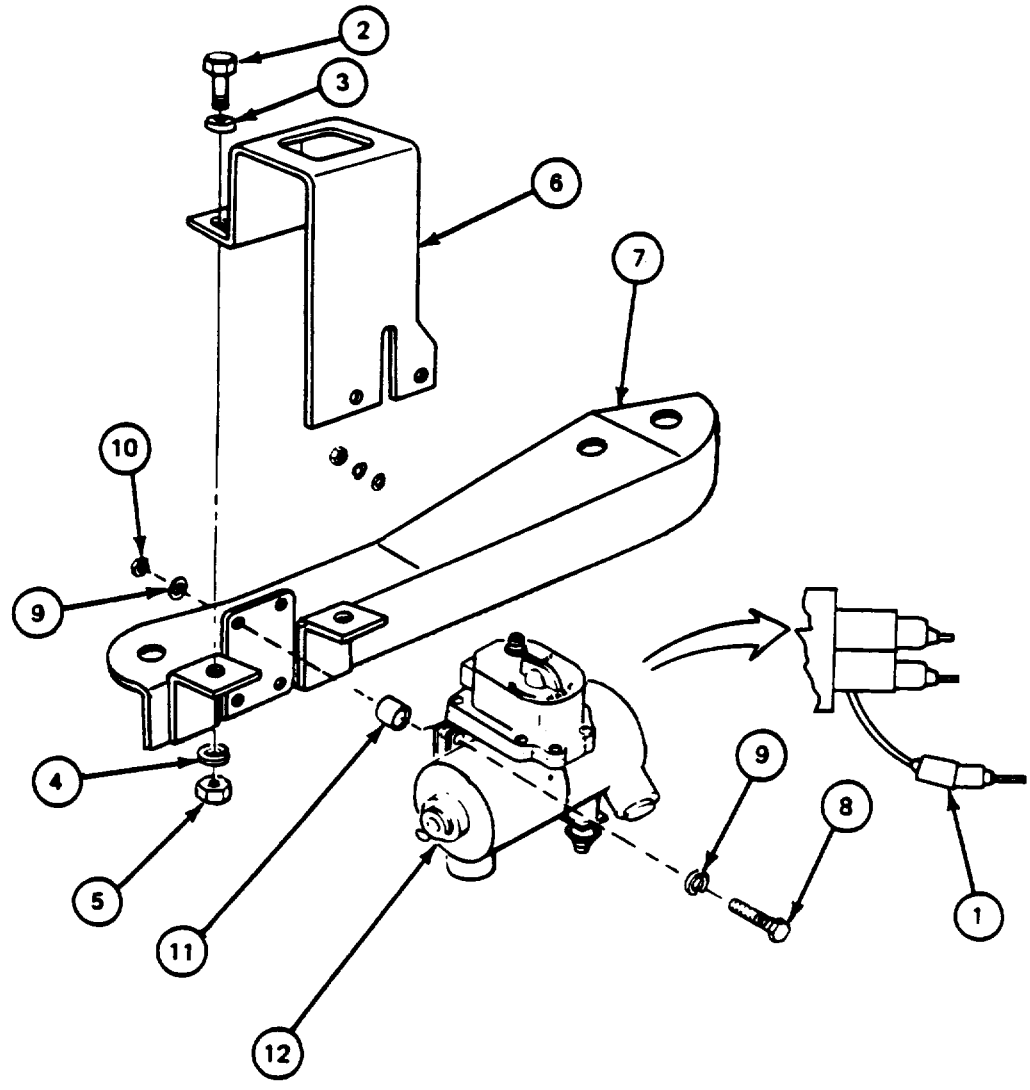
EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

PRELIMINARY PROCEDURES: Remove loader's heater adapter (para 60-6)

60-8. LOADER'S ELECTRIC AIR FILTER HEATER REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Disconnect electrical connector (1) (JPG).
2.	Using wrenches, remove two screws (2), two flat washers (3), two lockwashers (4), and two nuts (5) holding protective cover (6) to bracket (7).
3.	Using wrenches, remove four screws (8), eight lockwashers (9), and four nuts (10) holding four spacers (11) and loader's heater (12) to bracket (7).
	END OF TASK



60-9. LOADER'S ELECTRIC AIR FILTER HEATER INSTALLATION PROCEDURE

TOOLS: 7/16" open end wrench
7/16" socket (3/8" drive)
3/8" drive ratchet
6" extension (3/8" drive)

PERSONNEL: One

REFERENCES: JPG for procedure to connect electrical connectors
TM 9-2350-222-10 for procedure to operate loader's electric air filter heater

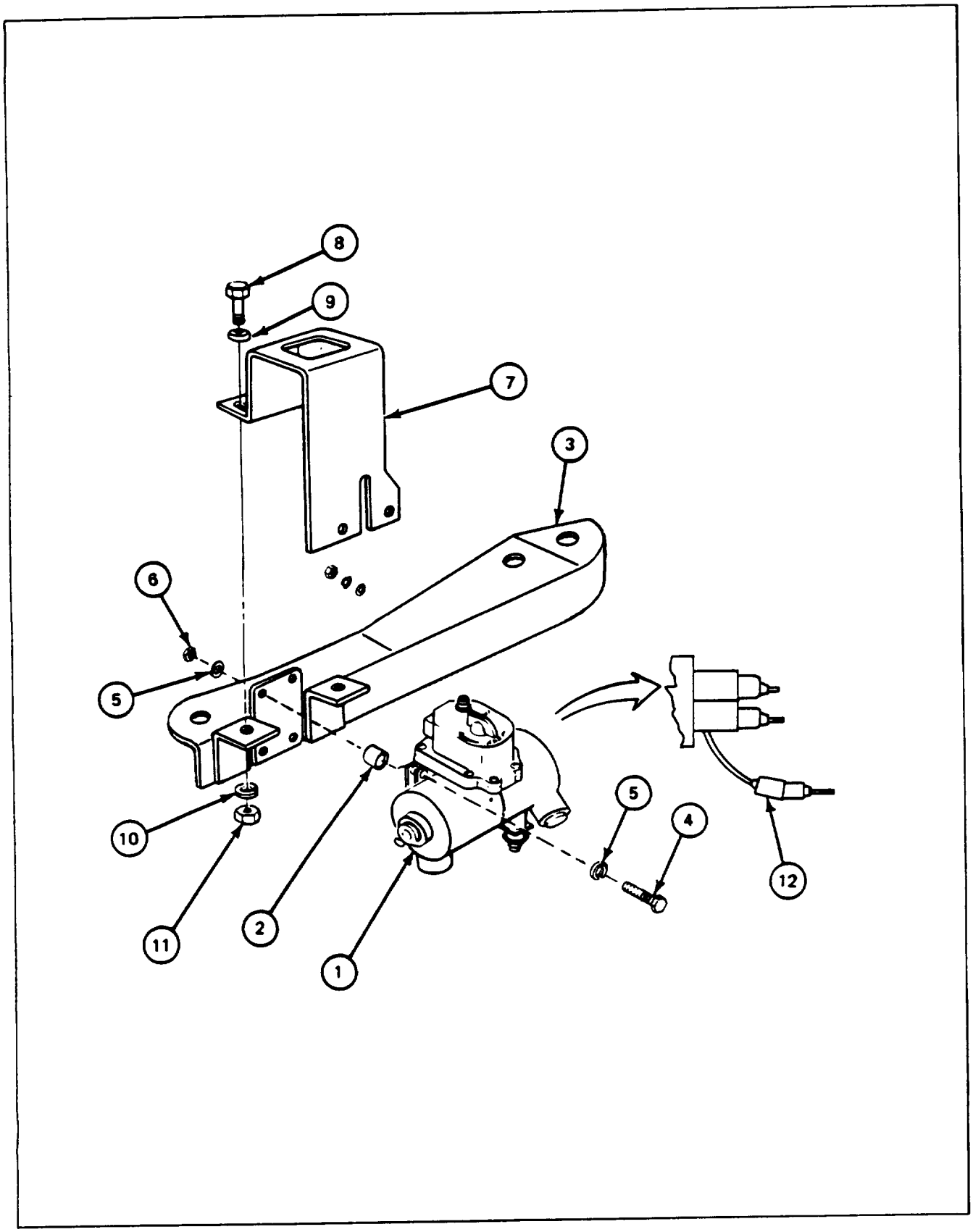
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Loader's Electric Air Filter Heater	FO-4	17

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

Step	Procedure
1.	Using wrenches, attach loader's electric air filter heater (1) and four spacers (2) in place on bracket (3) with four screws (4), eight lockwashers (5), and four nuts (6).
2.	Using wrenches, attach protective cover (7) to bracket (3) with two screws (8), two flat washers (9), two lockwashers (10), and two nuts (11).
3.	Connect electrical connector (12) (JPG).
	NOTE Follow-on Maintenance Action Required: Install loader's adapters (para 60-7). Install loader's filter hose (para 60-3), and loader's air duct hose (para 60-5). Operate loader's electric air filter heater to make sure it works properly (TM-10).
	END OF TASK


8
9
7
3
6
5
10
11
2
1
5
4
12

60-10. ORIFICE CONNECTOR REMOVAL PROCEDURE

TOOLS: External retaining ring pliers

PERSONNEL: One

REFERENCES: JPG for procedure to use retaining ring pliers

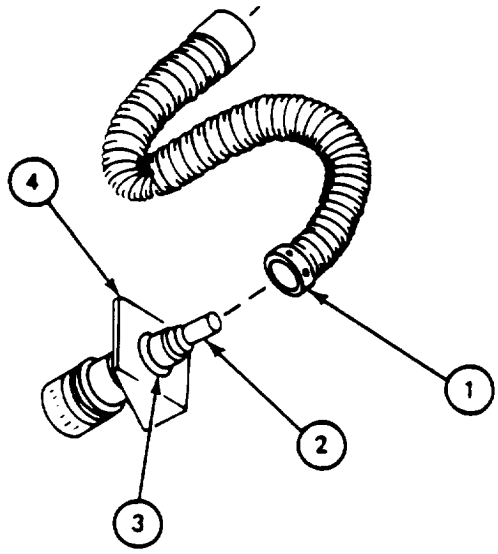
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Loader's Electric Air Filter Heater	FO-4	17

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

Step	Procedure
1.	Pull quick disconnect coupling (1) off orifice connector (2).
2.	Using retaining ring pliers, remove retaining ring (3) from orifice connector (2) (JPG).
3.	Remove orifice connector (2) from bracket (4).
	END OF TASK



60-11. ORIFICE CONNECTOR INSTALLATION PROCEDURE

TOOLS: External retaining ring pliers

PERSONNEL: One

REFERENCES: JPG for procedure to use retaining ring pliers

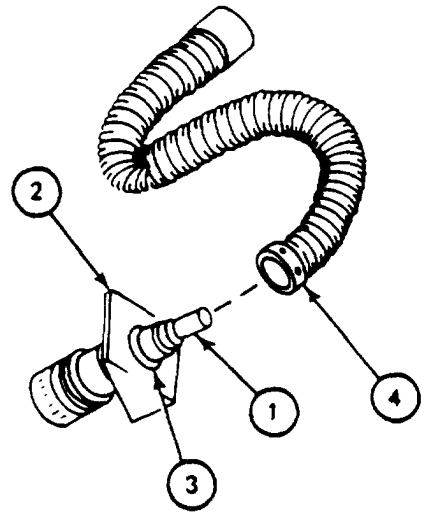
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Loader's Electric Air Filter Heater	FO-4	17

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

Frame 1

Step	Procedure
1.	Using retaining ring pliers, attach orifice connector (1) to bracket (2) with retaining ring (3) (JPG).
2.	Push quick disconnect coupling (4) on orifice connector (1).
	END OF TASK



60-12. ORIFICE CONNECTOR DISASSEMBLY PROCEDURE

TOOLS: Flat tip screwdriver
Stiff bristled brush
Scraper

SUPPLIES: Dry cleaning solvent (item 2, App. A)

PERSONNEL: One

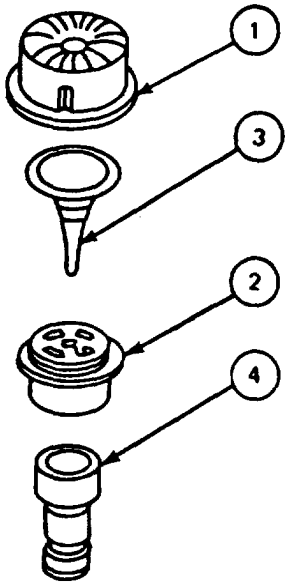
REFERENCES: JPG for procedure to clean parts

PRELIMINARY PROCEDURES: Remove orifice connector (para 60-10)

60-12. ORIFICE CONNECTOR DISASSEMBLY PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Using screwdriver, separate outlet valve cover (1) from outlet valve seat (2). Remove outlet valve cover fro-m outlet valve seat.
	NOTE
	Connector (4) and outlet valve seat (2) are sealed together.
2.	Using hands, pull outlet valve disc (3) from outlet valve seat (2).
	NOTE
	Follow-on Maintenance Action Required:
	Clean all parts (JPG).
	END OF TASK



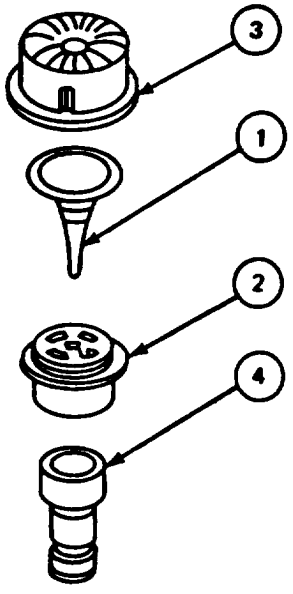
60-13. ORIFICE CONNECTOR ASSEMBLY PROCEDURE

SUPPLIES: Water

PERSONNEL: One

FRAME 1

Step	Procedure
	NOTE Connector (4) and outlet valve seat (2) are sealed together.
1.	Wet small end of outlet valve disc (1) with water.
2.	Using hands, push small end of outlet valve disc (1) in outlet valve seat (2) until outlet valve disc rests flat on outlet valve seat.
3.	Put outlet valve cover (3) on outlet valve seat (2).
	NOTE Follow-on Maintenance Action Required: Install orifice connector (para 60-11).
	END OF TASK

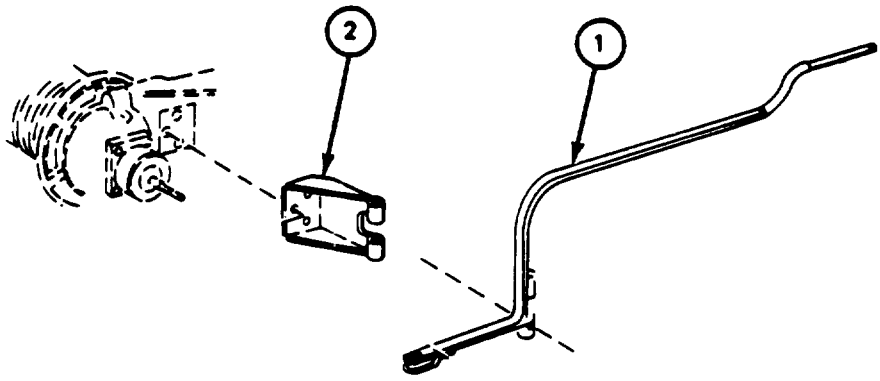


CHAPTER 61

BOOM WINCH SHIFT LEVER

61-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Tasks					
	Inspection	Adjustment	Removal	Installation	Disassembly	Assembly
Boom Winch Shift Lever	61-2	61-3	61-4	61-5	61-4	61-5
Shift Lever Pivot Bracket	. . .	. . .	61-6	61-7	. . .	. . .



61-2. BOOM WINCH SHIFT LEVER INSPECTION PROCEDURE

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Hydraulic Power Panel	FO-3	12
Winch	FO-5	1

GENERAL INSTRUCTIONS:

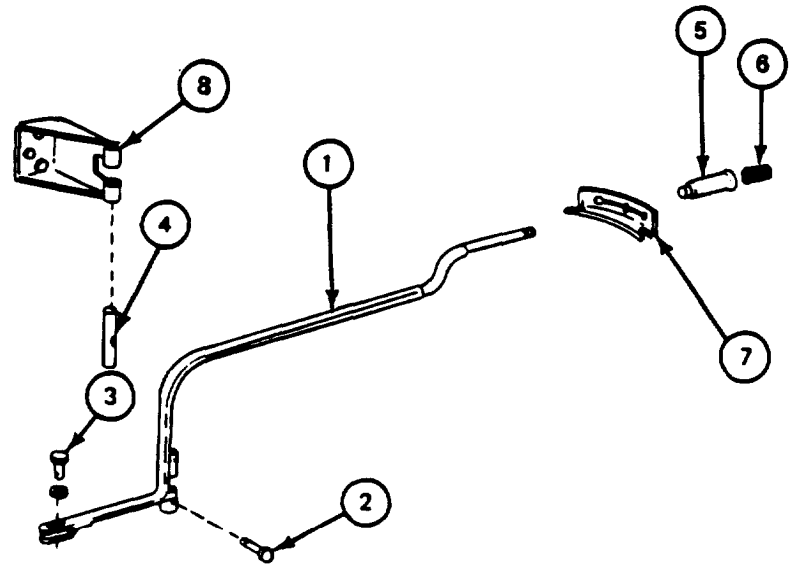
NOTE

If part is bad, order repair part or next higher assembly, as required.

61-2. BOOM WINCH SHIFT LEVER INSPECTION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Check shift lever (1) for cracks, dents, bent or warped areas, and damaged or worn threads on handle end.
2.	Check for worn or bent retaining pins (2) (3).
3.	Check for worn pivot tube (4).
4.	Check handle (5) for cracks, warp, and dents.
5.	Check spring (6) for deformity or lack of tension.
6.	Check indicator (7) for cracks, worn or bent areas.
7.	Check pivot bracket (8) for cracks, worn or bent areas.
	END OF TASK



61-3. BOOM WINCH SHIFT LEVER ADJUSTMENT PROCEDURE

TOOLS: 6" machinist steel rule
1/2" drive ratchet
3/4” socket (1/2” drive)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

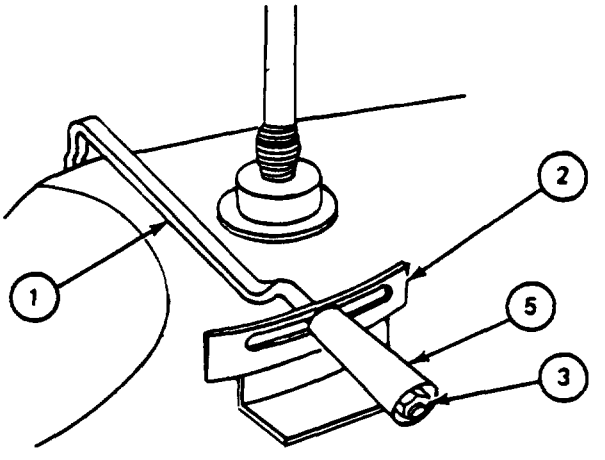
EQUIPMENT	FOLDOUT	CALLOUT
Winch	FO-5	1
Hydraulic Power Panel	FO-3	12

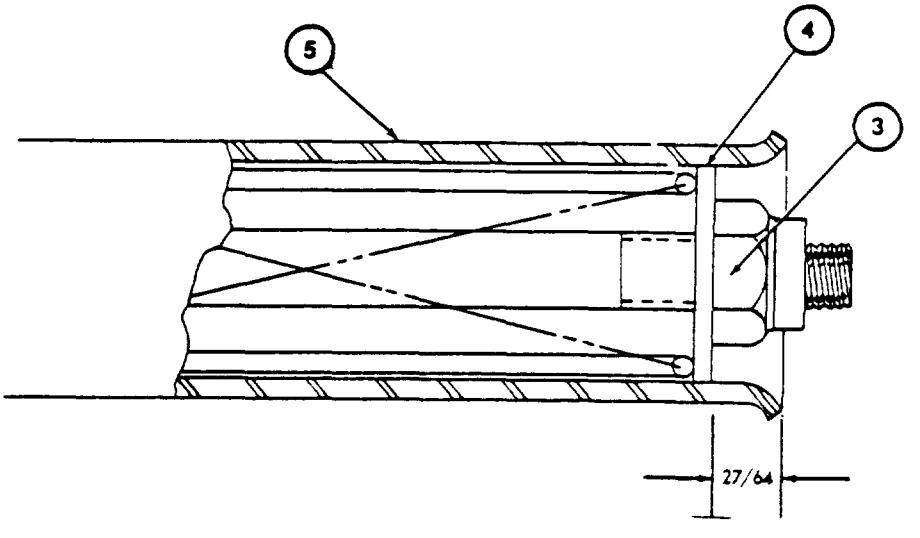
EQUIPMENT CONDITION: HYDRAULIC POWER switch on HYDRAULIC POWER panel set to OFF

61-3. BOOM WINCH SHIFT LEVER ADJUSTMENT PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Put lever (1) to N (center hole) on indicator (2).
2.	Using socket wrench and ruler, tighten locknut (3) until washer (4) is 27/64" inside handle (5).
	END OF TASK





51-4. BOOM WINCH SHIFT LEVER REMOVAL AND DISASSEMBLY PROCEDURE

TOOLS: 1/2” drive ratchet
3/4” socket (1/2” drive)
3/4” combination wrench
Slip joint pliers
1-1/4”’ lb. ball peen hammer
1/4" drift pin punch

PERSONNEL: One

REFERENCES: JPG for procedure to remove cotter pins

EQUIPMENT LOCATION INFORMATION:

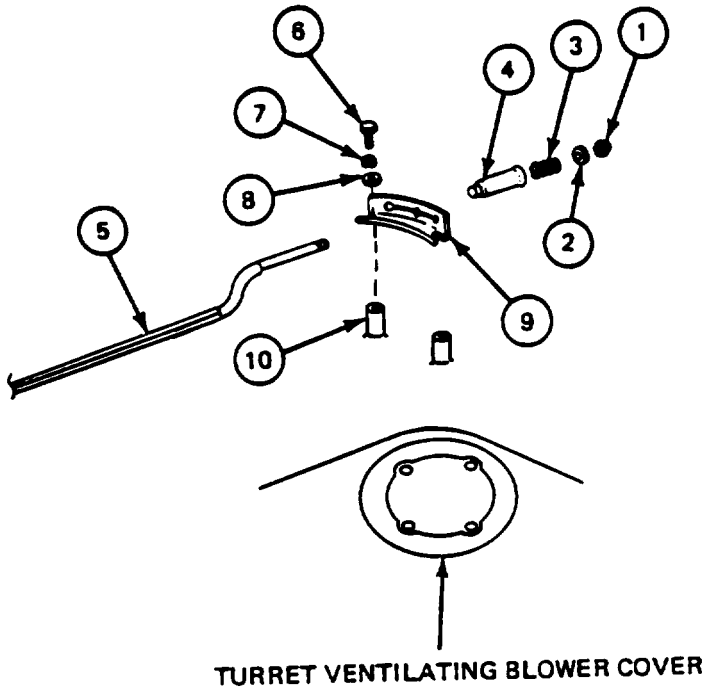
EQUIPMENT	FOLDOUT	CALLOUT
Winch	FO-5	1
Hydraulic Power Panel	FO-3	12

EQUIPMENT CONDITION: HYDRAULIC POWER switch on HYDRAULIC POWER panel set to OFF

61-4. BOOM WINCH SHIFT LEVER REMOVAL AND DISASSEMBLY PROCEDURE (CONT)

FRAME 1

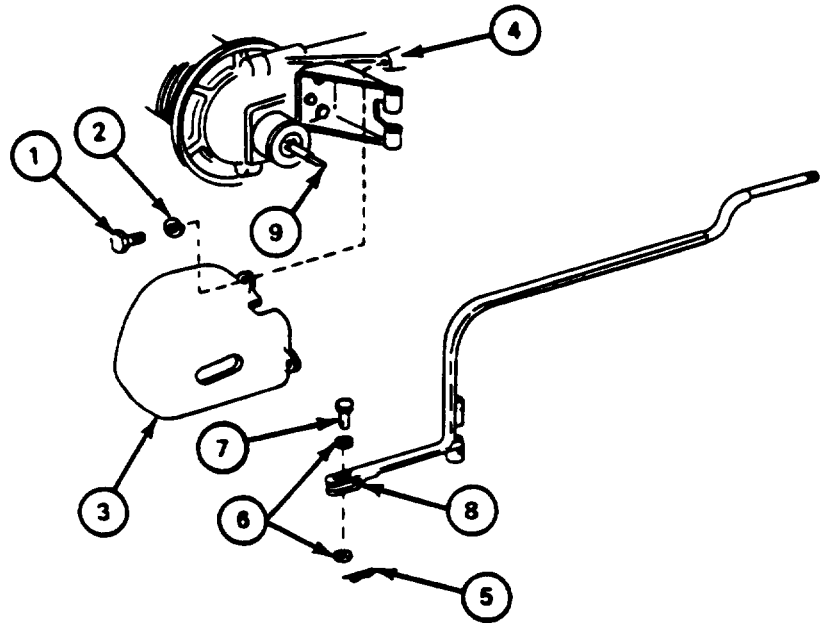
Step	Procedure
1.	Using socket wrench, remove nut (1), washer (2), spring (3), and handle (4) from shift lever (5).
2.	Using combination wrench, remove two screws (6), two lockwashers (7), two flat washers (8), and indicator (9) from posts (10).
	GO TO FRAME 2



61-4. BOOM WINCH SHIFT LEVER REMOVAL AND DISASSEMBLY PROCEDURE (CONT)

FRAME 2

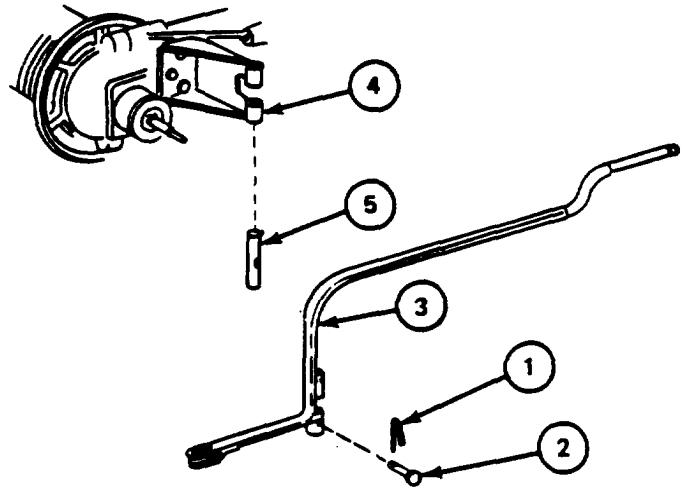
Step	Procedure
1.	Using combination wrench, remove three screws (1), three lockwashers (2), and cover (3) from winch (4).
2.	Using pliers, remove cotter pin (5), two washers (6), and pin (7) holding shift lever clevis (8) to winch push rod (9) (JPG).
	GO TO FRAME 3



61-4. BOOM WINCH SHIFT LEVER REMOVAL AND DISASSEMBLY PROCEDURE (CONT)

FRAME 3

Step	Procedure
1.	Using pliers, remove cotter pin (1) and pin (2) holding shift lever (3) to pivot bracket (4) (JPG).
2.	Using hammer and punch, remove tube (5) from shift lever (3) and pivot bracket (4).
3.	Remove shift lever (3) from pivot bracket (4).
	END OF TASK



61-5. BOOM WINCH SHIFT LEVER ASSEMBLY AND INSTALLATION PROCEDURE

TOOLS: 1/2” drive ratchet
3/4” socket (1/2” drive)
3/4” combination wrench
Slip joint pliers

SUPPLIES: Cotter pins (two) (MS 24665-132)
Grease (item 11, App. A)
Locknut (MS 2 1045-8)
Cleaning rags (item 15, App. A)

PERSONNEL: One

REFERENCES: JPG for procedure to install cotter pins

EQUIPMENT LOCATION INFORMATION:

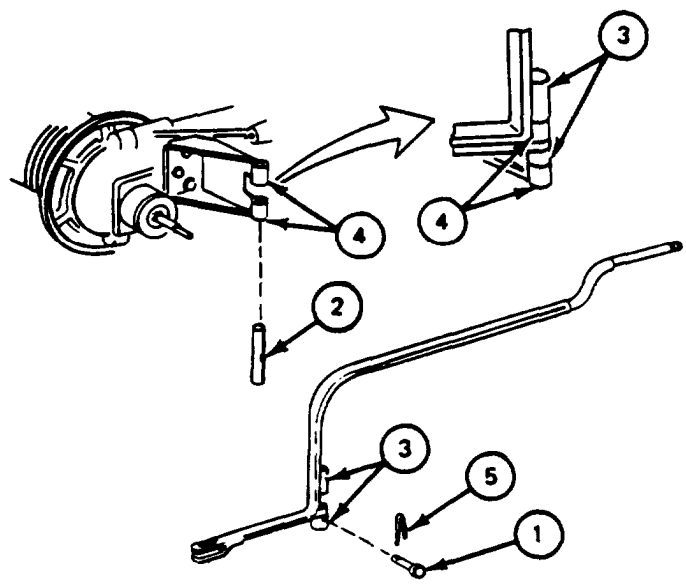
EQUIPMENT	FOLDOUT	CALLOUT
Winch	FO-5	1
Hydraulic Power Panel	FO-3	12

EQUIPMENT CONDITION: HYDRAULIC POWER switch on HYDRAULIC POWER panel set to OFF

61-5. BOOM WINCH SHIFT LEVER ASSEMBLY AND INSTALLATION PROCEDURE (CONT)

FRAME 1

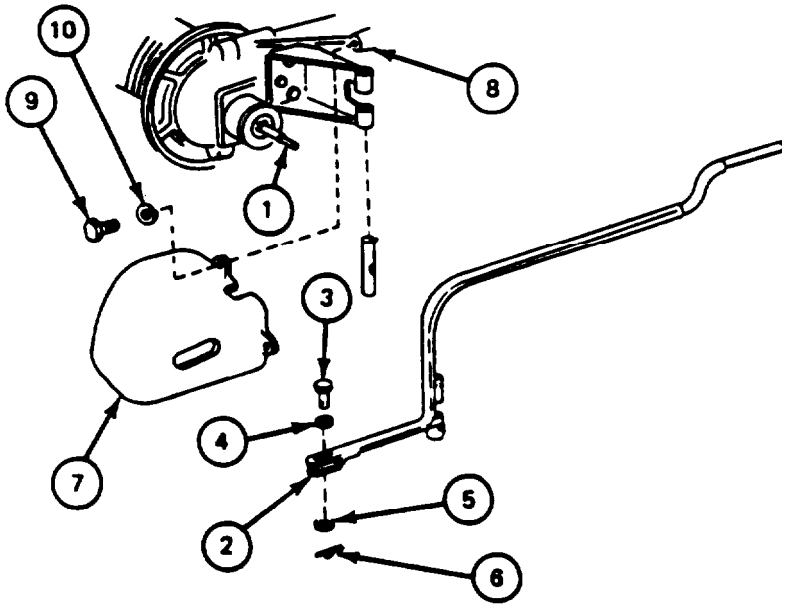
Step	Procedure
1.	Grease pin (1) and tube (2).
2.	Line up pivot holes of shift lever (3) with pivot holes of pivot bracket (4). Push tube (2) in holes in shift lever (4) and pivot (5).
3.	Line up hole in tube (2) with holes in shift lever (3).
4.	Push pin (1) in holes in shift lever (3) and tube (2).
5.	Using pliers, attach pin (1) with new cotter pin (5) (JPG).
	GO TO FRAME 2



61-5. BOOM WINCH SHIFT LEVER ASSEMBLY AND INSTALLATION PROCEDURE (CONT)

FRAME 2

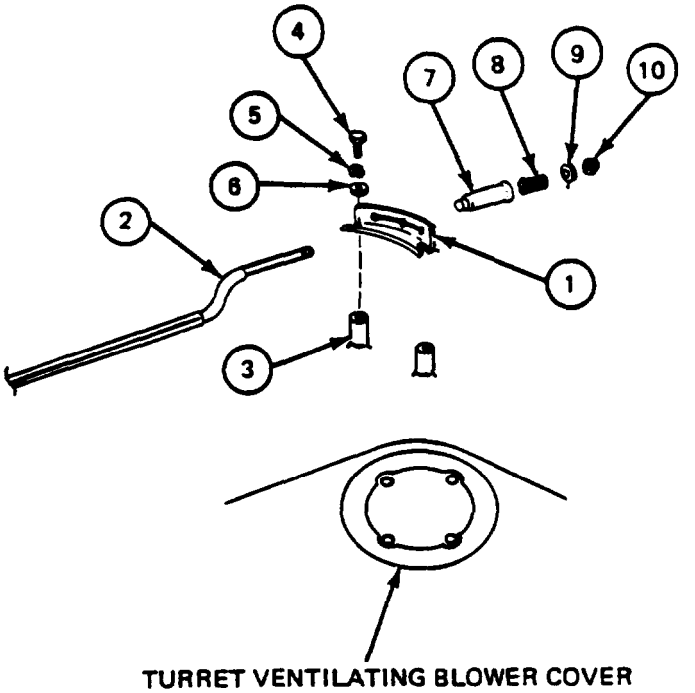
Step	Procedure
1.	Line up nearest hole of push rod (1) with clevis end of lever (2).
2.	Grease pin (3).
3.	Install pin (3) and washer (4).
4.	Using pliers, attach pin (3) with washer (5) and new cotter pin (6) (JPG).
5.	Using combination wrench, attach cover (7) to winch (8) with three screws (9) and three lockwashers (10).
	GO TO FRAME 3



61-5. BOOM WINCH SHIFT LEVER ASSEMBLY AND INSTALLATION PROCEDURE (CONT)

FRAME 3

Step	Procedure
1.	Slide indicator (1) over threaded end of lever (2).
2.	Using combination wrench, attach indicator (1) to two posts (3), using two screws (4), two Iockwashers (5), and two flat washers (6).
3.	Put lever (2) to N (center hole) on indicator (1).
4.	Using socket wrench, attach handle (7), spring (8), washer (9), and new locknut (10) to threaded end of lever (2).
	NOTE Follow-on Maintenance Action Required: Adjust boom winch shift lever (para 61-3).
	END OF TASK



61-6. SHIFT LEVER PIVOT BRACKET REMOVAL PROCEDURE

TOOLS: 3/4” combination wrench

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

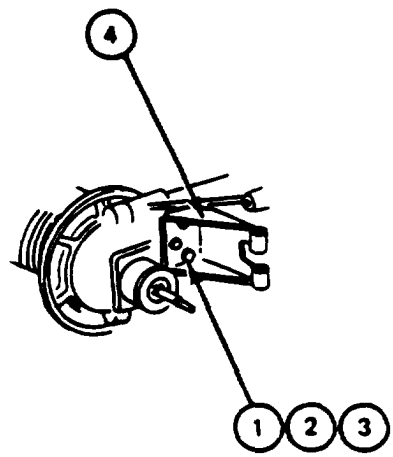
EQUIPMENT	FOLDOUT	CALLOUT
Winch	FO-5	1
Hydraulic Power Panel	FO-3	12

EQUIPMENT CONDITION: HYDRAULIC POWER switch on HYDRAULIC POWER panel set to OFF

PRELIMINARY PROCEDURES: Remove and disassemble boom winch shift lever (para 61-4)

FRAME 1

Step	Procedure
1.	Using wrench, remove three screws (1), three lockwashers (2), and three flat washers (3). Remove shift lever pivot bracket (4). END OF TASK



61-7. SHIFT LEVER PIVOT BRACKET INSTALLATION PROCEDURE

TOOLS: 3/4” combination wrench

PERSONNEL: One

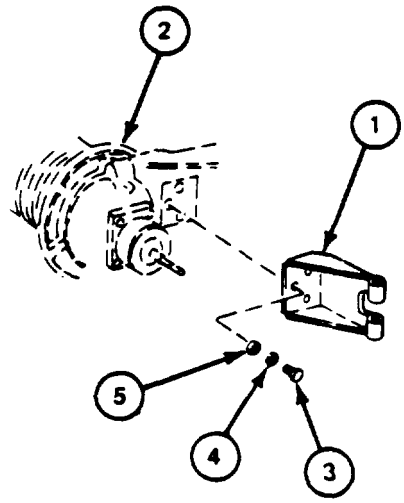
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch	FO-5	1
Hydraulic Power Panel	FO-3	12

EQUIPMENT CONDITION: HYDRAULIC POWER switch on HYDRAULIC POWER panel set to OFF

FRAME 1

Step	Procedure
1.	Using wrench, attach shift lever pivot bracket (1) to winch (2) with three screws (3), three lockwashers (4), and three flat washers (5).
	NOTE
	Follow-on Maintenance Action Required:
	Assemble and install boom winch shift lever (para 61-5).
	END OF TASK

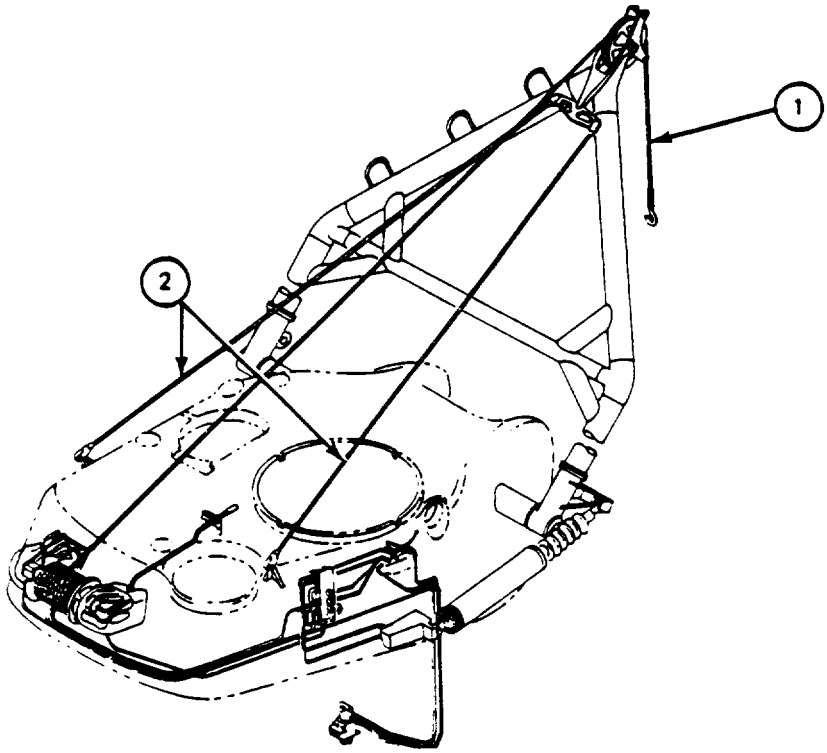


CHAPTER 62

BOOM WINCH WIRE ROPE, FERRULE, AND STAYLINES

62-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Tasks	
	Removal	Installation
1. Wire Rope and Ferrule	62-2	62-3
2. Staylines	62-4	62-5



62-2. WIRE ROPE AND FERRULE REMOVAL PROCEDURE

TOOLS: 2 pound ball peen hammer
3/4” drift pin punch

SUPPLIES: Safety gloves (two pair)

PERSONNEL: Two

REFERENCES: TM 9-2350-222-10 for procedure to operate winch

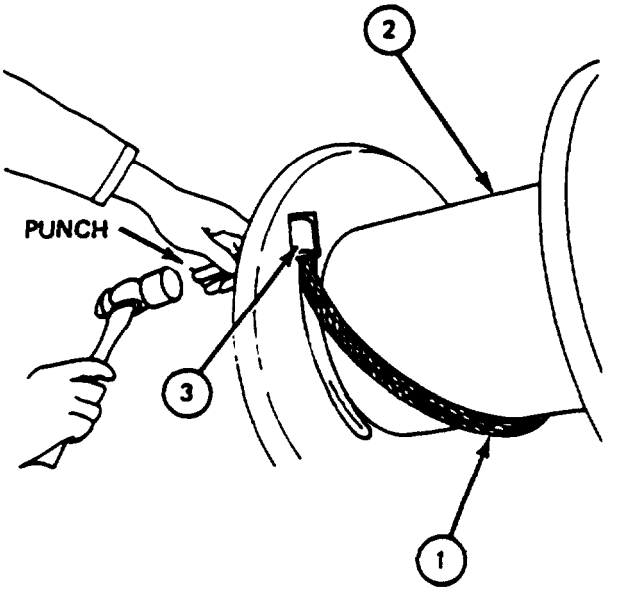
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch	FO-5	1

62-2. WIRE ROPE AND FERRULE REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
	WARNING Use safety gloves when handling wire rope. Wire rope can injure hands. Keep hands and clothes away from wire rope and winch while winch is turning. Wire rope and winch can cause injury.
1.	Soldier A: Operate winch until all of wire rope (1) is unrolled from winch drum (2) (TM-10).
2.	Soldier B: Pull wire rope (1) until it is unrolled from winch drum (2).
3.	Soldier B: Using hammer and punch, knock ferrule (3) out of anchor slot in side of winch drum (2).
4.	Soldier B: Remove wire rope (1) and ferrule (3) from vehicle.
	END OF TASK



62-3. WIRE ROPE AND FERRULE INSTALLATION PROCEDURE

TOOLS: 2 pound ball peen hammer
Pry bar

SUPPLIES: Grease (item 11, App. A)
1" round brush
Cleaning rags (item 15, App. A)
Safety gloves (two pair)

PERSONNEL: TWO

REFERENCES: TM 9-2350-222-10 for procedure to operate winch
LO 9-2350-222-12 for procedure to clean and lubricate winch drum and wire rope

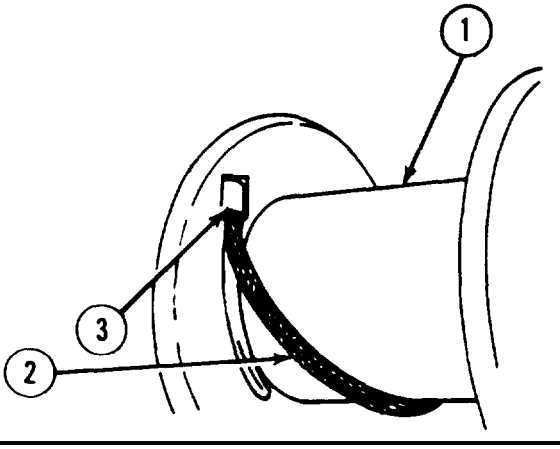
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch	FO-5	1

62-3. WIRE ROPE AND FERRULE INSTALLATION PROCEDURE (CONT)

FRAME 1

STEP	Procedure
	WARNING Use safety gloves when handling wire rope. Wire rope can injure hands. Keep hands and clothes away from wire rope and winch while winch is turning. Wire rope and winch can cause injury.
1.	Soldier A: Using brush, clean and lubricate winch drum (1) and wire rope (2) (LO).
2.	Soldier B: Put ferrule (3) end of wire rope (2) on winch cable pulley. Pull wire rope (2) down to winch drum (1).
3.	Soldier B: Put ferrule (3) in anchor slot on inside of winch drum (1) on shift lever side of winch drum (1).
4.	Soldier B: Using hammer, tap ferrule (3) until it is in place in anchor slot in winch drum (l).
5.	Soldier A: Operate winch to wind wire rope (2) on winch drum (1) (TM -10.
6.	Soldier B: Using pry bar, guide wire rope (2) on winch drum (1) to make even winding
	NOTE **Follow-on Maintenance Action Required:** **Notify support maintenance to load-test winch and boom in accordance with TB 43-0142.**
	END OF TASK



62-4. STAYLINE REMOVAL PROCEDURE

TOOLS: 2 pound ball peen hammer
3/4" drift pin punch
Slip joint pliers

SUPPLIES: Safety gloves

PERSONNEL: One

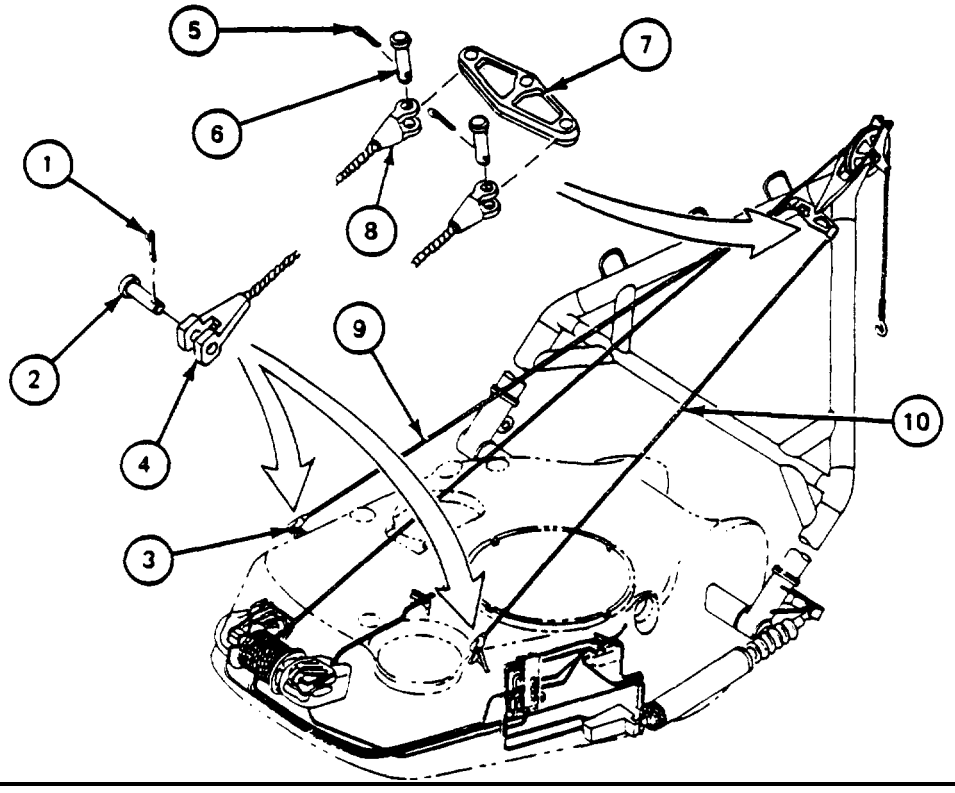
REFERENCES: TM 9-2350-222-10 for procedure to stow and leek boom

EQUIPMENT CONDITION: A-frame boom stowed and locked in traveI leeks (TM-10)

62-4. STAYLINE REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
	WARNING Use safety gloves when handling wire rope. Wire rope can injure hands.
1.	Using pliers, remove cotter pin (1) from clevis pin (2) in turret bracket (3) (JPG).
2.	Using hammer and punch, drive clevis pin (2) out of turret bracket (3) and stayline clevis (4).
3.	Using pliers, remove cotter pin (5) from clevis pin (6) in equilizer bar (7) (JPG).
4.	Using hammer and punch, drive clevis pin (6) out of equilizer bar (7) and stayline clevis (8).
5.	Remove stayline (9) from vehicle.
6.	Repeat steps 1 thru 5 for stayiine (10).
	END OF TASK



62-5. STAYLINE INSTALLATION PROCEDURE

TOOLS: 2 pound ball peen hammer
Slip joint pliers

SUPPLIES: Cotter pin (four)
Grease (item 11, App. A)
Cleaning rags (item 15, App. A)
Safety gloves

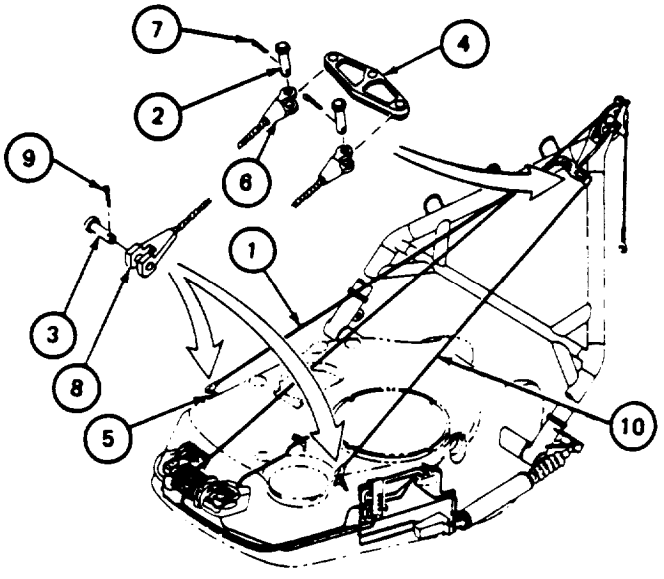
PERSONNEL: One

REFERENCES: LO 9-2350-222-12 for procedure to lubricate staylines
JPG for procedure to install cotter pins

62-5. STAYLINE INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
	WARNING Use safety gloves when handling wire rope. Wire rope can injure hands.
1.	Lubricate stayline (1) (LO).
2.	Put grease on two clevis pins (2) and (3), hole in equilizer bar (4), and hole in turret bracket (5).
3.	Line up holes in stayline clevis (6) with hole in equilizer bar (4).
4.	Using hammer, tap clevis pin (2) in holes in stayline clevis (6) and equilizer bar (4)
5.	Using pliers, install new cotter pin (7) in clevis pin (2).
6.	Line up holes in stayline clevis (8) with hole in turret bracket (5)
7.	Using hammer, tap clevis pin (3) in holes in stayline clevis (8) and turret bracket (5)
8.	Using pliers, install new cotter pin (9) in clevis pin (3).
9.	Stow stayline (1) in J hooks on side of turret and on A-frame boom.
10.	Repeat steps 1 thru 9 for stayline (10).
	NOTE **Follow-on Maintenance Action Required:** **Notify support maintenance to load-test winch and boom in accordance with TB 43-0142.**
	END OF TASK



CHAPTER 63

HYDRAULIC WINCH MOTOR AND COVER

63-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Tasks	
	Removal	Installation
Hydraulic Winch Motor	63-2	63-3
Hydraulic Winch Motor Cover	63-4	63-5

63-2. HYDRAULIC WINCH MOTOR REMOVAL PROCEDURE

TOOLS: 3/8" socket head screw key (Allen wrench)
3/4" combination wrench
8" adjustable wrench
8 ounce ball peen hammer
1/8" drive pin punch

SUPPLIES: Cleaning rags (item 15, App. A)
Dust plugs (three)
Container

PERSONNEL: One

REFERENCES: JPG for procedures to:
Remove preformed packings
Install dust plugs

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch	FO-5	1

PRELIMINARY PROCEDURES: Remove two hydraulic tubes (10951625) (para 2-85)
Remove hydraulic tube (10940790 (para 2-83)

GENERAL INSTRUCTIONS:

CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage eqiupment.

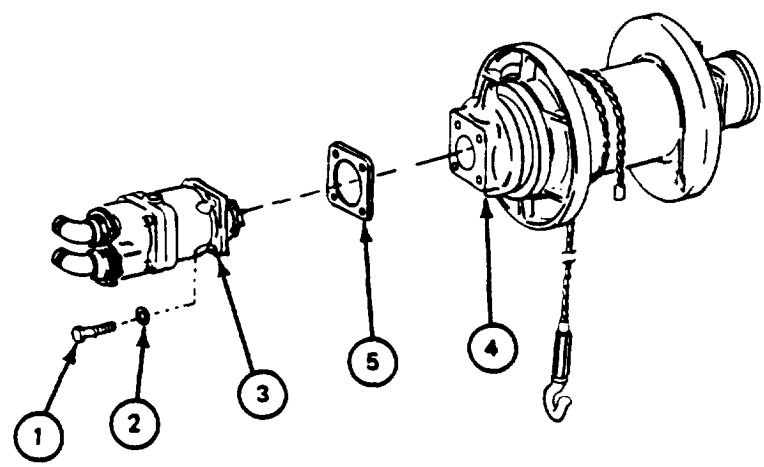
NOTE

Use rags to cleanup spilled hydraulic fluid.

63-2. HYDRAULIC WINCH MOTOR REMOVAL PROCEDURE (CONT)

FRAME 1

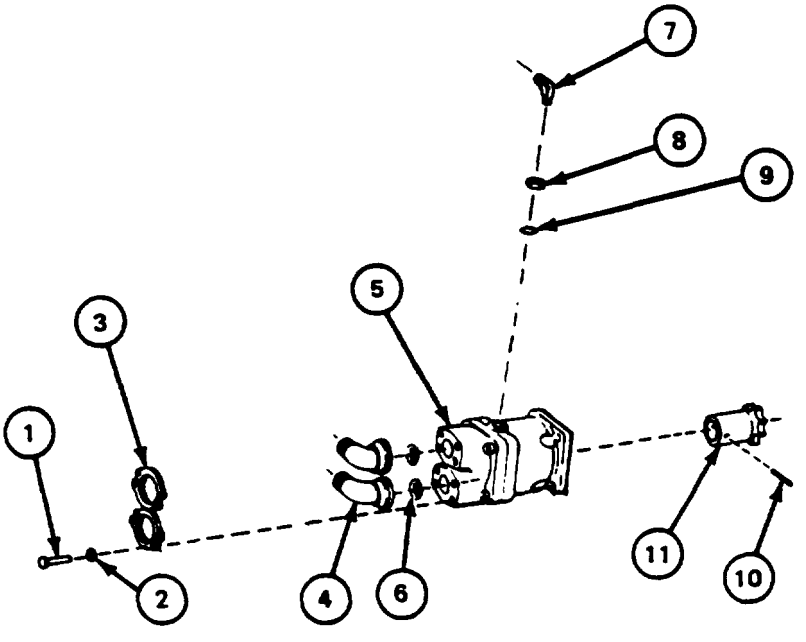
Step	Procedure
	NOTE Use container to catch any hydraulic fluid that may run out of motor (3) when hydraulic connections are removed.
1.	Using Allen wrench, remove four screws (1) and four lockwashers (2) holding hydraulic motor (3) to winch (4).
2.	Using hands, remove hydraulic motor (3) and gasket (5) from winch (4). Throw gasket (5) away.
	GO TO FRAME 2



63-2. HYDRAULIC WINCH MOTOR REMOVAL PROCEDURE (CONT)

FRAME 2

Step	Procedure
	NOTE If hydraulic motor(5) is to be replaced, do this frame. If not, omit this frame. Keep parts for installation (para 61-3).
1.	Using 3/4" wrench, remove eight screws (1), eight lockwashers (2), four clamps (3) and two elbows (4) to hydraulic motor (5).
2.	Using hands, remove two preformed packings (6) from motor (5) (JPG). Throw two preformed packings (6) away.
3.	Using adjustable wrench, remove elbow (7), nut (8) and preformed packing (9) from motor (5) (JPG). Throw preformed packing (9) away.
4.	Plug three holes in motor (5) with three dust plugs (JPG).
5.	Using hammer and punch, remove spring pin (10) from coupling (11) and hydraulic motor (5) shaft.
6.	Remove coupling (11) from hydraulic motor (5) shaft.
	END OF TASK



63-3. HYDRAULIC WINCH MOTOR INSTALLATION PROCEDURE

TOOLS: 3/8” socket head screw ey (Allen wrench)
3/4” combination wrench
8” adjustable wrench
8 ounce ball peen hammer
1/8” drive pin punch

SUPPLIES: Cleaning rags (item 15, App. A)
Hydraulic fluid (item 9, App. A)
Gasket (10908710)
Preformed packing (MS 28775-225) (two)
Preformed packing (MS 28778-6)

PERSONNEL: One

REFERENCES: JPG for procedure to install preformed packings
TM 9-2350-222-10 for procedure to operate hydraulic winch

GENERAL INSTRUCTIONS:

CAUTION

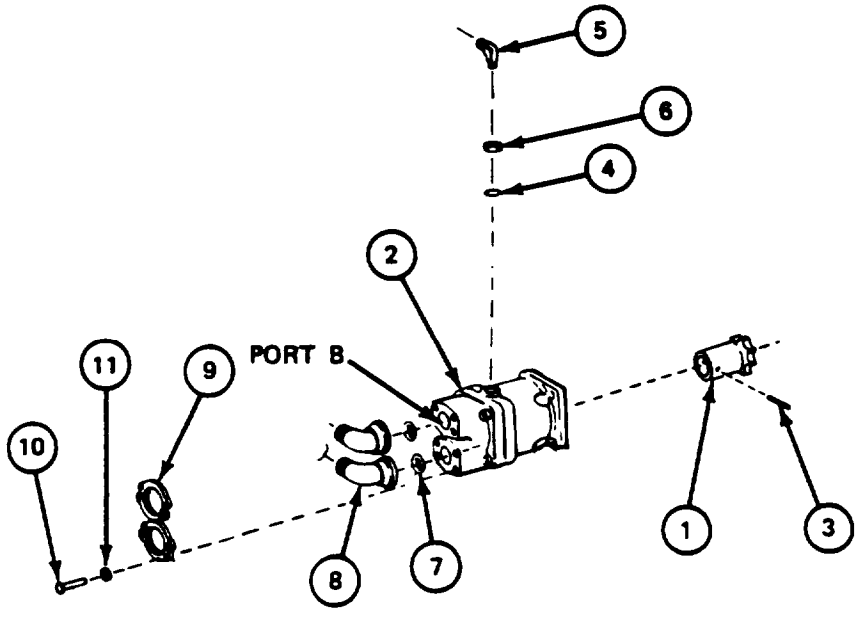
Keep dirt from getting in tubing or parts. Dirt can damage eqiupment.

Use rags to cleanup spilled hydraulic fluid.

63-3. HYDRAULIC WINCH MOTOR INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
	NOTE If hydraulic motor (2) was replaced, do this frame. If not, go to frame 2.
1.	Line up hole in coupling (1) with hole in hydraulic motor (2) shaft.
2.	Put coupling (1) on hydraulic motor (2) shaft.
3.	Using hammer and punch, attach coupling (1) to hydraulic motor (2) shaft with spring pin (3).
4.	Rotate hydraulic motor (2) until port B is up.
5.	Remove three dust plugs from three holes in hydraulic motor (2).
6.	Lightly coat preformed packing (4) with hydraulic fluid (JPG).
7.	Using adjustable wrench, attach elbow (5), nut (6), and preformed packing (4) to hydraulic motor (2) (JPG).
8.	Lightly coat two preformed packings (7) with hydraulic fluid (JPG).
9.	Using 3/4" wrench, attach two elbows (8), four clamps (9), and two preformed packings (7) to motor (2) with eight screws (10) and eight lockwashers (11) (JPG)
	GO TO FRAME 2



63-3. HYDRAULIC WINCH MOTOR INSTALLATION PROCEDURE (CONT)

FRAME 2

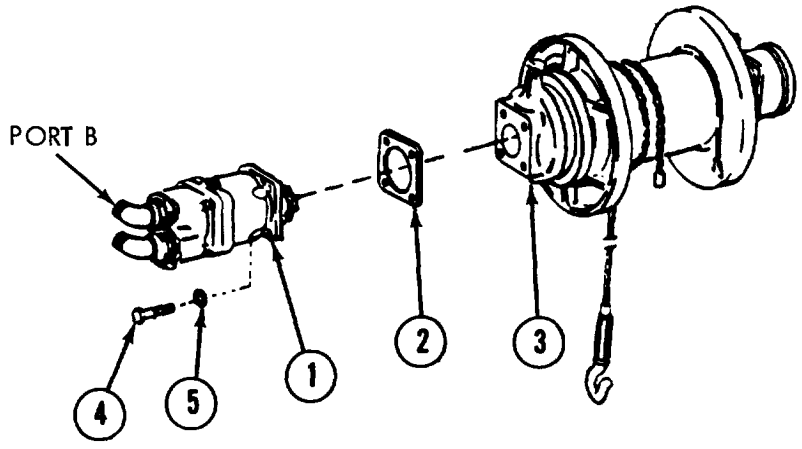
Step	Procedure
1.	Rotate hydraulic motor (1) until port B is up.
2.	Put gasket (2) and hydraulic motor (1) on winch (3).
3.	Using Allen wrench, attach hydraulic motor (1) and gasket (2) to winch (3) with four screws (4) and four lockwashers (5).

NOTE

Follow-on Maintenance Action Required:

Install tube assembly (10940790) (para 2-84).
Install two tube assemblies (10951625) (para 2-86).
Operate hydraulic winch to make sure it works properly (TM-10).
Notify support maintenance to load-test winch and boom in accordance with TB 43-0142.
Check for hydraulic leaks and repair as required.

END OF TASK



63-4. HYDRAULIC WINCH MOTOR COVER REMOVAL PROCEDURE

TOOLS: 3/4” socket (1/2” drive)
Ratchet (1/2” drive)

PERSONNEL: Two

REFERENCES: TM 9-2350-222-10 for procedure to traverse turret

EQUIPMENT LOCATION INFORMATION:

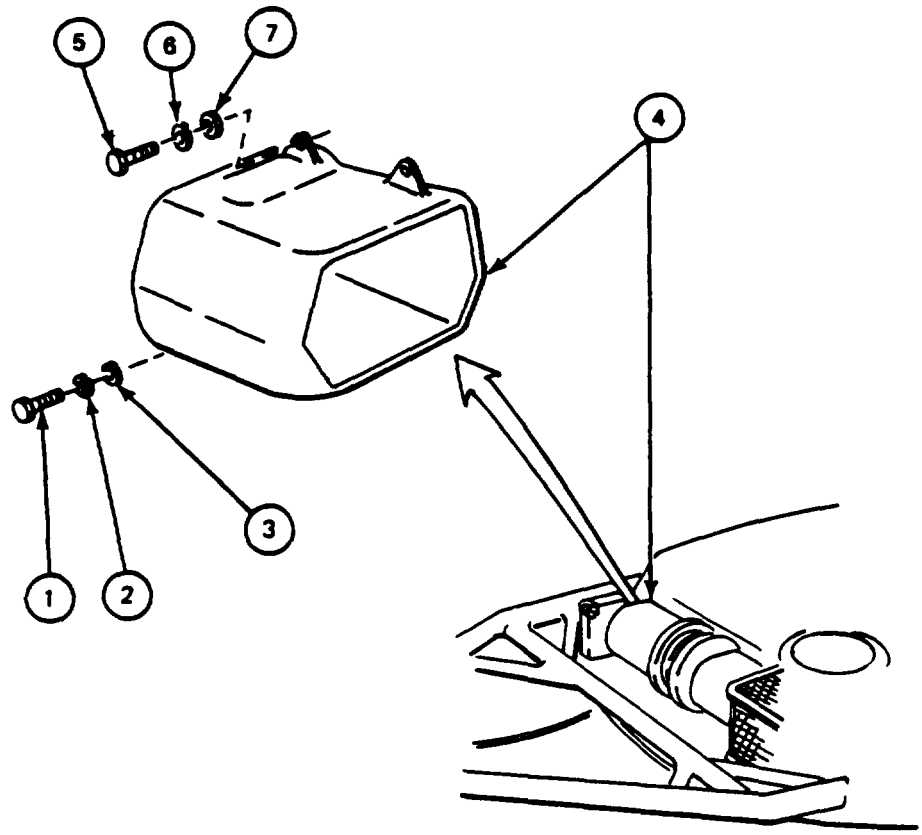
EQUIPMENT	FOLDOUT	CALLOUT
Winch	FO-5	1

EQUIPMENT CONDITION: Driver’s master control panel MASTER BATTERY switch set to OFF
Turret traversed with winch over rear deck (TM-10)
Turret traverse lock set to LOCKED

63-4. HYDRAULIC WINCH MOTOR COVER REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Soldier A: Using socket wrench, remove two screws (1), two lockwashers (2) and two flat washers (3) from bottom of cover (4).
2.	Soldier B: Hold cover (4) in place.
3.	Soldier A: Using wrench, remove two screws (5), two lockwashers (6), and two flat washers (7) from top of cover (4).
4.	Soldiers A and B: Lift and remove cover (4).
	END OF TASK



63-5. HYDRAULIC WINCH MOTOR COVER INSTALLATION PROCEDURE

TOOLS: 3/4" socket (1/2'" drive)
Ratchet (1/2" drive)

PERSONNEL: Two

REFERENCES: TM 9-2350-222-10 for procedure to traverse turret

EQUIPMENT LOCATION INFORMATION:

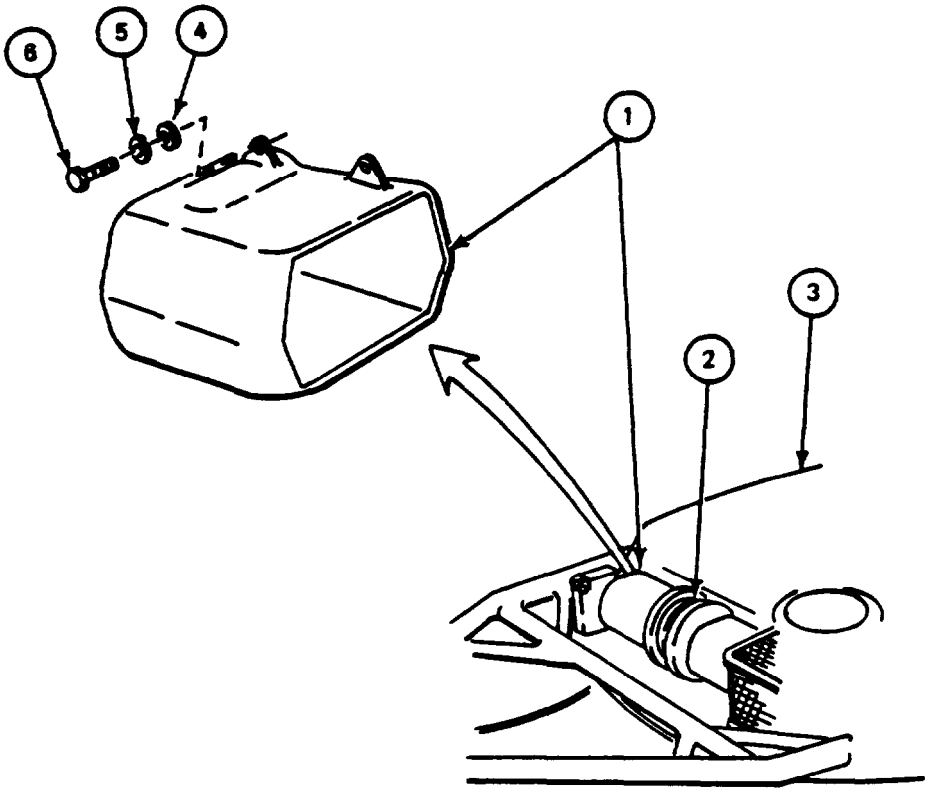
EQUIPMENT	FOLDOUT	CALLOUT
Winch	FO-5	1

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Turret traversed with winch over rear deck (TM-10)
Turret traverse lock set to LOCKED

63-5. HYDRAULIC WINCH MOTOR COVER INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Soldier A and Soldier B: Lift and position cover (1) around motor end of hydraulic winch (2).
2.	Soldier A: Hold cover (1) in position.
3.	Soldier B: Using socket wrench, attach cover (1) to turret (3) with four flat washers (4), four lockwashers (5) and four screws (6).
	END OF TASK

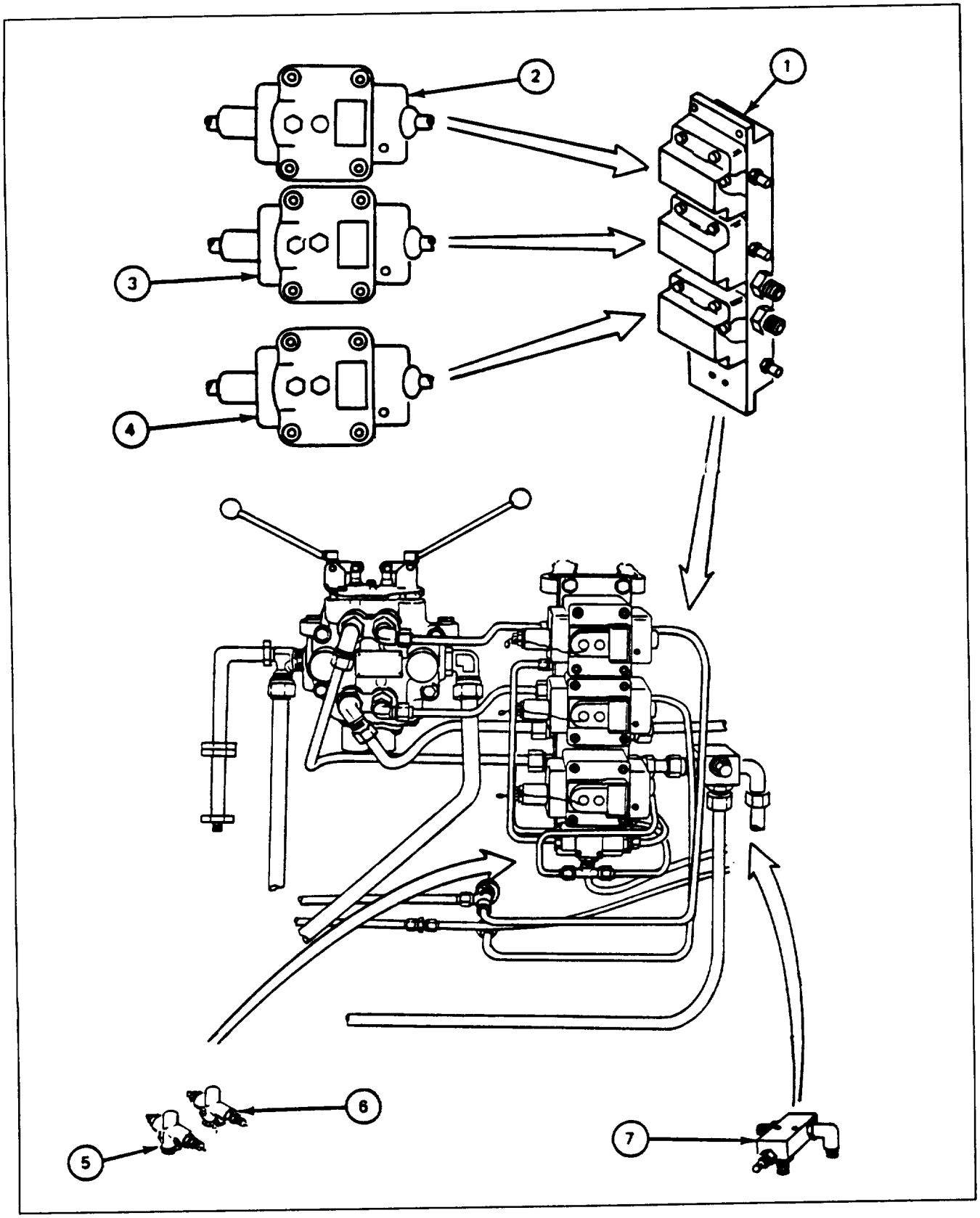


CHAPTER 64

MANIFOLD (COUNTERBALANCE AND SHUTTLE VALVE)

64-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Tasks Removal	Tasks Installation	Tasks Service
1. Manifold	64-2	64-3	. . .
2. Stow Counterbalance Valve	64-4	64-5	. . .
3. Erect Counterbalance Valve	64-6	64-7	. . .
4. Winch Counterbalance Valve	64-8	64-9	. . .
5. Boom Shuttle Valve	64-10	64-11	. . .
6. Winch Shuttle Valve	64-12	64-13	. . .
7. Winch Relief Valve	64-14	64-15	64-16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64-2. MANIFOLD REMOVAL PROCEDURE

TOOLS: 3/4" combination wrench
12” adjustable wrench
1-1/2” combination wrench (two)

SUPPLIES: Cleaning rags (item 15, App. A)
Dust caps (twelve)
Dust plugs (eight)
Masking tape (item 25, App. A)
Marking pen

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch Boom Control Valves	FO-2	4
Driver’s Master Control Panel	FO-3	11

EQUIPMENT CONDITION: Driver’s master control panel MASTER BATTERY switch set to OFF

PRELIMINARY PROCEDURES: Remove stow counterbalance valve (para 64-4)
Remove erect counterbalance valve (para 64-6)
Remove winch counterbalance valve (para 64-8)
Remove boom shuttle valve (para 64-10)
Remove winch shuttle valve (para 64-12)
Remove winch relief valve (para 64-14)

GENERAL INSTRUCTIONS:

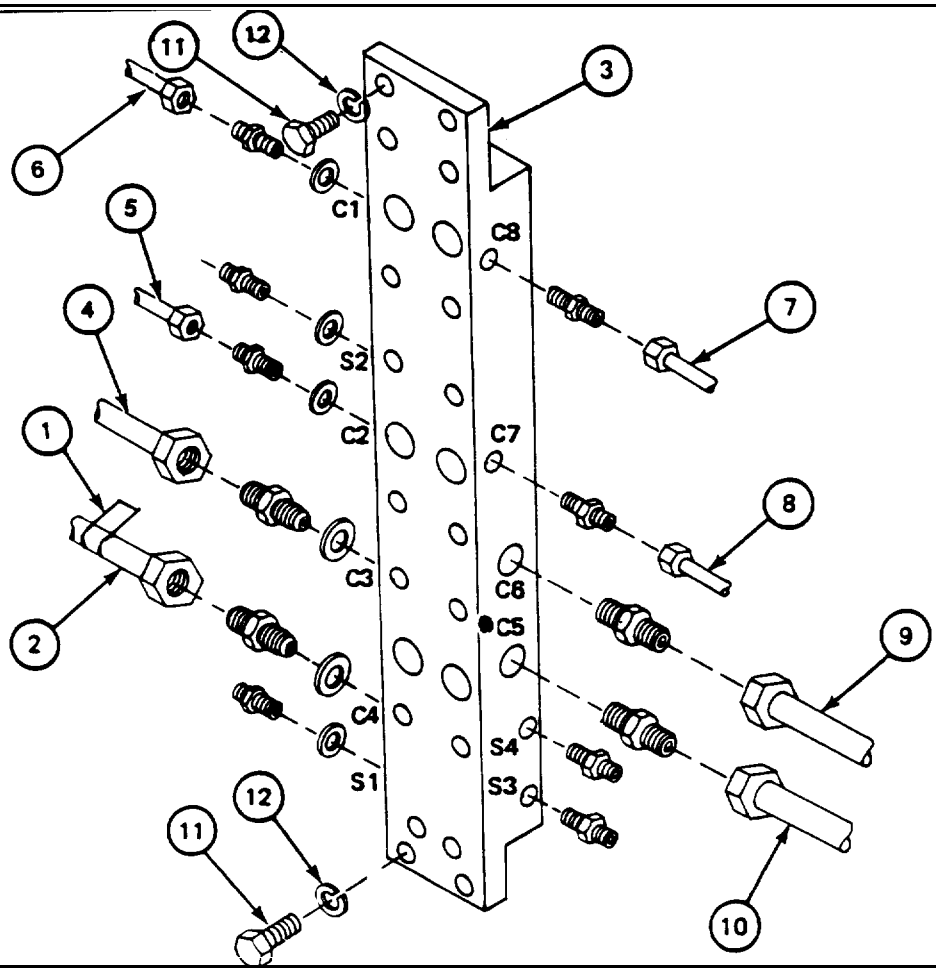
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage eqiupment.

64-2. MANIFOLD REMOVAL PROCEDURE (CONT)

FRAME 1

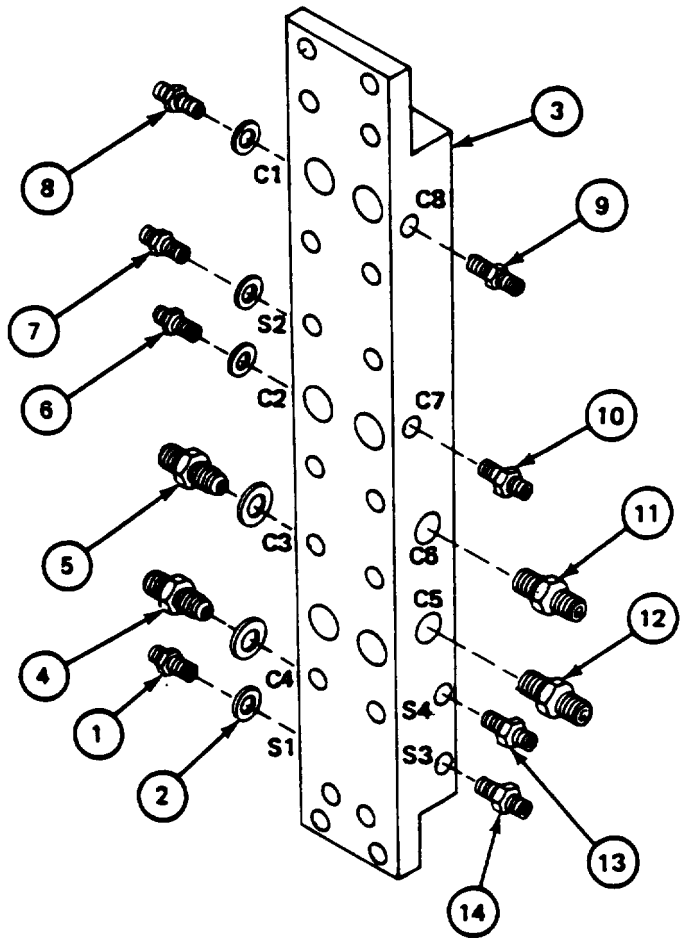
Step	Procedure
1.	Using masking tape (1) and felt tipped pen, tag tube assembly (2) with manifold (3) port identification markings.
2.	Repeat step 1 for seven tube assemblies (4 through 10).
3.	Using two 1-1/2" wrenches, disconnect tube assembly (2) from manifold (3).
4.	Repeat step 3 for seven tube assemblies (4 through 10).
5.	Using combination wrench, remove four screws (11) and four lockwashers (12) holding manifold (3) to turret.
6.	Remove manifold (3) from turret.
7.	Put eight dust plugs in eight tube assemblies (2) and (4 through 10).
	GO TO FR4ME 2



64-2. MANIFOLD REMOVAL PROCEDURE (CONT)

FRAME 2

Step	Procedure
1.	Using adjustable wrench, remove union (1) and preformed packing (2) from manifold (3). Throw away preformed packing (2).
2.	Using hands, put back union (1) in manifold (3).
3.	Put dust cap on union (1).
4.	Repeat steps 1 through 3 for eleven unions (4 through 14).
5.	Using rags, clean up spilled hydraulic fluid.
	END OF TASK



64-3. MANIFOLD INSTALLATION PROCEDURE

TOOLS: 1-1/2" combination wrench (two)
3/4" combination wrench

SUPPLIES: Cleaning rags (item 15, App. A)
Preformed packing (MS 28778-8) (four)
Preformed packing (MS 28778-6) (four)
Preformed packing (MS 28778-16) (four)

PERSONNEL: One

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

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch Boom Control Valves	FO-2	4
Driver's Master Control Panel	FO-3	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTIONS:

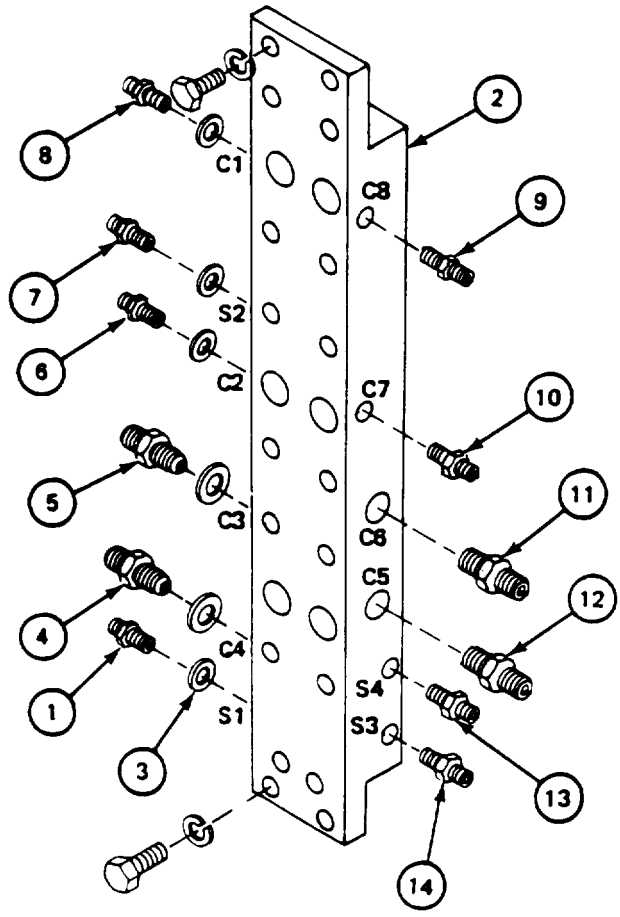
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage eqiupment.

64-3. MANIFOLD INSTALLATION PROCEDURE (CONT)

FRAME 1

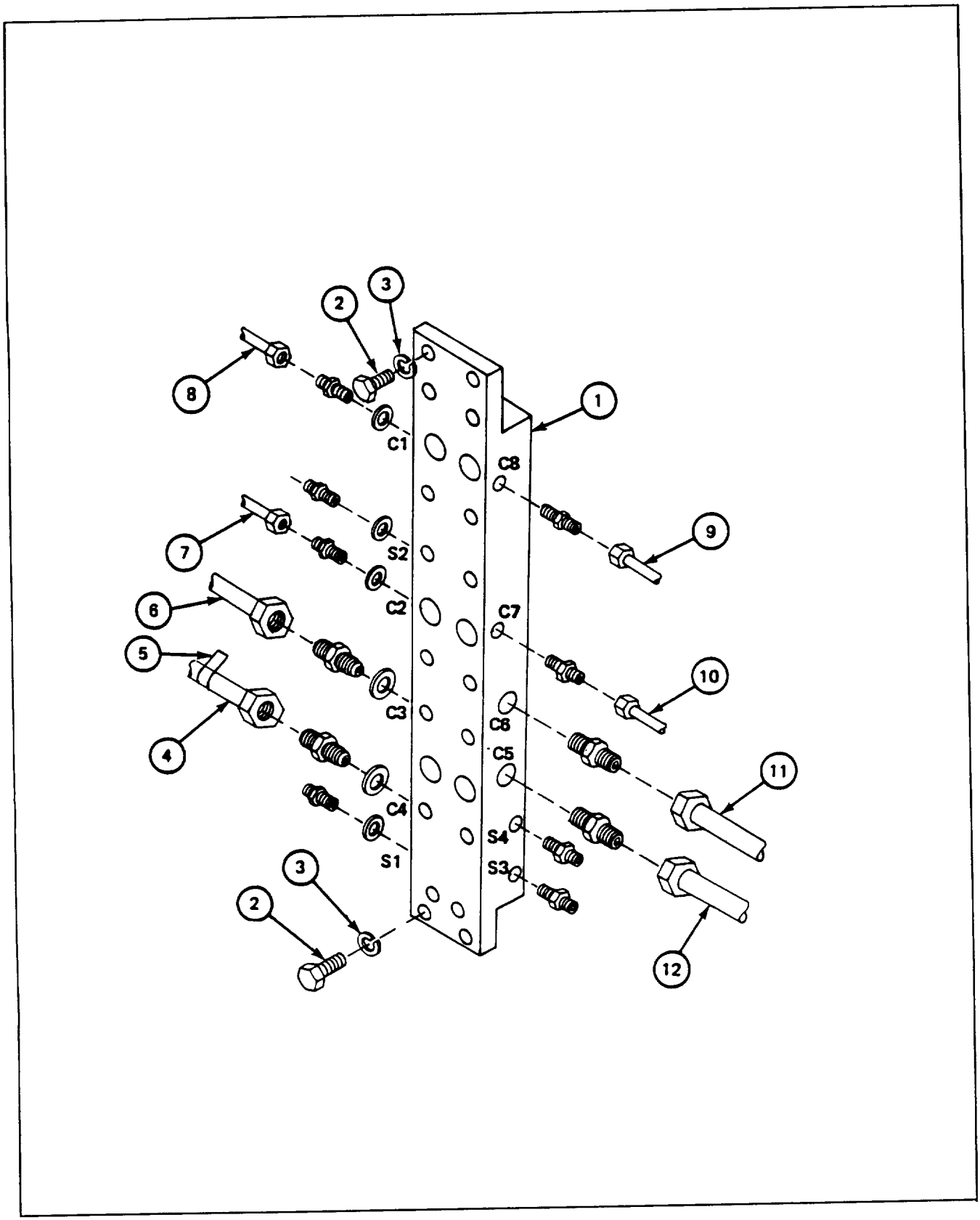
Step	Procedure
1.	Using hands, remove union (1) from manifold (2).
2.	Remove dust cap from union (1).
3.	Put correct size preformed packing (3) on union (1).
4.	Using 1-1/2" wrench, attach union (1) and preformed packing (3) to manifold (2).
5.	Repeat steps 1 through 4 for eleven unions (4 through 14).
	GO TO FRAME 2



64-3. MANIFOLD INSTALLATION PROCEDURE (CONT)

FRAME 2

Step	Procedure
1.	Using 3/4 in. wrench, attach manifold (1) to turret with four screws (2) and four lockwashers (3).
2.	Remove dust plug from tube assembly (4).
	CAUTION Tube assembly must be connected to equipment port per identification marking on tag (5) to prevent damage to equipment.
3.	Match identification marking on tag (5) on tube assembly (4) with marking on port on manifold (1). Remove tag (5).
4.	Using two 1-1/2 in. wrenches, attach tube assembly (4) to manifold (1).
5.	Repeat steps 2 through 4 for seven tube assemblies (6 through 12).
	NOTE Follow-on Maintenance Action Required: Install winch relief valve (para 63-15). Install winch shuttle valve (para 63-13). Install boom shuttle valve (para 63-11). Install winch counterbalance valve (para 63-9). Install erect counterbalance valve (para 63-7). Install stow counterbalance valve (para 63-5). Check winch and boom for proper operation (TM-10). Notify support maintenance to load-test winch and boom in accordance with TE 43-0142. Stow boom and winch (TM-10).
	END OF TASK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64-4. STOW COUNTERBALANCE VALVE REMOVAL PROCEDURE

TOOLS: 3/8" drive ratchet
5/16" hex head socket wrench (3/8" drive) (Allen wrench)
Container

SUPPLIES: Cleaning rags (item 15, App. A)
Dust plugs (four)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch Boom Control Valves	FO-2	4
Driver's Master Control Panel	FO-3	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTIONS:

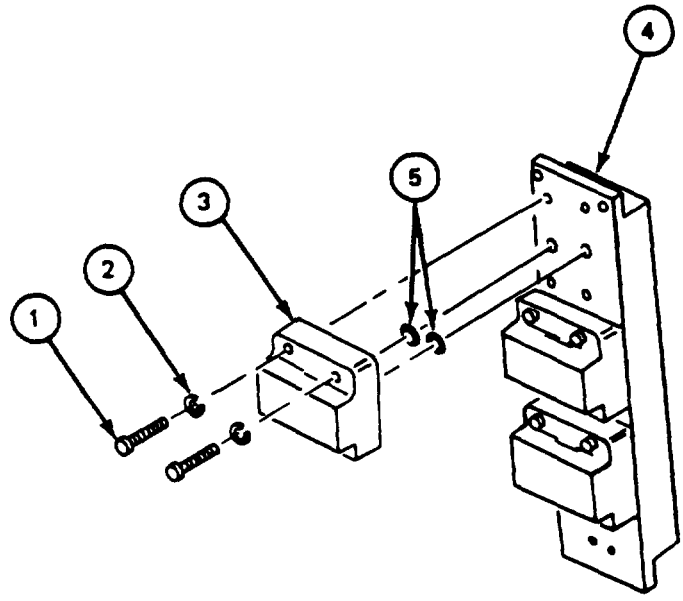
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

64-4. STOW COUNTERBALANCE VALVE REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Put container under valve to catch spilled hydraulic fluid.
2.	Using wrench, remove four screws (1) and four lockwashers (2) holding valve (3) to manifold (4).
3.	Remove valve (3) from manifold (4).
4.	Put two dust plugs in two ports in manifold (4).
5.	Remove two preformed packings (5) from valve (3). Throw preformed packings (5) away.
6.	Put two dust plugs in two ports in back of valve (3).
	END OF TASK



64-5. STOW COUNTERBALANCE VALVE INSTALLATION PROCEDURE

TOOLS: 3/8" drive ratchet
5/16" hex head socket wrench (3/8" drive) (Allen wrench)

SUPPLIES: Cleaning rags (item 15, App. A)
Preformed packings (two)

PERSONNEL: One

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

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch Boom Control Valves	FO-2	4
Driver's Master Control Panel	FO-3	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTIONS:

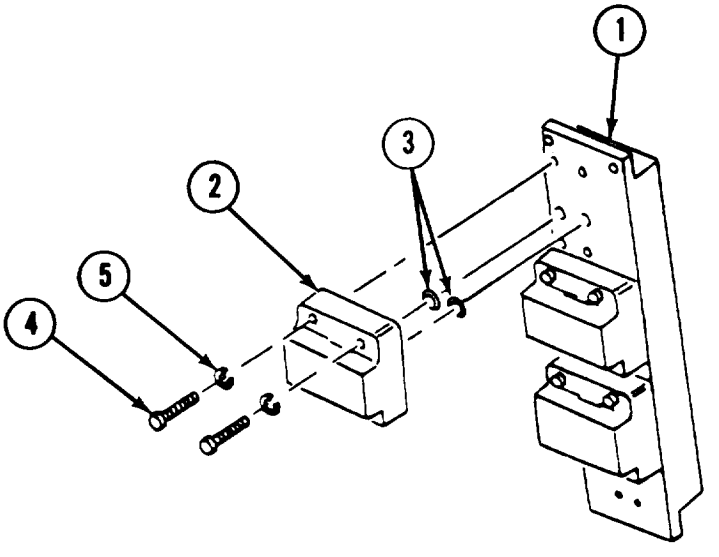
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

64-5. STOW COUNTERBALANCE VALVE INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Remove two dust plugs from two ports in manifold (1).
2.	Remove two dust plugs from two ports in back of valve (2).
3.	Put two new preformed packings (3) in two ports in back of valve (2).
4.	Using wrench, attach valve (2) to manifold (1) with four screws (4) and four lockwashers (5).
5.	Using rags, clean up spilled hydraulic fluid.
	NOTE Follow-on Maintenance Action Required: Check winch and boom for proper operation (TM-10). Notify support maintenance to load-test winch and boom in accordance with TB 43-0142. Stow boom and winch (TM-10).
	END OF TASK



64-6. ERECT COUNTERBALANCE VALVE REMOVAL PROCEDURE

TOOLS: 3/8" drive ratchet
5/16" hex head socket wrench (3/8" drive) (Allen wrench)
Container

SUPPLIES: Cleaning rags (item 15, App. A)
Dust plugs (four)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch Boom Control Valves	FO-2	4
Driver's Master Control Panel	FO-3	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTIONS:

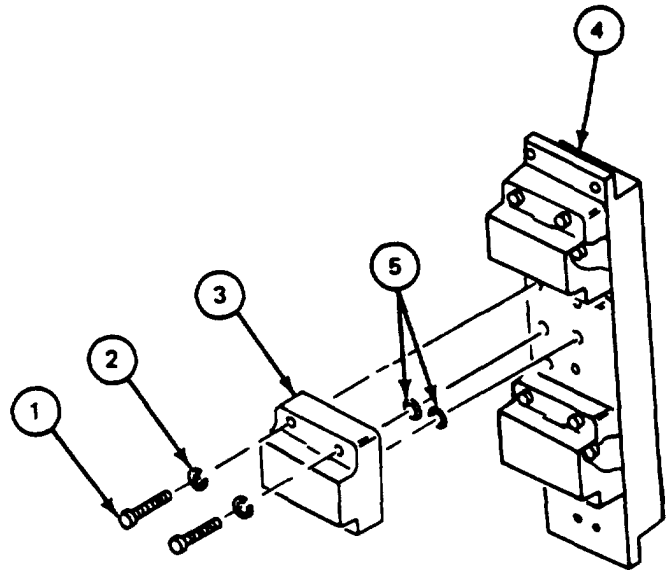
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

64-6. ERECT COUNTERBALANCE VALVE REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Put container under valve to catch spilled hydraulic fluid.
2.	Using wrench, remove four screws (1) and four lockwashers (2) holding valve (3) to manifold (4).
3.	Remove valve (3) from manifold (4).
4.	Put two dust plugs in two ports in manifold (4).
5.	Remove two preformed packings (5) from valve (3). Throw two preformed packings (5) away.
6.	Put two dust plugs in two ports in back of valve (3).
	END OF TASK



64-7. ERECT COUNTERBALANCE VALVE INSTALLATION PROCEDURE

TOOLS: 3/8" drive ratchet
5/16" hex head socket wrench (3/8" drive) (Allen wrench)

SUPPLIES: Cleaning rags (item 15, App. A)
Preformed packings (two)

PERSONNEL: One

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

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch Boom Control Valves	FO-2	4
Driver's Master Control Panel	FO-3	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTIONS:

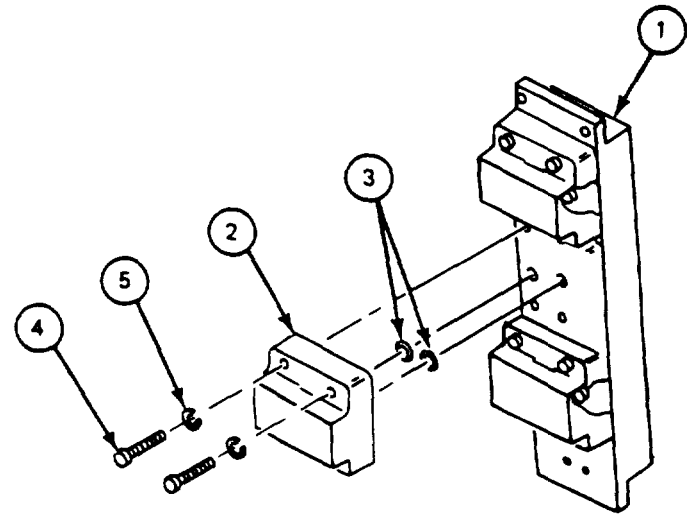
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

64-7. ERECT COUNTERBALANCE VALVE INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Remove two dust plugs from two ports in manifold (1).
2.	Remove two dust plugs from two ports in back of valve (2).
3.	Put two new preformed packings (3) in two ports in back of valve (2).
4.	Using wrench, attach valve (2) to manifold (1) with four screws (4) and four lockwashers (5).
5.	Using rags, clean up spilled hydraulic fluid.
	NOTE Follow-on Maintenance Action Required: Check winch and boom for proper operation (TM-10). Notify support maintenance to load-test winch and boom in accordance with TB 43-0142. Stow boom and winch (TM-10).
	END OF TASK



64-8. WINCH COUNTERBALANCE VALVE REMOVAL PROCEDURE

TOOLS: 3/8" drive ratchet
5/16" hex head socket wrench (3/8" drive) (Allen wrench)
Container

SUPPLIES: Cleaning rags (item 15, App. A)
Dust plugs (four)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch Boom Control Valves	FO-2	4
Driver's Master Control Panel	FO-3	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTIONS:

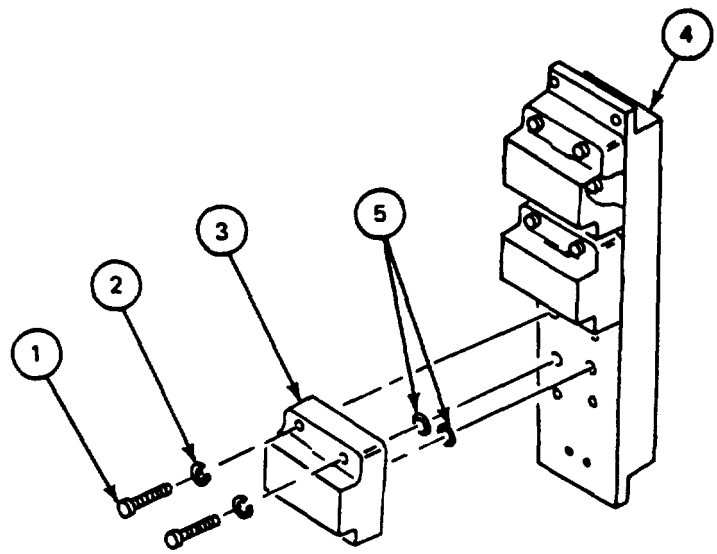
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

64-8. WINCH COUNTERBALANCE VALVE REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Put container under valve to catch spilled hydraulic fluid.
2.	Using wrench, remove four screws (1) and four lockwashers (2) holding valve (3) to manifold (4).
3.	Remove valve (3) from manifold (4).
4.	Put two dust plugs in two ports in manifold (4).
5.	Remove two preformed packings (5) from valve (3). Throw two preformed packings (5) away.
6.	Put two dust plugs in two ports in back of valve (3).
	END OF TASK



64-9. WINCH COUNTERBALANCE VALVE INSTALLATION PROCEDURE

TOOLS: 3/8" drive ratchet
5/16" hex head socket wrench (3/8" drive) (Allen wrench)

SUPPLIES: Cleaning rags (item 15, App. A)
Preformed packings (two)

PERSONNEL: One

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

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch Boom Control Valves	FO-2	4
Driver's Master Control Panel	FO-3	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTIONS:

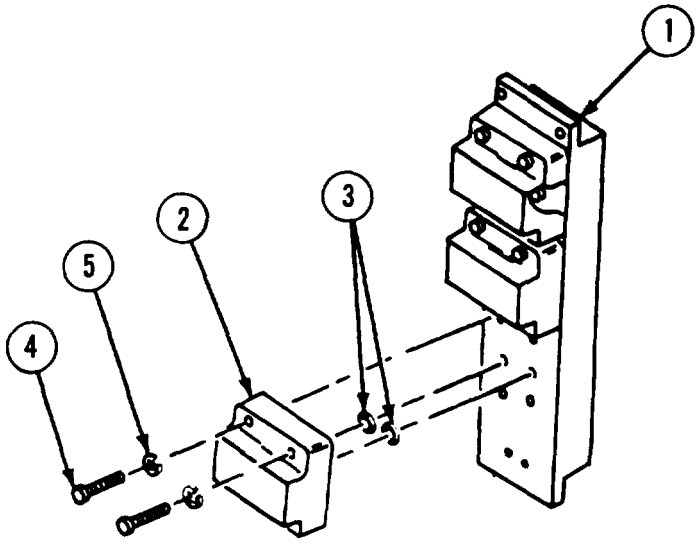
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

64-9. WINCH COUNTERBALANCE VALVE INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Remove two dust plugs from two ports in manifold (1).
2.	Remove two dust plugs from two ports in back of valve (2).
3.	Put two new preformed packings (3) in two ports in back of valve (2)
4.	Using wrench, attach valve (2) to manifold (1) with four screws (4) and four lockwashers (5).
5.	Using rags, clean up spilled hydraulic fluid.
	NOTE Follow-on Maintenance Action Required: Check winch and boom for proper operation (TM-10). Notify support maintenance to load-test winch and boom in accordance with TB 43-0142. Stow boom and winch (TM-10).
	END OF TASK



64-10. BOOM SHUTTLE VALVE REMOVAL PROCEDURE

TOOLS: 12" adjustable wrench (two)
3/8" flat tip screwdriver
Container

SUPPLIES: Cleaning rags (item 15, App. A)
Dust plugs (eight)
Dust caps (four)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch Boom Control Valves	FO-2	4
Driver's Master Control Panel	FO-3	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

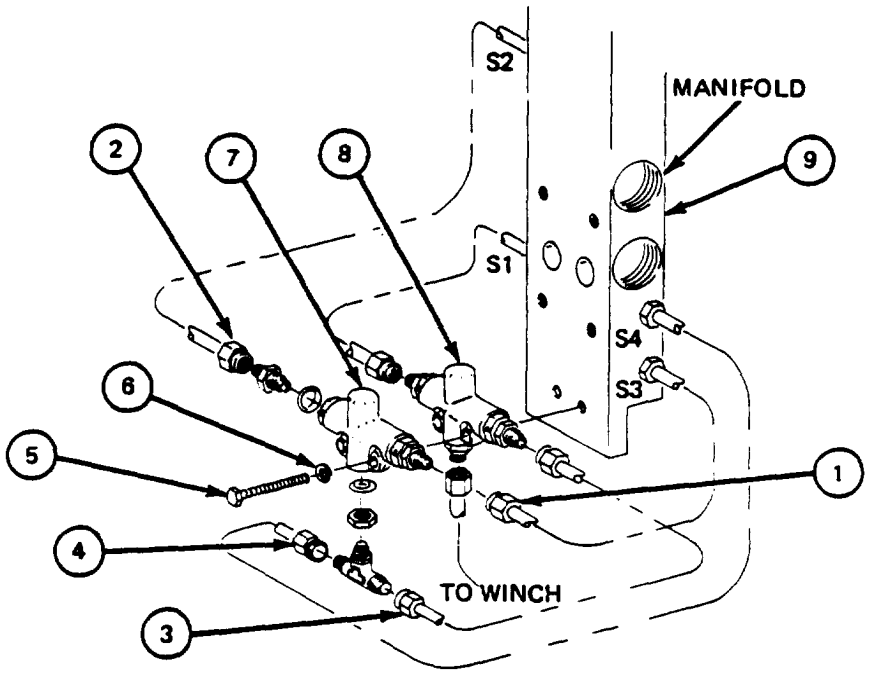
GENERAL INSTRUCTIONS:

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

64-10. BOOM SHUTTLE VALVE REMOVAL PROCEDURE (CONT)

FRAME 1

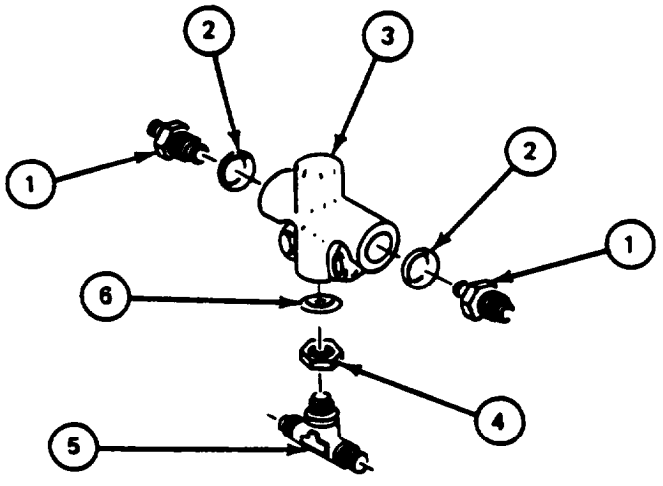
Step	Procedure
1.	Remove tube assembly (1) (10951667) (para 2-83).
2.	Remove tube assembly (2) (10951669) (para 2-83).
3.	Remove tube assembly (3) (10951670) (para 2-83).
4.	Remove tube assembly (4) (10951668) (para 2-83).
5.	Using screwdriver, remove two screws (5) and two lockwashers (6) holding two shuttle valves (7) and (8) to manifold (9).
6.	Remove boom shuttle valve (7) from shuttle valve (8).
7.	Using hands, put back two screws (5) and two lockwashers (6).
8.	Put eight dust plugs in four tube assemblies (1), (2), (3) and (4).
	GO TO FRAME 2



64-10. BOOM SHUTTLE VALVE REMOVAL PROCEDURE (CONT)

FRAME 2

Step	Procedure
1.	Using wrenches, remove two unions (1) and two preformed packings (2) from boom shuttle valve (3).
2.	Throw two preformed packings (2) away.
3.	Using hands, put back two unions (1) in boom shuttle valve (3).
4.	Using wrenches, loosen nut (4).
5.	Using wrenches, remove tee (5), nut (4), and preformed packing (6) from boom shuttle valve (3).
6.	Throw preformed packing (6) away.
7.	Using hands, put back tee (5) and nut (4) in boom shuttle valve (3).
8.	Put four dust caps on two unions (1) and tee (5).
	END OF TASK



64-11. BOOM SHUTTLE VALVE INSTALLATION PROCEDURE

TOOLS: 12" adjustable wrench (two)
3/8" flat tip screwdriver
Container

SUPPLIES: Cleaning rags (item 15, App. A)
Preformed packings (MS 28778-6) (three)

PERSONNEL: One

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

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch Boom Control Valves	FO-2	4
Driver's Master Control Panel	FO-3	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTIONS:

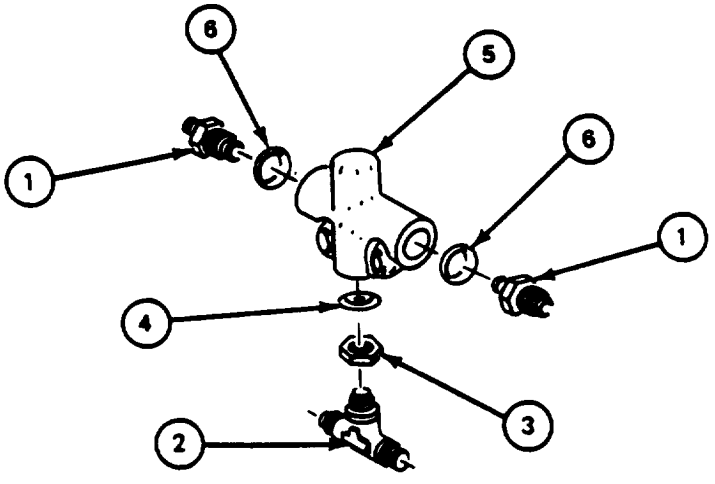
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

64-11. BOOM SHUTTLE VALVE INSTALLATION PROCEDURE (CONT)

FRAME 1

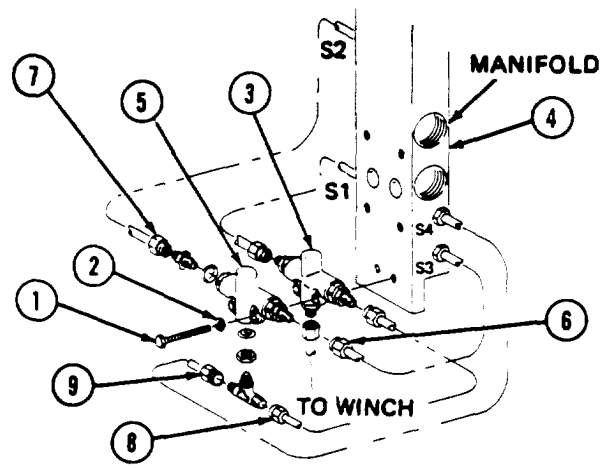
Step	Procedure
1.	Remove four dust caps from two unions (1) and tee (2).
	NOTE Nut (3) on tee (2) is used to seal preformed packing (4) in boom shuttle valve (5) after tee (2) is tightened and two ports in tee (2) are aligned with two ports in boom shuttle valve (5).
2.	Put preformed packing (4) on tee (2) and nut (3).
3.	Using two wrenches, attach tee (2), nut (3), and preformed packing (4) to shuttle valve (5).
4.	Line up two ports in tee (2) with two ports in boom shuttle valve (5).
5.	Using two wrenches, tighten nut (4) against boom shuttle valve (5).
6.	Put two preformed packings (6) on two unions (1).
7.	Using two wrenches, attach two unions (1) and two preformed packings (6) to boom shuttle valve (5).
	GO TO FRAME 2



64-11. BOOM SHUTTLE VALVE INSTALLATION PROCEDURE (CONT)

FRAME 2

Step	Procedure
1.	Using hands, remove two screws (1) and two lockwashers (2) holding winch shuttle valve (3) to manifold (4).
2.	Using screwdriver, attach boom shuttle valve (5) to winch shuttle valve (3) and manifold (4) with two screws (1) and two lockwashers (2).
3.	Remove eight dust plugs from four tube assemblies (6), (7), (8), and (9).
4.	Install tube assembly (6) (10951667) (para 2-84).
5.	Install tube assembly (7) (10951669) (para 2-84).
6.	Install tube assembly (8) (10951670) (para 2-84).
7.	Install tube assembly (9) (10951668) (para 2-84).
8.	Using rags, clean up spilled hydraulic fluid.
	NOTE Follow-on Maintenance Action Required: Check winch and boom for proper operation (TM-10). Notify support maintenance to load-test winch and boom in accordance with TB 43-0142. Stow boom and winch (TM-10).
	END OF TASK



64-12. WINCH SHUTTLE VALVE REMOVAL PROCEDURE

TOOLS: 12" adjustable wrench (two)
3/8" flat tip screwdriver
Container

SUPPLIES: Cleaning rags (item 15, App. A)
Dust plugs
Dust caps

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch Boom Control Valves	FO-2	4
Driver's Master Control Panel	FO-3	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTIONS:

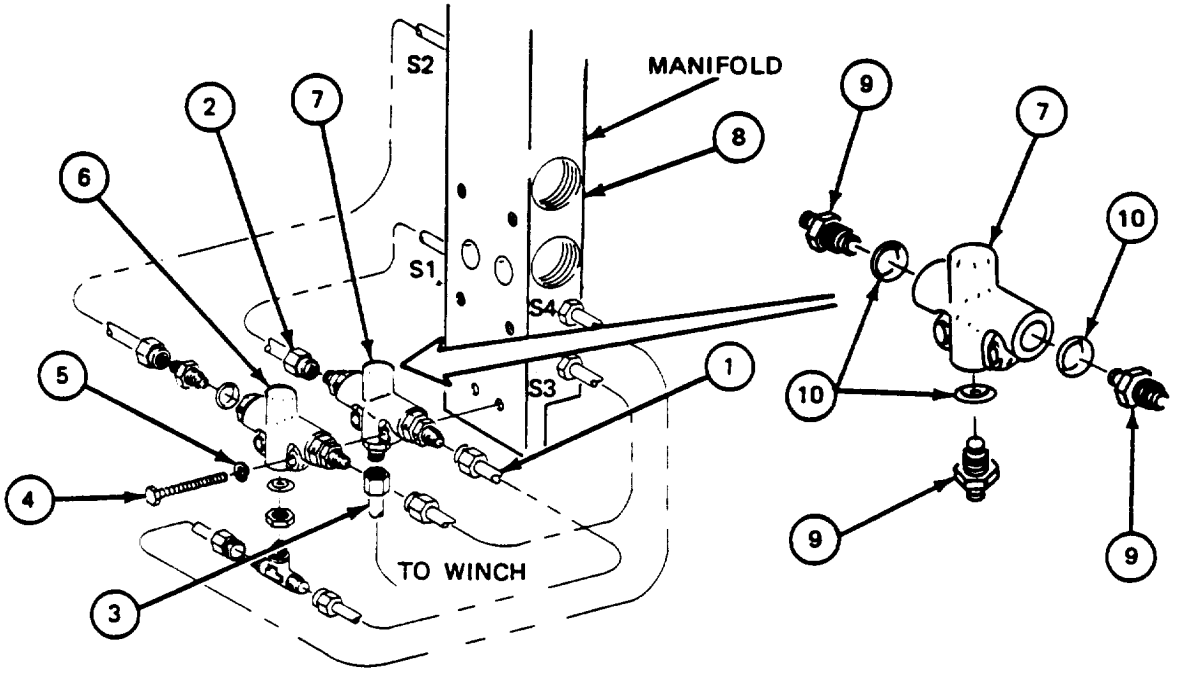
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

64-12. WINCH SHUTTLE VALVE REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Remove tube assembly (1) (10951670) (para 2-83).
2.	Remove tube assembly (2) (10951624) (para 2-83).
3.	Remove tube assembly (3) (10940791) (para 2-83).
4.	Using screwdriver, remove two screws (4) and two lockwashers (5) holding two shuttle valves (6) and (7) to manifold (8).
5.	Remove winch shuttle valve (7) from manifold (8).
6.	Using hands, put back two screws (4) and two lockwashers (5).
7.	Using wrenches, remove three unions (9) and three preformed packings (10) from winch shuttle valve (7).
8.	Throw three preformed packings (10) away.
9.	Using hands, put back three unions (9) in winch shuttle valve (7).
10.	Put three dust caps on three unions (9).
11.	Put six dust plugs in three tube assemblies (1), (2), and (3).
12.	Using rags, clean up any spilled hydraulic fluid.
	END OF TASK



64-13. WINCH SHUTTLE VALVE INSTALLATION PROCEDURE

TOOLS: 12" adjustable wrench (two)
3/8" flat tip screwdriver
Container

SUPPLIES: Cleaning rags (item 15, App. A)
Preformed packings (MS 28778-6) (three)

PERSONNEL: One

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

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch Boom Control Valves	FO-2	4
Driver's Master Control Panel	F 0 3	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTIONS:

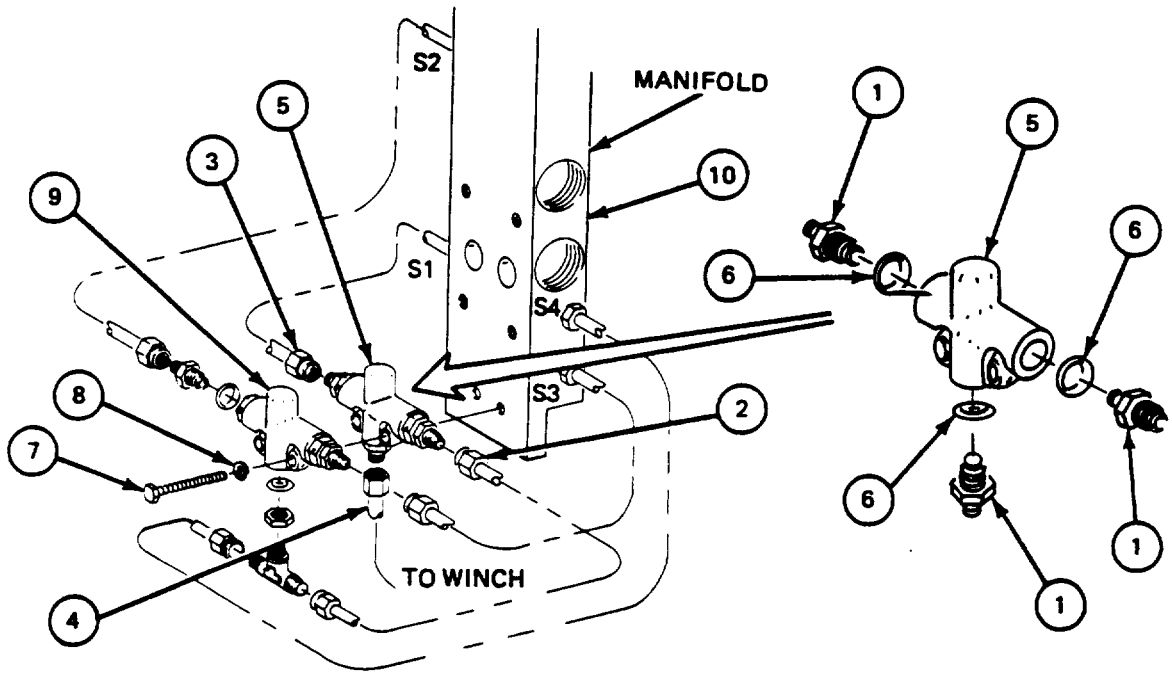
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

64-13. WINCH SHUTTLE VALVE INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Remove three dust caps from three unions (1) and six dust plugs from three tube assemblies (2), (3), and (4).
2.	Using hands, remove three unions (1) from winch shuttle valve (5).
3.	Put three preformed packings (6) on three unions (1).
4.	Using wrenches, install three unions (1) and three preformed packings (6) in winch shuttle valve (5).
5.	Using hands, remove two screws (7) and two lockwashers (8).
6.	Put winch shuttle valve (5) between boom shuttle valve (9) and manifold (10).
7.	Using wrench, attach boom shuttle valve (9) and winch shuttle valve (5) to manifold (10) with two screws (7) and two lockwashers (8).
8.	Install tube assembly (2) (10951670) (para 2-84).
9.	Install tube assembly (3) (10951624) (para 2-84).
10.	Install tube aasembly (4) (10940791) (para. 2-84).
11.	Using rags, clean up spilled hydraulic fluid.
	NOTE Follow-on Maintenance Action Required: Check winch and boom for proper operation (TM-10). Notify support maintenance to load-test winch and boom in accordance with TB 43-0142. Stow boom and winch (TM-10).
	END OF TASK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S4
S3
TO WINCH
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64-14. WINCH RELIEF VALVE REMOVAL PROCEDURE

TOOLS: 12" adjustable wrench (two)
Container

SUPPLIES: Dust plugs (three)
Dust caps (three)
Cleaning rags (item 15, App. A)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch Boom Control Valves	FO-2	4
Driver's Master Control Panel	FO-3	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTIONS:

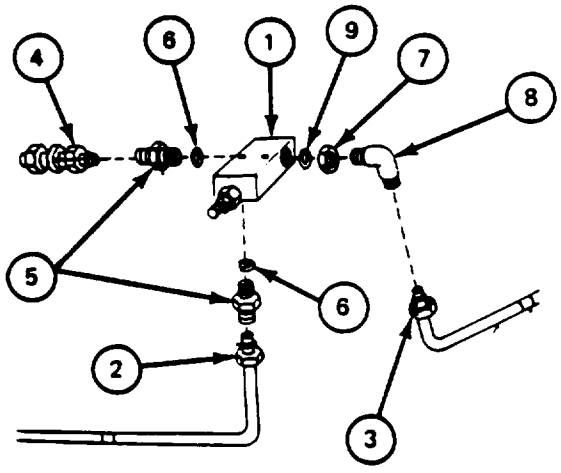
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

64-14. WINCH RELIEF VALVE REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Put container under winch relief valve (1) tube coupling nuts (2), (3), and (4) to catch hydraulic fluid.
2.	Using two wrenches, remove three tube coupling nuts (2), (3), and (4).
3.	Remove winch relief valve (1).
4.	Using wrench, remove two unions (5) and two preformed packings (6). Throw two preformed packings (6) away.
5.	Using hands, put back two unions (5) in winch relief valve (1).
6.	Using wrench, loosen nut (7).
7.	Using wrench, remove elbow (8), nut (7), and preformed packing (9). Throw preformed packing (9) away.
8.	Using hands, put back elbow (8) and nut (7) in winch relief valve (1).
9.	Put three dust caps on two unions (5) and elbow (8).
10.	Put three dust plugs in ends of three tube assemblies (2), (3) and (4).
11.	Using rags, clean up spilled hydraulic fluid.
	END OF TASK



64-15. WINCH RELIEF VALVE INSTALLATION PROCEDURE

TOOLS: 12" adjustable wrench (two)

SUPPLIES: Preformed packing (MS 28778-16) (three)
Cleaning rags (item 15, App. A)

PERSONNEL: One

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

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch Boom Control Valves	FO-2	4
Driver's Master Control Panel	F 0 3	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTIONS:

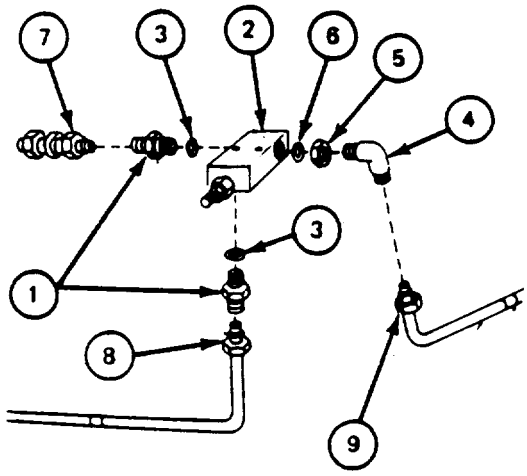
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

64-15. WINCH RELIEF VALVE INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Using hands, remove two unions (1) from winch relief valve (2),
2.	Remove two dust caps from two unions (1).
3.	Put two new preformed packings (3) on two unions (1).
4.	Using wrench, install two unions (1) on winch relief valve (2).
5.	Remove dust cap from elbow (4).
6.	Using hand, remove elbow (4), nut (5), from winch relief valve (2).
7.	Put two new preformed packings (6) on elbow (4).
8.	Using wrench, attach elbow (4), nut (5), and preformed packing (6) to winch relief valve (2). Tighten elbow (4). Do not tighten nut (5).
9.	Remove three dust plugs from three tube assemblies (7), (8), and (9).
10.	Using two wrenches, attach tube assembly (7) to winch relief valve (2).
11.	Using two wrenches, attach tube assembly (8) to winch relief valve (2).
12.	Line up elbow (4) with tube assembly (9).
13.	Using two wrenches, attach tube assembly (9) to winch relief valve (2).
14.	Using wrench, tighten nut (5).
15.	Using rags, clean up spilled hydraulic fluid.
	NOTE Follow-on Maintenance Action Required: Check winch and boom for proper operation (TM -10). Notify support maintenance to load-test winch and boom in accordance with TB 43-0142. Service winch relief valve (para 64-16).
	END OF TASK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64-16. WINCH RELIEF VALVE SERVICE PROCEDURE

TEST EQUIPMENT Pressure gauge (11669730)

TOOLS: Stopwatch with secondhand
12" adjustable wrench (two)

SUPPLIES: Cleaning rags (item 15, App. A)

PERSONNEL: Three

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

EQUIPMENT LOCATION INFORMATION:

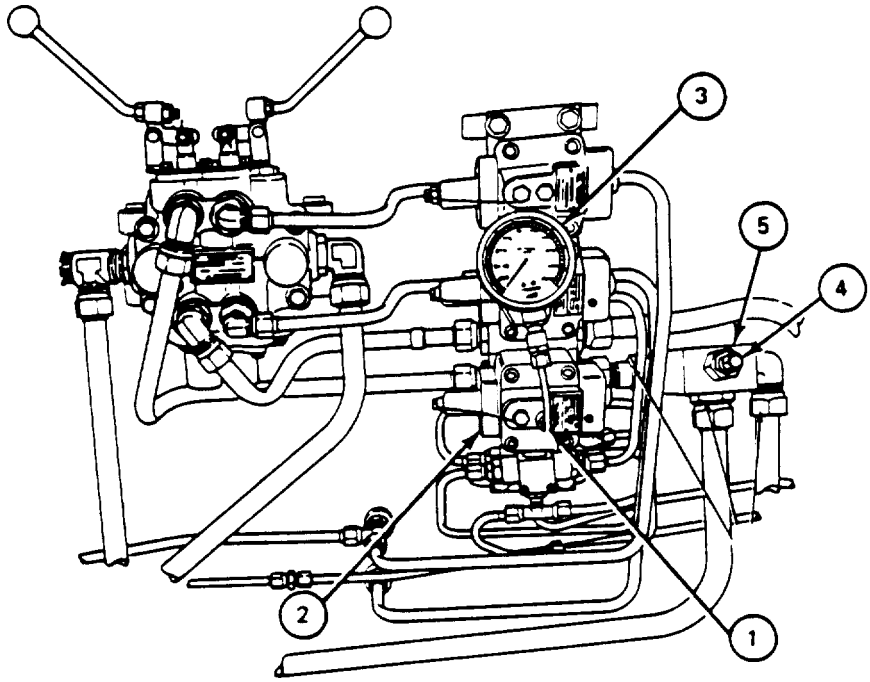
EQUIPMENT	FOLDOUT	CALLOUT
Winch Boom Control Valves	FO-2	4
Driver's Master Control Panel	FO-3	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

64-16. WINCH RELIEF VALVE SERVICE PROCEDURE (CONT)

FRAME 1

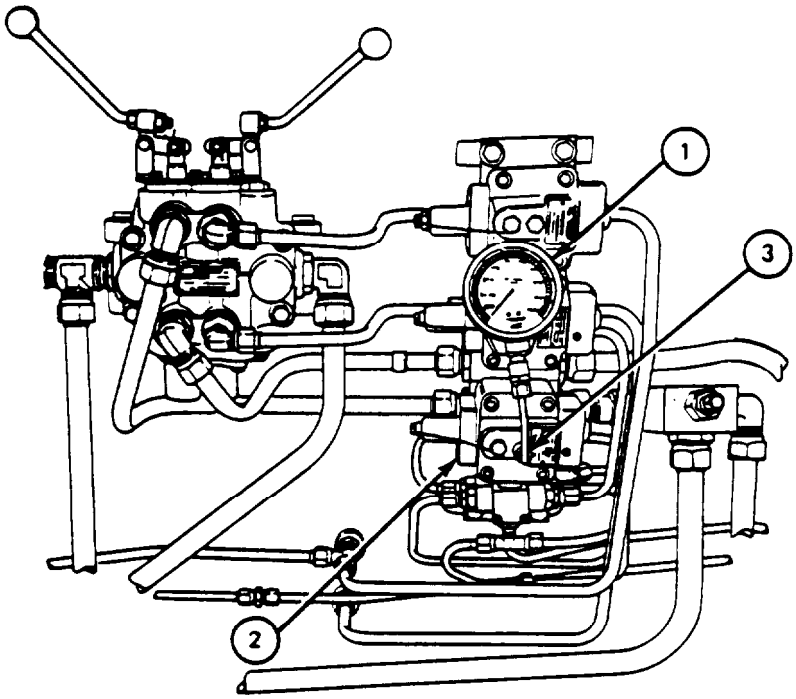
Step	Procedure
1.	Using wrench, remove screw (1) from winch counterbalance valve (2).
2.	Using wrench, install pressure gauge (3) on winch counterbalance valve (2)
3.	Do preliminary boom and winch operation procedure (TM-10).
4.	Set winch control to "reel in" position (TM-10). Read pressure gauge (3) presure. If pressure gauge (3) reading is between 2100 and 2200 psi, go to step 7. If not, go to step 5.
5.	Using wrench, remove cap (4) from winch relief valve (5). Adjust winch relief valve (5) until pressure gauge (3) reading is 2150 psi.
6.	Using wrench, put back cap (4) on winch relief valve (5).
7.	Operate boom from stowed to erect position (TM-10). Using stopwatch, read time required for boom to travel from stowed position to fully erected position. Travel time must be between 21 and 45 seconds.
8.	Repeat step 7.
	GO TO FRAME 2



64-16. WINCH RELIEF VALVE SERVICE PROCEDURE (CONT)

FRAME 2

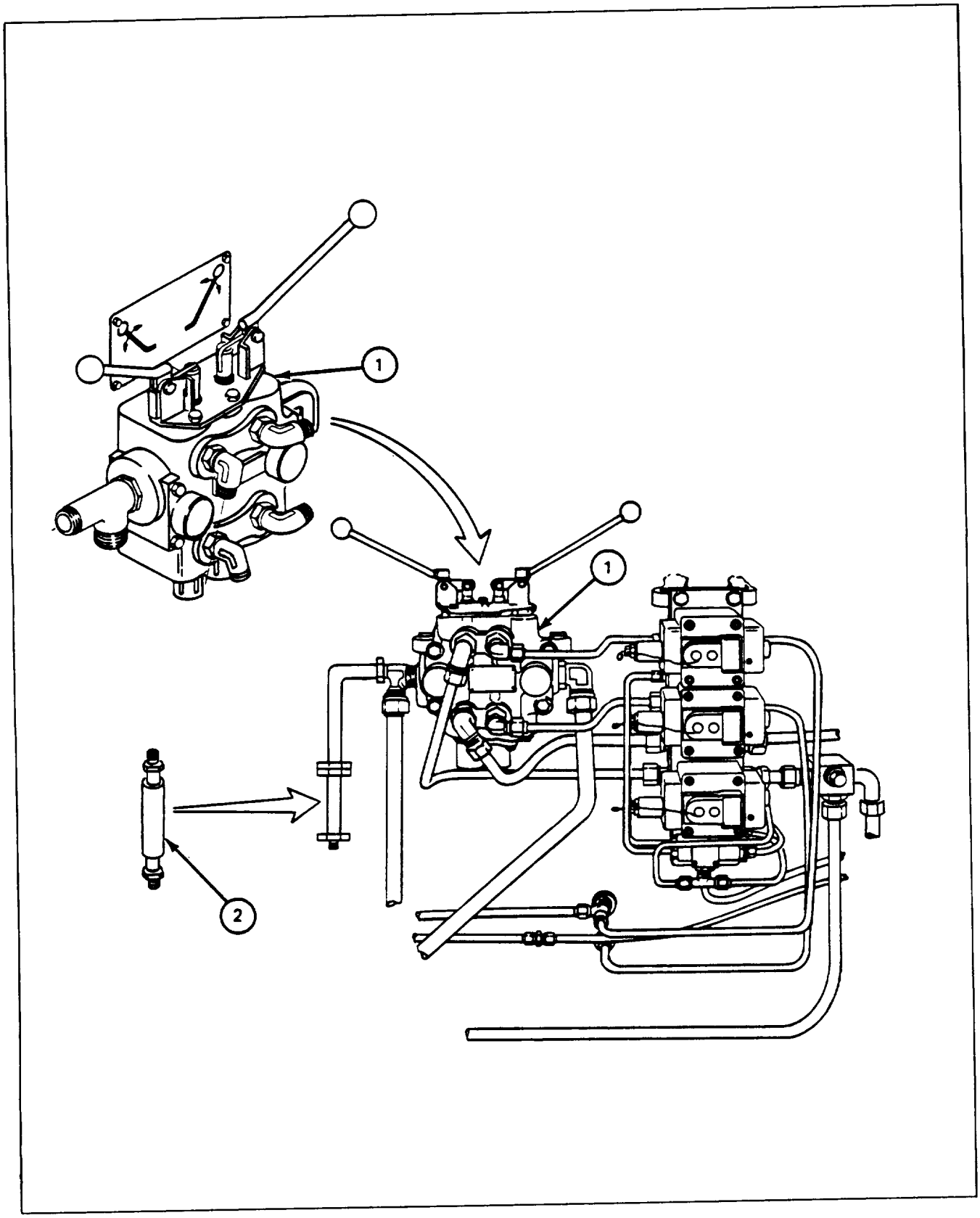
Step	Procedure
1.	If boom travel time is more than 45 seconds or less than 21 seconds, repeat frame 1, steps 4 through 8.
2.	Stow boom (TM-10).
3.	Using wrench, remove pressure gauge (1) from winch counterbalance valve (2).
4.	Using wrench, put screw (3) back in winch counterbalance valve (2).
5.	Using rags, clean up spilled hydraulic fluid.
	END OF TASK



CHAPTER 65
DIRECTIONAL CONTROL VALVE

65-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Tasks	
	Removal	Installation
1. Directional Control Valve	65-2	65-3
2. Boom Relief Valve	65-4	65-5


1
1
2

65-2. DIRECTIONAL CONTROL VALVE REMOVAL PROCEDURE

TOOLS: 1-1/2" combination wrench
3/4" combination wrench
Container

SUPPLIES: Cleaning rags (item 15, App A)
Dust caps (seven)
Dust plugs (seven)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch Boom Control Valves	FO-2	4
Driver's Master Control Panel	FO-3	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTIONS:

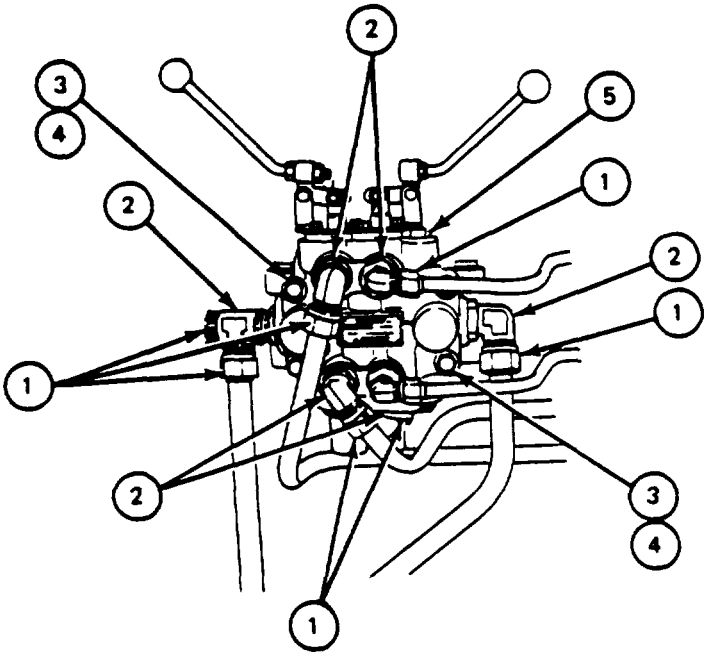
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

65-2. DIRECTIONAL CONTROL VALVE REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Put container under hydraulic tube nuts to catch hydraulic fluid.
2.	Using 1-1/2" wrench, remove seven nuts (1) from six control valve fittings (2).
3.	Using 3/4" wrench, remove four screws (3) and four flat washers (4) holding control valve (5) to turret.
4.	Remove control valve (5) from turret.
5.	Put seven dust caps on control valve fittings (2).
6.	Put seven dust plugs in seven hydraulic tube nuts (1).
7.	Using rags, clean up spilled hydraulic fluid.
	END OF TASK



65-3. DIRECTIONAL CONTROL VALVE INSTALLATION PROCEDURE

TOOLS: 1-1/2" combination wrench
3/4" combination wrench

SUPPLIES: Cleaning rags (item 15, App. A)

PERSONNEL: One

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

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch Boom Control Valves	FO-2	4
Driver's Master Control Panel	FO-3	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTIONS:

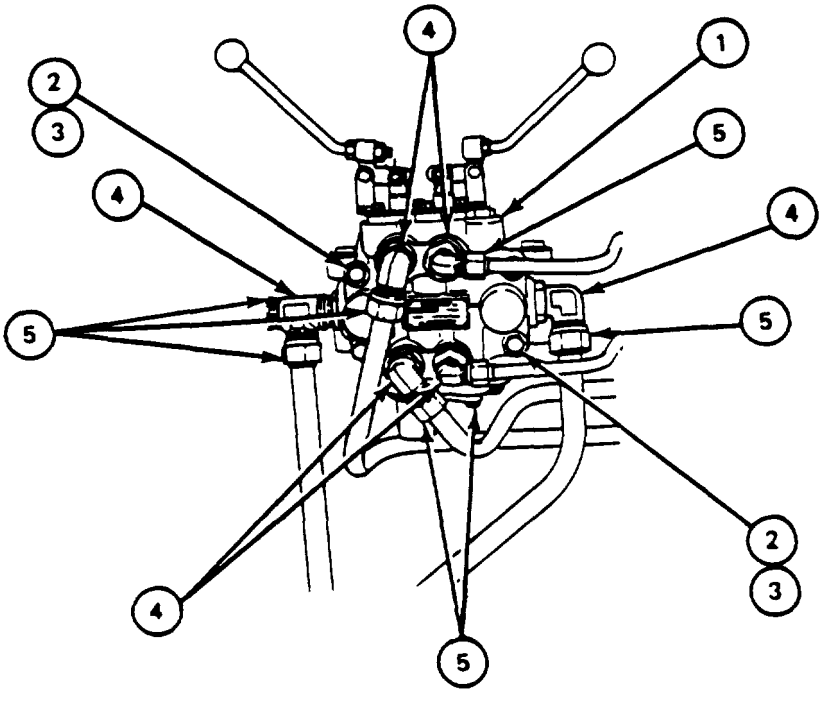
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

65-3. DIRECTIONAL CONTROL VALVE INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Using 3/4" wrench, attach control valve (1) to turret with four screws (2) and four flat washers (3).
2.	Remove seven dust caps from six control valve fittings (4).
3.	Remove seven dust plugs from seven hydraulic tube nuts (5).
4.	Using 1-1/2" wrench, attach seven hydraulic tube nuts (5) to six control valve fittings (4).
5.	Using rags, clean up spilled hydraulic fluid.
	NOTE Follow-on Maintenance Action Required: Check boom and winch for proper operation (TM-10).
	END OF TASK



65-4. BOOM RELIEF VALVE REMOVAL PROCEDURE

TOOLS: 12" adjustable wrench
Container
1-1/2" combination wrench

SUPPLIES: Cleaning rags (item 15, App. A)
Dust plugs (two)
Dust caps (two)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch Boom Control Valves	FO-2	4
Driver's Master Control Panel	FO-3	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTIONS:

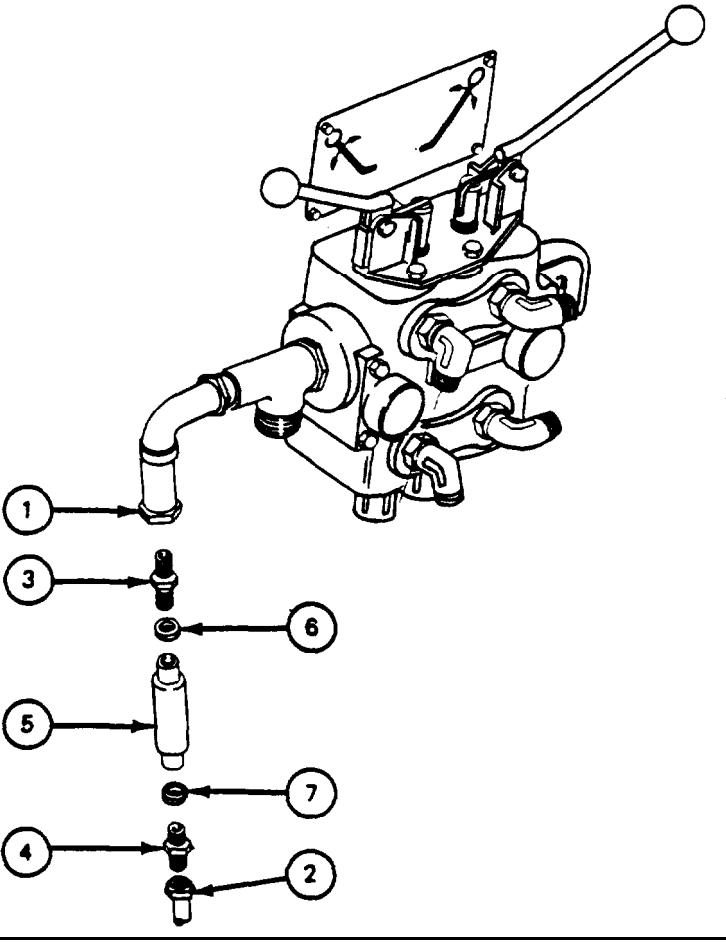
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

65-4. BOOM RELIEF VALVE REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Put container under hydraulic tube coupling nuts (1) and (2) to catch hydraulic fluid.
2.	Using two wrenches, remove two nuts (1) and (2) from two reducers (3) and (4).
3.	Using two wrenches, remove two reducers (3) and (4) from relief valve (5).
4.	Remove two preformed packings (6) and (7) from two reducers (3) and (4). Throw away two preformed packings (6) and (7).
5.	Put two dust caps in ends of relief valve (5).
6.	Using hands, put two reducers (3) and (4) back in two coupling nuts (1) and (2).
7.	Put two dust caps on two reducers (3) and (4).
8.	Using rags, clean up spilled hydraulic fluid.
	END OF TASK



65-5. BOOM RELIEF VALVE INSTALLATION PROCEDURE

TOOLS: 12" adjustable wrench
1-1/2" combination wrench

SUPPLIES: Preformed packing (MS 28778-12) (two)
Cleaning rags (item 15, App. A)

PERSONNEL: One

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

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch Boom Control Valves	FO-2	4
Driver's Master Control Panel	FO-3	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTIONS:

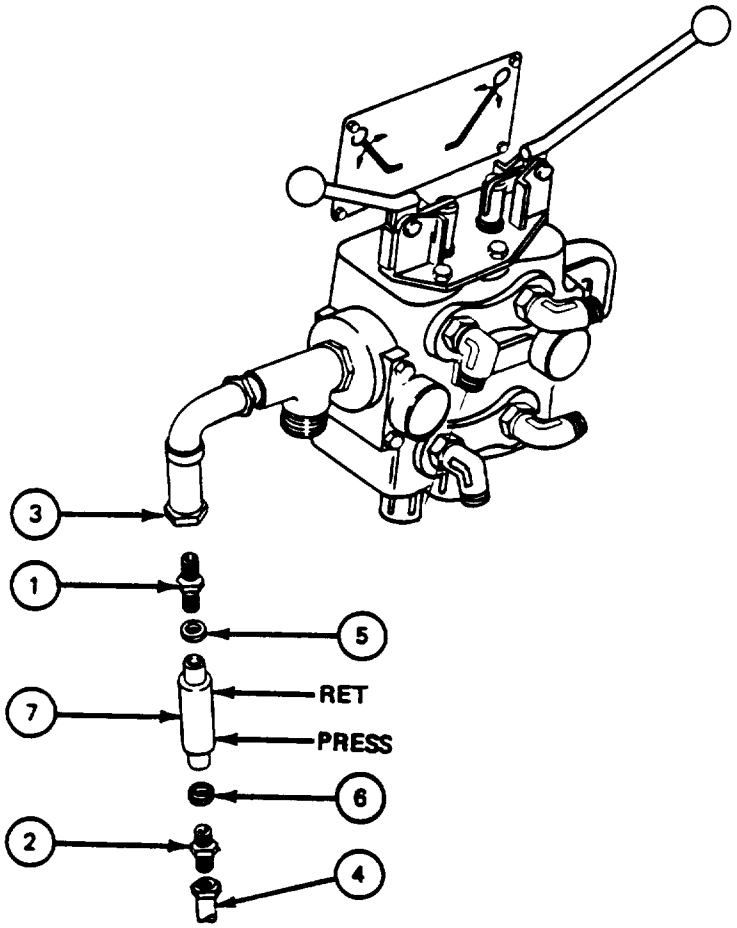
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment.

65-5. BOOM RELIEF VLAVE INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Using hands, remove two reducers (1) and (2) from two nuts (3) and (4).
2.	Remove two dust caps from two reducers (1) and (2).
3.	Put two new preformed packings (5) and (6) on two reducers (1) and (2).
4.	Remove two dust plugs from relief valve (7).
5.	Using two wrenches, install two reducers (1) and (2) and two preformed packings (5) and (6) on relief valve (7).
	CAUTION Relief valve (7) with end marked PRESS, must be attached to nut (4).
6.	Using two wrenches, install two nuts (3) and (4) on two reducers (1) and (2).
7.	Using rags, clean up any spilled hydraulic fluid.
	NOTE Follow-on Maintenance Action Required: Check boom and winch for proper operation (TM-10).
	END OF TASK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CHAPTER 66

A-FRAME PULLEY (SHEAVE)

66-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Tasks	
	Removal	Installation
A-Frame Pulley (Sheave)	66-2	66-3

66-2. A-FRAME PULLEY (SHEAVE) REMOVAL PROCEDURE

TOOLS: 12" adjustable wrench
Slip joint pliers

SUPPLIES: 1/2" rope, 3 feet long (two pieces)
Safety gloves

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedures to:
Stow and lock boom
Operate winch
JPG for procedure to remove cotter pins

EQUIPMENT LOCATION INFORMATION:

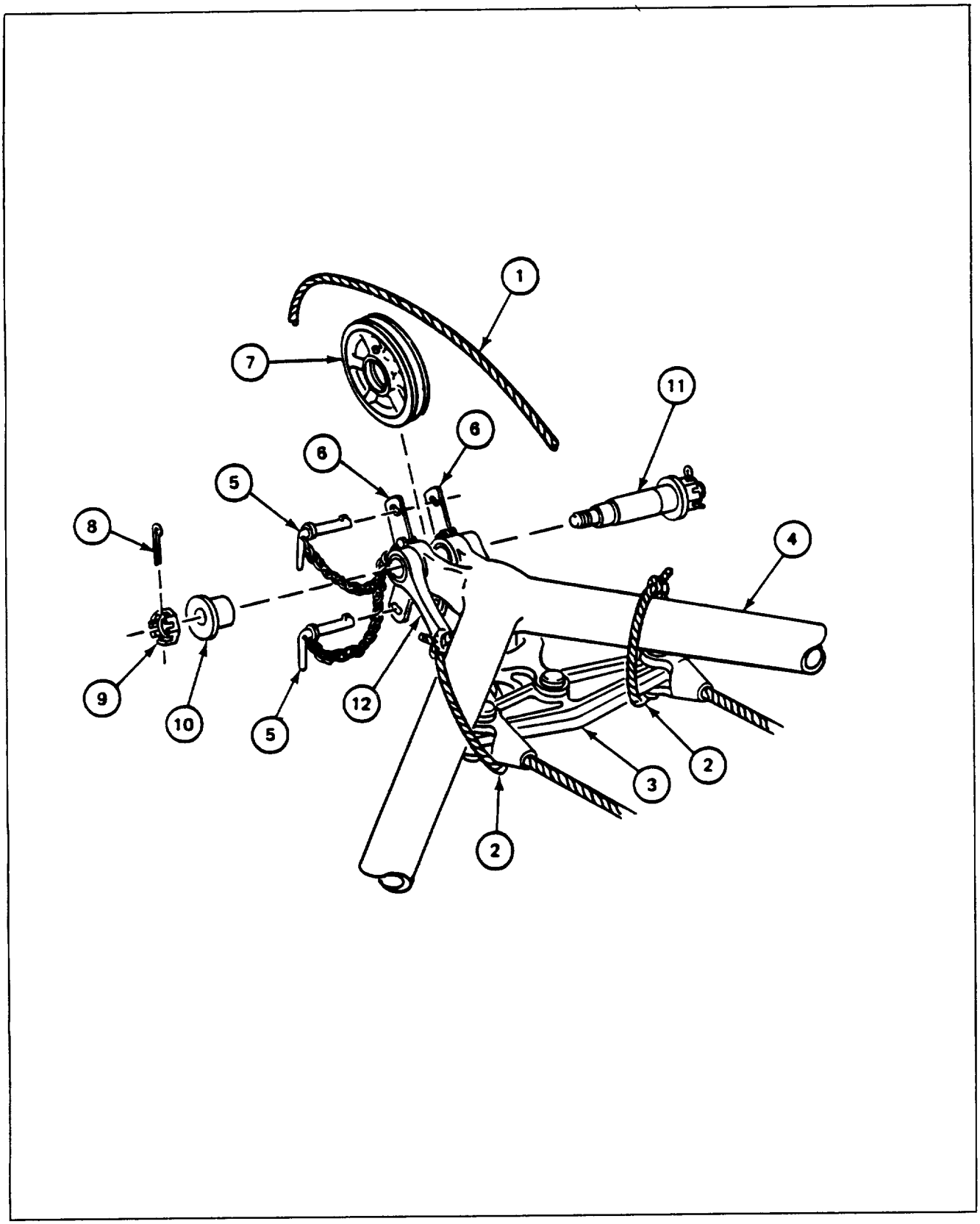
EQUIPMENT	FOLDOUT	CALLOUT
A-Frame Pulley	FO-5	9

EQUIPMENT CONDITION: A-frame boom stowed and locked in travel locks (TM-10)

66-2. A-FRAME PULLEY (SHEAVE) REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
	WARNING Use safety gloves when handling wire rope. Wire rope can injure hands. Keep hands and clothes away from wire rope and winch while winch is turning. Wire rope and winch can cause injury.
1.	Operate winch until wire rope (1) has slack (TM-10).
2.	Using rope (2), tie equalizer bar (3) to A-frame (4) to support its weight, two places.
3.	Turn two guide plate retainers (5) until lugs line up with slots in two guide plates (6). Pull out two guide plate retainers.
4.	Using hands, remove wire rope (1) from pulley (7).
5.	Using pliers, remove cotter pin (8) from nut (9) (JPG).
6.	Using wrench, remove nut (9) and bushing (10) from shaft (11).
7.	Lift weight of pulley (7) off shaft (11). Pull shaft out of pulley (7). Remove pulley.
8.	Lift weight of yoke (12) off shaft (11). Pull shaft out of yoke and A-frame (4).
9.	Lower yoke (12) until it is supported by equalizer bar (3).
	END OF TASK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66-3. A-FRAME PULLEY (SHEAVE) INSTALLATION PROCEDURE

TOOLS: 12" adjustable wrench
Slip joint pliers

SUPPLIES: Cotter pin (MS 24665-754)
Grease (item 11, App. A)
Cleaning rags (item 15, App. A)
Safety gloves

PERSONNEL: One

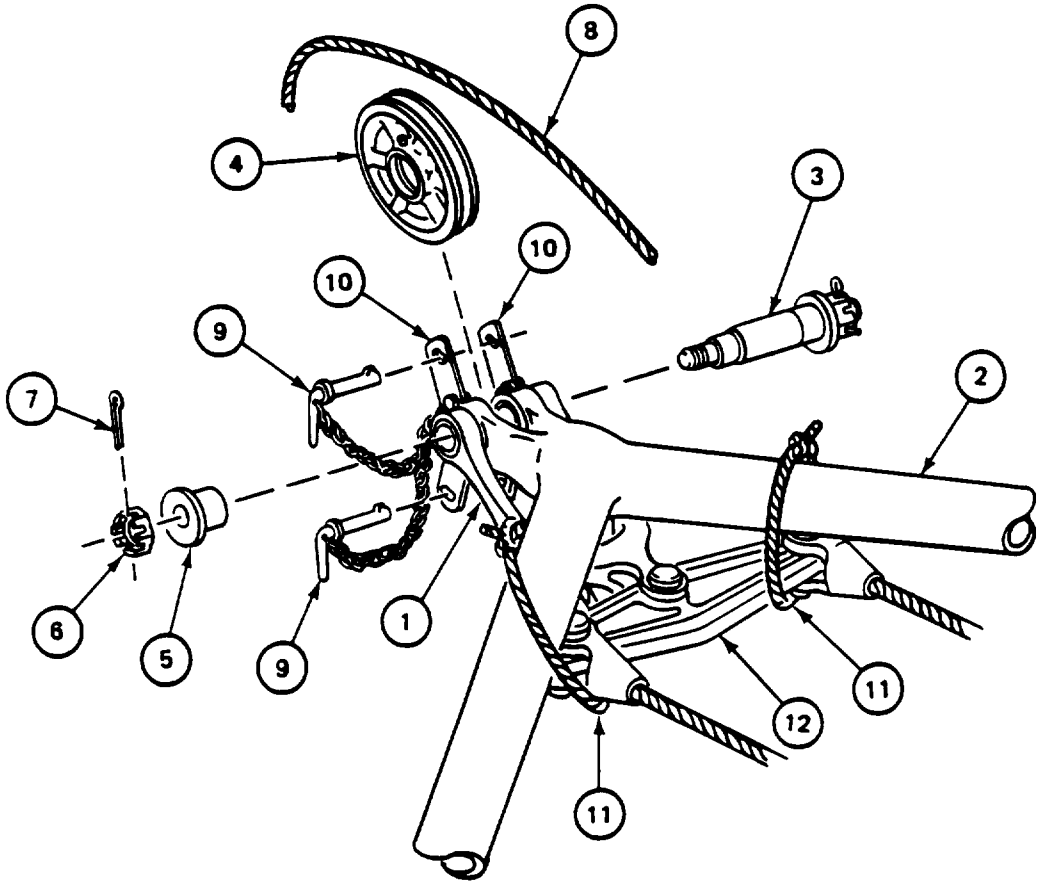
REFERENCES: LO 9-2350-222-12 for procedure to lubricate pulley
JPG for procedure to install cotter pins

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
A-Frame Pulley	FO-5	9

FRAME 1

Step	Procedure
	WARNING Use safety gloves when handling wire rope. Wire rope can injure hands. Keep hands and clothes away from wire rope and winch while winch is turning. Wire rope and winch can cause injury.
1.	Lift yoke (1) to line up holes in yoke with holes in A-frame (2). Push shaft (3) in holes in yoke and A-frame.
2.	Put pulley (4) in place. Push shaft (3) through holes in yoke (1), A-frame (2), and pulley.
3.	Using wrench, attach bushing (5) and nut (6) to shaft (3).
4.	Using pliers, install new cotter pin (7) in nut (6) (JPG).
5.	Put wire rope (8) on pulley (4).
6.	Push two guide plate retainers (9) through two guide plates (10). Turn two retainers (9) to lock in place.
7.	Remove two ropes (11) holding equalizer bar (12) to boom A-frame (2).
8.	Grease pulley (4) (LO).
	END OF TASK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CHAPTER 67

BOOM TRAVEL LOCK

67-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Tasks			
	Removal	Installation	Disassembly	Assembly
Boom Travel Lock	67-2	67-3	67-4	67-5

67-2. BOOM TRAVEL LOCK REMOVAL PROCEDURE

TOOLS: 20 ounce ball peen hammer
Slip joint pliers
1/4" drive pin punch

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedure to open boom travel locks
JPG for procedure to remove cotter pins

EQUIPMENT LOCATION INFORMATION:

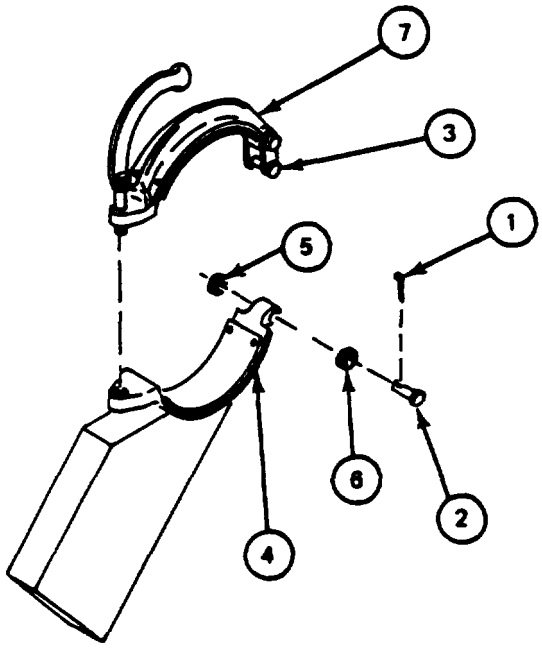
EQUIPMENT	FOLDOUT	CALLOUT
Boom Travel Lock	FO-5	7

EQUIPMENT CONDITION: Open boom travel locks (TM-10)

67-2. BOOM TRAVEL LOCK REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
	NOTE Procedure is same for right and left travel locks.
1.	Using pliers, remove cotter pin (1) from pin (2) that attaches two links (3) to bottom half of yoke (4) (JPG). Throw cotter pin (1) away.
2.	Remove flat washer (5) from pin (2).
3.	Using hammer and punch, remove pin (2) and flat washer (6) from two links (3) and bottom half of yoke (4).
4.	Remove top half of yoke (7) with two links (3).
5.	Repeat steps 1 through 4 for second travel lock.
	END OF TASK



67-3. BOOM TRAVEL LOCK INSTALLATION PROCEDURE

TOOLS: Slip joint pliers
20 ounce ball peen hammer

SUPPLIES: Cotter pin (MS 24665-283)

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedure to close boom travel locks
JPG for procedure to install cotter pins

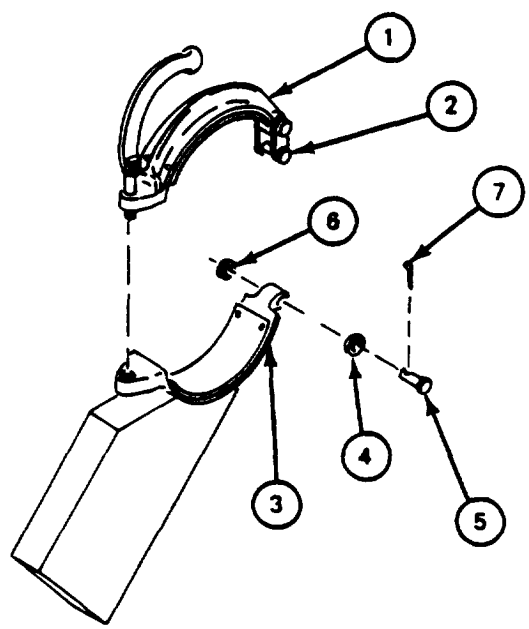
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Boom Travel Lock	FO-5	7

67-3. BOOM TRAVEL LOCK INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
	NOTE Procedure is same for right and left travel locks.
1.	Put top half of yoke (1) with two links (2) in position on bottom half of yoke (3).
2.	Put flat washer (4) on pin (5).
3.	Using hammer, put pin (5) through two links (2) and bottom half of yoke (3).
4.	Put flat washer (6) on pin (5).
5.	Using pliers, put new cotter pin (7) in pin (5) (JPG).
6.	Repeat steps 1 through 4 for second travel lock.
	NOTE Follow-on Maintenance Action Required: Close boom travel lock (TM-10).
	END OF TASK



67-4. BOOM TRAVEL LOCK DISASSEMBLY PROCEDURE

TOOLS: Slip joint pliers
20 ounce ball peen hammer
1/4” drive pin punch

PERSONNEL: One

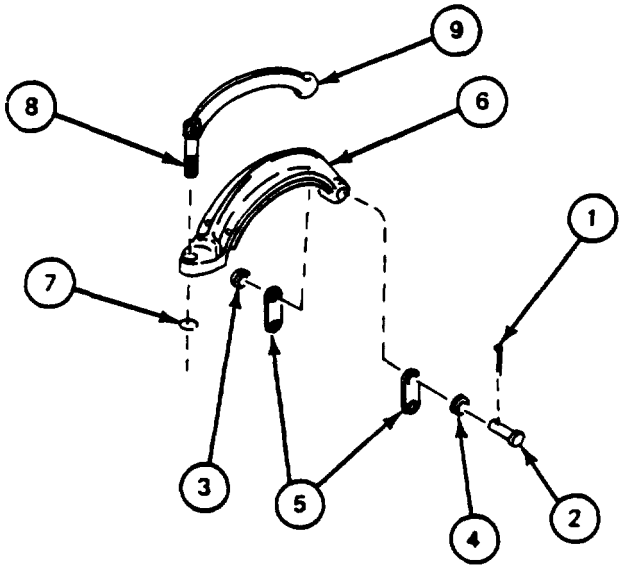
REFERENCES: JPG for procedure to remove cotter pins

PRELIMINARY PROCEDURES: Remove boom travel lock (para 67-2)

67-4. BOOM TRAVEL LOCK DISASSEMBLY PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Using pliers, remove cotter pin (1) from pin (2) (JPG). Throw cotter pin (1) away.
2.	Remove flat washer (3) from pin (2).
3.	Using hammer and punch, remove pin (2) and flat washer (4) that attach two links (5) to top half of yoke (6).
4.	Remove two links (5).
5.	Using pliers, remove retaining ring (7) from screw (8). Throw retaining ring (7) away.
6.	Remove screw (8) with lever (9) from top half of yoke (6).
	END OF TASK



67-5. BOOM TRAVEL LOCK ASSEMBLY PROCEDURE

TOOLS: Slip joint pliers
20 ounce ball peen hammer

SUPPLIES: Retaining ring (5411795)
Cotter pin (MS 24665-283)

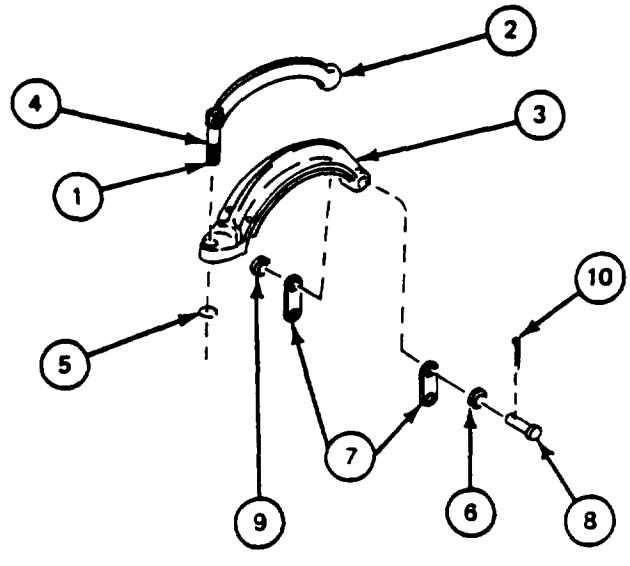
PERSONNEL: One

REFERENCES: JPG for procedure to install cotter pins

67-5. BOOM TRAVEL LOCK ASSEMBLY PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Put screw (1) with lever (2) in top half of yoke (3) until you can see groove (4) for retaining ring (5).
2.	Using pliers, put retaining ring (5) in groove (4) of screw (1).
3.	Put flat washer (6) and link (7) on pin (8).
4.	Using hammer, put pin (8) with link (7) in top half of yoke (3).
5.	Put second link (7) and flat washer (9) on pin (8).
6.	Using pliers, put cotter pin (10) in pin (8) (JPG).
	END OF TASK

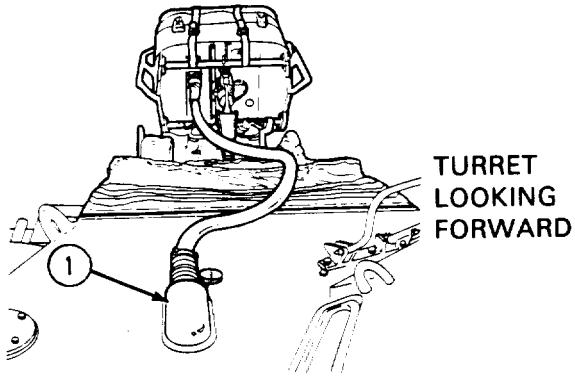


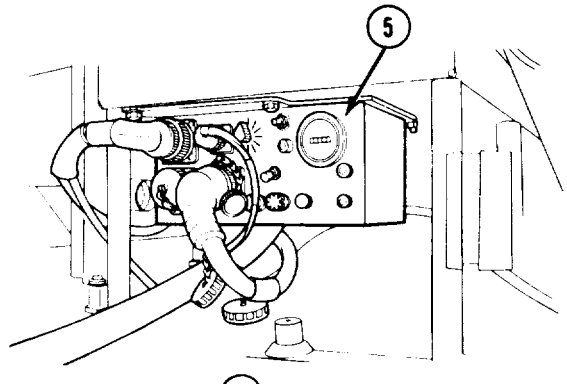
CHAPTER 68

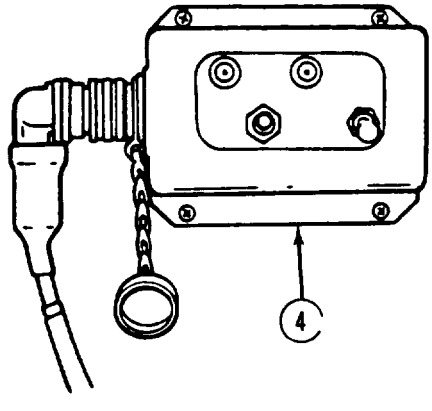
SEARCHLIGHT SYSTEM

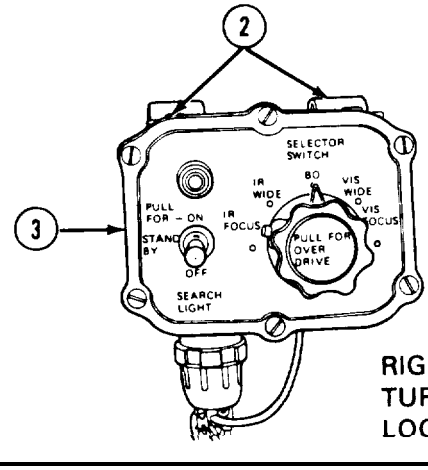
68-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Tasks: Removal	Tasks: Installation
1. Searchlight Connector Ground Lead	68-2	68-3
2. Searchlight (AN/VVS-2) Control Box Mounting Hardware	68-4	68-5
3. Searchlight (AN/VVS-2) Control Box	68-6	68-7
4. Searchlight (AN/VVS-3A) Remove Control Box	68-8	68-9
5. Searchlight (AN/VVS-3A) Master Control Box	68-10	68-11









68-2. SEARCHLIGHT GROUND LEAD REMOVAL PROCEDURE

TOOLS: Flat-tip screwdriver
1/2 in. socket (3/8 in. drive)
3/8 in. drive ratchet
Diagonal cutting pliers
Ball peen hammer
Drift pin punch

PERSONNEL: One

REFERENCE: JPG for procedure to remove safety wire

EQUIPMENT LOCATION INFORMATION:

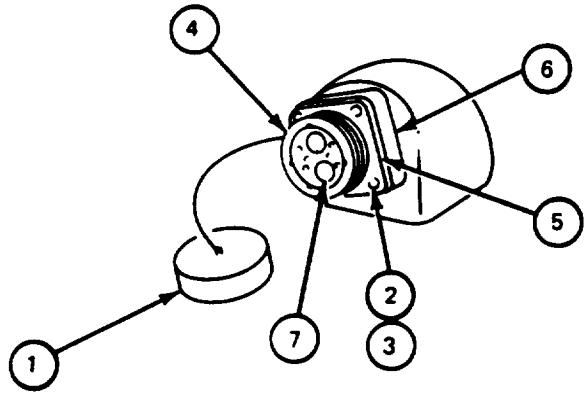
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Searchlight Connector	FO-5	4

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

68-2. SEARCHLIGHT GROUND LEAD REMOVAL PROCEDURE (CONT)

FRAME 1

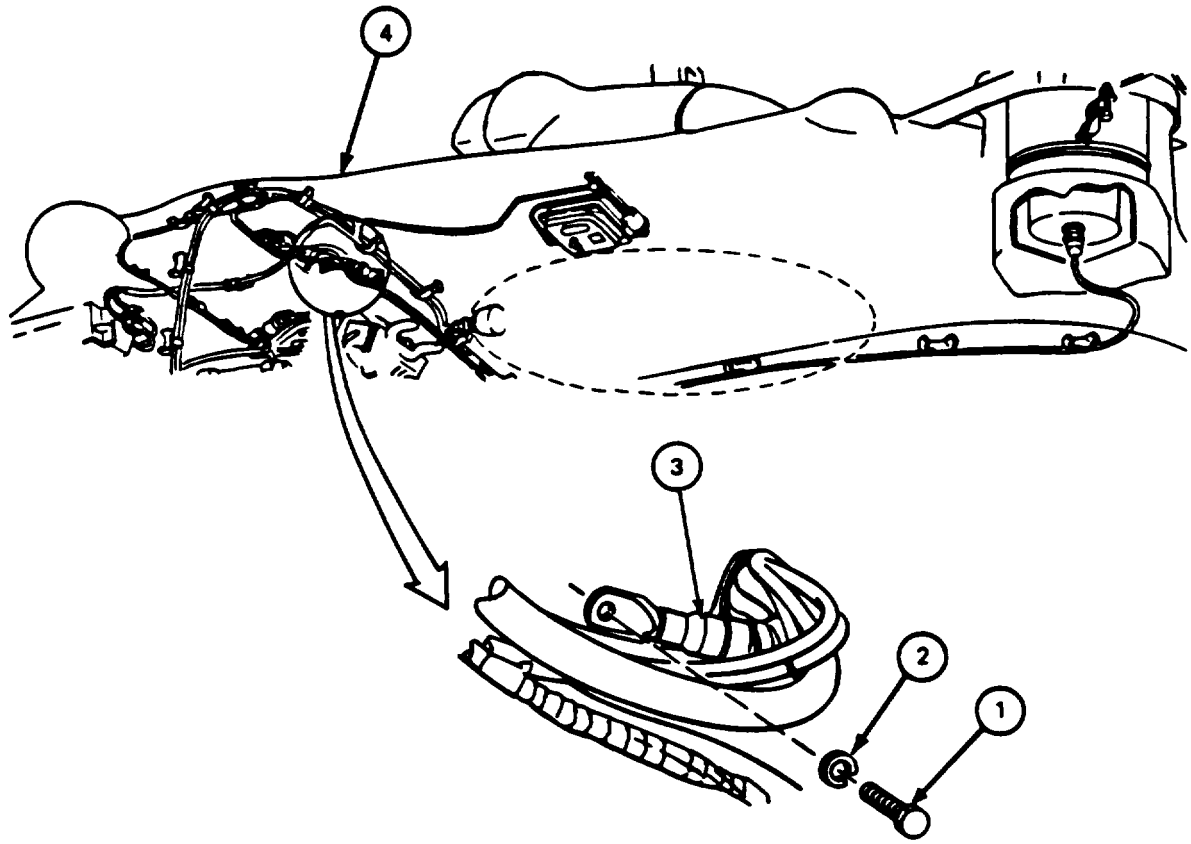
Step	Procedure
1.	Unscrew and remove dust cap (1).
2.	Using pliers, remove safety wire from four screws (2) (JPG).
3.	Using a screwdriver, remove four screws (2) and four washers (3). Separate receptacle shell (4), and gaskets (5) from adapter (6).
4.	Pull out receptacle shell (4).
5.	Using hammer and punch, remove electrical contact and cable (7) from shell (4).
	GO TO FRAME 2



68-2. SEARCHLIGHT GROUND LEAD REMOVAL PROCEDURE (CONT)

FRAME 2

Step	Procedure
1.	Using socket wrench, remove one screw (1) and one washer (2). Remove cable (3) from turret (4).
2.	Pull cable (3) through receptacle housing in turret.
	END OF TASK



68-3. SEARCHLIGHT GROUND LEAD INSTALLATION PROCEDURE

TOOLS: Flat tip screwdriver
1/2" socket (3/8" drive)
3/8" drive ratchet
Round nose pliers
Slip joint pliers

SUPPLIES: Lockwire

PERSONNEL: One

REFERENCES: JPG for procedures to:
Connect electrical connectors
Install lockwire

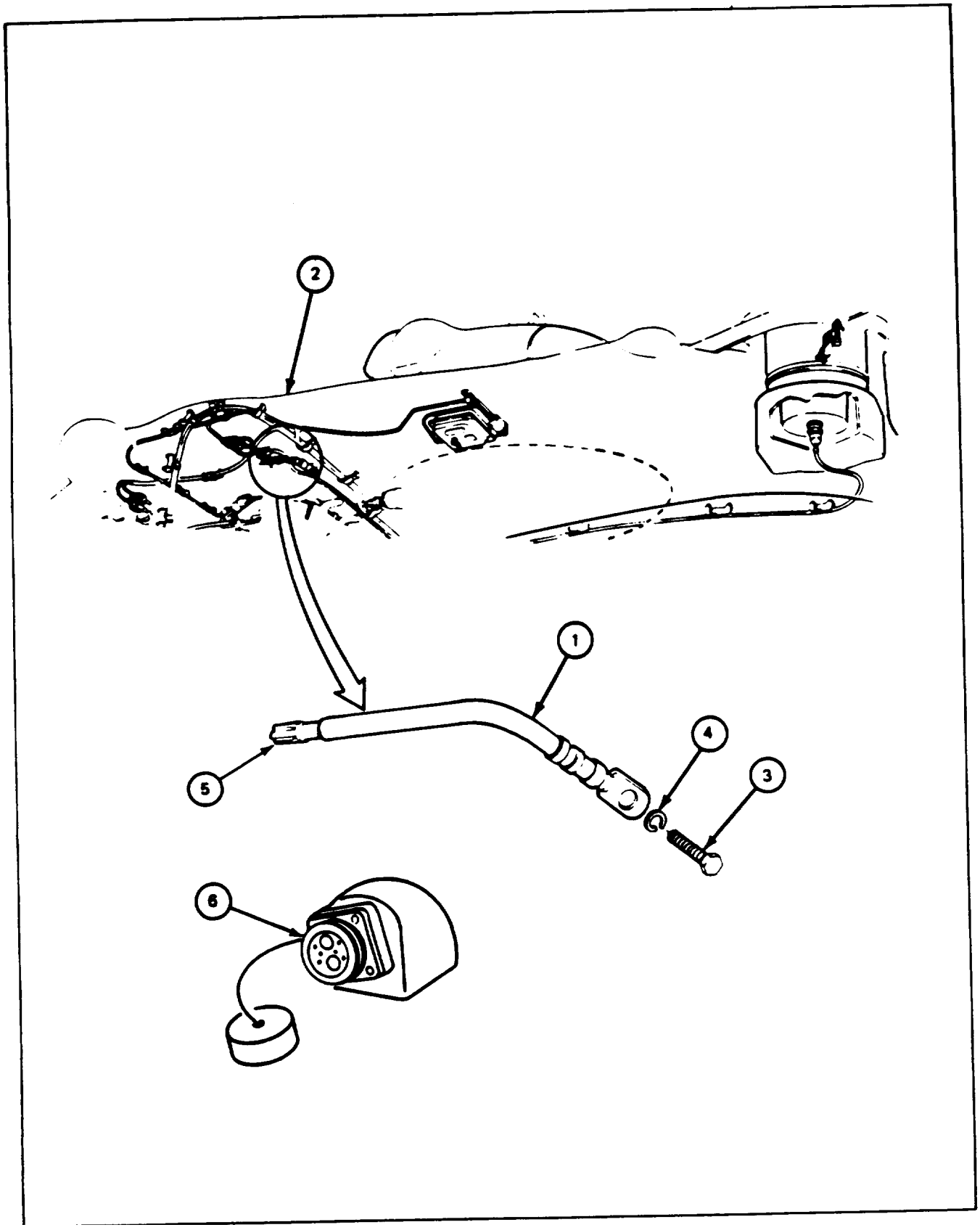
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Searchlight Connector	FO-5	4

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Receptacle for searchlight cable plug removed

FRAME 1

Step	Procedure
1.	Pull end of cable (1) with lug through hole in receptacle housing (2).
2.	Using socket wrench, put screw (3) and lockwasher (4) through cable lug (1) to turret (2).
3.	Using round nose pliers, pull electrical connector (5) into cable (1) and into receptacle (6).
	GO TO FRAME 2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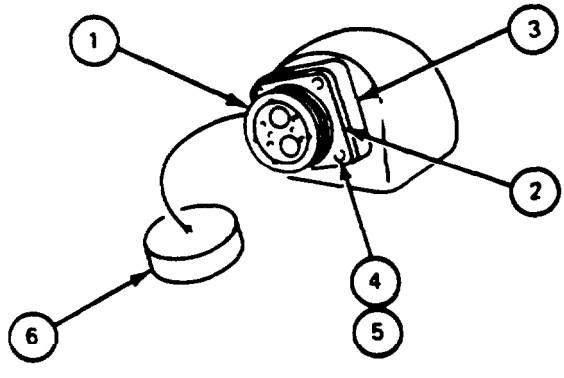
68-3. SEARCHLIGHT GROUND LEAD INSTALLATION PROCEDURE (CONT)

FRAME 2

Step	Procedure
1.	Using screwdriver, connect receptacle (1) and gasket (2) to adapter (3), with four screws (4) and four washers (5).
2.	Screw on dust cap (6).
3.	Safety wire four screws (4) (JPG).
	END OF TASK



68-4. SEARCHLIGHT (AN/VVS-2) CONTROL BOX MOUNTING HARDWARE REMOVAL PROCEDURE

TOOLS: 7/16 in. socket (3/8 in. drive)
3/8 in. drive ratchet
5 in. extension (3/8 in. drive)

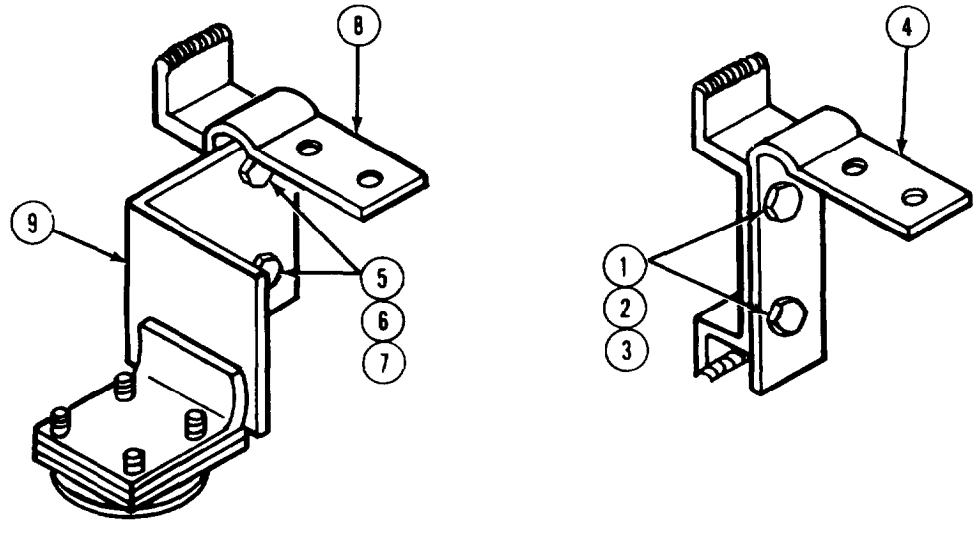
PERSONNEL: One

REFERENCE: JPG for procedure to disconnect electrical connectors

PRELIMINARY PROCEDURE: Remove searchlight control box (para 68-6)

FRAME 1

STEP	PROCEDURE
1.	Using socket wrench, remove two screws (1), two washers (2), and two nuts (3) that attach bracket (4) to turret wall.
2.	Remove bracket (4).
3.	Using socket wrench, remove two screws (5), two washers (6), and two nuts (7) that attach brackets (8) and (9) to turret wall.
4.	Remove brackets (8) and (9).
	END OF TASK



68-5. SEARCHLIGHT (AN/VVS-2) CONTROL BOX MOUNTING HARDWARE INSTALLATION PROCEDURE

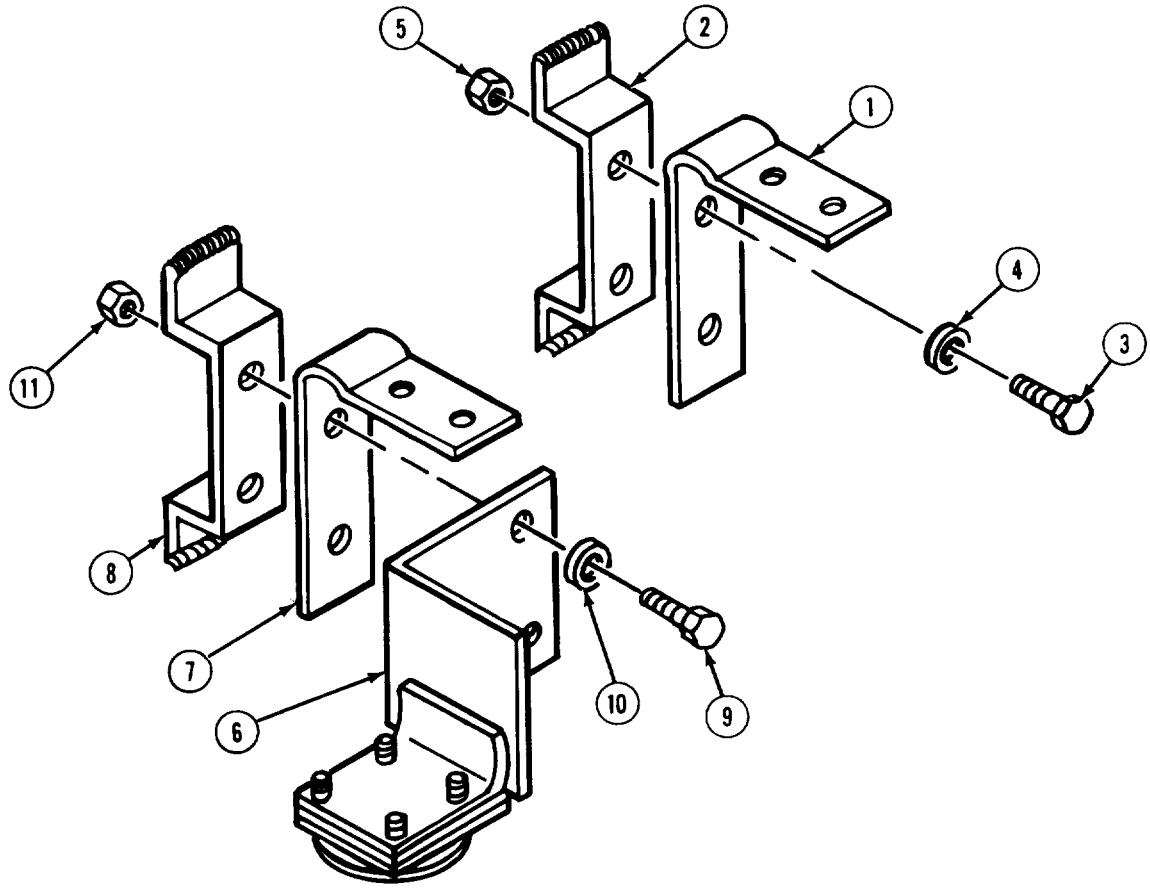
TOOLS: 7/16 in. socket (3/8 in. drive)
3/8 in. drive ratchet
1/2 in. combination wrench

PERSONNEL: One

68-5. SEARCHLIGHT (AN/VVS-2) CONTROL BOX MOUNTING HARDWARE INSTALLATION PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
1.	Place bracket (1) in mounting position on bracket (2) on turret wall.
2.	Using socket wrench, put in two screws (3), two washers (4) and two nuts (5).
3.	Place brackets (6) and (7) in mounting position on bracket (8) on turret wall.
4.	Using socket and combination wrenches, put in two screws (9), two washers (10), and two nuts (11).
	END OF TASK



68-6. SEARCHLIGHT (AN/VVS-2) CONTROL BOX REMOVAL PROCEDURE

TOOLS: 7/16 in. combination wrench
Adjustable hook spanner wrench

PERSONNEL: One

REFERENCE: JPG for procedure to disconnect electrical connectors

EQUIPMENT LOCATION INFORMATION:

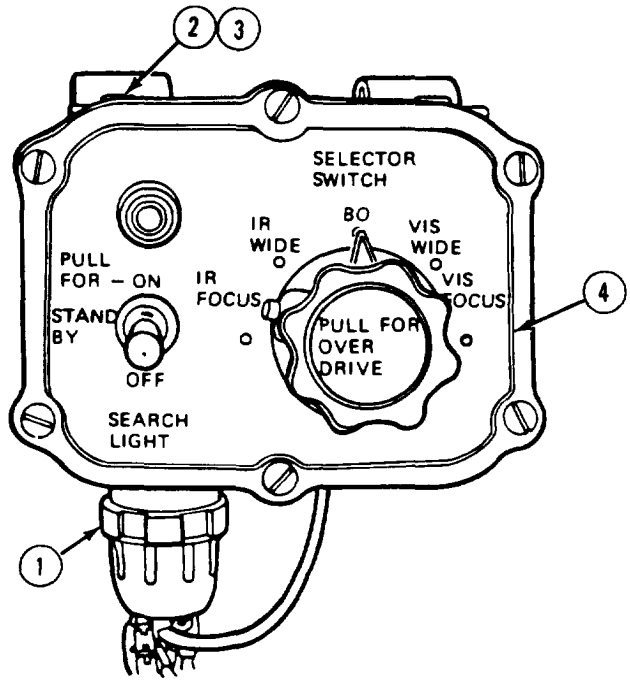
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

68-6. SEARCHLIGHT (AN/VVS-2) CONTROL BOX REMOVAL PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
1.	Using spanner wrench, disconnect electrical connector (1) (JPG).
2.	Using wrench, remove four mounting screws (2) and four lockwashers (3) that attach control box (4) to turret wall.
3.	Remove control box (4) from turret wall.
	END OF TASK



SEARCHLIGHT CONTROL BOX (AN/VVS-1)

68-7. SEARCHLIGHT (AN/VVS-2) CONTROL BOX INSTALLATION PROCEDURE

TOOLS: 7/16 in. socket (3/8 in. drive)
5 in. extension (3/8 in. drive)
3/8 in. drive ratchet
Adjustable hook spanner wrench

PERSONNEL: One

REFERENCES: JPG for procedure to connect electrical connectors
TM 9-2350-222-10 for procedure to operate searchlight

EQUIPMENT LOCATION INFORMATION:

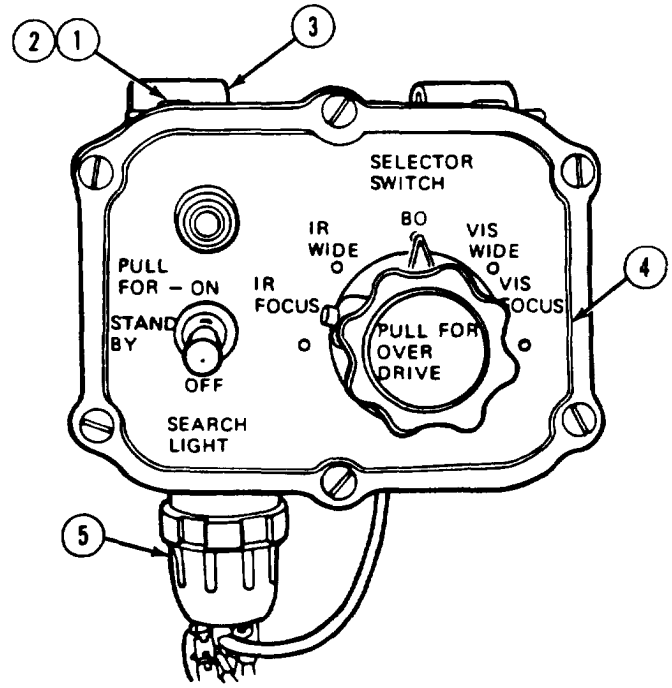
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

68-7. SEARCHLIGHT (AN/VVS-2) CONTROL BOX INSTALLATION PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
1.	Put four screws (1) and four lockwashers (2) through mounting bracket (3) into control box (4).
2.	Using socket wrench, tighten screws (1).
3.	Connect electrical connector (5) (JPG).
4.	Using spanner wrench, tighten electrical connector (5).
	NOTE **Follow-on Maintenance Action Required:** **Operate searchlight to make sure it works properly (TM-10).**
	END OF TASK



68-8. SEARCHLIGHT (AN/VVS-3A) REMOTE CONTROL BOX REMOVAL PROCEDURE

TOOL: Cross-tip screwdriver (Phillips)

PERSONNEL: One

REFERENCE: JPG for procedure to disconnect electrical connector

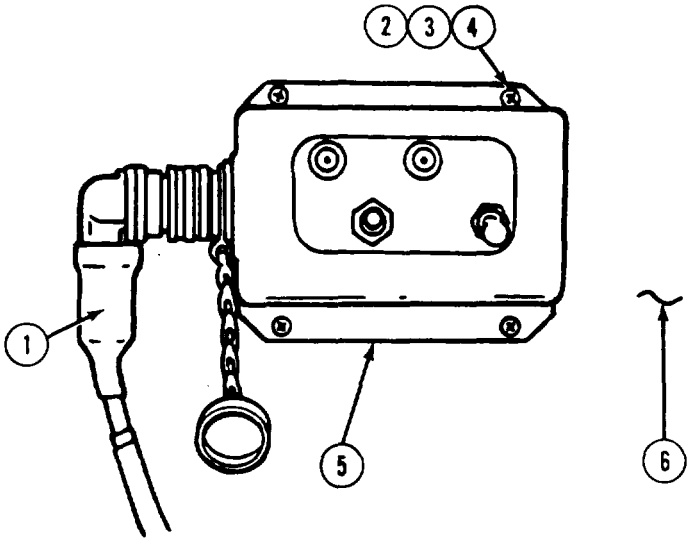
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Searchlight Remote Control Box	FO-2	1A

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF.

FRAME 1

STEP	PROCEDURE
1.	Disconnect electrical connector (1) (JPG).
2.	Using screwdriver, loosen four screws (2).
3.	Remove four screws (2), four lockwashers (3), and four flat washers (4).
4.	Remove control box (5) from mounting plate (6).
	END OF TASK



68-9. SEARCHLIGHT (AN/VVS-3A) REMOTE CONTROL BOX INSTALLATION PROCEDURE

TOOLS: Cross-tip screwdriver (Phillips)

SUPPLIES: Lockwasher (MS 35338-43) (4 Required)

PERSONNEL: One

REFERENCES: JPG for procedure to connect electrical connectors
TM 9-2350-222-10 for procedure to operate searchlight remote control box

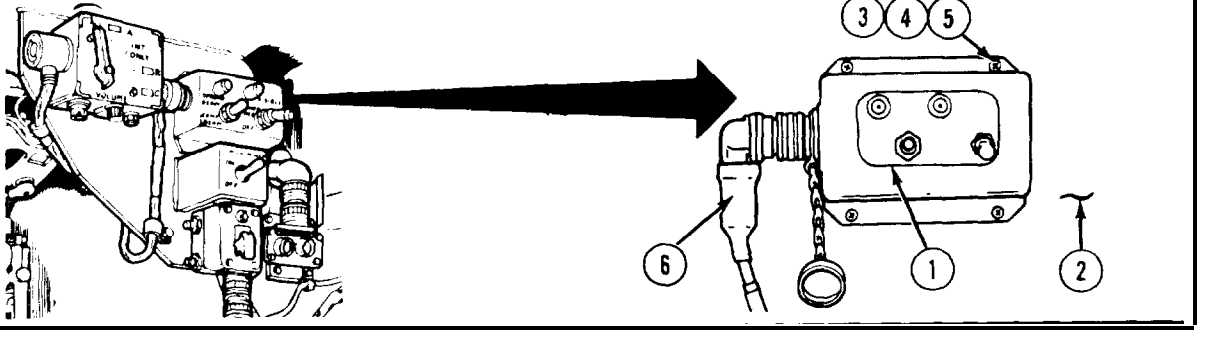
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Searchlight Remote Control Box	FO-2	1A

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

STEP	PROCEDURE
1.	Place remote control box (1) on mounting plate (2) and align mounting holes.
2.	Put in four screws (3), four lockwashers (4), and four flat washers (5).
3.	Using screwdriver, tighten four screws (3).
4.	Connect electrical connector (6) (JPG).
	NOTE Follow-on Maintenance Action Required: Operate searchlight to make sure it works properly (TM-10).
	END OF TASK



68-10. SEARCHLIGHT (AN/VVS-3A) MASTER CONTROL BOX REMOVAL PROCEDURE

TOOLS: 9/16 in. combination wrench
1/2 in. open end wrench

PERSONNEL: One

REFERENCE: JPG for procedure to disconnect electrical connectors

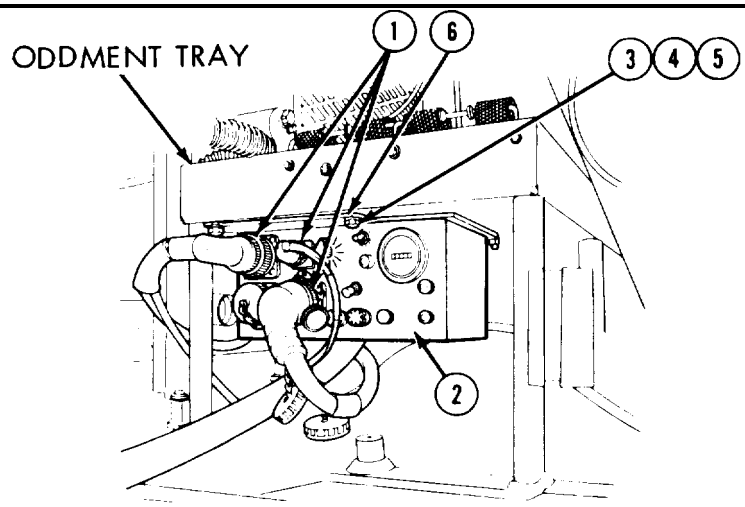
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Oddment Tray	FO-3	10
Searchlight Master Control Panel	FO-3	10A

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

STEP	PROCEDURE
1.	Disconnect three electrical connectors (1) from front of master control box (2) (JPG).
2.	Using combination and open end wrenches, remove four screws (3), four nuts (4), and four lockwashers (5) holding master control box (2) in mount (6).
3.	Remove master control box (2).
	END OF TASK



68-11. SEARCHLIGHT (AN/VVS-3A) MASTER CONTROL BOX INSTALLATION PROCEDURE

TOOLS: 9/16 in. combination wrench
1/2 in. open end wrench

PERSONNEL: One

REFERENCES: JPG for procedure to connect electrical connectors
TM 9-2350-222-10 for procedure to operate searchlight master control box

EQUIPMENT LOCATION INFORMATION:

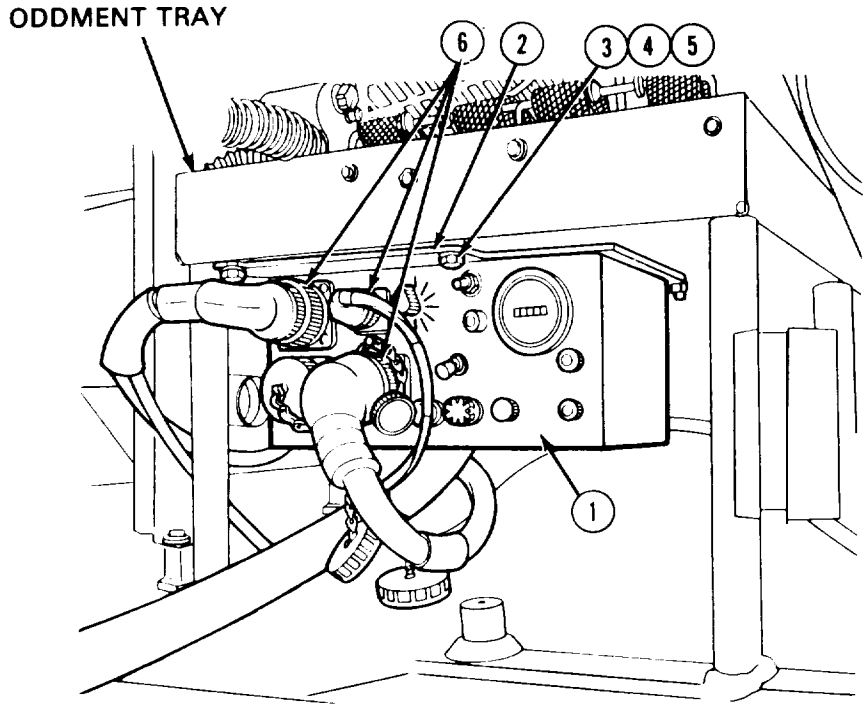
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Oddment Tray	PO-3	10
Searchlight Master Control Panel	FO-3	10A

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

68-11. SEARCHLIGHT (AN/VVS-3A) MASTER CONTROL BOX INSTALLATION PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
1.	Line up mounting holes in master control box (1) with mount (2).
2.	Put in four screws (3), four nuts (4), and four lockwashers (5) through master control box mounting holes and mount.
3.	Using combination and open end wrenches, tighten nuts (4).
4.	Connect three electrical connectors (6) (JPG).
	NOTE Follow-or Maintenance Action Required: Operate searchlight to make sure it works properly (TM-1O).
	END OF TASK



CHAPTER 68.1

SMOKE GRENADE LAUNCHER

68.1-1 MAINTENANCE PROCEDURES INDEX

	Equipment Item	Tasks: Removal	Tasks: Installation
1.	Launcher Power Box	68.1-2	68.1-3
2.	Launcher Pushbutton Unit	68.1-4	68.1-5
3.	Main Wiring Harness	68.1-6	68.1-7
4.	Discharger Harness	68.1-8	68.1-9
5.	Discharger	68.1-10	68.1-11
6.	Discharger Dummy Receptacle	68.1-12	68.1-13
7.	Grenade Stowage Boxes	68.1-14	68.1-15

68.1-2 LAUNCHER POWER BOX REMOVAL PROCEDURE

TOOLS: 7/16 in. socket (3/8 in. drive)
3/8 in. drive ratchet
7/16 in. combination wrench

PERSONNEL: One

REFERENCE: JPG for procedure to disconnect electrical connectors

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Interphone and Control Box	FO-2	1

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTIONS:

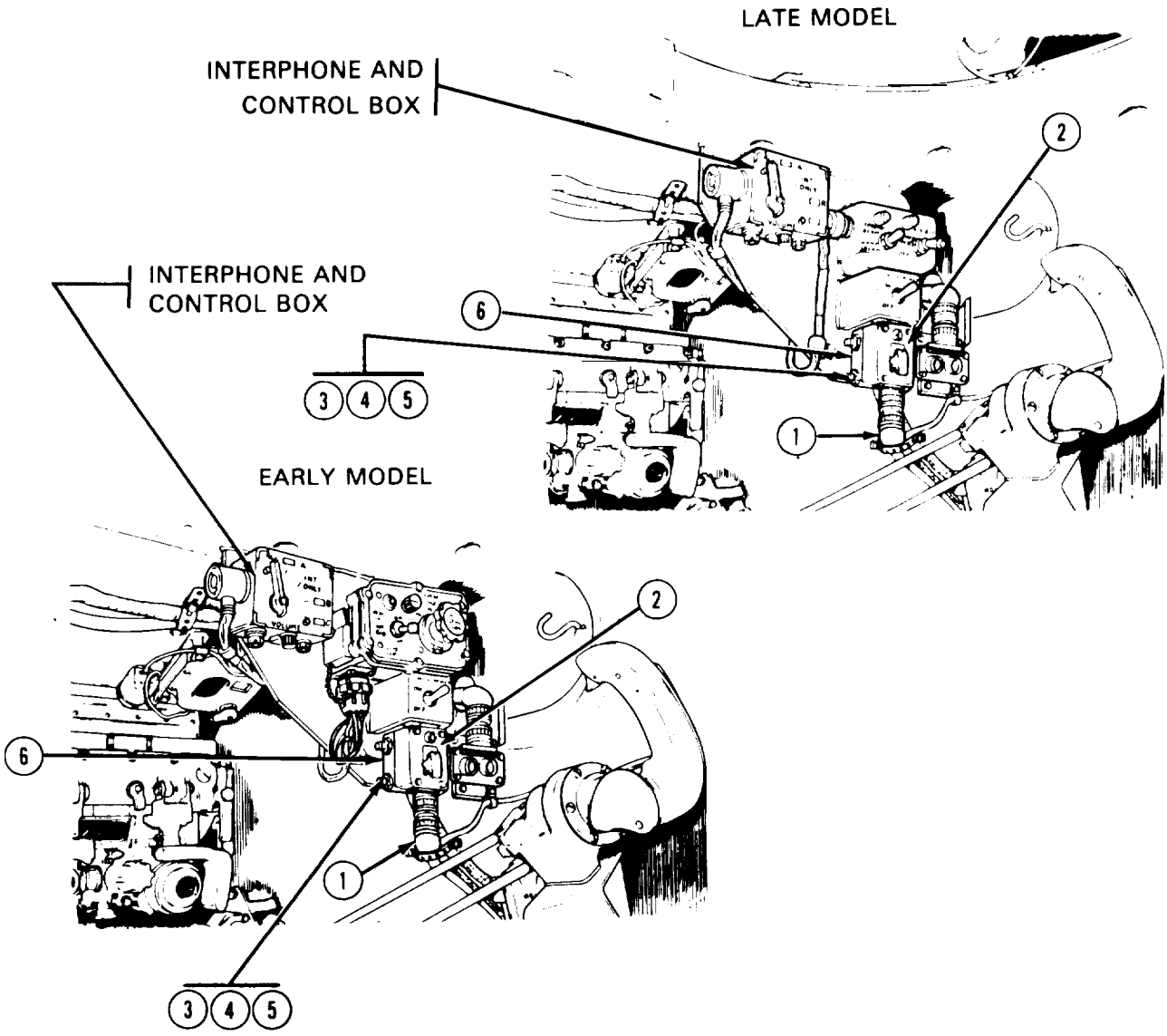
WARNING

Make sure there are no smoke grenades in discharger. Accidental firing of grenades could hurt or kill you.

68.1-2. LAUNCHER POWER BOX REMOVAL PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
1.	Disconnect electrical connector (1) from launcher power box (2) (JPG).
2.	Using socket wrench and combination wrench, remove two nuts (3), two lockwashers (4), and two screws (5) that attach launcher power box (2) to mounting bracket (6).
3.	Remove launcher power box (2) from mounting bracket (6).
	END OF TASK



68.1-3. LAUNCHER POWER BOX INSTALLATION PROCEDURE

TOOLS: 7/16 in. socket (3/8 in. drive)
3/8 in. drive ratchet
7/16 in. combination wrench

PERSONNEL: One

REFERENCES: JPG for procedure to connect electrical connectors
TM 9-2350-222-20-2-1 for procedure to functionally check smoke grenade launcher system

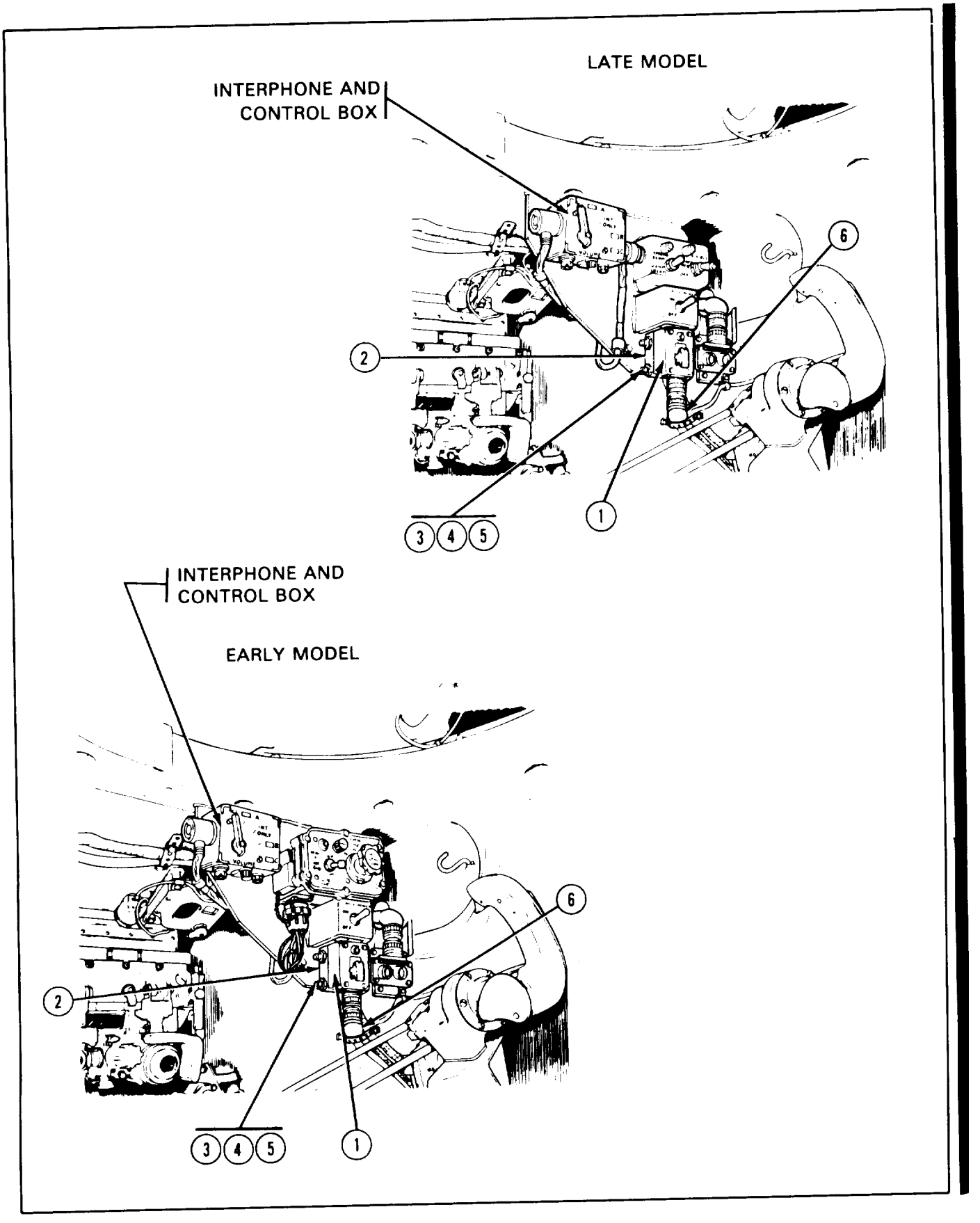
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's "Master Control Panel	FO-3	11
Interphone and Control Box	FO-2	1

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

STEP	PROCEDURE
1.	Using hand, place power box (1) in mounting bracket (2) and line up mounting holes.
2.	Put two screws (3) through mounting holes in power box (1) and bracket (2).
3.	Place one lockwasher (4) and one nut (5) on each screw (3).
4.	Using socket wrench and combination wrench, tighten two nuts (5).
5.	Connect electrical connector (6) (JPG).
	NOTE Follow-on Maintenance Action Required Perform functional check of smoke grenade launcher system (TM-20-2-1, para 3-5.1).
	END OF TASK


LATE MODEL
INTERPHONE AND CONTROL BOX
6
2
1
3
4
5
INTERPHONE AND CONTROL BOX
EARLY MODEL
6
2
3
4
5
1

68.1-4. LAUNCHER PUSHBUTTON UNIT REMOVAL PROCEDURE

TOOLS: 7/16 in. socket (3/8 in. drive)
3/8 in. drive ratchet

PERSONNEL: One

REFERENCE: JPG for procedure to disconnect electrical connectors

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Interphone and Control Box	FO-2	1

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTIONS:

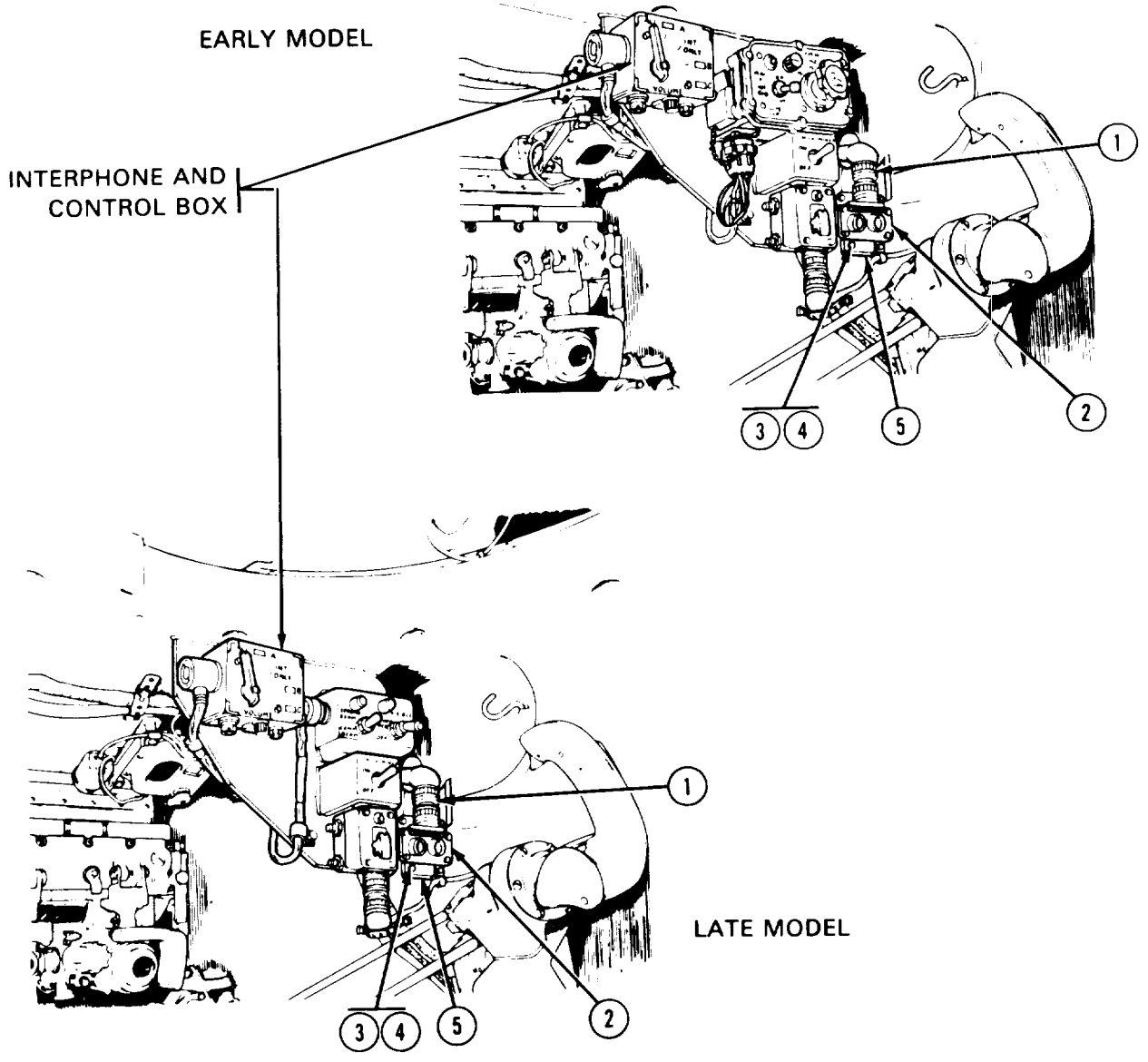
WARNING

Make sure there are no smoke grenades in discharger. Accidental firing of grenades could hurt or kill you.

68.1-4. LAUNCHER PUSHBUTTON UNIT REMOVAL PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
1.	Disconnect electrical connector (1) from pushbutton unit (2) (JPG).
2.	Using socket wrench, remove four mounting screws (3) and four lockwashers (4).
3.	Remove pushbutton unit (2) from bracket (5).
	END OF TASK



68.1-5. LAUNCHER Pushbutton UNIT INSTALLATION PROCEDURE

TOOLS: 7/16 in. socket (3/8 in. drive)
3/8 in. drive ratchet

PERSONNEL: One

REFERENCES: JPG for procedure to connect electrical connectors
TM 9-2350-222-20-2-1 for procedure to functionally check smoke grenade launcher system

EQUIPMENT LOCATION INFORMATION:

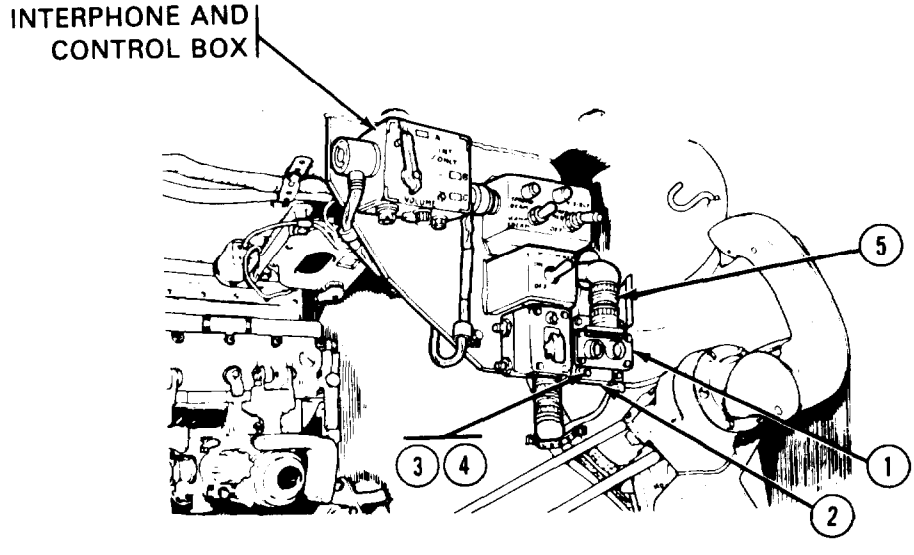
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Interphone and Control Box	FO-2	1

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

68.1-5. LAUNCHER PUSHBUTTON UNIT INSTALLATION PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
1.	Using hands, place pushbutton unit (1) on mounting bracket (2) and line up holes.
2.	Using fingers, install four screws (3) and four lockwashers (4).
3.	Using wrench, tighten four screws (3).
4.	Install electrical connector (5) (JPG).
	NOTE Follow-on Maintenance Action Required: Perform functional check of smoke grenade launcher system (TM-20-2-1, **para 3-5.1)**
	END OF TASK



68.1-6. MAIN WIRING HARNESS REMOVAL PROCEDURE

TOOLS: 7/16 in. combination wrench
Flat-tip screwdriver

PERSONNEL: One

REFERENCE: JPG for procedure to disconnect electrical connectors a remove wires from connector. TM 9-2350-222-20-2-3-2 for removal of 7.62mm ready round ammunition box and cover.

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Commander's Domelight	FO-3	3
Smoke Grenade Discharger	FO-5	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

PRELIMINARY PROCEDURES: Remove 7.62 mm ready round ammunitions box and cover.

GENERAL INSTRUCTIONS:

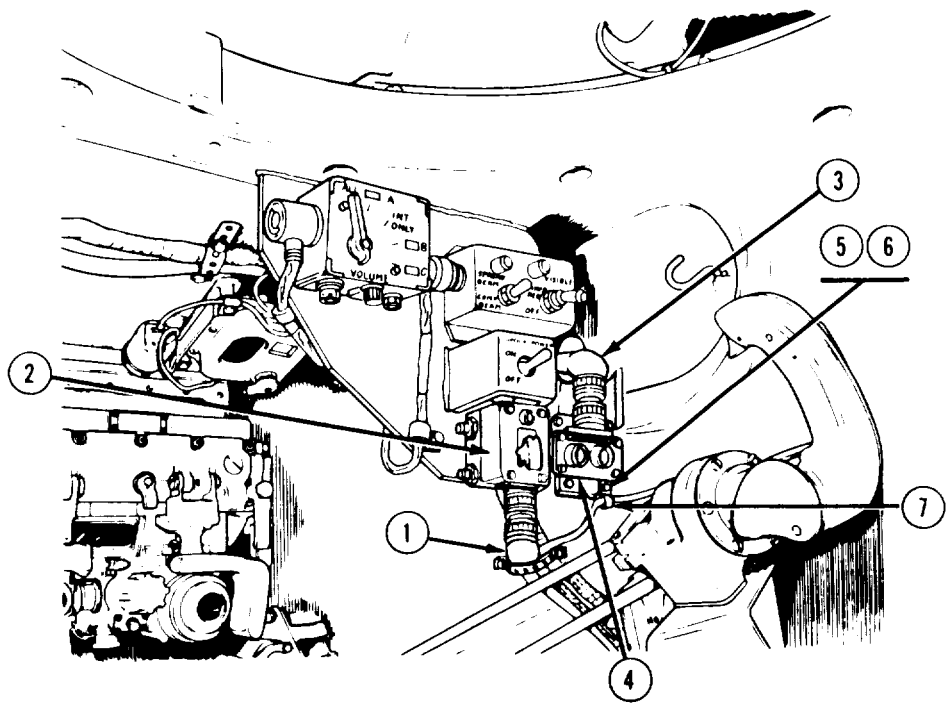
WARNING

Make sure there are no smoke grenades in discharger. Accidental firing of grenades could hurt or kill you.

68.1-6. MAIN WIRING HARNESS REMOVAL PROCEDURE (CONT)

FRAME 1

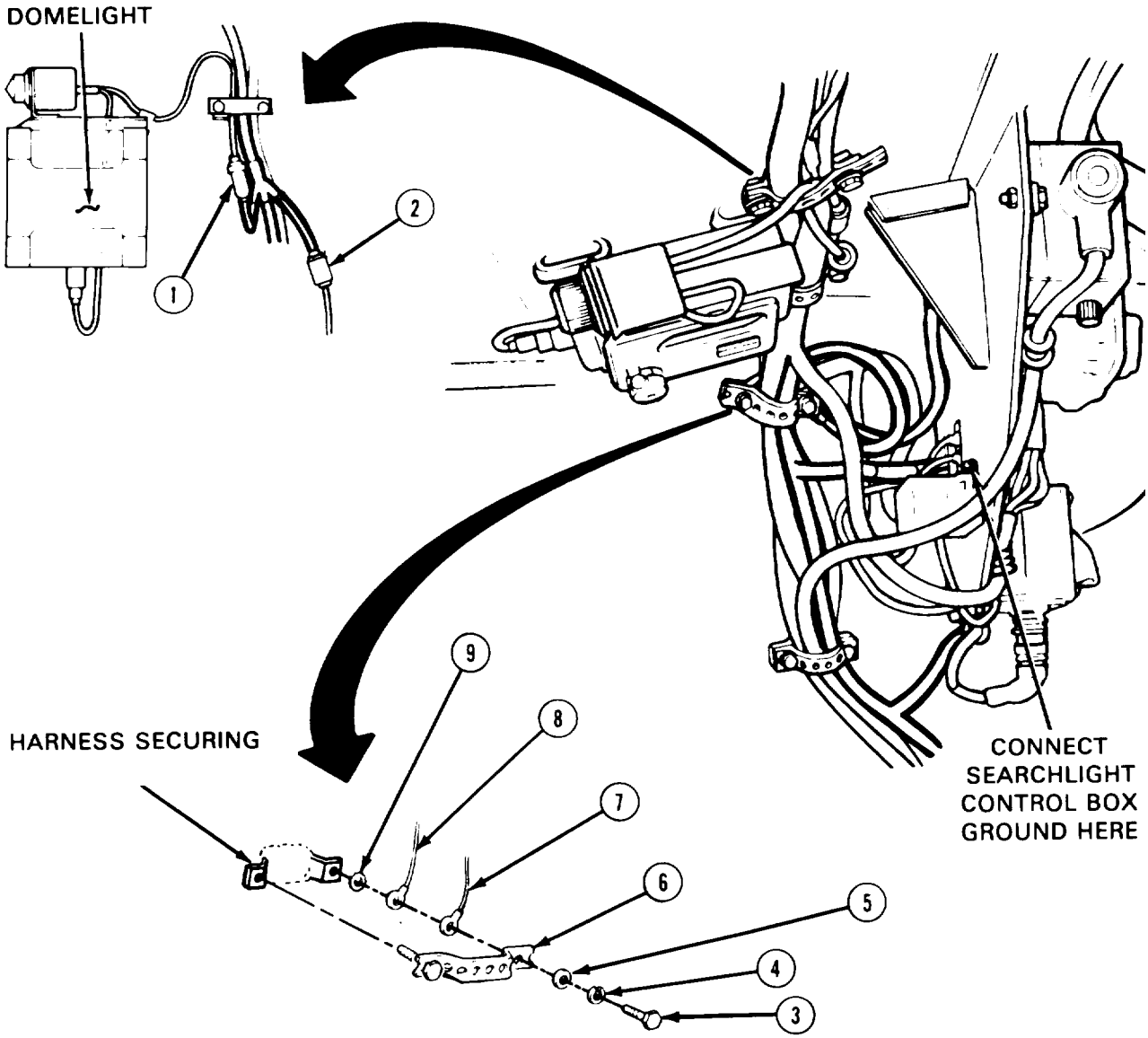
STEP	PROCEDURE
1.	Disconnect electrical connector P2 (1) from Power box (2) (JPG).
2.	Disconnect electrical connector P1 (3) from pushbutton unit (4) (JPG).
3.	Using 7/16 inch combination wrench, remove screw (5), lockwasher (6), and clamp (7) securing harness to bracket.
	GO TO FRAME 2



68.1-6. MAIN WIRING HARNESS REMOVAL PROCEDURE (CONT)

FRAME 2

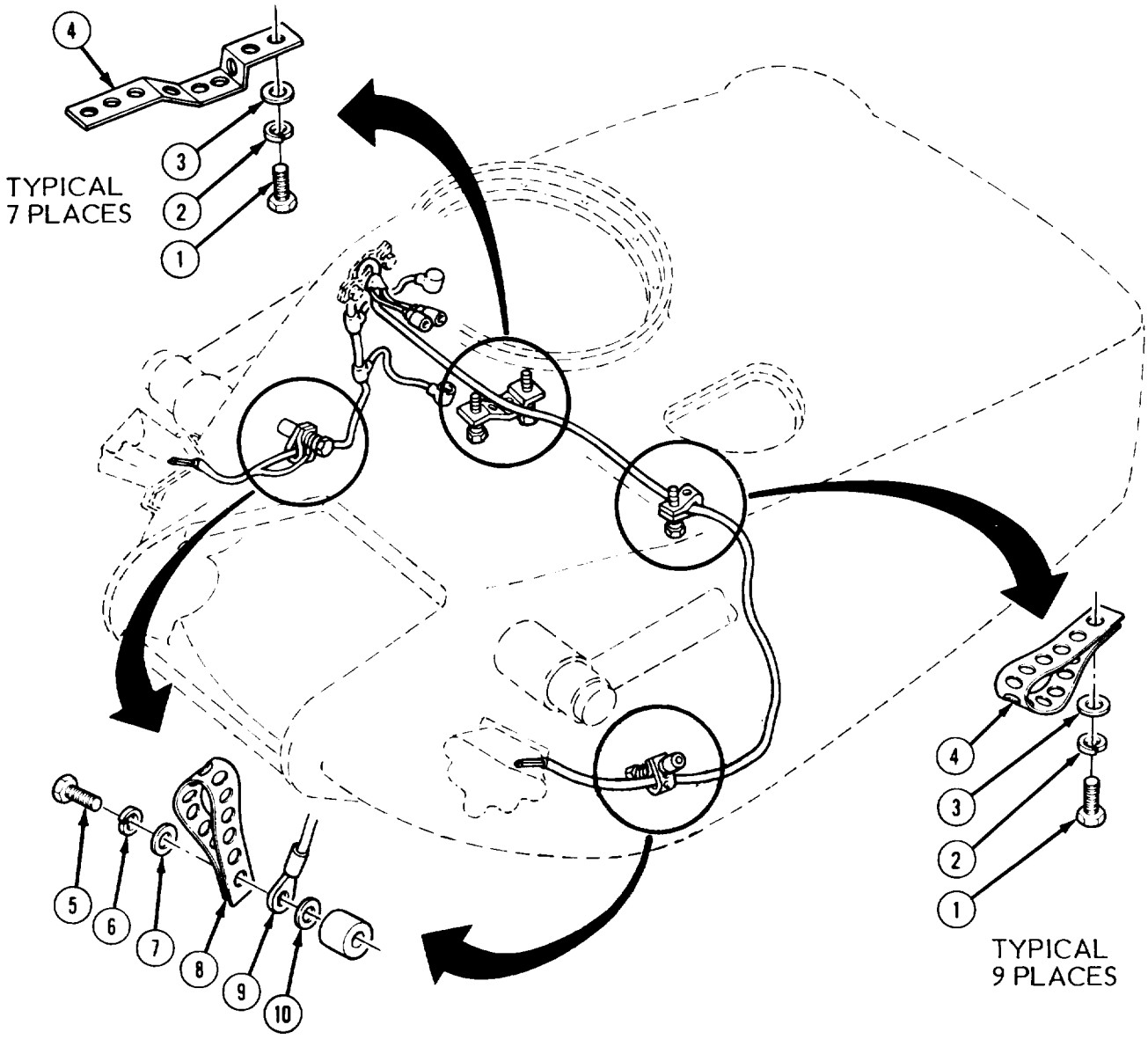
STEP	PROCEDURE
1.	Disconnect electrical connector P3 (1) and P4 (2) (JPG).
2.	Using 7/16 inch combination wrench, remove screw (3), lockwasher (4), flat washer (5), one end of strap (6), grenade power box ground lead (7), resistor ground lead (8), and starwasher (9).
3.	Remove harness from strap (6).
	GO TO FRAME 3



68.1-6. MAIN WIRING HARNESS REMOVAL PROCEDURE (CONT)

FRAME 3

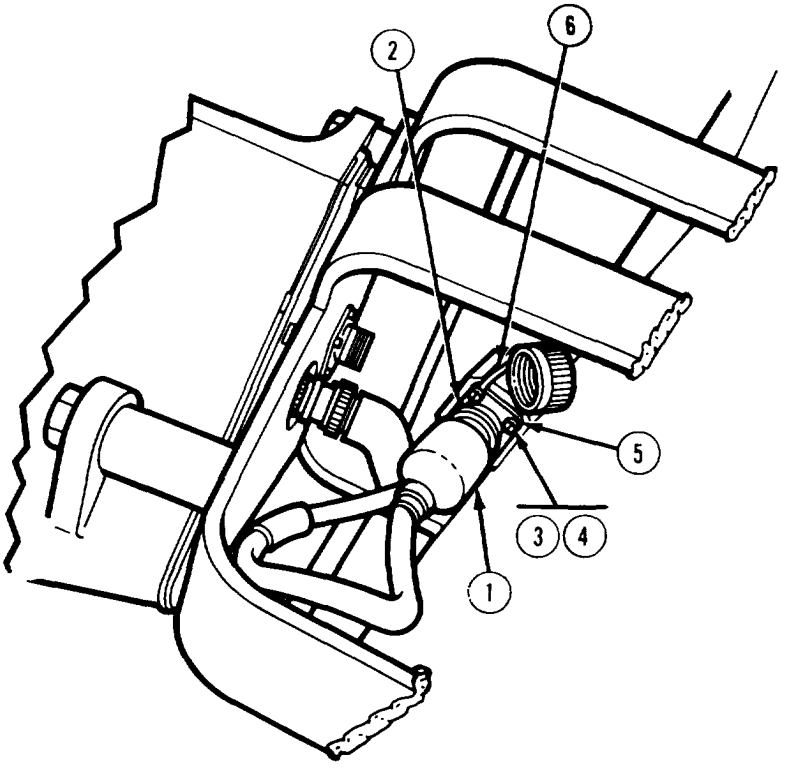
STEP	PROCEDURE
1.	Following routing of harness and using 7/16 inch wrench, remove screws (1), lockwasher (2), and flat washer (3) securing straps (4), and remove harness.
2.	Using 7/16 inch wrench, remove screws (5) lockwashers (6), flat washers (7), straps (8), ground wires (9), and lockwashers (10).
	GO TO FRAME 4



68.1-6. MAIN WIRING HARNESS REMOVAL PROCEDURE (CONT)

FRAME 4

STEP	PROCEDURE
1.	On outside of turret, disconnect discharger harness connectors (1) from housing connectors (2) (JPG).
2.	Using screwdriver, remove four screws (3) and lockwashers (4) securing connector (2), gasket (5) and cap assembly (6) to housing.
3.	Pull connector (2) out of housing.
4.	Remove electrical wires from connector (2) (JPG).
5.	Remove connector (2) and gasket (5).
6.	From inside of turret, carefully pull harness into turret and remove harness from tank.
	END OF TASK



68.1-7. MAIN WIRING HARNESS INSTALLATION PROCEDURE

TOOLS: 7/16 in. combination wrench
Cross-tip screwdriver

PERSONNEL: One

REFERENCES: JPG for procedure to connect electrical connectors and install wires into connectors
TM 9-2350-222-20-2-1 for procedure to functionally check smoke grenade launcher system

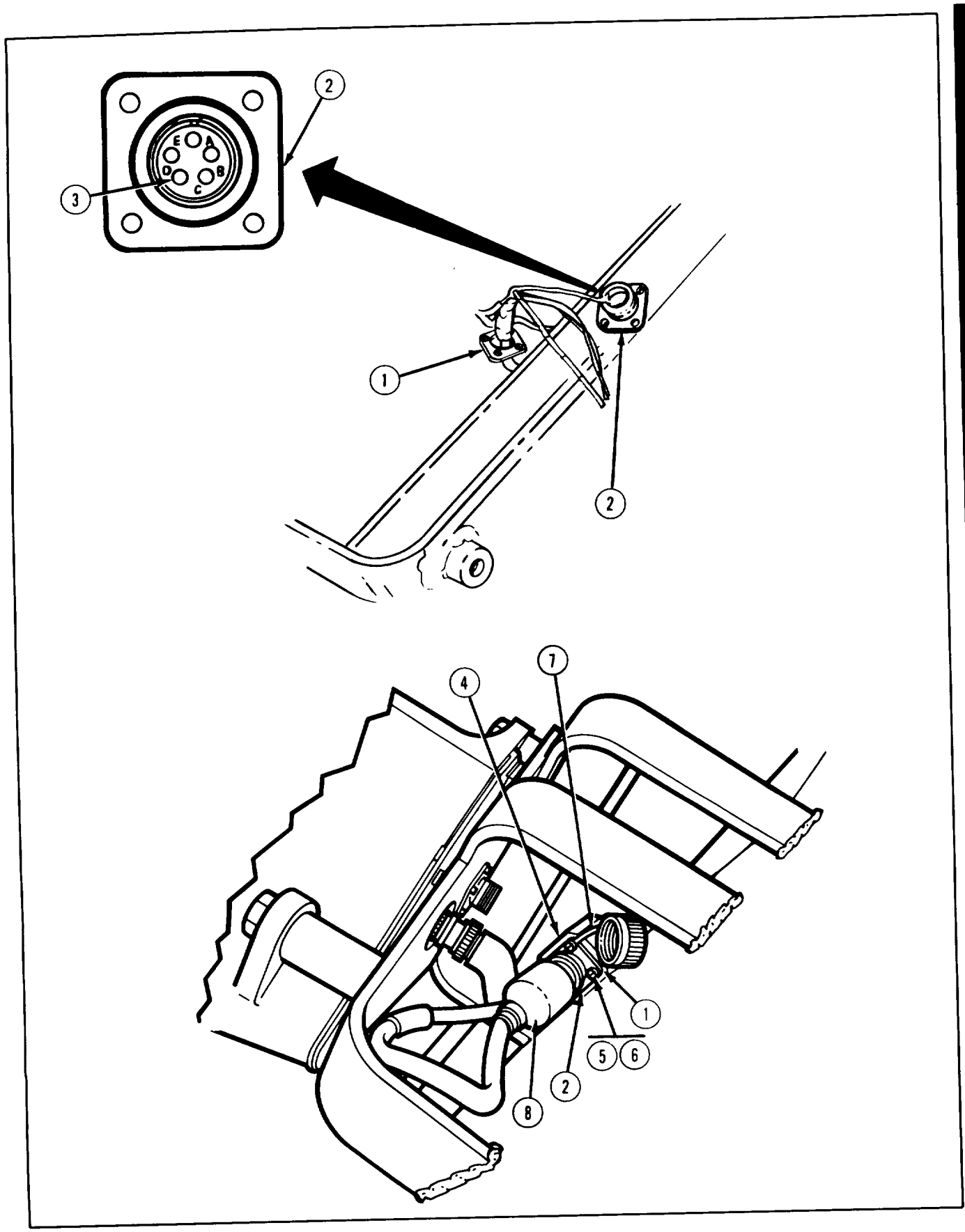
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Commander's Domelight	FO-3	3
Smoke Grenade Discharger	FO-5	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1

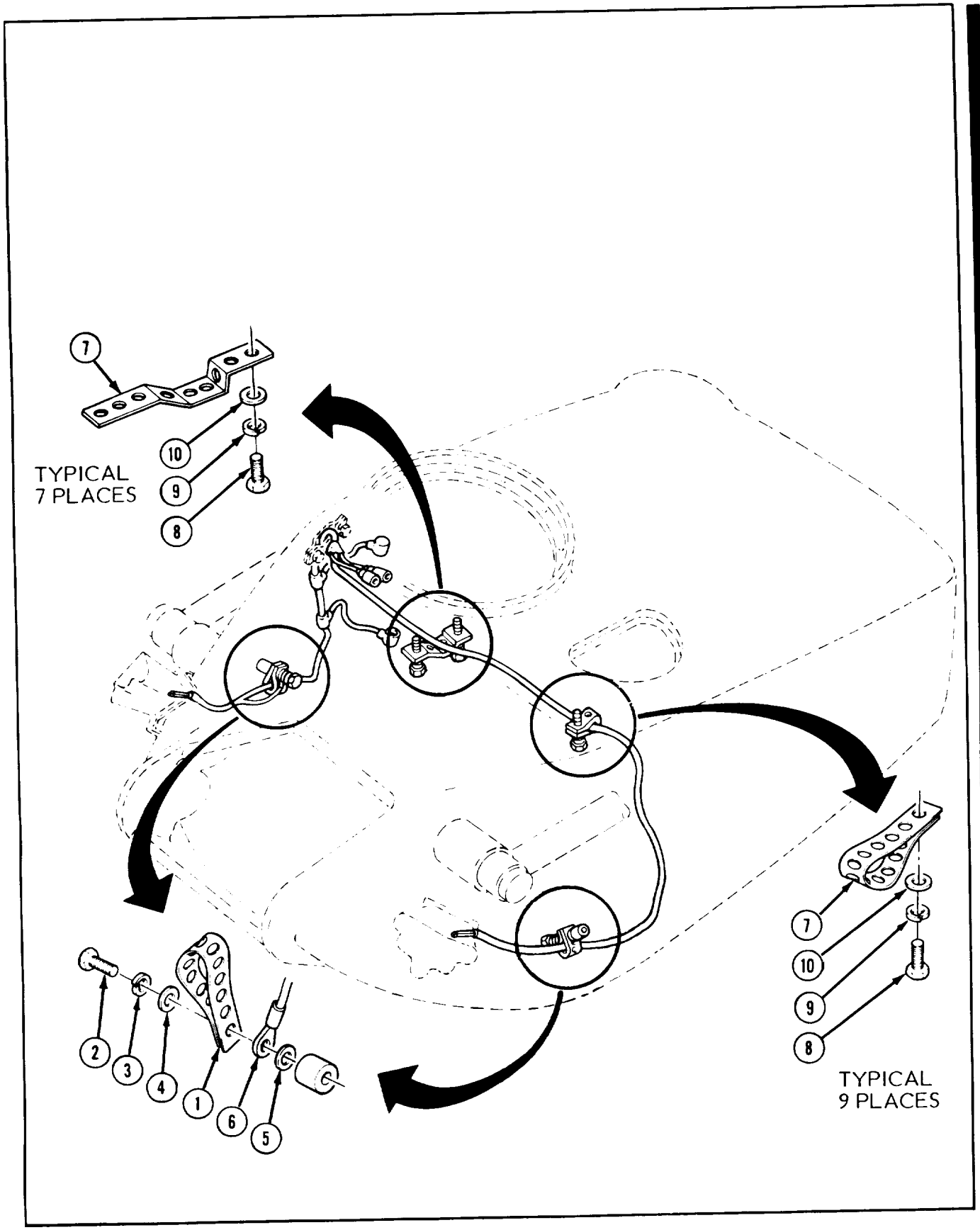
STEP	PROCEDURE
1.	Position harness into vehicle and carefully push harness into housing access hole until harness is outside of turret, on each side of turret.
2.	Install gasket (1) over harness wires.
3.	Insert harness wires into connector (2) (JPG).
4.	Install dummy socket (3) into position 'D' of connector (2).
5.	Position connector (2) and gasket (1) to housing (4).
6.	Using screwdriver, install four screws (5) and lockwashers (6) to secure connector (2), cap assembly (7), and gasket (1) to housing (4).
7.	Connect discharger harness connectors (8) to connectors (2) (JPG).
	GO TO FRAME 2


2
3
E
A
D
B
C
1
2
4
7
1
5
6
2
8

68.1-7. MAIN WIRING HARNESS INSTALLATION PROCEDURE (CONT)

FRAME 2

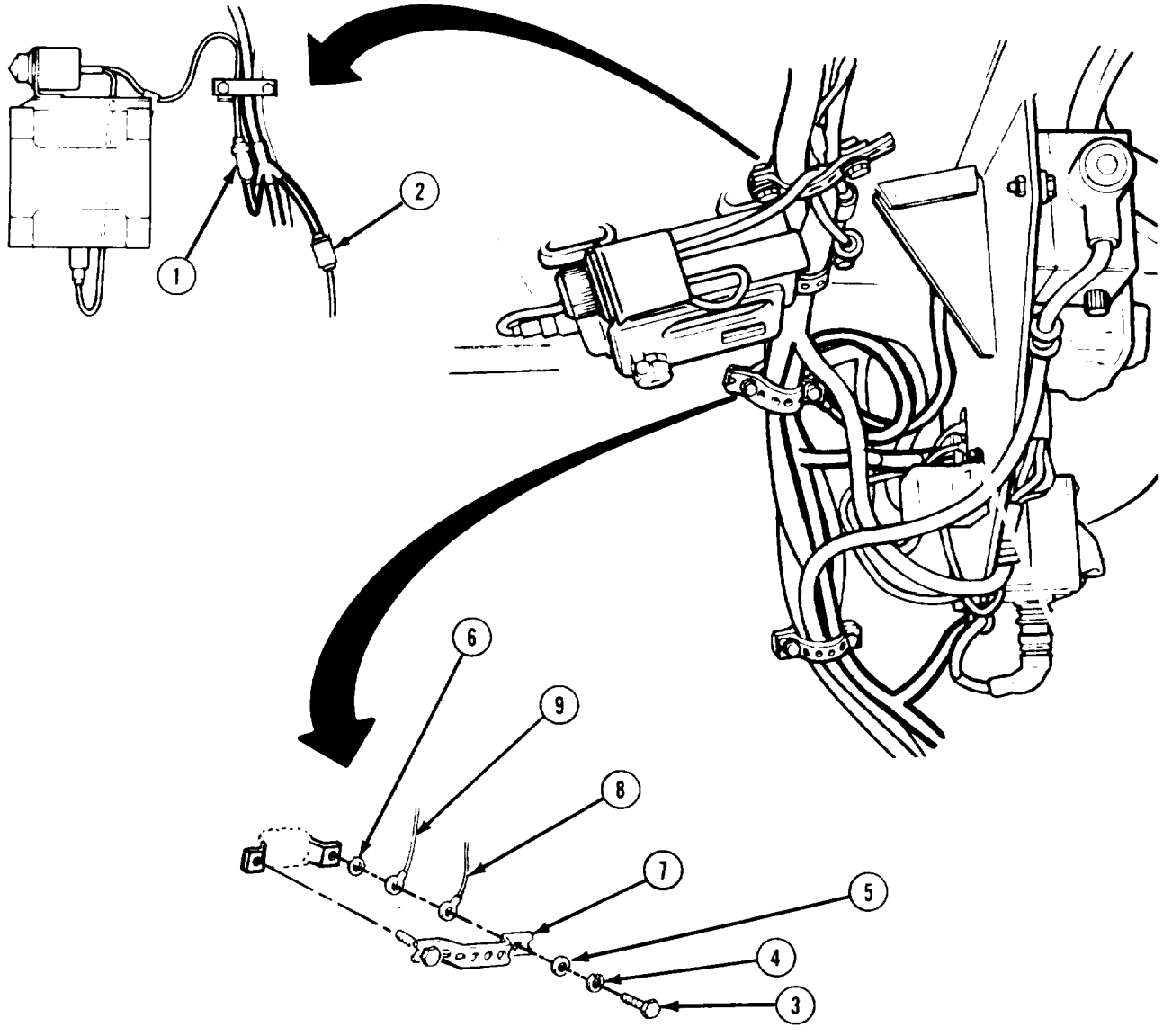
STEP	PROCEDURE
1	Inside turret: on each side of turret roof near housing access hole install straps (1) onto harness. Using 7/16 inch wrench, install screws (2), lockwashers (3), flat washers (4), and lockwashers (5) to secure straps (1) and ground wire (6).
2.	On left inside turret wall, install strap (7). Using 7/16 inch wrench, install screw (8), lockwasher (9) and flat washer (10) to secure strap (7).
3.	Route main harness (11) along existing harness on turret roof and secure harness (11) with existing screws (8), lockwashers (9), flat washers (10), and straps (7). **GO TO FRAME 3**


7
10
9
8
TYPICAL
7 PLACES
2
3
4
1
6
5
7
10
9
8
TYPICAL
9 PLACES

68.1-7 MAIN WIRING HARNESS INSTALLATION PROCEDURE (CONT)

FRAME 3

STEP	PROCEDURE
1.	Connect electrical connectors P3 (1) to J3 and P4 (2) to J4 (JPG).
2.	Using 7/16 inch wrench, install screw (3), lockwashers (4), flat washer (5), and starwasher (6) to secure one end of strap (7), grenade power box ground lead (8), and resistor ground lead (9).
	GO TO FRAME 4



68.1-7. MAIN WIRING HARNESS INSTALLATION PROCEDURE (CONT)

FRAME 4

STEP	PROCEDURE
1.	Feed connector P1 (1) through hole in bracket (2) and connect to pushbutton unit (3) (JPG).
2.	Connect connector P2 (4) to power box (5) (JPG).
3.	Install clamp (6) onto harness lead (7) and using 7/16 inch wrench, install screw (8) and lockwashers (9) to secure clamp (6) to bracket (2).

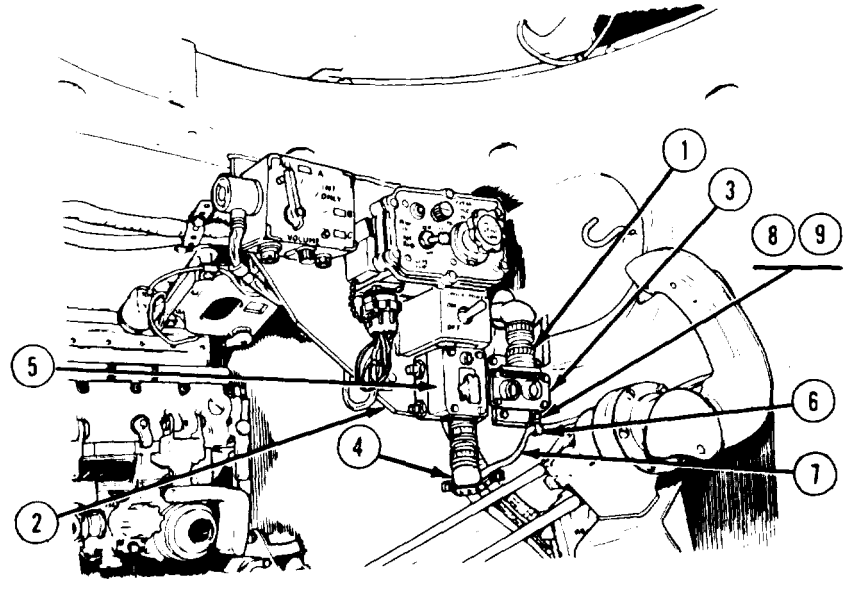
NOTE

Follow-on Maintenance Action Required:

Install 7.62 mm ready round ammunition box and cover (TM 20-2.3-2, para 27-3)

Perform functional check of smoke grenade launcher system (TM-20-2-1. para 3-5.1).

END OF TASK



68.1-8 DISCHARGER HARNESS REMOVAL PROCEDURE

TOOL: 7/16 in. combination wrench

PERSONNEL: One

REFERENCE: JPG for procedure to disconnect electrical connectors.

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Smoke Grenade Discharger	FO-5	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTION:

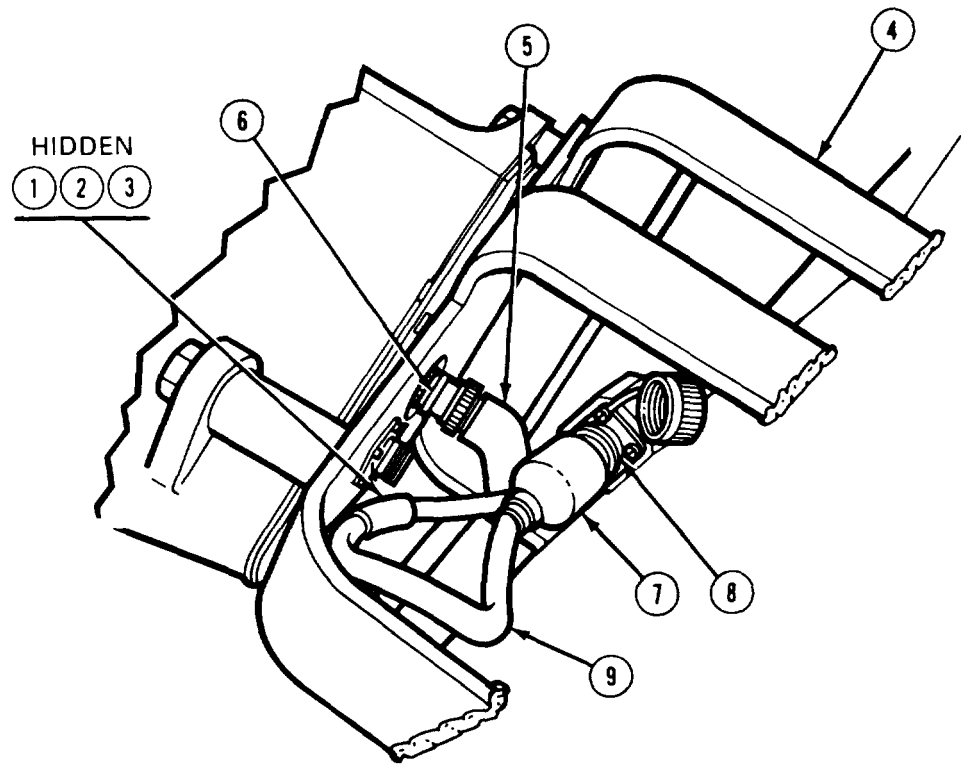
WARNING

Make sure there are no smoke grenades in discharger. Accidental firing of grenades could hurt or kill you.

68.1-8. DISCHARGER HARNESS REMOVAL PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
	NOTE Removal procedure for both the left end right discharger harness is the same.
1.	Using combination wrench, remove screw (1) and lockwasher (2) holding clamp (3) to bottom of discharger bracket (4).
2.	Disconnect electrical connector (5) from discharger connector (6) (JPG).
3.	Disconnect electrical connector (7) from housing connector (8) (JPG).
4.	Remove discharger harness (9).
	END OF TASK



68.1-9 DISCHARGER HARNESS INSTALLATION PROCEDURE

TOOL: 7/16 in. combination wrench

PERSONNEL: One

REFERENCES: JPG for procedure to connect electrical connectors
TM 9-2350-222-20-2-1 for procedure to functionally check smoke grenade launcher system

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Smoke Grenade Discharger	FO-5	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTION:

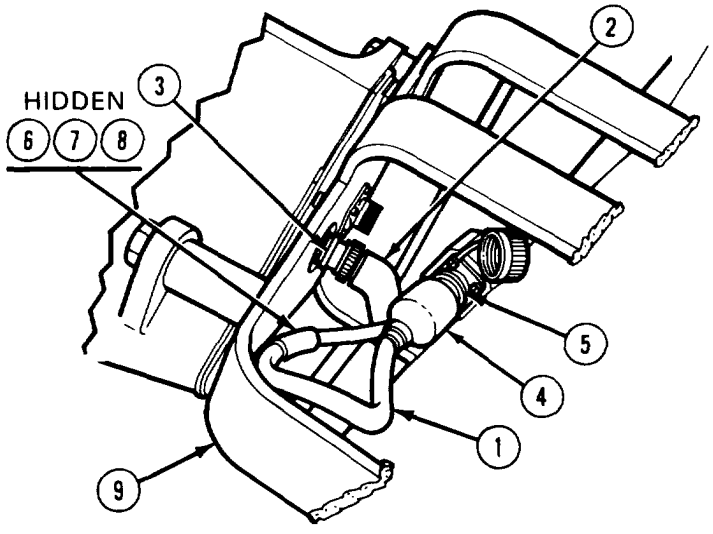
WARNING

Make sure there are no smoke grenades in discharger. Accidental firing of grenades could hurt or kill you.

68.1-9. DISCHARGER HARNESS INSTALLATION PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
	NOTE Installation procedures for both the left and right discharger harness are the same.
1.	Place discharger harness (1) on turret.
2.	Connect electrical connector (2) to discharger connector (3) (JPG).
3.	Connect electrical connector (4) to housing connector (5) (JPG).
4.	Using hands, install clamp (6) over discharger harness (1).
	NOTE During installation, loop harness (4) as shown in illustration.
5.	Using combination wrench, install screw (7) and lockwasher (8) through clamp (6) into bottom of discharger bracket (9).
	NOTE Follow-on Maintenance Action Required: Perform functional check of smoke grenade launcher system (TM 20-2-1, para 3-5.1).
	END OF TASK



68.1-10. SMOKE GRENADE DISCHARGERS (LEFT AND RIGHT) REMOVAL PROCEDURE

TOOLS: 3/4 in. socket (1/2 in. drive)
1/2 in. drive ratchet

PERSONNEL: One

REFERENCE: JPG for procedure to disconnect electrical connectors

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Smoke Grenade Discharger	FO-5	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTION:

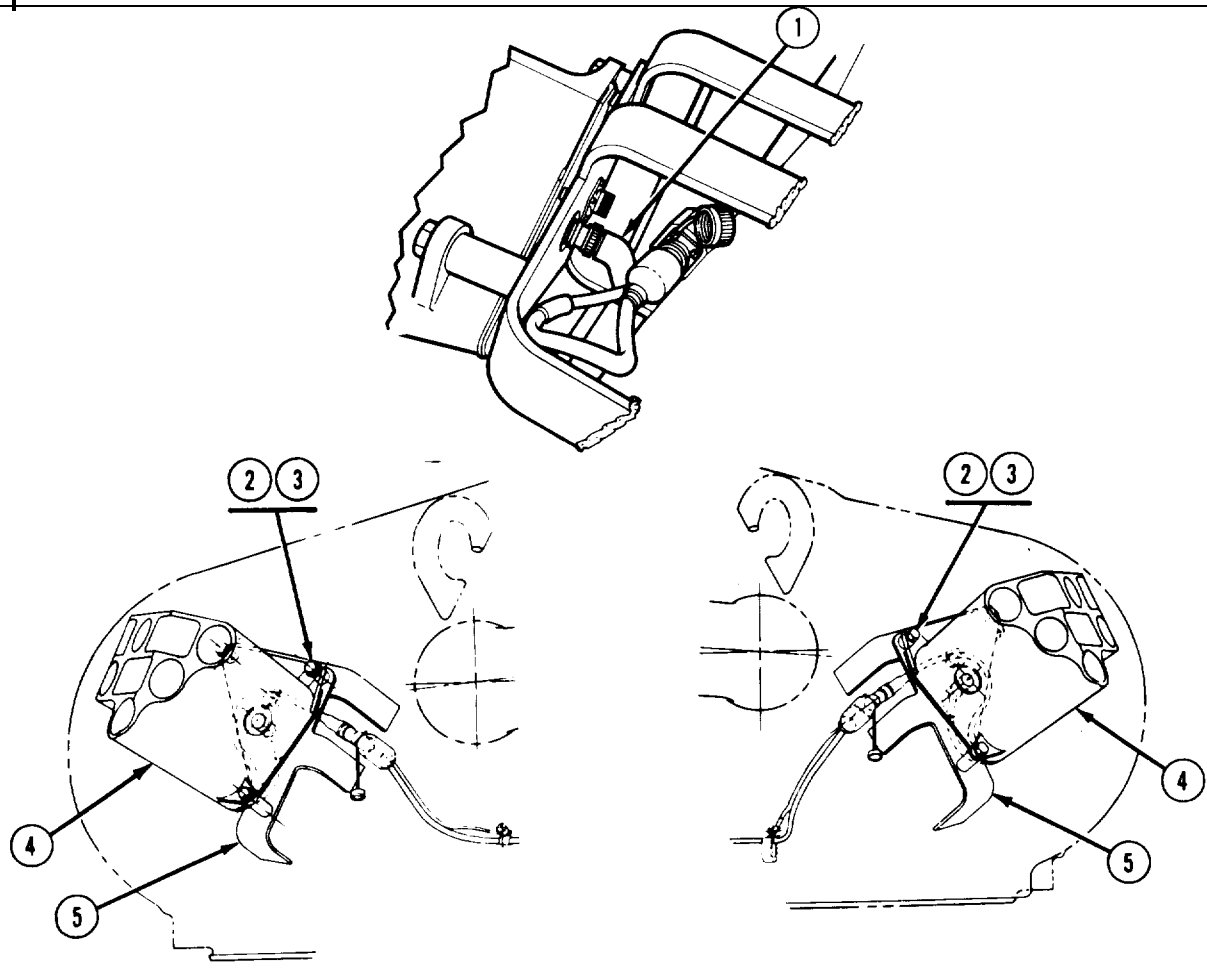
WARNING

Make sure there are no smoke grenades in discharger. Accidental firing of grenades could hurt or kill you.

68.1-10. SMOKE GRENADE DISCHARGERS (LEFT AND RIGHT) REMOVAL PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
	NOTE Removal procedure for both left and right smoke grenade dischargers is the same.
1.	Disconnect electrical connector (1) (JPG).
2.	Using socket wrench, remove three screws (2) and three washers (3) that attach discharger (4) to bracket (5).
3.	Remove discharger (4) from bracket (5).
	END **OF TASK**



68.1-11. SMOKE GRENADE DISCHARGERS (LEFT AND RIGHT) INSTALLATION PROCEDURE

TOOLS: 3/4 in. socket (1/2 in. drive)
1/2 in. drive ratchet
1/2 in. drive torque wrench (0 to 250 foot-pounds)

SUPPLY: Sealing compound (Item 20, Appendix A)

PERSONNEL One

REFERENCES: TM 9-2350-222-20-2-1 for procedure to functionally check smoke grenade launcher system
JPG for procedures to:
Connect electrical connectors
Use torque wrench

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Smoke Grenade Discharger	FO-5	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTION:

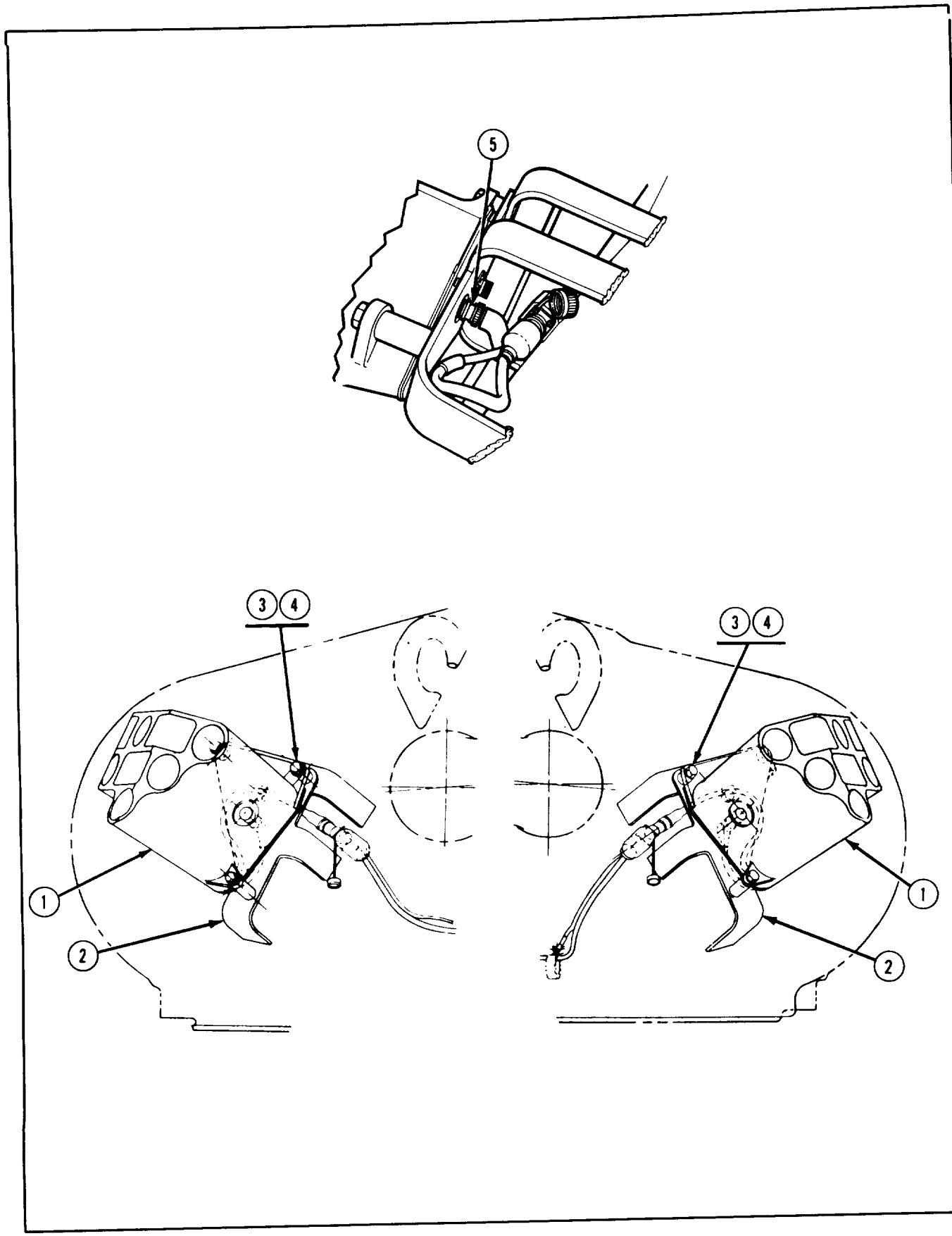
WARNING

Make sure there are no smoke grenades in discharger. Accidental firing of grenades could hurt or kill you.

68.1-11. SMOKE GRENADE DISCHARGERS (LEFT AND RIGHT) INSTALLATION PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
	NOTE Installation procedure for both left and right smoke grenade discharger is the same
1.	Place discharger (1) on mounting bracket (2) and align mounting holes.
2.	Apply sealing compound (Item 20, Appendix A) to threads of screws (3).
3.	Put in three screws (3) and three lockwashers (4) through discharger (1) mounting holes into mounting bracket (2).
4.	Using torque wrench, torque three screws (3) to between 55 and 74 foot-pounds (JPG).
5.	Connect electrical connector (5) (JPG).
	NOTE Follow-on Maintenance Action Required: Perform functional check of smoke grenade launcher system (TM-20-2-1. para 3-5.1).
	END OF TASK


5
3
4
1
2
3
4
1
2

68.1-12. SMOKE GRENADE DISCHARGER BRACKET DUMMY RECEPTACLE (LEFT AND RIGHT) REMOVAL PROCEDURE

TOOLS: Flat-tip screwdriver

PERSONNEL. One

REFERENCE: JPG for procedure to disconnect electrical connectors

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Smoke Grenade Discharger	FO-5	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTIONS:

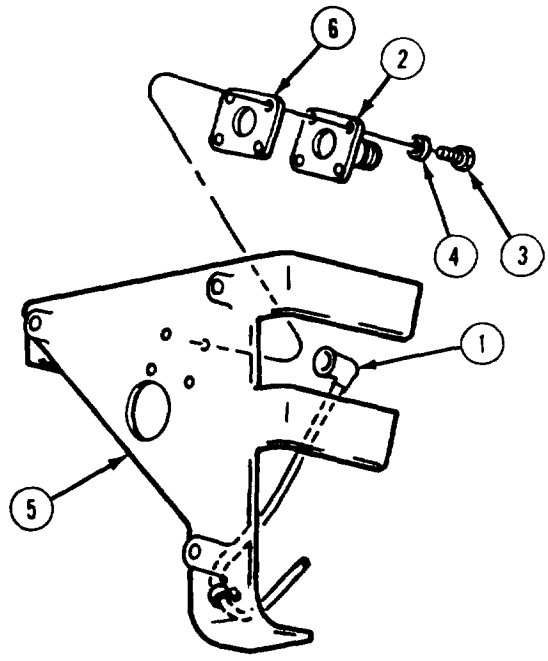
WARNING

Make sure there are no smoke grenades in discharger. Accidental firing of grenades could hurt or kill you.

68.1-12. SMOKE GRENADE DISCHARGER BRACKET DUMMY RECEPTACLE (LEFT AND RIGHT) REMOVAL PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
	NOTE Removal procedure for both the left end right dummy receptacle is the same.
1.	Disconnect electrical connector (1) from dummy receptacle (2) (JPG).
2.	Using screwdriver, remove four screws (3) and four lockwashers (4) holding receptacle (2) to discharger bracket (5).
3.	Remove receptacle (2) and gasket (6).
	END OF TASK



68.1-13. SMOKE GRENADE DISCHARGER BRACKET DUMMY RECEPTACLE (LEFT AND RIGHT) INSTALLATION PROCEDURE

TOOLS: Cross-tip screwdriver (Phillips)

SUPPLIES: Lockwasher (MS 35338-40) (4 Required)

PERSONNEL: One

REFERENCE. JPG for procedure to connect electrical connectors

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Smoke Grenade Discharger	FO-5	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTIONS:

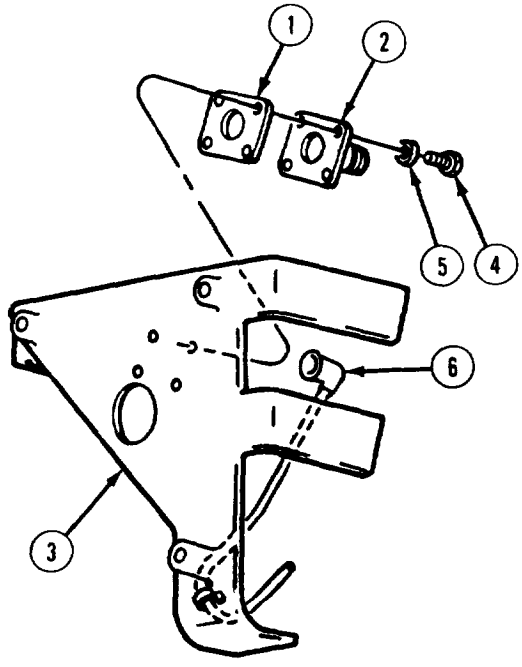
WARNING

Make sure there are no smoke grenades in discharger. Accidental firing of grenades could hurt or kill you.

68.1-13. SMOKE GRENADE DISCHARGER BRACKET DUMMY RECEPTACLE (LEFT AND RIGHT) INSTALLATION PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
	NOTE Installation procedure for both left and right dummy receptacles is the same.
1.	Position gasket (1) and dummy receptacle (2) on underside of discharger bracket (3).
2.	Using screwdriver, attach receptacle (2) to discharger bracket (3) with four screws (4) and four lockwashers (5).
3.	Connect electrical connector (6) to receptacle (2) (JPG).
	END OF TASK



68.1-14. SMOKE GRENADE STOWAGE BINS (LEFT AND RIGHT) REMOVAL PROCEDURE

TOOLS: 1/2 in. socket (3/8 in. drive)
3/8 in. drive ratchet

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTIONS:

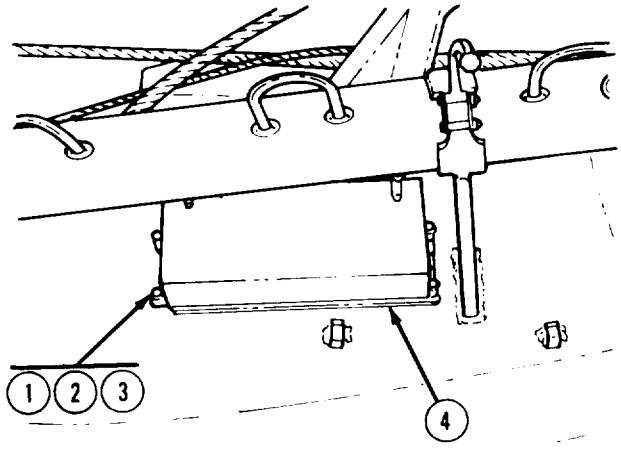
WARNING

Make sure stowage bins are empty of smoke grenades before removal. Accidental firing of grenades could hurt or kill you.

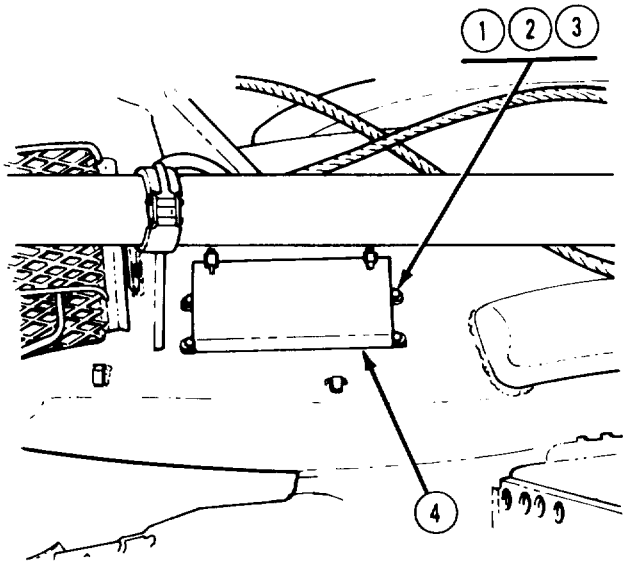
68.1-14. SMOKE GRENADE STOWAGE BINS (LEFT AND RIGHT) REMOVAL PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
	NOTE Removal procedure for both the left and right stowage bins is the same.
1.	Using wrench, remove four screws (1), four lockwashers (2), and four flat washers (3) that attach stowage bin (4) to turret.
2.	Remove stowage bin (4) from turret.
	END OF TASK



LEFT SIDE



RIGHT SIDE

68.1-15 SMOKE GRENADE STOWAGE BINS (LEFT AND RIGHT) INSTALLATION PROCEDURE

TOOLS: 1/2 in. socket (3/8 in. drive)
3/8 in. drive ratchet
1/2 in. drive ratchet
1/2 in. drive torque wrench (0-250 foot-pounds)

SUPPLIES: Lockwasher (MS 35338-36) (4 Required)

PERSONNEL: One

REFERENCE: Use torque wrench (JPG)

EQUIPMENT LOCATION INFORMATION:

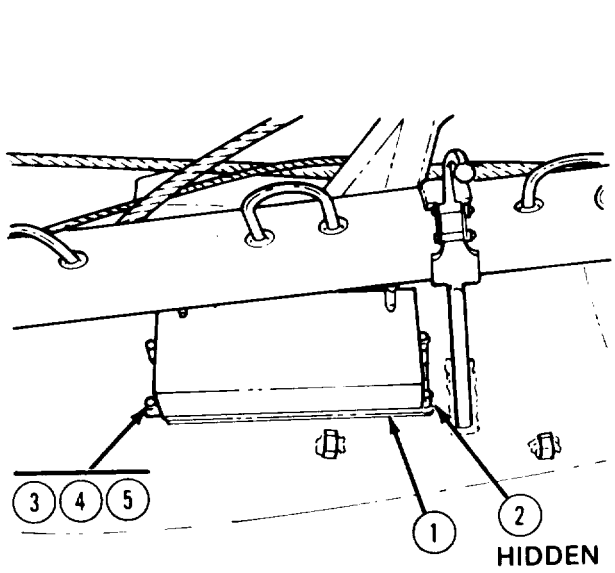
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

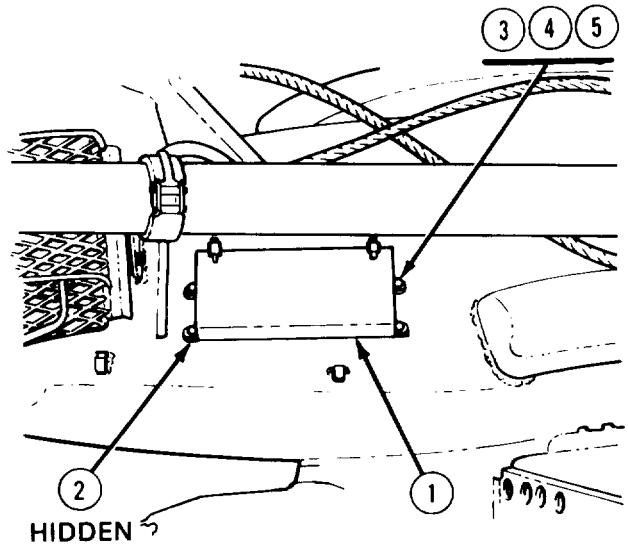
68.1-15 SMOKE GRENADE STOWAGE BINS (LEFT AND RIGHT) INSTALLATION PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
	NOTE **Installation procedure for both the left and right stowage bins is the same.**
1.	Position stowage bin (1) on mounting pads (2).
2.	Using socket wrench, attach stowage bin (1) to turret with four washers (3), four lockwashers (4), and four screws (5).
3.	Using torque wrench, torque four screws (5) to between 37-51 foot-pounds (JPG).
	END **OF TASK**



LEFT SIDE



RIGHT SIDE

CHAPTER 69

MAINTENANCE OF MATERIAL USED IN CONJUNCTION WITH MAJOR ITEMS

69-1. AMMUNITION. No organizational maintenance instructions are required for the ammunition. For information about ammunition, go to TM 9-2350-222-10.

69-2. COMMUNICATIONS SYSTEM. Information on the communications system is in TM 9-2350-222-10 Operator's Manual.

APPENDIX A

EXPENDABLE SUPPLIES AND MATERIALS LIST

Section 1. INTRODUCTION

A-1. SCOPE

This appendix lists expendable supplies and materials you will need to maintain the M728 tank.

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 materials e.g. Dry cleaning solvent (item 22. App. A).

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

C - Operator/Crew

O - Organizational 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 the listed 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 parentheses, if applicable.

e. Column 5 - Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This 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.

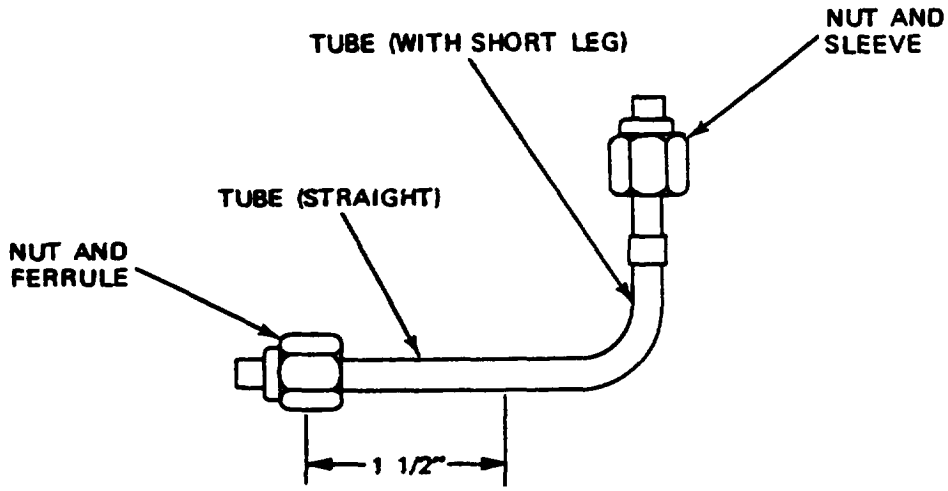
Section 2. EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) Item	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
	O	8040-00-515-2250	Adhesive	QT
1	O	8040-00-152-0023	Adhesive, Class III, MMM-A-132, Type I	KT
3	O	8040-00-893-1882	Adhesive, Rubber, MMM-A-1617, Type II, 302	OZ
	O	8040-01-036-5432	Adhesive, Rubber, MMM-A-1617, Type II, 1 gal	GL
3.1	O	8040-01-123-0082	Adhesive, neoprene (11669677)	
4		8040-00-664-4318	Adhesive, Type II, MIL-A-5092, 4 oz tube	TU
5	C	8020-00-224-6024	Brush, Artist	EA
6	C	5350-00-221-0872	Cloth, Abrasive, Crocus, CA. 50 sheets	PKG
7			Not Used	
8	O	6850-00-880-7616	Compound, Silicone, 8 oz tube	TU
9	O	9150-00-111-6256	Fluid, Hydraulic, FRH, MIL-H-46170	CN
10	O	6830-00-264-9086	Gas, Nitrogen, Dry, Type I, Class I, Grade 6, BB-N-411, 275 cf Cylinder	CY
	O	6830-00-656-1596	Gas, Nitrogen, Dry, Type I, Class I, Grade 6, BB-N-411, 200 cf Cylinder	CY
11	C	9150-00-190-0904	Grease, Automotive and Artillery, GAA, 1 lb can (MIL-G-10924)	CN
	C	9150-00-935-1017	Grease, Automotive and Artillery, GAA, 14 oz cartridge (MIL-G-10924)	EA
	C	9150-00-190-0905	Grease, Automotive and Artillery, GAA, 5 lb can (MIL-G-10924)	CN
12	O	9150-00-961-8995	Grease, plug valve 2 oz tube (MIL-G-27617) type 1 or 4	TU
13	C	9150-00-231-2360	Oil, Lubricating, Medium, PL, GP, 202 can (MIL-L-3150)	CN
	C	9150-00-231-2361	Oil, Lubricating, Medium, PL, GP 1 qt can (MIL-L-3150)	CN
14	O	9150-00-231-6689	Oil, Lubricating, PL-S, GP, VV-L-800	QT
15	C	7920-00-205-1711	Rag, Wiping, Cotton, 50 lb Bale Cloth, Lint-free	BL
15.1		8040-00-426-0652	Sealing Compound, MIL-A-46146, Type I	OZ
16	O	8030-00-275-8114	Sealing Compound, MIL-S-11030, 1 pt can	CN
	O	8030-00-242-3194	Sealing Compound, MIL-S-11030, 1 qt can	CN
	O	8030-00-433-4145	Sealing Compound, MIL-S-11030, 50 ft roll	RL
	O	8030-00-965-2437	Sealing Compound, MIL-S-11030, 90 ft roll	RL
17	O	8030-00-275-8110	Sealing Compound, MIL-S-11031, Kit	EA
	O	8030-00-537-7925	Sealing Compound, MIL-S-11031, Kit	EA

(1) Item	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
	O	8030-00-656-1042	Sealing Compound, MIL-S-11031, Kit	EA
18	O	8030-01-013-9306	Sealing Compound, MIL-S-22473, 8 oz bottle	BT
19	O	8030-01-025-1692	Sealing Compound, MIL-S-46163, Type II, Grade V, 250 cc bottle	BT
20	O	8030-00-434-4162	Sealing Compound, MIL-S-46163 Type II, Grade N, 250 cc bottle	BT
21	O	6850-00-826-2156	Solvent, Cleaning Compound (Tri-chloroethylene), MIL-C-81302, 1 pt can	CN
	O	6850-00-826-5853	Solvent, Cleaning Compound (Tri-chloroethylene), MIL-C-81302	CN
	O	6850-00-935-1082	Solvent, Cleaning Compound (Tri-chloroethylene), MIL-C-81302	DR
22	C	6850-00-664-5685	Solvent, Dry Cleaning, SD, 1 qt can (P-D-680)	CN
	C	6850-00-281-1985	Solvent, Dry Cleaning, SD, 1 gal can (P-D-680)	CN
23			Not Used	
24	O	5970-00-184-2002	Tape, Electrical Insulation, Grade A, Spec HH-T-00111, 1/32 inch thick, 2.00 inches wide	RL
25	O	8135-00-551-1245	Tape, Adhesive, 6 yd roll, Olive Opaque, W	RL
25.1	O	P/N 12297953	Teflon pipe sealant 50ML tube, (05972-92)	TU
26	C	8110-00-242-2089	Thinner, Paint, Ton, 1 gal can	CN
27	C	3610-00-810-0571	Tissue, Lens, Box of 240 each	BX

APPENDIX B

FABRICATED TOOLS



INSTRUCTIONS:

1. Back nut off of ferrule.
2 Cut tubes as close to sleeve as possible.
3. Remove nut and sleeve. Throw away.
4. Repeat 1 thru 3 for second nut and sleeve.
5. Measure 1 1/2" from end of tube with longer leg and cut tube

GENERAL NOTES

1. All dimensions are in inches.
2 Material: Make from tube P/N 11676278.
3. Break\ sharp edges and remove burrs.

By Order of the Secretary of the Army:

E. C. MEYER
General, United States Army
Chief of Staff

Official:

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

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PAGE NO.	PARA-GRAPH	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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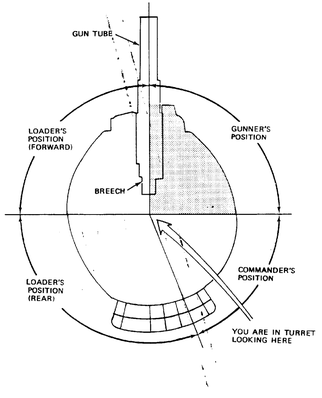
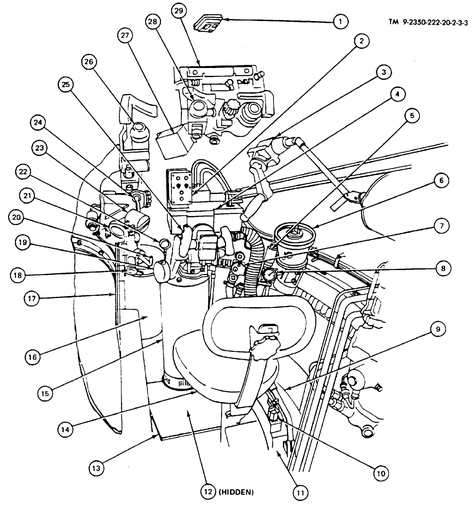
LEGEND:

1. GUNNER'S DOMELIGHT
2. GUNNER'S CONTROL BOX
3. HAND TRAVERSING DRIVE
4. GUNNER'S CONTROL
5. RIGHT HANGER
6. AZIMUTH INDICATOR
7. GUNNER'S ELECTRIC AIR FILTER HEATER
8. EQUILIBRATOR PRESSURE GAUGE
9. GUNNER'S FOOTGUARD
10. EQUILIBRATOR CHARGING MANIFOLD
11. 7.62 MM AMMUNITION BOXES
12. TURRET POWER AND SEARCHLIGHT RELAY BOX
13. GUNNER'S FOOTREST PLATE
14. GUNNER'S SEAT
15. POWER PACK
16. MAIN ACCUMULATOR
17. GUNNER'S GUARD
18. ELEVATION QUADRANT
19. MANUAL ELEVATING HANDLE
20. BLASTING MACHINE
21. TELESCOPE LIGHT SOURCE CONTROL
22. PRESSURE GAUGE
23. FILTER BOX
24. M114 TELESCOPE MOUNT
25. GUNNER'S CONTROL HANDLES
26. ARTICULATED TELESCOPE M105F
27. TURRET GUN FIRING RELAY BOX
28. GUNNER'S PERISCOPE M32
29. GUNNER'S PERISCOPE MOUNT M118

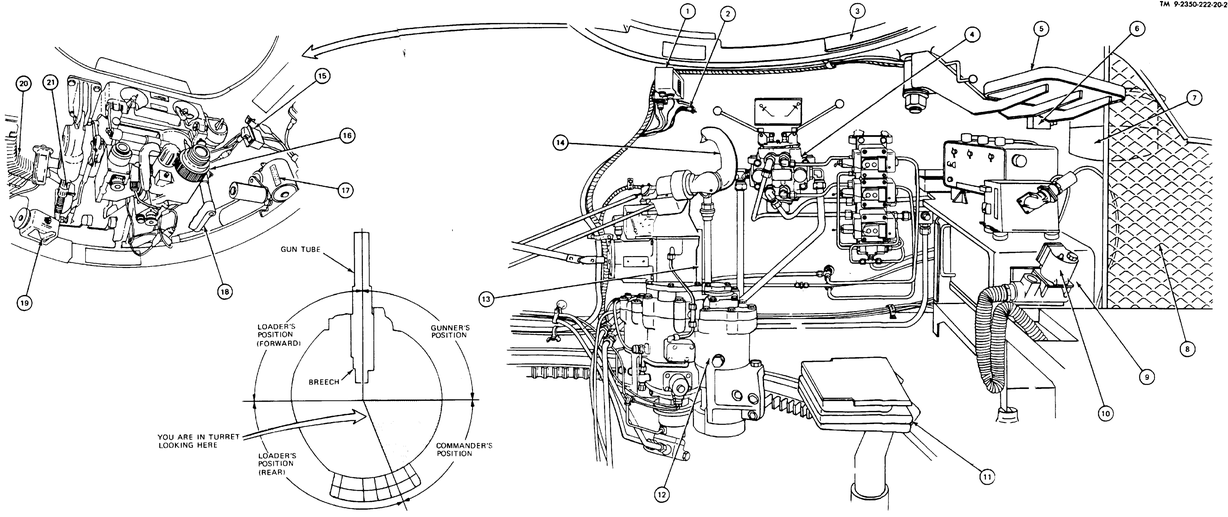




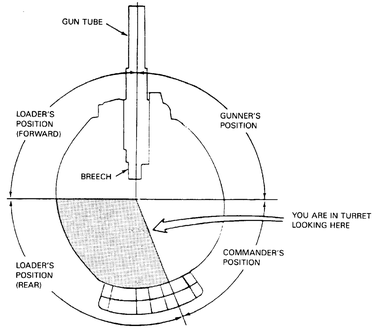
FO-1. EQUIPMENT LOCATION INFORMATION - GUNNER'S POSITION

LEGEND:

1. INTERPHONE AND CONTROL BOX
2. CUPOLA ELECTRICAL POWER CONTROL PANEL
3. BACKREST PAD
4. WINCH BOOM CONTROL VALVES
5. COMMANDER'S SWING SEAT
6. INTERCONNECTING BOX
7. TURRET VENTILATING BLOWER
8. ODDMENT TRAY RIGHT SCREEN
9. TURRET RADIO SUPPORTS
10. COMMANDER'S ELECTRIC AIR FILTER HEATER
11. COMMANDER'S SEAT
12. TURRET TRAVERSING MECHANISM
13. ANTI BACKLASH MECHANISM
14. COMMANDER'S CONTROL HANDLE
15. CUPOLA GUN SAFETY SWITCH AND GUARD
16. COMMANDER'S PERISCOPE
17. CUPOLA AZIMUTH GEAR BOX
18. SHIELD OPERATING HANDLE
19. CUPOLA AZIMUTH LOCK
20. FLEXIBLE CHUTE ASSEMBLY
21. ELEVATION SCREW JACK

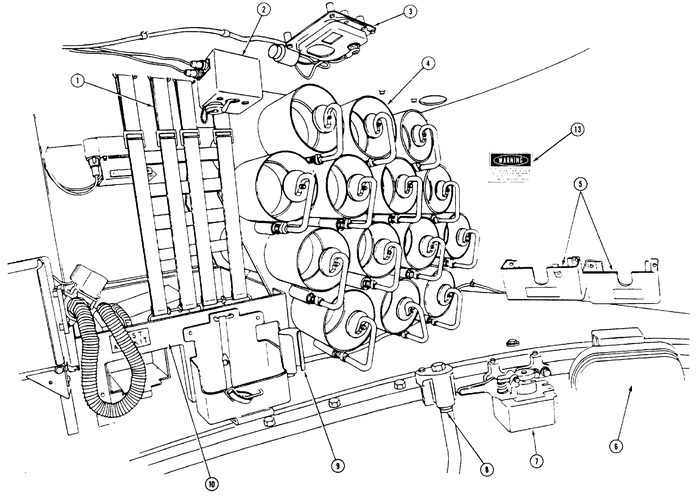


FO-2. EQUIPMENT LOCATION INFORMATION - COMMANDER'S POSITION



LEGEND:

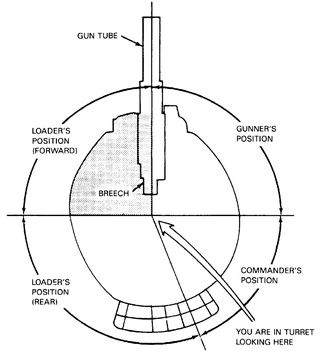
1. RADIO GUARD SCREEN
2. TURRET VENTILATING CONTROL BOX
3. COMMANDER'S DOMELIGHT
4. FOURTEEN ROUND AMMUNITION STOWAGE RACK
5. HAND GRENADE STOWAGE BRACKETS
6. LOADER'S SEAT
7. TURRET TRAVERSE LOCK
8. CENTER HANGER
9. FLASHLIGHT TUBE
10. ODDMENT TRAY
11. DRIVER'S MASTER CONTROL PANEL
12. HYDRAULIC PUMP PANEL
13. NBC WARNING DECAL

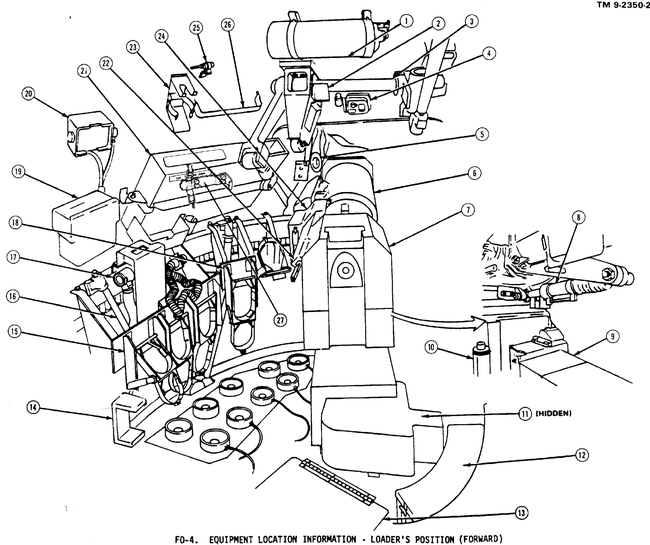


FO-3. EQUIPMENT LOCATION INFORMATION - LOADER'S POSITION (REAR)

LEGEND:

1. REPLENISHER
2. GUN ELEVATION INTERFERENCE SWITCH
3. BALLISTIC DRIVE
4. LOADER'S DOMELIGHT
5. MACHINE GUN MOUNT
6. 165 -MM GUN
7. BREECH
8. ELEVATING MECHANISM
9. PERISCOPE STOWAGE BOX
10. EQUILIBRATOR ACCUMULATOR
11. ELECTRICAL SLIPRING
12. CALIBER .50 AMMUNITION BOXES
13. BATTERY ACCESS DOOR
14. FIRE EXTINGUISHER MOUNTING BRACKET
15. 165 -MM SIX ROUND AMMUNITION RACK
16. LEFT HANGER
17. LOADER'S ELECTRIC AIR FILTER HEATER
18. 165 -MM THREE ROUND AMMUNITION RACK
19. LOADER'S PERISCOPE BOX
20. LOADER'S INTERPHONE CONTROL BOX
21. 7.62 READY ROUND AMMO BOX AND COVER
22. LOADER'S GUARD
23. OILCAN MOUNTING BRACKET
24. LOADER'S SAFETY SWITCH
25. RADIATION DETECTOR
26. CANTEEN MOUNTING BRACKET
27. FIRE EXTINGUISHER (HALON) MOUNTING BRACKET (IF EQUIPPED)

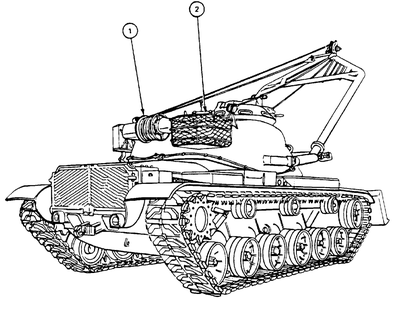


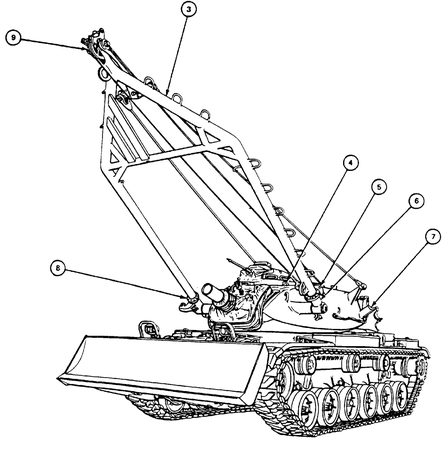


FO-4. EQUIPMENT LOCATION INFORMATION - LOADER'S POSITION (FORWARD)

LEGEND:

1. WINCH
2. SEARCHLIGHT STOWAGE BOX
3. A-FRAME
4. SEARCHLIGHT CONNECTOR
5. LOADER'S ESCAPE HATCH
6. A-FRAME LEFT TRUNNION
7. BOOM TRAVEL LOCK
8. A-FRAME RIGHT TRUNNION
9. A-FRAME PULLEY





FO-5. EQUIPMENT LOCATION INFORMATION - OUTSIDE TANK

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

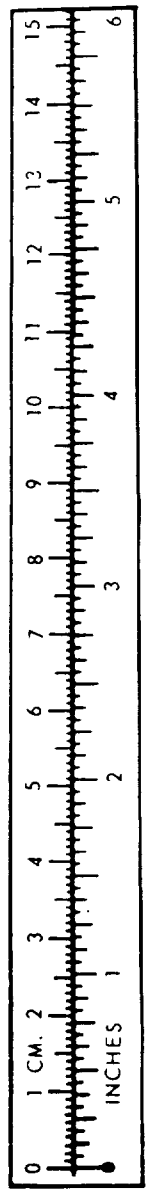
TEMPERATURE

$5/9\ (^0F - 32) = {}^0C$
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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