

TECHNICAL MANUAL
ORGANIZATIONAL
MAINTENANCE MANUAL

VOLUME III - PART 1
MAINTENANCE

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

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

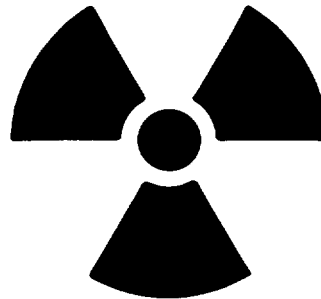
WARNING

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

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

Follow these rules to keep from getting -poisoned:

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

WARNINGWARNING
RADIATION HAZARD

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.

CHANGE

No. 3

**HEADQUARTERS
DEPARTMENT OF THE ARMY**
Washington, DC 24 January 1991

**Organizational Maintenance Manual
VOLUME 111- PART 1
MAINTENANCE**

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

TM 9-2350-222-20-2-3-1, 15 September 1980, is changed as follows:

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

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8-5 thru 8-8
8-25 thru 8-34

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8-1 and 8-2
8-5 thru 8-8
8-25 thru 8-34

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Colonel, United States Army
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NO. 2

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Washington, D. C., 23 December 1987

ORGANIZATIONAL MAINTENANCE MANUAL

**VOLUME III - PART 1
MAINTENANCE**

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

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1-23 and 1-24
1-29 and 1-30
1-37 thru 1-42
1-49 and 1-50
2-27 and 2-28
None
3-31 thru 3-35/(3-36 blank)
3-39 thru 3-48
3-53 and 3-54
3-57 thru 3-62
3-63 thru 3-69/(3-70 blank)
9-3 thru 9-6
13-1 thru 13-4
None
14-13 and 14-14
14-19 and 14-20
Index 3 thru Index 6
FO-3
FO-4

Insert Pages

i and ii
1-23 and 1-24
1-29 and 1-30
1-37 thru 1-41/(1-42 blank)
1-49 and 1-50
2-27 and 2-28
2-34.1 thru 2-34.3/(2-34.4 blank)
3-31 thru 3-35/(3-36 blank)
3-39 thru 3-48
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None
9-3 thru 9-6
13-1 thru 13-4
13-5 thru 13-8
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14-19 and 14-20
Index 3 thru Index 6
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CHANGE NO. 1

**HEADQUARTERS
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Washington, D.C. 19 August 1985**

**ORGANIZATIONAL MAINTENANCE
COMBAT ENGINEER VEHICLE
FULL TRACKED, M728
NSN (2350-00-795-1797)
(TURRET)**

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Cover	0	3-57 - 3-59	0.
a - c	0	3-60 Blank	0
A	0	3-61 - 3-69	0
B Blank	0	3-70 Blank	0
i - v i	0	4-1 -4-5	0
1-1 - 1-33	0	4-6 Blank	0
1-34 Blank	0	5-1 -5-4	0
1-35- 1-56	0	6-1 -6-4	0
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3-18 Blank	0	14-40 Blank	0
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3-37 - 3-55	0	Metric Conversion Chart.	0
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**Technical Manual
No. 9-2530-222-20-2-3-1**

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Washington, D. C., 15 September 1980**

**Technical Manual
Organizational Maintenance Manual**

**Volume III - Part 1
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 procedres, 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:

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Rock Island, IL 61299-6000

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

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INTRODUCTION

SCOPE

This manual is one of a series of manuals for your use in performing organizational maintenance of the turret and turret components of the M728 oombat engineer vehicle.

Descriptions of components and maintenance procedures for these components as allocated by the Maintenance Allocation Chart (MAC) are included.

MANUAL ORGANIZATION

This manual is arranged in 3 parts with each part divided into chapters as follows:

- Chapter 1 - contains system and component functional descriptions
- Chapter 2 and subsequent chapters - contains maintenance procedures for equipment items in the turret. Each equipment item is covered in a separate chapter.

HOW TO USE THIS MANUAL

- 1 Go to Table of Contents in front of manual or Index in back of manual to find equipment item that you are looking for.
- 2 Go to chapter or section listed in Table of Contents or Index.
- 3 Use maintenance procedures index to find maintenance task paragraph reference.
- 4 Go to paragraph references in maintenance procedures index.
- 5 Each maintenance procedure has a listing of resources (tools, personnel, etc) required to do the task. The resource listing items are explained as follows:
 - Tools: Hand tools or special tools required to do task
 - Supplies: Expendable material or parts required to do task
 - Personnel: Minimum number of soldiers required to do task
 - References: Lists other technical manuals where related procedures can be found
 - Equipment Location Information: Refers to foldout illustrations at end of each part that show where equipment item is located in turret
 - Equipment Condition: Condition of tank or equipment item necessary to start task
 - Preliminary Procedures Lists procedures that must be done before starting task
 - General Instructions Provides instructions that you should be made aware of when performing entire procedure

NOTE

If any resource is not applicable to the procedure, the resource will not be listed.

HOW TO USE THIS MANUAL (CONT)

6 Obtain resources

7 Continue with procedure:

- Procedures are arranged in frames beginning with Frame 1.
- Each frame provides instructions in a series of steps.
- Parts named in each step are followed by a number in parentheses ().
- Illustrations support each frame and are either on same page or on facing page.
- Number callouts on each illustration match number in procedure step.
- Following last step on each frame are instructions to either go to next frame or end task.
- Some tasks will require other procedures be done before task is completed. This will be denoted as: Follow-on Maintenance Action Required.

NOTE

In parts of this manual component/assembly nomenclature may differ. Refer to TM 9-2350-222-20-2-1, Appendix C for component/ assembly name used in Maintenance Allocation Chart and associated common name used in maintenance procedures.

CHAPTER 1

GENERAL MAINTENANCE INFORMATION

Section 1. SCOPE

1-1. This technical manual contains instructions for organizational maintenance of turret and turret components of the full-tracked combat engineer vehicle M728. The vehicle is designed to provide maximum ballistic protection for the crew and is heavily armed, being a basic M60A1 tank modified to provide a mobile and maneuverable weapon for combat support of ground troops and vehicles. It is equipped with a hydraulically operated bulldozer mounted to the front of the hull. A winch and boom are mounted to the turret for lifting, carrying, and winching. Erecting and stowing the boom are accomplished hydraulically. The M728 vehicle is used for breaching, obstacle removal, transportation of demolition teams, and pioneering operations. The crew consists of a commander, gunner, loader and driver.

1-2. The turret, which fits into the hull opening, is a one-piece homogeneous armor steel casting. A platform (turret basket) attached to the turret permits the commander, gunner, and loader to traverse with the turret. Openings provided in the turret accommodate the 165-mm combination gun mount, commander's cupola, ventilating blower, antennas, boom and winch hydraulic lines, sighting and fire control components and loader's hatch. The turret contains electrical and hydraulic controls, communications equipment, sighting and firing controls. Externally the turret has racks for stowing miscellaneous items such as a 5-gallon water can, cargo and combat packs, towing cables, water fording equipment and the Xenon searchlight. Internal racks are provided for stowage of items such as periscopes, binoculars, flashlights, canteens, rations, a portable carbon dioxide (CO₂) fire extinguisher, ammunition, and various hand tools. A winch-boom assembly is mounted to the turret for lifting, carrying, and winching operations.

1-3. TABULATED DATA

a. Vehicle

Armor (hull and turret)	cast homogeneous armor steel
Capacities (fuel and oil):	
Fuel tanks (total)	375 gal
Engine crankcase (fill, approximate)	18 gal
Engine crankcase, (refill, approximate)	13 gal
Transmission (fill, approximate)	23 gal
Transmission (refill, approximate)	17 gal
Hydraulic reservoir (boom, winch, and bulldozer) (fill, approximate)	50 gal
Hydraulic reservoir (boom, winch, and bulldozer) (refill, approximate)	48 gal
Crew	4 (commander, driver, gunner and loader)
Controls:	
Brakes:	
Operation	hydraulically-linked foot pedal
Type	multiple disc wet plate
Steering	
Type	mechanical, steering control
Turning radius	pivot to infinity
Transmission shift lever positions:	
"N" (Neutral)	pivot steer
"P" (Park)	lock vehicle brakes to park, start position
"L" (Low)	ascending and descending steep grades and soft or very rough terrain-forward at 10 mph maximum descending steep grades for maximum engine braking power - rearward at 5 mph maximum
"H" (High)	normal driving conditions - forward at 30 mph maximum
"R" (Reverse)	normal driving conditions and ascending steep grades for maximum engine power - rearward at 5 mph maximum descending steep grades for maximum braking power - forward at 5 mph maximum
Dimensions:	
Length (with boom and bulldozer in travel position)	350.80 in.
Length (with boom in erected position)	366.30 in.

Height (lowest operable)	128.23 in.
Length of hull with bulldozer installed	314.80 in.
Width with bulldozer installed	146 in.
Ground clearance	15 in.
Traverse radius (with boom in travel position)	197.50 in.
Traverse radius (with boom in erected position)	205.50 in.
Electrical:	
Electrical system	24-volt DC
Generated	28-volt DC, 300 amp
Number of batteries	6 (12-volt)
Power plant and final drive:	
Make and type	Continental 12-cylinder, air cooled, 90 degree "V" -type, compression-ignition
Model	AVDS-1790-2A
Displacement	1,790 cu in.
Weight, dry (with accessories)	4,527 lb
Speed:	
Governed, full load	2,400 rpm
Governed, no load	2,550 rpm
Idle	750 rpm
Horsepower, gross	750 bhp at 2,400 rpm
Horsepower, net	642 bhp at 2,400 rpm
Fuel oil, diesel	40 cetane, regular grade DF-2, VV-F-800, 20° to 115°F
Fuel oil, diesel	40 cetane, regular grade DF-1, VV-F-800, -25° to 20°F
Fuel oil, diesel	40 cetane, regular grade DF-A, VV-F-800, -65° to -25°F
Oil pressure:	
At 750 rpm (idle)	20 psi with OE 30 at 180°F
At 2,400 rpm (full load)	40 to 70 psi with OE 30 at 180°F
Oil temperature:	
Normal	180°F at 60°F ambient
Maximum	245°F

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Cooling system	thermostatically-controlled engine-driven fan for cylinders, transmission and engine oil coolers
Induction system	supercharged by two Schwitzer exhaust-driven turbosuperchargers
Transmission:	
Type	Allison CD-850-6A, cross-drive
Performance:	
Vehicle speed (maximum)	30 mph
Allowable speed (maximum):	
Low	10 mph
High	30 mph
Reverse	5 mph
Cruising range (approximate)	280 miles at 20 mph on hard surface roads
Vertical obstacle vehicle will climb forward	30 in.
Width of ditch vehicle will cross (maximum)	99 in.
Fording depth (without vehicle fording kit)	48 in.
Grade ascending ability (maximum)	60 percent
Grade descending ability (maximum)	60 percent
Fuel consumption (approximate)	1.13 gpm
Traverse of turret	360 deg
Weight	
Gross (combat-loaded)	115,000 lb
Net (less crew, stowage and fuel)	109,000 lb
Ground pressure	12.2 psi
Bridge load classification:	
Empty	54
Cross country (combat loaded)	57

1-4. GUN ELEVATING AND TURRET TRAVERSING SYSTEM

a. General. The gun elevating and turret traversing system consists of mechanical, electrical, and hydraulic components so arranged as to permit either the gunner or commander to traverse the turret 360 degrees in either direction or to depress and elevate the 165-mm gun. The 165-mm gun can be elevated or depressed while the turret is being traversed. The gun elevating and traversing system consists of the following an electrical-hydraulic controlled elevating and traversing system, and in case of power or other failure, a manually operated hydraulic elevating system and a manually operated mechanical traversing system.

b. Tabulated Data

Gun elevating system:

Depression of gun

Power control 10 deg minimum each side of vehicle front centerline to 90 deg of vehicle rear centerline
0 deg minimum each side from 90 deg of vehicle rear centerline to rear centerline

Manual control (with power "ON") 10 deg minimum each side of vehicle front center line to 90 deg of vehicle rear centerline and 0 deg minimum each side from 90 deg of rear centerline

(with power "OFF") 10 deg minimum each side of front centerline to 90 deg of vehicle rear centerline and 5 deg from 90 deg to 20 deg from rear centerline and 0 deg from 20 deg to rear centerline

Elevation of gun (power and manual control) 20 deg maximum for 360 deg of turret traverse

Type of elevation mechanism 20 deg maximum for 360 deg of turret traverse

Type of elevation mechanism hydraulic

Rate of power elevation of gun 4 deg per see
(maximum)

Turret traversing system:

Time required to power traverse 37.5 see minimum
turret 360 deg

1-5. TURRET ARMAMENT

a. General. The armament components include: a 165-mm gun M135, mounted in a combination gun mount M150, a coaxially mounted 7.62-mm machine gun M73, mounted in the combination gun mount, a gun elevating and turret traversing system, and a cal .50 machine gun M85, mounted in the commander's cupola M 19. Other armament located in the turret consists of a cal .45 submachine gun.

b. Tabulated Data

Ammunition:

M 13 link 7.62mm (for 7.62-mm machine gun)	3,600 rounds
M15 A2 link cal .50 (for cal .50 machine gun)	728 rounds
Cal .45	360 rounds
165-mm (for 165-mm gun XM135)	30 rounds
Grenades	12

Primary armament:

165-mm gun M135:

Type:

165-mm gun	tank gun, rifled bore, fixed cartridge ammunition
Caliber	165 millimeters (6.496 in.)
Breech	vertical sliding wedge, manual opening, spring closing
Firing mechanism	electric firing
Gun support	integral cylindrical bearing on tube
Tube	cold worked monoblock buttress thread attachment to breech ring

Length

Gun	105 in.
Bore (in calibers)	14
Rifling	90 in.

Characteristics:

Muzzle velocity	850 fps
Rated max. pressure	5,100 psi
Chamber volume	750 cu in.
Rifling twist	1 turn in 15 calibers
Projectile travel	91 in.

Combination gun mount M150:	
Type of recoil mechanism	concentric hydro-spring constant recoil distance
Length of recoil (normal)	12 in.
Length of recoil (maximum)	13.5 in.
Hydraulic oil capacity of recoil mechanism (including replenisher)	22 qts
Operation of firing mechanism	
Vehicle power	gunner one trigger on each of the gunner's power control handles and one trigger on manual elevating handle commander one trigger on commander's power control handle
Emergency firing device.....	hand-operated handle (rotation actuated)
Commander's cupola M1 9:	
Ammunition capacity (cal .50 machine gun) (approximate).....	188 rounds
Cupola azimuth movement	360 degrees
Elevation (machine gun).....	+60 degrees
Depression (machine gun) . '	-15 degrees
Operation.....	manual
Power required.....	24 volts dc
Communications.....	radio and interphone
Vision	eight vision blocks
Gun tiring.....	electrical and manual
Secondary armament	
Machine gun M85	cal .50
Ammunition.....	cal .50, M33 ball and M17 tracer in M15 series links
Weight of gun.....	65.00 lb
Weight of barrel with flash suppressor	16.25 lb
Overall	
Length of gun.....	54.50 in.
Length of barrel (w/flash suppressor)	40.00 in.
Width of gun.....	5.25 in.
Height of gun.....	5.90 in.
Rifling	
Length.....	32.60 in.

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Number of grooves	8
Twist (right-hand - one turn-in)	15.00 in.
Operation	recoil
Feed	metallic disintegrating link belt
Belt pull	20 lb
Cooling	air

Rate of fire (cyclic):

High	800 to 950 rd per min
Low	400 to 500 rd per min
Muzzle velocity	2,840 to 3,450 fps
Range (maximum)	6,700 meters or 7,275 yds
Chamber pressure	53,000 psi

Method of target engagement

Ground targets	10-20 round burst, low rate of fire
Air targets	a continuous burst, high rate of fire

7.62-mm machine gun M73:

Ammunition	AP M61, ball M80 and tracer M62 in M13 series links
Weight of gun	29.31 lb
Weight of barrel	5.25 lb
Length	38.00 in.
Length of barrel	22.00 in.
Length of rifling (approx)	20.00 in.
Number of grooves	4
Twist, right-hand	one turn in 12 in.
Height (cover closed)	5.30 in.
Height (cover open)	6.60 in.
Width	4.40 in.
Feed	disintegrating metallic link belt
Operation	recoil with gas assist
Cooling	air
Muzzle velocity (approx)	2,800 fps
Rate of fire (cyclic)	450-500 rd per min

Maximum range - (approx 3,700 meters
or 4,050 yards)..... see appropriate Firing Table

Maximum effective range 900 meters (tracer burnout point)

Method of target engagement 20-25 round bursts

Trigger push 15 lb

1-6. SIGHTING AND FIRE CONTROL EQUIPMENT

a. General. The sighting and fire control components of the M728 vehicle include both daylight (conventional) and infrared (IR) units. Five independent sighting and fire control systems are utilized in the M728 vehicle; namely a primary direct sighting and fire control system, a secondary direct sighting and fire control system, an auxiliary sighting and fire control system, a 7.62-mm machine gun sighting and fire control system, and a cal .50 machine gun sighting and fire control system.

b. Primary Direct Sighting and Fire Control System. The primary direct sighting and fire control system consists of a telescope M105F, telescope hanger, telescope mount M114, a light source control 8619165-1, instrument light M50, a filter box, and filters. Components contained in this system are used to view the target during daylight and during periods of artificial illumination.

c. Secondary Direct Sighting and Fire Control System. The secondary direct sighting and fire control system consists of a ballistic drive M1 5, periscope M32C, periscope mount M118, and infinity sight 8635466. The M1 5 ballistic drive is a direct periscope drive consisting of a temperature compensating link and a parallelogram linkage with solid cross shaft between the 165-mm gun trunnion and gunner's periscope M32C. The periscope M32C provides the gunner with three optical sighting systems: a unity power system for wide, close-in vision of the terrain, an eight-power daylight system for sighting of distant targets, and an eight-power infrared system used for night sighting of targets.

d. Auxiliary Sighting and Fire Control System. The auxiliary sighting and fire control system consists of a fire control (elevation) quadrant M13A3 with light source control 8620860, and azimuth indicator M28E2. These components are used during periods of limited visibility and darkness. The necessary data, range, quadrant elevation, and deflection from a reference point, are determined by the vehicle crew during hours of good visibility to each designated target and are recorded on a range card for ready use when required. Scales of the azimuth indicator and the fire control (elevation) quadrant are illuminated by light control sources. Controls on the sources of light allow the gunner to vary the brilliance of the illumination.

e. 7.62-mm Machine Gun Sighting and Fire Control System. The 7.62-mm machine gun sighting and fire control system consists of the infinity sight 8635466, which transfers electrical power to the infrared power supply and projects a circular reticle on the unity power window of the M32C periscope.

f. Cal .50 Machine Gun Sighting and Fire Control System. The cal .50 machine gun sighting and fire control system consists of periscope mount M119, light source control 8619159, and periscope M36.

g. Tabulated Data	
Ballistic drive	M15
Periscope M32C (gunner's):	
Optical characteristics - visible light body assembly	
Magnification	8X
Field-of-view	8 deg 0 min
Optical characteristics - infrared body assembly	
Magnification	8X
Field-of-view	8 deg 0 min
Line of sight (travel):	
Elevation	22 deg 0 min
Depression	18 deg 0 min
Temperature range:	
Operable	+ 150°F to -40°F
Storage	+ 160°F to -80°F
Optical characteristics - unity power system	
Horizontal field-of-view	30 deg 32 min
Vertical field-of-view	5 deg 48 min
Infinity Sight 8635466	
Illuminated Circle	20 mils
Lamp Operation	24 volt d.c.
Telescope M105F (gunner's):	
Magnification	8X
Field-of-view	7 deg 30 min
Diopter scale	-4 to +4 diopters
Reticle	HEP-M123E1 mil scale
	The horizontal line intersecting the vertical line on top of reticle (HEP-M123E1) form the boresight cross. The horizontal lines on each side of vertical lines equal 5 mils with exception of horizontal lines extending from the boresight cross on the mil scale which is 2.5 mils.

HEP-M123E1 meter scale

The vertical line below the horizontal line forming the boresight cross equals 100 meters of range. The space from bottom of this line to top of next vertical line equals 100 meters of range. The rest of the vertical lines and spaces equal 100 meters of range with the exception of the vertical line intersected by the horizontal line at the 600 meter point. This vertical line equals 200 meters; 100 meters above and 100 meters below the horizontal line. The reticle (HEP-M123E1) is numbered in increments of 200 meters starting at the range of 200 meters and continuing to the range of 800 meters.

Filters

neutral density, red, and yellow filters

Telescope mount M114 (gunner's):

Boresight knob scales (gun laying reticle)

graduated in 0.1 mil increments, numbered every mil

Scale:

Elevation

0.5 to 5.5 mils

Deflection

0.5 to 5.5 mils

Fire control (elevation) quadrant M13A3:

Scale graduations:

Elevation scale

200 mils depression to 600 mils elevation, graduated in 100-mil increments, numbered every 200 mils

Micrometer scale

0 to 100 mils elevation or depression graduated in 1-mil increments, numbered every 10 mils

Azimuth indicator M28E2:

Scale graduations:

Azimuth scale

0 to 3,200 mils, graduated in 100-mil increments, numbered every 200-mils counterclockwise in two consecutive semicircles

Micrometer scale	0 to 100 mils, graduated in 1-mil increments, numbered counterclockwise every 5 mils
Gunner's aid (dial)	0 to 50 mils left and right, in 1-mil increments, numbered every 5 mils
Pointer:	
Azimuth pointer	inner 100-mil scale
Micrometer pointer	used in conjunction with micrometer scale and outer 100-mil scale
Directional pointer	moves in relation to longitudinal axis of the vehicle
Gunner's quadrant MIAI:	
Scale graduations:	
Elevation scale	0 to 800 mils, 800 to 1,600 mils, graduated in 10-mil increments, numbered every 50 mils
Micrometer scale	0 to 10 mils in both directions, graduated in 0.2-mil increments, numbered every mil
Periscope M36 (commander's):	
Optical characteristics - unity power system:	
Horizontal field-of-view	60 deg
Vertical field of view	28 deg
(at zero elevation)	
Optical characteristics - visible light (left) channel:	
Magnification	7X
Field-of-view	10 deg
Optical characteristics - infrared (right) channel:	
Magnification	8X
Field-of-view	8 deg
Line of sight (travel):	
Elevation	60 deg
Depression	20 deg
Temperature range:	
Operable	+ 150°F to -40°F

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Storage	+160°F to -80°F
Periscope M27 (driver's):	
Magnification	1X
Field-of-view	150 deg horizontal, 50 deg vertical
Periscope M24 (driver's infrared):	
Magnification	1X
Field-of-view	26.8 deg and can be pivoted to right and left 32 deg and 15 deg in elevation
Operating voltage	16,000 volts dc
Periscope M37 (loader's):	
Magnification	1X
Field-of-view	26 deg vertical and 72 deg horizontal
Periscope mount M118:	
Height, including headrest	21.87 in.
Width	16.25 in.
Depth, including headrest	11.75 in.
Weight	83 lb
Periscope mount M11 9:	
Height, including headrest	19.46 in.
Width	15.68 in.
Depth, including headrest	9.15 in.
Weight	64 lb
Instruction plate (range card) 8724207	luminous markings

1-7. WINCH AND BOOM ASSEMBLY

a. General. The boom assembly is a tubular constructed “A” frame used for hoisting operations. The boom is mounted to a trunnion on each side of the turret, at the gun-end. It is moved to erect or stowed positions by a hydraulic cylinder and winch. In the stowed position, two manual locks secure the boom to the turret. In the erect position, the boom weight and hoisting load is supported by staylines extending from each side of the turret, from the rear of the turret, to an equalizer bar at the boom end. The equalizer bar divides the load equally between the staylines. A pulley is mounted at the end of the boom to guide and support the winch cable. A retaining eye, located below the pulley, provides a support for the winch cable hook when a two-part line operation is required. A second retaining eye is located on the left side of the boom near the trunnion. This eye is used to support the winch cable hook when erecting or stowing the boom. U-shaped rods on the left side of the boom provide steps for the crew when climbing the erected boom. J-shaped rods, one located on the turret and two on the boom, are supports for the staylines when the boom is in the stowed position. A reversible, hydraulically driven winch is located at the rear of the turret. The winch has three gear positions; high-speed (HI), low-speed (LO), and neutral (N). One end of the winch cable is attached to the winch drum. The cable extends upward onto the pulley located between the guides at the top of the boom. A lifting hook is secured at the free end of the cable. The winch “payout” or “reel-in” is controlled by a directional control valve located in the commander’s compartment. High or low winching speed is controlled by a lever located on top of the turret and to the rear of the commander’s cupola.

b. Tabulated Data.

Controls	hydraulic
Hoisting capacity	17,500 lb in all positions, single line, 4th layer
Winching capacity (direct pull)	25,000 lb single line, 1st layer
Boom	tubular "A" frame
Traverse	360 degrees
Winch	planetary gear, two-speed
Speed at 1,800 rpm engine speed.	
4th layer, low gear	30 fpm
Cable	3/4-in. dia, approximately 200 ft

1-8. COMMANDER'S CUPOLA

The commander's cupola is a self-contained unit mounted and secured in the top of the turret. The cupola contains the cal .50 M85 machine gun and the necessary instruments and controls to lay the machine gun in azimuth (deflection) and elevation and fire the machine gun. The cupola has vision blocks to provide the vehicle commander with 360 degrees overlapping external vision. The commander is protected from direct or overhead bursts by the cupola which also enables the machine gun to be serviced and operated under cover. An electrical slipring provides an uninterrupted source of power for the cal .50 machine gun, sighting unit, and communication system.

1-9. COMMUNICATIONS

The turret contains the major components of the vehicle communications equipment. This equipment, consisting of Radio Set AN/VRC-53, AN/GRC-125, or AN/VRC-46 and Intercommunication Set AN/VIC-1, provides ground-to-ground communications between vehicles and intercommunication for the crew.

1-10. VENTILATING BLOWER

The vehicle is ventilated by an electrically controlled blower, located on the upper right hand corner of the turret ceiling, that draws outside air into the turret. When the gun is being fired, the blower helps purge the driver's compartment and the turret of spent powder gases.

Section 2. REFERENCE DOCUMENTS

1-11. GENERAL MAINTENANCE

The following list contains applicable publications for general maintenance and repair,

AR 75-1	Malfunctions Involving Ammunition and Explosives
AR 310-20	Allied Communications Publications (ACP's) and Joint Army-Navy-Air Force Publications (JANAPS)
AR 385-40	Accident Reporting and Records
AR 385-55	Prevention of Motor Vehicle Accidents
AR 385-63	Regulation for Firing Ammunition for Training, Target Practice, and Combat
AR 385-65	Identification of Inert Ammunition and Ammunition Components
AR 725-50	Requisitioning, Receipt, and Issue System
DA Form 253	Fire Extinguisher Record Tag (For Use on Carbon Dioxide Extinguishers)
DA Form 348	Equipment - Operator's Qualification Record (Except Aircraft)
DA Form 829	Rejection Memorandum
DA Form 2028	Recommended Changes to DA Technical Manual, Parts List, or Supply Manual 7, 8, or 9
DA Form 2765	Request for Issue or Turn-In
DD Form 6	Reports of Packaging and Handling Deficiencies
DD Form 1397	Processing and Reprocessing Record for Shipment, Storage and Issue of Vehicles, and Spare Engines
ETM 643-091-9400R/JPG	Skill Performance Procedures for MOS 45N Tank Turrets M60, M60A1 , M728
FM 5-20	Camouflage, Basic Principles and Field Camouflage
FM 5-25	Explosives and Demolitions
FM 17-12	Tank Gunnery
FM 20-22	Vehicle Recovery
FM 21-5	Military Training
FM 21-6	Techniques of Military Instruction
FM 21-30	Military Symbols
FM 21-40	Chemical, Biological, Radiological, and Nuclear Defense
FM 31-70	Basic Cold Weather Manual
FM 31-71	Northern Operations
FM 31-72	Mountain Operations

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LO 9-2350-222-12	Lubrication Order for Vehicle, Combat Engineer, Full Tracked: M728
SF Form 46	United States Government Motor Vehicle Operator's Identification Card
SF Form 91	Operator's Report of Motor Vehicle Accident
TB 746-93-1	Color and Marking of Military Vehicles, Construction Equipment, and Materials Handling Equipment
TB ORD 426	Hydropneumatic Recoil Mechanisms for Towed and Self Propelled Field Artillery Instructions for Inspection and for Checking and Correcting Nitrogen Pressure
TB ORD 548	Failure of Azimuth Indicators, Sighting and Fire Control Instruments
TB 9-2300-278-20	Vehicle Protective Closures Use and Disposition
TM 3-220	Chemical, Biological, and Radiological (CBR) Decontamination
TM 9-207	Operation and Maintenance of Army Materiel in Extreme Cold Weather 0° to -65°
TM 9-238	Deep Water Fording of Ordnance Materiel
TM 9-243	Use and Care of Hand Tools and Measuring Tools
TM 9-254	General Maintenance Procedures for Fire Control Materiel
TM 9-500	Ordnance Corps Equipment Data Sheets
TM 9-1005-231-25	Machine Gun Caliber .50 M85, Organizational, Direct Support, General Support, and Depot Maintenance Manual including Repair Parts and Special Tools List
TM 9-1005-233-24	Machine Gun 7.62-MM, Organizational, Direct Support, and General Support, Maintenance Manual including Repair Parts and Special Tools List
TM 9-1300-206	Care, Handling, Preservation, and Destruction of Ammunition
TM 9-1305-200	Small Arms Ammunition
TM 9-2350-222 ESC	Equipment Serviceability Criteria
TM 9-2350-222-10	Operator's Manual: Vehicle, Combat Engineer, Full Tracked: M728
TM 9-2350-222-20P-1	Organizational Maintenance Repair Parts and Special Tools List for Hull, Vehicle, Combat Engineer, Full Tracked: M728
TM 9-2350-222-20P-2	Organizational Maintenance Repair Parts and Special Tools List for Turret, Vehicle, Combat Engineer, Full Tracked: M728
TM 9-2350-222-20-2-1	Preventive Maintenance for Turret, Vehicle, Combat Engineer, Full Tracked: M728
TM 9-2350-222-20-2-2-1	Organizational Troubleshooting for Turret, Vehicle, Combat Engineer, Full Tracked: M728

TM 9-2350-222-20-2-2-2	Organizational Troubleshooting for Turret, Vehicle, Combat Engineer, Full Tracked: M728
TM 9-2630-200-14	Identification, Inspection, Classification, Maintenance, Stowage, Disposition, and Issue of Solid Rubber Tires and Track Components
TM 9-3305-1	Principles of Artillery Weapons
TM 9-3305-2	Principles of Fire Control Materiel
TM 9-6140-200-14	Operation and Organizational, Field and Depot Maintenance: Storage Batteries, Lead-Acid Type
TM 11-5820-498-12	Operator's and Organizational Maintenance Manual including Repair and Special Tools List for Radio Sets AN/VRC-53, AN/VRC-64 and AN/GRC-125, AN/GRC-160 and Amplifier-Power Supply Group OA-3633/GRC and OA-3633A/GRC
TM 11-5820-401-12	Operator's and Organizational Maintenance Manual, Radio Sets AN/VRC-12 and AN/VRC-43, -44,-45,-46,47,46,-49, -64, and -55
TM 11-6230-219-12	Operator, Organizational Maintenance Manual for Searchlight D.C. 28 Volt, 100 Amp Xenon Type Infrared and Visible
TM 114230-219-35	Direct Support, General Support, and Depot Maintenance including Repair Parts Manual for Searchlight D.C. 28 Volt, 100 Amp Xenon Type Infrared and Visible
TM 21-301	Driver's Selection, Training, and Supervision, Full Track Vehicles
TM 21-306	Manual for the Tracked Vehicle Driver

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1-12. CLEANING

General cleaning procedures are located in ETM 643-091-9400R/JPG.

1-13. PAINTING

■ General painting procedures are located in TM 43-0139

Section 3. SAFETY AND EMERGENCY PROCEDURES

1-14. Any safety or emergency procedures associated with the Organizational level maintenance procedures contained in this manual will be found with the procedures they apply to.

Section 4. SPECIAL TOOLS

1-15. A list, of special tools and a description of their use can be found in the MAINTENANCE ALLOCATION CHART in TM 9-2350-222-20-2-1. Instructions for use of multi-use special tools is either contained in the applicable maintenance procedure or the Job Performance Guide as referenced in the applicable maintenance procedure.

Section 6. SPECIAL TEST EQUIPMENT

1-16. A list of special test equipment can be found in the MAINTENANCE A.LLOCATION CHART contained in TM 9-2350-222-20-2-1.

Section 6. GENERAL INFORMATION PROCEDURES

1-17. MAINTENANCE PROCEDURES INDEX

	Procedure	Paragraph
1.	Hydraulic System Pressure Reduction Procedure	1-18
2.	Main Accumulator Nitrogen Charging Procedure	1-19
3.	Manual Accumulator Nitrogen Charging Procedure	1-20
4.	Turret Hydraulic System Draining Procedure	1-21
5.	Turret Hydraulic System Bleeding Procedure	1-22
6.	Hydraulic Tube Connector Disconnect Procedure	1-23
7.	Hydraulic Tube Connector Connect Procedure	1-24
8.	Hydraulic Tube Connector Leakage Inspection Procedure	1-25
9.	Equilibrator Accumulator Nitrogen Charging Procedure	1-26
10.	Equilibrator System Draining and Filling Procedure	1-27

1-18. HYDRAULIC SYSTEM PRESSURE REDUCTION PROCEDURE

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

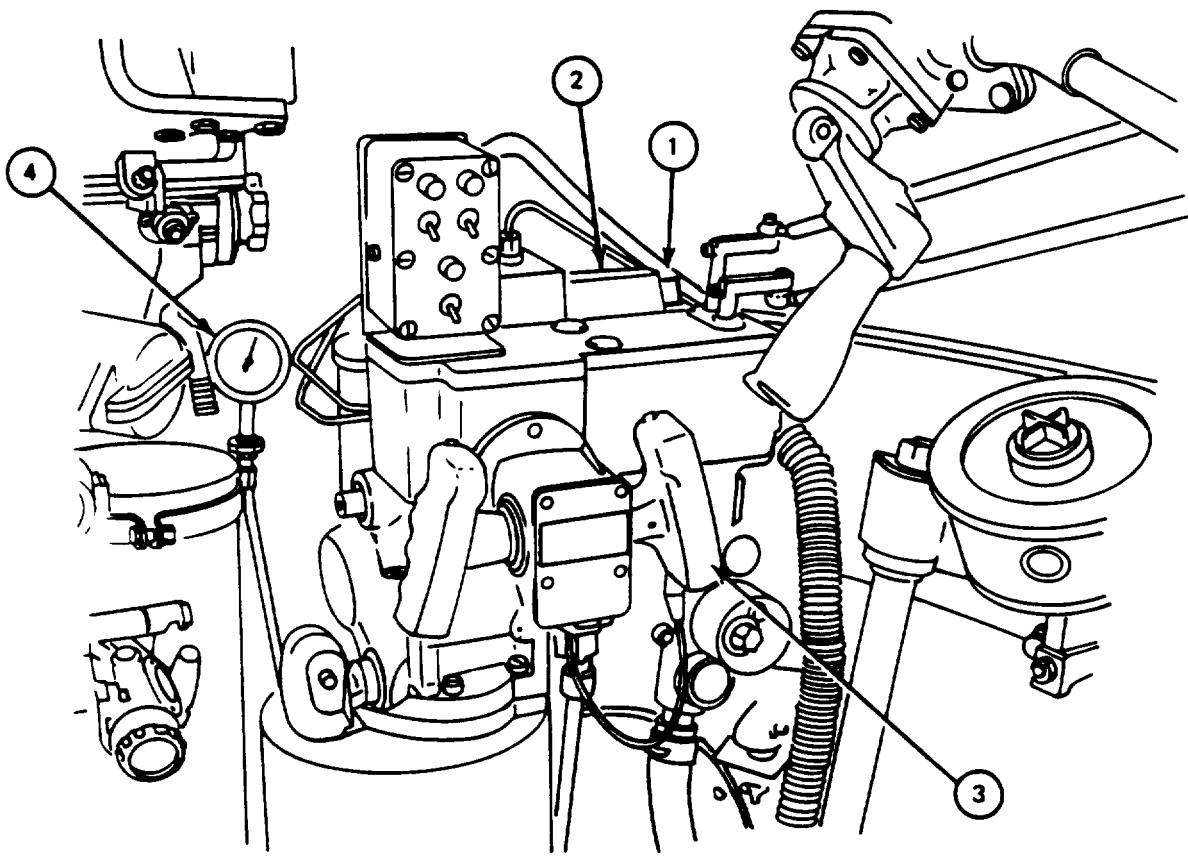
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Turret Traverse Lock	FO-3	7
Gunner's Control Handles	FO-1	25

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 LOCKED

1-18. HYDRAULIC SYSTEM PRESSURE REDUCTION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Using finger, push in and hold the plunger (1) on power solenoid (2).
NOTE	
The pressure will fall slowly until a reading of 500 to 550 psi is reached and then fall suddenly to zero.	
2.	Move gunner's control handles (3) to right or left until needle on pressure gauge (4) reads zero.
3.	Return gunner's handles (3) to neutral.
4.	Release plunger (1).
END OF TASK	



1-19. MAIN ACCUMULATOR NITROGEN CHARGING PROCEDURE

TEST EQUIPMENT: Dry nitrogen tank (NSN 6830-00-2649086)
 Accumulator charging regulator (NSN 4933-01-046-7109) (12252157)
 Adapter (NSN 4933-00-103-2802) (11658921)

TOOLS 3/8 in. open end wrench
 12 in. adjustable wrench
 11/16 in. open end wrench

SUPPLIES: Protective cap

PERSONNEL: One

REFERENCES TM 9-2350-222-10 for procedures.
 Check hydraulic system fluid level
 Check 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
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
 Nitrogen pressure checked (TM-10)

GENERAL INSTRUCTIONS

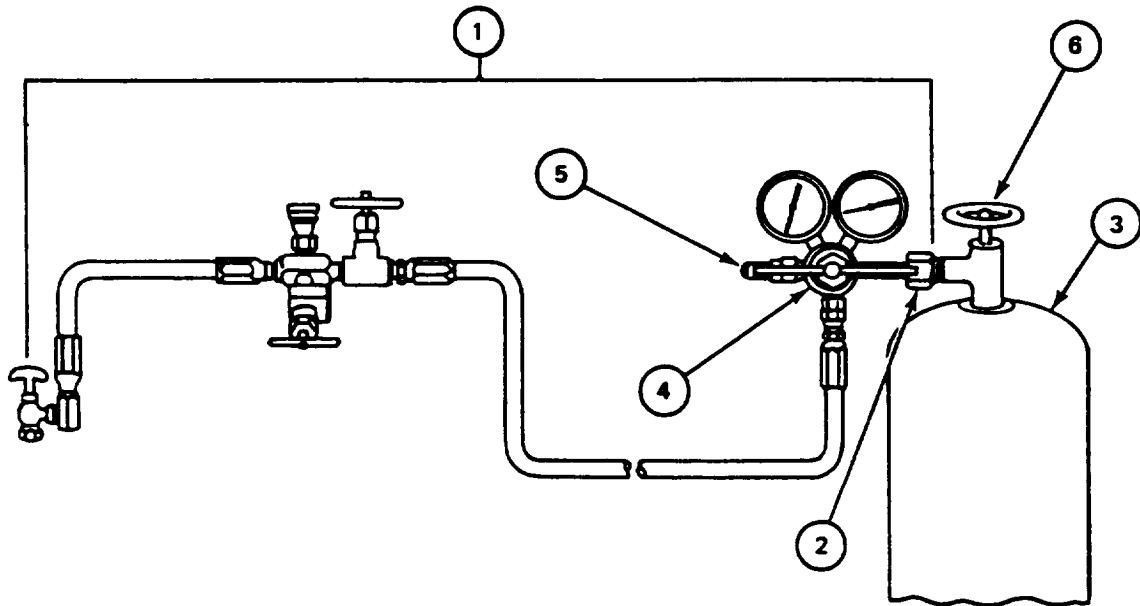
NOTE

The nitrogen bottle pressure gauge must read at least 600 psi. If it does not, get a fully charged nitrogen bottle.

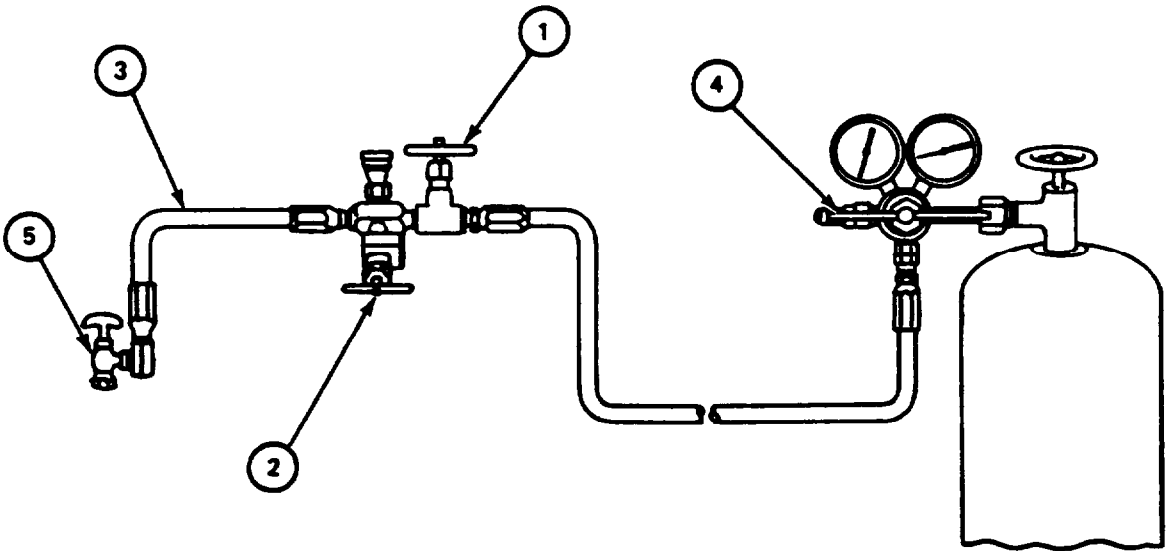
1-19. MAIN ACCUMULATOR NITROGEN CHARGING PROCEDURE (CONT)

FRAME 1

step	Procedure
	<div style="border: 1px solid black; padding: 5px; text-align: center; margin: 0 auto;"> <p>WARNING</p> </div> <p style="text-align: center; margin: 10px 0;">Before charging main accumulator, hydraulic system pressure must be lowered to 0 psi. Hydraulic fluid under pressure can hurt you.</p> <ol style="list-style-type: none"> 1. Lower hydraulic system pressure to 0 psi (para 1-18). 2. Take accumulator charging regulator (1) out of stowage box. 3. Using adjustable wrench, put accumulator charging regulator (1) with adapter (2) on nitrogen tank (3). 4. Close pressure regulator (4) by turning T handle (5) counterclockwise until it turns freely. 5. Open nitrogen supply valve (6). <p>GO TO FRAME 2</p>



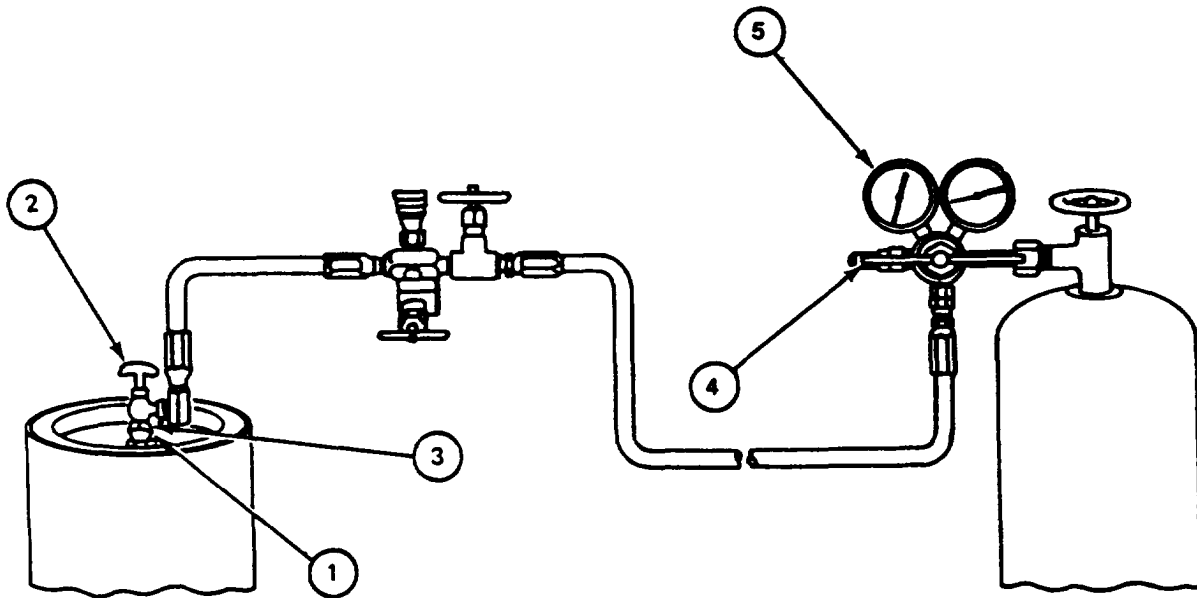
1-19. MAIN ACCUMULATOR NITROGEN CHARGING PROCEDURE (CONT)

FRAME 2	
Step	Procedure
<ol style="list-style-type: none"> 1. Open manifold shut-off valve (1). 2. Close bleeder valve (2). 3. Purge lines (3) by slowly turning regulator valve handle (4) clockwise until gas can be heard coming out of air chuck valve (5). Purge lines for 5 to 10 seconds. 4. Close manifold shut-off valve (1). <p>GO TO FRAME 3</p>	
 <p>The diagram shows a nitrogen charging manifold system. On the right is a nitrogen gas cylinder with a regulator assembly featuring two gauges and a handle, labeled (4). A hose connects the regulator to a central manifold. The manifold has a top shut-off valve labeled (1) and a bottom bleeder valve labeled (2). A line from the manifold goes to the left, where it branches into two lines. The upper line is labeled (3) and leads to an air chuck valve labeled (5). The lower line is unlabeled but connects to the manifold. The entire setup is enclosed in a rectangular frame.</p>	

1-19. MAIN ACCUMULATOR NITROGEN CHARGING PROCEDURE (CONT)

FRAME 3

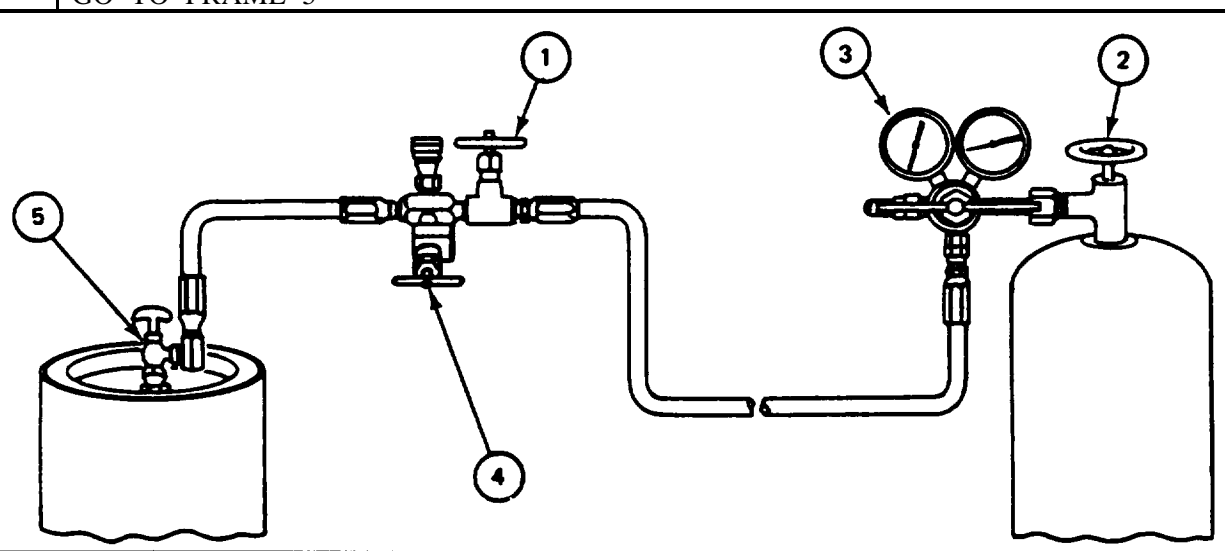
Step	Procedure
<ol style="list-style-type: none"> 1. 2. 3. 4. 5. 	<p>Using 3/8" open end wrench, remove cap from accumulator charging valve (1)</p> <p>Turn T handle (2) counterclockwise until it turns freely.</p> <p>Using 11/16" open end wrench. put air chuck valve (3) onto charging valve (1).</p> <p>Turn T handle (2) fully clockwise.</p> <p>Slowly turn regulator valve handle (4) clockwise until pressure regulating gauge (5) reads between 500 and 550 psi.</p> <p>GO TO FRAME 4</p>



Para 1-19 Cont

1-19. MAIN ACCUMULATOR NITROGEN CHARGING PROCEDURE (CONT)

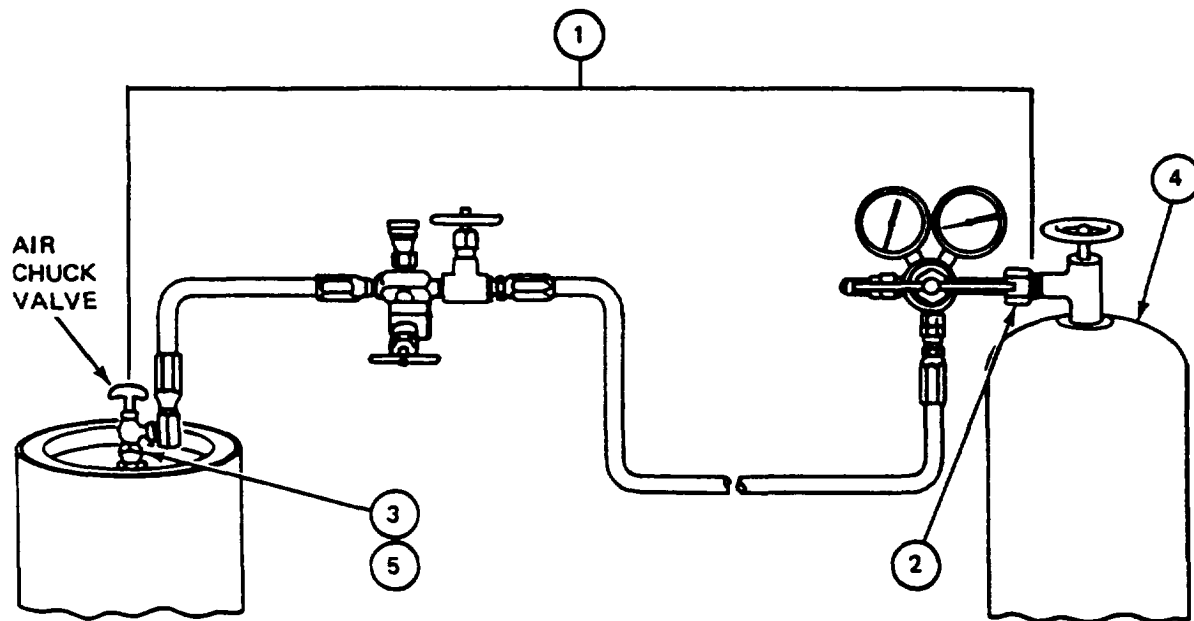
FRAME 4	
Step	Procedure
1.	<p>Slowly open manifold shut-off valve (1).</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">If main accumulator gauge shows pressure building up, close manifold shut-off valve (1) and do steps 2 and 3. If not, go to step 4.</p>
2.	Lower hydraulic system pressure to 0 psi (para 1-18).
3.	Return to step 1.
4.	<p>Close nitrogen supply valve (2) when pressure regulator gauge (3) settles at original pressure regulator valve setting between 500 and 550 psi.</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">If the accumulator is charged with too high nitrogen pressure (over 550 psi), excess pressure must be bled off by doing steps 5 and 6. Otherwise, go to step 7.</p>
5.	Check nitrogen supply valve (2) is closed.
6.	Open bleeder valve (4) slowly and close it when pressure on regulator gauge (3) shows between 500 and 550 psi.
7.	Turn T handle of air chuck valve (5) fully counterclockwise.
8.	Open bleeder valve (4).
GO TO FRAME 5	



1-19. MAIN ACCUMULATOR NITROGEN CHARGING PROCEDURE (CONT)

FRAME 5

Step	Procedure
<ol style="list-style-type: none"> 1. 2. 3. 	<p>Using adjustable wrench and 11/16" open end wrench, remove accumulator charging regulator (1) with adapter (2) from accumulator charging valve (3) and from nitrogen bottle (4).</p> <p>Using 3/8" open end wrench, put protective cap (5) on charging valve (3).</p> <p>Put accumulator charging regulator (1) with adapter (2) in stowage box.</p>
<p style="text-align: center;">NOTE</p> <p style="text-align: center;">Follow-on Maintenance Action Required:</p> <p style="text-align: center;">Check hydraulic system fluid level and fill as required (TM-10). Bleed turret hydraulic system (para 1-22).</p> <p>END OF TASK</p>	



1-20. MANUAL ACCUMULATOR NITROGEN CHARGING PROCEDURE

TEST EQUIPMENT: Dry nitrogen tank (NSN 6830-00-264-9086)
 Accumulator charging regulator (NSN 4933-01-046-7109) (122-52157)
 Adapter (NSN 4933-00-103-2802) (11658921)

TOOLS: 9/16 in. open end wrench
 11/16 in. open end wrench
 12 in. adjustable wrench
 3/8 in. open end wrench

SUPPLIES: Protective cap
 Lint-free cloths (item 15, App. A)
 1 gal container for fluid

PERSONNEL One

REFERENCES TM 9-2350-222-10 for procedures to:
 Manually elevate and depress 165-mm gun
 Check hydraulic system fluid level

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	FO-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

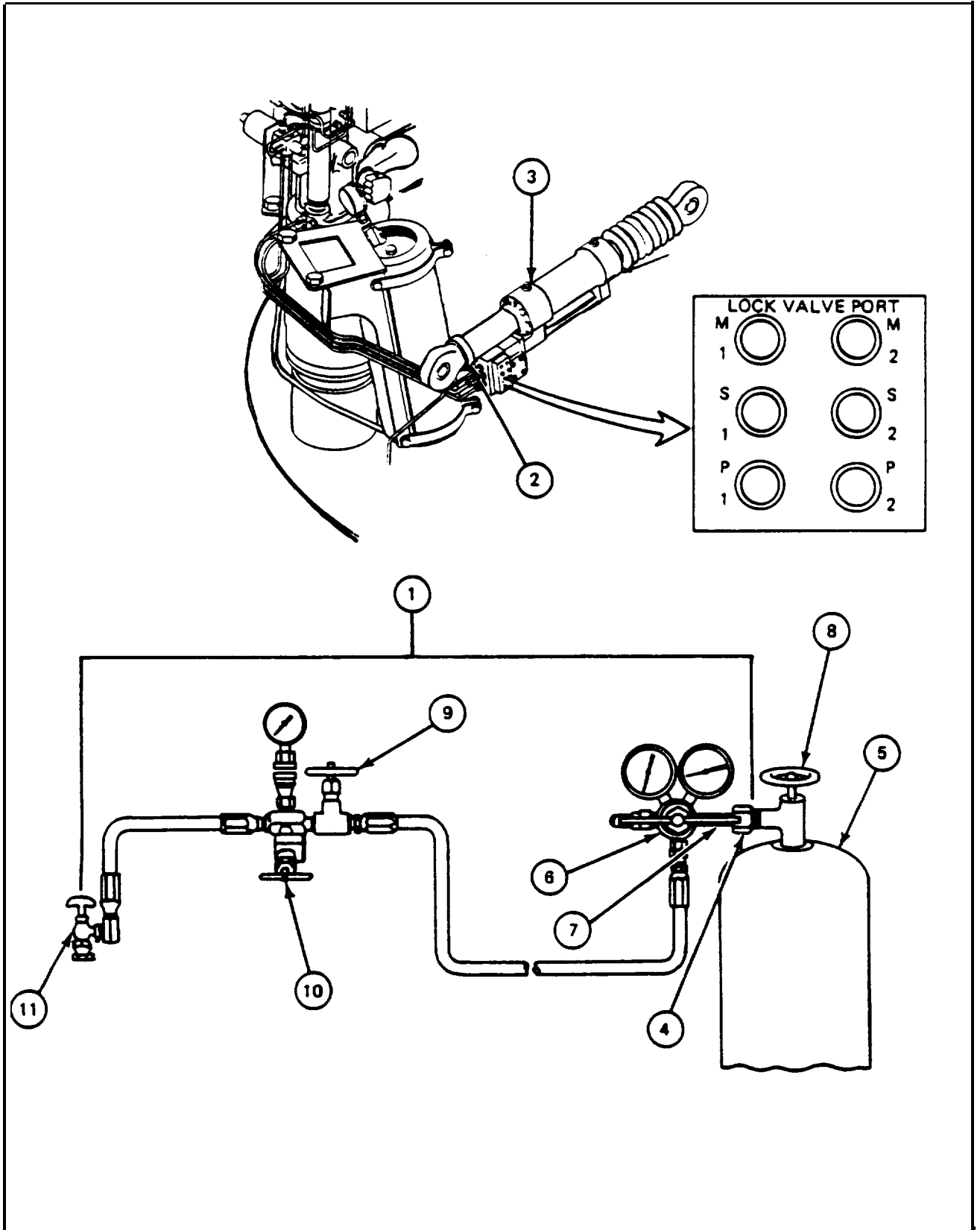
GENERAL INSTRUCTIONS:

NOTE

The nitrogen bottle pressure gauge must read at least 200 psi. If the reading is less, change the nitrogen bottle with one fully charged. Cloths will be used for cleaning up hydraulic fluid spills.

1-20. MANUAL ACCUMULATOR NITROGEN CHARGING PROCEDURE (CONT)

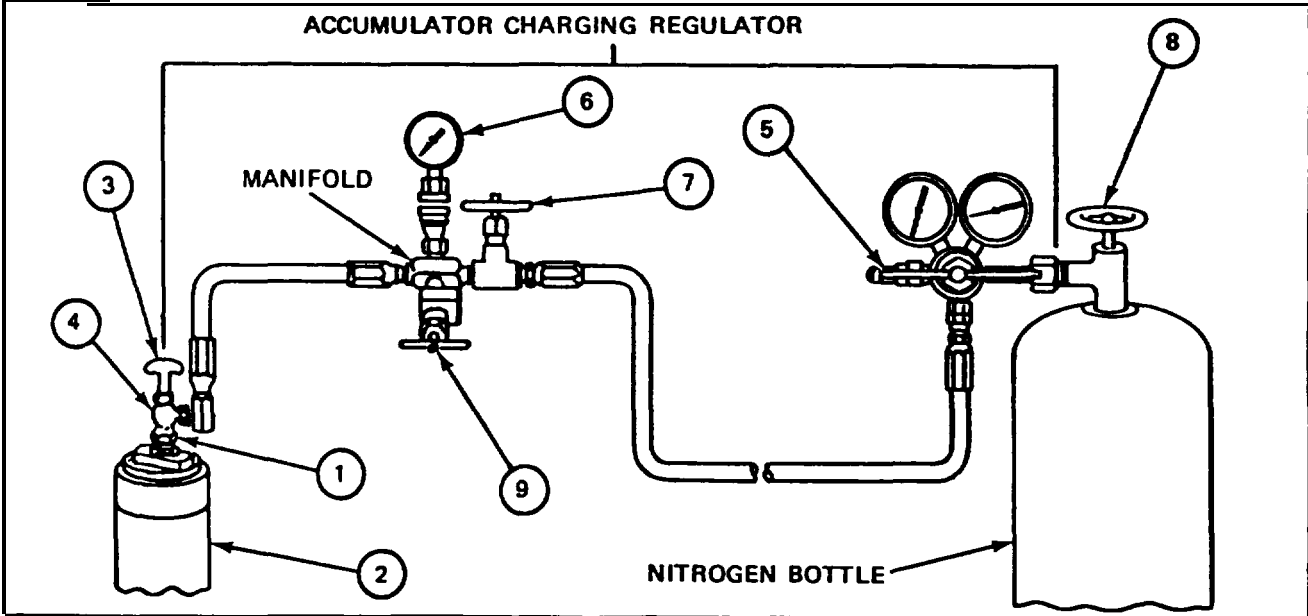
FRAME 1	
Step	Procedure
	<div style="border: 1px solid black; text-align: center; padding: 5px; margin: 10px auto; width: fit-content;"> <p>WARNING</p> </div> <p style="text-align: center; margin: 10px auto; width: 80%;">Before charging manual accumulator, hydraulic system pressure must be lowered to 0 psi. Hydraulic fluid under pressure can hurt you.</p> <ol style="list-style-type: none"> 1. Lower hydraulic system pressure to 0 psi (para 1-18). 2. Take accumulator charging regulator (1) out of stowage box. 3. Using 9/16" and 11/16" open end wrenches and container to catch hydraulic fluid. loosen fitting on manual depression line (2) at port M1 on elevating mechanism (3) to relieve and drain any pressurized fluid. Tighten fitting. 4. Using adjustable wrench, put accumulator charging regulator (1) with adapter (4) on nitrogen tank (5). 5. Close pressure regulator valve (6) by turning T handle (7) counterclockwise until it turns freely. 6. Open nitrogen supply valve (8). 7. Open manifold shut-off valve (9). 8. Close bleeder valve (10). 9. Purge lines by slowly turning T handle (7) clockwise until gas can be heard coming out of air chuck valve (11). Purge lines for 5 to 10 seconds. <p>GO TO FRAME 2</p>



1-20. MANUAL ACCUMULATOR NITROGEN CHARGING PROCEDURE (CONT)

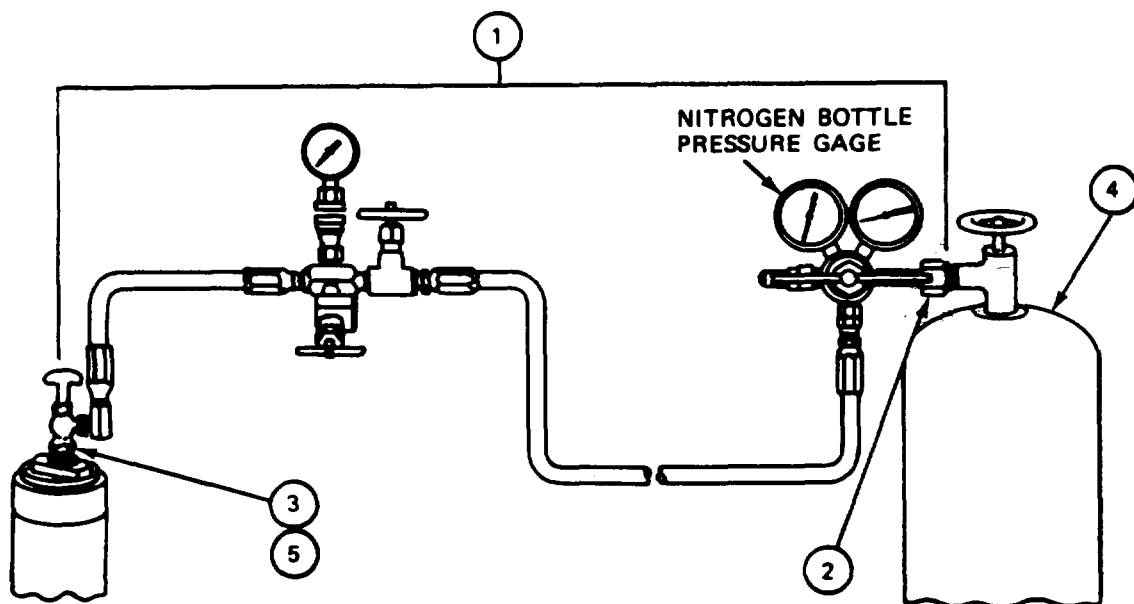
FRAME 2

Step	Procedure
1.	Using 3/8" open end wrench, remove cap from charging valve (1) on manual elevation accumulator (2).
2.	Turn T handle (3) counterclockwise until it turns freely.
3.	Using 11/16" open end wrench, put air chuck valve (4) onto charging valve (1).
4.	Turn T handle (3) fully clockwise.
5.	Slowly turn pressure regulator valve handle (5) clockwise until manifold pressure gauge (6) shows between 75 and 100 psi.
6.	Close nitrogen supply valve (8) when manifold pressure gauge (6) settles at a pressure between 75 and 100 psi.
<p>NOTE</p> <p>If the pressure is greater than 100 psi excess pressure must be bled off by doing steps 7 and 8. Otherwise, go to step 9.</p>	
7.	Check nitrogen supply valve (8) is closed.
8.	Open bleeder valve (9) slowly and close it when pressure on manifold gauge (6) shows between 75 and 100 psi.
9.	Turn T handle (3) fully counterclockwise.
10.	Open bleeder valve (9). GO TO FRAME 3



1-20. MANUAL ACCUMULATOR NITROGEN CHARGING PROCEDURE (CONT)

FRAME 3	
Step	Procedure
1.	Using adjustable wrench and 11/16" open end wrench, remove accumulator charging regulator (1) with adapter (2) from accumulator charging valve (3) and from nitrogen bottle (4).
2.	Using 3/8" open end wrench, put protective cap (5) on charging valve (3) of manual elevation accumulator.
3.	Put accumulator charging regulator (1) with adapter (2) in stowage box.
<p>NOTE</p> <p>Follow-on Maintenance Action Required:</p> <p>Check hydraulic system fluid level and fill as required (TM-10). Bleed hydraulic system, if required (para 1-22). Recharge manual accumulator with oil by lowering gun and turning pump handle counterclockwise until resistance is met (TM-10).</p>	
<p>END OF TASK</p>	



1-21. TURRET HYDRAULIC SYSTEM DRAINING PROCEDURE

SUPPLIES: Hose
 2 gallon container

PERSONNEL: One

REFERENCES: LO 9-2350-222-12 for procedure to fill hydraulic reservoir
 TM 9-2350-222-10 for procedures to:
 Traverse turret
 Set turret traverse lock to LOCKED

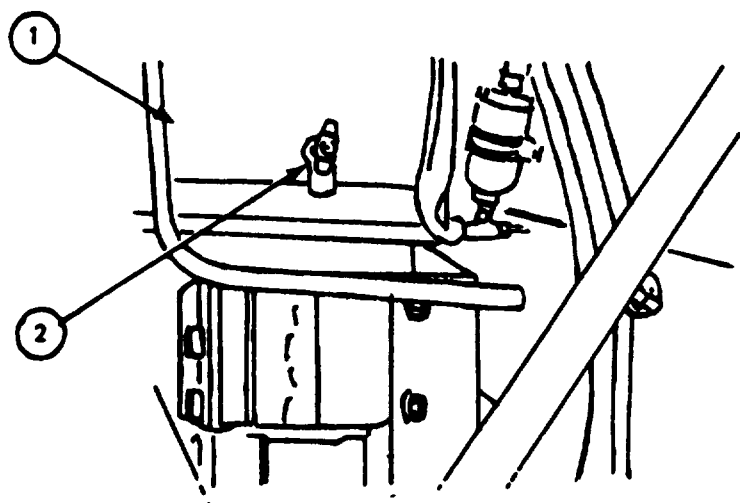
EQUIPMENT LOCATION INFORMATION:

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

1-21. TURRET HYDRAULIC SYSTEM DRAINING PROCEDURE (CONT)

FRAME 1	
Step	Procedure
<ol style="list-style-type: none"> 1. 2. 	<p>Traverse turret until reservoir (1) can be reached from driver's compartment (TM-10).</p> <p>Set turret traverse lock to LOCKED (TM-10).</p> <div style="text-align: center; border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>WARNING</p> </div> <p style="text-align: center;">Before draining hydraulic system, hydraulic pressure must be lowered to 0 psi. Hydraulic fluid under pressure can hurt you.</p>
<ol style="list-style-type: none"> 3. 4. 5. 6. 7. 	<p>Lower hydraulic system pressure to 0 psi (para 1-18).</p> <p>Attach one end of hose to drain cock (2) and put other end in container.</p> <p>Open drain cock (2) and let all fluid drain from resevoir (1). Close drain cock.</p> <p>Remove hose from drain cock (2) and container.</p> <p>Take fluid to disposal point.</p> <div style="text-align: center; margin: 10px 0;"> <p>NOTE</p> <p>Follow-on Maintenance Action Required:</p> <p>Fill hydraulic system (LO).</p> </div> <p>END OF TASK</p>



1-22. TURRET HYDRAULIC SYSTEM BLEEDING PROCEDURE

TOOLS: 7/16 in. open end wrench (two)
9/16 in. open end wrench
3/8 in. open end wrench
Diagonal cutting pliers

SUPPLIES: Hydraulic fluid (item 9, App. A)
1 qt. container for fluid
Lint-free cloths (item 15, App. A)
3/16 in. I.D. hose, 6 ft lg

PERSONNEL: Two

REFERENCES: TM 9-2350-222-10 for procedures to:
Elevate and depress 165-mm gun
Traverse Turret
Check nitrogen pressure
Engage turret traverse lock

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	FO-4	8

PRELIMINARY PROCEDURE: Traverse turret until 165-mm gun is over driver's hatch (TM-10).

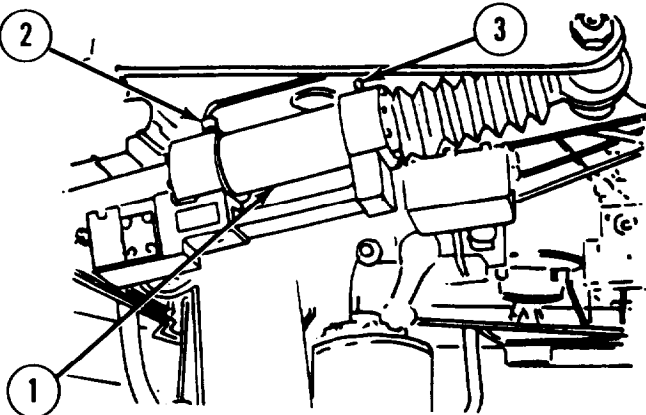
EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to ON
Gunner's control box ELEV/TRAV POWER switch set to ON
Nitrogen pressure checked (TM-10)
Turret traverse lock engaged

GENERAL INSTRUCTIONS:

NOTE

Bleed turret hydraulic system when gun movement is spongy, or when any hydraulic part has been removed and replaced. Bleed hose must be placed in container for every bleed operation and container must be dumped after each operation. Cloths will be used for cleanup of all fluid spills.

1-22. TURRET HYDRAULIC SYSTEM BLEEDING PROCEDURE (CONT)

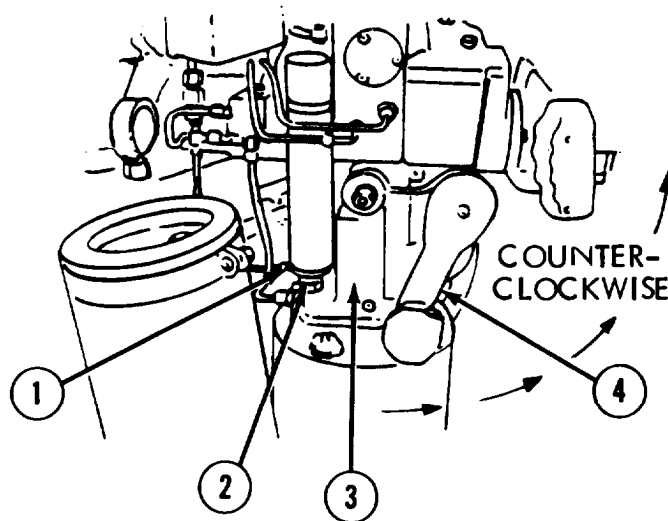
FRAME 1	
Step	Procedure
1.	Soldier A: Using gunner's control handles, elevate and depress gun at least five times (TM-10). Set gun at full depression (TM-10).
	NOTE
	Gun muzzle must be over front of vehicle (top of driver's hatch) to obtain full depression.
2.	Soldier B: Install hose on elevating mechanism front bleed valve (2). Place other end of hose in container.
3.	Using 3/8 in. wrench, open front bleed valve (2).
4.	Soldier A: Using gunner's control handles, slowly elevate gun (TM-10).
5.	Soldier B: Check hydraulic fluid, flowing from hose, for air bubbles. When no air bubbles are present; front bleed valve (2) is higher than rear bleed valve (3); and gun is not at maximum elevation, close front bleed valve (2) using 3/8 in. wrench.
6.	Remove hose from front bleed valve (2) and install on rear bleed valve (3).
7.	Soldier A: Using gunner's control handles, position gun at full elevation.
8.	Soldier B: Using 3/8 in. wrench, open rear bleed valve (3).
9.	Soldier A: Using gunner's control handles, slowly depress gun.
10.	Soldier B: Check hydraulic fluid, flowing from hose, for air bubbles. When no air bubbles are present; rear bleed valve (3) is higher than front bleed valve (2); and gun is not at maximum depression, close rear bleed valve (3), using 3/8 in. wrench. Remove hose.
	GO TO FRAME 2
	

1-22. TURRET HYDRAULIC SYSTEM BLEEDING PROCEDURE (CONT)

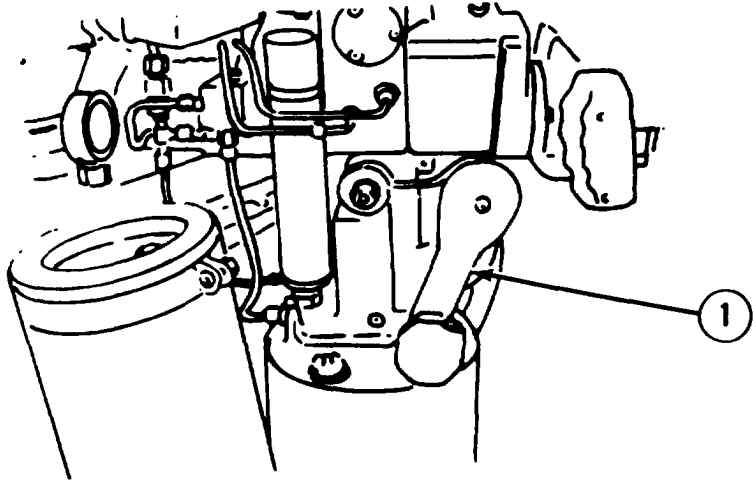
FRAME 2

Step	Procedure
1.	Soldier B: Loosen manual accumulator (1) from adapter (2). Place lint free cloth around riser assembly (3).
2.	Soldier A: Rapidly rotate the hand elevating pump handle (4) counterclockwise until a flow of clear hydraulic fluid (no air bubbles) emerges from accumulator (1) and adapter (2).
3.	Soldier B: Tighten accumulator (1) to adapter (2).

GO TO FRAME 3



1-22. TURRET HYDRAULIC SYSTEM BLEEDING PROCEDURE (CONT)

FRAME 3	
Step	Procedure
1.	Soldier A: Using gunner's control handles, set gun at full elevation and hold control handles in that position.
2.	Soldier A: Rotate manual elevation pump handle (1) counterclockwise a minimum of fifty times.
3.	Return gunner's control handles to neutral position.
4.	Soldier A: Rotate manual elevation pump handle (1) to move gun in elevation and depression
	NOTE
	If movement of gun is spongy, repeat steps 1 through 3.
5.	Repeat frame 1 steps 2 through 10. Refill reservoir according to LO 9-2350-222-12 and clean up any oil spillage.
	NOTE
	Follow-on Maintenance Action Required: Nitrogen pressure check (TM-10).
	

1-23. HYDRAULIC TUBE CONNECTOR DISCONNECT PROCEDURE

TOOLS: Open end wrenches (two) of suitable size
8" adjustable wrench

SUPPLIES: Suitable protective caps and plugs

PERSONNEL:

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

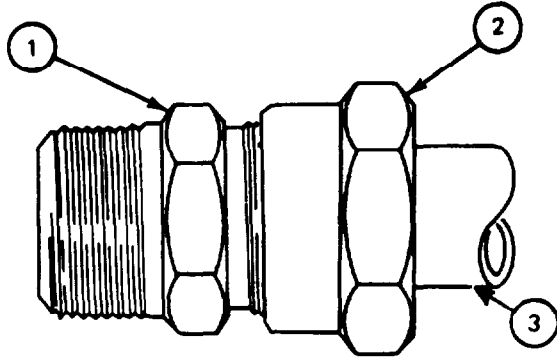
EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED

GENERAL INSTRUCTIONS:

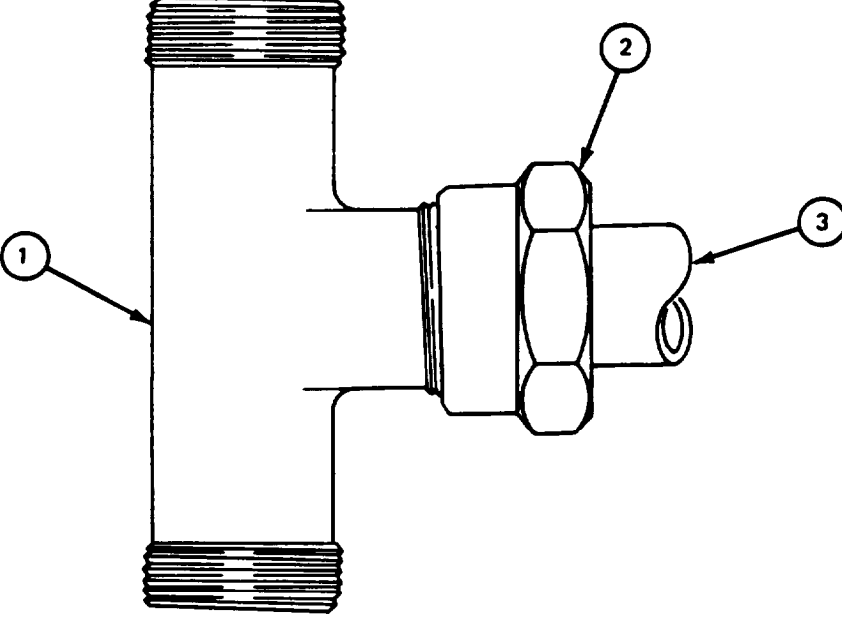


Keep dirt from getting in tubing or parts. Dirt can damage equipment. Handle tubes carefully to prevent damage.

1-23. HYDRAULIC TUBE CONNECTOR DISCONNECT PROCEDURE (CONT)

FRAME 1	
Step	Procedure
	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">WARNING</div> <p>Before removing hydraulic tubes, hydraulic system pressure must be lowered to 0 psi. Hydraulic fluid under pressure can hurt you.</p>
1.	Lower hydraulic system pressure to 0 psi (para 1-18).
	<p>NOTE</p> <p>For tee or elbow, go to frame 2.</p>
2.	Using suitable size wrench, hold adapter (1) or reducer to stop it from turning.
3.	Using another suitable size wrench, turn nut (2) and remove tube (3).
4.	Put plug in open end of tube (3).
5.	Using suitable wrench, remove adapter, if required.
6.	Put plug in open adapter (1) port.
7.	Put two caps on adapter (1), if removed.
	GO TO FRAME 2
 <p>The diagram shows a hydraulic tube connector assembly. It consists of a threaded adapter (1) on the left, a central nut (2), and a tube (3) on the right. The tube (3) is shown being removed from the nut (2). The adapter (1) has a port on the right side.</p>	

1-23. HYDRAULIC TUBE CONNECTOR DISCONNECT PROCEDURE (CONT)

FRAME 2	
Step	Procedure
<ol style="list-style-type: none"> 1. Using adjustable wrench, hold tee (1) or elbow to stop it from turning. 2. Using suitable sized open end wrench, turn nut (2) and remove tube (3). 3. Put caps on open arms of tee (1) and put plug in open tube (3). <p>END OF TASK</p>	
	

1-24. HYDRAULIC TUBE CONNECTOR CONNECT PROCEDURE

TOOLS: Open end wrench (two) of suitable size
8" adjustable wrench

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

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

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. Handle tubes carefully to prevent damage.

1-24. HYDRAULIC TUBE CONNECTOR CONNECT PROCEDURE (CONT)

FRAME 1	
Step	Procedure
<ol style="list-style-type: none"> 1. Take out protective plugs from ends of tube. 2. Clean all parts (para 2-90). 	<p style="text-align: center;">NOTE</p> <p style="text-align: center;">For tee or elbow, go to frame 2. Some tube connectors use a vibration type sleeve. If this connector has one, use same sleeve or same kind of sleeve.</p> <ol style="list-style-type: none"> 3. Put hydraulic fluid on threads of adapter (1) or reducer and sleeve (2). 4. Insert sleeve (2) of tube (3) in adapter (1), and start nut (4) by hand. 5. Using one wrench, hold the adapter (1) to stop it from turning. 6. Using other wrench, turn nut (4) until it becomes hard to turn. 7. Stop and note place you stopped turning wrench: then turn nut (4) between one-sixth and one-third of a turn beyond noted, position. <p>GO TO FRAME 2</p>

1-24. HYDRAULIC TUBE CONNECTOR CONNECT PROCEDURE (CONT)

FRAME 2	
Step	Procedure
<ol style="list-style-type: none"> 1. Put hydraulic fluid on threads of tee connector (1), or elbow, and sleeve (2). 2. Insert sleeve (2) of tube (3) in tee connector (1) and start nut (4) by hand. 3. Using adjustable wrench hold tee connector (1) to stop it from turning. 4. Using other wrench. turn nut (4) until it becomes hard to turn. 5. Stop and note place you stopped turning wrench: then turn nut (4) between one-sixth and one-third of a turn beyond noted position. 	<p>END OF TASK</p>
<p>The diagram illustrates the assembly process. On the left, a tee connector (1) is shown with a sleeve (2) inserted into its side. On the right, a nut (4) is being tightened onto the sleeve (2) of a tube (3).</p>	

1-25. HYDRAULIC TUBE CONNECTOR LEAKAGE INSPECTION PROCEDURE

SUPPLIES: Hydraulic fluid (item 9, App. A)
 Cleaning rags (item 15, App. A)

PERSONNEL: One

REFERENCES: LO 9-2350-222-12 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

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
 Connect tube connectors (para 1-24)

GENERAL INSTRUCTIONS:

NOTE

Use rags to clean up fluid spillage.

FRAME 1	
Step	Procedure
1.	Fill reservoir with hydraulic fluid (LO).
2.	Turn driver's master control panel MASTER BATTERY switch to ON.
3.	Turn gunner's control box ELEV/TRAV POWER switch to ON until hydraulic pressure reaches normal value. Then turn it OFF.
4.	Check hydraulic joints for leaks.
<p>NOTE</p> <p>The most leakage allowable is a seepage slightly moist to the touch, or green discoloration; of painted surfaces. If seepage is any greater, the joint or seal is leaking. In that case, disconnect tube connector (para 1-23) and connect tube connector (para 1-24).</p>	
END OF TASK	

1-26. EQUILIBRATOR ACCUMULATOR NITROGEN CHARGING PROCEDURE

TEST EQUIPMENT Dry nitrogen tank (NSN 6830-00-264-9086)
Accumulator charging regulator (NSN 4933-01-046-7109) (12252157)
Adapter (NSN 4933-00103-2802) (11658921)

TOOLS: 3/8 in. open end wrench
12 in. adjustable wrench
11/16 in. open end wrench

SUPPLIES: Protective cap

PERSONNEL. One

REFERENCES: TM 9-2350-222-10 for procedures to:
Elevate main gun
Check equilibrator system nitrogen pressure
Check equilibrator system fluid level
Balance equilibrator 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
Main gun elevated to maximum elevation (TM-10)
Equilibrator system nitrogen pressure checked (TM-10)

GENERAL INSTRUCTIONS

WARNING

Be sure main gun is at maximum elevation before relieving pressure in equilibrator system.

NOTE

The nitrogen bottle pressure gauge must read at least 1500 psi. If it does not, get a fully charged nitrogen bottle.

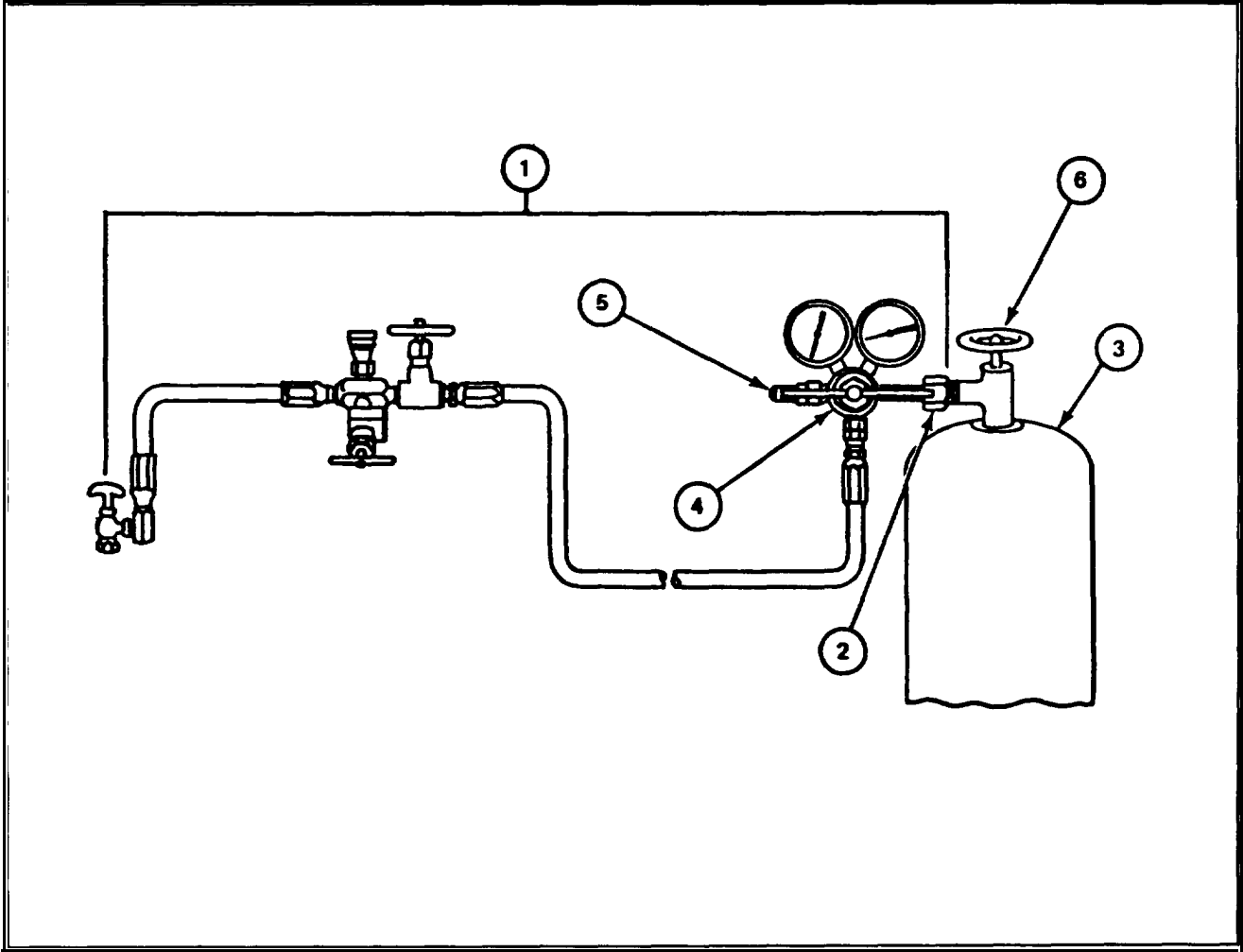
Para 1-26
1-50

Change 2

1-26. EQUILIBRATOR ACCUMULATOR NITROGEN CHARGING PROCEDURE (CONT)

FRAME 1

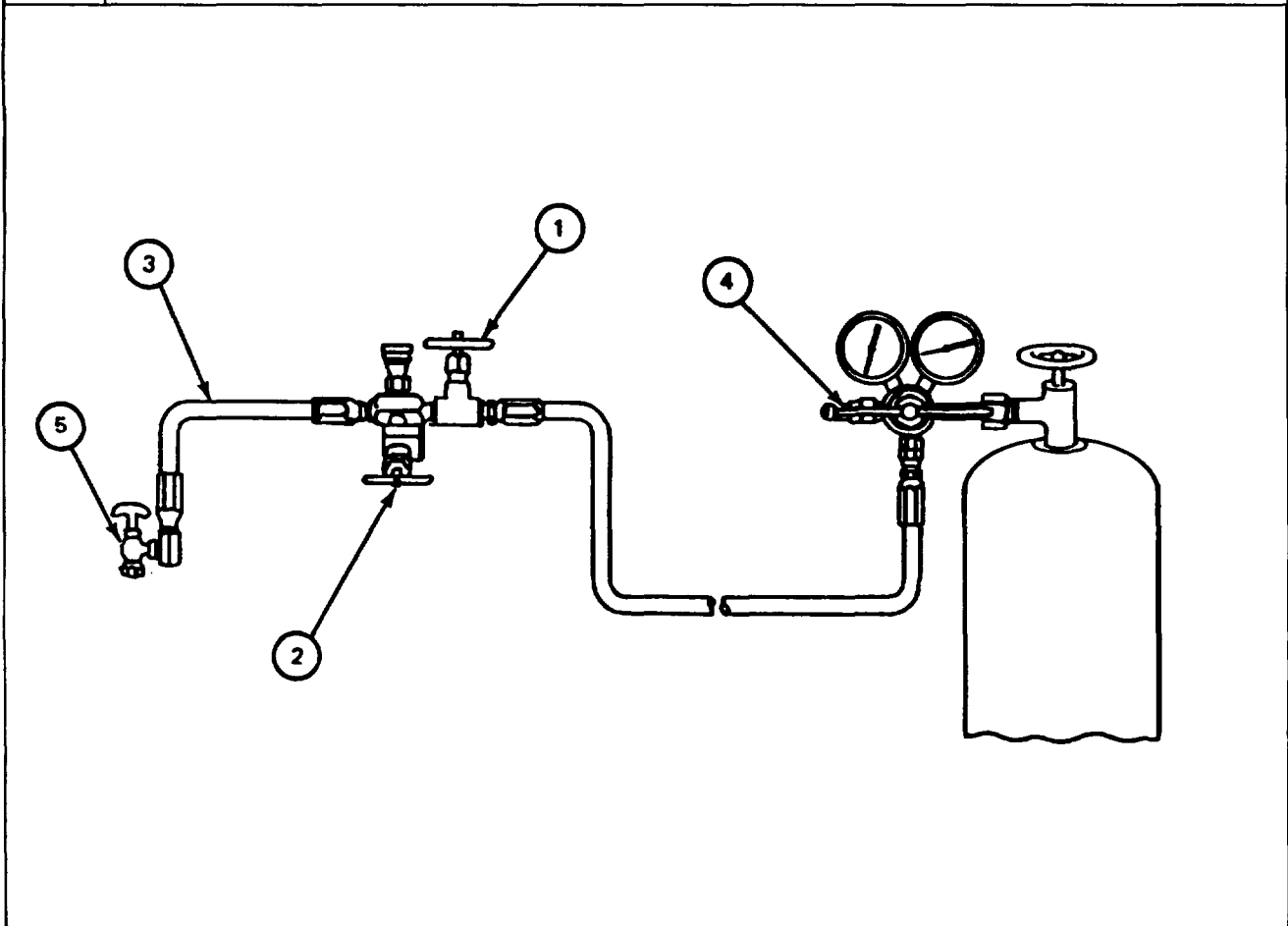
Step	Procedure
1.	Take accumulator charging regulator (1) out of stowage box.
2.	Using adjustable wrench, put accumulator charging regulator (1) with adapter (2) on nitrogen tank (3).
3.	Close pressure regulator (4) by turning T handle (5) counterclockwise until it turns freely.
4.	Open nitrogen supply valve (6). GO TO FRAME 2



**1-26. EQUILBRATOR ACCUMULATOR NITROGEN CHARGING PROCEDURE
(CONT)**

FRAME 2

Step	Procedure
1.	Open manifold shut-off valve (1).
2.	Close bleeder valve (2).
3.	Purge lines (3) by slowly turning T handle (4) clockwise until gas can be heard coming out of air chuck valve (5). Purge lines for 5 to 10 seconds.
4.	Close manifold shut-off valve (1).
GO TO FRAME 3	

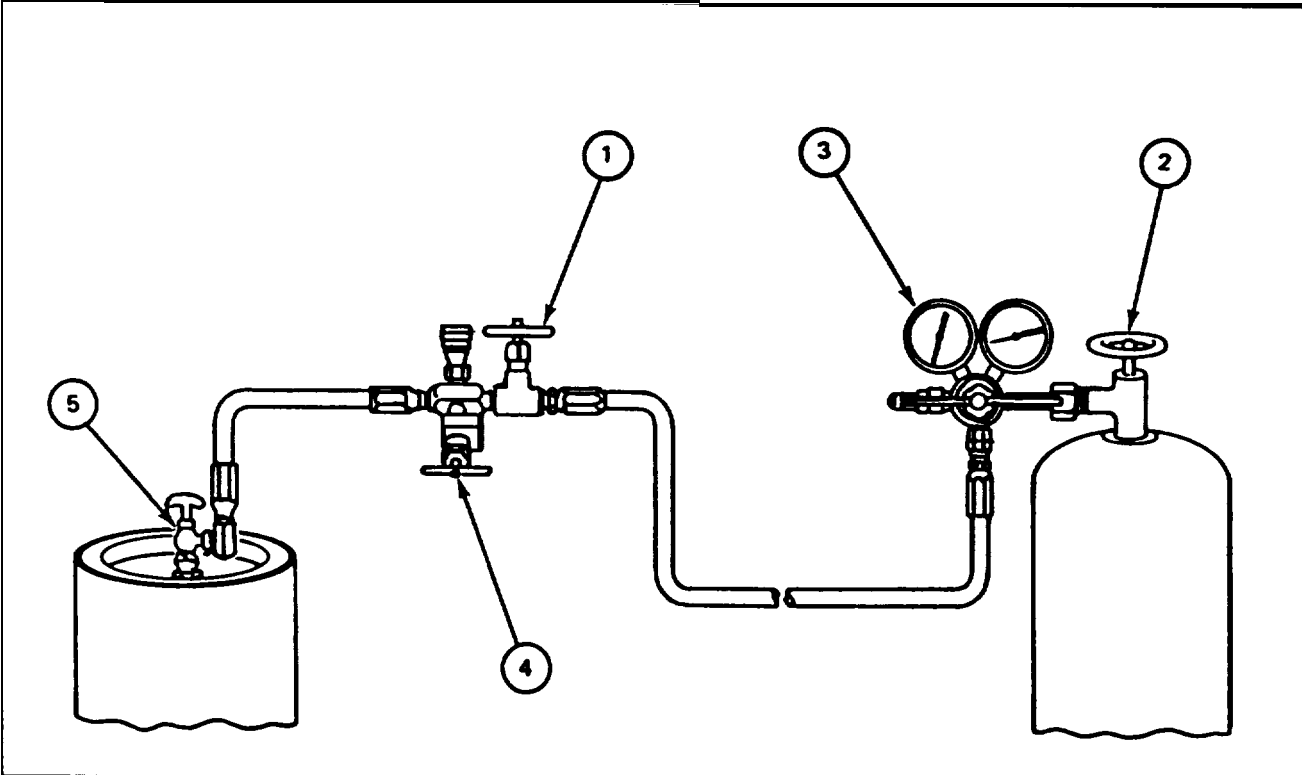


1-26. EQUILIBRATOR ACCUMULATOR NITROGEN CHARGING PROCEDURE (CONT)

FRAME 3	
Step	Procedure
1.	Using 3/8" open end wrench, remove cap from equilibrator accumulator charging valve (1).
2.	Turn T handle (2) counterclockwise until it turns freely.
3.	Using 11/16" open end wrench, put air chuck valve (3) onto charging valve (1).
4.	Turn T handle (2) fully clockwise.
5.	Slowly turn regulator valve handle (4) clockwise until pressure regulating gauge (5) reads between 1375 and 1425 psi.
GO TO FRAME 4	

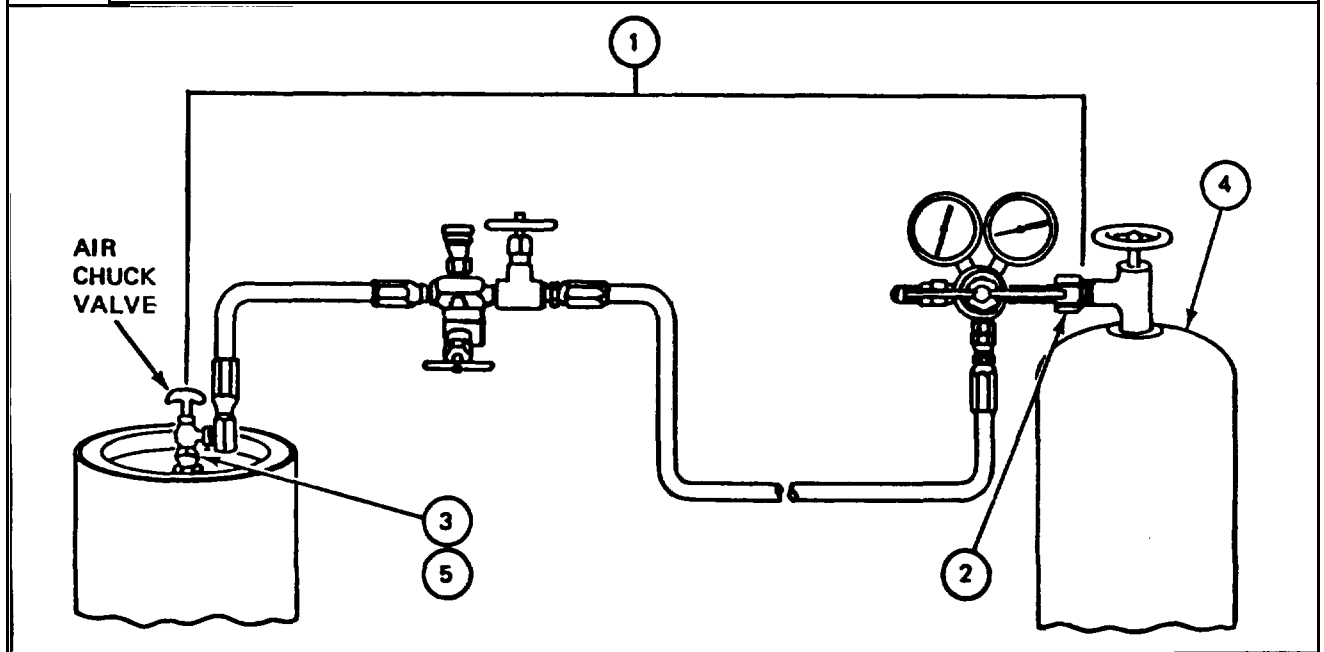
1-26. EQUILBRATOR ACCUMULATOR NITROGEN CHARGING PROCEDURE (CONT)

FRAME 4	
Step	Procedure
<ol style="list-style-type: none"> 1. 2. 	<p>Slowly open manifold shut-off valve (1). Close nitrogen supply valve (2) when pressure regulator gauge (3) settles at original pressure regulator valve setting between 1375 and 1425 psi.</p>
	<p style="text-align: center;">NOTE</p> <p style="text-align: center;">If the accumulator is charged with too high nitrogen pressure (over 1425 psi), excess pressure must be bled off by doing steps 5 and 6. Otherwise, go to step 7.</p>
<ol style="list-style-type: none"> 3. 4. 5. 6. 	<p>Check nitrogen supply valve (2) is closed. Open bleeder valve (4) slowly and close it when pressure on regulator gauge (3) shows between 1375 and 1425 psi. Turn T handle of air chuck valve (5) fully counterclockwise- Open bleeder valve (4).</p>
	<p>GO TO FRAME 5</p>



1-26. EQUILIBRATOR ACCUMULATOR NITROGEN CHARGING PROCEDURE (CONT)

FRAME 5	
Step	Procedure
1.	Using adjustable wrench and 11/16" open end wrench, remove accumulator charging regulator (1) with adapter (2) from equilibrator accumulator charging valve (3) and from nitrogen bottle (4).
2.	Using 3/8" open end wrench, put protective cap (5) on charging valve (3).
3.	Put accumulator charging regulator (1) with adapter (2) in stowage box.
<p>NOTE</p> <p>Follow-on Maintenance Action Required</p> <p>Check equilibrator system fluid level and fill as required (TM-10).</p> <p>Balance equilibrator system (TM- 10).</p>	
END OF TASK	



1-27. EQUILIBRATOR SYSTEM DRAINING AND FILLING PROCEDURE

PERSONNEL: One

FRAME 1	
Step	Procedure
1.	Remove equilibrator manifold (para 47-2).
2.	Remove equilibrator reservoir (para 47-4).
3.	Remove equilibrator falter (para 47-6).
4.	Install equilibrator falter (para 47-7).
5.	Install equilibrator reservoir (para 47-5).
6.	Install equilibrator manifold (para 47-3).
	END OF TASK

CHAPTER 2
TURRET MISCELLANEOUS EQUIPMENT ITEMS

Section 1. SCOPE

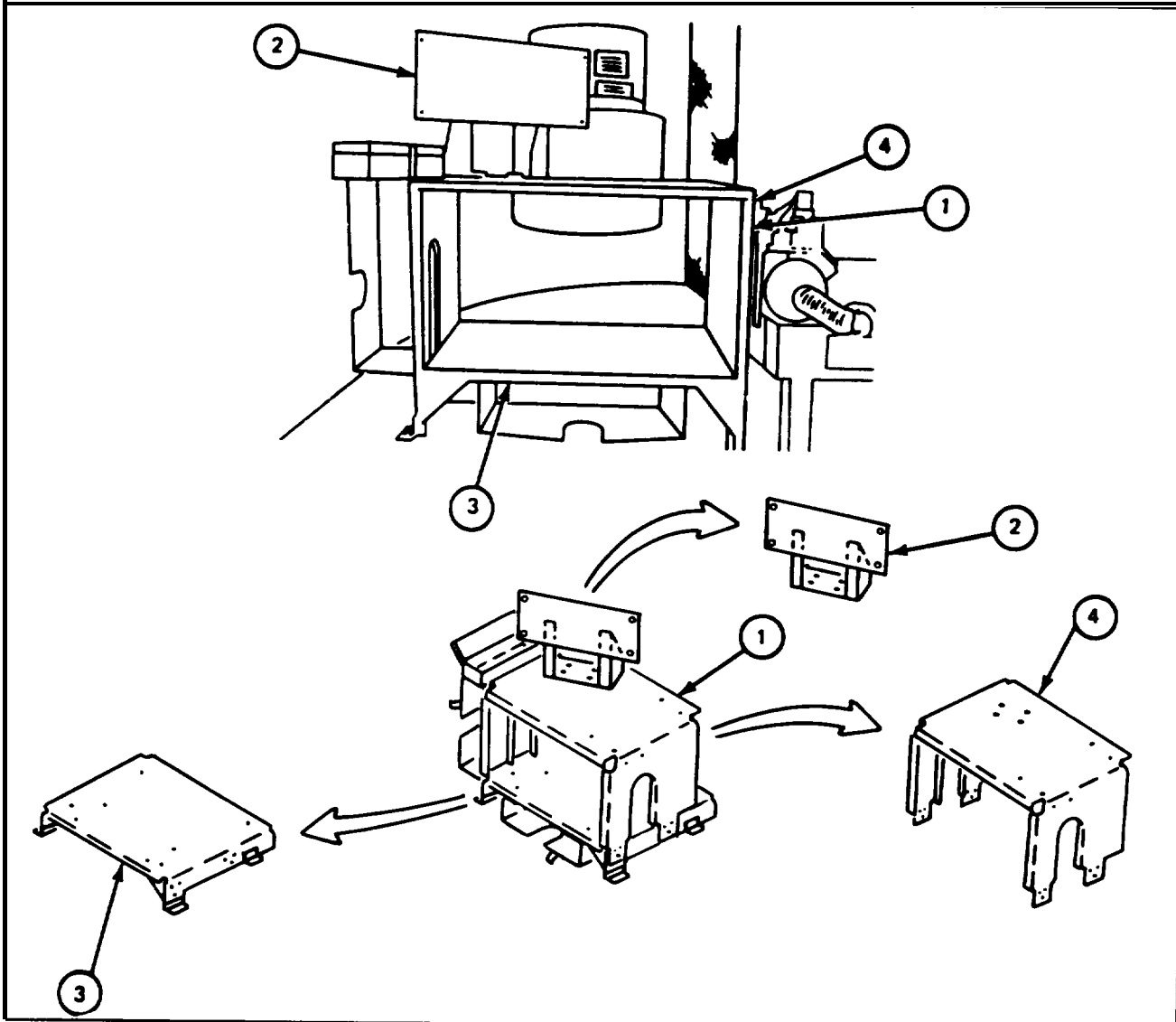
2-1. LIST OF EQUIPMENT ITEMS CONTAINED IN THIS CHAPTER

Section	Equipment Item	Paragraph
2	Turret Radio Supports and Attaching Parts	2-2
3	Turret Gun Firing Relay Box	2-9
4	Turret Power and Searchlight Relay Box to Power Pack Motor Cable	2-12
5	Gunner's Footguard	2-15
6	Turret Platform Ammunition Boxes and Battery Access Door	2-18
7	Gunner's Footrest Plate	2-25
8	Turret Exterior, Stowage Rack	2-28
9	Radio Guard Screen, Binocular Stowage Holder, Oddment Tray and Flashlight Tube	2-31
10	Canteen Mounting Bracket	2-42
11	Oilcan Mounting Bracket	2-45
12	Turret Structure Covers	2-48
13	Turret Bustle 165-MM Ammunition Stowage Rack and Retainer Handle	2-57
14	Turret Hydraulic System Tubes and Tube Holders	2-62
15	Winch and Boom Hydraulic Tubes and Tube Holders	2-80

Section 2. TURRET RADIO SUPPORTS AND ATTACHING PARTS

2-2. MAINTENANCE PROCEDURES INDEX

Equipment Item	Removal	Tasks	Installation
1. Turret Radio Supports and Attaching Parts	2-3		2-8
2. Radio Accessory Bracket	2-4		2-7
3. Lower Radio Support	2-5		2-6
4. Upper Radio Support	2-5		2-6



2-3. TURRET RADIO SUPPORTS AND ATTACHING PARTS REMOVAL PROCEDURE

TOOLS: 9/16" socket (3/8" drive)
 3/8" drive ratchet
 12" extension (3/8" drive)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

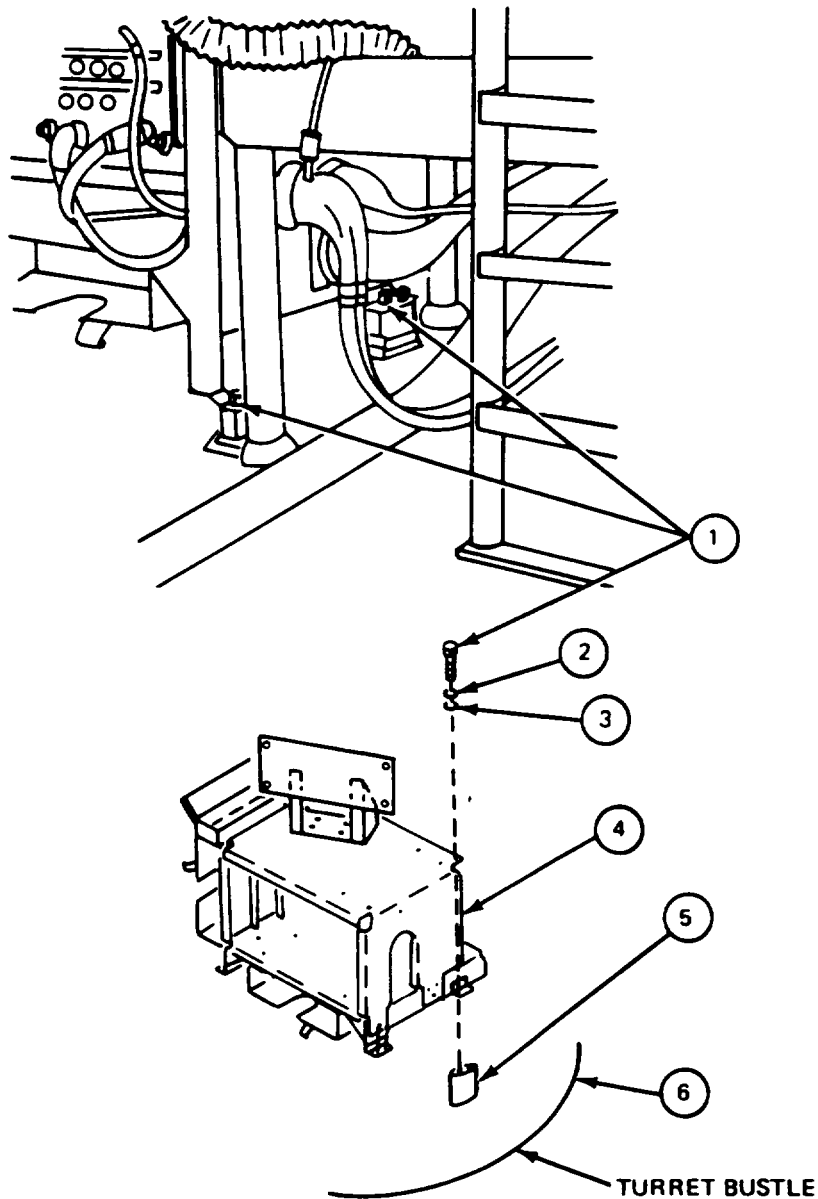
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Radio Supports	FO-2	9

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
 Radio set and radio mounts removed (VRC 46 or 53)

PRELIMINARY PROCEDURES: Remove commander's electric air filter heater (para 58-8)

**2-3. TURRET RADIO SUPPORTS AND ATTACHING PARTS REMOVAL
PROCEDURE (CONT)**

FRAME 1	
Step	Procedure
1.	Using socket wrench, remove eight screws (1), eight lockwashers (2) and eight washers (3) holding radio support (4) to mounting blocks (5) on turret bustle (6).
2.	Separate radio support (4) from mounting blocks (5).
END OF TASK	



2-4. RADIO ACCESSORY BRACKET REMOVAL PROCEDURE

TOOLS: 1/2" socket (3/8" drive)
 3/8" drive ratchet
 1 /2' open end wrench

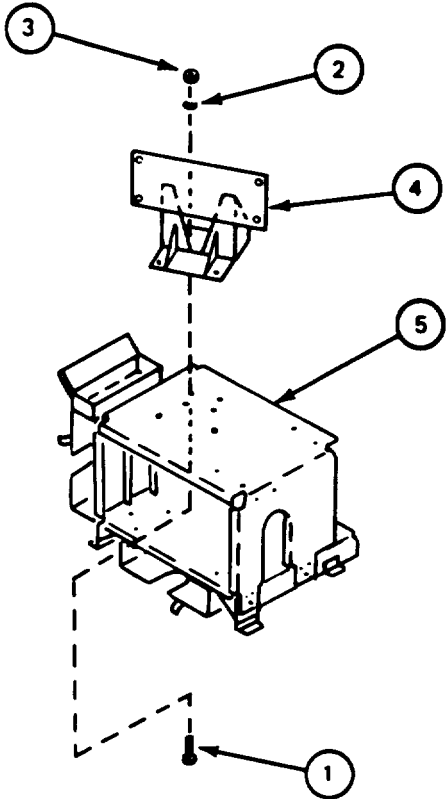
PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Radio Supports	FO-2	9

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
 Radio set and radio mounts removed (VRC 46 or 53)

2-4. RADIO ACCESSORY BRACKET REMOVAL PROCEDURE (CONT)

FRAME 1	
Step	Procedure
	<p style="text-align: center;">NOTE</p> <p style="text-align: center;">On some models, only four screws, four washers, and four nuts are used.</p> <ol style="list-style-type: none"> 1. Using socket wrench on screw and open end wrench on nut, remove six screws (1), six lockwashers (2) and six nuts (3) holding radio accessory bracket (4) to radio support (5). 2. Separate radio accessory bracket (4) from radio support (5). <p>END OF TASK</p>
	

2-5. LOWER RADIO SUPPORT AND UPPER RADIO SUPPORT REMOVAL PROCEDURE

TOOLS: 1/2" socket (3/8" drive)
 3/8" drive ratchet
 6" extension (3/8" drive)

PERSONNEL: One

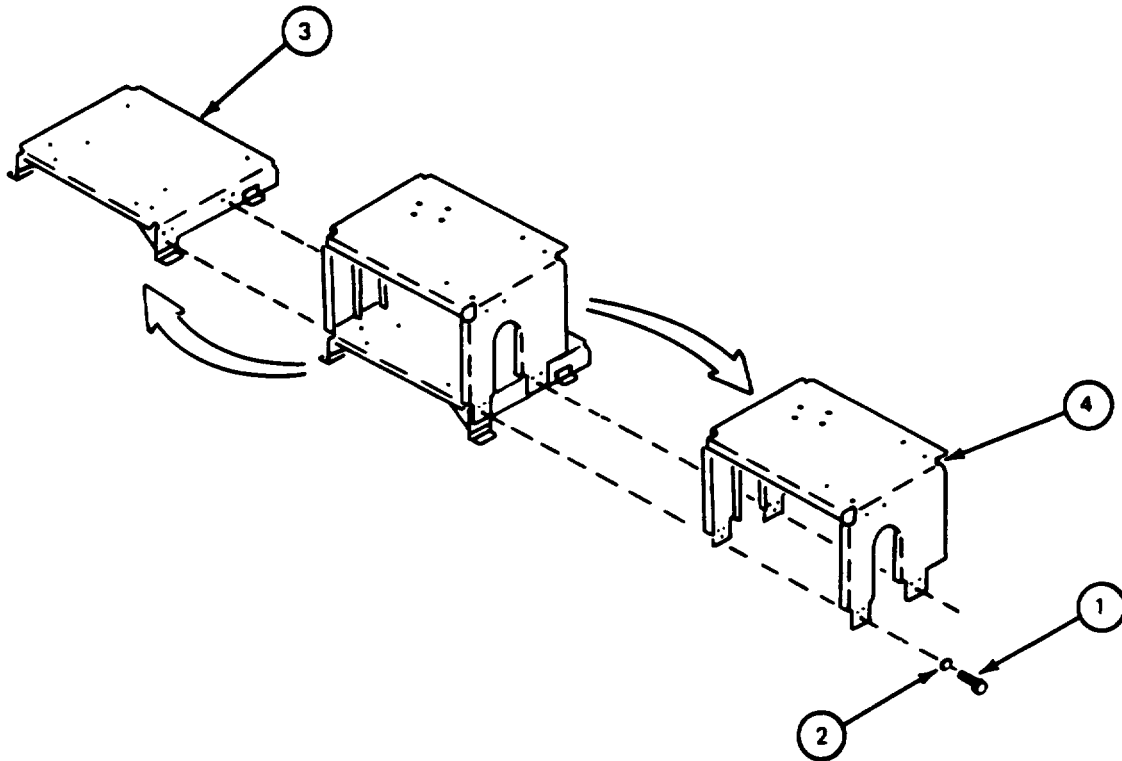
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Turret Radio Supports	FO-2	9

PRELIMINARY PROCEDURES: Remove turret radio support and attaching parts (para 2-3)
 Remove radio accessory bracket (para 2-4)
 Remove grenade box retaining brackets (para 4-2)

**2-5. LOWER RADIO SUPPORT AND UPPER RADIO SUPPORT REMOVAL
PROCEDURE (CONT)**

FRAME 1	
Step	Procedure
1.	Using socket wrench, remove ten screws (1) and ten lockwashers (2) holding lower radio support (3) to upper radio support (4).
2.	Separate lower radio support (3) from upper radio support (4). END OF TASK



2-6. LOWER RADIO SUPPORT AND UPPER RADIO SUPPORT INSTALLATION PROCEDURE

TOOLS: 1/2" socket (3/8" drive)
 3/8" drive ratchet
 6" extension (3/8" drive)

PERSONNEL: One

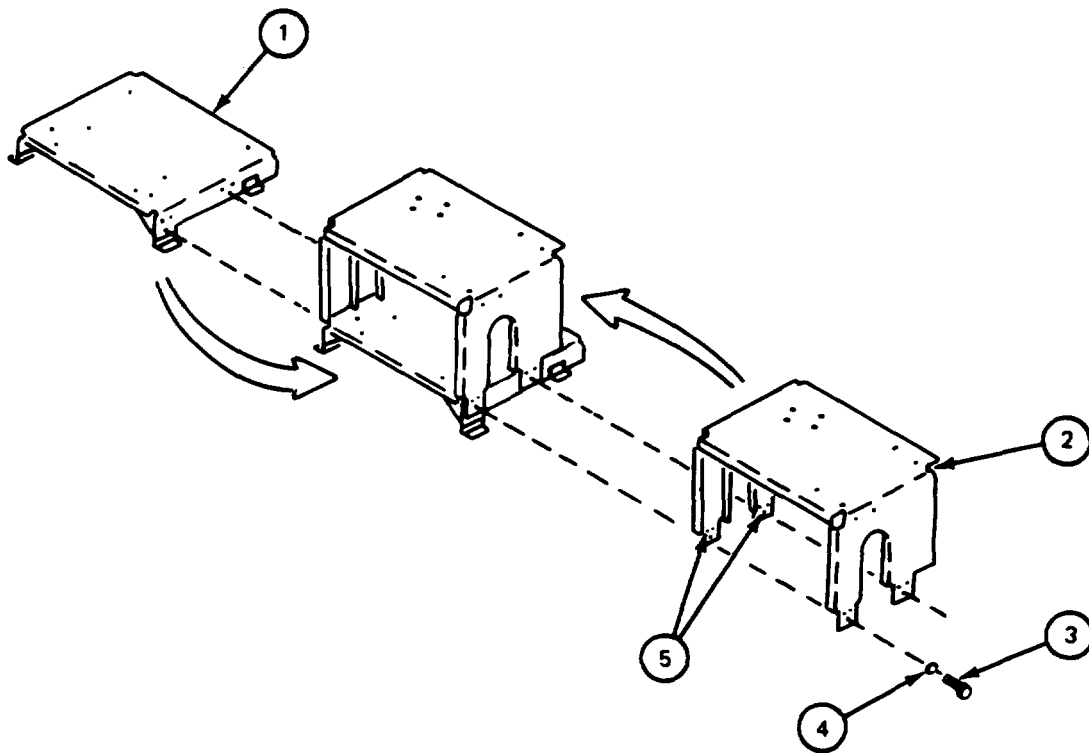
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Radio Supports	FO-2	9

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

2-6. LOWER RADIO SUPPORT AND UPPER RADIO SUPPORT INSTALLATION PROCEDURE (CONT)

FRAME 1	
Step	Procedure
1.	<p>NOTE</p> <p>Lower radio support (1) is attached to upper radio support (2) using ten screws (3) and ten lockwashers (4). Two additional screws (3) and lockwashers (4) are added when side grenade box retaining bracket is attached later.</p> <p>Using socket wrench, attach lower radio support (1) to upper radio support (2) with ten screws (3) and ten lockwashers (4). Do not place two screws (3) and two lockwashers (4) in two holes (5).</p> <p>NOTE</p> <p>Follow-on Maintenance Action Required</p> <p>Install commander's electric air filter heater (para 58-9). Install grenade box retaining brackets (para 4-3).</p> <p>END OF TASK</p>



2-7. RADIO ACCESSORY BRACKET INSTALLATION PROCEDURE

TOOLS: 1/2" socket (3/8" drive)
 3/8" drive ratchet
 1/2" open end wrench

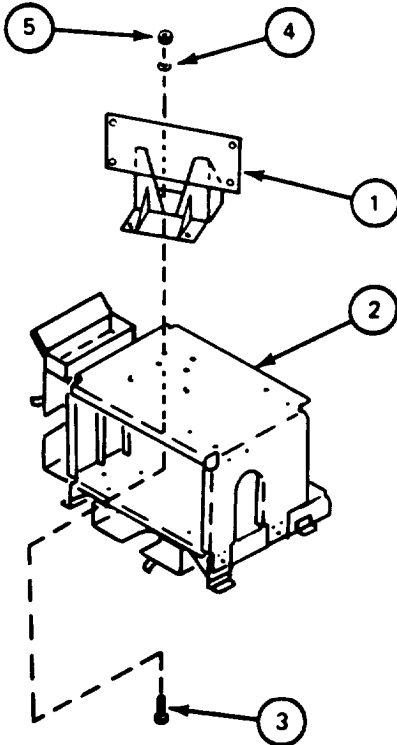
PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Radio Supports	FO-2	9

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

2-7. RADIO ACCESSORY BRACKET INSTALLATION PROCEDURE (CONT)

FRAME 1	Procedure
Step	<p style="text-align: center;">NOTE</p> <p style="text-align: center;">On some models only four screws, four lockwashers, and four nuts are used.</p> <p>1. Using socket wrench on screw and open end wrench on nut, attach radio accessory bracket (1) to radio support (2) with six screws (3), six lockwashers (4) and six nuts (5).</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Follow-on Maintenance Action Required: Install turret radio supports and attaching parts (para 2-8).</p> <p>END OF TASK</p>
	

2-8. TURRET RADIO SUPPORTS AND ATTACHING PARTS INSTALLATION PROCEDURE

TOOLS: 9/16" socket (3/8" drive)
 3/8" drive ratchet
 12" extension

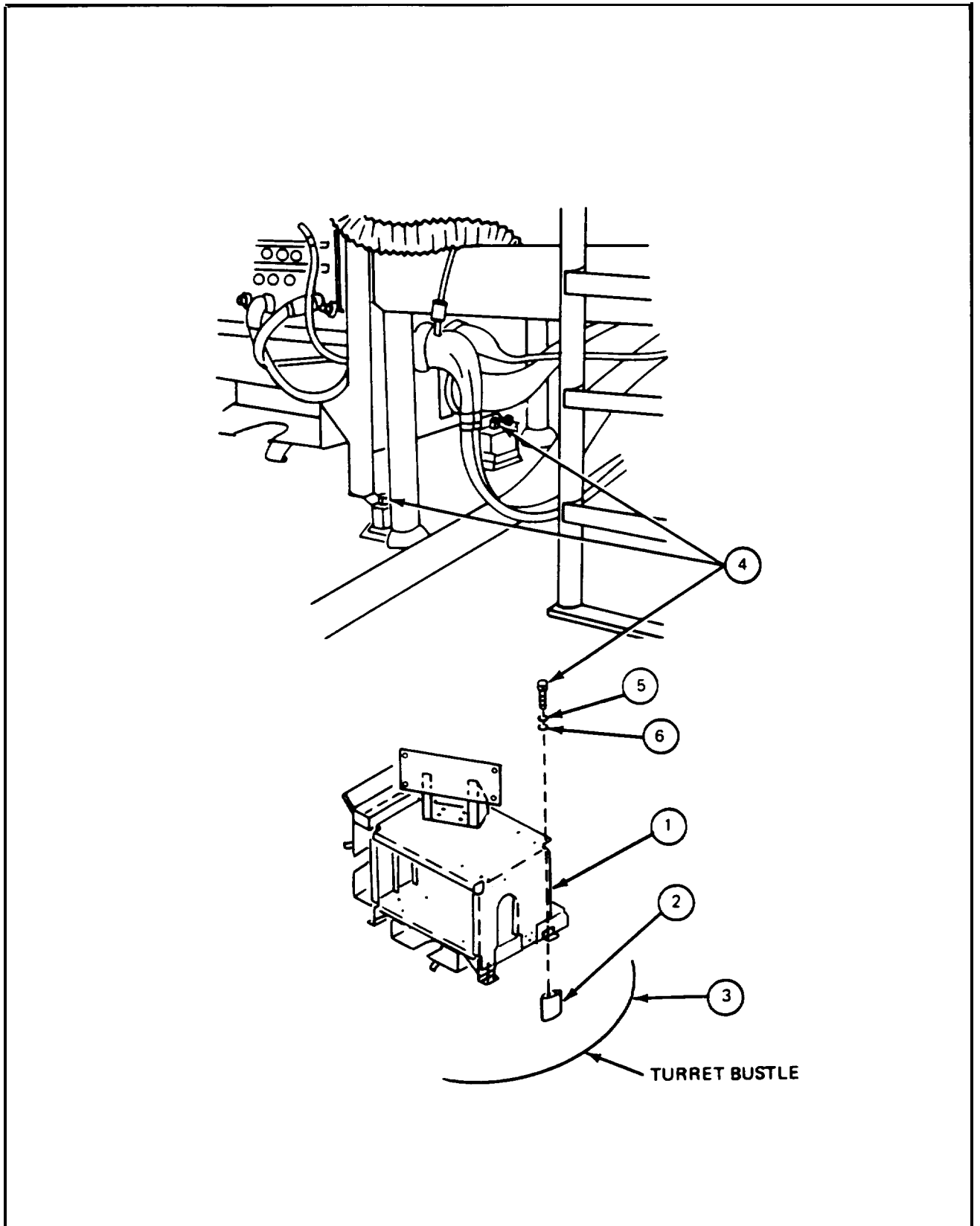
PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Radio Supports	FO-2	9

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

FRAME 1	
Step	Procedure
1.	Using socket wrench, attach turret radio supports and attaching parts (1) to mounting blocks (2) on turret bustle (3) with eight screws (4), eight lockwashers (5), and eight washers (6). END OF TASK



Section 3. TURRET GUN FIRING RELAY BOX

2-9. MAINTENANCE PROCEDURES INDEX

Equipment Item	Removal	Tasks	Installation
Turret Gun Firing Relay Box	2-10		2-11

2-10. TURRET GUN FIRING RELAY BOX REMOVAL PROCEDURE

TOOLS: 9/16” socket (3/8’ drive)
 3/8” drive ratchet
 5” extension (3/8” drive)
 Adjustable hook spanner 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 Gun Firing Relay Box	FO-1	27

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

FRAME 1	
Step	Procedure
1.	Using spanner wrench, disconnect electrical connector (1) (JPG).
2.	Using socket wrench, remove four screws (2), four lockwashers (3), and turret gun firing relay box (4) from mounting bracket (5).
END OF TASK	

2-11. TURRET GUN FIRING RELAY BOX INSTALLATION PROCEDURE

TOOLS: 9/16" socket (3/8" drive)
3/8" drive ratchet
5" extension (3/8" drive)
Adjustable hook spanner wrench

PERSONNEL: One

REFERENCES: JPG for procedure to connect electrical connectors
TM 9-2350-222-10 for procedure to test gun firing circuit

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	F03	11
Turret Gun Firing Relay Box	FO-1	27

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

2-11. TURRET GUN FIRING RELAY BOX INSTALLATION PROCEDURE (CONT)

FRAME 1	
Step	Procedure
1.	Line up four holes in turret gun firing relay box (1) with four holes in mounting bracket (2).
2.	Using socket wrench, attach turret gun firing relay box (1) to mounting bracket (2) with four screws (3) and four lockwashers (4).
3.	Using spanner wrench, connect electrical connector (5) to turret gun firing relay box (1) (JPG).
<p>NOTE</p> <p>Follow-on Maintenance Action Required:</p> <p>Test turret gun firing circuit (TM- 10).</p> <p>END OF TASK</p>	

**Section 4. TURRET POWER AND SEARCHLIGHT RELAY BOX TO POWER PACK
MOTOR CABLE**

2-12. MAINTENANCE PROCEDURES INDEX

Equipment Item	Removal	Tasks	Installation
Turret Power and Searchlight Relay Box to Power Pack Motor Cable	2-13		2-14

**2-13. TURRET POWER AND SEARCHLIGHT RELAY BOX TO POWER PACK
MOTOR CABLE REMOVAL PROCEDURE**

TOOLS: Connector spanner wrench
 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:

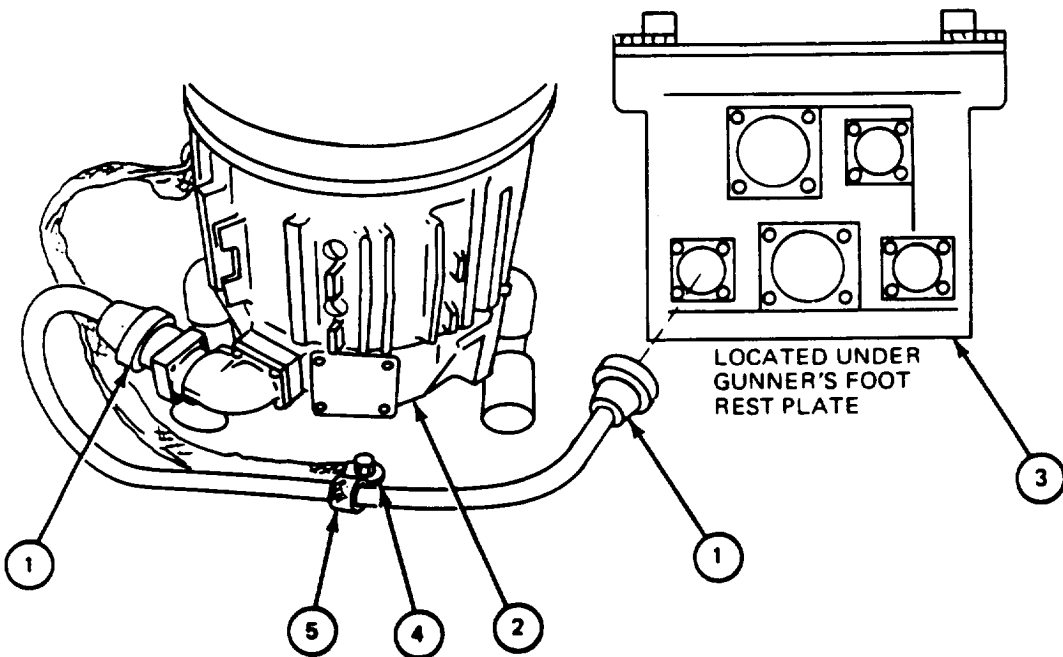
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Power Pack	FO-1	15
Turret Power and Searchlight Relay Box	FO-1	12

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

PRELIMINARY PROCEDURES: Remove gunner's footrest plate (para 2-26)

2-13. TURRET POWER AND SEARCHLIGHT RELAY BOX TO POWER PACK MOTOR CABLE REMOVAL PROCEDURE (CONT)

FRAME 1	
Step	Procedure
1.	Using spanner wrench, disconnect cable (1) from power pack motor (2) (JPG).
2.	Using spanner wrench, disconnect cable (1) from turret power and searchlight relay box (3) (JPG).
3.	Using socket wrench, remove screw and lockwasher (4) holding harness clamp (5) to turret floor.
4.	Remove cable (1) from clamp (5).
END OF TASK	



**2-14. TURRET POWER AND SEARCHLIGHT RELAY BOX TO POWER PACK
MOTOR CABLE INSTALLATION PROCEDURE**

TOOLS: Connector spanner 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

EQUIPMENT LOCATION INFORMATION:

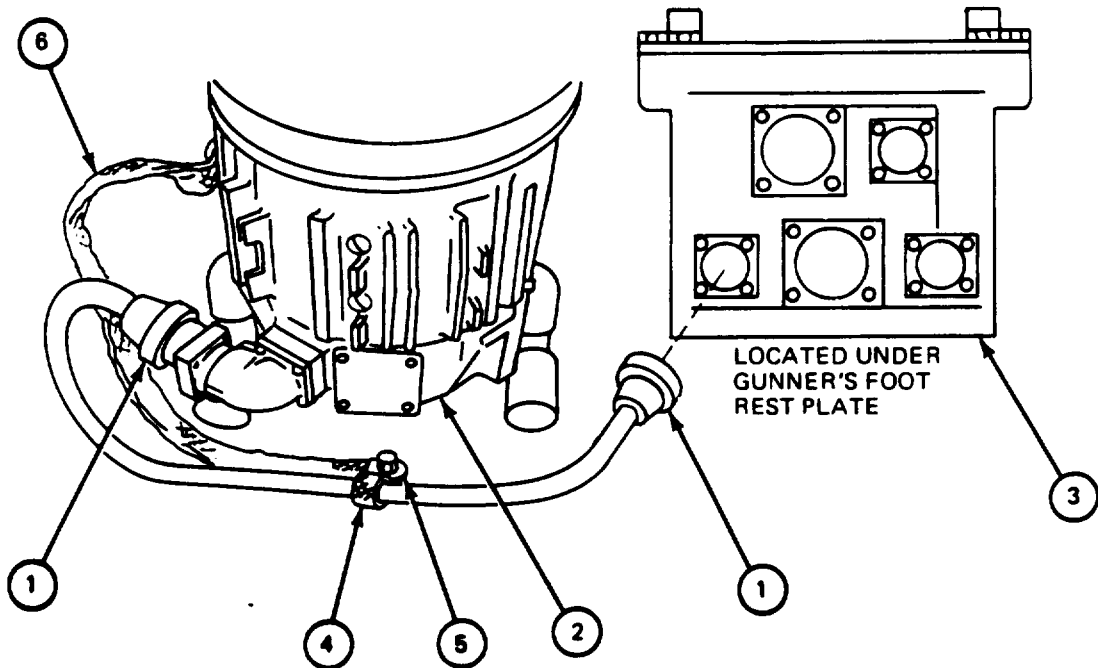
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Power Pack	FO-1	15
Turret Power and Searchlight Relay Box	FO-1	12

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

2-14. TURRET POWER AND SEARCHLIGHT RELAY BOX TO POWER PACK MOTOR CABLE INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Using spanner wrench, connect cable (1) to power pack motor (2) (JPG).
2.	Using spanner wrench, connect cable (1) to turret power and searchlight relay box (3) (JPG).
3.	Put cable (1) into harness clamp (4).
4.	Put bolt and lockwasher (5) through hole in harness clamp and hole in power pack motor ground strap (6).
5.	Using socket wrench, put bolt and lockwasher (5) into turret floor.
<p>NOTE</p> <p>Follow-on Maintenance Action Required: Install gunner's footrest plate (para 2-27).</p> <p>END OF TASK</p>	



Section 5. GUNNER'S FOOTGUARD

2-15. MAINTENANCE PROCEDURES INDEX

Equipment Item	Removal	Tasks	Installation
Gunner's Footguard	2-16		2-17

2-16. GUNNER'S FOOTGUARD REMOVAL PROCEDURE

TOOLS: 7/16" open end wrench (two)

PERSONNEL: One

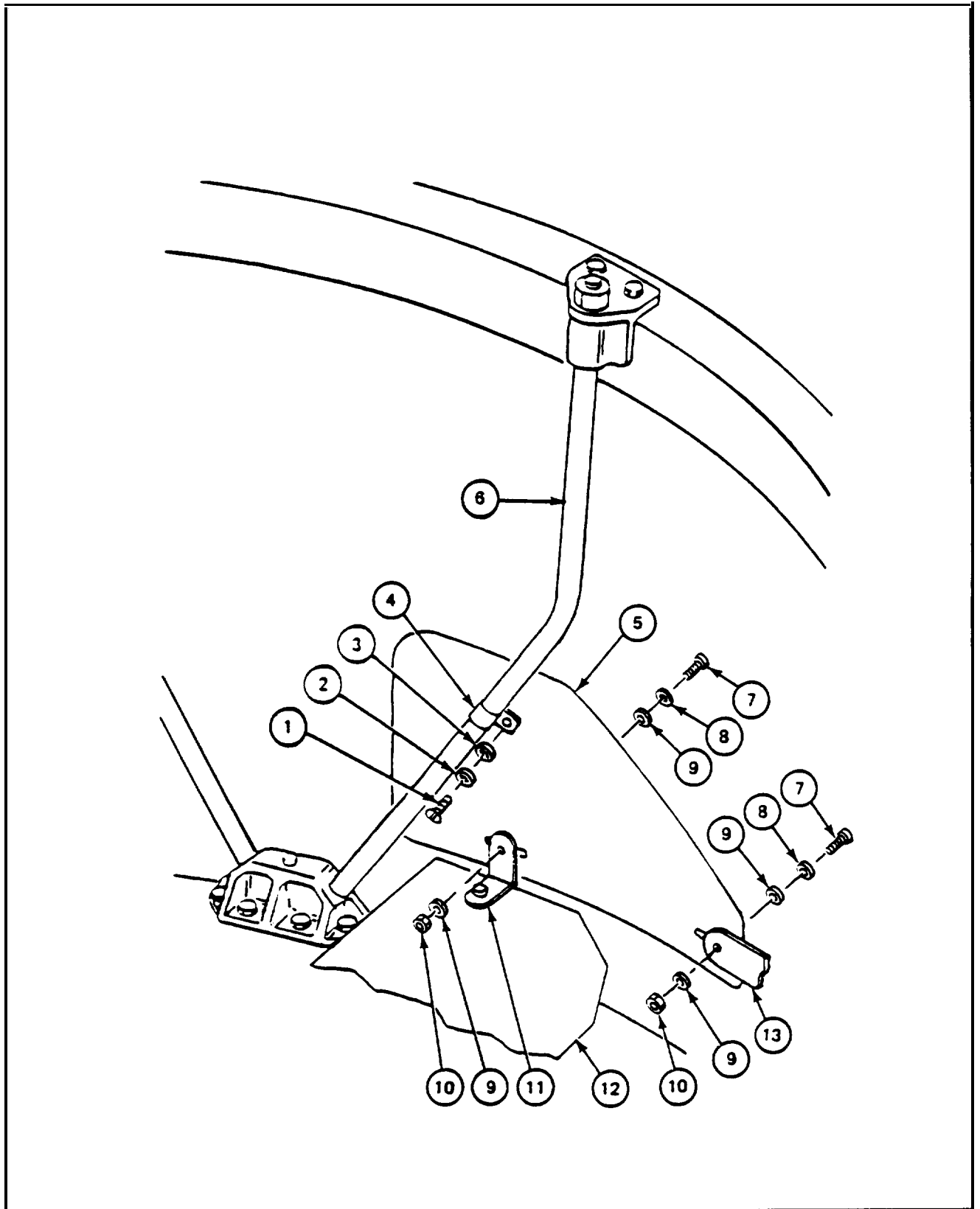
REFERENCES: TM 9-2350-222-10 for procedures to:
 Traverse turret "
 Set turret traverse lock to LOCKED

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	
Gunner's Footguard	FO-1	9
Gunner's Footrest Plate	FO-1	13
Equilibrator Charging Manifold	FO-1	10

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

FRAME 1	
Step	Procedure
1.	Traverse turret until gunner's footguard can be reached from driver's compartment (TM-10).
2.	Set turret traverse lock to LOCKED (TM-10).
3.	Using wrench, remove screw (1), lockwasher (2), flat washer (3), and clamp (4) that attach gunner's footguard (5) to hanger (6).
4.	Using two wrenches, remove two screws (7), two lockwashers (8), four flat washers (9) and two nuts (10) that attach gunner's footguard (5) to brace (11) on gunner's footrest plate (12) and support (13) on equilibrator charging manifold.
5.	Remove gunner's footgurad (5).
	END OF TASK



2-17. GUNNER’S FOOTGUARD INSTALLATION PROCEDURE

TOOLS: 7/16” open end wrench

PERSONNEL: One

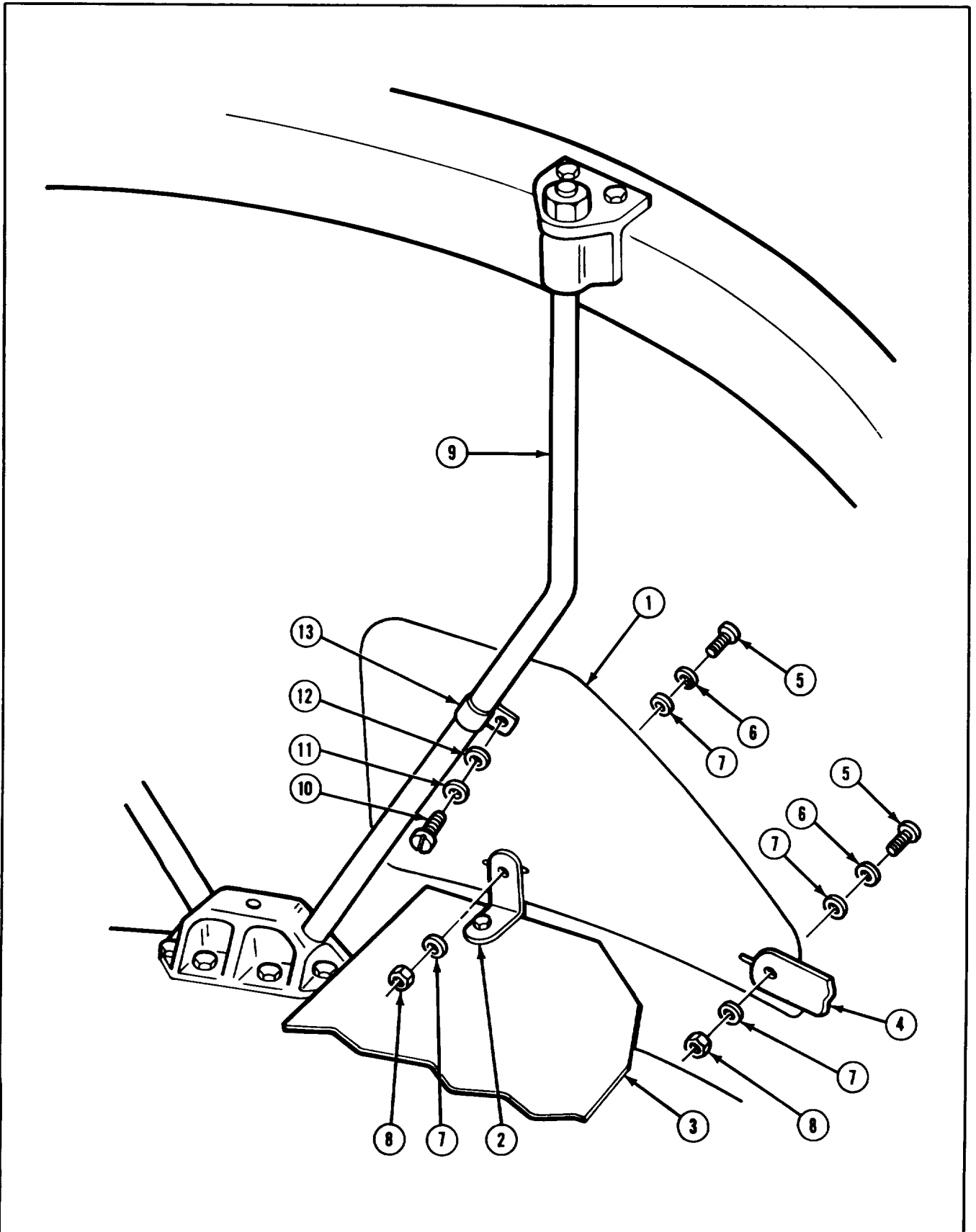
REFERENCES: TM 9-2350-222-10 for procedures to
 Traverse turret
 Set turret traverse leek to LOCKED

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver’s Master Control Panel	FO-3	11
Turret Traverse Leek	FO-3	7
Gunner’s Footguard	FO-1	9
Gunner’s Footrest Plate	FO-1	13
Equilibrator Charging Manifold	FO-1	10

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

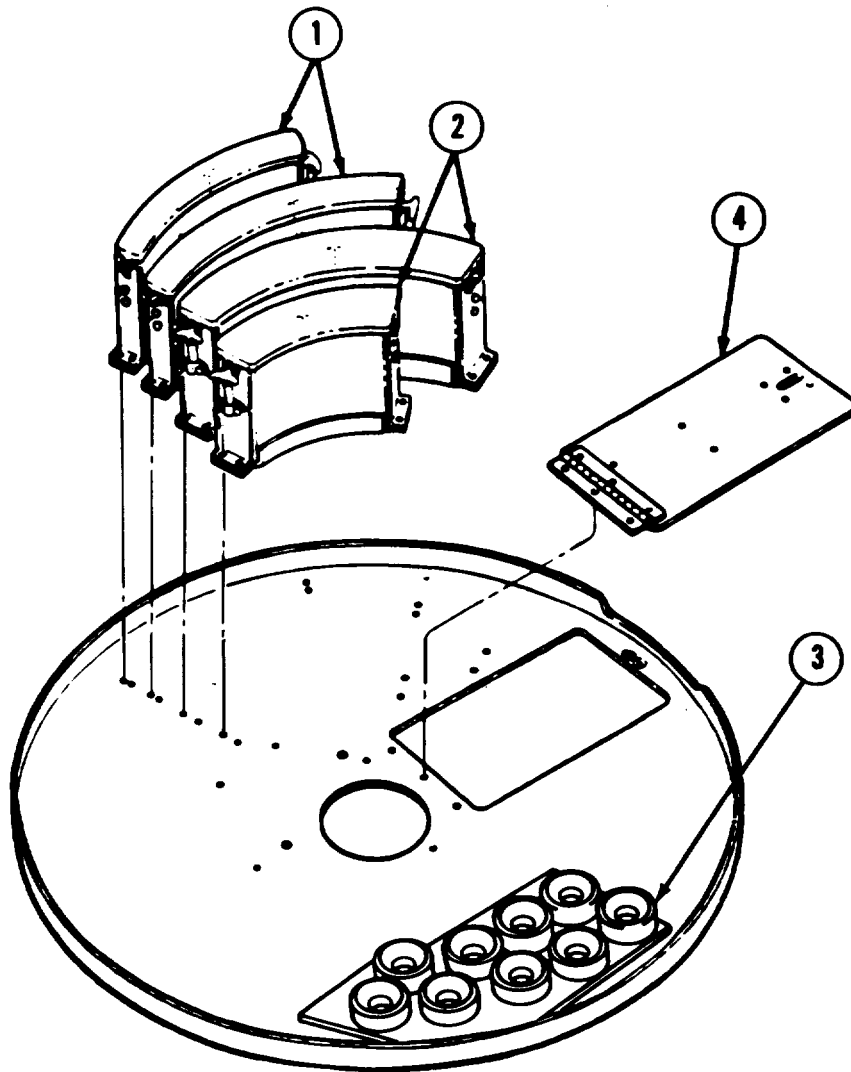
FRAME 1	
Step	Procedure
1.	Traverse turret until gunner’s footguard mounting position can be reached from driver’s compartment (TM- 10).
2.	Set turret traverse lock to LOCKED (TM-10).
3.	Using two wrenches. attach gunner’s footguard (1) to brace (2) on gunner’s footrest plate (3) and support (4) on equilibrator charging manifold with two screws (5), two lockwashers (6), four flat washers (7) and two nuts (8).
4.	Using wrench, attach gunner’s footguard (1) to hanger (9) with screw (10), lockwasher (11), flat washer (12) and clamp (13).
	END OF TASK



SECTION 6. TURRET PLATFORM AMMUNITION BOXES, CUSHIONING PADS, AND BATTERY ACCESS DOOR

2-18. MAINTENANCE PROCEDURES INDEX

	Equipment Item	Removal	Tasks	Installation
1.	7.62-MM Ammunition Boxes	2-19		2-20
2.	Caliber .50 Ammunition Boxes	2-21		2-22
3.	165-MM Ready Ammunition Rack Cushioning Pads	2-22.1		2-22.2
4.	Battery Access Door and Instruction Plate	2-23		2-24



2-19. 7.62-MM AMMUNITION BOXES REMOVAL PROCEDURE

TOOLS: 9/16" socket (3/8" drive)
3/8" drive ratchet
12" 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:

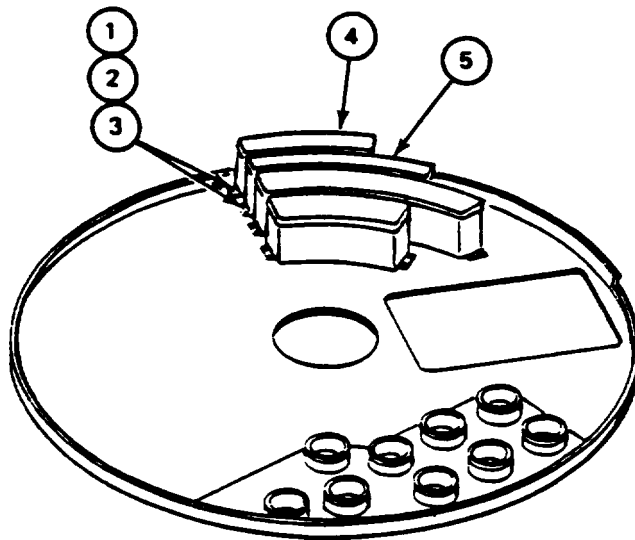
EQUIPMENT	FOLDOUT	CALLOUT
7.62-MM Ammunition Boxes	FO-1	11

EQUIPMENT CONDITION: All ammunition removed from 7.62-mm ammunition boxes
Gunner's seat set to high position

2-19. 7.62-MM AMMUNITION BOXES REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Traverse main gun over left side of vehicle (TM-10).
2.	Set turret traverse lock to LOCKED (TM-10).
3.	Using socket wrench, remove four screws (1), four lockwashers (2), four flat washers (3), and ammunition box (4) from turret floor.
4.	Using socket wrench, remove four screws (1), four lockwashers (2), four flat washers (3), and ammunition box (5) from turret floor.
END OF TASK	



2-20. 7.62-MM AMMUNITION BOXES INSTALLATION PROCEDURE

TOOLS: 9/16" socket (3/8" drive)
 3/8" drive ratchet
 12" extension (3/8" drive)

PERSONNEL: One

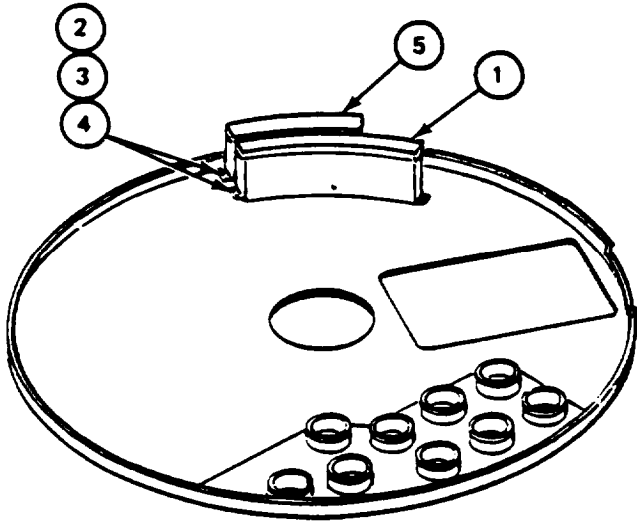
REFERENCES: TM 9-2350-222-10 for procedures to:
 Traverse turret
 Set turret traverse lock to LOCKED

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7
7.62-MM Ammunition Boxes	FO-1	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
 All ammunition removed from 7.62-mm ammunition boxes
 Gunner's seat set to high position

2-20. 7.62-MM AMMUNITION BOXES INSTALLATION PROCEDURE (CONT)

FRAME 1	
Step	Procedure
<ol style="list-style-type: none"> 1. Traverse main gun over left side of vehicle (TM-10). 2. Set turret traverse lock to LOCKED (TM-10). 3. Using socket wrench, attach ammunition box (1) to turret floor with four screws (2), four lockwashers (3), and four flat washers (4). 4. Using socket wrench, attach ammunition box (5) to turret floor with four screws (2), four lockwashers (3), and four flat washers (4). <p>END OF TASK</p>	
	

2-21. CALIBER .50 AMMUNITION BOXES REMOVAL PROCEDURE

TOOLS: 9/16" socket (3/8" drive)
 3/8" drive ratchet
 12" extension (3/8" drive)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7
Caliber .50 Ammunition Boxes	FO-4	12

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
 Turret traverse lock set 'to LOCKED
 All ammunition removed from caliber .50 ammunition boxes
 Gunner's seat set to high position

FRAME 1	
Step	Procedure
1.	Using socket wrench, remove four screws (1), four lockwashers (2), four flat washers (3), and ammunition box (4) from turret floor.
2.	Using socket wrench, remove four screws (1), four lockwashers (2), four flat washers (3), and ammunition box (5) from turret floor.
	END OF TASK

The diagram shows a top-down view of a circular turret floor. In the center, there are two rectangular ammunition boxes. Callout 1 points to four screws around the perimeter of the turret floor. Callout 2 points to four lockwashers, and callout 3 points to four flat washers, both also around the perimeter. Callout 4 points to the left ammunition box, and callout 5 points to the right ammunition box. At the bottom of the turret floor, there is a cluster of several small cylindrical objects, likely representing removed ammunition.

2-22. CALIBER .50 AMMUNITION BOXES INSTALLATION PROCEDURE

TOOLS: 9/16" socket (3/8" drive)
 3/8" drive ratchet
 12" extension (3/8" drive)

PERSONNEL: One

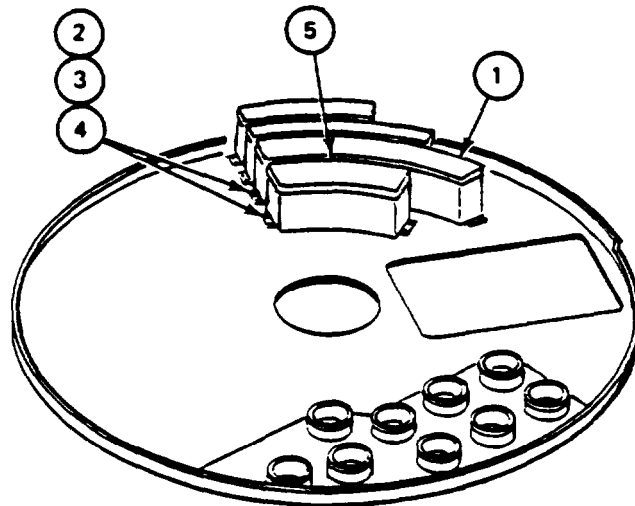
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7
Caliber .50 Ammunition Boxes	FO-4	12

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
 Turret traverse lock set to LOCKED
 All ammunition removed from caliber .50 ammunition boxes
 Gunner's seat set to high position

FRAME 1

Step	Procedure
1.	Using socket wrench, attach ammunition box (1) to turret platform with four screws (2), four lockwashers (3), and four flat washers (4).
2.	Using socket wrench, attach ammunition box (5) to turret platform with four screws (2), four lockwashers (3), and four flat washers (4).
	END OF TASK



Para 2-22

2-22.1. 165-MM READY AMMUNITION RACK CUSHIONING PADS REMOVAL PROCEDURE

TOOLS: Dull knife or scraper

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7
165-MM Three Round Ammunition Rack	FO-4	18
165-MM Six Round Ammunition Rack	FO-4	15

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
 Turret traverse lock set to LOCKED
 All ammunition removed from 165-mm ready ammunition racks

FRAME 1	
Step	Procedure
1.	Using a dull knife or scraper, remove cushioning pad (1) and old adhesive from turret platform.
	END OF TASK

The diagram shows a top-down view of a circular turret platform. On the right side, there is a rectangular cushioning pad. A callout line with a circled number '1' points to this pad. Other components on the platform include a circular hole in the center, a rectangular cutout on the left, and a cluster of six small circular objects (likely ammunition rounds) at the bottom.

2-22.2. 165-MM READY AMMUNITION RACK CUSHIONING PADS INSTALLATION PROCEDURE

SUPPLIES: Adhesive (item 3, App. A)
Cushioning pad 10940525 (as required)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

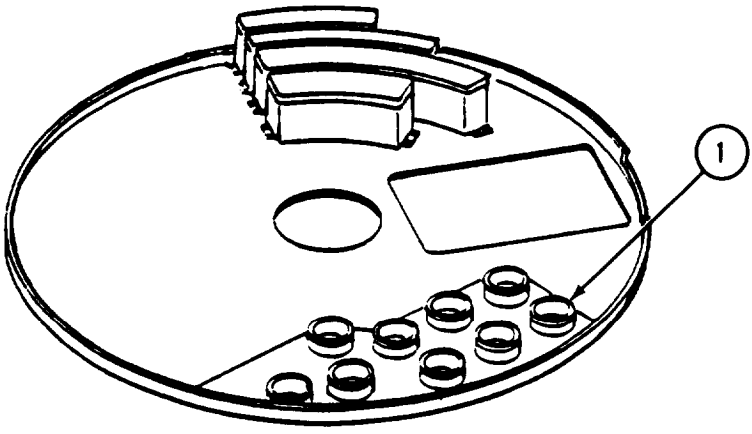
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7
165-MM Three Round Ammunition Rack	FO-4	18
165-MM Six Round Ammunition Rack	FO-4	15

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Turret traverse lock set to LOCKED
All ammunition removed from 165-mm ready ammunition racks



Allow no smoking in work area. Bonding adhesives are flammable.

2-22.2. 165-MM AMMUNITION RACK CUSHIONING PADS INSTALLATION PROCEDURE

FRAME 1	
Step	Procedure
<ol style="list-style-type: none"> 1. 2. 3. 	<p>Clean mounting surface on turret platform for cushioning pad (1).</p> <p>Apply adhesive to back side of new cushioning pad (1) and on turret platform.</p> <p>Locate cushioning pad (1) in place on turret platform and press firmly in place.</p> <p>END OF TASK</p>
 <p>The diagram shows a top-down view of a circular turret platform. On the right side, a rectangular cushioning pad, labeled with a circled '1', is being placed onto the surface. The platform contains several circular components, likely ammunition magazines, arranged in a semi-circle at the bottom. A curved structure is visible at the top of the platform.</p>	

2-23. BATTERY ACCESS DOOR AND INSTRUCTION PLATE REMOVAL PROCEDURE

TOOLS: Cross tip screwdriver (Phillips)
3/8 in. combination box and open end wrench

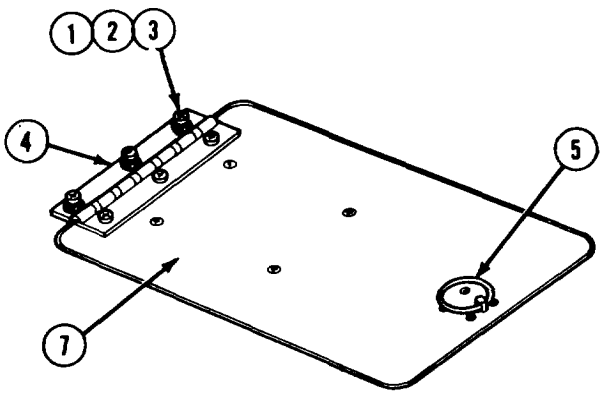
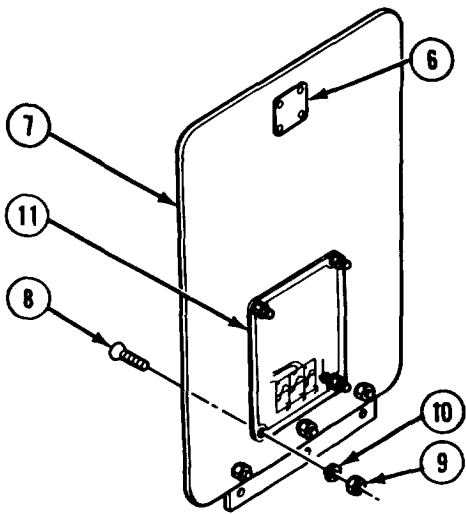
PERSONNEL: One -

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7
Battery Access Door	FO-4	13

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

FRAME 1	
STEP	PROCEDURE
1.	Using screwdriver, remove three screws (1), three lockwashers (2), and three flat washers (3) that hold door hinge (4) to turret platform.
2.	Pull ring (5) on door catch (6) and remove door (7).
3.	Using screwdriver and wrench, remove four screws (8) from outside of door (7) and four nuts (9) and four lockwashers (10) from inside of door (7).
4.	Remove instruction plate (11) from inside of door (7).
END OF TASK	

2-24. BATTERY ACCESS DOOR AND INSTRUCTION PLATE INSTALLATION PROCEDURE

TOOLS: Cross tip screwdriver (Phillips)
3/8 in. combination box and open end wrench

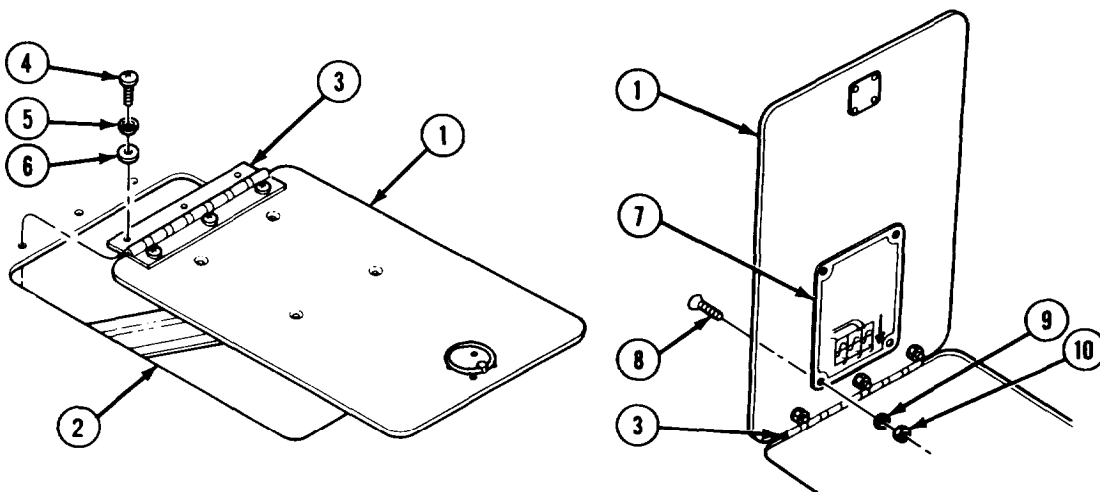
PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7
Battery Access Door	FO-4	13

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

STEP	PROCEDURE
1.	Put door (1) over battery access opening (2) in turret floor.
2.	Line up three holes in door hinge (3) with three holes in turret floor.
3.	Using screwdriver, attach door hinge (3) to turret floor with three screws (4), three lockwashers (5) and three flat washers (6).
4.	Hold instruction plate in position on inside of door (1) so that arrow on instruction plate (7), indicating front of vehicle, is pointing toward door hinge (3).
5.	Using screwdriver and wrench, install four screws (8) on outside of door (1), and four lockwashers (9) and four nuts (10) on inside of door (1), securing plate (7) to door (1).
END OF TASK	



Section 7. GUNNER'S FOOTREST PLATE

2-25. MAINTENANCE PROCEDURES INDEX

Equipment item	Removal	Tasks	Installation
Gunner's Footrest Plate	2-26		2-27

2-26. GUNNER'S FOOTREST PLATE REMOVAL PROCEDURE

TOOLS: 7/16" combination wrench (two)

PERSONNEL: One

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

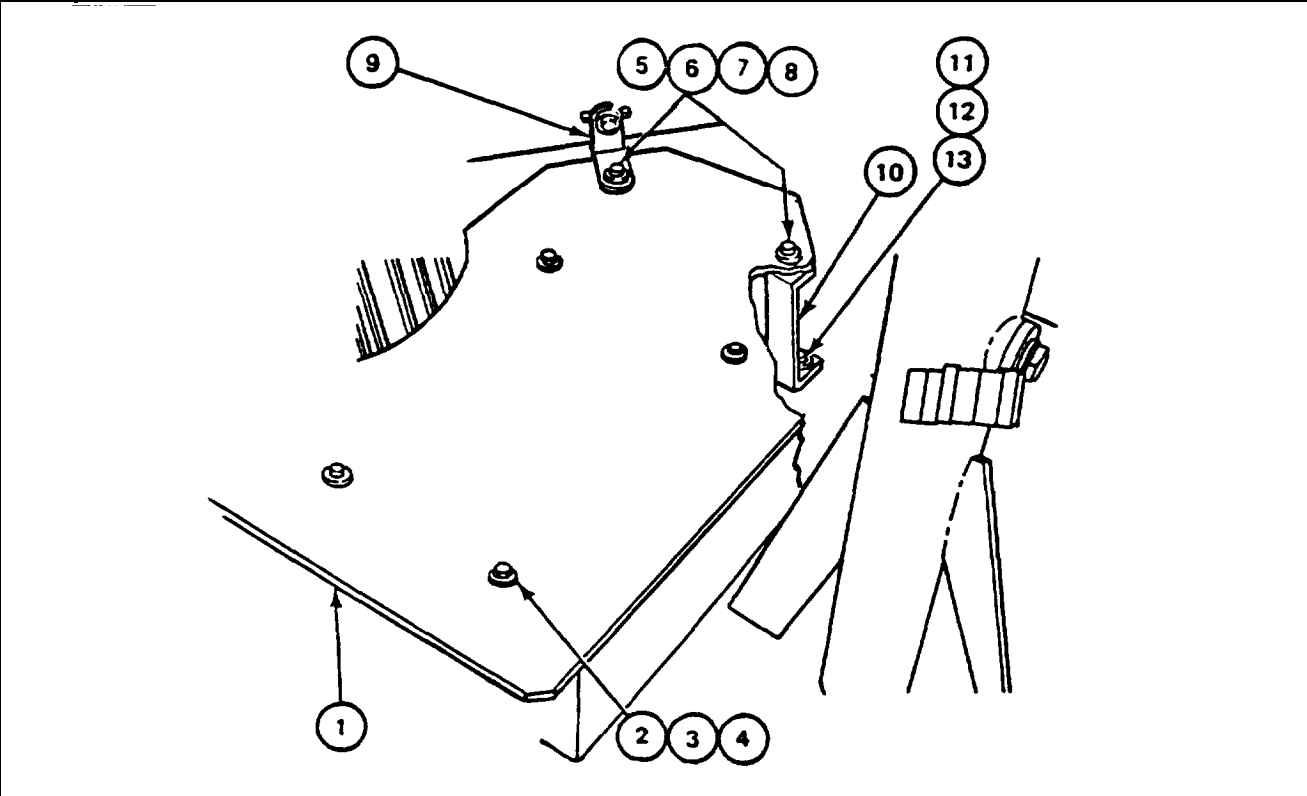
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7
Gunner's Footrest Plate	FO-1	13

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

2-26. GUNNER'S FOOTREST PLATE REMOVAL PROCEDURE (CONT)

FRAME 1	
Step	Procedure
1.	Traverse turret until gunner's footrest 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 lockwashers (3), and four flat washers (4) that hold gunner's footrest plate (1) to turret power relay box on turret platform floor.
4.	Using two wrenches from driver's compartment, remove two screws (5), two lockwashers (6), four flat washers (7) and two nuts (8) that hold gunner's footrest plate (1) to bracket (9) and support (10).
5.	Remove gunner's footrest plate (1).
NOTE	
Do step 6 if support (10) is bad.	
6.	Using wrench, remove screw (11), lockwasher (12), flat washer (11) and support (10) from turret floor.
END OF TASK	



Para 2-26 Cont

2-27. GUNNER'S FOOTREST PLATE INSTALLATION PROCEDURE

TOOLS: 7/16" combination wrench (two)

PERSONNEL: One

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

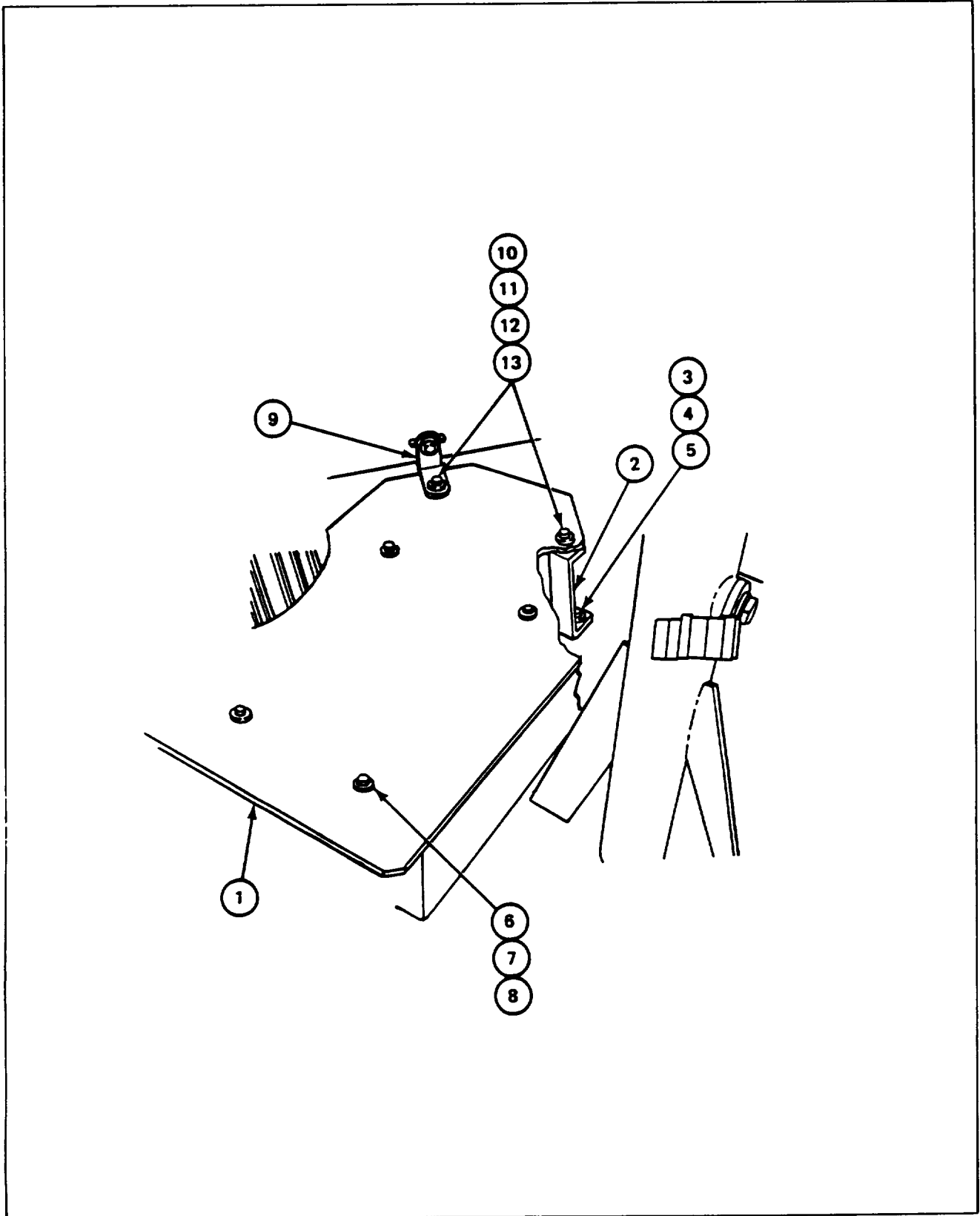
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7
Gunner's Footrest Plate	FO-1	13

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

2-27. GUNNER'S FOOTREST PLATE INSTALLATION PROCEDURE (CONT)

FRAME 1	
Step	Procedure
1.	Traverse turret until gunner's footrest plate (1) can be reached from driver's compartment (TM-10).
2.	Set turret traverse lock to LOCKED (TM-10).
NOTE	
Do step 3 if support (1) was replaced.	
3.	Using wrench, attach support (2) to turret floor with screw (3), lockwasher (4) and flat washer (5).
4.	Position gunner's footrest plate (1) on power relay box on turret floor.
5.	Using wrench, attach gunner's footrest plate (1) to power relay box with four screws (6), four lockwashers (7) and four flat washers (8).
6.	Using two wrenches from driver's compartment, attach gunner's footrest plate (1) to support (2) and bracket (9) with two screws (10), two lockwashers (11), four flat washers (12) and two nuts (13).
END OF TASK	



Section 8. TURRET EXTERIOR STOWAGE RACK**2-28. MAINTENANCE PROCEDURES INDEX**

Equipment Item	Removal	Tasks	Installation
Turret Exterior Stowage Rack	2-29		2-30

2-29. EXTERIOR STOWAGE RACK REMOVAL PROCEDURE

TOOLS: 15/16" socket (1/2" drive)
1/2" drive ratchet
15/16" combination wrench

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

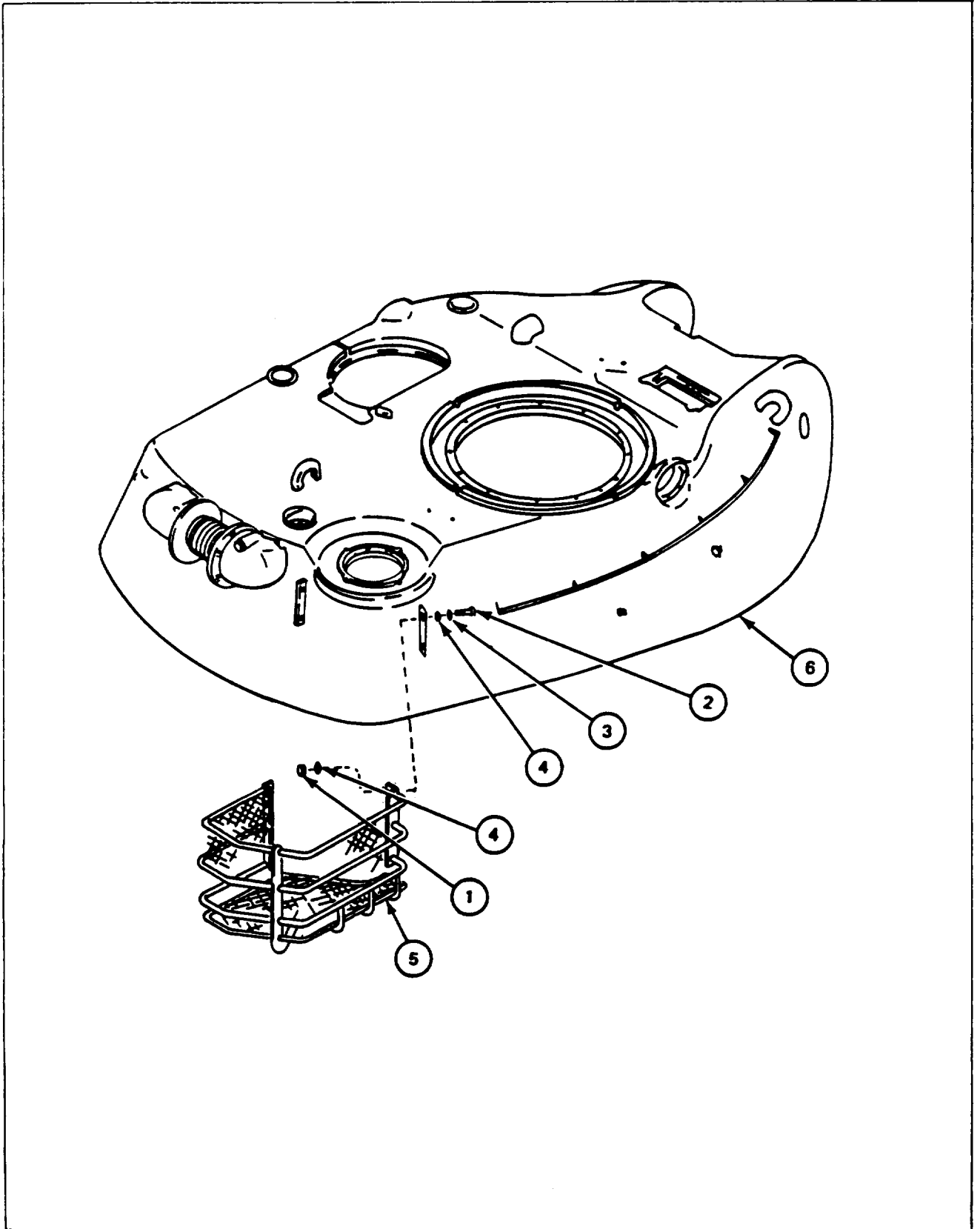
EQUIPMENT
Driver's Master Control Panel

FOLDOUT
FO-3

CALLOUT
11

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

FRAME 1	
Step	Procedure
1.	Using socket wrench and combination wrench, remove four nuts (1), four screws (2), four lockwashers (3), and eight flat washers (4) that attach stowage rack (5) to turret (6).
2.	Lift stowage rack (5) from turret (6) and place on ground. END OF TASK



2-30. EXTERIOR STOWAGE RACK INSTALLATION PROCEDURE

TOOLS: 15/16" socket (1/2" drive)
 1/2" drive ratchet
 15/ 16" combination wrench

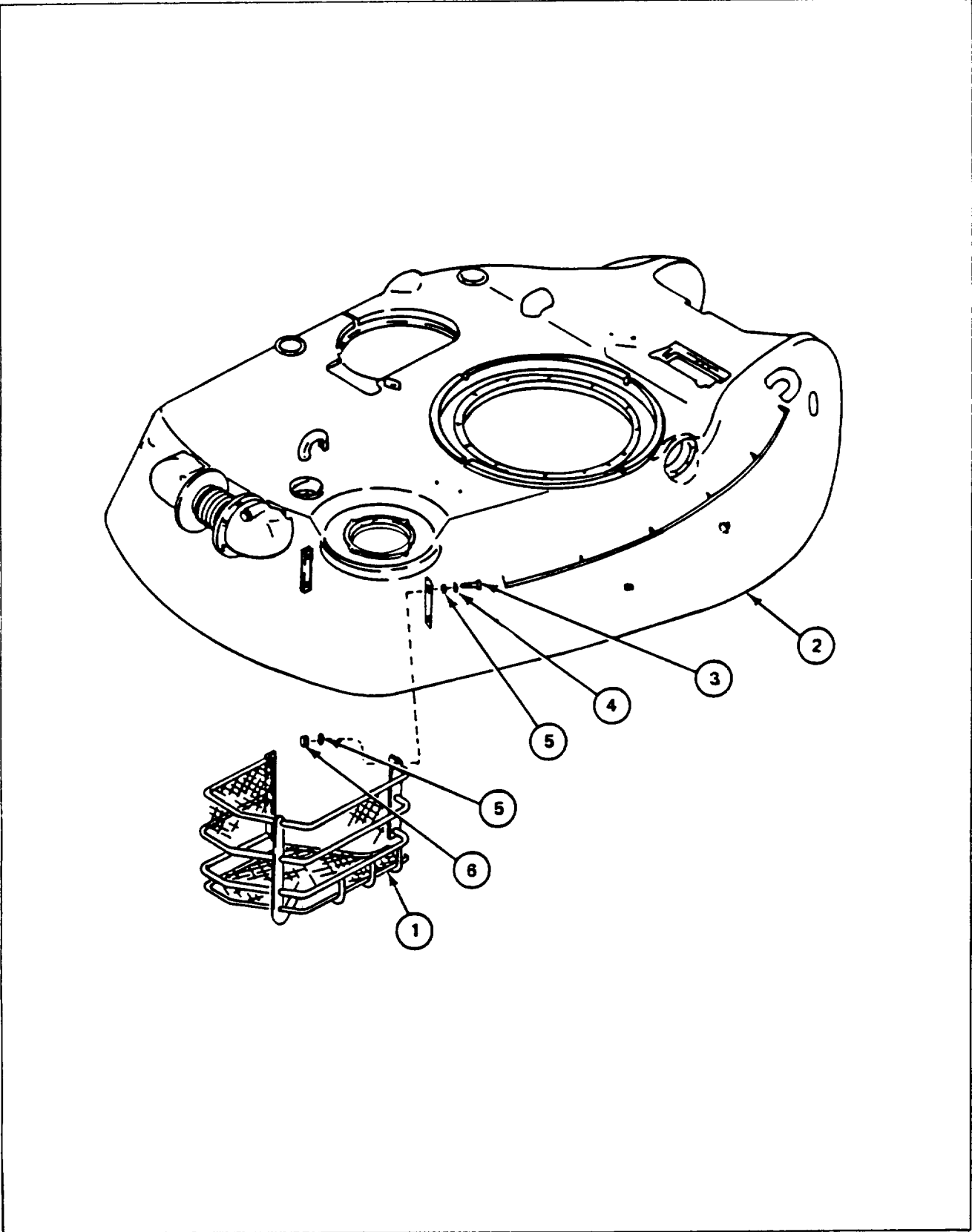
PERSONNEL: One

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

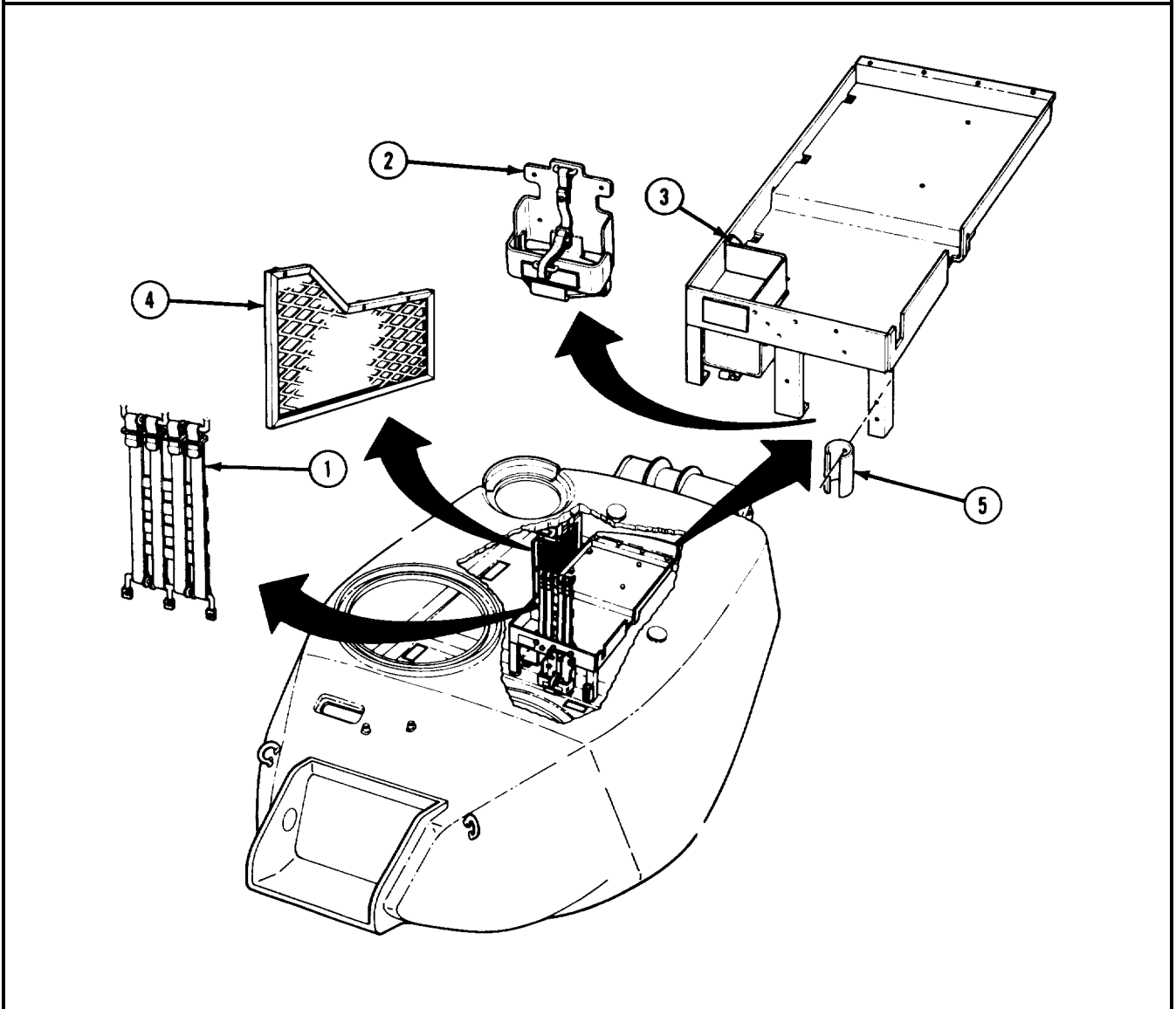
FRAME 1	
Step	Procedure
1.	Using socket wrench and combination wrench, attach stowage rack (1) to outside of turret (2) with four screws (3), four lockwashers (4), eight flat washers (5) and four nuts (6). END OF TASK



Section 9. RADIO GUARD SCREEN, BINOCULAR STOWAGE HOLDER, ODDMENT TRAY AND FLASHLIGHT TUBE (EARLY MODEL)

2-31. MAINTENANCE PROCEDURES INDEX

Equipment Item	Removal	Tasks	Installation
1. Radio Guard Screen	2-32		2-33
2. Binocular Stowage Holder	2-34		2-35
3. Oddment Tray	2-36		2-37
4. Oddment Tray Right Screen	2-38		2-39
5. Flashlight Tube	2-40		2-41



2-32. RADIO GUARD SCREEN REMOVAL PROCEDURE

TOOLS Flat tip screwdriver
3/8 in. combination wrench

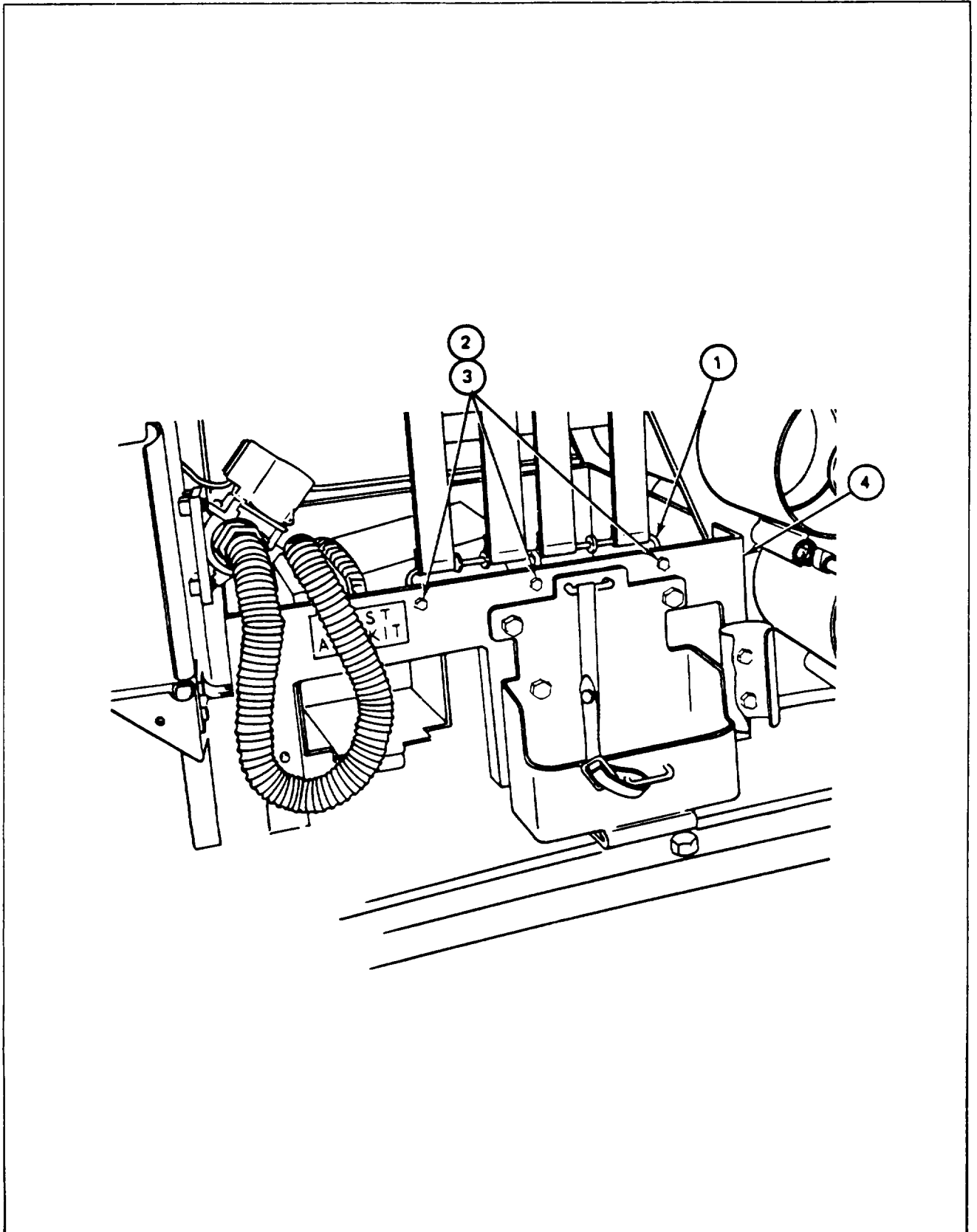
PERSONNEL One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Oddment Tray	FO-3	10

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

FRAME 1	
STEP	PROCEDURE
1.	Remove radio guard screen (1) straps from turret roof bracket.
2.	Using screwdriver and wrench, remove three screws (2) and three nuts (3) that attach radio guard screen (1) to oddment tray (4).
3.	Remove radio guard screen (1).
	END OF TASK



2-33. RADIO GUARD SCREEN INSTALLATION PROCEDURE

TOOLS: Flat tip screwdriver
3/8" combination wrench

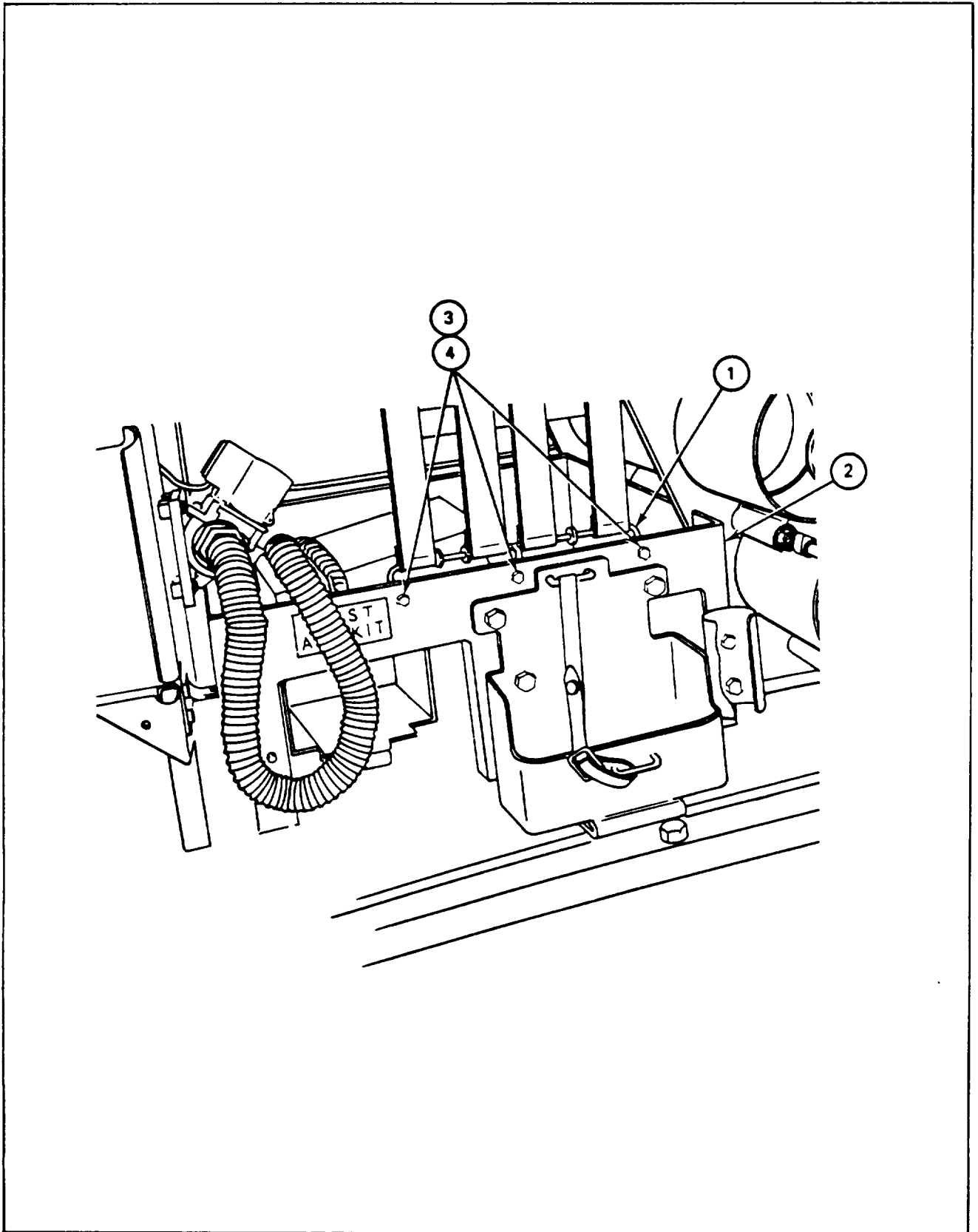
PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Oddment Tray	FO-3	10

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

FRAME 1	
Step	Procedure
1.	Using screwdriver and wrench, attach radio guard screen (1) to oddment tray (2) with three screws (3) and three nuts (4).
2.	Install radio guard screen (1) straps on turret roof bracket.
	END OF TASK



2-34. BINOCULAR STOWAGE HOLDER REMOVAL PROCEDURE

TOOLS: 7/ 16" open end wrench
Flat tip screwdriver

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Oddment Tray	FO-3	10

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

FRAME 1	
Step	Procedure
1.	Using screwdriver and wrench, remove three screws (1), three lockwashers (2), and three nuts (3) that attach binocular stowage holder to oddment tray (5).
2.	Remove binocular stowage holder (4).
	END OF TASK

2-35. BINOCULAR STOWAGE HOLDER INSTALLATION PROCEDURE

TOOLS: 7/16 in. open end wrench
Flat tip screwdriver

PERSONNEL One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Oddment Tray	FO-3	10

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

FRAME 1	
STEP	PROCEDURE
1.	Using screwdriver and wrench, attach binocular stowage holder to oddment tray (2) with three screws (3), three lockwashers (4), and three nuts (5). END OF TASK

2-36. ODDMENT TRAY REMOVAL PROCEDURE

TOOLS: 1/2 in. socket (3/8 in. drive)
 3/8 in. drive ratchet
 5 in. extension (3/8 in. drive)

PERSONNEL One

EQUIPMENT LOCATION INFORMATION:

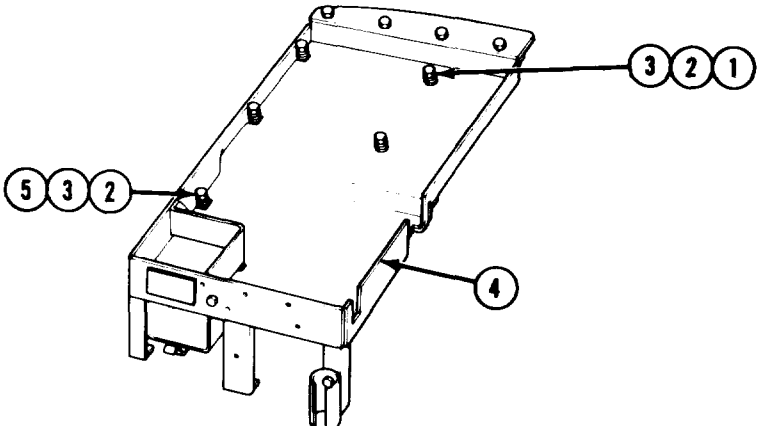
EQUIPMENT
 Oddment Tray

FOLDOUT
FO-3

CALLOUT
 10

EQUIPMENT CONDITION: All loose equipment removed from oddment tray

PRELIMINARY PROCEDURES: Remove radio guard screen (para 2-32).
 Remove oddment tray right screen (para 2-38)
 Remove commander's electric air filter heater hoses
 (para 58-2 and 58-4)

FRAME 1	
STEP	PROCEDURE
1.	Using socket wrench, remove nine screws (1), nine lockwashers (2), and nine flat washers (3) that attach oddment tray (4) to turret bustle floor.
2.	Using socket wrench, remove screw (5), lockwasher (2), and flat washer (3) that attach oddment tray (4) to turret bustle floor.
3.	Remove oddment tray (4).
	END OF TASK
	

2-37. ODDMENT TRAY INSTALLATION PROCEDURE

TOOLS: 1/2 in. socket (3/8 in. drive)
3/8 in. drive ratchet
5 in. extension (3/8 in. drive)

PERSONNEL: One

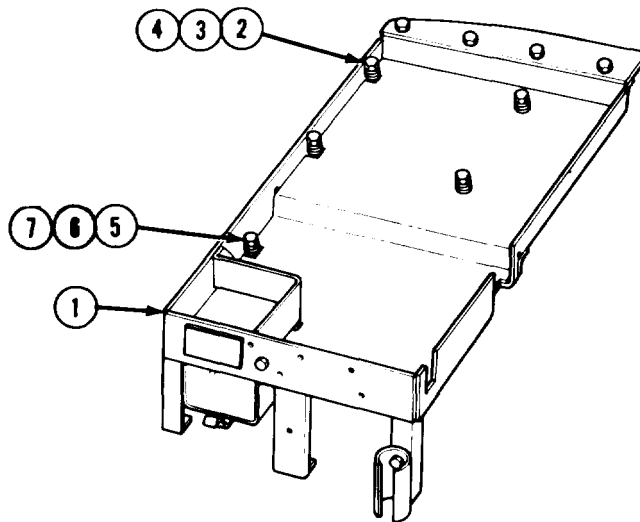
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Oddment Tray	FO-3	10

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

2-37. ODDMENT TRAY INSTALLATION PROCEDURE (CONT)

FRAME 1	
STEP	PROCEDURE
1.	<p>Place oddment tray (1) on mounting pads on turret bustle floor.</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Screws (2) are shorter than screw (5).</p>
2.	<p>Using socket wrench, attach oddment tray (1) to mounting pads on turret bustle floor with nine screws (2), nine lockwashers (3), and nine flat washers (4).</p>
3.	<p>Using socket wrench, attach oddment tray (1) to mounting pad on turret bustle floor with screw (5), lockwasher (6), and flat washer (7).</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Follow-on Maintenance Action Required:</p> <p style="text-align: center;">Install oddment tray right screen (para 2-39). Install commander's electric air filter heater hoses (para 58-3 and 58-5). Install radio guard screen (para 2-33).</p> <p>END OF TASK</p>



2-38. ODDMENT TRAY RIGHT SCREEN REMOVAL PROCEDURE

TOOLS: 1/2" socket (3/8" drive)
 3/8" drive ratchet
 5" extension (3/8" drive)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Oddment Tray	FO-3	10

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

FRAME 1	
Step	Procedure
<ol style="list-style-type: none"> 1. Using socket wrench, remove three screws (1), three lockwashers (2), and three flat washers (3) that attach screen (4) to bracket (5) on turret roof. 2. Lift screen (4) off clips on oddment tray (6). 3. Remove screen (4). <p>END OF TASK</p>	

2-39. ODDMENT TRAY RIGHT SCREEN INSTALLATION PROCEDURE

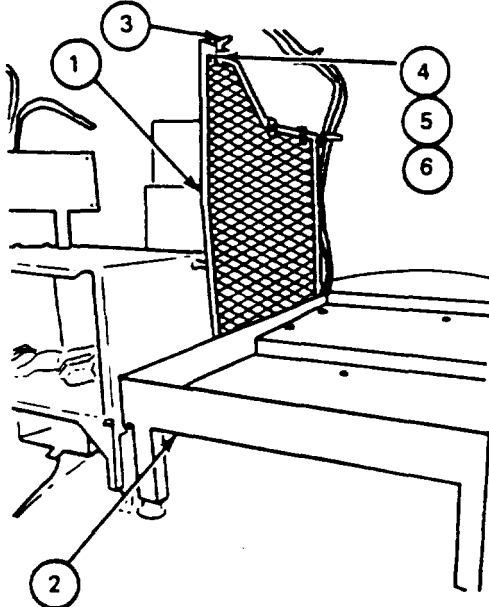
TOOLS: 1/2" socket (3/8" drive)
 3/8" drive ratchet
 5" extension (3/8" drive)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Oddment Tray	FO-3	10

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

FRAME 1	
Step	Procedure
	<p>NOTE</p> <p>Be sure clips on oddment tray are spread enough for easy installation.</p> <ol style="list-style-type: none"> Place screen (1) on clips of oddment tray (2). Using socket wrench, attach screen (1) to bracket (3) on turret roof with three screws (4), three lockwashers (5), and three flat washers (6). <p>END OF TASK</p>
	

2-40. FLASHLIGHT TUBE REMOVAL PROCEDURE

TOOLS: 3/8 in. open end wrench
Flat tip screwdriver

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT
Oddment Tray

FOLDOUT
FO-3

CALLOUT
10

FRAME 1	
STEP	PROCEDURE
1.	Using screwdriver and wrench, remove two screws (1), two flat washers (2), and two nuts (3) that attach flashlight tube (4) to oddment tray (5).
2.	Remove flashlight tube.
END OF TASK	

241. FLASHLIGHT TUBE INSTALLATION PROCEDURE

TOOLS: 3/8 in. open end wrench
Flat tip screwdriver

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Oddment Tray	FO-3	10

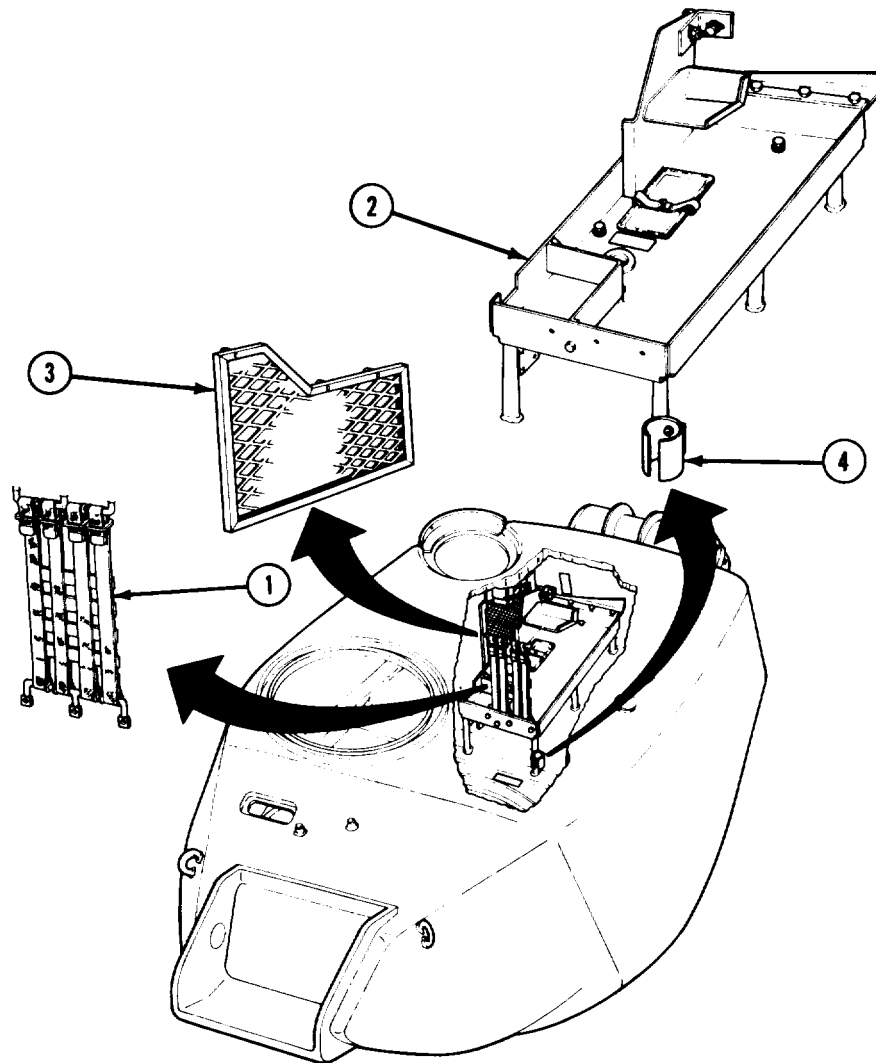
EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1	
STEP	PROCEDURE
1.	Using screwdriver and wrench, attach flashlight tube (1) to oddment tray (2) with two screws (3), two flat washers (4) and two nuts (5). END OF TASK

**Section 9.1. RADIO GUARD SCREEN, ODDMENT TRAY AND FLASHLIGHT TUBE
(LATE MODEL)**

2-41.1 MAINTENANCE PROCEDURES INDEX

		Tasks	
Equipment Item	Removal		Installation
1. Radio Guard Screen	2-41.2		2-41.3
2. Oddment Tray	2-41.4		2-41.5
3. Oddment Tray Right Screen	2-38		2-39
4. Flashlight Tube	2-41.6		2-41.7



2-41.2. RADIO GUARD SCREEN REMOVAL PROCEDURE

TOOLS: Cross tip screwdriver (Phillips) #2
 3/8 in. combination wrench

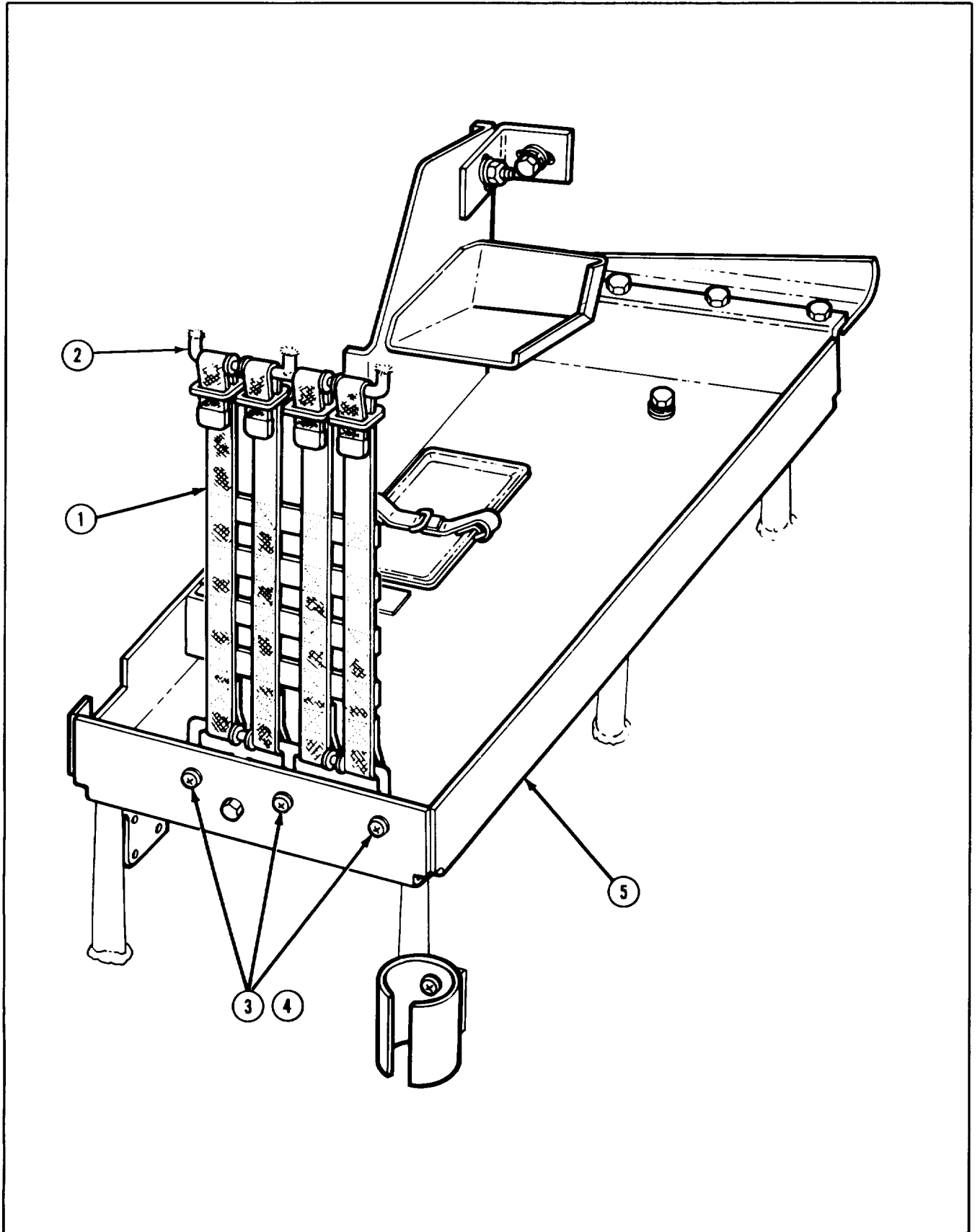
PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Oddment Tray	FO-3	10

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

FRAME 1	
STEP	PROCEDURE
1.	Remove radio guard screen (1) straps from turret roof bracket (2).
2.	Using screwdriver and wrench, remove three screws (3) and three locknuts (4) that attach radio guard screen (1) to oddment tray (5).
3.	Remove radio guard screen (1).
	END OF TASK



2-41.3. RADIO GUARD SCREEN INSTALLATION PROCEDURE

TOOLS: Cross tip screwdriver (Phillips) #2
 3/8 in. combination wrench

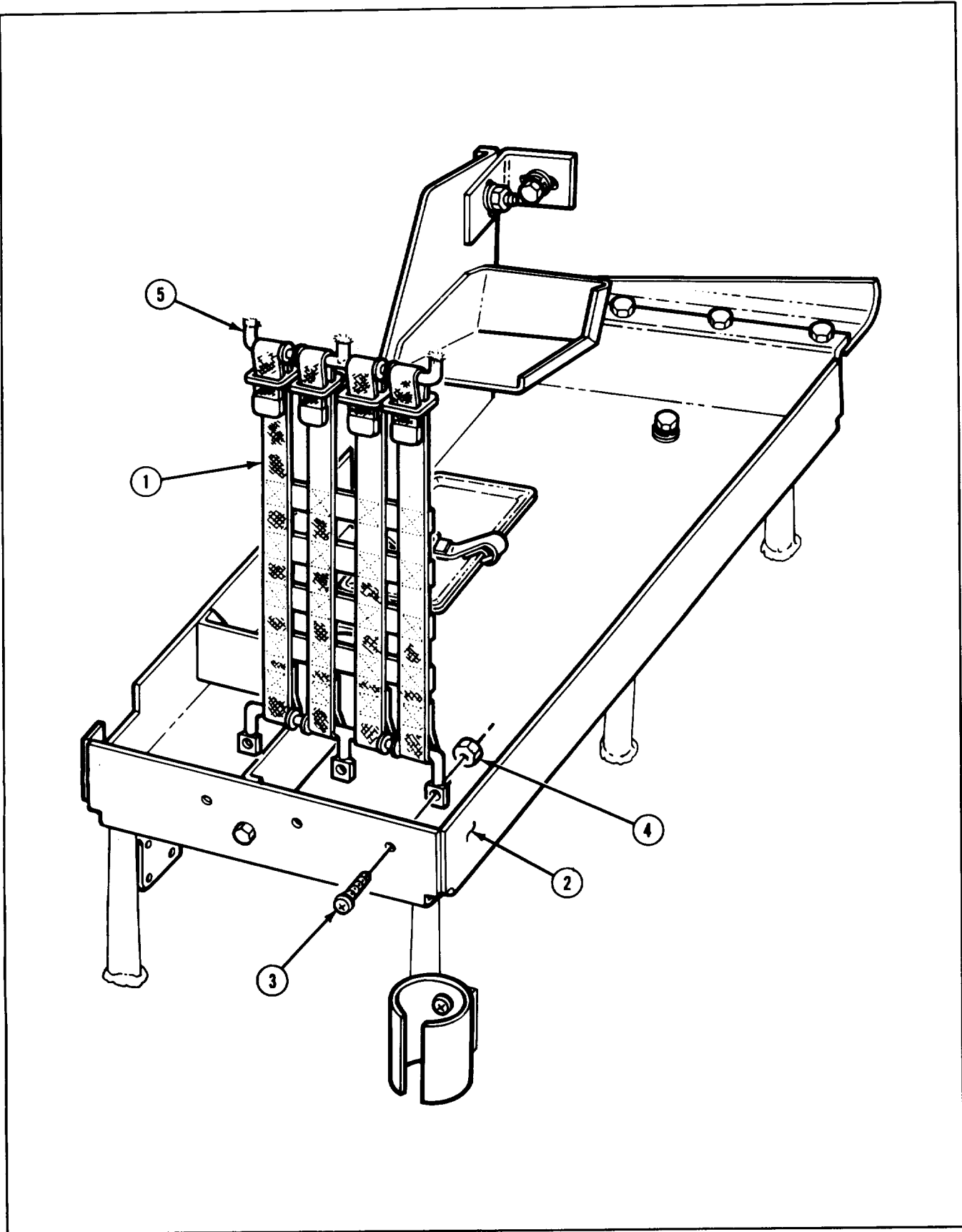
PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Oddment Tray	FO-3	10

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

FRAME 1	
STEP	PROCEDURE
1.	Using screwdriver and wrench, attach radio guard screen (1) to oddment tray (5) with three screws (3) and three locknuts (4).
2.	Install radio guard screen (1) straps on turret roof bracket (2).
	END OF TASK



2-41.4. ODDMENT TRAY REMOVAL PROCEDURE

TOOLS: 1/2 in. socket (3/8 in. drive)
 3/8 in. drive ratchet
 5 in. extension (3/8 in. drive)
 1/2 in. combination box and open end wrench

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

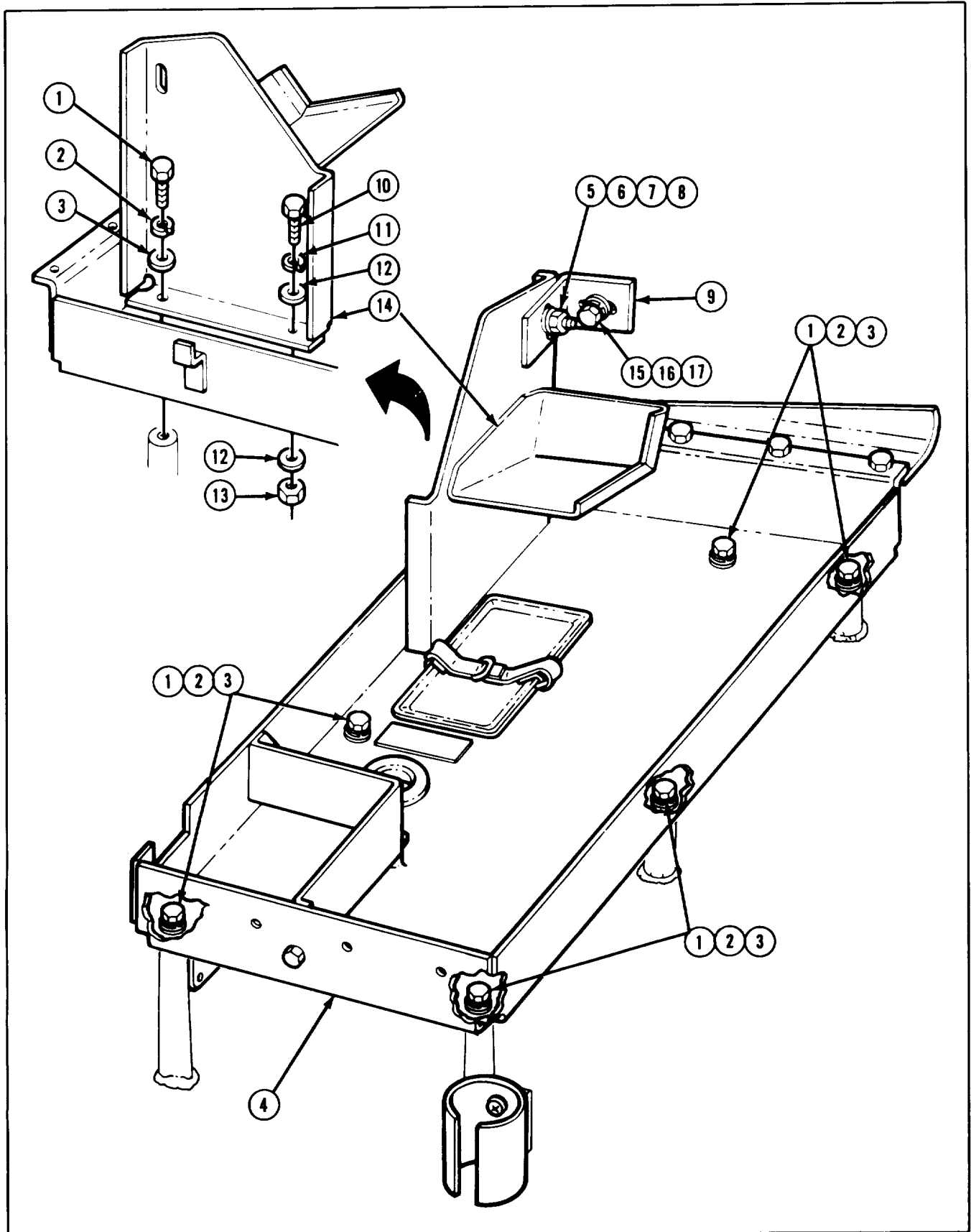
EQUIPMENT Oddment Tray	FOLDOUT FO-3	CALLOUT 10
---------------------------	-----------------	---------------

EQUIPMENT CONDITION: All loose equipment removed from oddment tray.

PRELIMINARY PROCEDURES: Remove radio guard screen (para 2-41.2)
 Remove oddment tray right screen (para 2-38)
 Remove commander's electric air filter heater hoses (para 58-2 and 58-4)

FRAME 1

STEP	PROCEDURE
1.	Using socket wrench, remove seven screws (1), seven lockwashers (2), and seven flat washers (3) that attach oddment tray (4) to turret bustle floor.
2.	Using socket wrench and combination wrench, remove screw (5), lockwasher (6), two flat washers (7), and nut (8) that attach oddment tray (4) to turret wall bracket (9).
3.	Remove oddment tray (4).
4.	Using socket wrench, extension, and combination wrench, remove screw (10), lockwasher (11), two flat washers (12), and nut (13) securing binocular stowage bracket (14) to oddment tray (4).
5.	Remove binocular stowage bracket (14).
6.	Using socket wrench, remove screw (15), lockwasher (16), flat washer (17) and turret wall bracket (9) from turret bustle wall.
	END OF TASK



2-41.5. ODDMENT TRAY INSTALLATION PROCEDURE

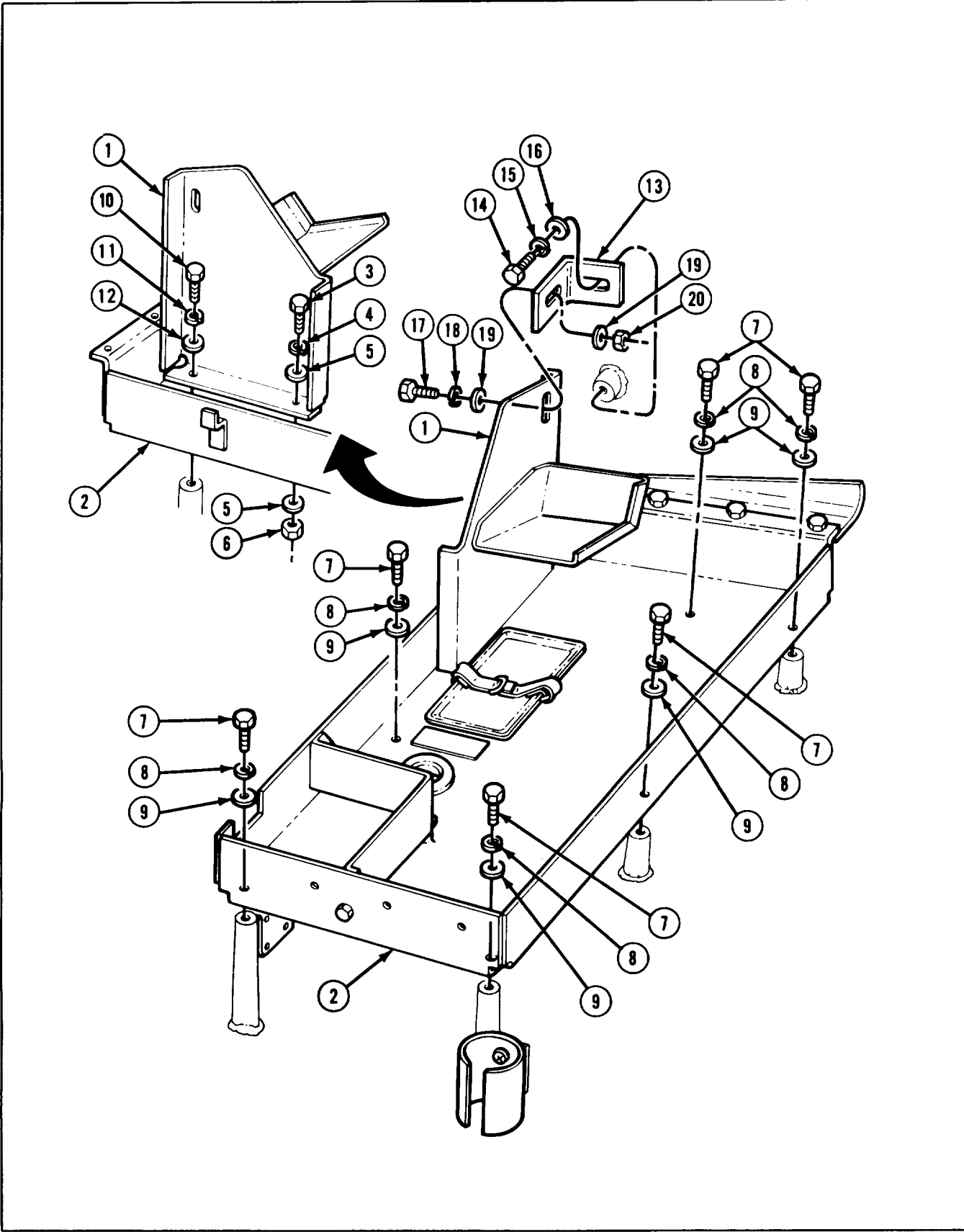
TOOLS: 1/2 in. socket (3/8 in. drive)
 3/8 in. drive ratchet
 5 in. extension (3/8 in. drive)
 1/2 in. combination box and open end wrench

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Oddment Tray	FO-3	10

FRAME 1	
STEP	PROCEDURE
1.	Place binocular stowage bracket (1) in position in oddment tray (2).
2.	Using socket wrench, extension, and combination wrench, install screw (3), lockwasher (4), two flat washers (5), and nut (6), securing binocular stowage bracket (1) to oddment tray (2).
3.	Place oddment tray (2) on mounting pads on turret bustle floor.
4.	Using socket wrench, attach oddment tray (2) to mounting pads on turret bustle floor with six screws (7), six lockwasher (8), and six flat washers (9).
5.	Using socket wrench and extension, attach oddment tray (2) and binocular stowage bracket (1) to mounting pad on turret bustle floor with screw (10), lockwasher (11), and flat washer (12).
6.	Place turret wall bracket (13) in position at binocular stowage bracket (1) and turret bustle wall.
7.	Install screw (14), lockwasher (15), and flat washer (16). Do not tighten.
8.	Using socket wrench and combination wrench, install screw (17), lockwasher (18), two flat washers (19), and nut (20) securing turret wall bracket (13) to binocular stowage bracket (1).
9.	Using socket wrench, tighten screw (14), securing turret wall bracket (13) to turret bustle wall.
	NOTE
	Follow-on Maintenance Action Required:
	Install commander's electric air filter heater and hoses (para 58-3 and 58-5).
	Install oddment tray right screen (para 2-39).
	Install radio guard screen (para 241.3).
	END OF TASK



2-41.6 FLASHLIGHT TUBE REMOVAL PROCEDURE

TOOLS: 3/8 in. open end wrench
 Cross tip screwdriver (Phillips #2)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

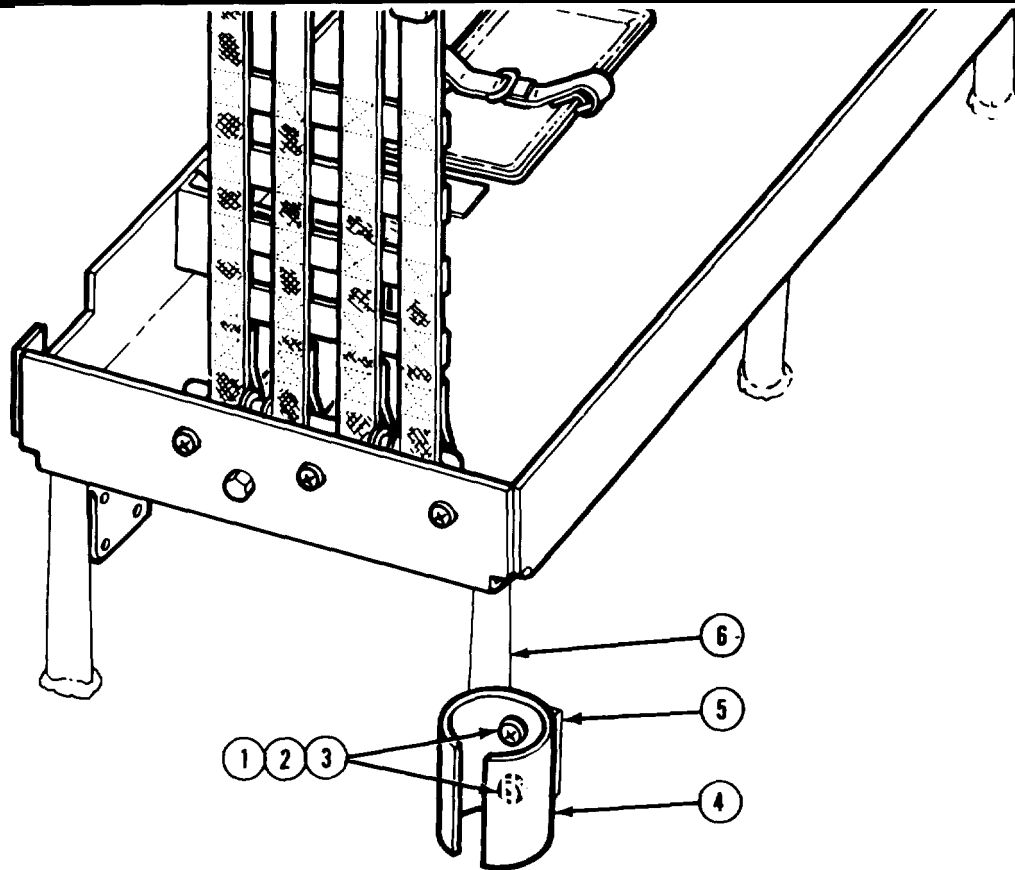
EQUIPMENT
 Oddment Tray

FOLDOUT
FO-3

CALLOUT
 10

FRAME 1

STEP	PROCEDURE
1.	Using screwdriver and wrench, remove two screws (1), two flat washers (2), and two locknuts (3) that attach flashlight tube (4) to plate (5) on boss (6).
2.	Remove flashlight tube. END OF TASK



2-41.7 FLASHLIGHT TUBE INSTALLATION PROCEDURE

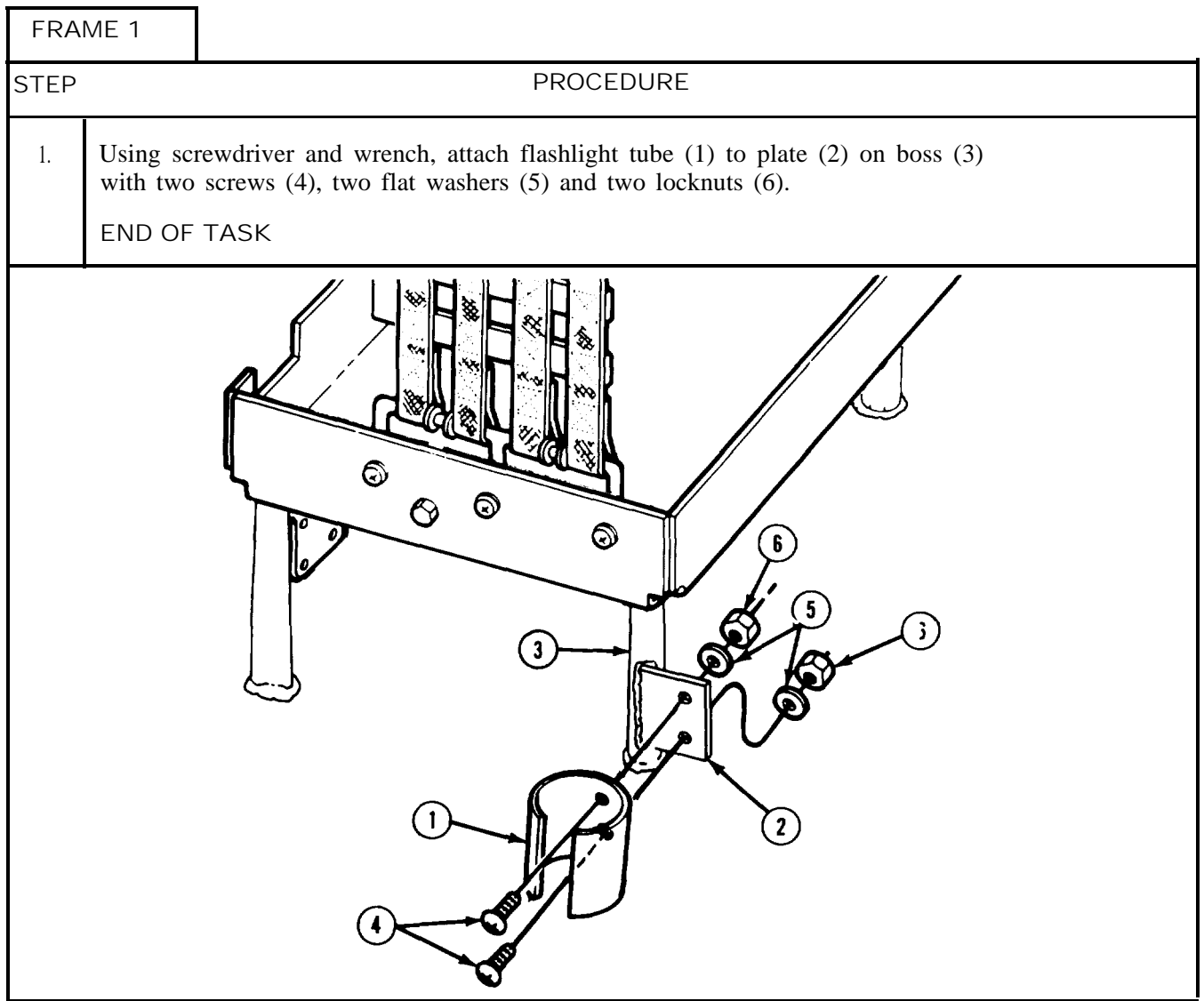
TOOLS: 3/8 in. open end wrench
 Cross tip screwdriver (Phillips #2)

SUPPLIES: Self locking nut (MS 21083-NO 8) (2 required)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Oddment Tray	FO-3	10



Section 10. CANTEEN MOUNTING BRACKET

2-42. MAINTENANCE PROCEDURES INDEX

Equipment Item	Removal	Tasks	Installation
Canteen Mounting Bracket	2-43		2-44

2-43. CANTEEN MOUNTING BRACKET REMOVAL PROCEDURE

TOOL: 7/ 16" open end wrench (two)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT
Canteen Mounting Bracket

FOLDOUT
FO-4

CALLOUT
26

EQUIPMENT CONDITION: Canteen removed from mounting bracket.

FRAME 1	
Step	procedure
1.	Using one wrench on head of screw and other wrench on nut, remove two screws (1), four flat washers (2), two lockwashers (3), and two nuts (4) that attach mounting bracket (5) to turret wall.
2.	Remove canteen mounting bracket (5).
END OF TASK	

2-44. CANTEEN MOUNTING BRACKET INSTALLATION PROCEDURE

TOOLS: 7/ 16” open end wrench (two)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

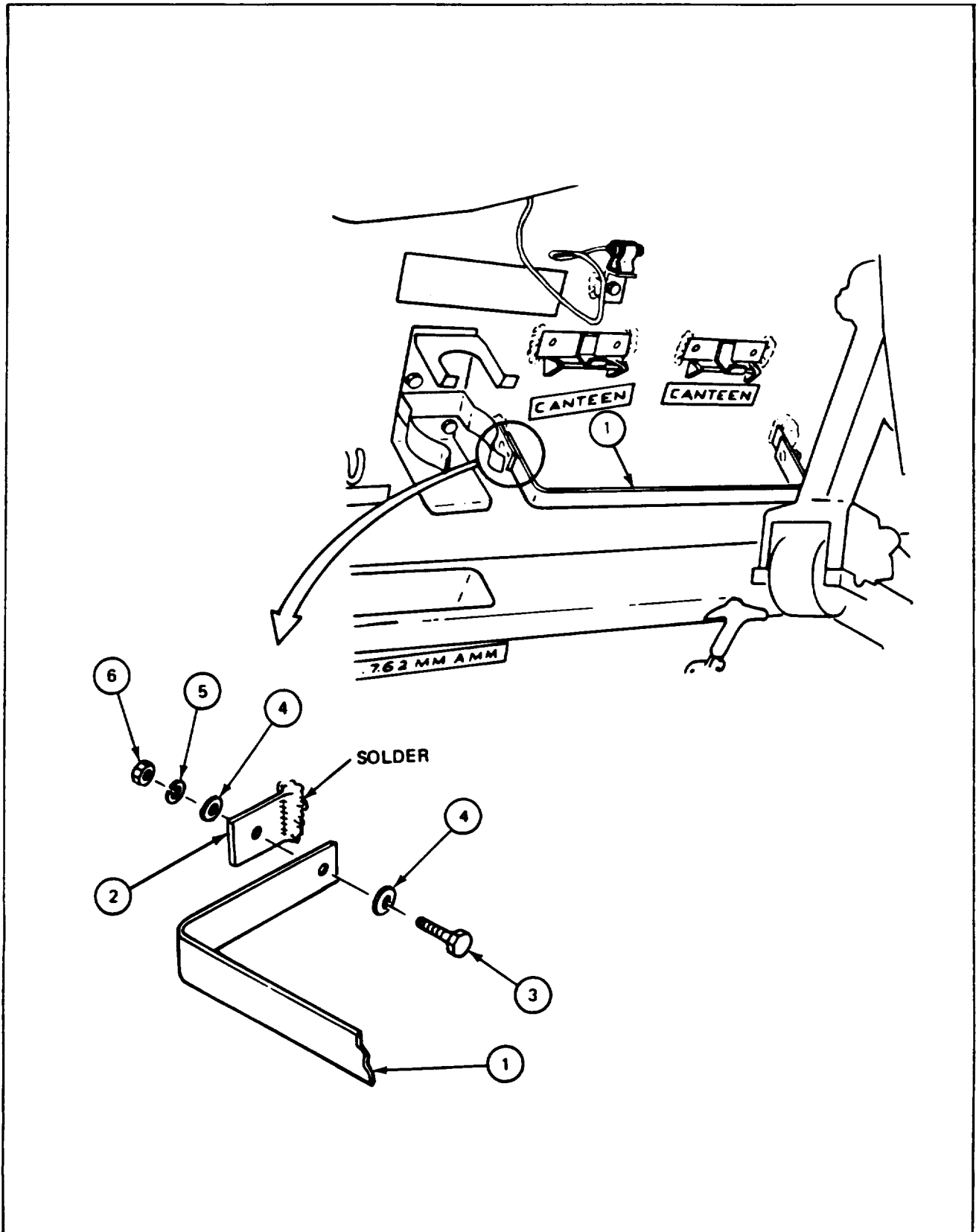
EQUIPMENT
Canteen Mounting Bracket

FOLDOUT
FO-4

CALLOUT
26

FRAME 1

Step	Procedure
1.	Position canteen mounting bracket (1) between brackets (2) on turret wall.
2.	Using one wrench on head of screw and other wrench on nut, attach canteen mounting bracket (1) to turret wall with two screws (3), four flat washers (4), two lockwashers (5) and two nuts (6).
END OF TASK	



Section 11. OILCAN MOUNTING BRACKET

2-45. MAINTENANCE PROCEDURES INDEX

Equipment Item	Removal	Tasks	Installation
Oilcan Mounting Bracket	2-46		2-47

2-46. OILCAN MOUNTING BRACKET REMOVAL PROCEDURE

TOOL: 1 /2" open end wrench

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT
Oilcan Mounting Bracket

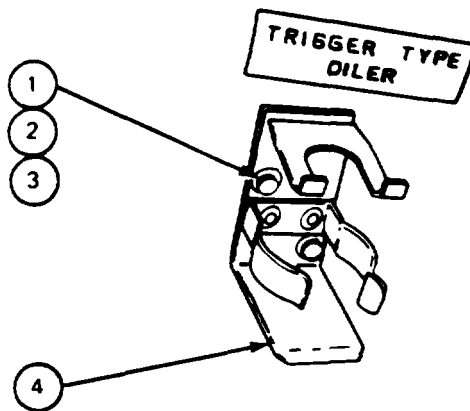
FOLDOUT
FO-4

CALLOUT
23

EQUIPMENT CONDITION: Oilcan removed from mounting bracket

FRAME 1

Step	Procedure
1.	Using wrench, remove two screws (1), two lockwashers (2), and two flat washers (3) that attach mounting bracket (4) to turret wall. Remove oilcan mounting bracket. END OF TASK



2-47. OILCAN MOUNTING BRACKET INSTALLATION PROCEDURE

TOOL: 1/2" open end wrench

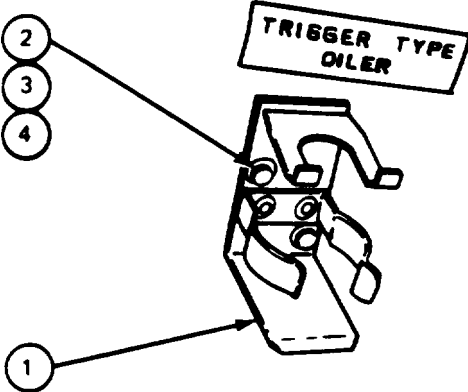
PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT
Oilcan Mounting Bracket

FOLDOUT
FO-4

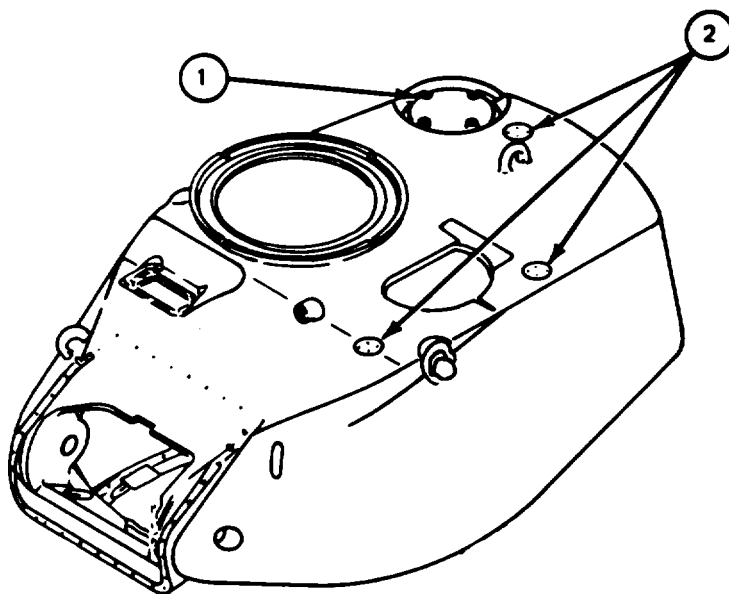
CALLOUT
23

FRAME 1	
Step	Procedure
1.	Using wrench, attach mounting bracket (1) to turret with two screws (2), two lockwashers (3) and two flat washers (4). END OF TASK
	

Section 12. TURRET STRUCTURE COVERS

2-48. MAINTENANCE PROCEDURES INDEX

Equipment Item	Removal	Tasks	Installation
1. Turret Ventilating Blower Cover	249		2-50
2. Turret Antenna Base Cover			
Right Rear Cover	2-51		2-52
Left Rear Cover	2-53		2-54
Left Front Cover	2-55		2-56



2-49. TURRET VENTILATING BLOWER COVER REMOVAL PROCEDURE

TOOLS: 3/8" socket head screw key (Allen wrench)
Pry bar

PERSONNEL: Two

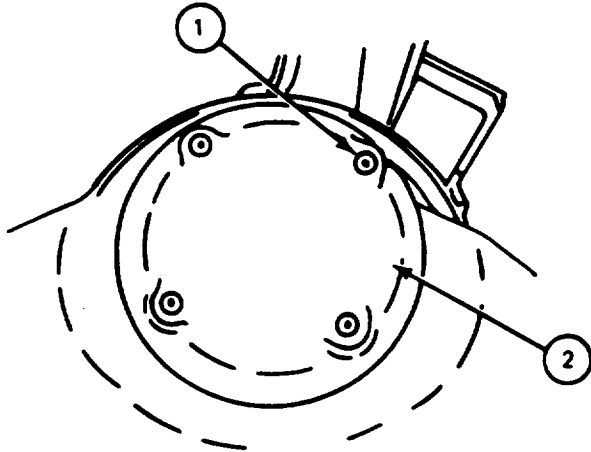
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT
Drivers Master Control Panel

FOLDOUT
FO-3

CALLOUT
11

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

FRAME 1	
Step	Procedure
1.	Using wrench, remove four screws (1) that attach turret ventilating blower cover (2) to turret.
<p>NOTE</p> <p>Two soldiers are needed in step 2 to lift cover. A pry bar may be needed if cover is stuck.</p>	
2.	Remove turret ventilating blower cover (2). END OF TASK
	

2-50. TURRET VENTILATING BLOWER COVER INSTALLATION PROCEDURE

TOOLS: 3/8" socket head screw key (Allen wrench)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT
Driver's Master Control Panel

FOLDOUT
FO-3

CALLOUT
11

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

FRAME 1	
Step	Procedure
1.	Put turret ventilating blower cover (1) in place on turret (2).
2.	Using wrench, attach cover to turret (2) with four screws (3).
	END OF TASK

The diagram illustrates the installation process. It shows a circular turret (2) with a cover (1) being placed over it. Four screws (3) are used to secure the cover to the turret. The cover is shown as a dashed circle, and the turret is shown as a solid circle. The screws are shown as small circles with lines pointing to them.

2-51. TURRET ANTENNA BASE (RIGHT REAR) COVER REMOVAL PROCEDURE

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

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT
 Driver's Master Control Panel

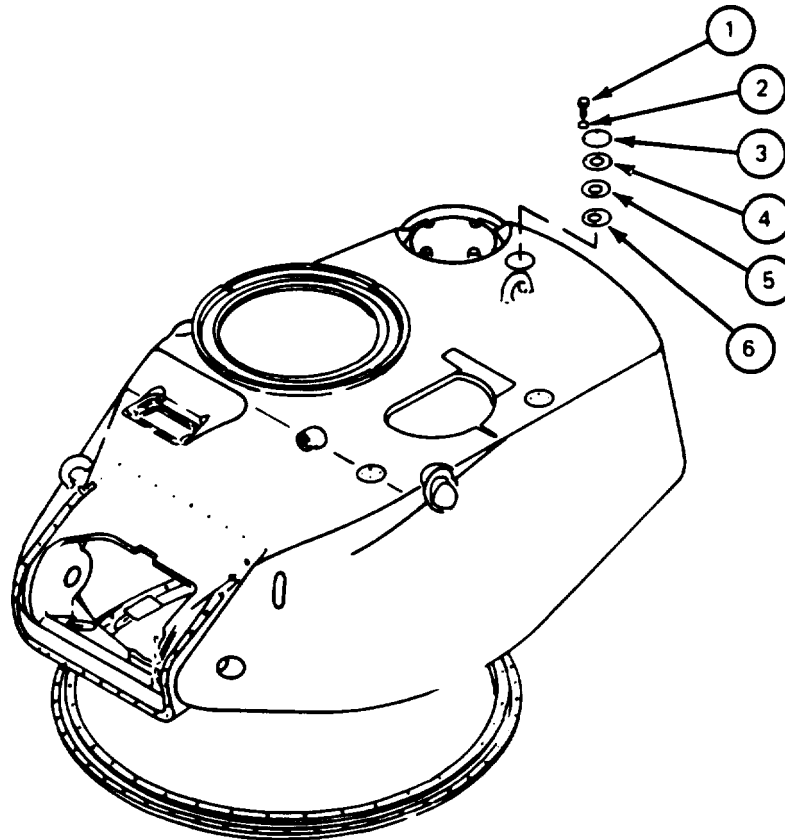
FOLDOUT
 FO-3

CALLOUT
 11

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

FRAME 1

Step	Procedure
1.	Using socket wrench, remove four screws (1) and four lock washers (2) that attach cover (3) to turret.
2.	Remove cover (3), gasket (4), plate (5), and gasket (6). END OF TASK



2-52. TURRET ANTENNA BASE (RIGHT REAR) COVER INSTALLATION PROCEDURE

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

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT
Driver's Master Control Panel

FOLDOUT
FO-3

CALLOUT
11

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

FRAME 1	
Step	Procedure
1.	Put in gasket (1). plate (2), gasket (3), and cover (4).
2.	Using socket wrench. attach cover to turret with four screws (5) and four washers (6). END OF TASK

2-53. TURRET ANTENNA BASE (LEFT REAR) COVER REMOVAL PROCEDURE

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

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT
 Driver's Master Control Panel

FOLDOUT
 FO-3

CALLOUT
 11

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

FRAME 1	
Step	Procedure
1.	Using socket wrench, remove four screws (1) and four lockwashers (2) that attach cover (3) to turret.
2.	Remove cover (3), gasket (4), adapter (5), and gasket (6).
	END OF TASK

2-54. TURRET ANTENNA BASE (LEFT REAR) COVER INSTALLATION PROCEDURE

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

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT
Driver's Master Control Panel

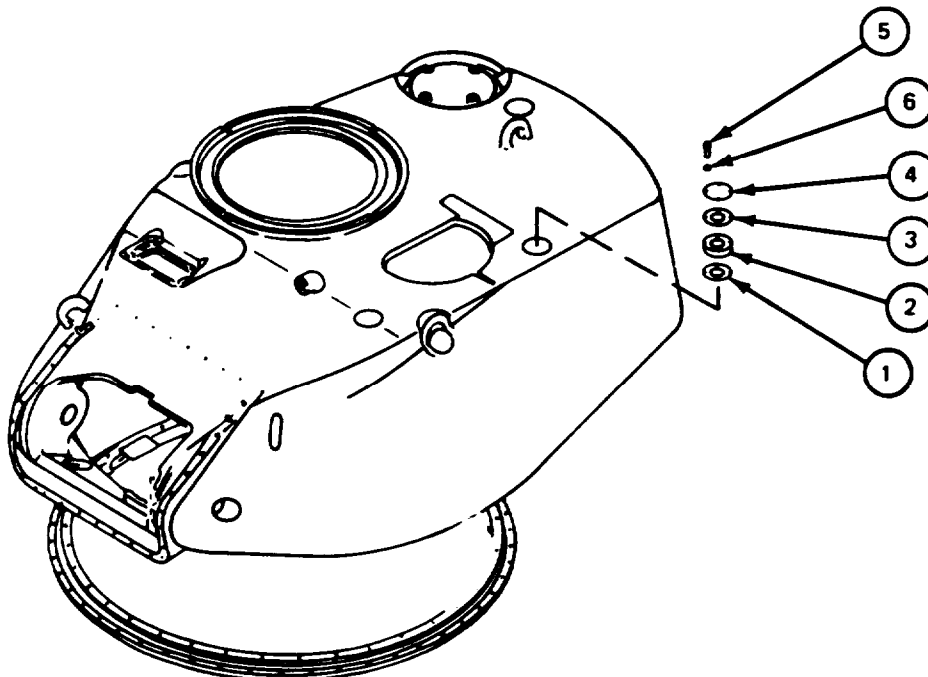
FOLDOUT
FO-3

CALLOUT
11

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

FRAME 1

Step	Procedure
1.	Put in gasket (1), adapter (2), gasket (3), and cover (4).
2.	Using socket wrench, attach cover to turret with four screws (5) and four washers (6). END OF TASK



2-55. TURRET ANTENNA BASE (LEFT FRONT) COVER REMOVAL PROCEDURE

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

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT
Driver's Master Control Panel

FOLDOUT
FO-3

CALLOUT
11

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

FRAME 1	
Step	Procedure
1.	Using socket wrench, remove four screws (1) and four lockwashers (2) that attach cover (3) to turret.
2.	Remove cover (3) and gasket (4). END OF TASK

2-56. TURRET ANTENNA BASE (LEFT FRONT) COVER INSTALLATION PROCEDURE

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

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT Driver's Master Control Panel	FOLDOUT FO-3	CALLOUT 11
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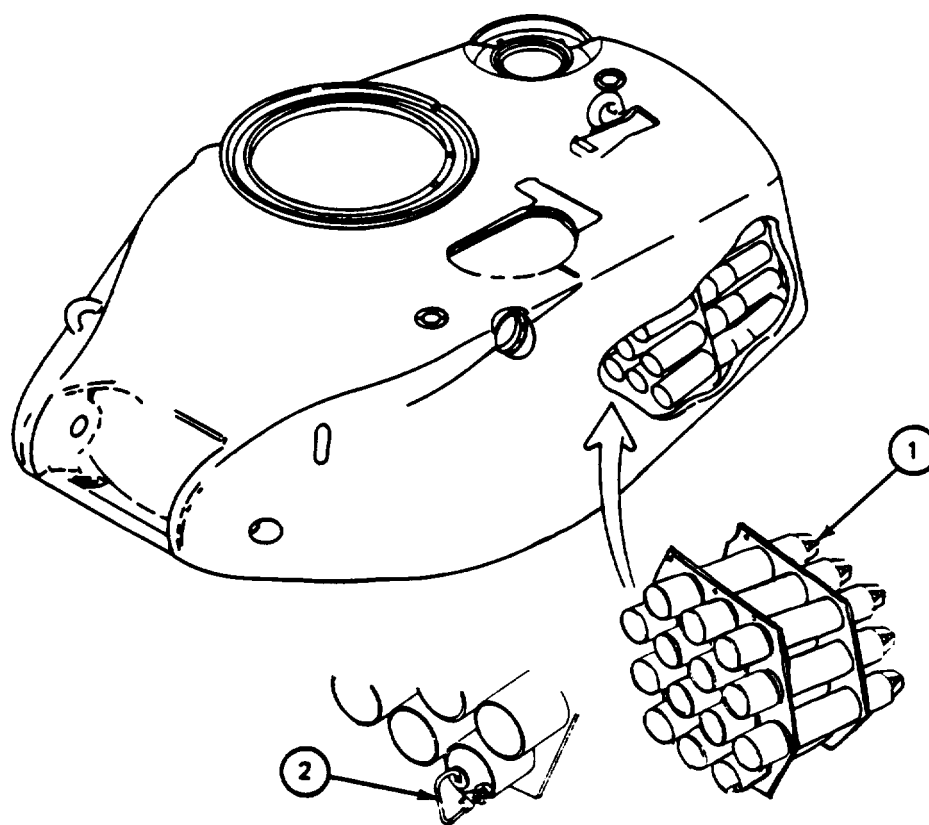
EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

FRAME 1	
Step	Procedure
1.	Put in gasket (1) and cover (2).
2.	Using socket wrench, attach cover to turret with four screws (3) and four washers (4). END OF TASK

Section 13. TURRET BUSTLE 165-MM AMMUNITION STOWAGE RACK AND
RETAINER HANDLE

2-57. MAINTENANCE PROCEDURES INDEX

Equipment Item	Removal	Tasks	Installation
1. Fourteen Round Ammunition Stowage Rack	2-58		2-59
2. Retainer Handle	2-60		2-61



2-58. FOURTEEN ROUND AMMUNITION STOWAGE RACK REMOVAL PROCEDURE

TOOLS: 3/4" socket (3/8" drive)
12" extension (3/8" drive)
18" extension (3/8" drive)
3/8" drive ratchet

PERSONNEL: Two

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Fourteen Round Ammunition Stowage Rack	FO-3	4

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Ammunition removed from stowage rack

2-58. FOURTEEN ROUND AMMUNITION STOWAGE RACK REMOVAL PROCEDURE (CONT)

FRAME 1	
Step	Procedure
1.	Using socket wrench and 12" extension, remove three screws (1), three lockwashers (2), and three flat washers (3) that attach top of front plate (4) of stowage rack (5) to turret bustle.
2.	Repeat step 1 for bottom of front plate (4).
3.	Using socket wrench and 18" extension, remove screw (6), lockwasher (7), and flat washer (8) that attach top of rear plate (9) of stowage rack (5) to turret bustle.
4.	Repeat step 4 for bottom of rear plate (9).
5.	Call support maintenance personnel to remove turret.
6.	Remove stowage rack (5).
	END OF TASK

2-59. FOURTEEN ROUND AMMUNITION STOWAGE RACK INSTALLATION PROCEDURE

TOOLS: 3/4" socket (3/8" drive)
12" extension (3/8" drive)
18" extension (3/8" drive)
3/8" drive ratchet

PERSONNEL: Two

EQUIPMENT LOCATION INFORMATION:

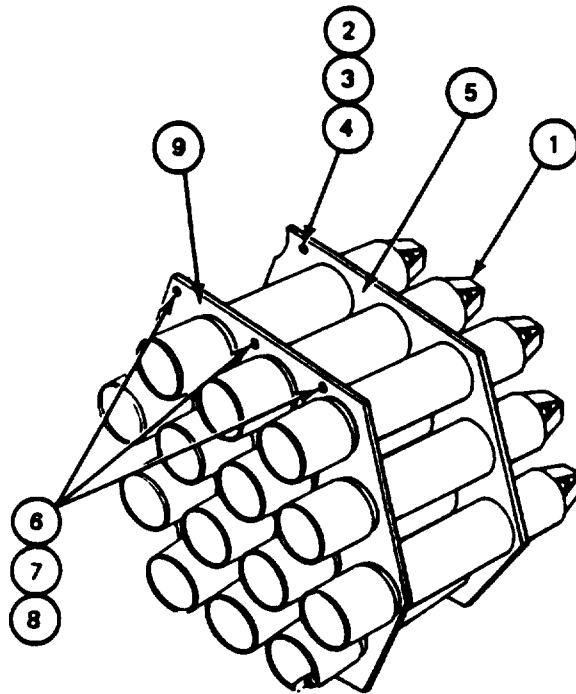
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Fourteen Round Ammunition Stowage Rack	FO-3	4

EQUIPMENT CONDITION: Vehicle turret removed

2-59. FOURTEEN ROUND AMMUNITION STORAGE RACK INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Soldier A and B: Place stowage rack (1) on turret platform floor.
2.	Call support maintenance personnel to install turret.
3.	Place stowage rack (1) in turret bustle.
4.	Using socket wrench and 18" extension, install screw (2), lockwasher (3), and flat washer (4) that attach bottom of rear plate (5) of stowage rack (1) to turret bustle.
5.	Repeat step 4 for top of rear plate (5).
6.	Using socket wrench and 12" extension, install three screws (6), three lockwashers (7), and three flat washers (8) that attach bottom of front plate (9) of stowage rack (1) to turret bustle.
7.	Repeat step 6 for top of front plate (9). END OF TASK



2-60. RETAINER HANDLE REMOVAL PROCEDURE

TOOLS: 1" open end wrench

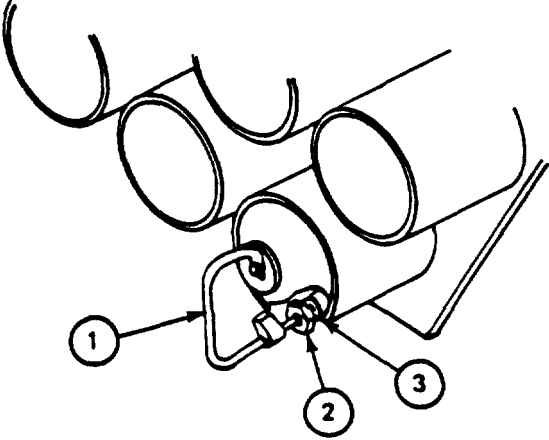
PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Fourteen Round Ammunition Stowage Rack	FO-3	4

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

2-60. RETAINER HANDLE REMOVAL PROCEDURE (CONT)

FRAME 1	
Step	Procedure
<ol style="list-style-type: none"> 1. 2. 3. 	<p>Turn handle (1) and pull to open position.</p> <p>Using wrench, loosen nut (2) and slide nut out of tube (3).</p> <p>Remove handle (1).</p> <p>END OF TASK</p>
	

2-61. RETAINER HANDLE INSTALLATION PROCEDURE

TOOLS: 1" open end wrench

PERSONNEL: One

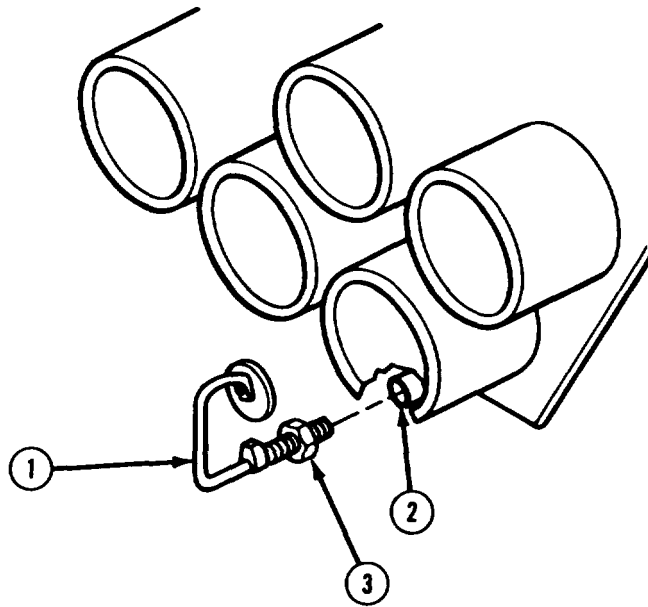
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Fourteen Round Ammunition Stowage Rack	FO-3	4

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

2-61. RETAINER HANDLE INSTALLATION PROCEDURE (CONT)

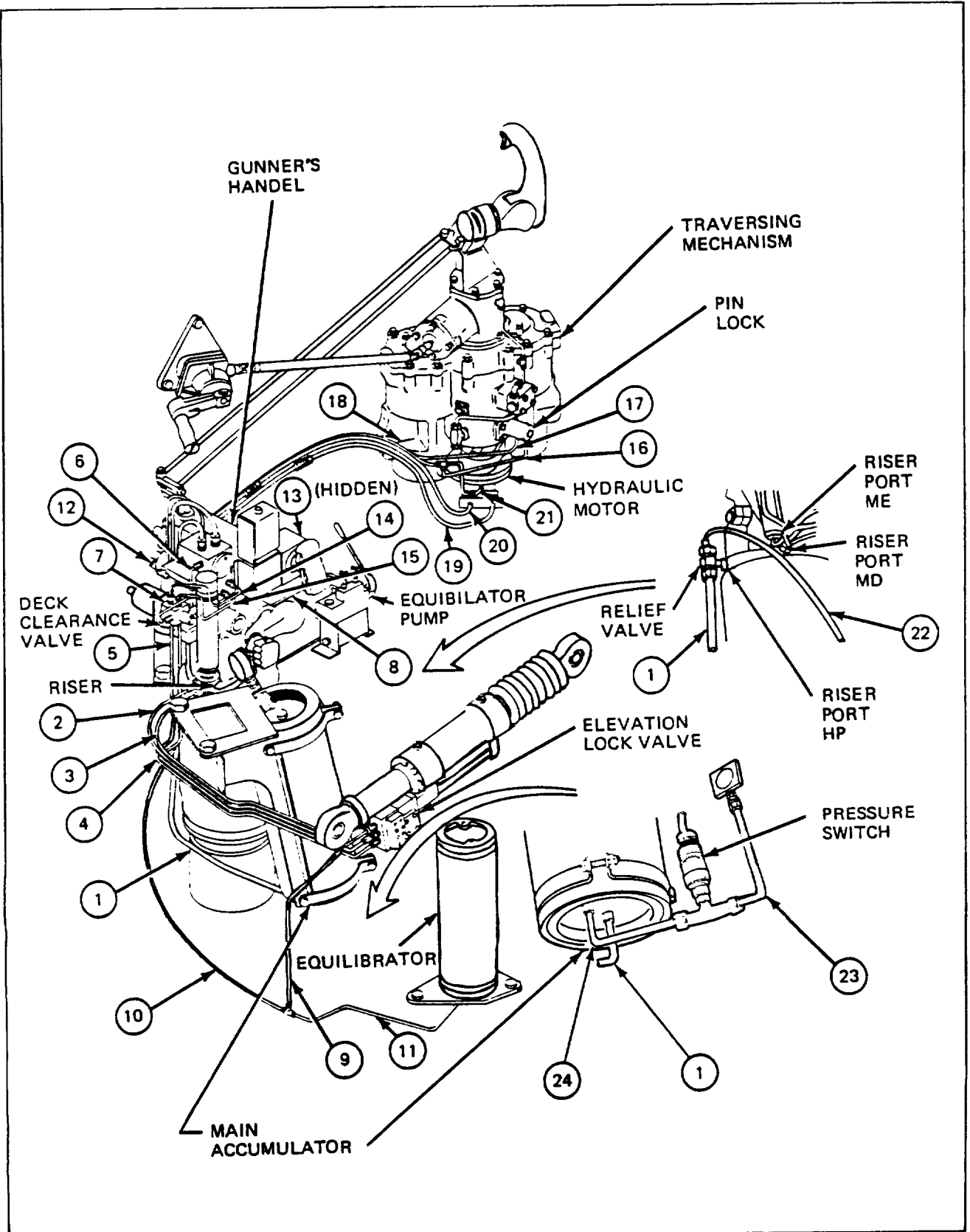
FRAME 1	
STEP	PROCEDURE
1.	Slide handle (1) into tube (2).
2.	Using wrench, tighten nut (3).
3.	Turn handle (1) and push to close position.
	END OF TASK



**Section 14. TURRET HYDRAULIC SYSTEM TUBES AND TUBE HOLDERS
(EARLY MODEL VEHICLE)**

2-62. MAINTENANCE PROCEDURES INDEX

Equipment Item	Inspection	Cleaning	Tasks		Installation	Install Holder	
			Remove Holder	Removal			
NOTE							
See (para 2-63) for cross index between tube assembly part numbers and maintenance procedure index callout numbers.							
TUBE ASSEMBLY							
1.	10911706	2-64	2-65	None	2-66	2-67	None
2.	10911686	2-64	2-65	2-74	2-68	2-69	2-75
3.	11591342	2-64	2-65	2-74	2-68	2-69	2-75
4.	10911704	2-64	2-65	2-74	2-68	2-69	2-75
5.	10911702	2-64	2-65	2-74	2-68	2-69	2-75
6.	10940925	2-64	2-65	None	2-68	2-69	None
7.	10911692	2-64	2-65	None	2-68	2-69	None
8.	10940932	2-64	2-65	2-78	2-68	2-69	2-79
9.	10940926	2-64	2-65	2-78	2-68	2-69	2-79
10.	10940930	2-64	2-65	2-78	2-68	2-69	2-79
11.	10940885	2-64	2-65	None	2-68	2-69	None
12.	10940753	2-64	2-65	2-76	2-68	2-69	2-77
13.	10940924	2-64	2-65	None	2-68	2-69	None
14.	10911695	2-64	2-65	None	2-68	2-69	None
15.	10911696	2-64	2-65	None	2-68	2-69	None
16.	10940876	2-64	2-65	None	2-68	2-69	None
17.	10940751	2-64	2-65	2-76	2-68	2-69	2-77
18.	10940700	2-64	2-65	2-76	2-68	2-69	2-77
19.	10940696	2-64	2-65	2-76	2-70	2-71	2-77
20.	10940752	2-64	2-65	2-76	2-70	2-71	2-77
21.	10940923	2-64	2-65	None	2-72	2-73	None
22.	10951856	2-64	2-65	None	2-68	2-69	None
23.	10911687	2-64	2-65	None	2-68	2-69	None
24.	10911690	2-64	2-65	None	2-68	2-69	None
TUBE HOLDERS							
	10933586	2-64	...	...	2-74	2-75	. . .
	10933587	2-64	...	...	2-74	2-75	. . .
	10911683	2-64	...	...	2-76	2-77	. . .
	10911685	2-64	...	...	2-76	2-77	. . .
	MS21333-34	2-64	...	...	2-78	2-79	. . .
	MS21333-55	2-64	...	...	2-78	2-79	. . .



2-63. MAINTENANCE PROCEDURES CROSS INDEX

Cross index between Tube Assembly part numbers and maintenance procedure index callout numbers.

Tube Assembly	Callout	How to Use Maintenance Procedures Index for Turret Hydraulic System Tubes Maintenance
10911686	2	1. Find tube assembly part number in table at left (for example, 10911702).
10911687	23	
10911690	24	
10911692	7	2. Use callout number (5) to find tube assembly on ILLUSTRATION.
10911695	14	
10911696	15	
10911702	5	3. Use callout number (5) to find tube assembly in MAINTENANCE PROCEDURES INDEX.
10911704	4	
10911706	1	
10940696	19	4. Use REMOVAL or INSTALLATION column to find procedure for tube assembly you are removing (2-68) or installing (2-69).
10940700	18	
10940751	17	
10940752	20	
10940753	12	5. Use REMOVE HOLDER column to find procedure for removing tube holders (2-74), if required.
10940876	16	
10940885	11	
10940923	21	
10940924	13	6. Use INSTALL HOLDER column to find procedure for installing tube holders (2-75), if required.
10940925	6	
10940926	9	
10940930	10	
10940932	8	7. For removing or installing tube holders only, use part number in EQUIPMENT ITEM column under TUBE HOLDERS (10933586) to find REMOVAL (2-74) or INSTALLATION (2-75) procedure for particular tube holder.
10951856	22	
11591342	3	

2-64. TURRET HYDRAULIC SYSTEM TUBES AND TUBE HOLDERS INSPECTION
PROCEDURE

PERSONNEL: One

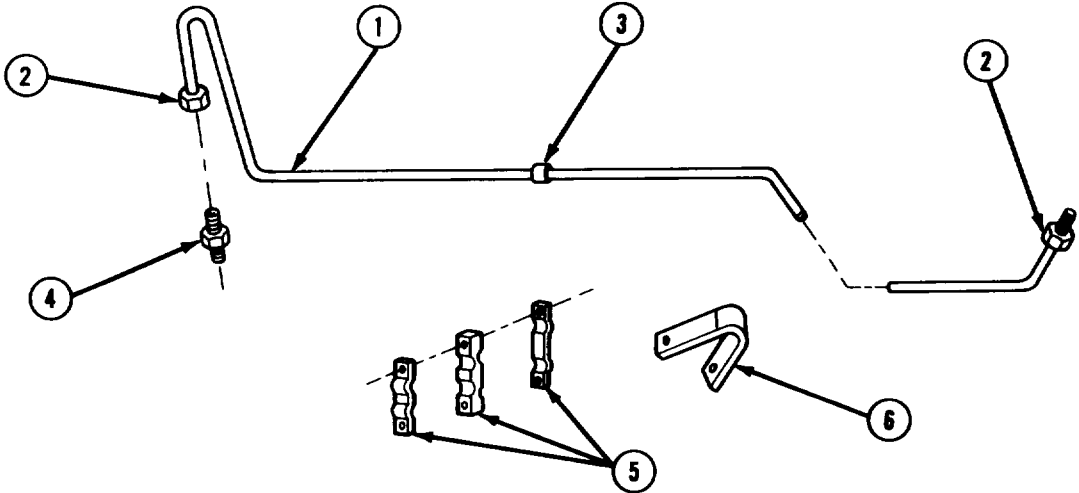
PRELIMINARY PROCEDURES: Remove tube holders (see 2-62 for para)
Tube assemblies removed (see 2-62 for para)

GENERAL INSTRUCTIONS

CAUTION

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

2-64. TURRET HYDRAULIC SYSTEM TUBES AND TUBE HOLDERS INSPECTION PROCEDURE (CONT)

FRAME 1	PROCEDURE
	<p style="text-align: center;">NOTE</p> <p style="text-align: center;">If hydraulic tubes, tube holders, or brackets are damaged, get new hydraulic tubes, tube holders or brackets.</p> <ol style="list-style-type: none"> 1. Check ends of each tube (1) for roundness. 2. Check nuts (2) on each tube for damage. 3. Check body of tube to see that marker band (3) is on it, and is undamaged. 4. Check body of each tube (1) for tears, bendings, or damage. 5. Check threads on each fitting (4) for damage. 6. Check each tube holder (5) for bending or other damage. 7. Check each clamp (6) for bending or other damage. <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Follow-on Maintenance Action Required:</p> <p style="text-align: center;">Install tubes (see 2-62 for para). Install tube holders (sw 2-62 for para).</p> <p>END OF TASK</p>
	

2-65. TURRET HYDRAULIC SYSTEM TUBES CLEANING PROCEDURE

TOOLS: Compressed air unit

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

PERSONNEL: One

PRELIMINARY PROCEDURES: Remove tubes and tube holders (see 2-62 for para)

GENERAL INSTRUCTIONS:

CAUTION

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

FRAME 1	
Step	Procedure
<ol style="list-style-type: none"> 1. 2. 3. 	<p>Remove protective plugs from ends of tubes or lines.</p> <p>Using dry cleaning solvent, clean both outside and inside surfaces of each part.</p> <p>Dry parts with compressed air.</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">If dry compressed air is not available, put tube on a previously cleaned area and let it set for at least five minutes before installing it.</p> <p style="text-align: center;">Follow-on Maintenance Action Required:</p> <p style="text-align: center;">Install tubes (see 2-62 for para). Install tube holders (see 2-62 for para).</p> <p>END OF TASK</p>

2-66. TURRET HYDRAULIC SYSTEM TUBE (1091 1706) REMOVAL PROCEDURE

TOOLS: 1-1 /8" open end wrench (two)

SUPPLIES: 4 plugs for tube assembly and equipment ports
Masking tape (item 25, App. A)
Felt tipped pen
Cleaning rags (item 15, App. A)

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

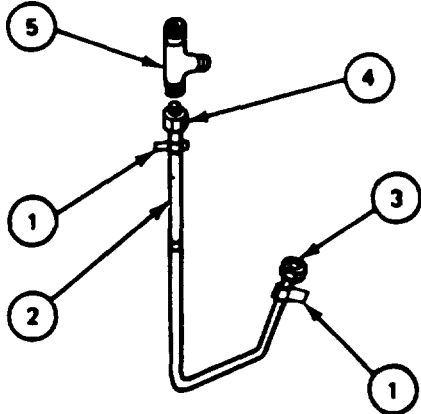
EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED

GENERAL INSTRUCTIONS:

CAUTION

Keep dirt from getting in tubing or parts. Dirt can **damage** equipment. Handle tubes care fully **to stop damage**. Use rags to clean up fluid spillage.

2-66. TURRET HYDRAULIC SYSTEM TUBE (1091 1706) REMOVAL PROCEDURE (CONT)

FRAME 1	Step	Procedure
		<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">WARNING</div> <p>Before removing hvdraulic tubes, hydraulic system pressure must be lowered to 0 psi. Hydraulic fluid under pressure can hurt you.</p> <ol style="list-style-type: none"> 1. Lower hydraulic system pressure to 0 psi (para 1-18). 2. Drain hydraulic system (para 1-21). <p style="text-align: center;">NOTE</p> <p>Use the maintenance procedure index (para 2-62) and part number on band attached to tube assembly (2) to locate tube assembly you are removing.</p> <ol style="list-style-type: none"> 3. Using masking tape (1) and felt tipped pen, tag both ends of tube assembly (2) with equipment port identification markings. 4. Using wrench on tube assembly nut (3) and wrench on adapter in accumulator to keep it from turning, remove tube assembly nut (3) (para 1-23). 5. Using wrench, remove tube assembly nut (4) from relief valve (5) (para -23). 6. Plug tube assembly, relief valve, and accumulator ports, four places. 7. Remove tube assembly (2) from vehicle. <p>END OF TASK</p>
		

2-67. TURRET HYDRAULIC SYSTEM TUBE (1091 1706) INSTALLATION PROCEDURE

TOOLS: 1-1/8 ” open end wrench (two)

SUPPLIES: Hydraulic fluid (item 9, App. A)
 Dry cleaning solvent or mineral spirits paint thinner
 (items 22 or 26, App. A)
 Cleaning rags (item 15, App. A)

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

EQUIPMENT CONDITION: Driver’s master control panel MASTER BATTERY switch set to OFF
 Gunner’s control box ELEV/TR4V POWER switch set to OFF
 Turret traverse lock set to LOCKED

PRELIMINARY PROCEDURES: Inspect tubes and tube holders (para 2-64)
 Clean tubes (para 2-65).

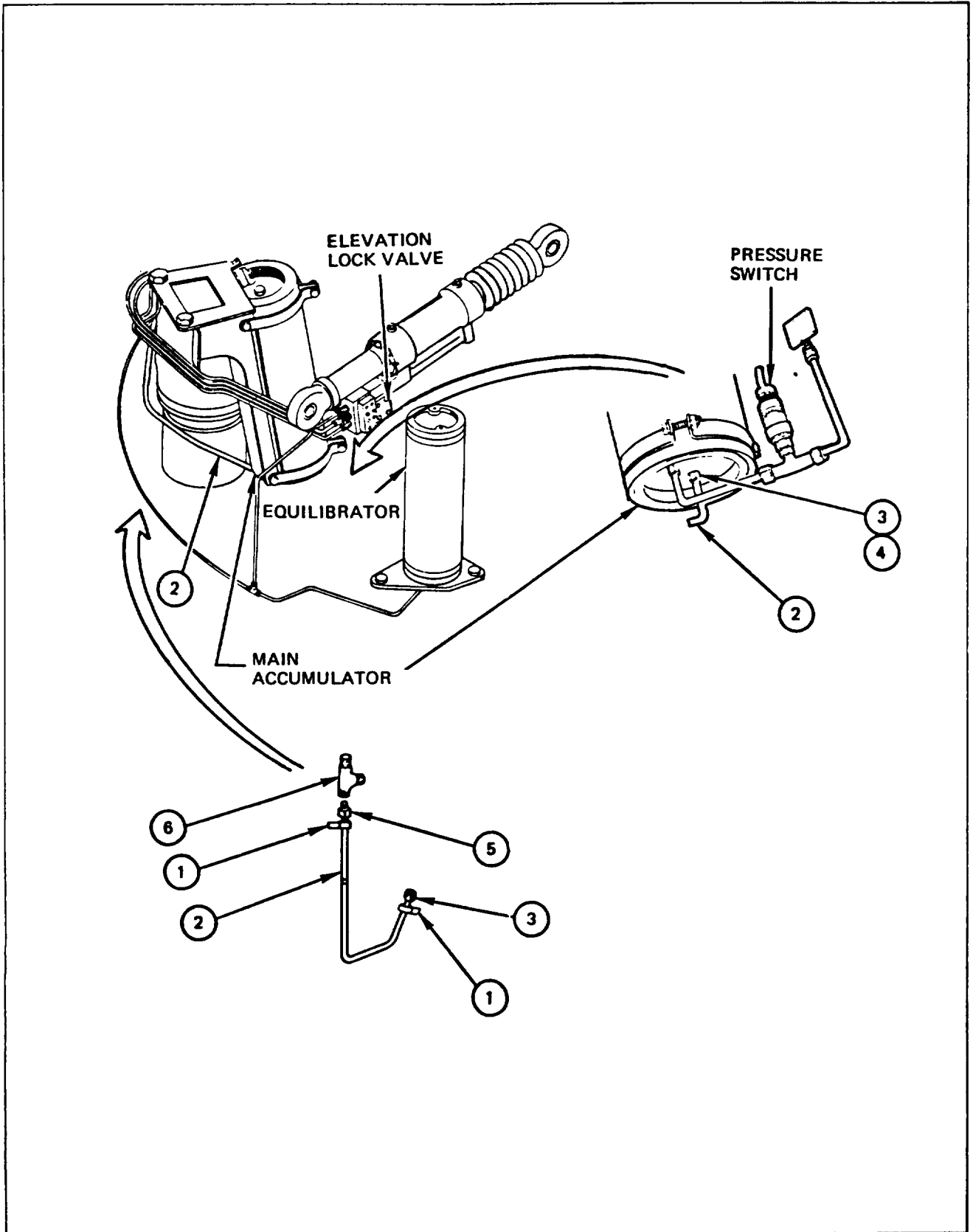
GENERAL INSTRUCTIONS:



Keep dirt from getting in tubing or parts. Dirt can damage equipment. Handle tubes care fully to stop damage. Use rags to clean up fluid spillage.

**2-67. TURRET HYDRAULIC SYSTEM TUBE 1091 1706) INSTALLATION
PROCEDURE (CONT)**

FRAME 1	
Step	Procedure
1.	<p>Remove four protective plugs from tube assembly, relief valve port, and accumulator adaptor port.</p> <p style="text-align: center;">CAUTION</p> <p style="text-align: center;">Tube assembly must be connected to equipment port per identification marking on tag (1) to prevent damage to equipment.</p>
2.	Match identification marking on tag (1) on tube assembly (2) with marking on port in equipment.
3.	Put tube assembly (2) in approximate position between connecting points.
4.	Using wrench on tube assembly nut (3) and wrench on adaptor (4) in accumulator to keep it from turning, connect tube assembly (2) to accumulator adapter (4) (para 1-24).
5.	Using wrench, connect tube assembly nut (5) to relief valve (6) (para 1-24).
6.	Remove two identification tags (1).
	<p>NOTE</p> <p>Do the following step if this procedure completes the maintenance of the hydraulic system. If other maintenance must be done, do the following step after completion of the other maintenance.</p>
7.	Check connections of tube assembly for leaks of hydraulic fluid (JPG). If hydraulic connection leaks hydraulic fluid, remove (para 2-66) and install (para 2-67) new tube assembly.
	END OF TASK



2-68. TURRET HYDRAULIC SYSTEM TUBE REMOVAL PROCEDURE

TOOLS: 5/8" open end wrench
11/16" open end wrench
8" adjustable wrench

SUPPLIES: 4 plugs for tube assembly and equipment pens
Masking tape (item 25, App. A)
Felt tipped pen
Cleaning rags (item 15, App. A)

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

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: Tube 10940932 only:
Remove gunner's footrest (para 2-25)
Remove **gunner's** footguard (para 2-16)

GENERAL INSTRUCTIONS:

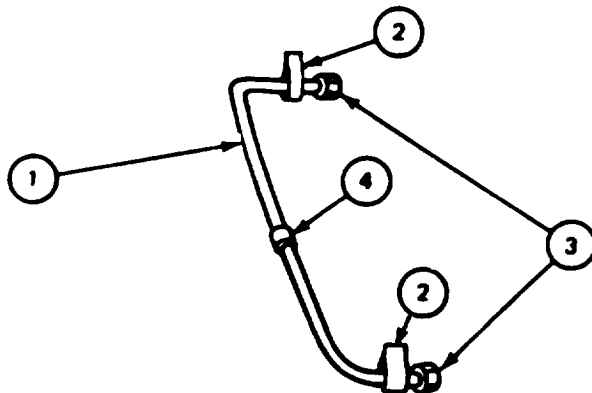
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment. Handle tubes care fully to stop damage. Use rags to clean up fluid spillage.

2-68. TURRET HYDRAULIC SYSTEM TUBE REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
	<div style="text-align: center; border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>WARNING</p> </div> <p style="text-align: center;">Before removing hydraulic tubes, hydraulic system pressure must be lowered to 0 psi. Hydraulic fluid under pressure can hurt you.</p> <ol style="list-style-type: none"> 1. Lower hydraulic system pressure to 0 psi (para 1-18). 2. If tube assembly (1) you are removing is connected to the reservoir, drain hydraulic system (para 1-2 1). <div style="text-align: center; margin: 10px 0;"> <p>NOTE</p> </div> <p style="text-align: center;">Use the maintenance procedure index (para 2-62) and part number on band (4) attached to tube assembly (1) to locate tube assembly you are removing.</p> <ol style="list-style-type: none"> 3. Remove any tube holders, if necessary, that hold tube assembly (1) to equipment (see maintenance procedure index for para). 4. Using masking tape (2) and felt tipped pen, tag both ends of tube assembly (1) with equipment port identification markings. 5. Using 5/8" wrench on tube assembly nuts (3) and 11/ 16" wrench on nipple in equipment, if required, remove two tube assembly nuts (3) (para 1-23). 6. Plug tube assembly and two equipment ports, four places. 7. Remove tube assembly (1) from vehicle. <p>END OF TASK</p>



2-69. TURRET HYDRAULIC SYSTEM TUBE INSTALLATION PROCEDURE

TOOLS: 5/8" open end wrench
1 1 / 16" open end wrench
8" adjustable wrench

SUPPLIES: Cleaning rags (item 15, App. A)

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

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

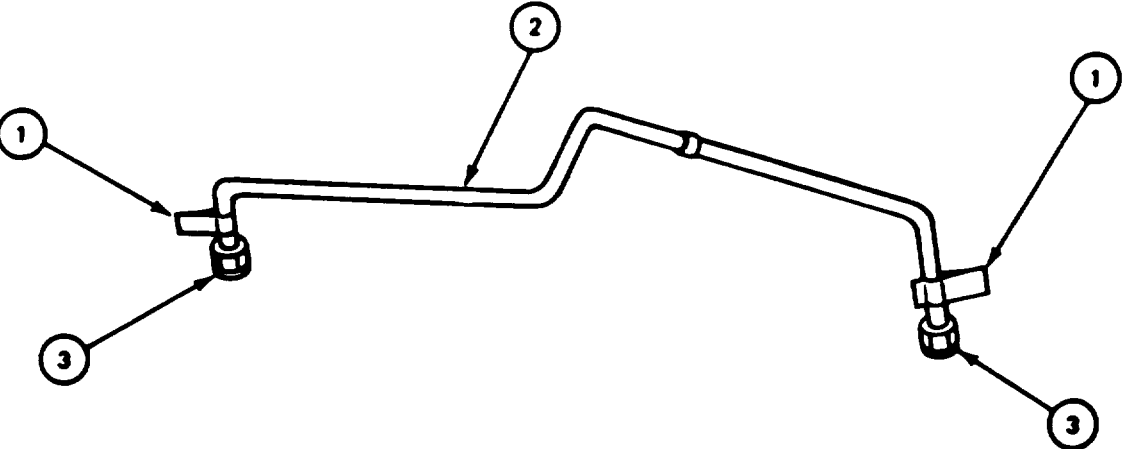
PRELIMINARY PROCEDURES: Inspect tubes and tube holders (para 2-64)
Clean tubes (para 2-65)

GENERAL INSTRUCTIONS:

CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment. Handle tubes **carefully** to stop damage. Use rags to clean up fluid spillage.

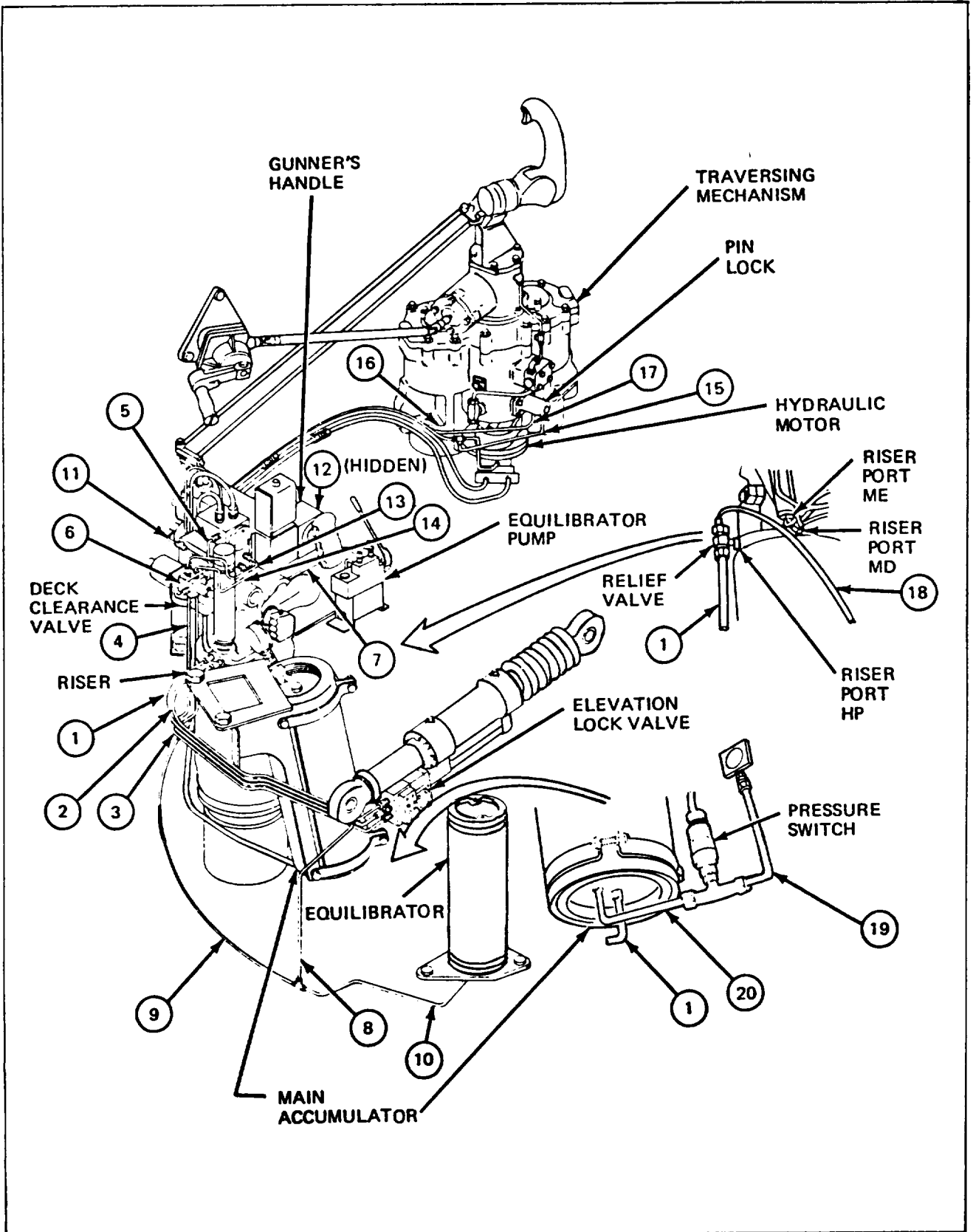
2-69. TURRET HYDRAULIC SYSTEM TUBE INSTALLATION PROCEDURE (CONT)

FRAME 1	
Step	Procedure
	<p style="text-align: center;">NOTE</p> <p style="text-align: center;">See maintenance procedure index (para 2-62) for any tube holders used with tube assembly (see part number) you are installing.</p> <ol style="list-style-type: none"> 1. Using hand, remove tube holders, screws, and lockwashers from equipment (see table in frame 2 for para). 2. Remove four protective plugs from tube assembly and from two ports in equipment. <p style="text-align: center;">CAUTION</p> <p style="text-align: center;">Tube assembly must be connected to equipment port per identification marking on tag (1) to prevent damage to equipment.</p> <ol style="list-style-type: none"> 3. Match identification marking on tag (1) on tube assembly (2) with marking on port in equipment. 4. Put tube assembly in approximate position between connecting points. 5. Using 5/8" wrench on tube assembly nuts (3) and 11/ 16" wrench, if required. on nipple in equipment, tighten two tube assembly nuts (3) (para 1-24). 6. Remove two identification tags (1). <p>GO TO FRAME 2</p>
	 <p>The diagram shows a hydraulic tube assembly with two connection points. On the left, a tube is connected to a port. On the right, a tube is connected to another port. The tube assembly consists of a main tube with a bend. Callout 1 points to identification tags on both ends of the tube assembly. Callout 2 points to the main tube assembly. Callout 3 points to nuts on both ends of the tube assembly.</p>

2-69. TURRET HYDRAULIC SYSTEM TUBE INSTALLATION PROCEDURE (CONT)

FRAME 2

Step	Procedure			
	NOTE			
	See frame 3 for cross index between tube assembly part numbers and callout numbers in this illustration.			
1.	Do steps 1 thru 6 in frame 1, as required, for the following tube assemblies:			
	Tube Assembly	CONNECTIONS		Tube Holders
		From	To	
	(1) 10911686	Riser MD	Lock valve M 1	2-75
	(2) 11591342	Riser ME	Lock valve M2	2-75
	(3) 10911704	Deck clearance valve CD	Lock valve P 1	2-75
	(4) 10911702	Deck clearance valve CE	Lock valve P2	2-75
	(5) 10940925	Deck clearance valve A	Gunner's handle A	None
	(6) 10911692	Deck clearance valve D	Gunner's handle tee DRAIN	None
	(7) 10940932	Equilibrator Pump E	Tee 10940924 and 10940930	2-79
	(8) 10940926	Tee 10940930 and 10940885	Elevating mechanism E	2-79
	(9) 10940930	Tee 10940924 and 10940932	Tee 10940926 and 10940885	2-79
	(10) 10940885	Tee 10940926 and 10940930	Equilibrator E	None
	(11) 10940753	Tee 10940876 and 10940923	Gunner's handle tee DL	2-77
	(12) 10940924	Tee 10940932 and 10940930	Pressure gauge	None
	(13) 10911695	Deck clearance valve EE	Gunner's handle EE	None
	(14) 10911696	Deck clearance valve ED	Gunner's handle ED	None
	(15) 10940876	Pin lock D5	Tee 10940923 and 10940753	None
	(16) 10940700	Union 10940751	Gunner's handle SP	2-77
	(17) 10940751	Pin lock G	Union 10940700	2-77
	(18) 10951856	Reservoir	Relief valve (Riser HP)	None
	(19) 10911687	Pressure gauge	Pressure switch tee	None
	(20) 10911690	Accumulator	Pressure switch tee	None
2.	Install tube holders, as required (see table above for para).			
	GO TO FRAME 3			



2-69. TURRET HYDRAULIC SYSTEM TUBE INSTALLATION PROCEDURE (CONT)

FRAME 3

Step

Procedure

NOTE

Do the following steps if this procedure completes the maintenance of the hydraulic system. If other maintenance must be done, do the following steps after completion of the other maintenance.

1. Check connections of tube assemblies for leaks of hydraulic fluid (JPG). If hydraulic connection leaks hydraulic fluid, remove (para 2-68) and install (para 2-69) new tube assembly.
2. Tube 10940932 only:
 Install gunner's foot guard (para 2-17).
 Install gunner's foot rest (para 2-26).

Cross Index Between Tube Assembly Part Numbers and Callout Numbers in Illustration of Frame 2

Tube Assembly	Callout
10911686	1
687	19
690	20
692	6
695	13
696	14
702	4
704	3
10940700	16
751	17
753	11
876	15
885	10
924	12
925	5
926	8
930	9
932	7
10951856	18
11591342	2

END OF TASK

2-70. TURRET HYDRAULIC SYSTEM TUBE (10940696) (10940752) REMOVAL PROCEDURE

TOOLS: 7/8" open end wrench
 1" open end wrench

SUPPLIES: 4 plugs for tube assembly and equipment ports
 Masking tape (item 25, App. A)
 Felt tipped pen
 Cleaning rags (item 15, App. A)

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

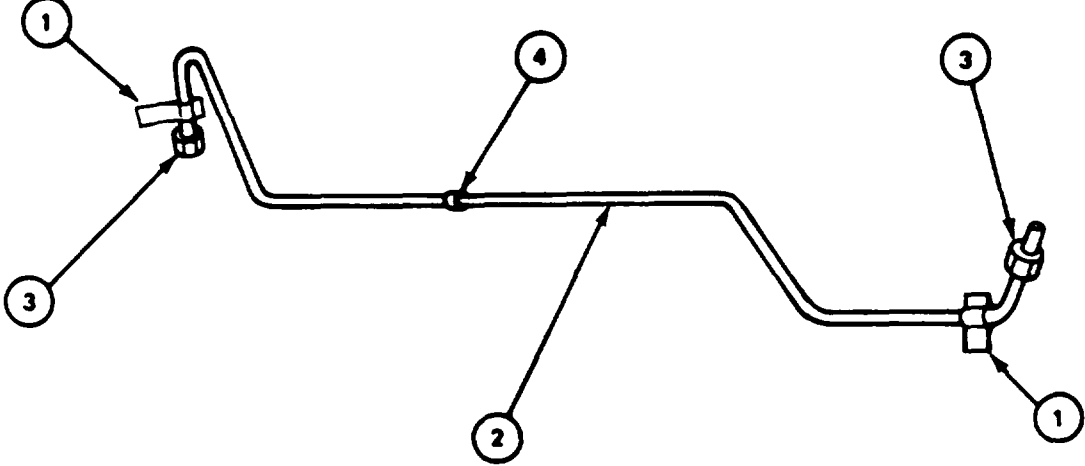
EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
 Gunner's control box ELEV/TR4V POWER switch set to OFF
 Turret traverse lock set to LOCKED

GENERAL INSTRUCTIONS:



Keep dirt from getting in tubing or parts. Dirt can damage equipment. Handle tubes carefully to stop damage. Use rags to clean up fluid spillage.

2-70. TURRET HYDRAULIC SYSTEM TUBE (10940696).(10940752) REMOVAL PROCEDURE (CONT)

FRAME 1	Step Procedure
	<div style="text-align: center; border: 1px solid black; padding: 5px;">WARNING</div> <p>Before removing hydraulic tubes, hydraulic system pressure must be lowered to 0 psi. Hydraulic fluid under pressure can hurt you.</p> <ol style="list-style-type: none"> 1. Lower hydraulic system pressure to 0 psi (para 1-18). <p style="text-align: center;">NOTE</p> <p>Use the maintenance procedure index (para 2-62) and part number on band (4) attached to tube assembly (2) to locate tube assembly you are removing.</p> <ol style="list-style-type: none"> 2. Remove tube holders, three places (para 2-76 and 2-78). 3. Using masking tape (1) and felt tipped pen, tag both ends of tube assembly (2) with equipment port identification markings. 4. Using 7/8" wrench on tube assembly nuts (3) and 1" wrench on adapter in equipment, remove two tube assembly nuts (3) (para 1-23). 5. Plug tube assembly and two equipment ports, four places. 6. Remove tube assembly (2) from vehicle. <p>END OF TASK</p>
	

**2-71. TURRET HYDRAULIC SYSTEM TUBE (10940696) (10940752)
INSTALLATION PROCEDURE**

TOOLS: 7/8" open end wrench
1" open end wrench

SUPPLIES: Cleaning rags (item 15, App. A)

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

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: Inspect tubes and tube holders (para 2-64)
Clean tubes (para 2-65)

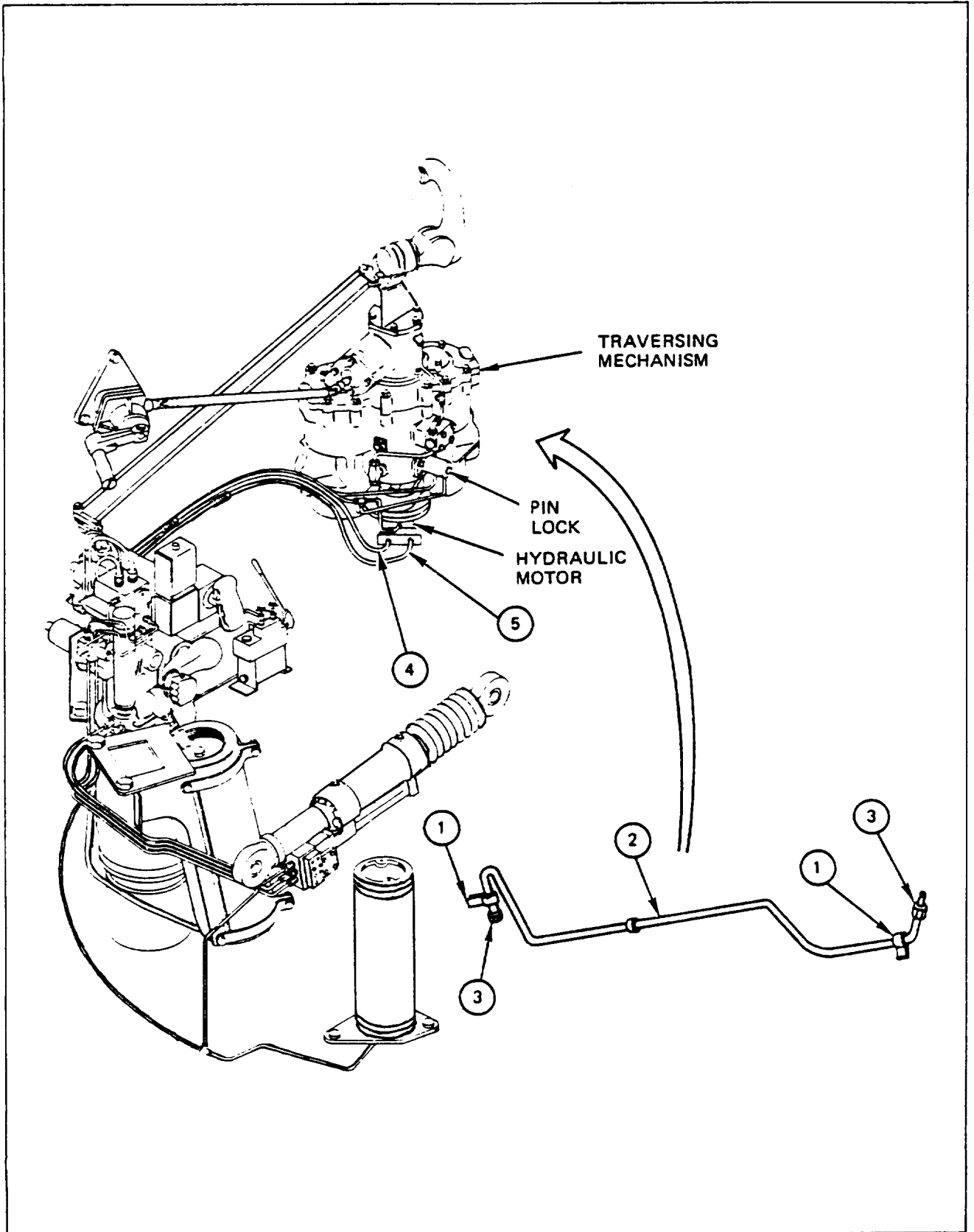
GENERAL INSTRUCTIONS:

CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment. Handle tubes carefully to stop damage. Use rags to clean up fluid spillage.

**2-71. TURRET HYDRAULIC SYSTEM TUBE (109241 18) (109241 19)
INSTALLATION PROCEDURE (CONT)**

FRAME 1				
Step	procedure			
1.	Using hands, remove tube holders, screws, lockwashers, and nuts from equipment, three places (para 2-83 and 2-85).			
2.	Remove four protective plugs from tube assembly, hydraulic motor port, and gunner's handle port.			
<div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">CAUTION</div> <p style="text-align: center;">Tube assembly must be connected to equipment port per identification marking on tag (1) to prevent damage to equipment.</p>				
3.	Match identification marking on tag (1) on tube assembly (2) with marking on port in equipment.			
4.	Put tube assembly (2) in approximate position between connecting points.			
5.	Using 7/ 8" wrench on tube assembly nut (3) and 1" wrench on adapter in equipment connect tube assembly (2) to two adapters (para 1-24).			
6.	Remove two identification tags (1).			
7.	Do steps 2 thru 6, as required, for the following tube assemblies			
	Tube Assembly	CONNECTIONS		Tube Holders
		From	To	
	(4) 10940752	Hydraulic motor 1	Gunner's handle TR	2-77
	(5) 10940696	Hydraulic motor 2	Gunner's handle TL	2-77
8.	Install tube holders, three places (para 2-77).			
NOTE				
Do the following step if this procedure completes the maintenance of the hydraulic svstem. If other maintenance must be done, do the following step after completion of the other maintenance.				
9.	Check connections of tube assembly for leaks of hydraulic fluid (JPG). If hydraulic connection leaks hydraulic fluid, remove (para 2-70) and install (para 2-71) new tube assembly.			
END OF TASK				



2-72. TURRET HYDRAULIC SYSTEM TUBE (10940923) REMOVAL PROCEDURE

TOOLS: 5/8" open end wrench
13/ 16" open end wrench
8" adjustable wrench

SUPPLIES: 4 plugs for tube assembly and equipment ports
Masking tape (item 25, App. A)
Felt tipped pen
Cleaning rags (item 15, App. A)

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

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 tubin or parts. Dirt can damage equipment. Handle tubes carefully to stop damage. Use rags to clean up fluid spillage.

2-72. TURRET HYDRAULIC SYSTEM TUBE (10940923) REMOVAL PROCEDURE (CONT)

FRAME 1	
Step	Procedure
	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">WARNING</div> <p>Before removing hydraulic tubes, hydraulic system pressure must be lowered to 0 psi. Hydraulic fluid under pressure can hurt you.</p>
1.	Lower hydraulic system pressure to 0 psi (para 1-18).
	<p>NOTE</p> <p>Use the maintenance procedure index (para 2-62) and part number on band (7) attached to tube assembly (2) to locate tube assembly you are removing.</p>
2.	Using masking tape (1) and felt tipped pen, tag both ends of tube assembly (2) with equipment port identification markings.
3.	Using 5/8" wrench on tube assembly nut (3) and 13/16" wrench on adapter (4) in hydraulic motor, remove tube assembly nut (3) (para 1-23).
4.	Using 5/8" wrench on tube assembly nut (5) and adjustable wrench on tee (6), remove tube assembly nut (5) (para 1-23).
5.	Plug tube assembly and two equipment ports, four places.
6.	Remove tube assembly (2) from vehicle.
	END OF TASK

2-73. TURRET HYDRAULIC SYSTEM TUBE (10940923) INSTALLATION PROCEDURE

TOOLS: 5/8" open end wrench
 13/16" open end wrench
 8" adjustable wrench

SUPPLIES: Cleaning rags (item 15, App. A)

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

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: Inspect tubes and tube holders (para 2-64)
 Clean tubes (para 2-65)

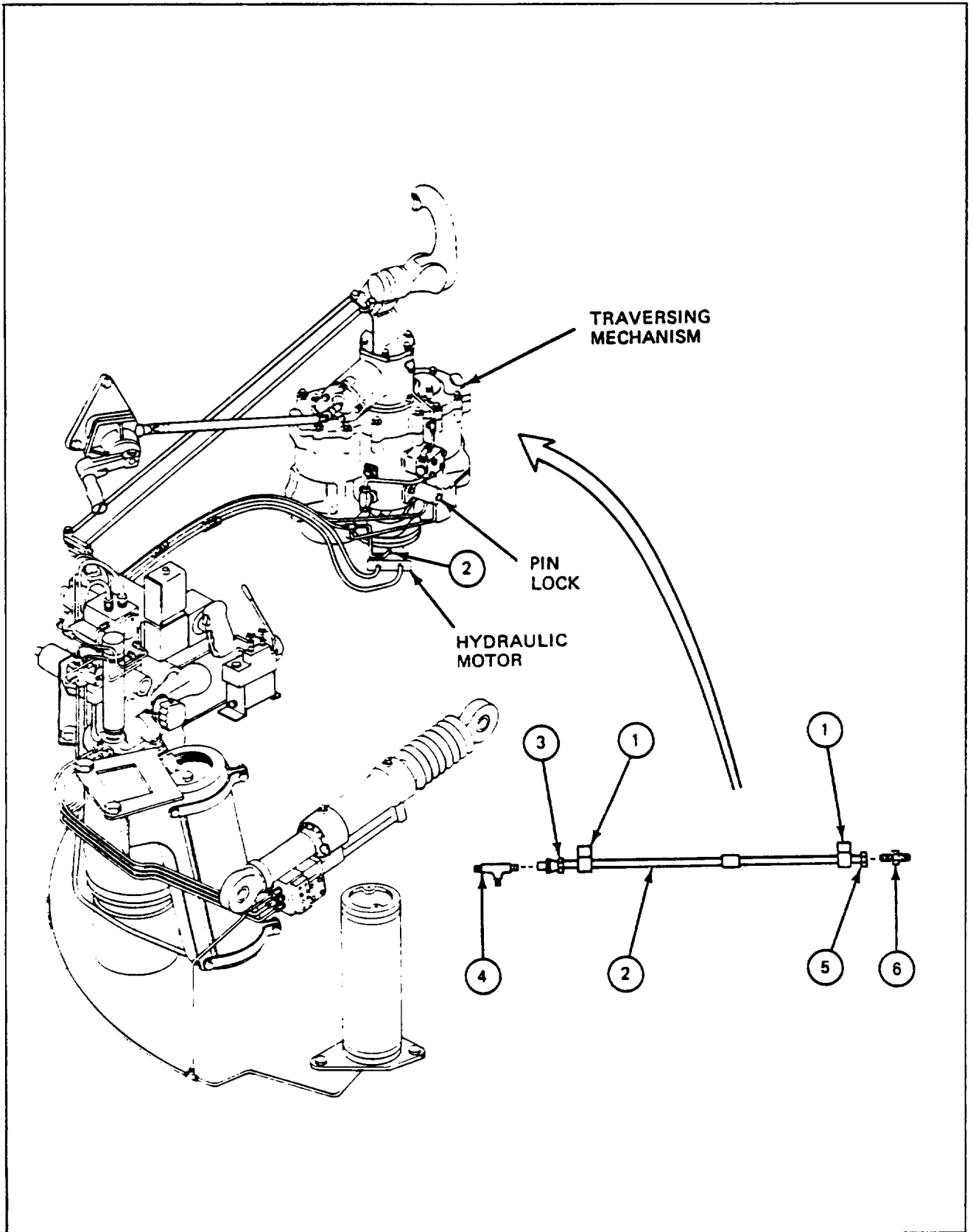
GENERAL INSTRUCTIONS:

CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment. Handle tubes care fully to stop damage. Use rags to clean up fluid spillage.

**2-73. TURRET HYDRAULIC SYSTEM TUBE (10940923) INSTALLATION
PROCEDURE (CONT)**

FRAME 1	
Step	Procedure
1.	<p>Remove four protective plugs from tube assembly, tee and adapter in hydraulic motor port.</p> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;">CAUTION</div> <p style="text-align: center;">Tube assembly must be connected to equipment port per identification marking on tag (1) to prevent damage to equipment.</p>
2.	Match identification marking on tag (1) on tube assembly (2) with marking on port in equipment.
3.	Put tube assembly in approximate position between connecting points.
4.	Using 5/8" wrench on tube assembly nut (3) and adjustable wrench on tee (4), connect tube assembly (2) to tee (4) (para 1-24).
5.	Using 5/8" wrench on tube assembly nut (5) and 13/16" wrench on adaptor (6) in hydraulic motor D3, connect tube assembly (2) to adaptor (6) (para 1-24).
6.	Remove two identification tags (1).
	<p>NOTE</p> <p>Do the following step if this procedure completes the maintenance of the hydraulic system. If other maintenance must be done, do the following step after completion of the other maintenance.</p>
7.	<p>Check connections of tube assembly for leaks of hydraulic fluid (JPG). If hydraulic connection leaks hydraulic fluid, remove (para 2-72) and install (para 2-73) new tube assembly.</p> <p>END OF TASK</p>



2-74. TUBE HOLDER AND HOLDER STRAPS (10933586) (10933587) REMOVAL PROCEDURE

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

SUPPLIES: Masking tape (1" wide) (item 25, App. A)

PERSONNEL: One

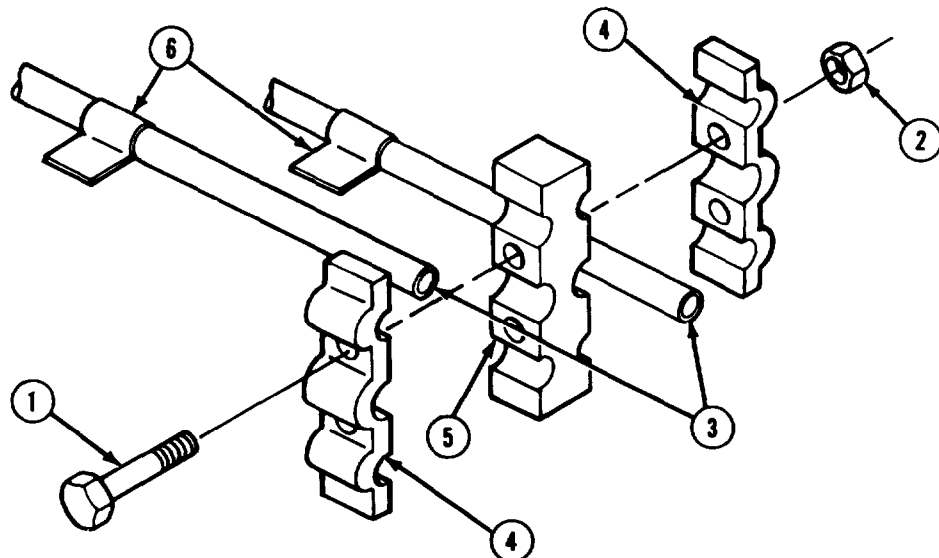
EQUIPMENT LOCATION INFORMATION:

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

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

2-74. TUBE HOLDER AND HOLDER STRAPS (10933686) (10933587) REMOVAL PROCEDURE (CONT)

FRAME 1	
STEP	PROCEDURE
1.	Using open end wrench or socket wrench remove two screws (1) and two nuts (2) holding three tube holders to six hydraulic tubes (3) on early model, four hydraulic tubes (3) on late models.
2.	Pull off two tube holder straps (4).
3.	Pull tubes apart and pull out tube holder (5).
NOTE	
If all tube assemblies are to be removed, omit step 4. If not, do step 4 and omit step 5.	
4.	After tube assemblies (3) are removed, using hands, put back three tube holders (4, 5) with two screws (1) and two nuts (2), so they will not be lost.
5.	Wrap a piece of masking tape (6) around each tube assembly (3) to mark location of tube holders (4, 5).
END OF TASK	



2-75. TUBE HOLDER AND HOLDER STRAPS (10933586) (10933587) INSTALLATION PROCEDURE

TOOLS: 7/16 in. open end wrench
7/16 in. socket (3/8 in. drive)
3/8 in. drive ratchet

SUPPLIES: Locknuts (MS 35649-2252) (2 required)

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

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

2-75. TUBE HOLDER AND HOLDER STRAPS (10933586) (109335871 INSTALLATION PROCEDURE (CONT)

FRAME 1	
STEP	PROCEDURE
1.	Remove masking tape (1) which shows where tube holders are put, if required.
2.	Pull tube assemblies (2) out slightly and put in tube holder (3).
3.	Using open end wrench or socket wrench attach tube holder (3) and two tube holder straps (4) holding tubes (2, 5) with two screws (6) and two new locknuts (7).
END OF TASK	

2-76. TUBE HOLDER AND HOLDER STRAPS (1091 1683) (1091 1685) REMOVAL PROCEDURE

TOOLS: 7/16 in. open end wrench
7/16 in. socket (3/8 in. drive)
3/8 in. drive ratchet

PERSONNEL: One

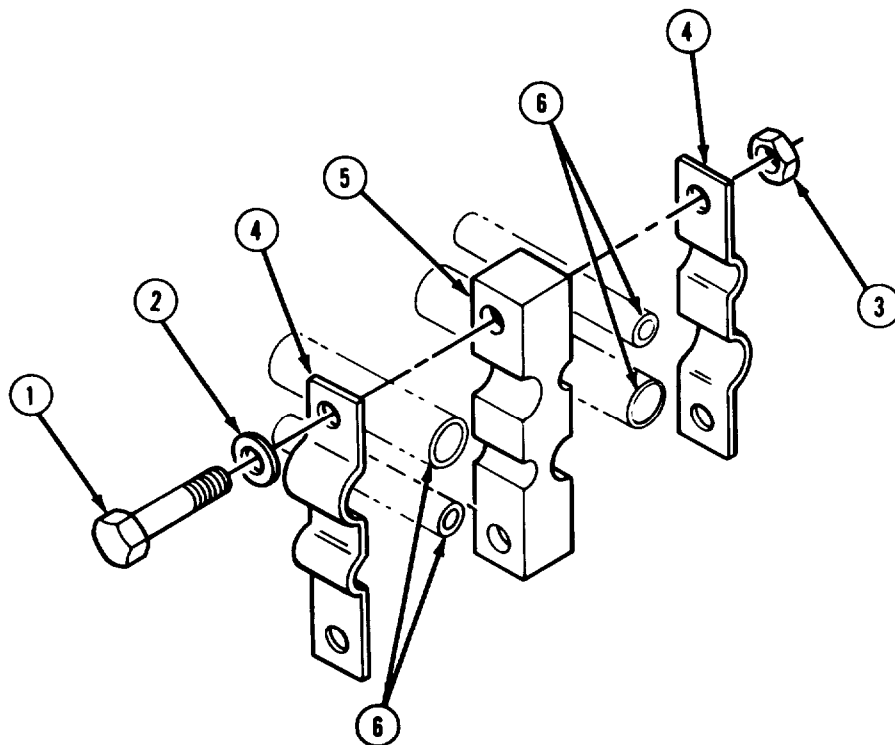
EQUIPMENT LOCATION INFORMATION:

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

2-76. TUBE HOLDER AND HOLDER STRAPS (1091 1683) (10911685) REMOVAL PROCEDURE (CONT)

FRAME 1	
STEP	PROCEDURE
1.	Using open end wrench or socket wrench remove two screws (1) and two lockwashers (2) and two nuts (3) for tube holder nearest gunner's control box holding three tube holders (4, 5) to equipment.
2.	Pull off two tube holders (4).
3.	Pull tubes apart and pull out tube holder (5).
4.	After tube assemblies (6) are removed, using hands, put back three tube holders (4, 5) with two screws (1) and two lockwashers (2) so they will not be lost. END OF TASK



2-77. TUBE HOLDER AND HOLDER STRAPS (1091 1683) (1091 1685) INSTALLATION PROCEDURE

TOOLS: 7/16 in. open end wrench
7/16 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
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

2-77. TUBE HOLDER AND HOLDER STRAPS (1091 1683) (1091 1685) INSTALLATION
PROCEDURE (CONT)

FRAME 1	
STEP	PROCEDURE
	<p style="text-align: center;">NOTE</p> <p style="text-align: center;">These tube holders and holder straps are used in three places to hold the same four tube assemblies.</p> <ol style="list-style-type: none"> 1. Pull tube assemblies (1) out slightly and put in tube holder (2). 2. Using open end wrench of socket wrenches, attach three tube holders (2, 3) holding four tube assemblies (1) to equipment with two screws (4) and two lockwashers (5) and two nuts (6) for tube holder nearest gunner's control box. <p>END OF TASK</p>

2-78. TUBE CLAMPS (MS21333-34) (MS21333-55) REMOVAL PROCEDURE

TOOLS: 7/16 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
Gunner's Control Box	FO-1	2
Turret Traverse Leek	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 leek set to LOCKED

FRAME 1	
STEP	PROCEDURE
	<p>NOTE</p> <p>One each of tube clamp MS21333-34 is used on tuba assemblies 10940932/12270136 and 10940926/12270140. Tube clamp MS21333-55 is used on tube assembly 10940930/12270137.</p>
1.	Using socket wrench, remove screw (1) and lockwasher (2) holding tube clamp (3) and tube assembly (4) to equipment.
2.	Remove tube clamp (3) from tube assembly (4) and attach to equipment with screw (1) and lockwasher (2) to avoid losing parts.
	END OF TASK

2-79. TUBE CLAMPS (MS21333-34) (MS21333-55) INSTALLATION PROCEDURE

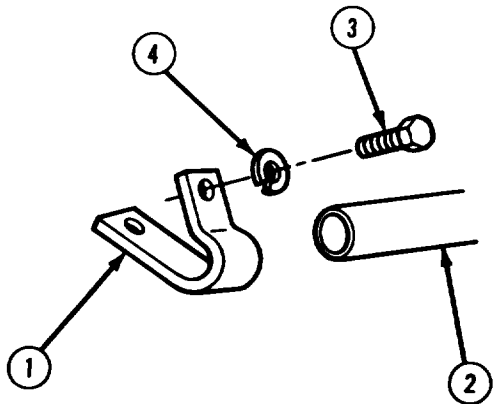
TOOLS: 7/16 in. socket (3/8 in. drive)
3/8 in. drive ratchet

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

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

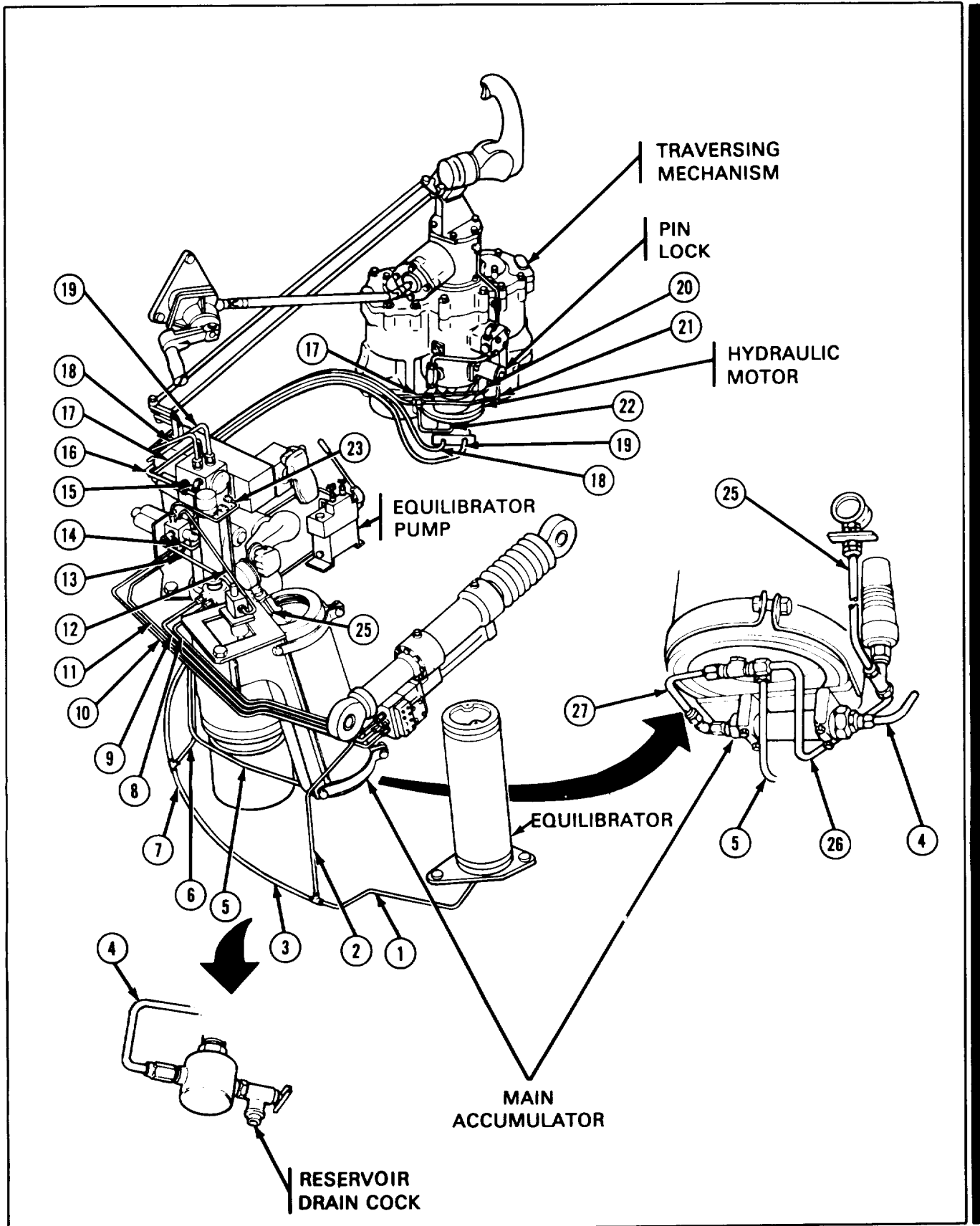
EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Gunner's control box ELEV/TRAV POWER switch set to OFF
Turret traverse lock set to LOCKED

FRAME 1	
STEP	PROCEDURE
	NOTE
	<p>One each of tube clamp MS21333-34 is used on tube assemblies 10940932/12270136 and 10940926/12270140. Tube clamp MS 21333-55 is used on tube assembly 10940930/12270137.</p> <ol style="list-style-type: none"> 1. Put tube clamp (1) on tube assembly (2). 2. Using socket wrench, attach tube clamp (1) and tube assembly to equipment with screw (3) and lockwasher (4). <p>END OF TASK</p>
	 <p>The diagram illustrates the installation of a tube clamp. It shows a U-shaped tube clamp (1) being positioned around a cylindrical tube assembly (2). A screw (3) is used to secure the clamp to the tube, and a lockwasher (4) is used to lock the screw in place. Arrows point from the numbered circles to the corresponding parts in the assembly.</p>

Section 14.1 TURRET HYDRAULIC SYSTEM TUBES AND TUBE HOLDERS (LATE MODEL VEHICLE)

2-79.1. MAINTENANCE PROCEDURE INDEX

Equipment Item	Inspection	Cleaning	Tasks		Installation	Install Holder	
			Remove Holder	Removal			
NOTE							
See (para 2-79.2) for cross index between tube assembly part numbers and maintenance procedure index callout numbers.							
TUBE ASSEMBLY							
1.	12270133	2-64	2-65	None	2-79.9	2-79.10	None
2.	12270140	2-64	2-65	2-78	2-79.5	2-79.6	2-79
3.	12270137	2-64	2-65	None	2-79.13	2-79.14	None
4.	11676269	2-64	2-65	None	2-79.11	2-79.12	None
5.	11676552	2-64	2-65	None	2-79.3	2-79.4	None
6.	12270139	2-64	2-65	2-78	2-79.5	2-79.6	2-79
7.	12270136	2-64	2-65	2-78	2-79.5	2-79.6	2-79
8.	11676601	2-64	2-65	2-74	2-79.11	2-79.12	2-75
9.	11676603	2-64	2-65	2-74	2-79.11	2-79.12	2-75
10.	11676514	2-64	2-65	2-74	2-79.5	2-79.6	2-75
11.	11676507	2-64	2-65	2-74	2-79.5	2-79.6	2-75
12.	11654814	2-64	2-65	None	2-79.5	2-79.6	None
13.	11654815	2-64	2-65	None	2-79.5	2-79.6	None
14.	11676253	2-64	2-65	None	2-79.13	2-79.14	None
15.	11676251	2-64	2-65	None	2-79.13	2-79.14	None
16.	12290866	2-64	2-65	2-76	2-79.13	2-79.14	2-77
17.	12270142	2-64	2-65	2-76	2-79.5	2-79.6	2-77
18.	12290864	2-64	2-65	2-76	2-79.7	2-79.8	2-77
19.	12290865	2-64	2-65	2-76	2-79.7	2-79.8	2-77
20.	12270141	2-64	2-65	None	2-79.5	2-79.6	None
21.	12270143	2-64	2-65	None	2-79.5	2-79.6	None
22.	12290861	2-64	2-65	None	2-79.9	2-79.10	None
23.	11676280	2-64	2-65	None	2-79.11	2-79.12	None
24.	11675062	2-64	2-65	None	2-79.11	2-79.12	None
25.	11676596	2-64	2-65	None	2-79.5	2-79.6	None
26.	11676595	2-64	2-65	None	2-79.13	2-79.14	None
27.	11676278	2-64	2-65	None	2-79.13	2-79.14	None
TUBE HOLDERS							
	10933586	2-64	...	...	2-74	2-75	. . .
	10933587	2-64	...	...	2-74	2-75	. . .
	10911683	2-64	...	...	2-76	2-77	. . .
	10911685	2-64	...	...	2-76	2-77	. . .
	MS21333-34	2-64	...	...	2-78	2-79	. . .
	MS21333-55	2-64	...	...	2-78	2-79	. . .



2-79.2 MAINTENANCE PROCEDURES CROSS INDEX

Cross index between Tube Assembly part numbers and maintenance procedure index callout numbers.

Tube Assembly	Callout	How to Use Maintenance Procedures Index for Turret Hydraulic System Tubes Maintenance
11654814	12	1. Find tube assembly part number in table at left (for example, 11676514).
11654815	13	
11674062	24	
11676251	15	2. Use callout number (10) to find tube assembly on ILLUSTRATION.
11676253	14	
11676269	4	
11676278	27	3. Use callout number (10) to find tube assembly in MAINTENANCE PROCEDURES INDEX.
11676280	23	
11676507	11	
11676514	10	4. Use REMOVAL or INSTALLATION column to find procedure for tube assembly you are removing (2-79.5) or installing (2-79.6).
11676552	5	
11676595	26	
11676596	25	
11676601	8	5. Use REMOVE HOLDER column to find procedure for removing tube holders (2-74), if required.
11676603	9	
12270133	1	
12290864	18	
12290865	19	6. Use INSTALL HOLDER column to find procedure for installing tube holders (2-75), if required.
12270136	7	
12270137	3	
12290861	22	
12270139	6	
12270140	2	
12270141	20	
12270142	17	
12270143	21	
12290866	16	

2-79.3 TURRET HYDRAULIC SYSTEM TUBE (1 1676552) REMOVAL PROCEDURE

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

SUPPLIES: 4 plugs for tube assembly and equipment ports
 Masking tape (Item 25, App. A)
 Felt tipped pen
 Cleaning rags (Item 15, App. A)

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

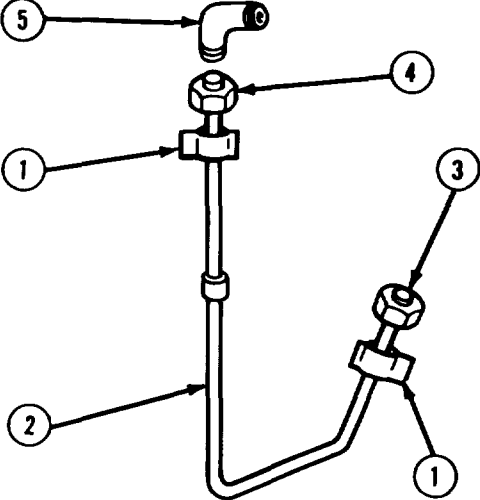
EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
 Gunner's control box ELEV/TRAV POWER switch set to OFF
 Turret traverse lock set to LOCKED

GENERAL INSTRUCTIONS:

CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment. Handle tubes carefully to stop damage. Use rags to clean up fluid spillage.

2-79.3 TURRET HYDRAULIC SYSTEM TUBE (11676552) REMOVAL PROCEDURE (CONT)

FRAME 1	
STEP	PROCEDURE
	<p style="text-align: center;">WARNING</p> <p>Before removing hydraulic tubes, hydraulic system pressure must be lowered to 0 psi. Hydraulic fluid under pressure can hurt you.</p> <ol style="list-style-type: none"> 1. Lower hydraulic system pressure to 0 psi (para 1-18). 2. Drain hydraulic system (para 1-21). <p style="text-align: center;">NOTE</p> <p>Use the maintenance procedure index (para 2-62) and part number on band attached to tube assembly (2) to locate tube assembly you are removing.</p> <ol style="list-style-type: none"> 3. Using masking tape (1) and felt tipped pen, tag both ends of tube assembly (2) with equipment port identification markings. 4. Using 1 inch wrench on tube assembly nut (3) and 1-1/8 wrench on nipple in main accumulator to keep it from turning, remove tube assembly nut (3). 5. Using 1 inch wrench, remove tube assembly nut (4) while holding elbow (5) with adjustable wrench. 6. Plug tube assembly and all ports, four places. 7. Remove tube assembly (2) from vehicle. <p>END OF TASK</p>
	

2-79.4 TURRET HYDRAULIC SYSTEM TUBE (1 1676552) INSTALLATION PROCEDURE

TOOLS: 1 in. open and wrench
 1-1/8 in. open end wrench (two)
 8 in. adjustable wrench

SUPPLIES: Hydraulic fluid (Item 9, App. A)
 Drycleaning solvent or mineral spirits paint thinner
 (Item 22 or 26, App. A)
 Cleaning rags (Item 15, App. A)

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

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: Inspect tubes and tube holders (para 2-64)
 Clean tubes (para 2-65)

GENERAL INSTRUCTIONS:

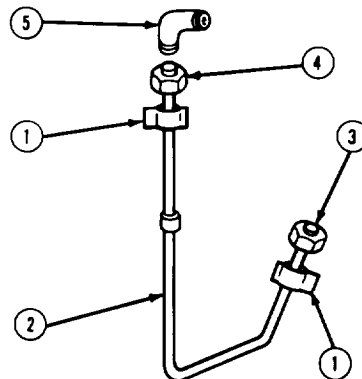
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment. Handle tubes carefully to stop damage. Use rags to clean up fluid spillage.

2-79.4 TURRET HYDRAULIC SYSTEM TUBE (11676552) INSTALLATION PROCEDURE (CONT)

FRAME 1

STEP	PROCEDURE
1.	Remove four protective plugs from tube assembly, relief valve port, and accumulator adapter port.
	<p style="text-align: center;">CAUTION</p> <p style="text-align: center;">Tube assembly must be connected to equipment port per identification marking on tag (1) to prevent damage to equipment.</p>
2.	Match identification marking on tag (1) on tube assembly (2) with marking on port in equipment.
	<p style="text-align: center;">NOTE</p> <p style="text-align: center;">Tube connects to Riser HP and nipple on base of accumulator.</p>
3.	Put tube assembly (2) in approximate position between connecting points.
4.	Using 1 inch wrench on tube assembly nut (3) and 1-1/8 inch wrench on nipple in accumulator to keep it from turning, connect tube assembly (2) to accumulator nipple.
5.	Using 1 inch wrench, connect tube assembly nut (4) while holding elbow (5) with adjustable wrench.
6.	Remove two identification tags (1).
	<p style="text-align: center;">NOTE</p> <p style="text-align: center;">Do the following step if this procedure completes the maintenance of the hydraulic system. If other maintenance must be done, do the following step after completion of the other maintenance.</p>
7.	Check connections of tube assembly for leaks of hydraulic fluid (JPG). If hydraulic connection leaks hydraulic fluid, remove (para 2-79.3) and install (para 2-79.4) new tube assembly.
	END OF TASK



2-79.5 TURRET HYDRAULIC SYSTEM TUBE REMOVAL PROCEDURE

TOOLS: 9/16 in. open end wrench
 11/16 in. open end wrench

SUPPLIES: Four plugs for tube assembly and equipment ports
 Masking tape (Item 25, App. A)
 Felt tipped pen
 Cleaning rags (Item 15, App. A)

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

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: Tube 12270136 only:
 Remove gunner's footrest (para 2-25)
 Remove gunner's footguard (para 2-16)

GENERAL INSTRUCTIONS:

CAUTION

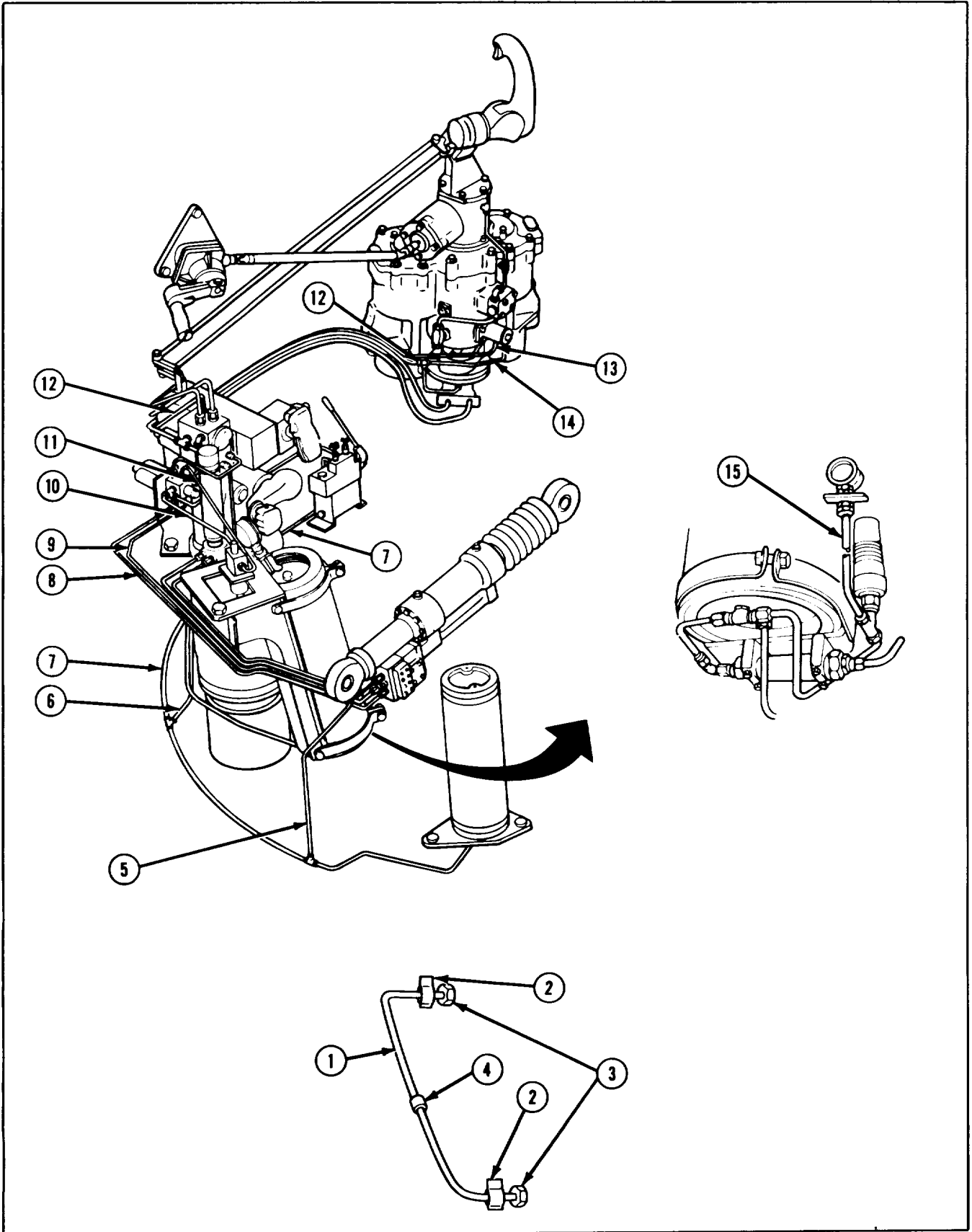
Keep dirt from getting in tubing or parts. Dirt can damage equipment. Handle tubes carefully to stop damage. Use rags to clean up fluid spillage.

NOTE

See table in frame 1 for part number and location of tubes removed in this task.

2-79.5 TURRET HYDRAULIC SYSTEM TUBE REMOVAL PROCEDURE (CONT)

FRAME 1				
STEP	PROCEDURE			
1.	Lower hydraulic system pressure to 0 psi (para 1-18).			
2.	If tube assembly (1) you are removing is connected to the reservoir, drain hydraulic system (Para 1-21).			
NOTE				
Use the table below and part number on band (2) attached to tube assembly (1) to locate tube assembly you are removing.				
3.	Remove any tube clamps, if necessary, that hold tube assembly (1) to equipment (see table in frame 2 for para).			
4.	Using masking tape (3) and felt tipped pen, tag both ends of tube assembly (1) with equipment port identification markings.			
5.	Using 9/16 inch wrench on tube assembly nuts (4) and 11/16 inch wrench on fitting in equipment, if required, remove two tube assembly nuts (4) (para 1-23).			
6.	Plug tube assembly and two equipment ports, four places.			
7.	Remove tube assembly (1) from vehicle.			
	Tube Assembly	CONNECTIONS		Holders or clamp
		From		
5.	12270140	Tee and tubes 12270133 and 12270137	Elevation cylinder port E	2-78
6.	12270139	Tee and tubes 12270136 and 12270137	pressure gage	2-78
7.	12270136	Tee and tubes 12270137 and 12270139	Equilibrator pump	2-78
8.	11676514	Elevation lock P2	Deck clearance CE	2-74
9.	11676507	Elevation lock P1	Deck clearance CD	2-74
10.	11654815	Elevation Shutoff D	Deck clearance D	None
11.	11654814	Elevation Shutoff EE	Deck clearance ED	None
12.	12270142	Nipple and tube 12270141	Gunner's control SP	2-76
13.	12270141	Nipple and tube 12270142	Pin lock G	None
14.	12270143	Tee and tubes 12270144 and 12270138	Pin lock D5	None
15.	11676596	Tee on pressure switch and tube 11676595	Union on Gage	None
END OF TASK				



2-79.6 TURRET HYDRAULIC SYSTEM TUBE INSTALLATION PROCEDURE

TOOLS: 9/16 in. open end wrench
11/16 in. open end wrench

SUPPLIES: Cleaning rags (item 15, App. A)

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

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: Inspect tubes and tube holders (para 2-64)
Clean tubes (para 2-65)

GENERAL INSTRUCTIONS:

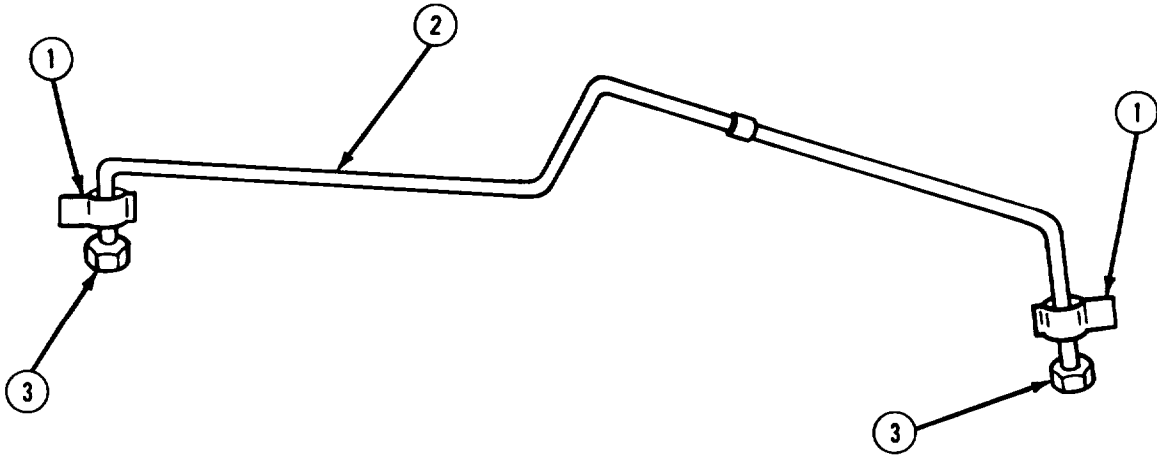
CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment. Handle tubes carefully to stop damage. Use rags to clean up fluid spillage.

NOTE

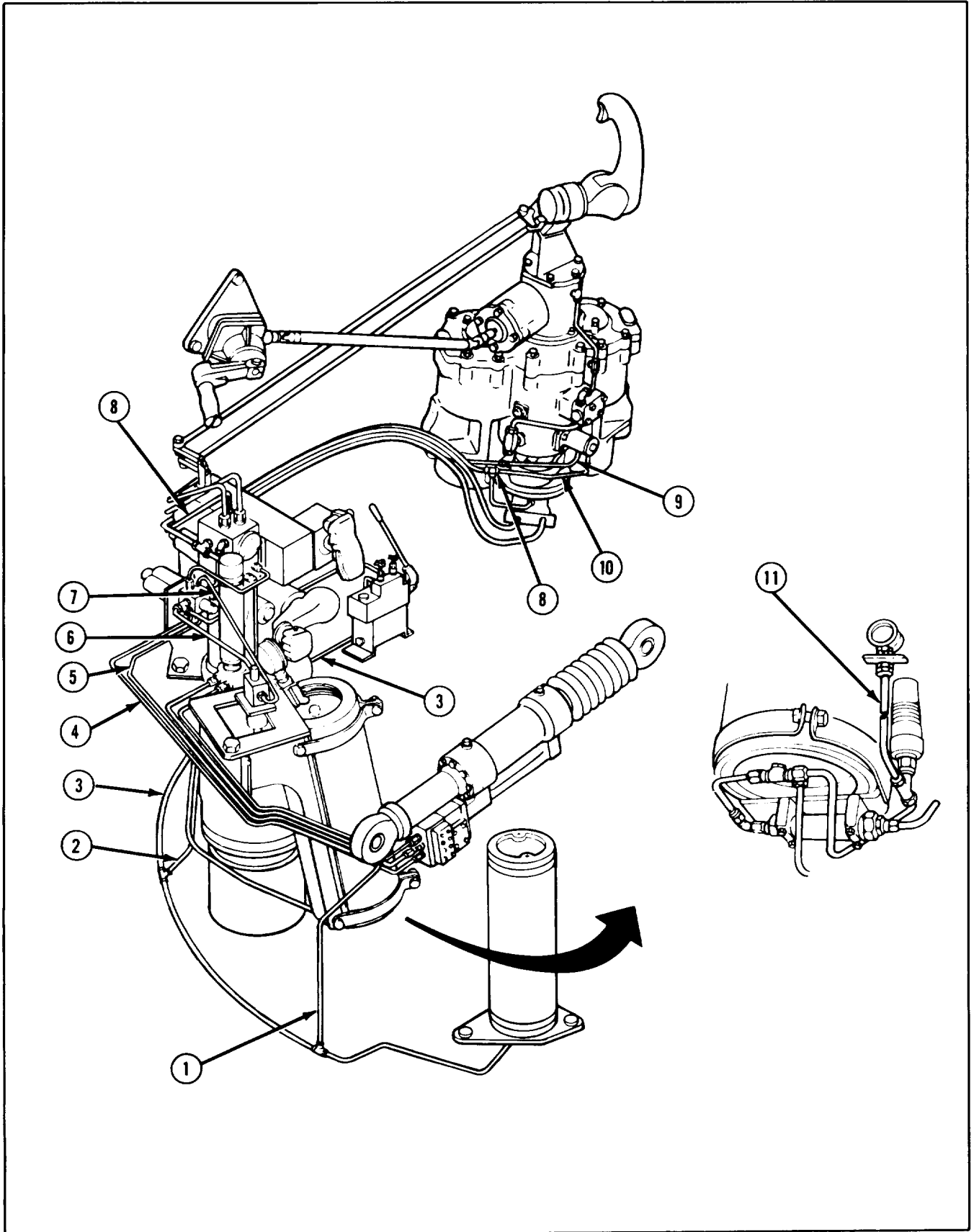
See frame 2 for tube part number and location of tubes installed in this task.

2-79.6 TURRET HYDRAULIC SYSTEM TUBE INSTALLATION PROCEDURE (CONT)

FRAME 1	
STEP	PROCEDURE
1.	Using hand, remove tube holders, screws, and lockwashers from equipment (see table in frame 2 for para).
2.	Remove four protective plugs from tube assembly and from two ports in equipment.
	<div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">CAUTION</div> <p>Tube assembly must be connected to equipment port per identification marking on tag (1) to prevent damage to equipment.</p>
3.	Match identification marking on tag (1) on tube assembly (2) with marking on port in equipment.
4.	Put tube assembly in approximate position between connecting points.
5.	Using 9/16 inch wrench on tube assembly nuts (3) and 11/16 inch wrench, if required, on fitting in equipment, tighten two tube assembly nuts (3) (para 1-24).
6.	Remove two identification tags (1).
	GO TO FRAME 2
 <p>The diagram shows a hydraulic tube assembly consisting of two parallel tubes connected by a single longitudinal tube. The assembly is shown in a bent configuration. On the left side, there is a fitting with a nut labeled (3) and an identification tag labeled (1). On the right side, there is another fitting with a nut labeled (3) and an identification tag labeled (1). The tube assembly itself is labeled (2).</p>	

2-79.6 TURRET HYDRAULIC SYSTEM TUBE INSTALLATION PROCEDURE (CONT)

FRAME 2			
STEP	PROCEDURE		
<p>NOTE</p> <p>Do the following steps if this procedure completes the maintenance of the hydraulic system. If other maintenance must be done, do the following steps after completion of the other maintenance.</p>			
1.	Check connections of tube assemblies for leaks of hydraulic fluid (JPG). If hydraulic connection leaks hydraulic fluid, remove (para 2-79.5) and install (para 2-79.6) new tube assembly.		
1.1	Install holders (para 2-75) or clamps (para 2-77) if used.		
2.	Tube 12270136 only: Install gunner's foot guard (para 2-17). Install gunner's footrest (para 2-26).		
TUBE PART NUMBER AND LOCATION			
Tube Assembly	CONNECTIONS		Holders or clamp
	From		
1. 12270140	Tee and tubes 12270133 and 12270137	Elevation cylinder port E	2-78
2. 12270139	Tee and tubes 12270136 and 12270137	pressure gage	2-78
3. 12270136	Tee and tubes 12270137 and 12270139	Equilibrator pump	2-78
4. 11676514	Elevation lock P2	Deck clearance CE	2-74
5. 11676507	Elevation lock P1	Deck clearance CD	2-74
6. 11654815	Elevation Shutoff D	Deck clearance D	None
7. 11654814	Elevation Shutoff EE	Deck clearance ED	None
8. 12270142	Nipple and tube 12270141	Gunner's control SP	2-76
9. 12270141	Nipple and tube 12270142	Pin lock G	None
10. 12270143	Tee and tubes 12270144 and 12270138	Pin lock D5	None
11. 11676596	Tee on pressure switch and tube 11676595	Union on Gage	None
END OF TASK			



2-79.7 TURRET HYDRAULIC SYSTEM TUBES (12290864) (12290865) REMOVAL PROCEDURE

TOOLS: 7/8 in. open end wrench
1 in. open end wrench

SUPPLIES: Four plugs for tube assembly and equipment ports
Masking tape (Item 25, App. A)
Felt tipped pen
Cleaning rags (Item 15, App. A)

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

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. Handle tubes carefully to stop damage. Use rags to clean up fluid spillage.

2-79.7 TURRET HYDRAULIC SYSTEM TUBES (12290864) (12290865) REMOVAL PROCEDURE (CONT)

FRAME 1	
STEP	PROCEDURE
<p>1.</p>	<p>Before removing hydraulic tubes, hydraulic system pressure must be lowered to 0 psi. Hydraulic fluid under pressure can hurt you.</p> <p>Lower hydraulic system pressure to 0 psi (para 1-18).</p> <p style="text-align: center;">NOTE</p> <p>Use the maintenance procedure index (para 2-62) and part number on band (4) attached to tube assembly (2) to locate tube assembly you are removing.</p> <p>Remove tube holders, two places (para 2-76),</p> <p>Using masking tape (1) and felt tipped pen, tag both ends of tube assembly (2) with equipment port identification markings.</p> <p>Using 7/8 inch wrench on tube assembly nuts (3) and 1 inch wrench on nipple in equipment, remove two tube assembly nuts (3) (para 1-23).</p> <p>Plug tube assembly and two equipment ports, four places.</p> <p>Remove tube assembly (2) from vehicle.</p> <p>END OF TASK</p>

2-79.8 TURRET HYDRAULIC SYSTEM TUBES (12290864) 12290865) INSTALLATION PROCEDURE

TOOLS 7/8 in. open endwrench
1 in. open end wrench

SUPPLIES Cleaning rags (Item 15, App. A)

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

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: Inspect tubes and tube holders (para 2-64)
Clean tubes (para 2-65)

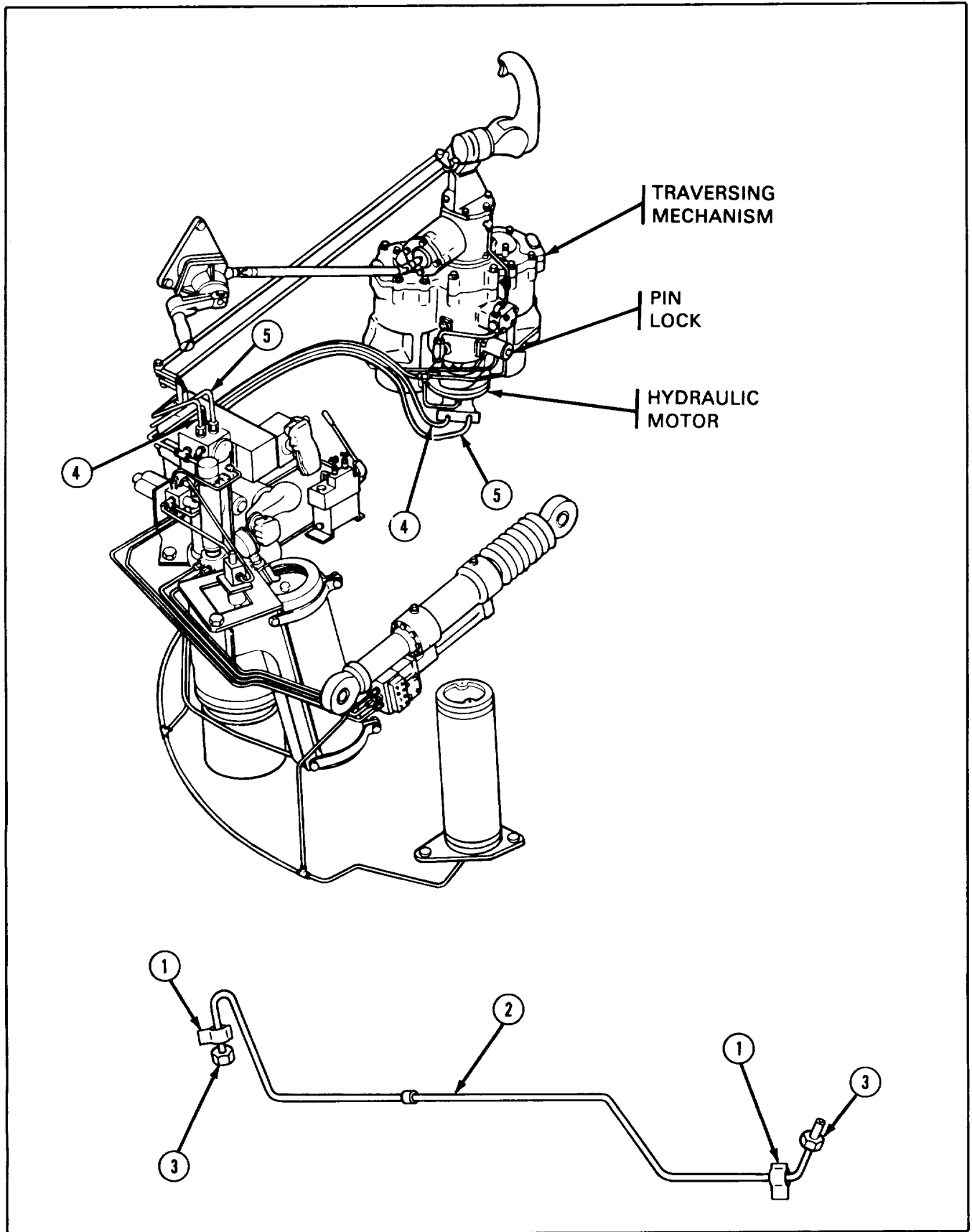
GENERAL INSTRUCTIONS:

CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment. Handle tubes carefully to stop damage. Use rags to clean up fluid spillage.

2-79.8 TURRET HYDRAULIC SYSTEM TUBES (1 2290864) (1 2290865) INSTALLATION PROCEDURE (CONT)

FRAME 1				
STEP	PROCEDURE			
1.	Using hands, remove tube holders, screws, lockwashers, and nuts from equipment, two places (para 2-76).			
2.	Remove four protective plugs from tube assembly, hydraulic motor port, and gunner's handle port.			
	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">CAUTION</div> <p>Tube assembly must be connected to equipment port per identification marking on tag (1) to prevent damage to equipment.</p>			
3.	Match identification marking on tag (1) on tube assembly (2) with marking on port in equipment.			
4.	Put tube assembly (2) in approximate position between connecting points.			
5.	Using 7/8 inch wrench on tube assembly nut (3) and 1 inch wrench on nipple in equipment, connect tube assembly (2) to two nipples (para 1-24).			
6.	Remove two identification tags (1).			
7.	Do steps 2 thru 6, as required, for the following tube assemblies			
	Tube Assembly	CONNECTIONS		Holders or clamp
		From	To	
(4)	12290864	Hydraulic motor M1	Gunner's Control TR	2-77
(5)	12290865	Hydraulic motor M2	Gunner's Control TL	2-77
8.	Install tube holders, two places (para 2-77).			
	<p>NOTE</p> <p>Do the following step if this procedure completes the maintenance of the hydraulic system. If other maintenance must be done, do the following step after completion of the other maintenance.</p>			
9.	Check connections of tube assembly for leaks of hydraulic fluid (JPG). If hydraulic connection leaks hydraulic fluid, remove (para 2-79.7) and install (para 2-79.8) new tube assembly.			
	END OF TASK			



2-79.9 TURRET HYDRAULIC SYSTEM TUBES (122701 33) (1 2290861) REMOVAL PROCEDURE

TOOLS: 9/16 in. open end wrench
13/16 in. open end wrench
10 in. adjustable wrench

SUPPLIES: Four plugs for tube assembly and equipment ports
Masking tape (Item 25, App. A)
Felt tipped pen
Cleaning rags (Item 15, App. A)

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

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. Handle tubes carefully to stop damage. Use rags to clean up fluid spillage.

2-79.9. TURRET HYDRAULIC SYSTEM TUBES (1 2270133) (12290861) REMOVAL PROCEDURE (CONT)

FRAME 1	
STEP	PROCEDURE
	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">WARNING</div> <p>Before removing hydraulic tubes, hydraulic system pressure must be lowered to 0 psi. Hydraulic fluid under pressure can hurt you.</p>
1.	Lower hydraulic system pressure to 0 psi (para 1-18).
	<div style="text-align: center;">NOTE</div> <p>Use the maintenance procedure index (para 2-79.1) and part number on band (7) attached to tube assembly (2) to locate tube assembly you are removing.</p>
2.	Using masking tape (1) and felt tipped pen, tag both ends of tube assembly (2) with equipment port identification markings.
3.	Using 9/16 inch wrench on tube assembly nut (3) and 13/16 inch wrench on reducer (4) in equipment, remove tube assembly nut (3) (para 1-23).
4.	Using 9/16 inch wrench on tube assembly nut (5) and adjustable wrench on tee (6), remove tube assembly nut (5) (para 1-23).
5.	Plug tube assembly and two equipment ports, four places.
6.	Remove tube assembly (2) from vehicle.
	END OF TASK

**2-79.10 TURRET Hydraulic SYSTEM TUBES (12270133) (12290861) Installation
PROCEDURE (CONT)**

TOOLS: 9/16 in. open end wrench
13/16 in. open end wrench
10 in. adjustable wrench

SUPPLIES: Cleaning rags (Item 15, App. A)

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

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: Inspect tubes and tube holders (para 2-64)
Clean tubes (para 2-65)

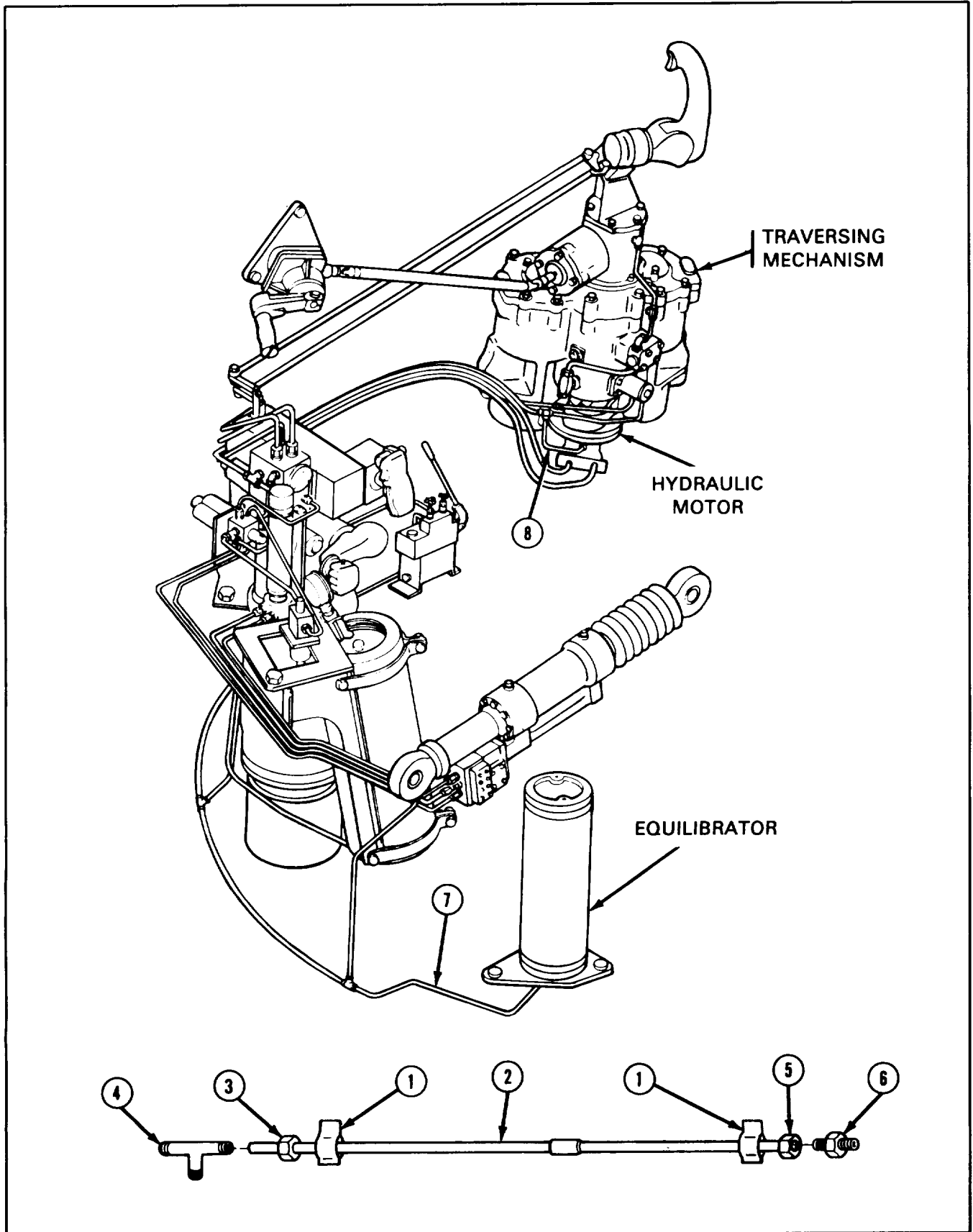
GENERAL INSTRUCTIONS:

CAUTION

Keep dirt from getting in tubing or parts. Dirt can damage equipment. Handle tubes carefully to stop damage. Use rags to clean up fluid spillage.

**2-79.10 TURRET HYDRAULIC SYSTEM TUBES (12270133) (12290861) INSTALLATION
PROCEDURE (CONT)**

FRAME 1				
STEP	PROCEDURE			
1.	Remove four protective plugs from tube assembly, tee, and adapter in hydraulic motor port. <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> CAUTION </div> Tube assembly must be connected to equipment port per identification marking on tag (1) to prevent damage to equipment.			
2.	Match identification marking on tag (1) on tube assembly (2) with marking on port in equipment.			
3.	Put tube assembly in approximate position between connecting points.			
4.	Using 9/16 inch wrench on tube assembly nut (3) and adjustable wrench on tee (4), connect tube assembly (2) to tee (4) (para 1-24).			
5.	Using 9/16 inch wrench on tube assembly nut (5) and 13/16 inch wrench on reducer (6) in equipment, connect tube assembly (2) to reducer (6) (para 1-24).			
6.	Remove two identification tags (1).			
7.	Do steps 2 thru 6, as required, for the following tube assemblies			
	Tube Assembly	CONNECTIONS		Holders or clamp
		From	To	
(7)	12270133	Tee and Tubes 12270137 and 12270140	Reducer in equilibrators	None
(8)	12270861	Tee and Tubes 12270143 and 12270144	Reducer in traverse gearbox D3	None
	NOTE Do the following step if this procedure completes the maintenance of the hydraulic system. If other maintenance must be done, do the following step after completion of the other maintenance.			
8.	Check connections of tube assembly for leaks of hydraulic fluid (JPG). If hydraulic connection leaks hydraulic fluid, remove (para 2-79.9) and install (para 2-79.10) new tube assembly.			
	END OF TASK			



2-79.11 TURRET HYDRAULIC SYSTEM TUBE REMOVAL PROCEDURE

TOOLS: 9/16 in. open end wrench
 13/16 in. open end wrench
 11/16 in. open end wrench

SUPPLIES: Four plugs for tube assembly and equipment ports
 Masking tape (Item 25, App. A)
 Felt tipped pen
 Cleaning rags (Item 15, App. A)

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

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

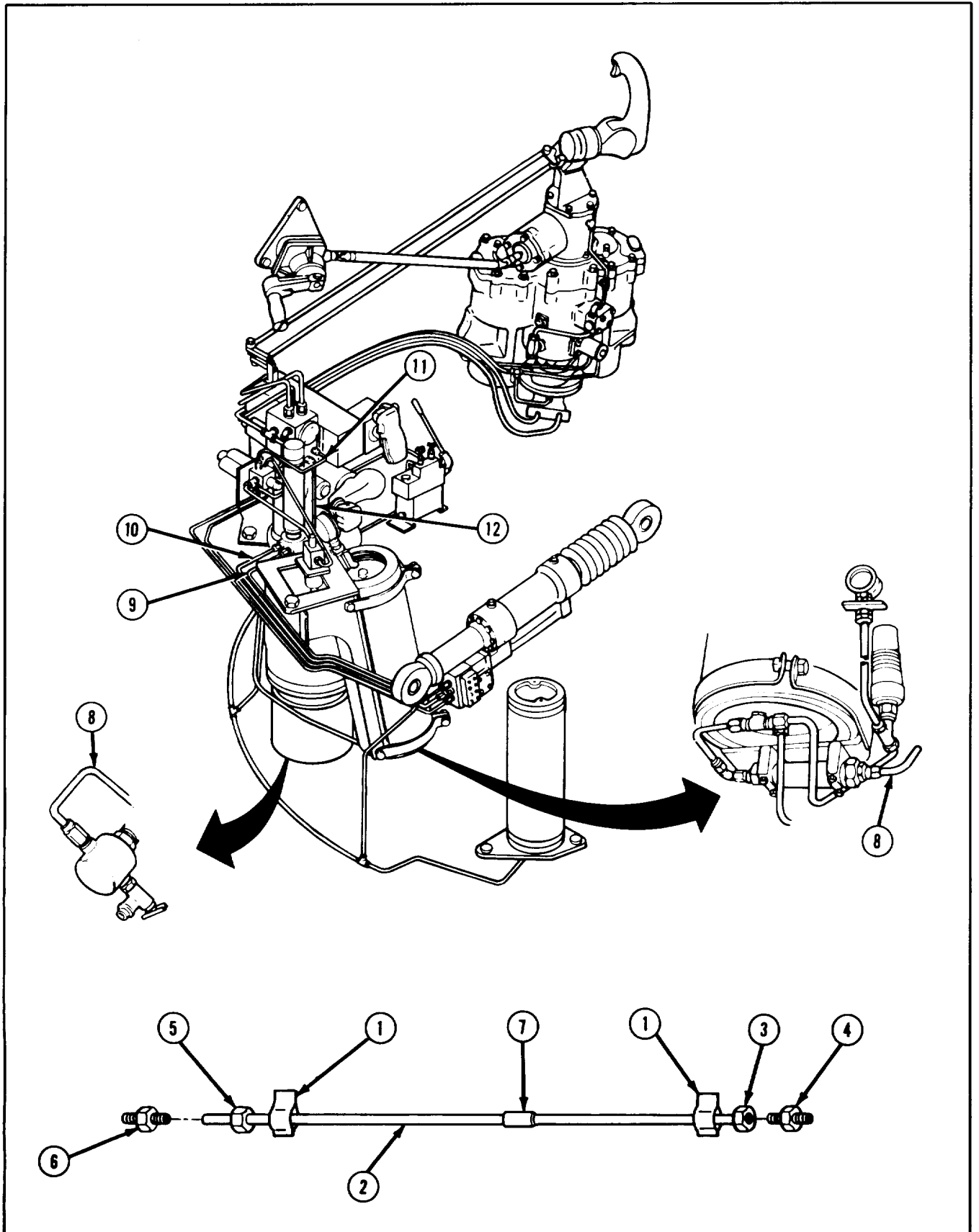
Keep dirt from getting in tubing or parts. Dirt can damage equipment. Handle tubes carefully to stop damage. Use rags to clean up fluid spillage.

NOTE

See table in frame 1 for part number and location of tubes removed in this task.

2-79.11 TURRET HYDRAULIC SYSTEM TUBE REMOVAL PROCEDURE (CONT)

FRAME 1				
STEP	PROCEDURE			
	<div style="border: 1px solid black; padding: 2px; display: inline-block;">WARNING</div> <p>Before removing hydraulic tubes, hydraulic system pressure must be lowered to 0 psi. Hydraulic fluid under pressure can hurt you.</p>			
1.	Lower hydraulic system pressure to 0 psi (para 1-18).			
	<div style="border: 1px solid black; padding: 2px; display: inline-block;">NOTE</div> <p>Use the maintenance procedure index (para 2-79.1) and part number on band (7) attached to tube assembly (2) to locate tube assembly you are removing.</p>			
2.	Remove tube holders, if necessary, see table below.			
3.	Using masking tape (1) and felt tipped pen, tag both ends of tube assembly (2) with equipment port identification markings.			
4.	Using 9/16 inch wrench on tube assembly nut (3) and 13/16 inch wrench on reducer (4) in equipment, remove tube assembly nut (3) (para 1-23).			
5.	Using 9/16 inch wrench on tube assembly nut (5) and 11/16 inch wrench on nipple (6), remove tube assembly nut (5) (para 1-23).			
6.	Plug tube assembly and two equipment ports, four places.			
7.	Remove tube assembly (2) from vehicle.			
	Tube Assembly	CONNECTIONS		Holders or Clamp
		From	To	
	(8) 11676269	Reducer in relief valve	Nipple in tee of reservoir	None
	(9) 11676601	Elevation cylinder lock M1	Riser MD	2-74
	(10) 11676603	Elevation cylinder lock M2	Riser ME	2-74
	(11) 11676280	Deck clearance EE	Gunner's Control EE	None
	(12) 11674062	Elevating shutoff CE	Gunner's Control ED	None
	END OF TASK			



2-79.12 TURRET HYDRAULIC SYSTEM TUBE INSTALLATION PROCEDURE

TOOLS: 9/16 in. open end wrench
 13/16 in. open end wrench
 11/16 in. open end wrench

SUPPLIES: Cleaning rags (Item 15, App. A)

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

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: Inspect tubes and tube holders (para 2-64)
 Clean tubes (para 2-65)

GENERAL INSTRUCTIONS:

CAUTION

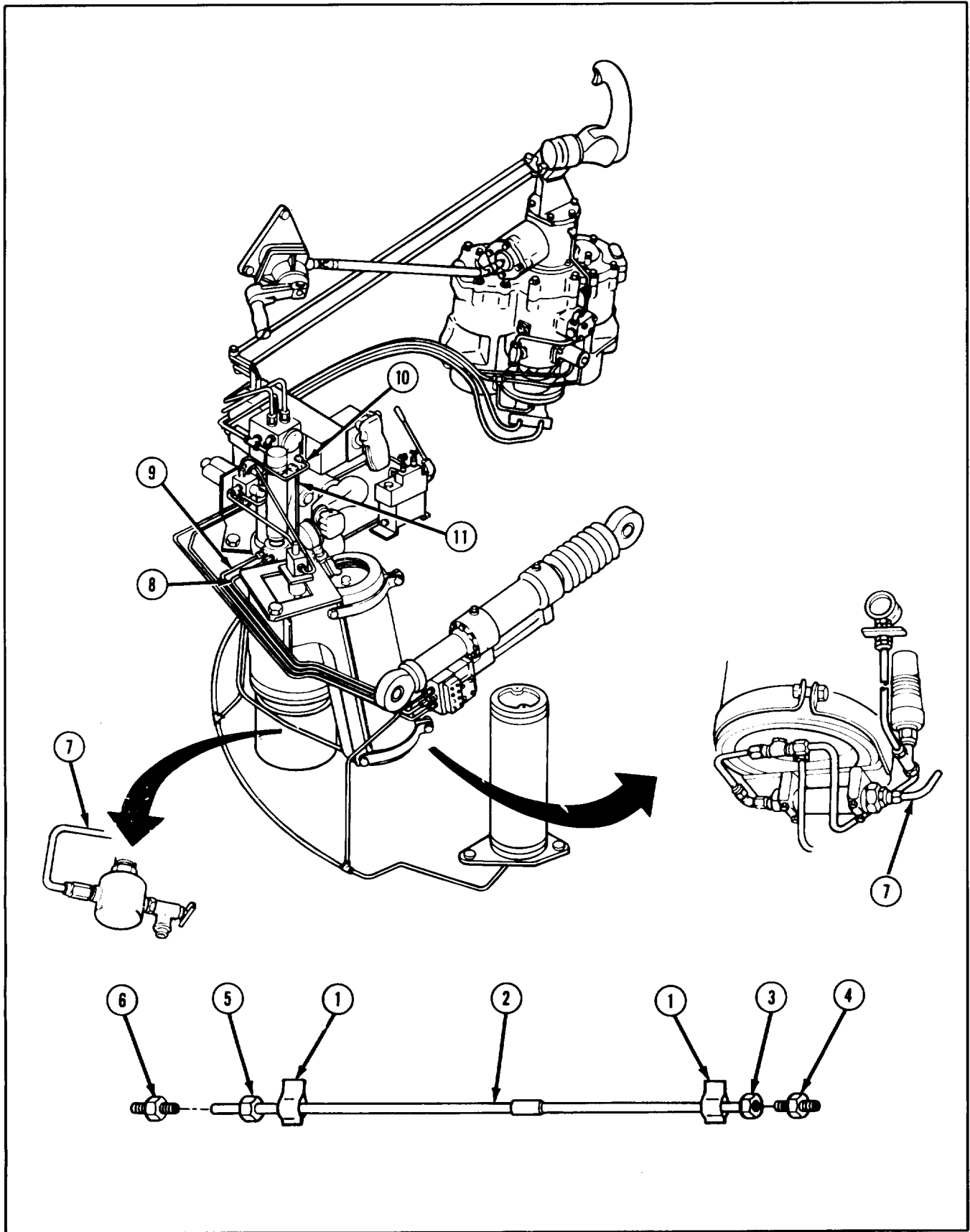
Keep dirt from getting in tubing or parts. Dirt can damage equipment. Handle tubes carefully to stop damage. Use rags to clean up fluid spillage.

NOTE

See table in frame 1 for part numbers and location of tubes installed in this task.

2-79.12 TURRET Hydraulic SYSTEM TUBE INSTALLATION PROCEDURE (CONT)

FRAME 1																											
STEP	PROCEDURE																										
1.	Using hand, remove tube holders, screws and lockwashers from equipment (see table below).																										
2.	Remove four protective plugs from tube assembly, tee and adapter in hydraulic motor port.																										
	<div style="border: 1px solid black; padding: 2px; display: inline-block;">CAUTION</div> Tube assembly must be connected to equipment port per identification marking on tag (1) to prevent damage to equipment.																										
3.	Match identification marking on tag (1) on tube assembly (2) with marking on port in equipment.																										
4.	Put tube assembly in approximate position between connecting points.																										
5.	Using 9/16 inch wrench on tube assembly nut (3) and 11/16 inch wrench on nipple (4), connect tube assembly (2) to nipple (4) (para 1-24).																										
6.	Using 9/16 inch wrench on tube assembly nut (5) and 13/16 inch wrench on reducer (6) in equipment, connect tube assembly (2) to reducer (6) (para 1-24).																										
7.	Remove two identification tags (1).																										
8.	Do steps 2 thru 7, as required, for the following tube assemblies:																										
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Tube Assembly</th> <th colspan="2">CONNECTIONS</th> <th rowspan="2">Holders or clamp</th> </tr> <tr> <th>From</th> <th>To</th> </tr> </thead> <tbody> <tr> <td>(7) 11676269</td> <td>Reducer in relief valve</td> <td>Nipple in tee of reservoir</td> <td>None</td> </tr> <tr> <td>(8) 11676601</td> <td>Elevation cylinder lock MI</td> <td>Riser MD</td> <td>2-74</td> </tr> <tr> <td>(9) 11676603</td> <td>Elevation cylinder lock M2</td> <td>Riser ME</td> <td>2-74</td> </tr> <tr> <td>(10) 11676260</td> <td>Deck clearance EE</td> <td>Gunner's Control EE</td> <td>None</td> </tr> <tr> <td>(11) 11674062</td> <td>Elevating shutoff CE</td> <td>Gunner's Control ED</td> <td>None</td> </tr> </tbody> </table>	Tube Assembly	CONNECTIONS		Holders or clamp	From	To	(7) 11676269	Reducer in relief valve	Nipple in tee of reservoir	None	(8) 11676601	Elevation cylinder lock MI	Riser MD	2-74	(9) 11676603	Elevation cylinder lock M2	Riser ME	2-74	(10) 11676260	Deck clearance EE	Gunner's Control EE	None	(11) 11674062	Elevating shutoff CE	Gunner's Control ED	None
Tube Assembly	CONNECTIONS		Holders or clamp																								
	From	To																									
(7) 11676269	Reducer in relief valve	Nipple in tee of reservoir	None																								
(8) 11676601	Elevation cylinder lock MI	Riser MD	2-74																								
(9) 11676603	Elevation cylinder lock M2	Riser ME	2-74																								
(10) 11676260	Deck clearance EE	Gunner's Control EE	None																								
(11) 11674062	Elevating shutoff CE	Gunner's Control ED	None																								
9.	Install tube holders (para 2-75), as required.																										
	NOTE Do the following step if this procedure completes the maintenance of the hydraulic system. If other maintenance must be done, do the following step after completion of the other maintenance.																										
10.	Check connections of tube assembly for leaks of hydraulic fluid (JPG). If hydraulic connection leaks hydraulic fluid, remove (para 2-79.11) and install (para 2-79.12) new tube assembly.																										
	END OF TASK																										



2-79.13 TURRET HYDRAULIC SYSTEM TUBE REMOVAL PROCEDURE

TOOLS: 9/16 in. open end wrench

SUPPLIES: Four plugs for tube assembly and equipment ports
 Masking tape (Item 25, App. A)
 Felt tipped pen
 Cleaning rags (Item 5, App. A)

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

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

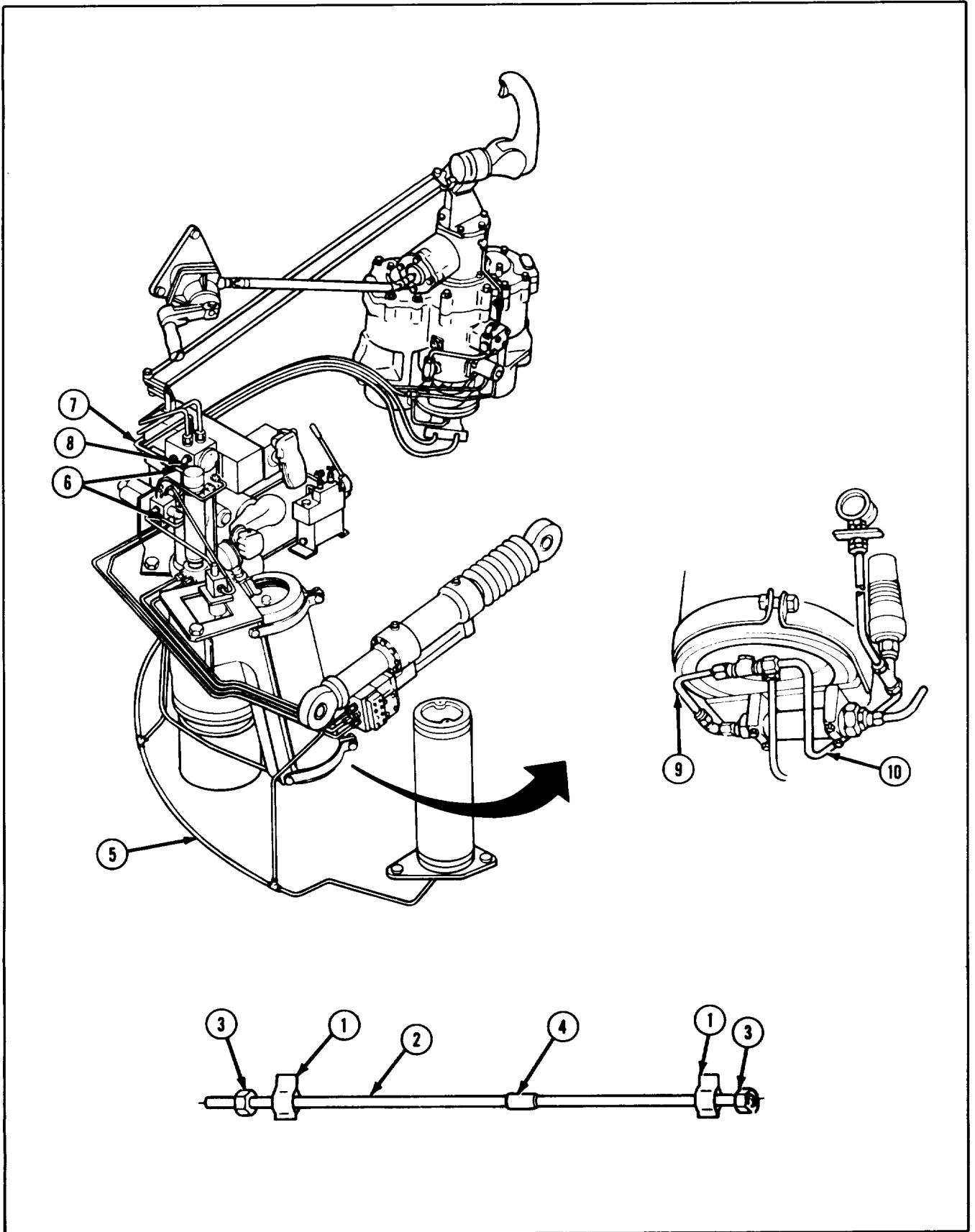
Keep dirt from getting in tubing or parts. Dirt can damage equipment. Handle tubes carefully to stop damage. Use rags to clean up fluid spillage.

NOTE

See table in frame 1 for part number and location of tubes removed in this task.

2-79.13 TURRET Hydraulic SYSTEM TUBE REMOVAL PROCEDURE (CONT)

FRAME 1				
STEP	PROCEDURE			
	<div style="border: 1px solid black; padding: 2px; display: inline-block;">WARNING</div> Before removing hydraulic tubes, 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).			
	NOTE			
	Use the maintenance procedure index (para 2-79.1) and part number on band (4) attached to tube assembly (2) to locate tube assembly you are removing.			
2.	Remove tube holders, if necessary, see table below.			
3.	Using masking tape (1) and felt tipped pen, tag both ends of tube assembly (2) with equipment port identification markings.			
4.	Using 9/16 inch wrench on tube assembly nut (3), remove two tube assembly nuts (3) from fittings in equipment (para 1-23).			
5.	Plug tube assembly and two equipment ports, four places.			
6.	Remove tube assembly (2) from vehicle.			
	Tube Assembly	CONNECTIONS		Holders or clamp
		From	To	
(5)	12270137	Tee and tubes 12270133 and 12270140	Tee and tubes 12270139 and 12270136	None
(6)	11676253	Tee at deck clearance D	Tee at gunner's control DL	None
(7)	12290866	Tee and tubes 12270138 and 12270143	Tee at gunner's control DL	2-76
(8)	11676251	Elbow at deck clearance A	Tee at gunner's control A	None
(9)	11676278	Tee and tube 11676595	Elbow in relief valve	None
(10)	11676595	Tee and tube 11676278	Tee in pressure switch and tube 11676596	None
END OF TASK				



2-79.14 TURRET HYDRAULIC SYSTEM TUBE INSTALLATION PROCEDURE

TOOLS: 9/16 in. open end wrench

SUPPLIES: Cleaning rags (Item 15, App. A)

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

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: Inspect tubes and tube holders (para 2-64)
 Clean tubes (para 2-65)

GENERAL INSTRUCTIONS:

CAUTION

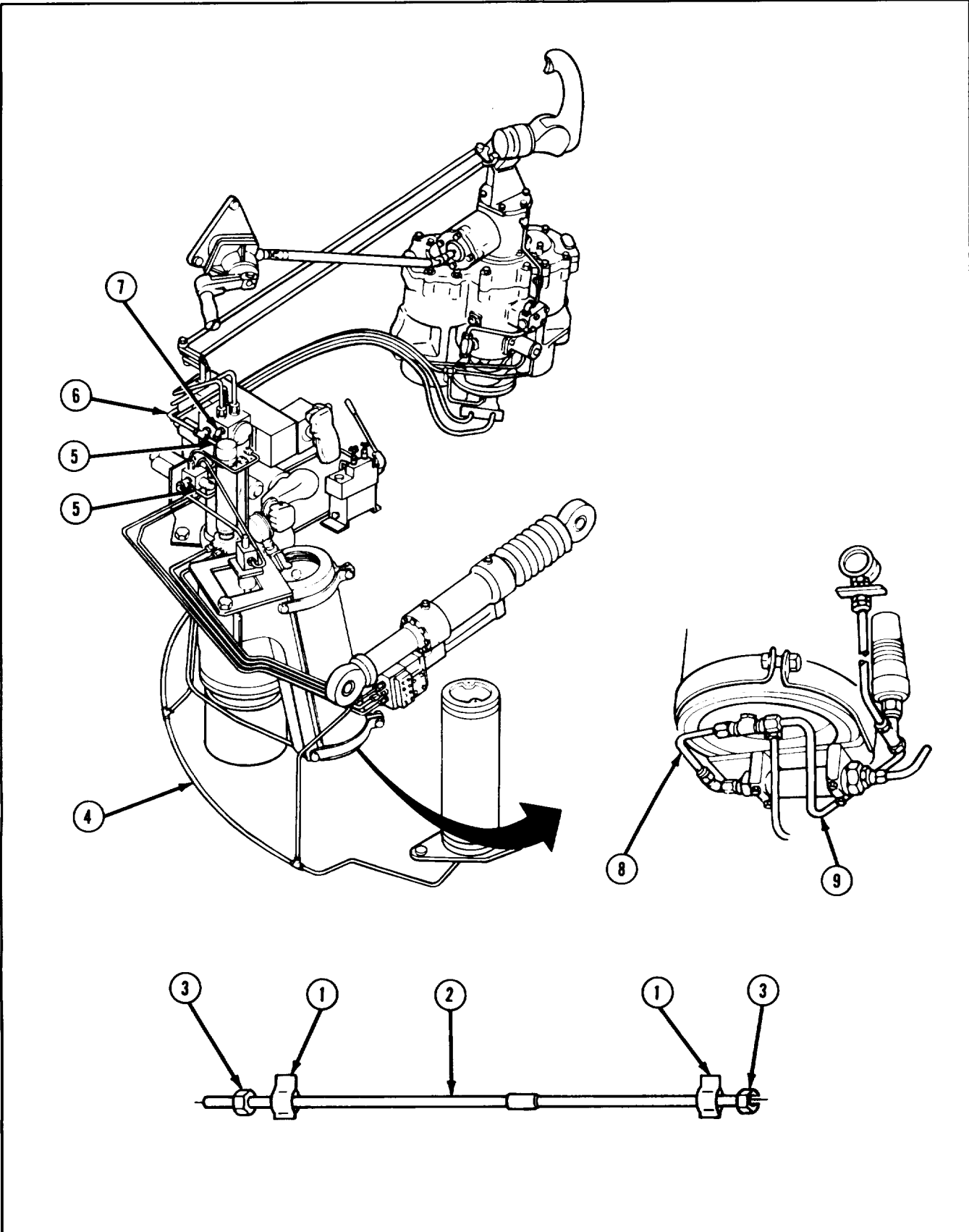
Keep dirt from getting in tubing or parts. Dirt can damage equipment. Handle tubes carefully to stop damage. Use rags to clean up fluid spillage.

NOTE

See table in frame 1 for part numbers and location of tubes installed in this task.

2-79.14 TURRET Hydraulic SYSTEM TUBE INSTALLATION PROCEDURE (CONT)

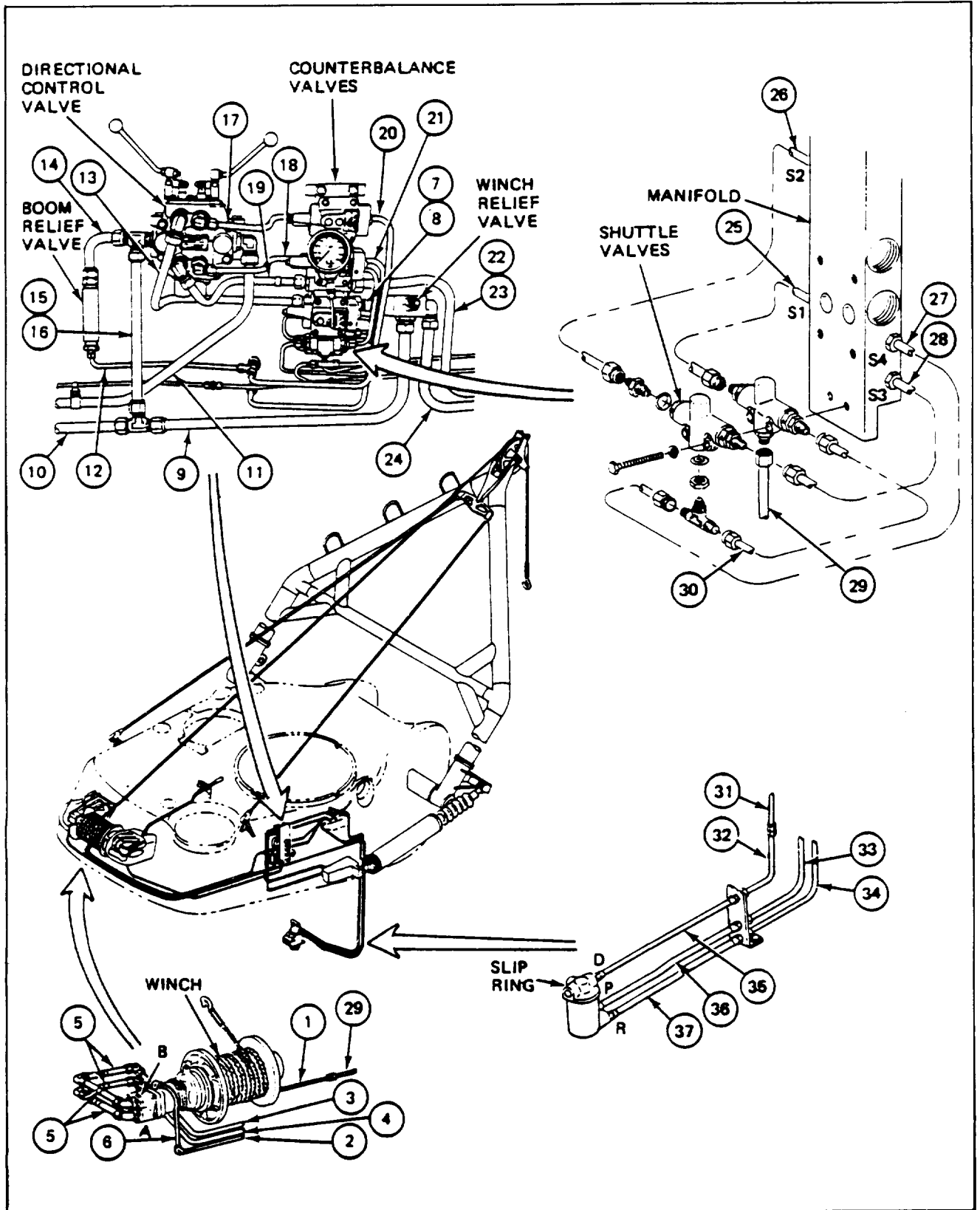
FRAME 1				
STEP	PROCEDURE			
1.	Using hand, remove tube holders, screws and lockwashers from equipment (see table below).			
2.	Remove four protective plugs from tube assembly, tee and adapter in hydraulic motor port.			
	<div style="border: 1px solid black; padding: 5px; display: inline-block;">CAUTION</div> <p>Tube assembly must be connected to equipment port per identification marking on tag (1) to prevent damage to equipment.</p>			
3.	Match identification marking on tag (1) on tube assembly (2) with marking on port in equipment.			
4.	Put tube assembly in approximate position between connection points.			
5.	Using 9/16 inch wrench on tube assembly nuts (3), connect tube assembly (2) to fittings in equipment (para 1-24).			
6.	Remove two identification tags (l).			
7.	Do steps 2 thru 6, as required, for the following tube assemblies:			
	Tube Assembly	CONNECTIONS		Holders or Clamp
		From	To	
(4)	12270137	Tee and tubes 12270133 and 12270140	Tee and tubes 12270139 and 12270136	None
(5)	11676253	Tee at deck clearance D	Tee at gunner's control DL	None
(6)	12290866	Tee and tubes 12270138 and 12270143	Tee at gunner's control DL	2-76
(7)	11676251	Elbow at deck clearance A	Tee at gunner's control A	None
(8)	11676278	Tee and tube 11676595	Elbow in relief valve	None
(9)	11676595	Tee and tube 11676278	Tee in pressure switch and tube 11676596	None
8.	Install tube holders (para 2-77), as required.			
	NOTE			
	Do the following step if this procedure completes the maintenance of the hydraulic system. If other maintenance must be done, do the following step after completion of the other maintenance.			
9.	Check connections of tube assembly for leaks of hydraulic fluid (JPG). If hydraulic connection leaks hydraulic fluid, remove (para 2-79.13) and install (para 2-79.14) new tube assembly.			
	END OF TASK			



Section 15. WINCH AND BOOM HYDRAULIC TUBES AND TUBE HOLDERS

2-80. MAINTENANCE PROCEDURE INDEX

Equipment Item		Cleaning	Remove Holder	Tasks Removal	Installation	Install Holder
1.	10940791	2-82	None	2-83	2-84	None
2.	10940877	2-82	2-91 2-93	2-83	2-84	2-92 2-94
3.	10940889	2-82	2-95	2-85	2-86	2-96
4.	10940933	2-82	2-95	2-85	2-86	296
5.	10951625	2-82	None	2-85	2-86	None
6.	10940790	2-82	None	2-83	2-84	None
7.	10940886	2-82	2-95	2-85	2-86	296
8.	11616045	2-82	None	2-85	2-86	296
9.	11616104	2-82	None	2-85	2-86	None
10.	11616050	2-82	None	2-85	2-86	None
11.	10940652	2-82	None	2-85	2-86	None
12.	11591075	2-82	None	2-87	2-88	None
13.	10940928	2-82	None	2-89	2-90	None
14.	11591076	2-82	None	2-85	2-86	None
15.	11616103	2-82	None	2-85	2-86	None
16.	10940651	2-82	None	2-85	2-86	None
17.	10940859	2-82	None	287	2-88	None
18.	10940823	2-82	None	287	2-88	None
19.	10940812	2-82	None	2-89	2-90	None
20.	11591077	2-82	None	2-87	2-88	None
21.	10940875	2-82	None	287	2-88	None
22.	10940931	2-82	2-95	2-85	2-86	296
23.	11616046	2-82	2-95 2-97	2-85	2-86	2-96 298
24.	11616105	2-82	2-95	2-85	2-86	296
25.	10951624	2-82	None	2-83	2-84	None
26.	10951669	2-82	None	2-83	2-84	None
27.	10951668	2-82	None	2-83	2-84	None
28.	10951667	2-82	None	2-83	2-84	None
29.	10940929	2-82	2-93	2-83	2-84	294
30.	10951670	2-82	None	2-83	2-84	None
31.	10940811	2-82	2-91 2-93	2-83	2-84	292 294
32.	11637508	2-82	2-93	2-83	2-84	294
33.	11637510	2-82	2-93	2-83	2-84	2-94
34.	11637509	2-82	2-93	283	2-84	2-94
35.	MS28762-6-0274	2-82	None	2-83	2-84	None
36.	MS28762-16-0270	2-82	None	2-85	2-86	None
37.	MS28762-16-0266	2-82	None	2-85	2-86	None



2-81. MAINTENANCE PROCEDURE INDEX (CONT)

Cross Index between Tube Assembly part numbers and maintenance procedure index callout numbers

Tube Assembly	Callout	How to Use Maintenance Procedure Index for Turret Hydraulic System Tubes Maintenance
1. 10940651	16	<ol style="list-style-type: none"> 1. Find tube assembly part number in table at left (for example, 10940933). 2. Use callout number (4) to find tube assembly on ILLUSTRATION. 3. Use callout number (4) to find tube assembly in MAINTENANCE PROCEDURE INDEX. 4. Use REMOVAL or INSTALLATION column to find procedure for tube assembly you are removing (2-85) or installing (2-86). 5. Use REMOVE HOLDER column to find procedure for removing tube holders (2-95), if required. 6. Use INSTALL HOLDER column to find procedure for installing tube holders (2-96), if required.
2. 10940652	11	
3. 10940790	6	
4. 10940791	1	
5. 10940811	31	
6. 10940812	19	
7. 10940823	18	
8. 10940859	17	
9. 10940875	21	
10. 10940877	2	
11. 10940886	7	
12. 10940889	3	
13. 10940928	13	
14. 10940929	29	
15. 10940931	22	
16. 10940933	4	
17. 10951624	25	
18. 10951625	5	
19. 10951667	28	
20. 10951668	27	
21. 10951669	26	
22. 10951670	30	
23. 11591075	12	
24. 11591076	14	
25. 11591077	20	
26. 11616045	8	
27. 11616046	23	
28. 11616050	10	
29. 11616103	15	
30. 11616104	9	
31. 11616105	24	
32. 11637508	32	
33. 11637509	34	
34. 11637510	33	
35. MS 28762-6-0274	35	
36. MS 28762-16-0270	36	
37. MS 28762-16-0266	37	

2-82. WINCH AND BOOM HYDRAULIC TUBES CLEANING PROCEDURE

TOOLS: Compressed air unit

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

PERSONNEL: One

PRELIMINARY PROCEDURE: Tubes and tube holders removed from vehicle (see. maintenance procedure index for para)

GENERAL INSTRUCTIONS: Keep dirt from getting into tubing or parts. Dirt can damage equipment.

FRAME 1	
Step	Procedure
<ol style="list-style-type: none"> 1. 2. 3. 	<p>Remove protective plugs from ends of tubes or lines.</p> <p>Using dry cleaning solvent, clean both outside and inside surfaces of each part.</p> <p>Dry parts with compressed air.</p> <p style="text-align: center;">NOTE</p> <p>If dry compressed air is not available, put tube on a previously cleaned area and let it set for at least five minutes before installing it.</p> <p>Follow-on Maintenance Action Required:</p> <p>Install tubes (see maintenance procedure index for para).</p> <p>Install tube holders (see maintenance procedure index for para).</p> <p>END OF TASK</p>

2-83. WINCH AND BOOM HYDRAULIC TUBES REMOVAL PROCEDURE

TOOLS: 11/16" open end wrench
13/16" open end wrench
8" adjustable wrench

SUPPLIES: 4 plugs for tube assembly and equipment ports
Masking tape (item 25, App. A)
Marking pen
Cleaning rags (item 15, App. A)

PERSONNEL: One

REFERENCES: JPG for procedure to tag parts

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch Boom Control Valves	FO-2	4
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/T RAV 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. Handle tubes carefully to stop damage. Use rags to clean up fluid spillage.

2-83. WINCH AND BOOM HYDRAULIC TUBES REMOVAL PROCEDURE (CONT)

FRAME 1	
Step	Procedure
	<p>NOTE</p> <p>Use the maintenance procedure index and part number on band (4) attached to tube assembly (1) to locate tube assembly you are removing.</p> <ol style="list-style-type: none"> 1. Remove any tube holders, if necessary, holding tube assembly (1) to equipment (see maintenance procedure index for para). 2. Using masking tape (2) and pen, tag both ends of tube assembly (1) with equipment port identification markings (JPG). 3. Using 11/16" wrench on tube assembly nuts (3) and 13/16" wrench on nipple in equipment, if required, remove two tube assembly nuts (3) (para 1-23). 4. Plug tube assembly and two equipment ports, four places. 5. Remove tube assembly (1) from vehicle. <p>END OF TASK</p>

2-84. WINCH AND BOOM HYDRAULIC TUBES INSTALLATION PROCEDURE

TOOLS: 11/16" open end wrench
13/16" open end wrench
8" adjustable wrench

SUPPLIES: Cleaning rags (item 15, App. a)

PERSONNEL: One

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

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch Boom Control Valves	FO-2	4
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

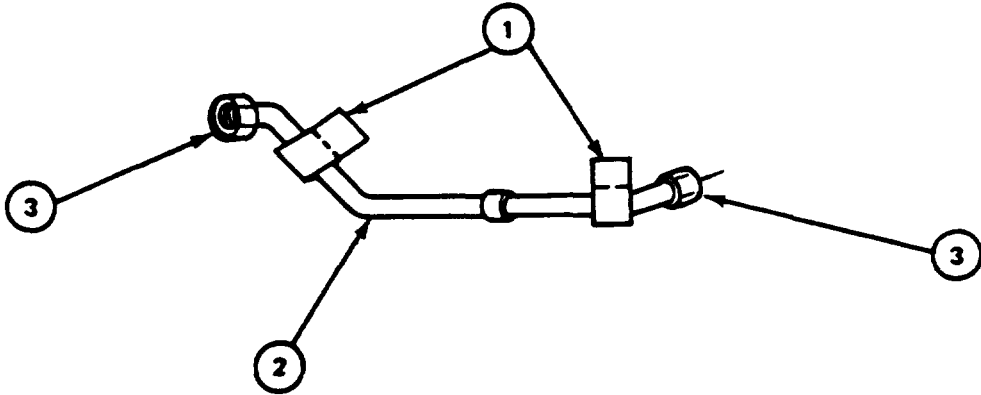
PRELIMINARY PROCEDURES: Clean tubes (para 2-82)

GENERAL INSTRUCTIONS:

CAUTION

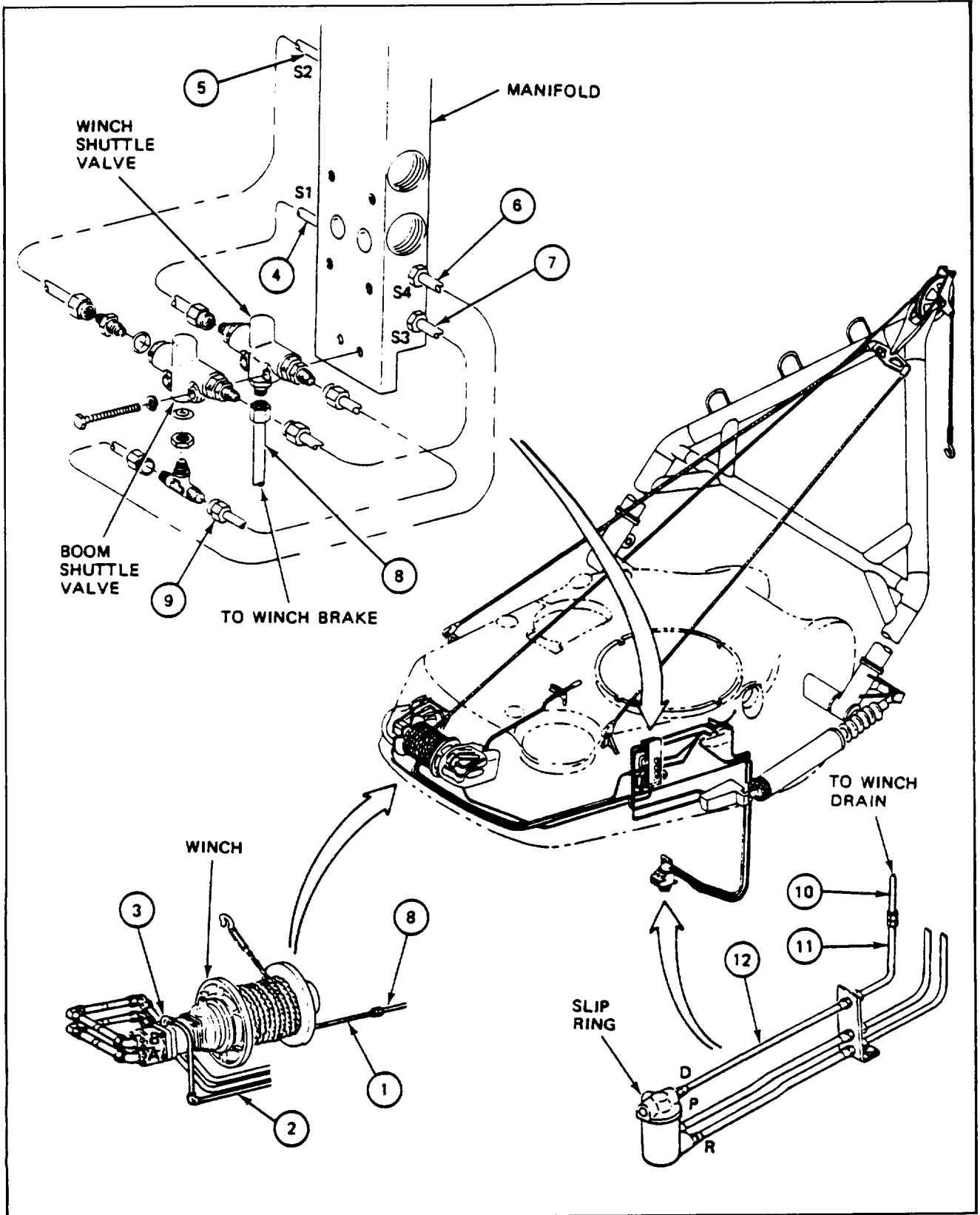
Keep dirt from getting in tubing or parts. Dirt can damage e equipment. Handle tubes care fully to stop damage. Use rags to clean up fluid spillage.

2-84. WINCH AND BOOM HYDRAULIC TUBES INSTALLATION PROCEDURE (CONT)

FRAME 1	
Step	Procedure
	NOTE
	See maintenance procedure index for any tube holders used with tube assembly (see part number) you are installing.
1.	Using hand, remove tube holders, screws, and lockwashers from equipment (see table in frame 2 for para).
2.	Remove four protective plugs from tube assembly and from two ports in equipment.
	CAUTION
	Tube assembly must be connected to equipment port per identification marking on tag (1) to prevent damage to equipment.
3.	Match identification marking on tag (1) on tube assembly (2) with marking on port in equipment.
4.	Put tube assembly in approximate position between connecting points.
5.	Using 11/16" wrench on tube assembly nuts (3) and 13/16" wrench, if required, on nipple in equipment, tighten two tube assembly nuts (3) (para 1-24).
6.	Remove two identification tags (1).
	GO TO FRAME 2
	 <p>The diagram shows a hydraulic tube assembly with several components. Callout 1 points to two identification tags on the top of the assembly. Callout 2 points to the main body of the tube assembly. Callout 3 points to two nuts on the ends of the assembly.</p>

2-84. WINCH AND BOOM HYDRAULIC TUBES INSTALLATION PROCEDURE (CONT)

FRAME 2				
Step	Procedure			
	NOTE			
	See frame 3 for cross index between tube assembly part numbers and callout numbers in this illustration.			
1.	Do steps 1 thru 6 in frame 1, as required, for the following tube assemblies			
	Tube Assembly	CONNECTIONS		Tube Holders
		From	To	
	(1) 10940791	Union (10940929)	Winch brake	None
	(2) 10940877	Union (10940811)	Union (10940790)	2-92 2-94
	(3) 10940790	Union (10940877)	Winch motor drain	None
	(4) 10951624	Manifold S 1	Winch shuttle valve	None
	(5) 10951669	Manifold S2	Boom shuttle valve	None
	(6) 10951668	Manifold S4	Tee (shuttle valve)	None
	(7) 10951667	Manifold S3	Boom shuttle valve	None
	(8) 10940929	Union (10940791)	Union (10940811)	None
	(9) 10951670	Winch shuttle valve	Boom shuttle valve tee	None
	(10) 10940811	Union (11637508)	Union (10940877)	2-92 2-94
	(11) 11637508	Bracket (slip ring D)	Union (10940811)	2-94
	(12) MS 28762-6-0274	Slipring D	Bracket (11637508)	None
2.	Install tube holders, as required (see table above for para).			
	GO TO FRAME 3			



2-84. WINCH AND BOOM HYDRAULIC TUBE INSTALLATION PROCEDURE (CONT)

FRAME 3	Step Procedure																										
	<p style="text-align: center;">NOTE</p> <p>Follow-on Maintenance Action Required:</p> <p>Do the following if this procedure completes the maintenance of the hydraulic system. If other maintenance must be done, do the following after completion of the other maintenance.</p> <p>Operate boom and winch (TM- 10). Check connections of tube assemblies for leaks of hydraulic fluid. If hydraulic connection leaks hydraulic fluid, remove (para 2-83) and install (para 2-84) new tube assembly.</p> <p>Cross Index Between Tube Assembly Part Numbers and Callout Numbers in Illustration of Frame 2</p> <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Tube Assembly</th> <th style="text-align: center;">Callout</th> </tr> </thead> <tbody> <tr><td style="text-align: center;">10940790</td><td style="text-align: center;">3</td></tr> <tr><td style="text-align: center;">10940791</td><td style="text-align: center;">1</td></tr> <tr><td style="text-align: center;">10940811</td><td style="text-align: center;">10</td></tr> <tr><td style="text-align: center;">10940877</td><td style="text-align: center;">2</td></tr> <tr><td style="text-align: center;">10940929</td><td style="text-align: center;">8</td></tr> <tr><td style="text-align: center;">10951624</td><td style="text-align: center;">4</td></tr> <tr><td style="text-align: center;">10951667</td><td style="text-align: center;">7</td></tr> <tr><td style="text-align: center;">10951668</td><td style="text-align: center;">6</td></tr> <tr><td style="text-align: center;">10951669</td><td style="text-align: center;">5</td></tr> <tr><td style="text-align: center;">10951670</td><td style="text-align: center;">9</td></tr> <tr><td style="text-align: center;">11637508</td><td style="text-align: center;">11</td></tr> <tr><td style="text-align: center;">MS28762-6-0274</td><td style="text-align: center;">12</td></tr> </tbody> </table> <p style="text-align: center;">END OF TASK</p>	Tube Assembly	Callout	10940790	3	10940791	1	10940811	10	10940877	2	10940929	8	10951624	4	10951667	7	10951668	6	10951669	5	10951670	9	11637508	11	MS28762-6-0274	12
Tube Assembly	Callout																										
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10951669	5																										
10951670	9																										
11637508	11																										
MS28762-6-0274	12																										

2-85. WINCH AND BOOM HYDRAULIC TUBES REMOVAL PROCEDURE

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

SUPPLIES: 4 plugs for tube assembly and equipment ports
 Masking tape (item 15, App. A)
 Felt tipped pen
 Cleaning rags (item 25, App. A)

PERSONNEL: One

REFERENCES: JPG for procedure to tag parts

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch Boom Control Valves	FO-2	4
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Turret Traverse Lock	FO-3	7

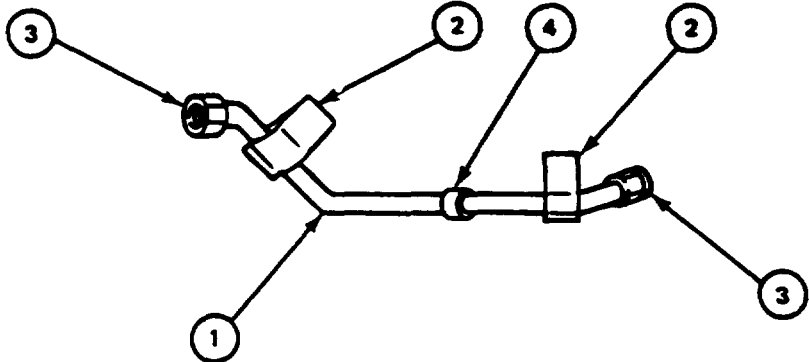
EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
 Gunner's control box ELEV/TRAV POWER switch set to OFF
 Turret traverse lock set to LOCKED

GENERAL INSTRUCTIONS:



Keep dirt from getting in tubing or parts. Dirt can damage e
 equipment Handle tubes care fully to stop damage. Use
 rags to clean up fluid spillage.

2-85. WINCH AND BOOM HYDRAULIC TUBES REMOVAL PROCEDURE (CONT)

FRAME 1	Step Procedure
	<p style="text-align: center;">NOTE</p> <p style="text-align: center;">Use the maintenance procedure index and part number on band (4) attached to tube assembly (1) to locate tube assembly you are removing.</p> <ol style="list-style-type: none"> 1. Remove any tube holders, if necessary, holding tube assembly (1) to equipment (see maintenance procedure index for para). 2. Using masking tape (2) and felt tipped pen, tag both ends of tube assembly (1) with equipment port identification markings (JPG). 3. Using 1-1/2" wrench on tube assembly nuts (3) and 1-5/8" wrench on nipple in equipment, if required, remove two tube assembly nuts (3) (para 1-23). 4. Plug tube assembly and two equipment ports, four places. 5. Remove tube assembly (1) from vehicle. <p>END OF TASK</p>
	

2-86. WINCH AND BOOM HYDRAULIC TUBES INSTALLATION PROCEDURE

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

SUPPLIES: Cleaning rags (item 25, App. A)

PERSONNEL: One

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

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch Boom Control Valves	FO-2	4
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

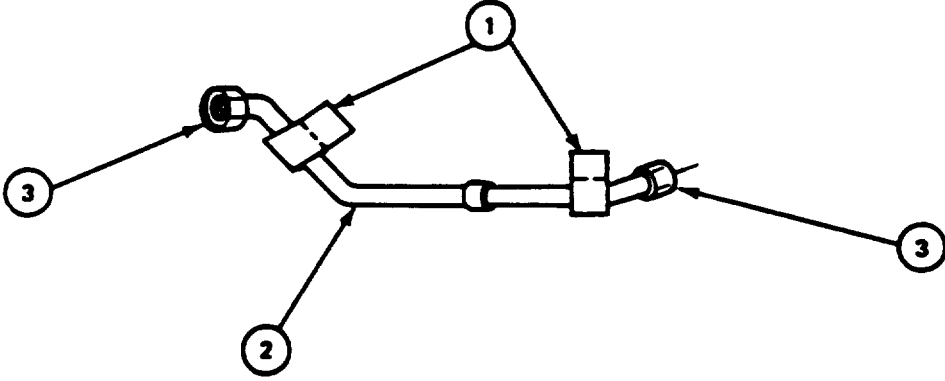
PRELIMINARY PROCEDURES: Clean tubes (para 2-82)

GENERAL INSTRUCTIONS:



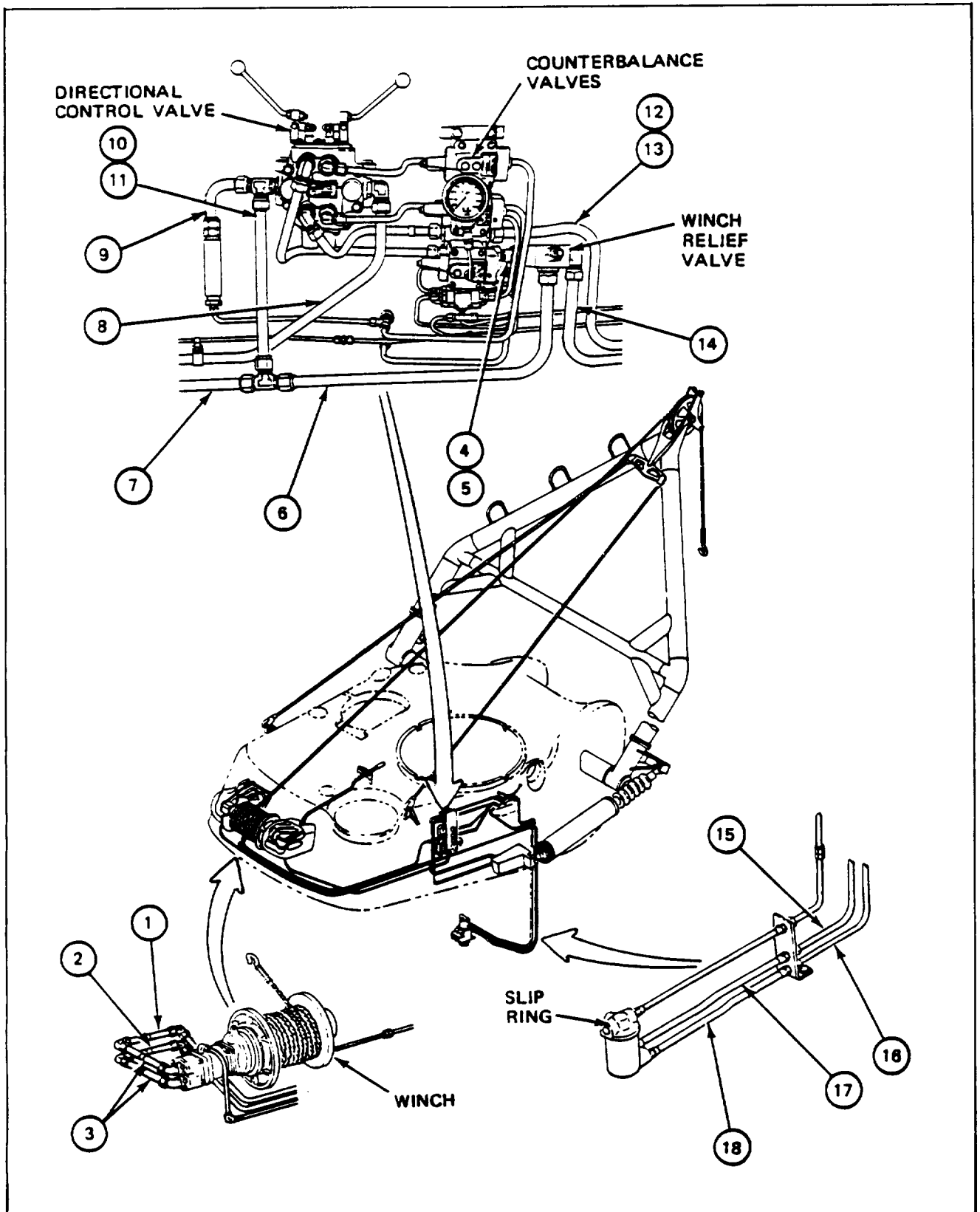
Keep dirt from getting in tubing or parts. Dirt can damage equipment. Handle tubes carefully to stop damage. Use rags to clean up fluid spillage.

2-86. WINCH AND BOOM HYDRAULIC TUBES INSTALLATION PROCEDURE (CONT)

FRAME 1	Step	Procedure
		<p>NOTE</p> <p>See maintenance procedure index for any tube holders used with tube assembly (see part number are installing).</p> <ol style="list-style-type: none"> Using hand, remove tube holders, screws, and lockwashers from equipment (see table in frame 2 for para). Remove four protective plugs from tube assembly and from two ports in equipment. <p style="text-align: center;">CAUTION</p> <p>Tube assembly must be connected to equipment port per identification marking on tag (1) to prevent damage to equipment.</p> <ol style="list-style-type: none"> Match identification marking on tag (1) on tube assembly (2) with marking on port in equipment. Put tube assembly in approximate position between connecting points. using 1-1/2" wrench on tube assembly nuts (3) and 1-5/8" wrench, if required, on nipple in equipment, tighten two tube assembly nuts (3) (para 1-24). Remove two identification tags (1). <p>GO TO FRAME 2</p>
		

2-86. WINCH AND BOOM HYDRAULIC TUBES INSTALLATION PROCEDURE (CONT)

FRAME 1				
Step	Procedure			
NOTE				
See frame 3 for cross index between tube assembly part numbers and callout numbers in this illustration.				
1.	Do steps 1 thru 6 in fra 1. as required, for the following tube assemblies			
	Tube Assembly	CONNECTIONS		Tube Holders
		From	To	
	(1) 10940889	Winch Motor B	Union (11616046)	2-96
	(2) 10940933	Winch Motor A	Union (11616105)	2-96
	(3) 10951625	Winch Motor B	Elbow (10940889) (10940933)	None
	(4) 10940886	Union (10940933)	Manifold C3	None
	(5) 11616045	Manifold C5	Winch relief valve	2-96
	(6) 11616104	Winch relief valve	Tee (11616103)	None
	(7) 11616050	Union (11637509)	Tee (11616103)	None
	(8) 10940652	Union (11637510)	Control valve P	None
	(9) 11591076	Boom relief valve RET	Tee (Control valve T)	None
	(10) 11616103	Tee (11616050)	Tee (Control valve T)	None
	(11) 10940931	Union (11637509)	Tee (Control valve T)	None
	(12) 10940931	Manifold C6	Union (10940889)	2-96
	(13) 11616046	Manifold C6	Union (10940889)	2-96 2-98
	(14) 11616105	Union (10940933)	Winch relief valve	2-96
	(15) 11637510	Bracket (slipring P)	Union (10940652)	2-94
	(16) 11637509	Bracket (slipring R)	Union (11616050)	2-94
	(17) MS 28762-16-0270	Slipring P	Bracket (116375 10)	None
	(18) MS 28762-16-0266	Slipring R	Bracket (11637509)	None
2.	Install tube holders, as required (see table above for para).			
	GO TO FRAME 3			



2-86. WINCH AND BOOM HYDRAULIC TUBES INSTALLATION PROCEDURE (CONT)

FRAME 3

Step	Procedure																																						
	<p>NOTE</p> <p>Follow-on Maintenance Action Required:</p> <p>Do the following if this procedure completes the maintenance of the hydraulic system. If other maintenance must be done, do the following after completion of the other maintenance.</p> <p>Operate winch and boom (TM- 10). Check connections of tube assemblies for leaks of hydraulic fluid. If hydraulic connection leaks hydraulic fluid, remove (para 2-85) and install (para 2-86) new tube assembly.</p> <p>Cross Index Between Tube Assembly Part Numbers and Callout Numbers in Illustration of Frame 2</p> <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Tube Assembly</th> <th style="text-align: center;">Callout</th> </tr> </thead> <tbody> <tr><td style="text-align: center;">10940651</td><td style="text-align: center;">11</td></tr> <tr><td style="text-align: center;">10940652</td><td style="text-align: center;">8</td></tr> <tr><td style="text-align: center;">10940886</td><td style="text-align: center;">4</td></tr> <tr><td style="text-align: center;">10940889</td><td style="text-align: center;">1</td></tr> <tr><td style="text-align: center;">10940931</td><td style="text-align: center;">12</td></tr> <tr><td style="text-align: center;">10940933</td><td style="text-align: center;">2</td></tr> <tr><td style="text-align: center;">10951625</td><td style="text-align: center;">3</td></tr> <tr><td style="text-align: center;">11591076</td><td style="text-align: center;">9</td></tr> <tr><td style="text-align: center;">11616045</td><td style="text-align: center;">5</td></tr> <tr><td style="text-align: center;">11616046</td><td style="text-align: center;">13</td></tr> <tr><td style="text-align: center;">11616050</td><td style="text-align: center;">7</td></tr> <tr><td style="text-align: center;">11616103</td><td style="text-align: center;">10</td></tr> <tr><td style="text-align: center;">11616104</td><td style="text-align: center;">6</td></tr> <tr><td style="text-align: center;">11616105</td><td style="text-align: center;">14</td></tr> <tr><td style="text-align: center;">11637509</td><td style="text-align: center;">16</td></tr> <tr><td style="text-align: center;">11637510</td><td style="text-align: center;">15</td></tr> <tr><td style="text-align: center;">MS28762-16-0270</td><td style="text-align: center;">17</td></tr> <tr><td style="text-align: center;">MS28762-164266</td><td style="text-align: center;">18</td></tr> </tbody> </table>	Tube Assembly	Callout	10940651	11	10940652	8	10940886	4	10940889	1	10940931	12	10940933	2	10951625	3	11591076	9	11616045	5	11616046	13	11616050	7	11616103	10	11616104	6	11616105	14	11637509	16	11637510	15	MS28762-16-0270	17	MS28762-164266	18
Tube Assembly	Callout																																						
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11637509	16																																						
11637510	15																																						
MS28762-16-0270	17																																						
MS28762-164266	18																																						
	<p>END OF TASK</p>																																						

2-87. WINCH AND BOOM HYDRAULIC TUBES REMOVAL PROCEDURE

TOOLS: 7/8" open end wrench
 1" open end wrench
 8" adjustable wrench

SUPPLIES: 4 plugs for tube assembly and equipment ports
 Masking tape (item 25, App. A)
 Felt tipped pen
 Cleaning rags (item 15, App. A)

PERSONNEL: One

REFERENCES: JPG for procedure to tag parts

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Winch Boom Control Valves	FO-2	4
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

GENERAL INSTRUCTIONS:

CAUTION

Keep dirt from getting in tubes or parts. Dirt can damage e
 equipment Handle tubes carefully to stop damage. Use
 rags to clean up fluid spillage.

2-87. WINCH AND BOOM HYDRAULIC TUBES REMOVAL PROCEDURE (CONT)

FRAME 1

Step

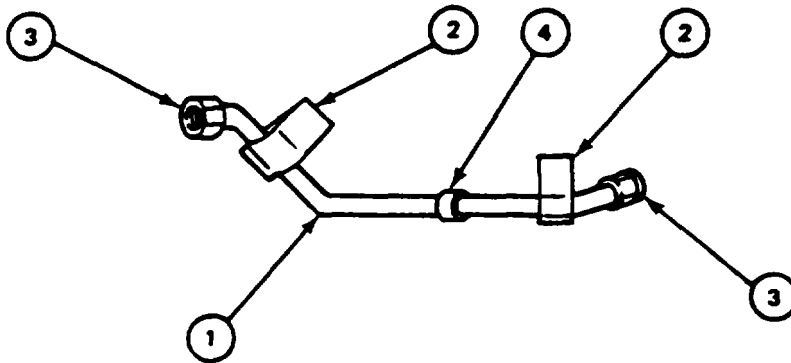
Procedure

NOTE

Use the maintenance procedure index and part number on band (4) attached to tube assembly (1) to locate tube assembly you are removing.

1. Remove any tube holders, if necessary, holding tube assembly (1) to equipment (see maintenance procedure index for para).
2. Use masking tape (2) and pen, tag both ends of tube assembly (1) with equipment port identification markings (JPG).
3. Using 7/8" wrench on tube assembly nuts (3) and 1" wrench on nipple in equipment, if required, remove two tube assembly nuts (3) (para 1-23).
4. Plug tube assembly and two equipment ports, four places.
5. Remove tube assembly (1) from vehicle.

END OF TASK



2-88. WINCH AND BOOM HYDRAULIC TUBES INSTALLATION PROCEDURE

TOOLS: 7/8" open end wrench
 1" open end wrench
 8" adjustable wrench

SUPPLIES: Cleaning rags (item 15, App. A)

PERSONNEL: One

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

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch Boom Control Valves	FO-2	4
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

PRELIMINARY PROCEDURES: Clean tubes (para 2-82)

GENERAL INSTRUCTIONS:

CAUTION

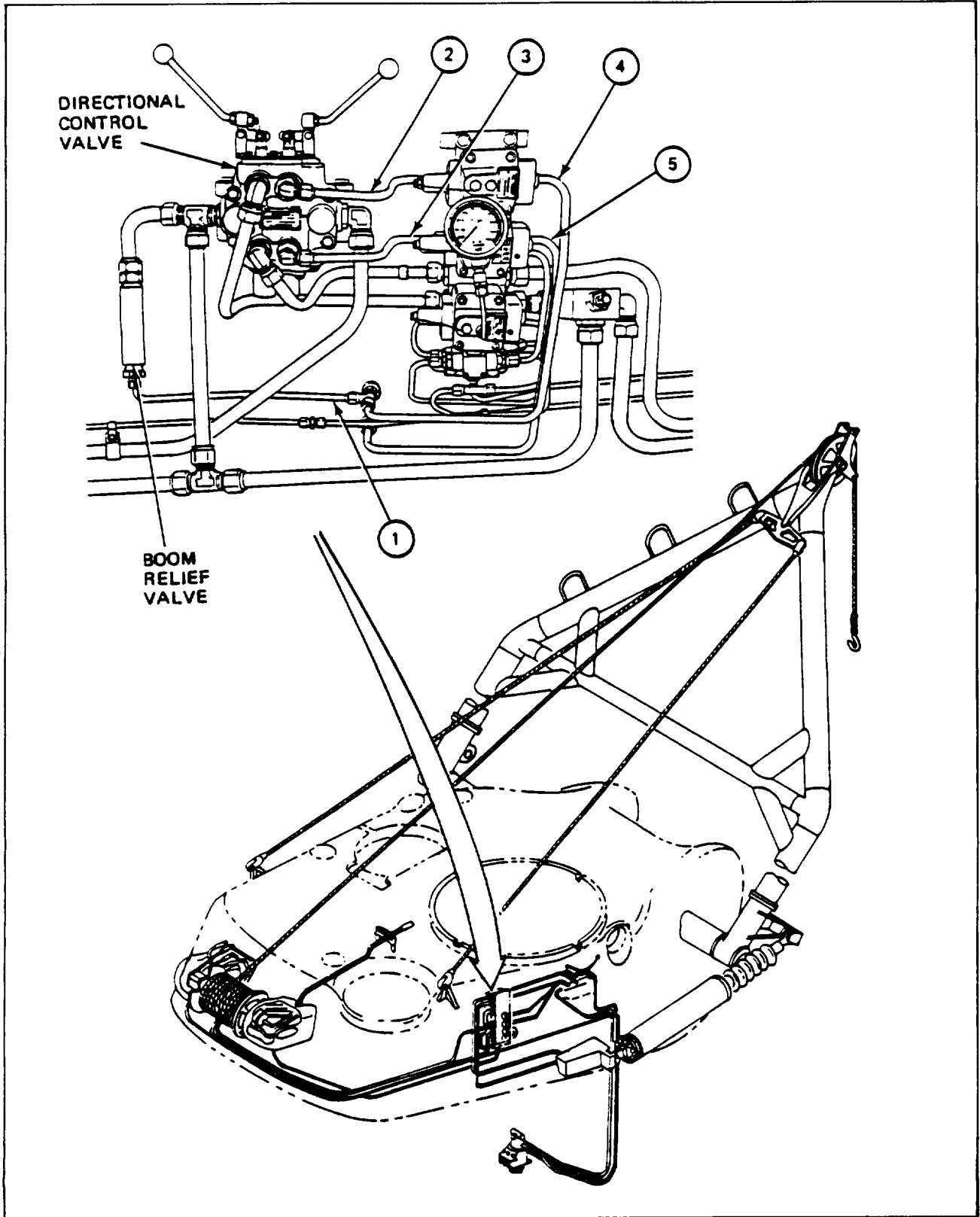
Keep dirt from getting in tubes or parts. Dirt can damage e
 equipment Handle tubes carefully to stop damage. Use
 rags to clean up fluid spillage.

2-88. WINCH AND BOOM HYDRAULIC TUBES INSTALLATION PROCEDURE (CONT)

FRAME 1	
Step	Procedure
	<p>NOTE</p> <p>See maintenance procedure index for any tube holders used with tube assembly (see part number) you are installing.</p> <ol style="list-style-type: none"> 1. Using hand, remove tube holders, screws, and lockwashers from equipment (see table in frame 2 for para). 2. Remove four protective plugs from tube assembly and from two ports in equipment. <p style="text-align: center;">CAUTION</p> <p>Tube assembly must be connected to equipment port per identification marking on tag (1) to prevent damage to equipment.</p> <ol style="list-style-type: none"> 3. Match identification marking on tag (1) on tube assembly (2) with marking on port in equipment. 4. Put tube assembly in approximate position between connecting points. 5. Using 7/8" wrench on tube assembly nuts (3) and 1" wrench, if required, on nipple in equipment, tighten two tube assembly nuts (3) (para 1-24). 6. Remove two identification tags (1). <p>GO TO FRAME 2</p>

2-88. WINCH AND BOOM HYDRAULIC TUBES INSTALLATION PROCEDURE (CONT)

FRAME 2				
Step	Procedure			
1.	Do steps 1 thru 6 in frame 1, as required, for the following tube assemblies:			
	Tube Assembly	CONNECTIONS		Tube Holders
		From	To	
	(1) 11591075	Boom Relief Valve Press	Tee (11591077)	None
	(2) 10940859	Manifold C1	Control valve B1	None
	(3) 10940823	Manifold C2	Control valve A 1	None
	(4) 11591077	Manifold C8	Tee (11591075)	None
	(5) 10940875	Manifold C7	Elbow (Boom cylinder S)	None
NOTE				
<p>Follow-on Maintenance Action Required:</p> <p>Do the following if this procedure completes the maintenance of the hydraulic system. If other maintenance must be done, do the following after completion of the other maintenance.</p> <p>Operate boom and winch (TM- 10). Check connections of tube assemblies for leaks of hydraulic fluid. If hydraulic connection leaks hydraulic fluid, remove (para 2-87) and install (para 2-88) new tube assembly.</p>				
END OF TASK				



2-89. WINCH AND BOOM HYDRAULIC TUBES REMOVAL PROCEDURE

TOOLS: 1-1/4" open end wrench
1-3/8" open end wrench
8" adj unstable wrench

SUPPLIES: 4 plugs for tube assembly and equipment ports
Masking tape (item 25, App. A)
Felt tipped pen
Cleaning rags (item 15, App. A)

PERSONNEL: One

REFERENCES: JPG for procedure to tag parts

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch Boom Control Valves	FO-2	4
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

GENERAL INSTRUCTIONS:

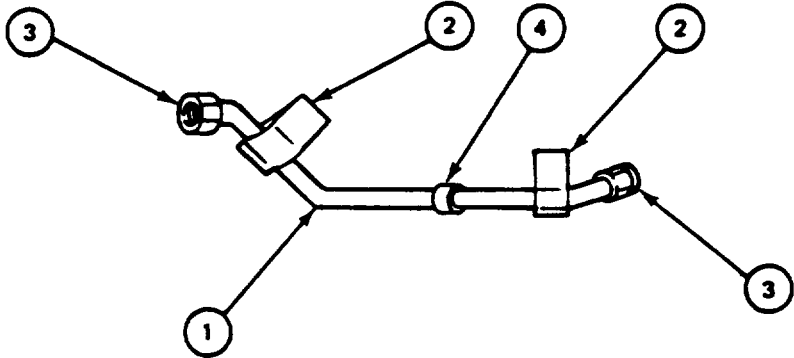
CAUTION

Keep dirt from getting in tubes or parts. Dirt can damage equipment. Handle tubes carefully to stop damage. Use rags to clean up fluid spillage.

2-89. WINCH AND BOOM HYDRAULIC TUBES REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
	<p style="text-align: center;">NOTE</p> <p style="text-align: center;">Use the maintenance procedure index and part number on band (4) attached to tube assembly (1) to locate tube assembly you are removing.</p> <ol style="list-style-type: none">1. Remove any tube holders, if necessary, holding tube assembly (1) to equipment (see maintenance procedure index for para).2. Use masking tape (2) and pen, tag both ends of tube assembly (1) with equipment port identification markings (JPG).3. Using 1-1/4" wrench on tube assembly nuts (3) and 1-3/8" wrench on nipple in equipment, if required, remove two tube assembly nuts (3) (para 1-23).4. Plug tube assembly and two equipment ports, four places.5. Remove tube assembly (1) from vehicle. <p style="text-align: center;">END OF TASK</p>



2-90. WINCH AND BOOM HYDRAULIC TUBES INSTALLATION PROCEDURE

TOOLS: 1-1/4" open end wrench
1-3/8" open end wrench
8" adjustable wrench

SUPPLIES: Cleaning rags (item 15, App. A)

PERSONNEL: One

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

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Winch Boom Control Valves	FO-2	4
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

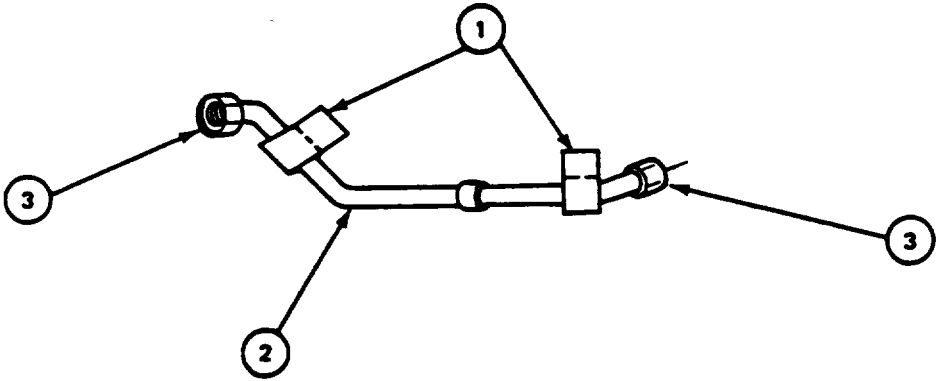
PRELIMINARY PROCEDURES: Clean tubes (para 2-82)

GENERAL INSTRUCTIONS:

CAUTION

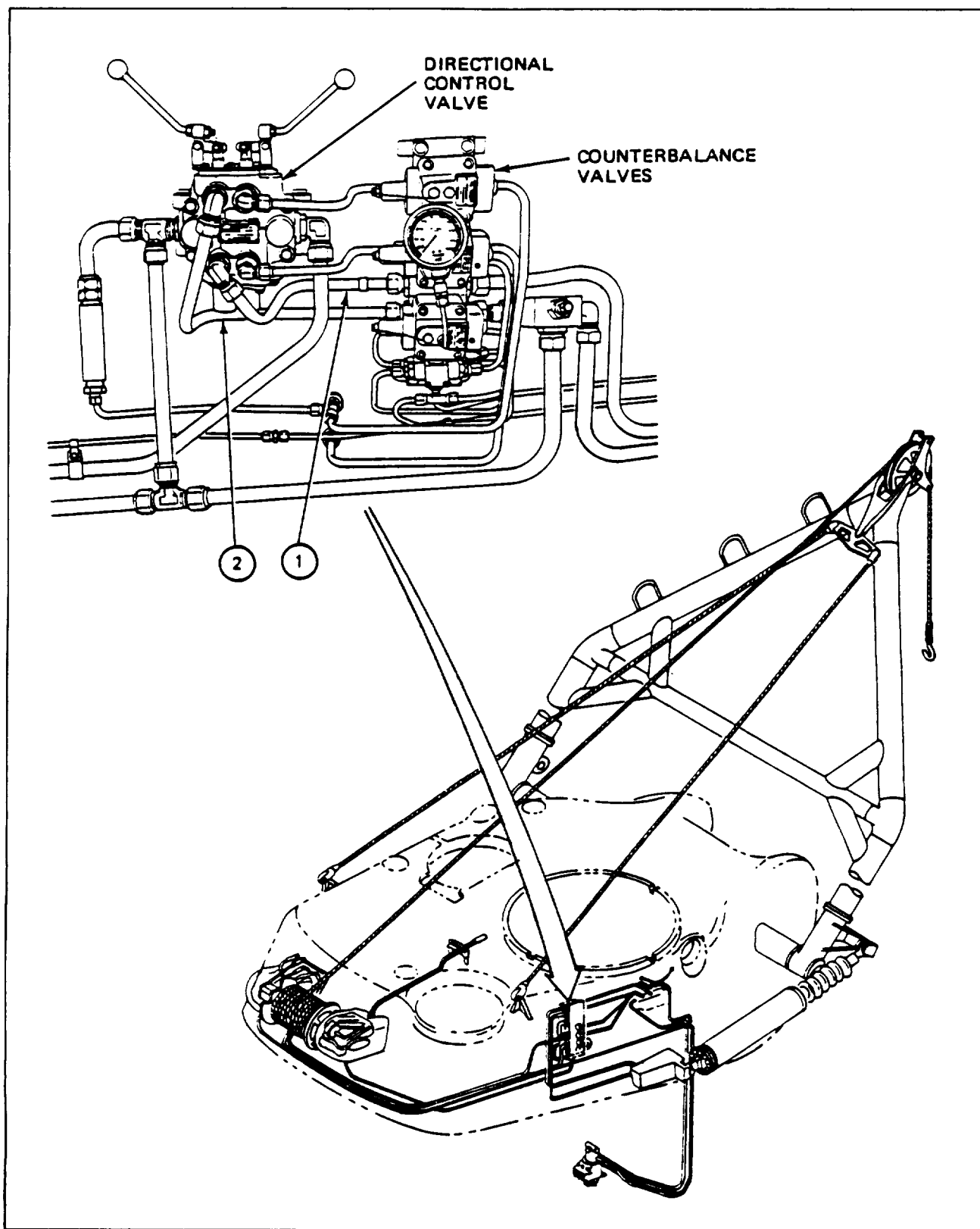
Keep dirt from getting in tubes or parts. Dirt can **damage** e
equipment Handle tubes carefully to stop damage. Use
rags to clean up fluid spillage.

2-90. WINCH AND BOOM HYDRAULIC TUBES INSTALLATION PROCEDURE (CONT)

FRAME 1	Step Procedure
	<p style="text-align: center;">NOTE</p> <p style="text-align: center;">See maintenance procedure index for any tube holders used with tube assembly (see part number) you are installing.</p> <ol style="list-style-type: none"> 1. Using hand, remove tube holders, screws, and lockwashers from equipment (see table in frame 2 for para). 2. Remove four protective plugs from tube assembly and from two ports in equipment. <p style="text-align: center;">CAUTION</p> <p style="text-align: center;">Tube assembly must be connected to equipment port per identification marking on tag (1) to prevent damage to equipment.</p> <ol style="list-style-type: none"> 3. Match identification marking on tag (1) on tube assembly (2) with marking on port in equipment. 4. Put tube assembly in approximate position between connecting points. 5. Using 1-1/4" wrench on tube assembly nuts (3) and 1-3/8" wrench, if required, on nipple in equipment, tighten two tube assembly nuts (3) (para 1-24). 6. Remove two identification tags (1). <p>GO TO FRAME 2</p>
	 <p>The diagram shows a hydraulic tube assembly with several components labeled with circled numbers. Callout 1 points to two identification tags on the top of the assembly. Callout 2 points to the main body of the tube assembly. Callout 3 points to two nuts on the ends of the assembly, one on the left and one on the right.</p>

2-90. WINCH AND BOOM HYDRAULIC TUBES INSTALLATION PROCEDURE (CONT)

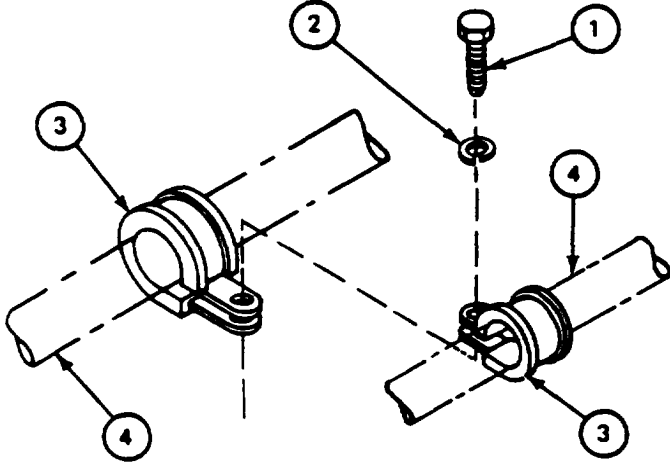
FRAME 2			
Step	Procedure		
1.	Do steps 1 thru 6 in frame 1, as required, for the following tube assemblies:		
Tube Assembly	CONNECTIONS		Tube Holders
	From	To	
(1) 10940812 (2) 10940928	Manifold C3 Manifold C4	Control valve A2 Control valve B2	None None
NOTE			
<p>Follow-on Maintenance Action Required:</p> <p>Do the following if this procedure completes the maintenance of the hydraulic system. If other maintenance must be done, do the following after completion of the other maintenance.</p> <p>Operate boom and winch (TM- 10). Check connections of tube assemblies for leaks of hydraulic fluid. If hydraulic connection leaks hydraulic fluid, remove (para 2-89) and install (para 2-90) new tube assembly.</p>			
END OF TASK			



2-91. TUBE CLAMP (MS 9025-5) REMOVAL PROCEDURE

TOOLS: 7/16" combination wrench

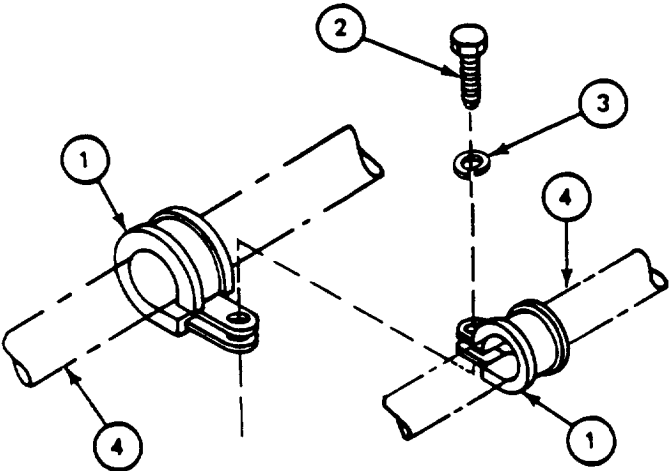
PERSONNEL: One

FRAME 1	
Step	Procedure
<ol style="list-style-type: none"> 1. Using wrench, remove screw (1) and lockwasher (2) holding two tube clamps (3) to equipment. 2. Using hands, spread tube clamp (3) on tube assembly (4) to be removed. 3. Pull tube clamp (3) off tube assembly (4) to be removed. 4. After tube assembly (4) is removed from equipment, using hands, put back tube clamp (3), screw (1), and lockwasher (2) so they will not be lost. <p>END OF TASK</p>	

2-92. TUBE CLAMP (MS 9025-5) INSTALLATION PROCEDURE

TOOLS: 7/16" combination wrench

PERSONNEL: One

FRAME 1		
Step	Procedure	
1.	Using hands, remove tube clamp (1), screw (2), and lockwasher (3) from equipment.	
2.	Using hands, spread tube clamp (1).	
3.	Push tube clamp (1) on tube assembly (4) to be installed.	
4.	Using wrench, attach two tube clamps (1) and two tube assemblies (4) to equipment with screw (2) and lockwasher (3).	
END OF TASK		
		

2-93. TUBE CLAMP (MS 9024-5) (MS 9024-15) REMOVAL PROCEDURE

TOOLS: No. 2 cross tip screwdriver (Phillips)
 3/8" combination wrench

PERSONNEL: One

FRAME 1	
Step	Procedure
1.	Using wrench and screwdriver, remove screw (1), lockwasher (2), and nut (3) holding clamp (4) and clamp (5) to two tube assemblies (6) and (7).
2.	Using hands, spread tube clamp (4) or (5) on tube assembly (6) or (7) to be removed.
3.	Pull tube clamp (4) or (5) off tube assembly (6) or (7) to be removed.
4.	After tube assembly (6) or (7) is removed from equipment, using hands, put back tube clamp (4) or (5), screw (1), lockwasher (2) and nut (3) so they will not be lost.
END OF TASK	

2-94. TUBE CLAMP (MS 9024-5) (MS 9024-15) INSTALLATION PROCEDURE

TOOLS: No. 2 cross tip screwdriver (Phillips)
 3/8" combination wrench

PERSONNEL: One

FRAME 1	
Step	Procedure
<ol style="list-style-type: none"> 1. Using hands, remove tube clamp (1), screw (2), lockwasher (3), and nut (4). 2. Using hands, spread tube clamp (1). 3. Push tube clamp (1) on tube assembly (5) to be installed. 4. Using wrench and screwdriver, attach two tube clamps (1) to two tube assemblies (5) with screw (2), lockwasher (3), and nut (4). <p>END OF TASK</p>	

2-95. TUBE CLAMP (1094081) REMOVAL PROCEDURE

TOOLS: 9/16" combination wrench

PERSONNEL: One

FRAME 1

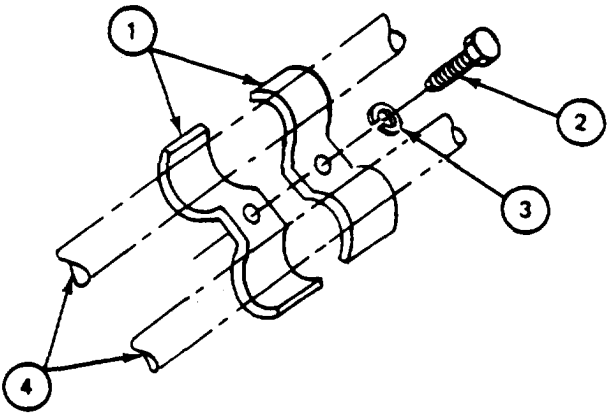
Step	Procedure
<ol style="list-style-type: none"> 1. Using wrench, remove screw (1) and lockwasher (2) holding two tube clamps (3) to equipment. 2. Using hands, remove two tube clamps (3) from tube assemblies (4). 3. After tube assembly (4) is removed, using hands, put back two tube clamps (3), screw (1), and lockwasher (2) so they will not be lost. <p>END OF TASK</p>	

2-96. TUBE CLAMP (1094081) INSTALLATION PROCEDURE

TOOLS: 9/16" combination wrench

PERSONNEL: One

FRAME 1

Step	Procedure
<ol style="list-style-type: none"> 1. 2. 3. 	<p>Using hands, remove two tube clamps (1), screw (2), and lockwasher (3) from equipment.</p> <p>Put tube assembly (4) to be installed in two tube clamps (1).</p> <p>Using wrench, attach two tube clamps (1) and two tube assemblies (4) to equipment with screw (2) and lockwasher (3).</p> <p>END OF TASK</p>
	

2-97. TUBE CLAMP (MS 9025-5) (MS 9025-15) REMOVAL PROCEDURE

TOOLS: 7/16" combination wrench (two)

PERSONNEL: One

FRAME 1	
Step	Procedure
1.	Using two wrenches, remove screw (1), lockwasher (2), and nut (3) holding clamp (4) and clamp (5) to two tube assemblies (6) and (7).
2.	Using hands, spread tube clamp (4) or (5) on tube assembly (6) or (7) to be removed.
3.	Pull tube clamp (4) or (5) off tube assembly (6) or (7) to be removed.
4.	After tube assembly (6) or (7) is removed from equipment, using hands, put back tube clamps (4) or (5), screw (1), lockwasher (2), and nut (3) so they will not be lost.
END OF TASK	

2-98. TUBE CLAMP (MS 9025-5) MS 9025-15) INSTALLATION PROCEDURE

TOOLS: 7/16" combination wrench (two)

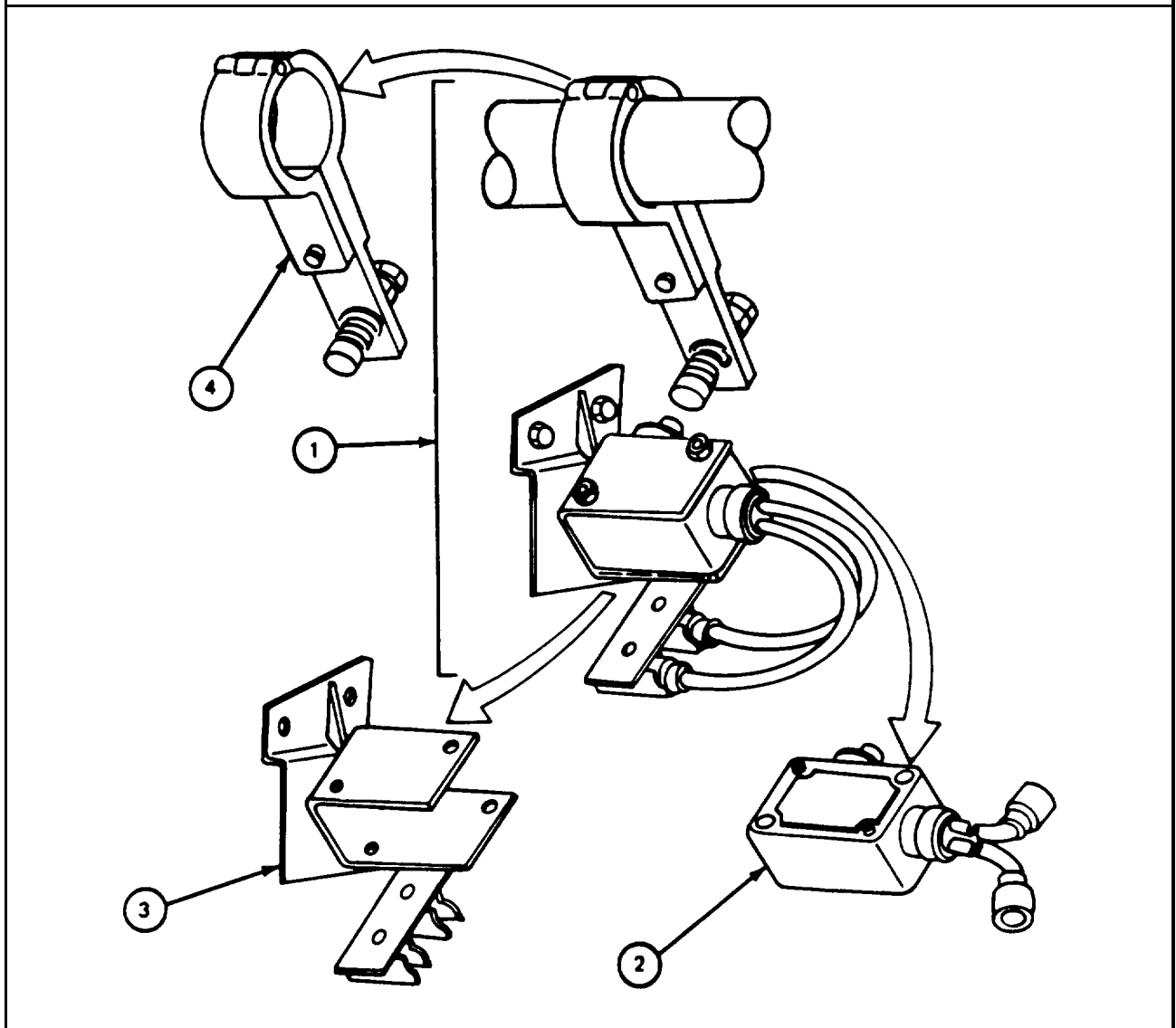
PERSONNEL: One

FRAME 1	
Step	Procedure
<ol style="list-style-type: none"> 1. Using hands, remove tube clamp (1), screw (2), lockwasher (3), and nut (4). 2. Using hands, spread tube clamp (1). 3. Put tube clamp (1) on tube assembly (5) to be installed. 4. Using two wrenches, attach two tube clamps (1) to two tube assemblies (5) with screw (2), lockwasher (3), and nut (4). <p>END OF TASK</p>	

Section 16. GUN ELEVATION INTERFERENCE SWITCH

2-99. MAINTENANCE PROCEDURES INDEX

Equipment Item	Adjustment	Tasks Removal	Installation
1. Gun Elevation Interference Switch	2-100	...	...
2. Switch	...	2-101	2-102
3. Support	...	2-103	2-104
4. Clamp	...	2-105	2-106



2-100. GUN ELEVATION INTERFERENCE SWITCH ADJUSTMENT PROCEDURE

TOOLS: 7/16" box end wrench

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedure to manually elevate and depress gun and traverse turret

EQUIPMENT LOCATION INFORMATION:

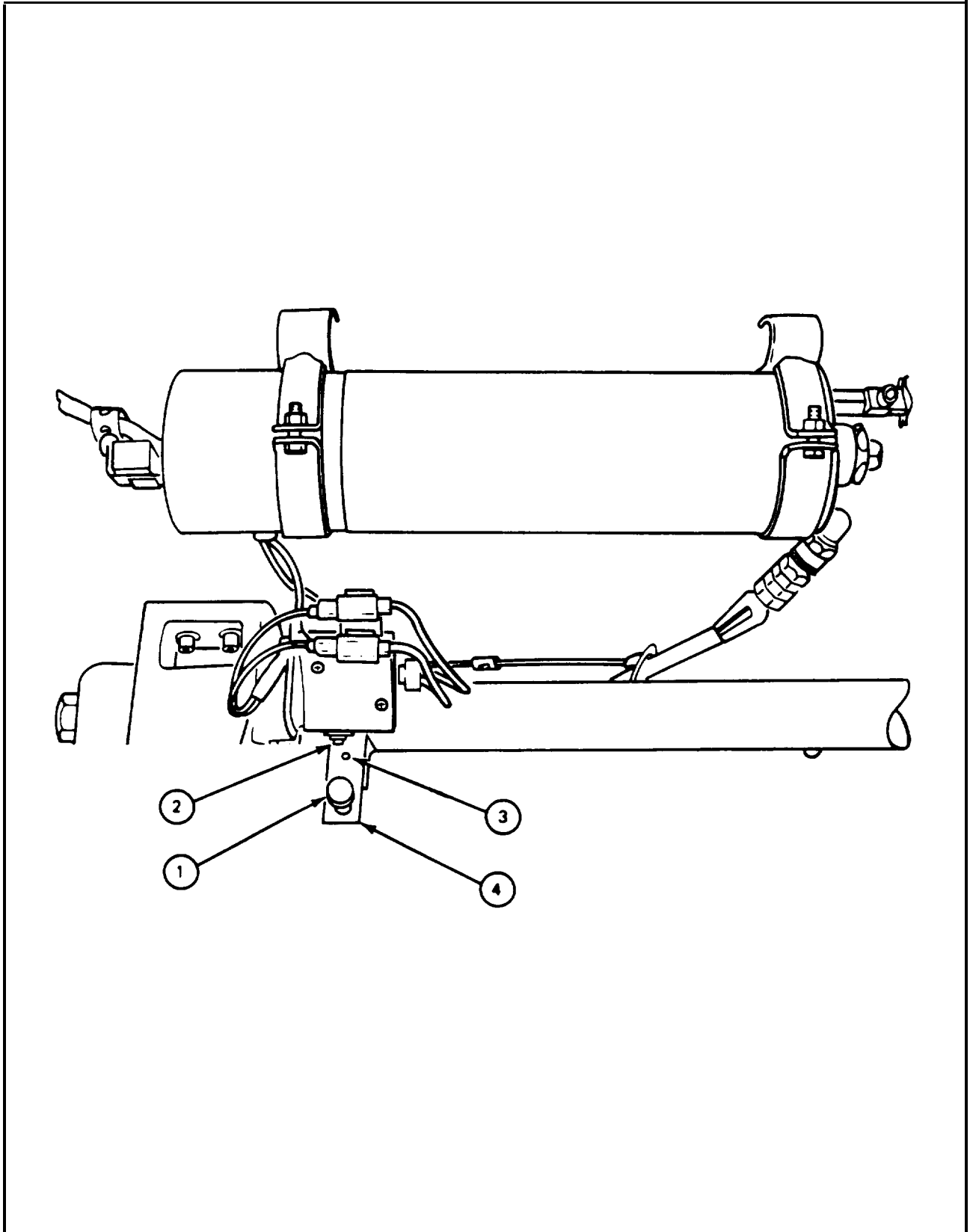
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gun Elevation Interference Switch	FO-4	2

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

FRAME 1	
Step	Procedure
1.	Manually traverse turret until gun is over vehicle front slope (TM-10).
2.	Manually position gun to zero elevation (TM-10).
3.	Check to see that plunger (1) is engaging switch (2).
NOTE	
If plunger is not engaging switch, do step 4, otherwise go to step 5.	
4.	Using wrench, loosen screw (3). Turn clamp (4) until switch clicks. Tighten screw (3).
5.	Set MASTER BATTERY and ELEV/TRAV POWER (on gunner's control box) switches to ON.
6.	Fully depress gun (TM- 10).
7.	Slowly traverse turret to rear (TM-10). When gun is approximately 90" from front of tank, gun should automatically elevate.
NOTE	
If gun does not raise enough to clear rear deck. readjust clamp by doing steps 3 thru 7 above. If gun 'does not elevate, adjust traverse limit switch, actuator, and cam (para 3-6).	
END OF TASK	

Para 2-100

2-170



2-101. SWITCH REMOVAL PROCEDURE

TOOLS: 5/16" box end wrench
 Cross tip screwdriver (Phillips)

PERSONNEL: One

REFERENCES: JPG for procedure to disconnect electrical connectors
 TM 9-2350-222-10 for procedure to manually elevate and depress gun

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gun Elevation Interference Switch	FO-4	2

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

FRAME 1	
Step	Procedure
1.	Manually position gun above zero elevation (TM- 10).
2.	Disconnect two electrical connectors (1) (JPG).
3.	Using wrench and screwdriver, remove two screws (2), two lockwashers (3), and two nuts (4).
4.	Remove switch (5) from mounting bracket (6).
5.	Remove connector leads (1) from clamps (7).
END OF TASK	

2-102. SWITCH INSTALLATION PROCEDURE

TOOLS: 5/16" box end wrench
 Cross tip screwdriver (Phillips)

PERSONNEL: One

REFERENCES: JPG for procedure to connect electrical connectors
 TM 9-2350-222-10 for procedure to manually elevate and depress gun

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gun Elevation Interference Switch	FO-4	2

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

FRAME 1	
Step	Procedure
1.	Manually position gun above zero elevation (TM-10).
2.	Place switch (1) on mounting bracket (2).
3.	Put two screws (3) through holes in mounting bracket (2) and switch (1).
4.	Put two lockwashers (4) and two nuts (5) on two screws (3), Using wrench and screwdriver, tighten nuts.
5.	Connect two electrical connectors (6) (JPG).
<p>NOTE</p> <p>Follow-on Maintenance Action Required:</p> <p>Check switch adjustment (para 2-100).</p> <p>END OF TASK</p>	

2-103. SUPPORT REMOVAL PROCEDURE

TOOLS: Cross tip screwdriver (Phillips)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT
Gun Elevation Interference Switch

FOLDOUT
FO-4

CALLOUT
2

PRELIMINARY PROCEDURES: Remove switch (para 2-101)

FRAME 1	
Step	Procedure
<ol style="list-style-type: none"> 1. Using screwdriver, remove two screws (1) and two lockwashers (2). 2. Remove support (3). <p>END OF TASK</p>	<p>The diagram illustrates the removal of a support plate from a gun elevation interference switch. A screwdriver is shown removing two screws (1) and two lockwashers (2) from the support plate (3). The support plate is shown being lifted away from the switch mechanism.</p>

Para 2-103

2-174

2-104. SUPPORT INSTALLATION PROCEDURE

TOOLS: Cross tip screwdriver (Phillips)

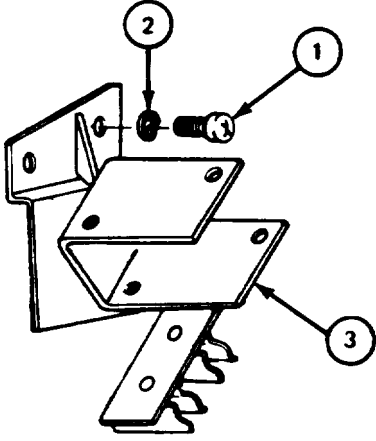
PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT
Gun Elevation Interference Switch

FOLDOUT
FO-4

CALLOUT
2

FRAME 1	
Step	Procedure
<ol style="list-style-type: none"> 1. 2. 	<p>Put two screws (1) and two lockwashers (2) through holes in support (3) and into holes for mounting support.</p> <p>Using screwdriver, tighten screws (1).</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Follow-on Maintenance Action Required: Install switch (para 2-102).</p> <p>END OF TASK</p>
 <p>The diagram illustrates the assembly step. It shows a mounting bracket on the left with two holes. A support plate (3) is being aligned with these holes. Two screws (1) and two lockwashers (2) are being inserted through the support plate into the bracket's holes. Arrows point from callouts 1, 2, and 3 to the respective parts.</p>	

2-105. CLAMP REMOVAL PROCEDURE

TOOLS: 7/16" box end wrench

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

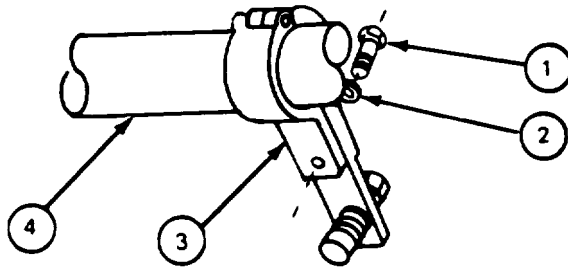
EQUIPMENT
Gun Elevation Interference Switch

FOLDOUT
FO-4

CALLOUT
2

FRAME 1

Step	Procedure
1.	Using wrench, remove screw (1) and lockwasher (2) that holds clamp (3) to cross shaft (4).
2.	Remove clamp (3) from cross shaft (4). END OF TASK



2-106. CLAMP INSTALLATION PROCEDURE

TOOLS: 7/16" box end wrench

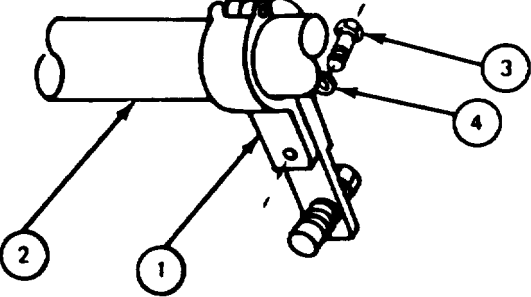
PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT
Gun Elevation Interference Switch

FOLDOUT
FO-4

CALLOUT
2

FRAME 1	
Step	Procedure
1.	Put clamp (1) on cross shaft (2).
2.	Using wrench, put in screw (3) and lockwasher (4).
<p>NOTE</p> <p>Follow-on Maintenance Action Required:</p> <p>Adjust gun elevation interference switch (para 2-100).</p> <p>END OF TASK</p>	
	

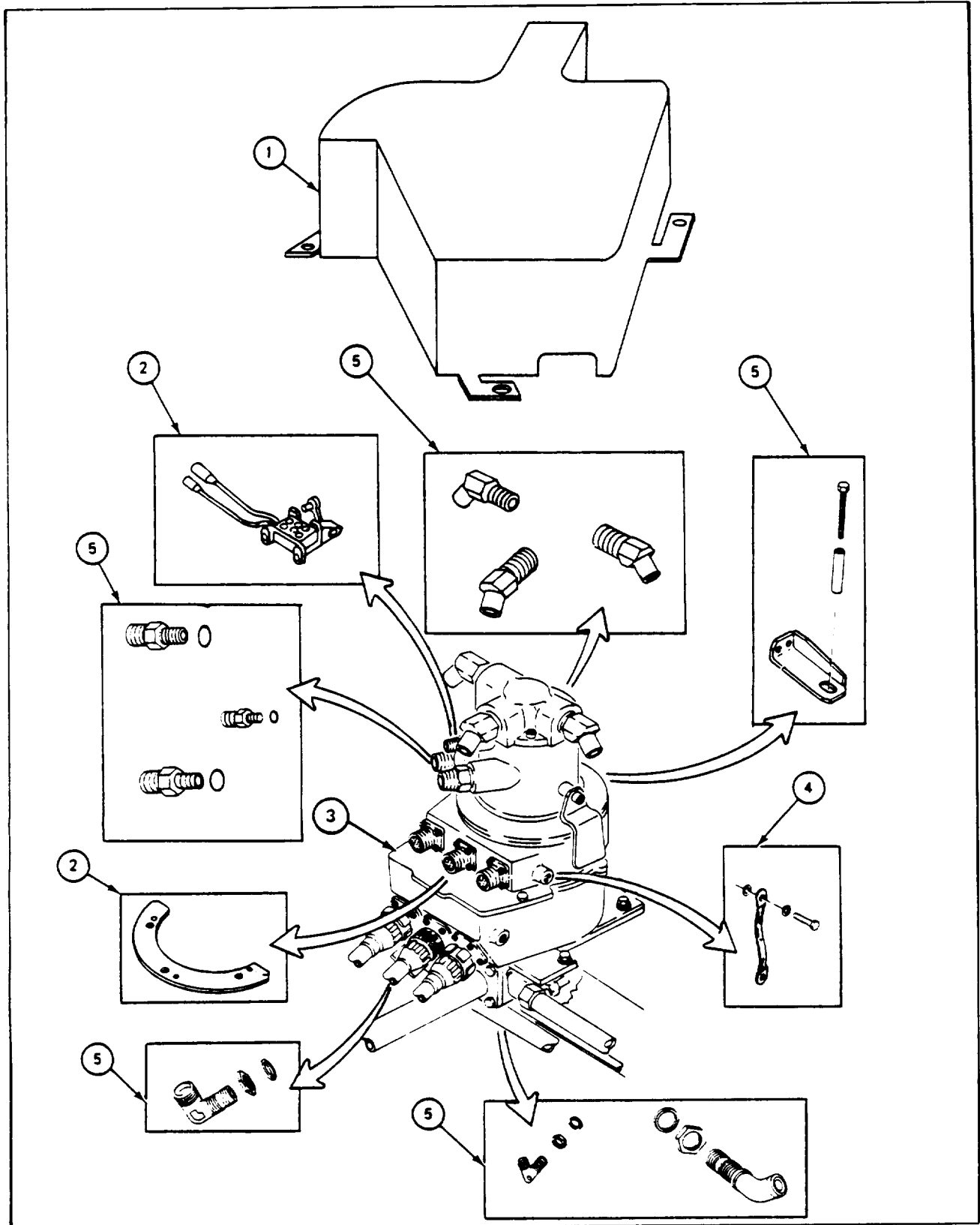
CHAPTER 3
TURRET ELECTRICAL SLIPRING

3-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Tasks		
	Removal	Installation	Adjustment
1. Cover	3-2	3-3	...
2. Traverse Limit Switch, Actuator, and Cam	3-4	3-5	3-6
3. Turret Electrical Slipring	3-7	3-8	...
4. Ground Strap	3-9	3-10	...
5. Bracket and Fittings	3-11	3-12	...

Para 3-1

3-2



3-2. COVER REMOVAL PROCEDURE

TOOLS: 3/8" drive ratchet
 7/16" socket (3/8" drive)
 9/16" socket (3/8" drive)

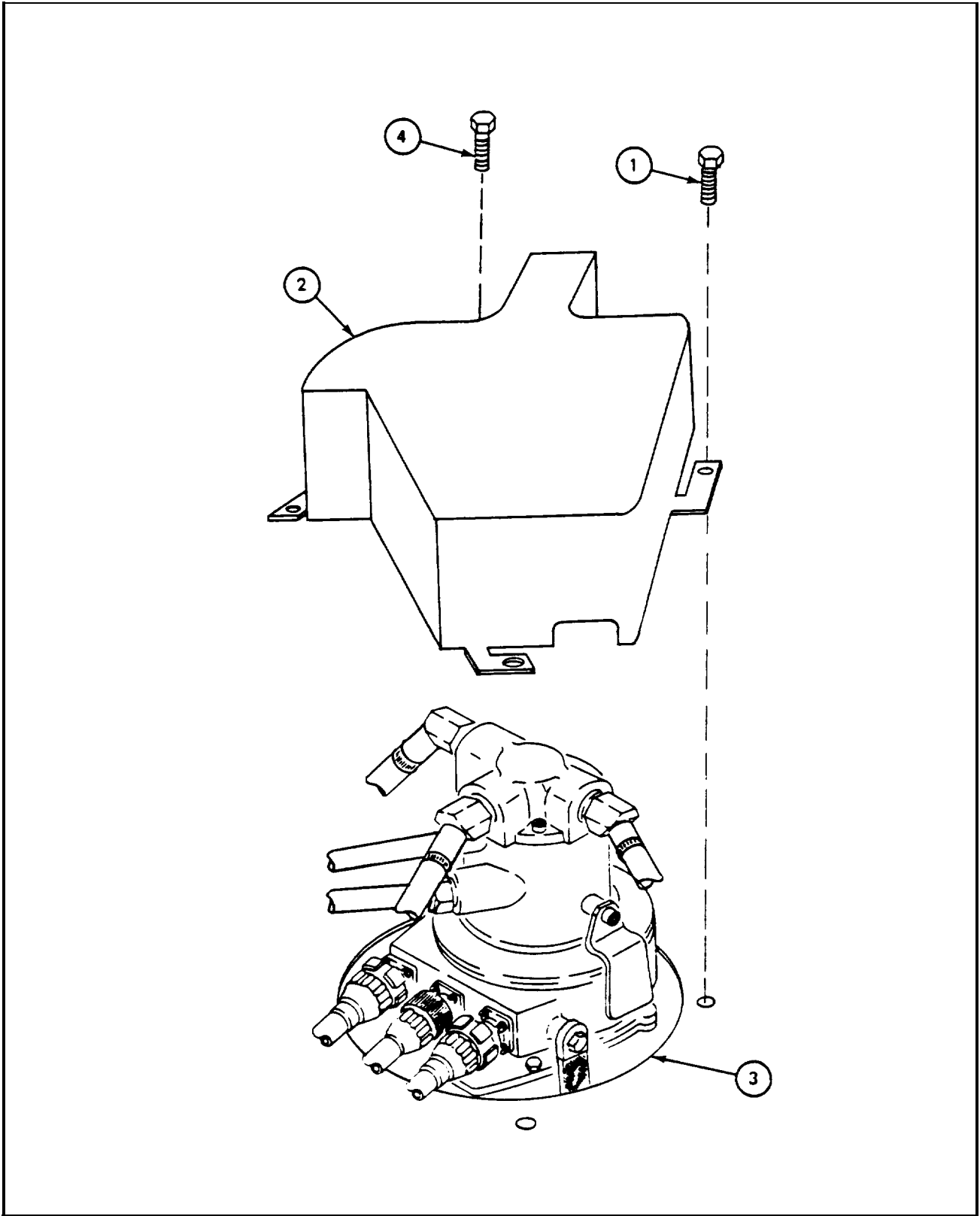
PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

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

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

FRAME 1	
Step	Procedure
1.	Using 7/16" socket wrench, remove four screws (1) from cover (2) and turret floor (3).
2.	Using 9/16" socket wrench, remove screw (4) and cover (2) from turret floor (3).
	END OF TASK



3-3. COVER INSTALLATION PROCEDURE

TOOLS: 9/16" socket (3/8" drive)
 7/16" socket (3/8" drive)
 3/8" drive ratchet

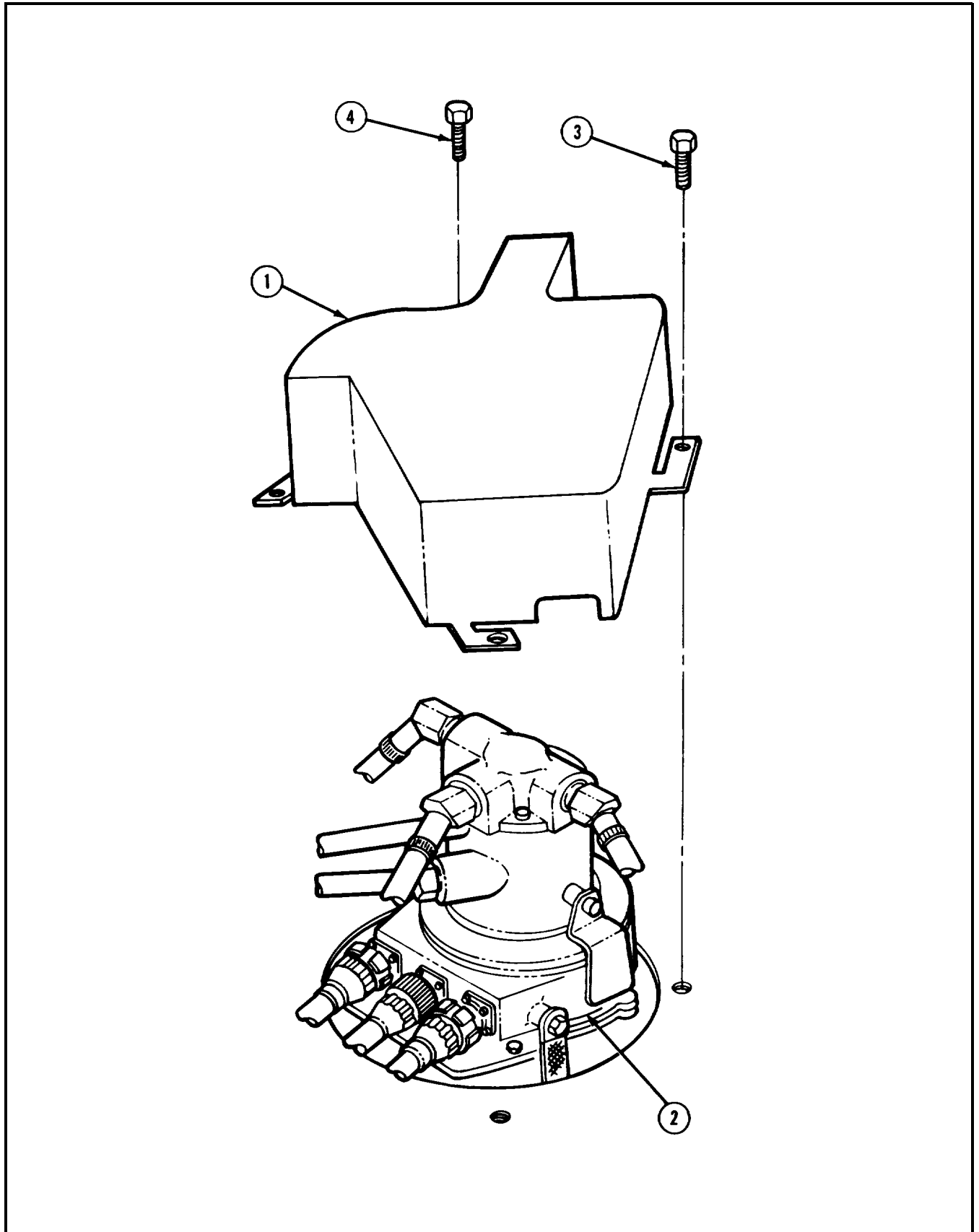
PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

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

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 cover (1) over slipping (2). Line up five holes in cover with five holes in turret floor.
2.	Using 7/16" wrench, install four screws (3) in cover (1) and turret floor.
3.	Using 9/16" wrench, attach cover (1) to turret floor with screw (4).
	END OF TASK



3-4. TRAVERSE LIMIT SWITCH, ACTUATOR, AND CAM REMOVAL PROCEDURE

TOOLS: Flat tip screwdriver
 7/16 in. socket (3/8 in. drive)
 3/8 in. drive ratchet
 Cross tip screwdriver (Phillips) #2

PERSONNEL: One

REFERENCES: JPG for procedure to disconnect electrical connectors

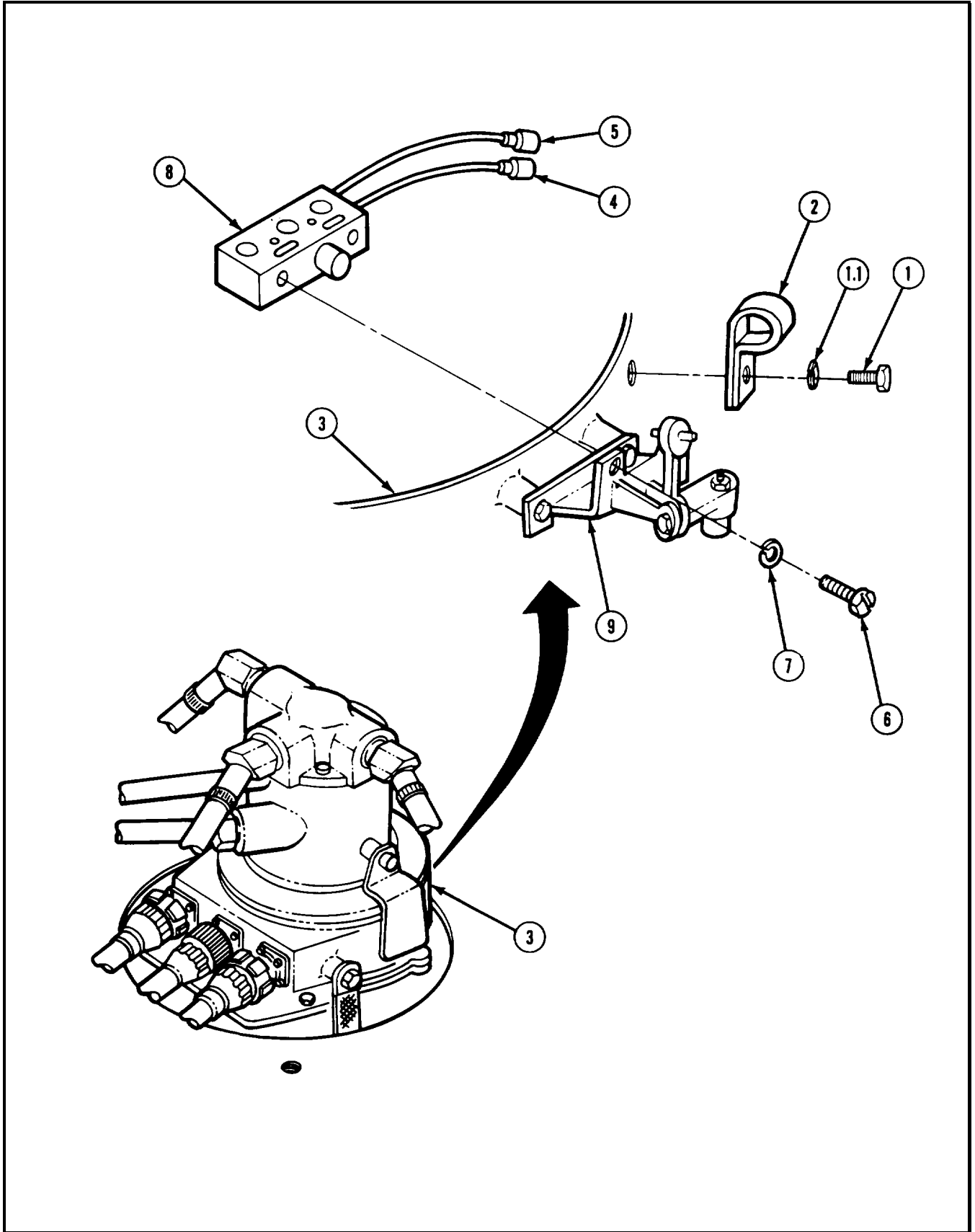
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Electrical Slipping	FO-4	11

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

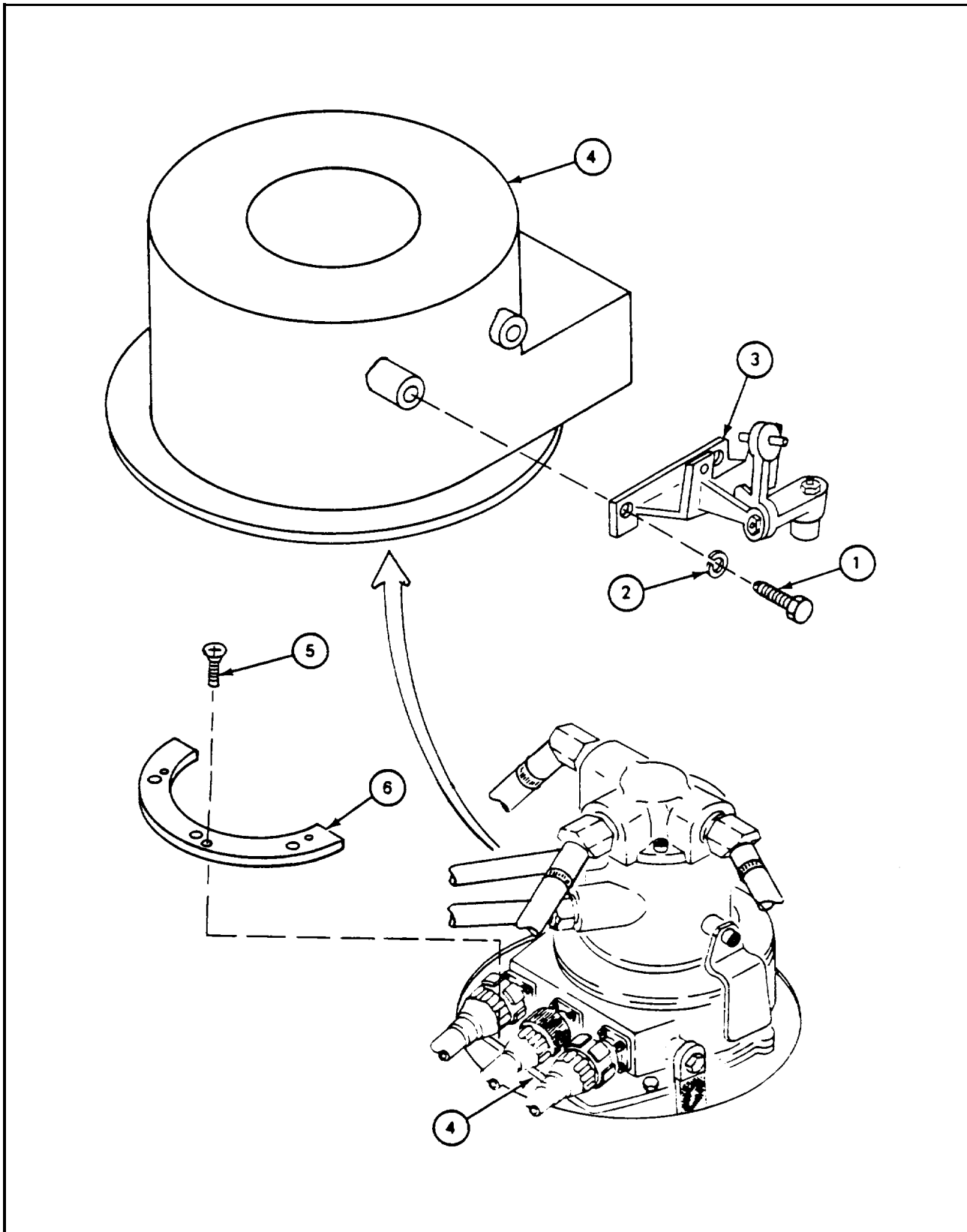
PRELIMINARY PROCEDURES: Remove cover (para 3-2)

FRAME 1	
STEP	PROCEDURE
1.	Using socket, remove screw (1), lockwasher (1.1), and clamp (2) from slipping (3).
2.	Disconnect electrical connectors (4) and (5) (JPG).
3.	Using flat tip screwdriver, remove two screws (6), two lockwashers (7), and switch (8) from actuator bracket (9).
	GO TO FRAME 2



3-4. TRAVERSE LIMIT SWITCH, ACTUATOR, AND CAM REMOVAL PROCEDURE (CONT)

FRAME 2	
STEP	PROCEDURE
1.	Using socket, remove two screws (1), two lockwashers (2), and actuator (3) from slipring (4).
2.	Using cross tip screwdriver, remove three screws (5) and cam (6) from slipring (4).
	END OF TASK



Para 3-4 Cont
3-11/(3-12 blank)

3-5. TRAVERSE LIMIT SWITCH, ACTUATOR, AND CAM INSTALLATION PROCEDURE

TOOLS: Flat tip screwdriver
 3/8 in. drive ratchet
 7/16 in. socket (3/8 in. drive)
 Cross tip screwdriver (Phillips) # 2

PERSONNEL One

REFERENCES: JPG for procedures to connect electrical connectors

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 cover (para 3-2)

3-5. TRAVERSE LIMIT SWITCH, ACTUATOR, AND CAM INSTALLATION PROCEDURE (CONT)

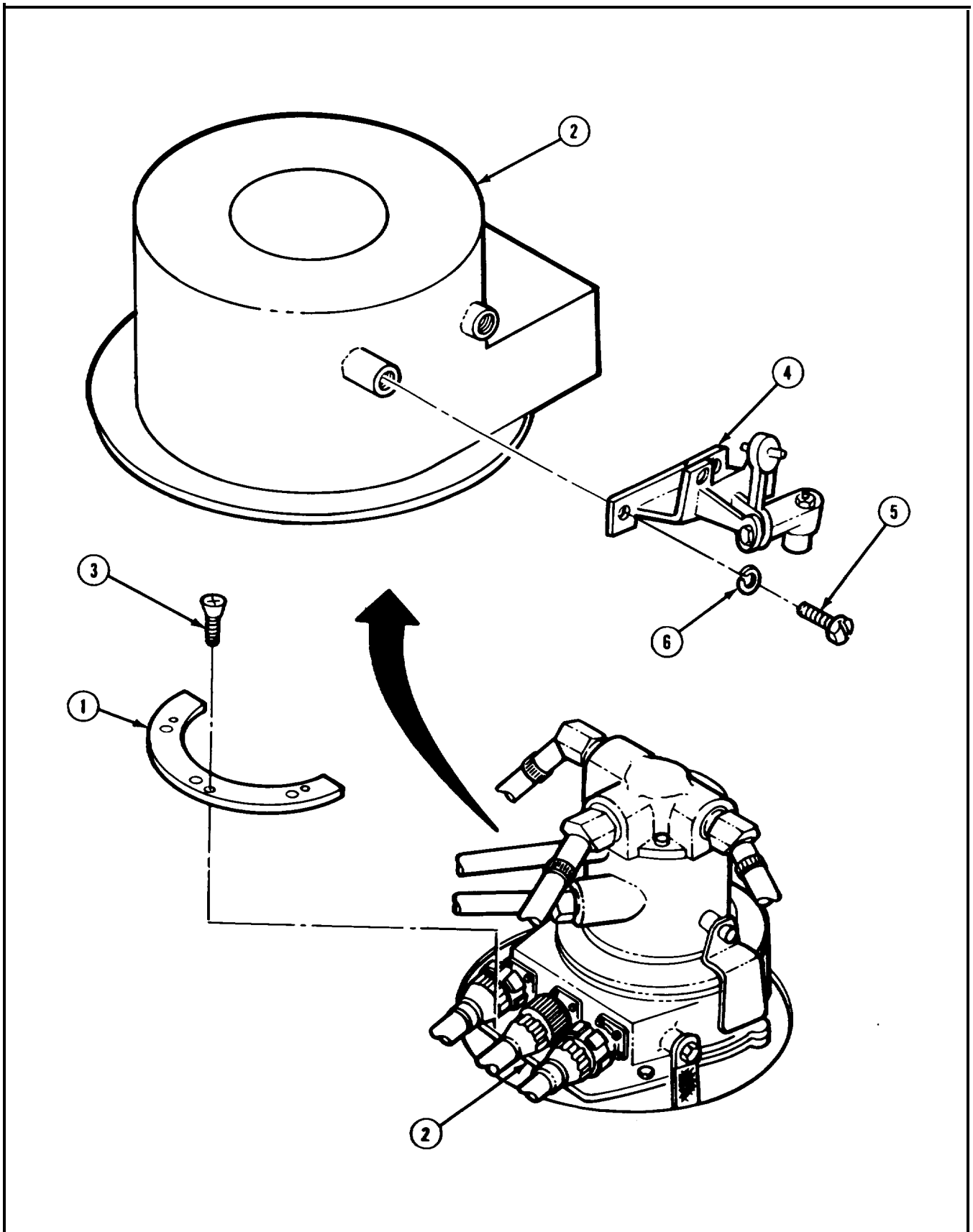
FRAME 1

STEP

PROCEDURE

1. Put cam (1) on slipring (2). Line up three small holes in cam with three holes in slipring.
2. Using cross tip screwdriver, attach cam (1) to slipring (2) with three screws (3).
3. Using socket, attach actuator (4) to slipring (2) with two screws (5) and two lockwashers (6).

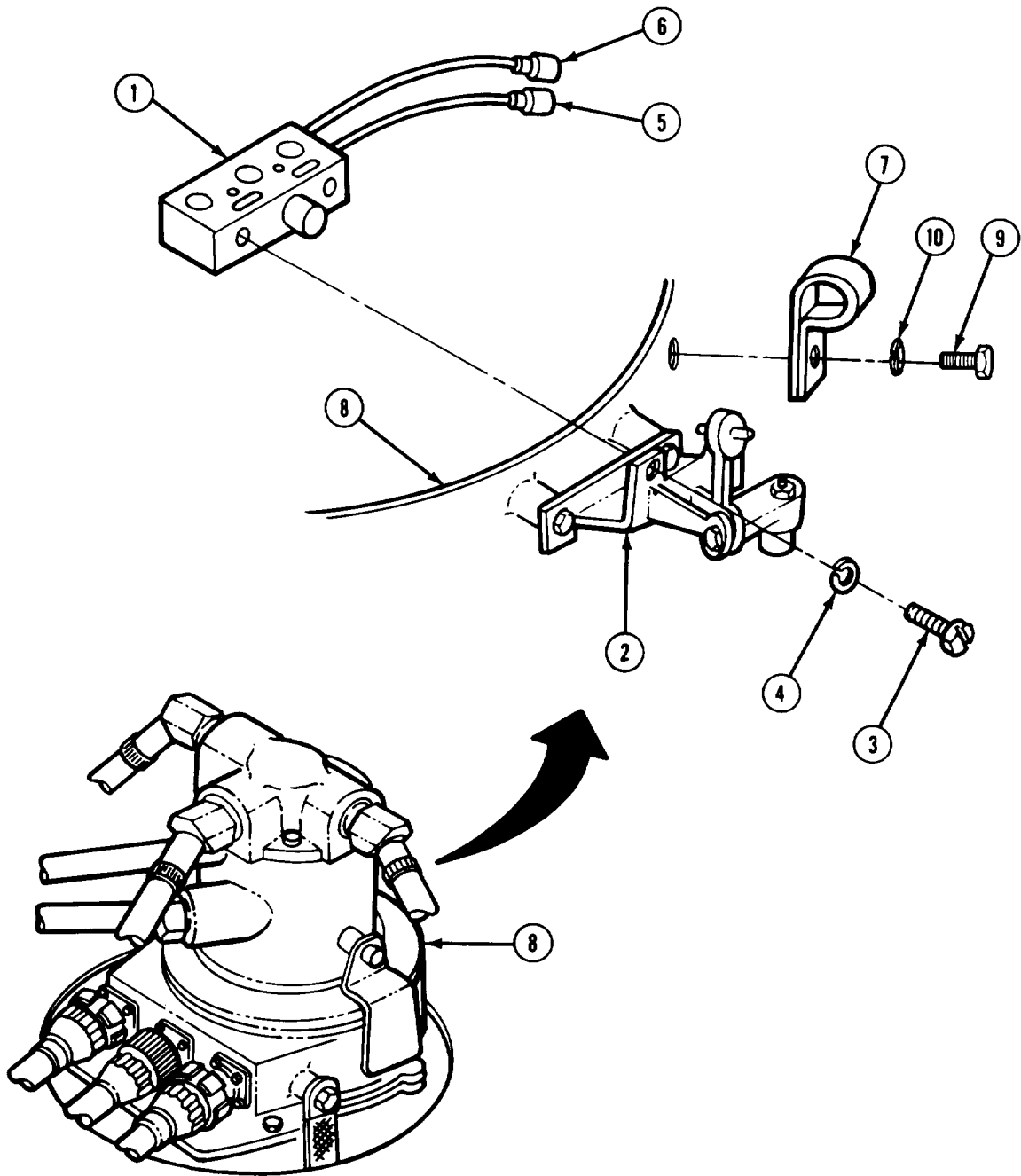
GO TO FRAME 2



3-5. TRAVERSE LIMIT SWITCH, ACTUATOR, AND CAM INSTALLATION PROCEDURE (CONT)

FRAME 2

STEP	PROCEDURE
1.	Using flat tip screwdriver, attach switch (1) to actuator bracket (2) with two screws (3) and two lockwashers (4).
2.	Connect electrical connectors (5) and (6) (JPG).
3.	Put clamp on electrical leads for connectors (5) and (6). Lay electrical leads flat on slipring (8).
4.	Using wrench, attach clamp (7) to slipring (8) with screw (9) and lockwasher (10).
NOTE	
Follow-on Maintenance Action Required:	
Adjust traverse limit switch, actuator and cam (para 3-6).	
END OF TASK	



3-6. TRAVERSE LIMIT SWITCH, ACTUATOR, AND CAM ADJUSTMENT PROCEDURE

TOOLS: 3/32" socket head screw key (Allen wrench)
 3/8" combination wrench
 Multimeter

PERSONNEL: One

REFERENCES: JPG for procedures to:
 Use multimeter
 Disconnect and connect electrical connectors
 TM 9-2350-222-10 for procedures to:
 Manually traverse turret
 Depress and 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
Turret Electrical Slipping	F0-4	11

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

PRELIMINARY PROCEDURES: Remove cover (para 3-2)

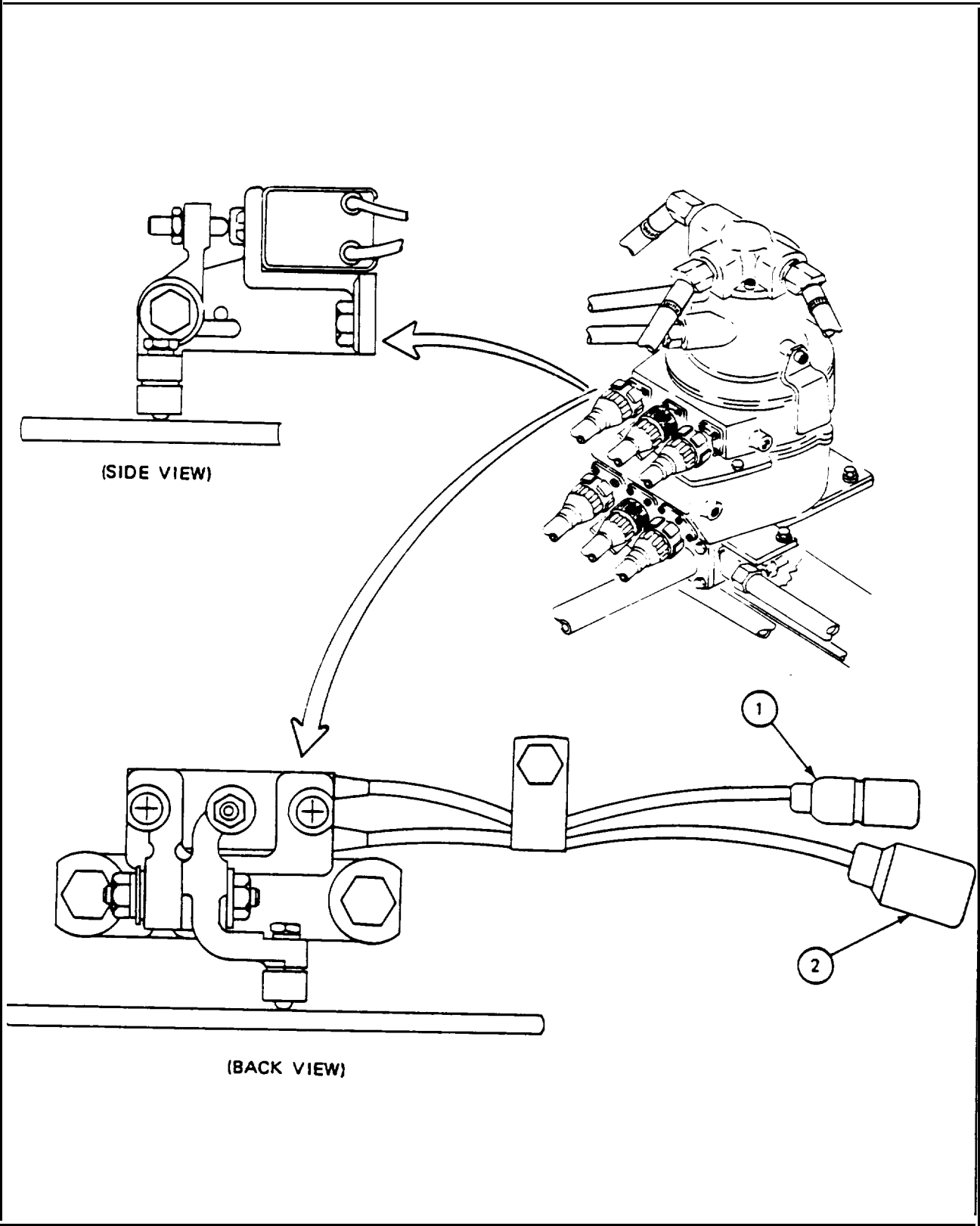
GENERAL INSTRUCTIONS:

NOTE

If normal indication is not obtained, switch is bad. Replace bad switch (para 3-4 and 3-5).

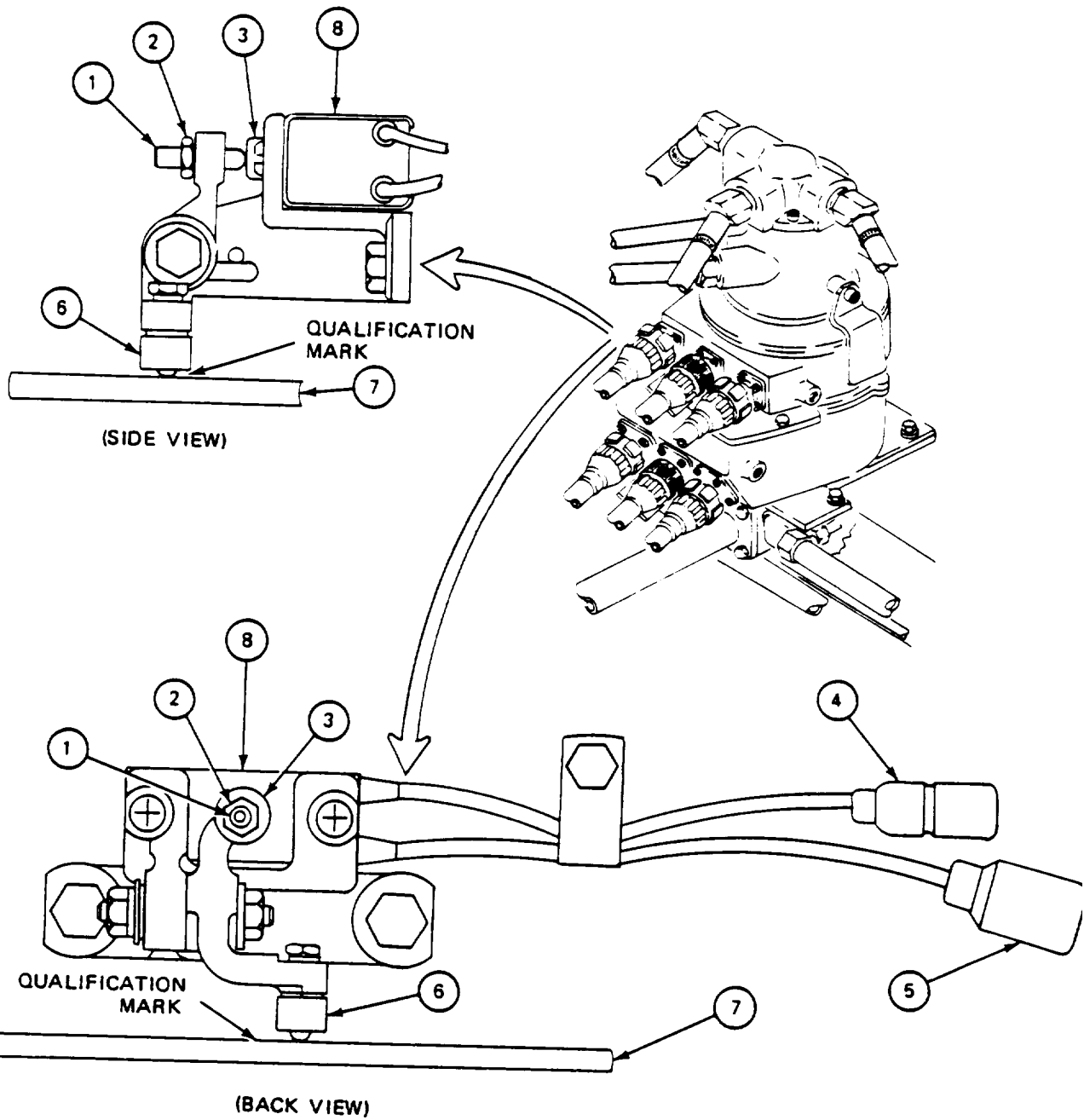
**3-6. TRAVERSE LIMIT SWITCH, ACTUATOR, AND CAM ADJUSTMENT
PROCEDURE (CONT)**

FRAME 1	
Step	Procedure
1.	Manually traverse turret until main gun is pointed over front of vehicle (TM-10).
2.	Set turret traverse lock to LOCKED (TM-10).
3.	Manually elevate main gun above 0 degrees elevation (TM-10).
4.	Disconnect electrical connectors (1) and (2) (JPG).
	GO TO FRAME 2



**3-6. TRAVERSE LIMIT SWITCH, ACTUATOR, AND CAM ADJUSTMENT
PROCEDURE (CONT)**

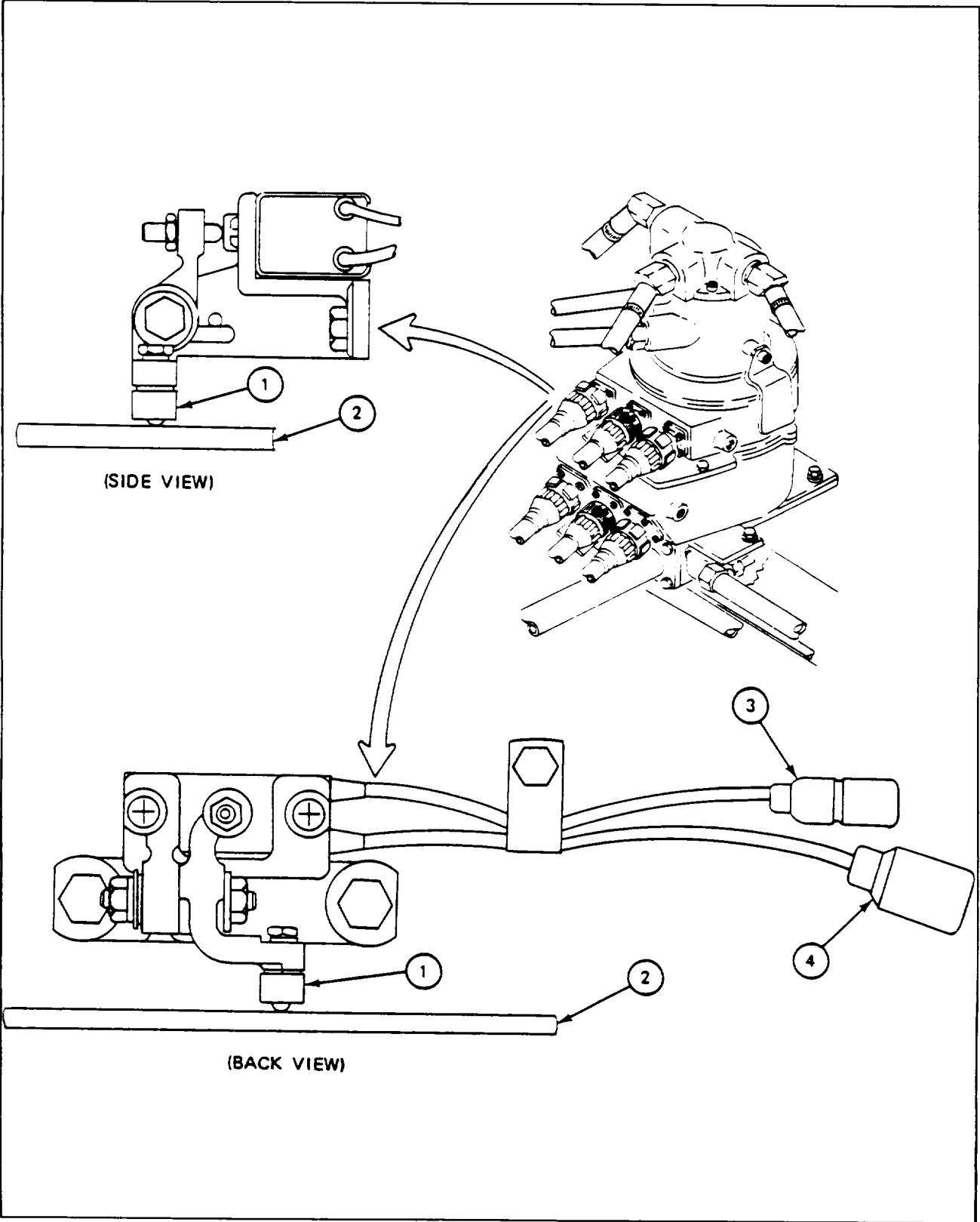
Step	Procedure	Normal Indication
1.	Using Allen wrench to hold adjusting screw (1) and combination wrench to turn locknut (2), loosen locknut.	. . .
2.	Using Allen wrench, turn adjusting screw (1) counterclockwise until adjusting screw is not touching plunger (3).	. . .
3.	Using multimeter, check continuity between electrical connectors (4) and (5) (JPG).	More than 10 million ohms
4.	Manually traverse turret to the left until cam follower roller (6) is lined up with qualification mark on cam (7) (TM-10).	. . .
5.	Set turret traverse lock to LOCKED (TM- 10).	. . .
NOTE		
When switch operates, it should make a clicking sound.		
6.	Using Allen wrench, turn adjusting screw (1) clockwise until adjusting screw pushes in against plunger (3) far enough to operate switch (8).	Switch (8) clicks
7.	Using multimeter, check continuity between electrical connectors (4) and (5) (JPG).	Less than 2 ohms
8.	Using Allen wrench, turn adjusting screw (1) clockwise about 1/8 turn.	. . .
9.	Using Allen wrench to hold adjusting screw (1) and combination wrench to turn locknut (2), tighten locknut. GO TO FRAME 3	



NOTE: QUALIFICATION MARK IS GROVE CUT IN TOP OF CAM (7).

**3-6. TRAVERSE LIMIT SWITCH, ACTUATOR, AND CAM ADJUSTMENT
PROCEDURE (CONT)**

FRAME 3		
Step	Procedure	Normal Indication
1.	Manually traverse turret forward until cam follower roller (1) is not touching cam (2) (TM- 10).	. . .
2.	Set turret traverse lock to LOCKED (TM-10).	. .
3.	Using multimeter, check continuity between electrical connectors (3) and (4) (JPG).	More than 10 million ohms
4.	Manually traverse turret to right until cam follower roller (1) rides up on cam (2) (TM-10).	. . .
5.	Set turret traverse lock to LOCKED (TM-10).	. . .
6.	Using multimeter, check continuity between electrical connectors (3) and (4) (JPG).	Less than 2 ohms
7.	Manually traverse turret to left until gun points over front of vehicle (TM-10).	. . .
8.	Set turret traverse lock to LOCKED (TM-10).	. . .
9.	Connect electrical connectors (3) and (4) (JPG).	. . .
NOTE		
Follow-on Maintenance Action Required:		
Install cover (para 3-3).		
END OF TASK		



3-7. TURRET ELECTRICAL SLIPRING REMOVAL PROCEDURE

TOOLS: Flat tip screwdriver
3/8" drive ratchet
5/16" socket (3/8" drive)
11/16" open end wrench
16" adjustable wrench
Adjustable hook spanner wrench
Diagonal cutting pliers
Long round nose pliers
9/16" socket (3/8" drive)
1/2" socket (3/8" drive)
6" extension (3/8" drive)
7/16" combination wrench
9/16" combination wrench

SUPPLIES: Masking tape
Caps (three) for air fittings
Caps (six) for hydraulic fittings
Caps (six) for electrical connectors
Plugs (three) for air hoses
Caps (six) for hydraulic tubes

PERSONNEL: Two

REFERENCES: JPG for procedures to:
Disconnect electrical connectors
Use spanner wrench
Remove lockwire
TM 9-2350-222-10 for procedures to:
Traverse turret manually
Set turret traverse lock to LOCKED
Operate SELECTOR VALVE control lever

EQUIPMENT LOCATION INFORMATION:

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

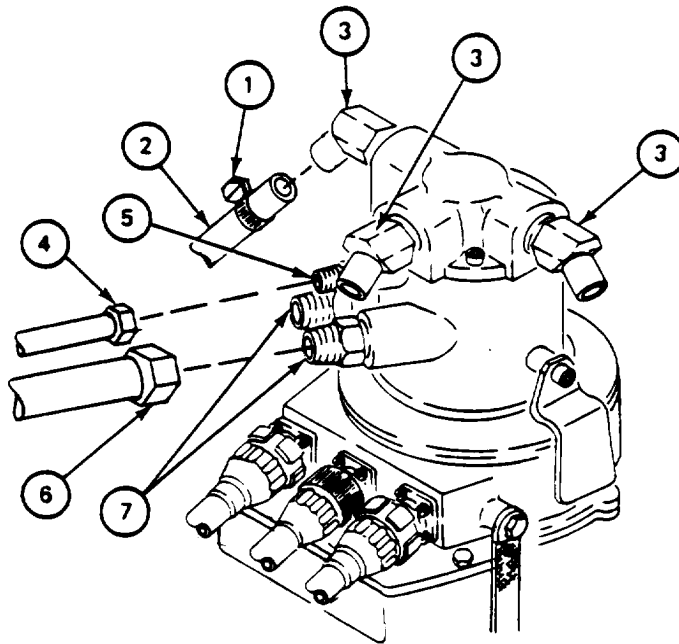
EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Turret traverse lock set to LOCKED
SELECTOR VALVE control lever set to HULL (TM-10)

PRELIMINARY PROCEDURES: Remove cover (para 3-2)

3-7. TURRET ELECTRICAL SLIPRING REMOVAL PROCEDURE (CONT)

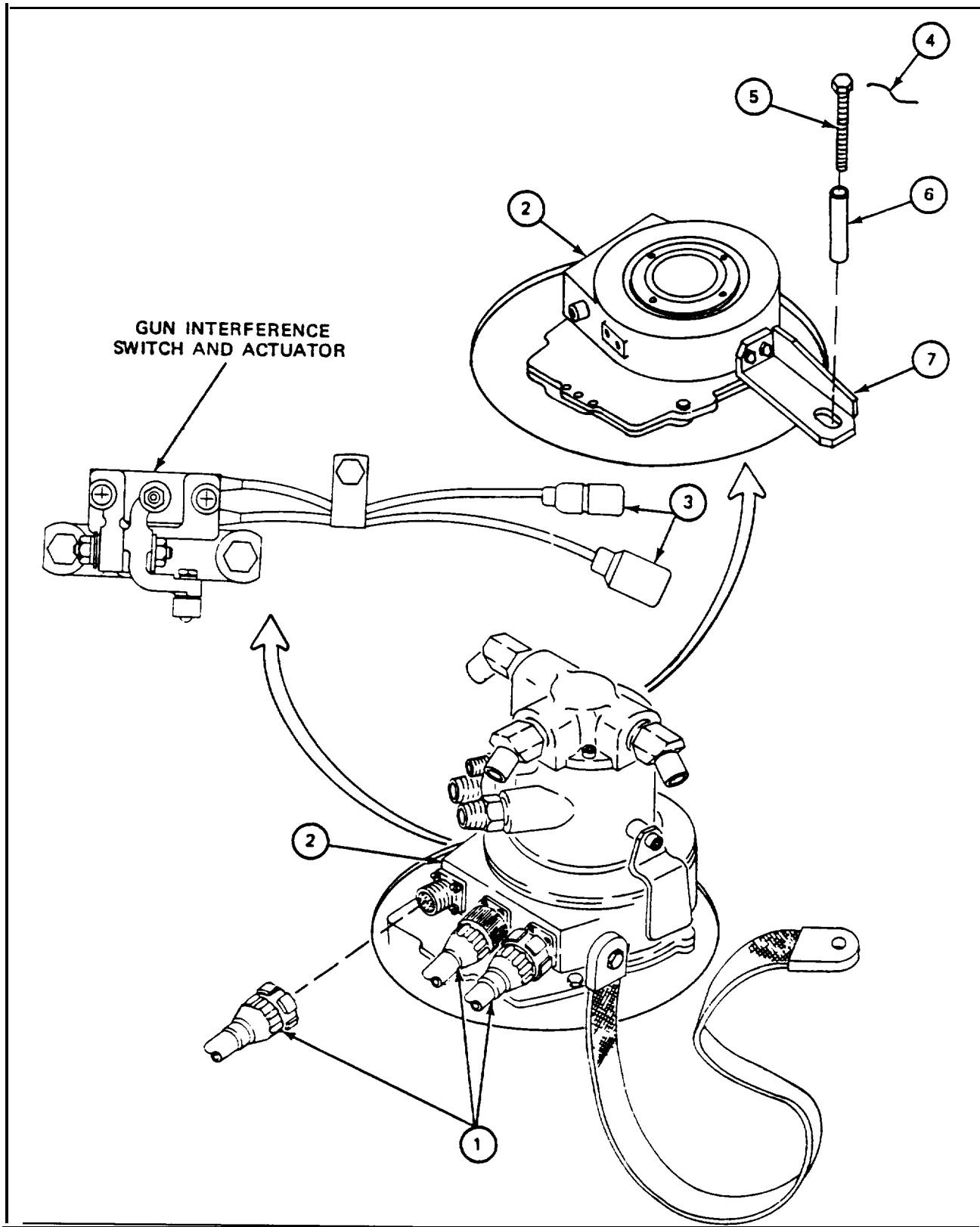
FRAME 1

Step	Procedure
1.	Using 5/16" socket wrench or screwdriver, loosen three clamps (1). Remove three hoses (2) from three fittings (3).
2.	Put caps on three fittings (3). Put plugs in three hoses (2).
3.	Using 11/16" wrench, remove tube (4) from fitting (5).
4.	Put caps on tube (4) and fitting (5).
5.	Using adjustable wrench, remove two tubes (6) from two fittings (7).
6.	Put caps on two tubes (6) and two fittings (7). GO TO FRAME 2



3-7. TURRET ELECTRICAL SLIPRING REMOVAL PROCEDURE (CONT)

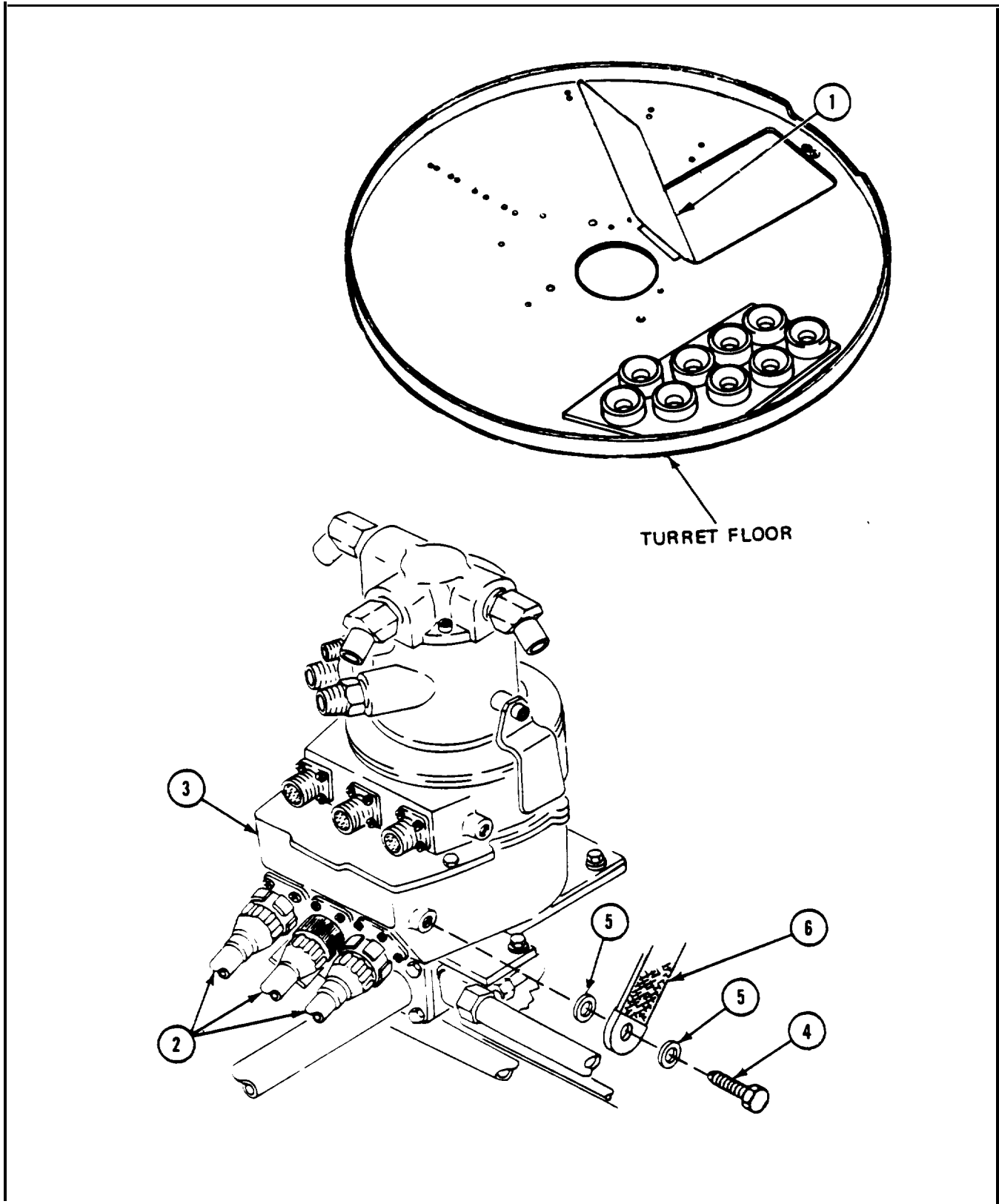
FRAME 2	
Step	Procedure
1.	Using spanner wrench, disconnect three electrical connectors (1) from slipring (2). Put caps on three electrical connectors (JPG).
2.	Disconnect two electrical connectors (3) (JPG).
3.	Using diagonal cutting pliers and long round nose pliers, remove lockwire (4) from screw (5) and slipring (2) (JPG).
4.	Using 9/16" socket wrench, remove screw (5) and spacer sleeve (6) from bracket (7) and turret floor.
GO TO FRAME 3	



GUN INTERFERENCE SWITCH AND ACTUATOR

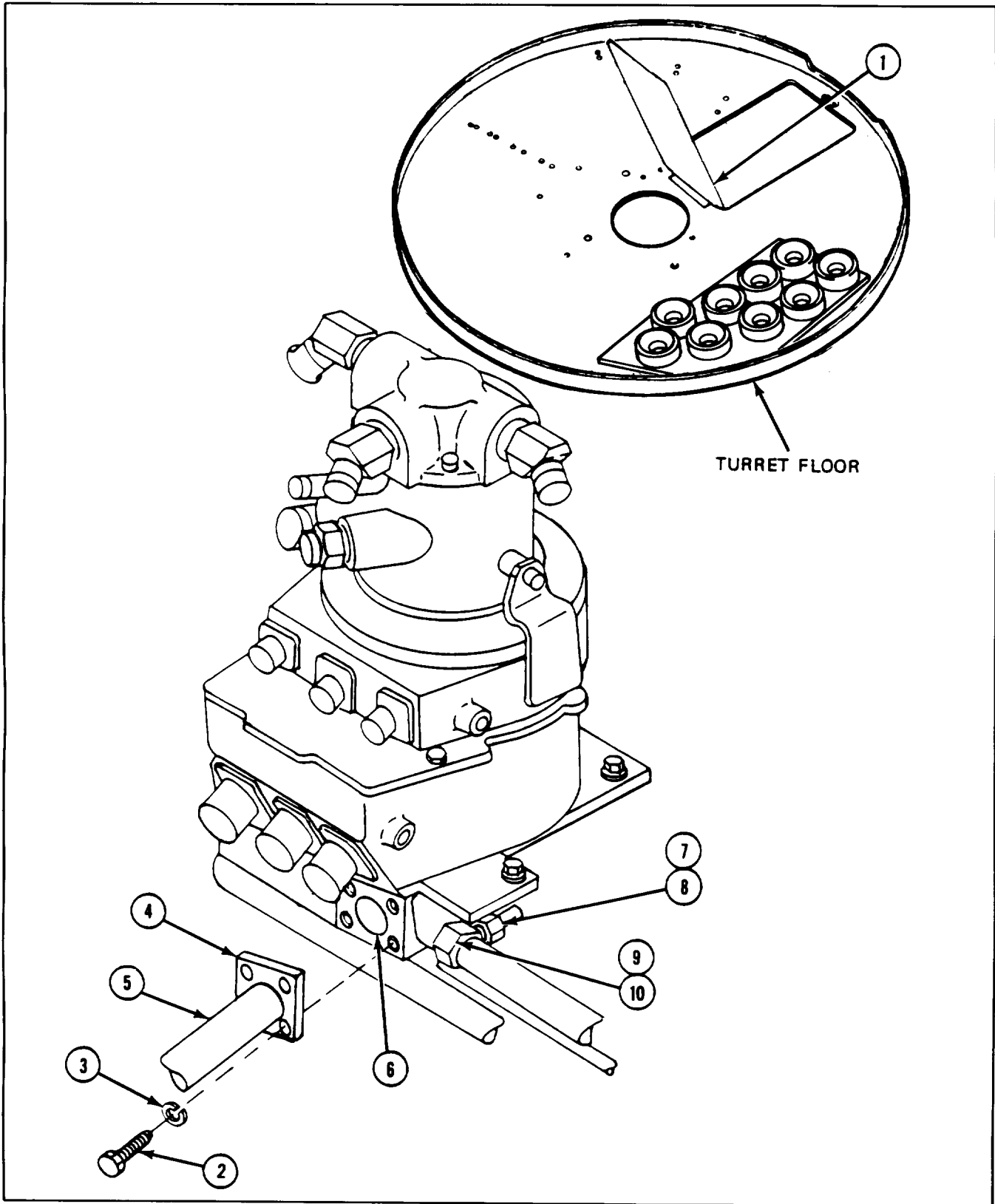
3-7. TURRET ELECTRICAL SLIPRING REMOVAL PROCEDURE (CONT)

FRAME 3	
Step	Procedure
	<p style="text-align: center;">NOTE</p> <p style="text-align: center;">To do the following steps, you should look down and reach through openings in turret floor. Parts are shown as they would look with turret floor removed.</p> <ol style="list-style-type: none"> 1. Soldier A: Raise access door (1). Hold door up in open position. 2. Soldier B: Manually traverse turret until three electrical connectors (2) can be reached through openings in turret floor (TM-10). <div style="text-align: center; border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>WARNING</p> </div> <p style="text-align: center;">Be sure turret traverse lock is set to LOCKED before reaching down below turret floor. If turret traverse lock is not set to LOCKED, turret could move and hurt or kill you.</p> <ol style="list-style-type: none"> 3. Set turret traverse lock to LOCKED (TM-10). 4. Using spanner wrench, disconnect three electrical connectors (2) from slipring (3). Put caps on three electrical connectors (JPG). 5. Using 9/16" combination wrench, remove screw (4), two lockwashers (5), and ground strap (6) from slipring (3). <p>GO TO FRAME 4</p>



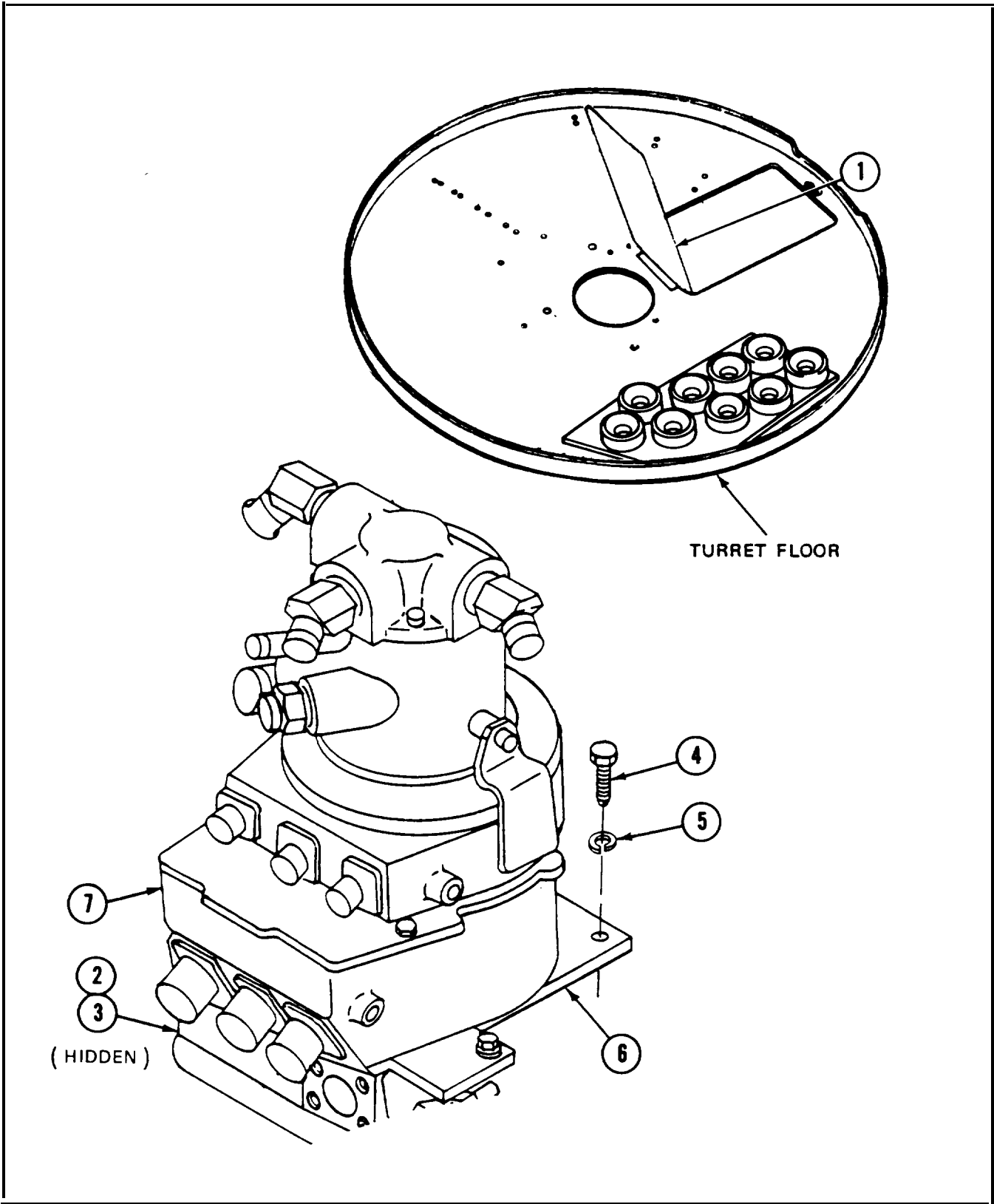
3-7. TURRET ELECTRICAL SLIPRING REMOVAL PROCEDURE (CONT)

FRAME 4	
Step	Procedure
	<p>NOTE</p> <p>To do the following steps, you should look down and reach through openings in turret floor. Parts are shown as they would look with turret floor removed.</p>
1.	Soldier A: Hold access door (1) up.
2.	Soldier B: Using 7/16" combination wrench, remove four screws (2), four lockwashers (3), flange (4), and hose (5) from air inlet (6). Cover air inlet with masking tape. Put plug in hose.
3.	Using 11/16" wrench, remove tube (7) from fitting (8). Put caps on tube and fitting.
4.	Using adjustable wrench, remove tube (9) from fitting (10). Put caps on tube and fitting.
	GO TO FRAME 5



3-7. TURRET ELECTRICAL SLIPRING REMOVAL PROCEDURE (CONT)

FRAME 5	
Step	Procedure
	<p>NOTE</p> <p>To do the following steps, you should look down and reach through openings in turret floor. Parts are shown as they would look with turret floor removed.</p>
<ol style="list-style-type: none"> 1. 2. 	<p>Soldier A. Hold access door (1) up.</p> <p>Soldier B Manually traverse turret until tube (2) and fitting (3) can be reached through openings in turret floor (TM-10).</p>
	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">WARNING</div>
<ol style="list-style-type: none"> 3. 4. 5. 6. 7. 	<p>Be sure turret traverse lock is set to LOCKED before reaching down below turret floor. If turret traverse lock is not set to LOCKED, turret could move and hurt or kill you.</p> <p>Set turret traverse lock to LOCKED (TM-10).</p> <p>Using adjustable wrench, remove tube (2) from fitting (3). Put caps on tube and fitting.</p> <p>Using 1/2" socket wrench and extension, remove four screws (4) and four lockwashers (5) from plate (6) and hull.</p> <p>Soldier A Close access door (1). Go outside vehicle.</p> <p>Soldier B Lift slipring (7) from turret floor. Hand slipring to Soldier A outside vehicle.</p> <p>END OF TASK</p>



3-8. TURRET ELECTRICAL SLIPRING INSTALLATION PROCEDURE

TOOLS: 1/4" flat tip screwdriver
 3/8" drive ratchet
 5/16" socket (3/8" drive)
 11/16" open end wrench
 16" adjustable wrench
 Adjustable hook spanner wrench
 Diagonal cutting pliers
 Long round nose pliers
 9/16" socket (3/8" drive)
 7/16" combination wrench
 1/2" socket (3/8" drive)
 6" extension (3/8" drive)
 9/16" combination wrench

SUPPLIES: Lockwire

PERSONNEL: Two

REFERENCES: JPG for procedures to:
 Connect electrical connectors
 Use spanner wrench
 Install lockwire
 TM 9-2350-222-10 for procedures to:
 Traverse turret manually
 Set turret traverse lock to LOCKED
 Operate SELECTOR VALVE control lever
 Traverse turret to test operation of slipring

EQUIPMENT LOCATION INFORMATION:

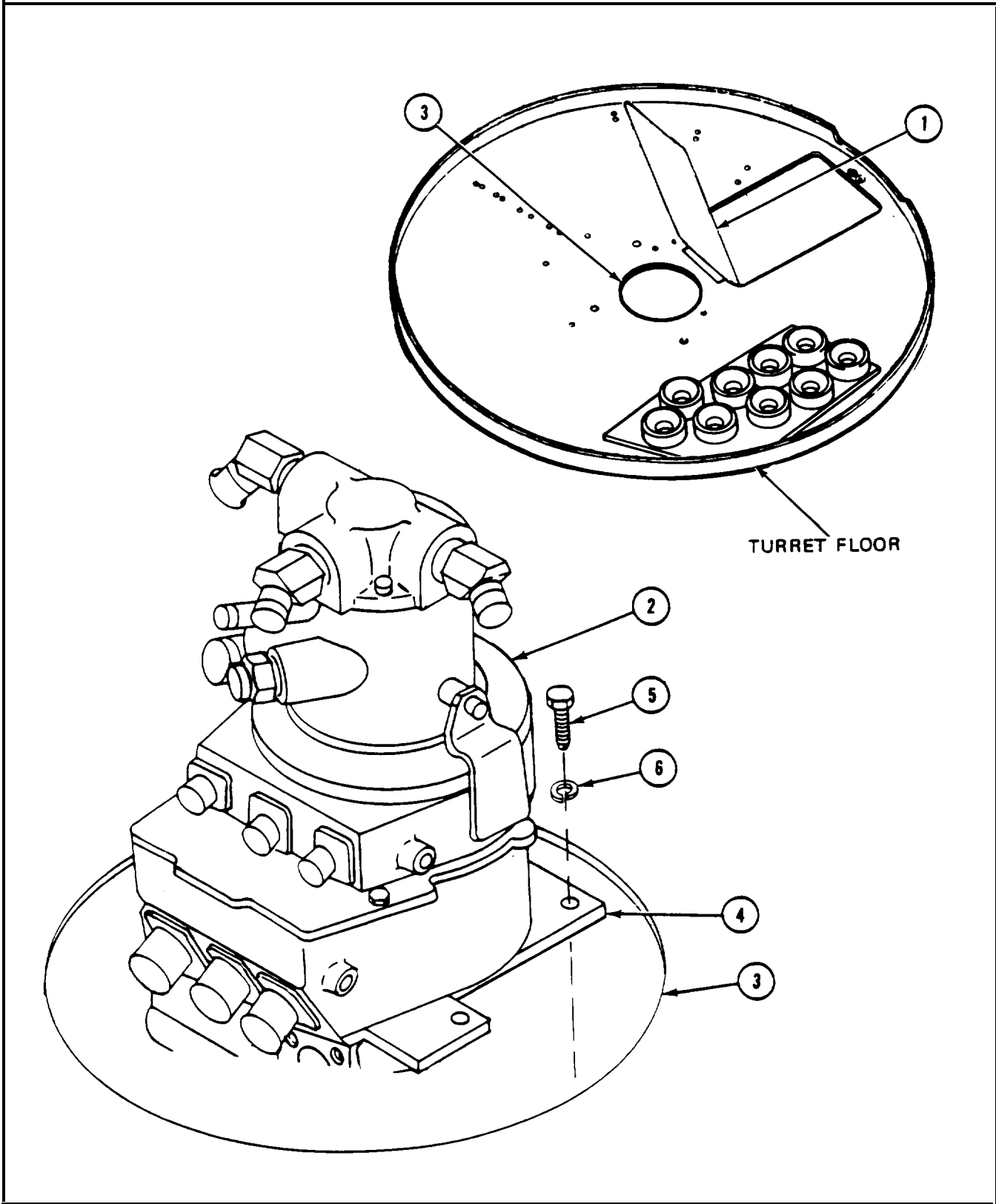
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7
Turret Electrical Slipring	FO-4	11

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
 Turret traverse lock set to LOCKED
 SELECTOR VALVE control lever set to HULL (TM-10)

PRELIMINARY PROCEDURES: Install bracket and fittings (para 3-12)

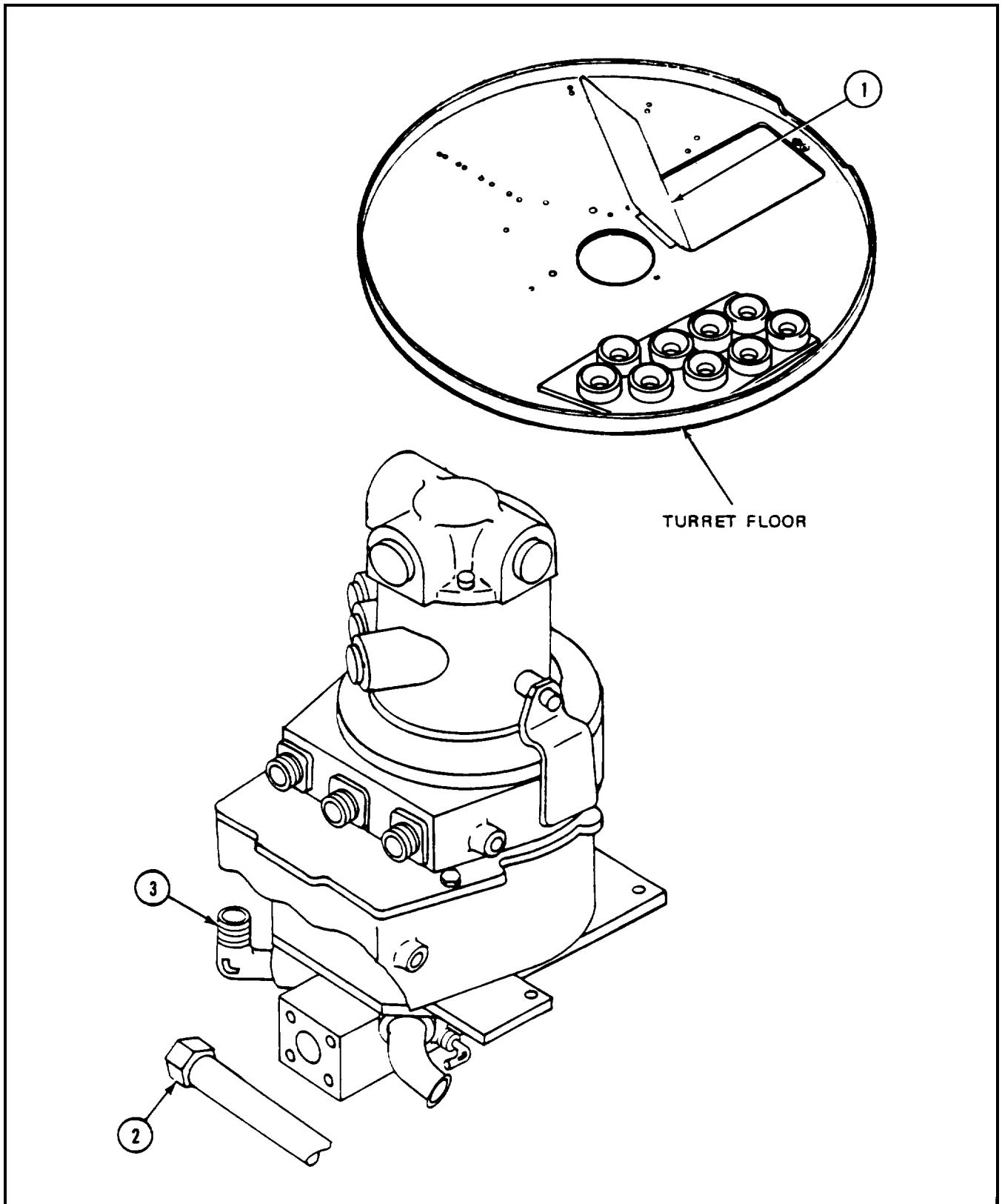
3-8. TURRET ELECTRICAL SLIPRING INSTALLATION PROCEDURE (CONT)

FRAME 1	
Step	Procedure
1.	<p>Soldier A: Open access door (1). Hold access door up in open position.</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">To find mounting holes in hull, you should look down through openings in turret floor.</p>
2.	<p>Soldier B: Manually traverse turret until slipring mounting holes can be reached through openings in turret floor (TM-10).</p> <div style="text-align: center; border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>WARNING</p> </div> <p style="text-align: center;">Be sure turret traverse lock is set to LOCKED before reaching down below turret floor. If turret traverse lock is not set to LOCKED, turret could move and hurt or kill you.</p>
3.	<p>Set turret traverse lock to LOCKED (TM-10).</p>
4.	<p>Soldier B: Lower slipring (2) into big opening (3) in turret floor. Line up four holes in plate (4) with four mounting holes in hull.</p>
5.	<p>Using 1/2" socket wrench and extension, attach plate (4) to hull with four screws (5) and four lockwashers (6).</p> <p>GO TO FRAME 2</p>



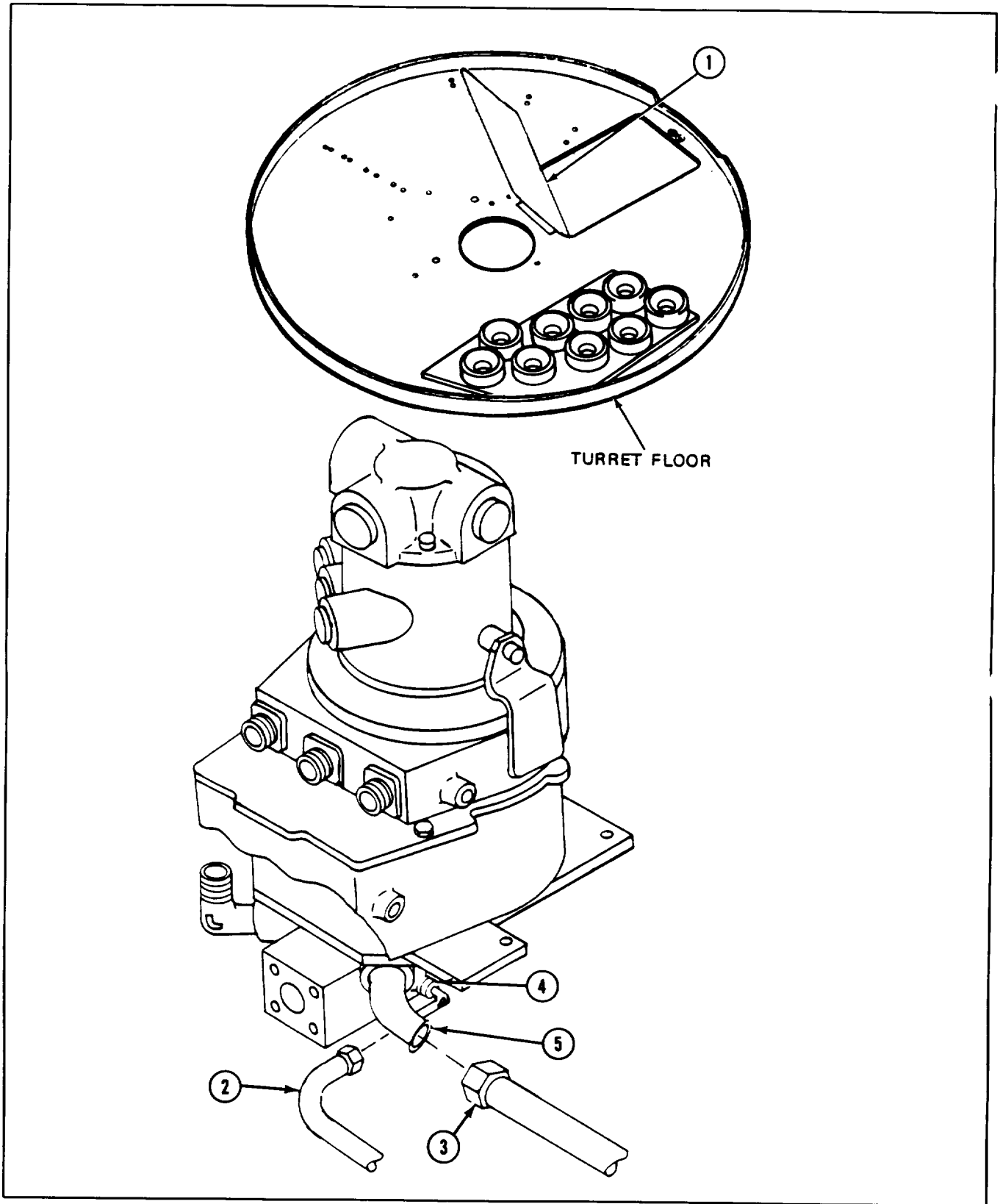
3-8. TURRET ELECTRICAL SLIPRING INSTALLATION PROCEDURE (CONT)

FRAME 2	
Step	Procedure
	<p style="text-align: center;">NOTE</p> <p style="text-align: center;">To do the following steps, you should look down and reach through openings in turret floor. Parts are shown as they would look with turret floor removed.</p> <ol style="list-style-type: none">1. Soldier A: Hold access door (1) up.2. Soldier B: Manually traverse turret until tube (2) and fitting (3) can be reached through openings in turret floor (TM-10). <p style="text-align: center;">WARNING</p> <p style="text-align: center;">Be sure turret traverse lock is set to LOCKED before reaching down below turret floor. If turret traverse lock is not set to LOCKED, turret could move and hurt or kill you.</p> <ol style="list-style-type: none">3. Set turret traverse lock to LOCKED (TM-10).4. Remove caps from tube (2) and fitting (3).5. Using adjustable wrench, attach tube (2) to fitting (3). <p>GO TO FRAME 3</p>



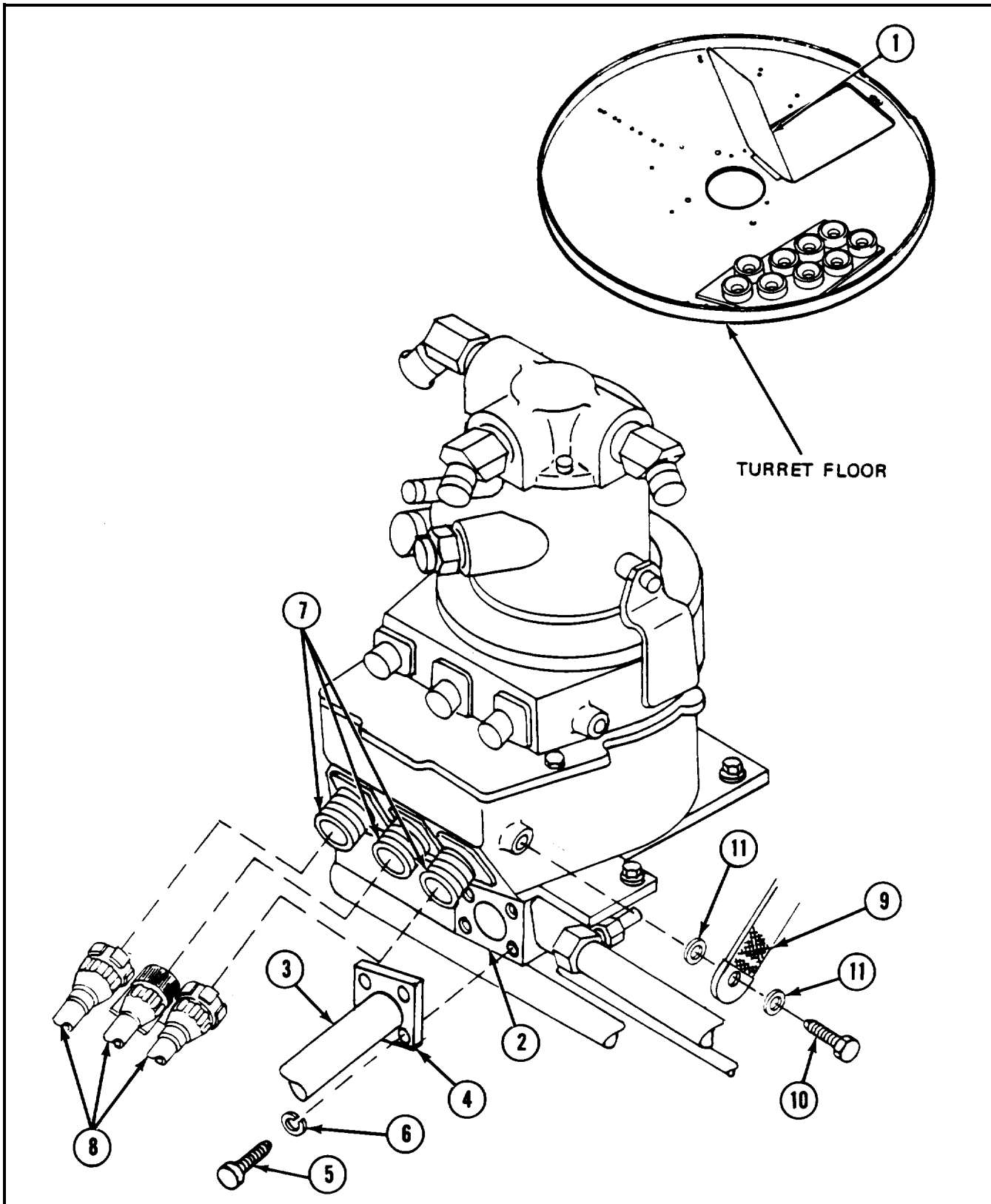
3-8. TURRET ELECTRICAL SLIPRING INSTALLATION PROCEDURE (CONT)

FRAME 3	
Step	Procedure
	<p>NOTE</p> <p>To do the following steps, you should look down and reach through openings in turret floor. Parts are shown as they would look with turret floor removed.</p>
<ol style="list-style-type: none"> 1. 2. 	<p>Soldier A: Hold access door (1) up.</p> <p>Soldier B: Manually traverse turret until tubes (2) and (3) and fittings (4) and (5) can be reached through openings in turret floor (TM-10).</p>
	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">WARNING</div>
<ol style="list-style-type: none"> 3. 4. 5. 6. 	<p>Be sure turret traverse lock is set to LOCKED before reaching down below turret floor. If turret traverse lock is not set to LOCKED, turret could move and hurt or kill you.</p> <p>Set turret traverse lock to LOCKED (TM-10).</p> <p>Remove caps from tubes (2) and (3) and fittings (4) and (5).</p> <p>Using 11/16" wrench, attach tube (2) to fitting (4).</p> <p>Using adjustable wrench, attach tube (3) to fitting (5).</p> <p>GO TO FRAME 4</p>



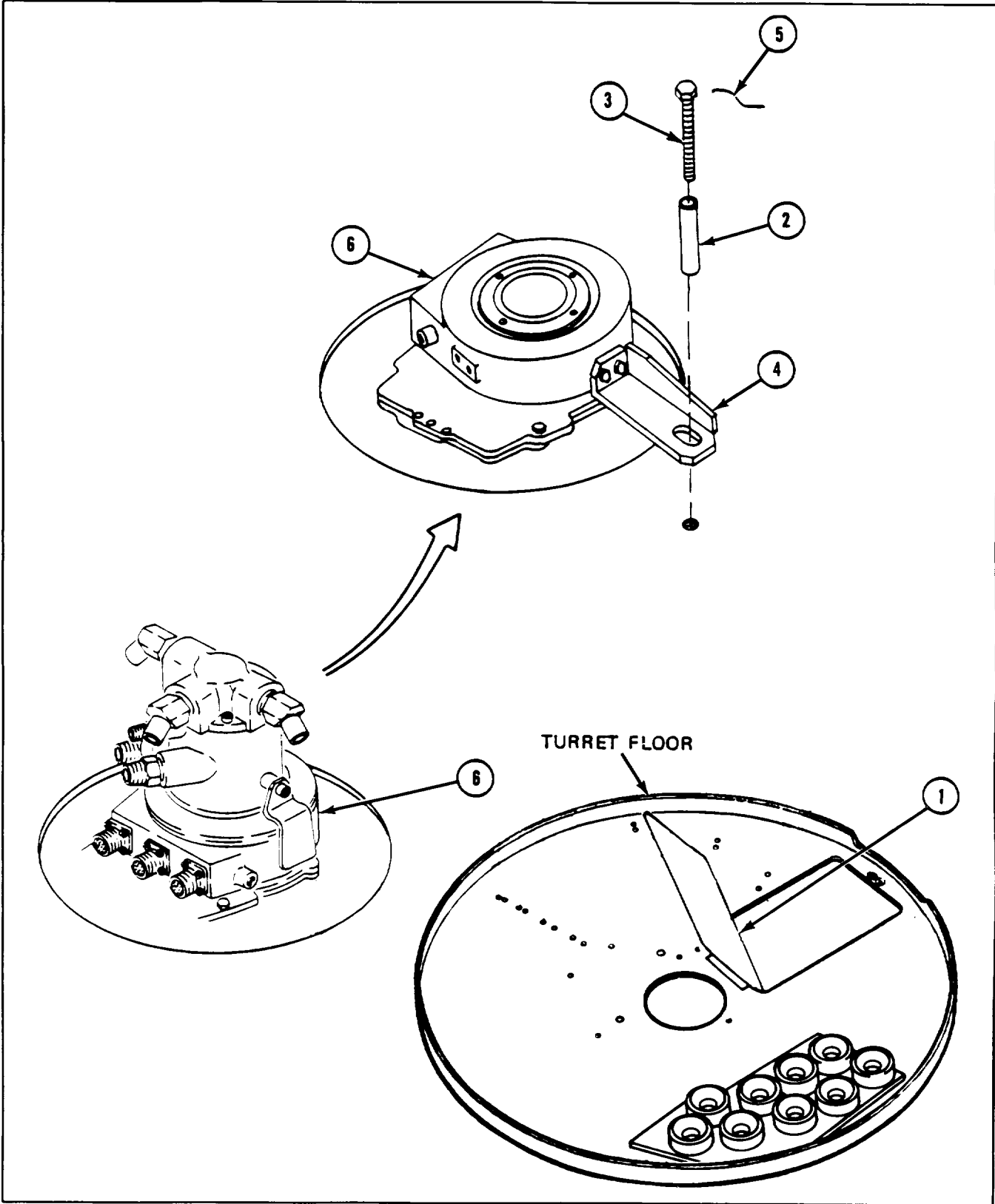
3-8. TURRET ELECTRICAL SLIPRING INSTALLATION PROCEDURE (CONT)

FRAME 1	
Step	Procedure
	<p>NOTE</p> <p>To do the following steps, you should look down and reach through openings in turret floor. Parts are shown as they would look with turret floor removed.</p>
1.	Soldier A: Hold access door (1) up.
2.	Soldier B: Remove masking tape from air inlet (2).
3.	Using 7/16" combination wrench, attach hose (3) and flange (4) to air inlet (2) with four screws (5) and four lockwashers (6).
4.	Remove caps from three electrical connectors (7).
5.	Using spanner wrench, attach three electrical plugs (8) to three electrical connectors (7).
6.	Using 9/16" combination wrench, attach ground strap (9) to slipring with screw (10) and two lockwashers (11).
	GO TO FRAME 5



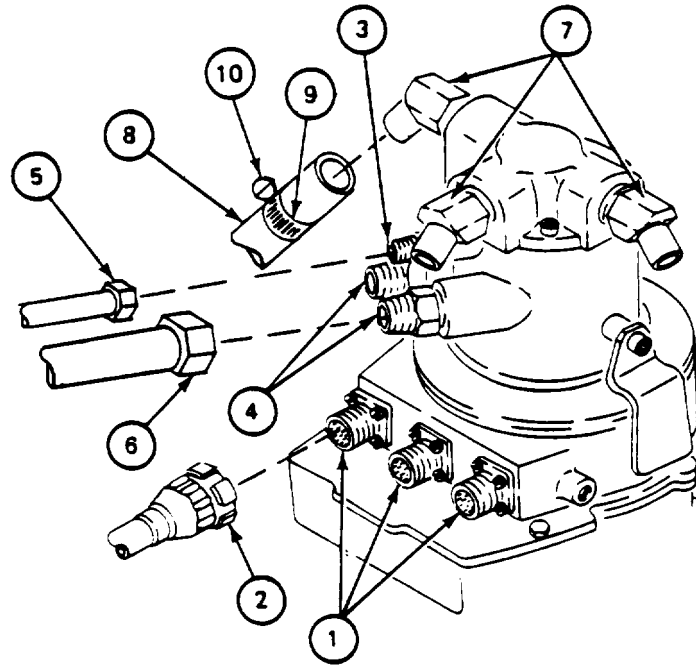
3-8. TURRET ELECTRICAL SLIPRING INSTALLATION PROCEDURE (CONT)

FRAME 5	
Step	Procedure
1.	Soldier A: Close access-door (1).
2.	Soldier B: Put spacer sleeve (2) on screw (3).
3.	Using 9/16" socket wrench, attach bracket (4) to turret floor with screw (3) and spacer sleeve (2).
4.	Using long round nose pliers and diagonal cutting pliers, install lockwire (5) on screw (3) and slipring (6).
	GO TO FRAME 6



3-8. TURRET ELECTRICAL SLIPRING INSTALLATION PROCEDURE (CONT)

FRAME 6	
Step	Procedure
1.	Remove caps from three electrical connectors (1).
2.	Using spanner wrench, connect three electrical plugs (2) to three electrical connectors (1).
3.	Remove caps from three fittings (3) and (4) and three tubes (5) and (6).
4.	Using 11/16" wrench, attach tube (5) to fitting (3).
5.	Using adjustable wrench, attach two tubes (6) to two fittings (4).
6.	Remove caps from three fittings (7). Remove three plugs from three hoses (8).
7.	Put three hoses (8) on three fittings (7). Slide three clamps (9) next to three fittings (7).
8.	Using screwdriver or 5/16" socket wrench, turn three screws (10) until three hoses (8) are clamped tight on three fittings (7).
NOTE	
Follow-on Maintenance Action Required:	
Adjust traverse limit switch actuator, and cam (para 3-6).	
Install cover (para 3-3).	
Test slipring to make sure it operates properly (TM-10).	
END OF TASK	



3-9. GROUND STRAP REMOVAL PROCEDURE

TOOLS: 1/2" combination wrench
 9/16" combination wrench

PERSONNEL: One

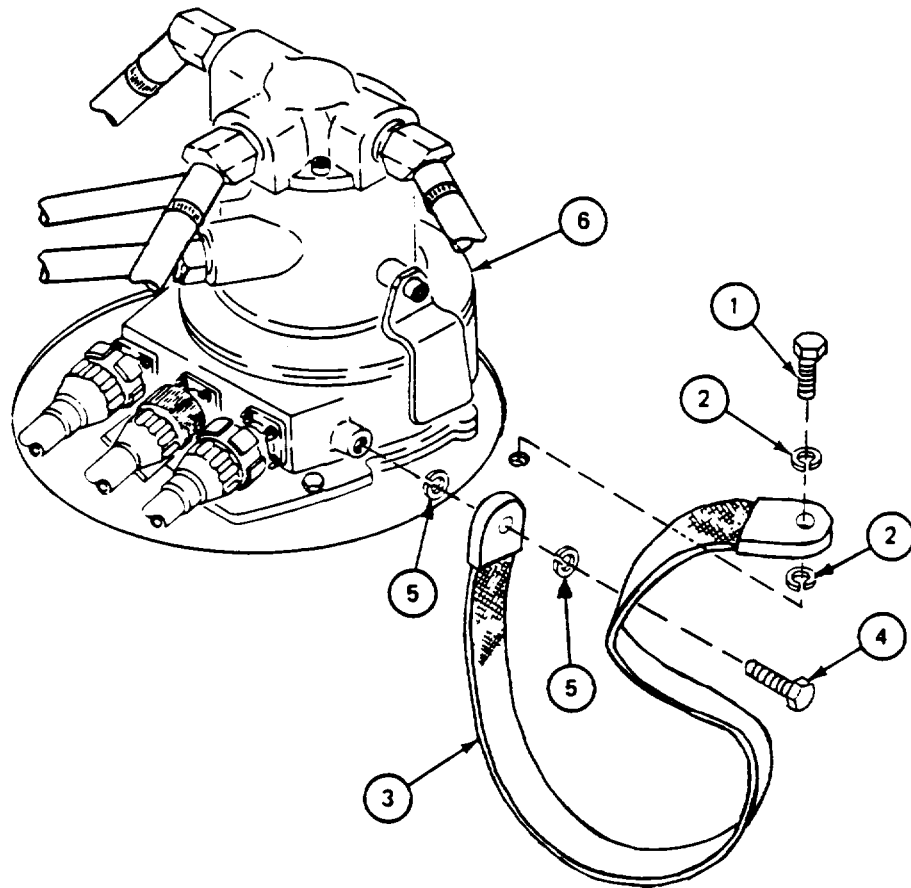
EQUIPMENT LOCATION INFORMATION:

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

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

PRELIMINARY PROCEDURES: Remove cover (para 3-2)

FRAME 1	
Step	Procedure
1.	Using 1/2" wrench, remove screw (1), two lockwashers (2) and ground strap (3) from turret floor.
2.	Using 9/16" wrench, remove screw (4), two lockwashers (5) and ground strap (3) from slipping (6).
	END OF TASK



3-10. GROUND STRAP INSTALLATION PROCEDURE

TOOLS: 1/2" combination wrench
 9/16" combination wrench

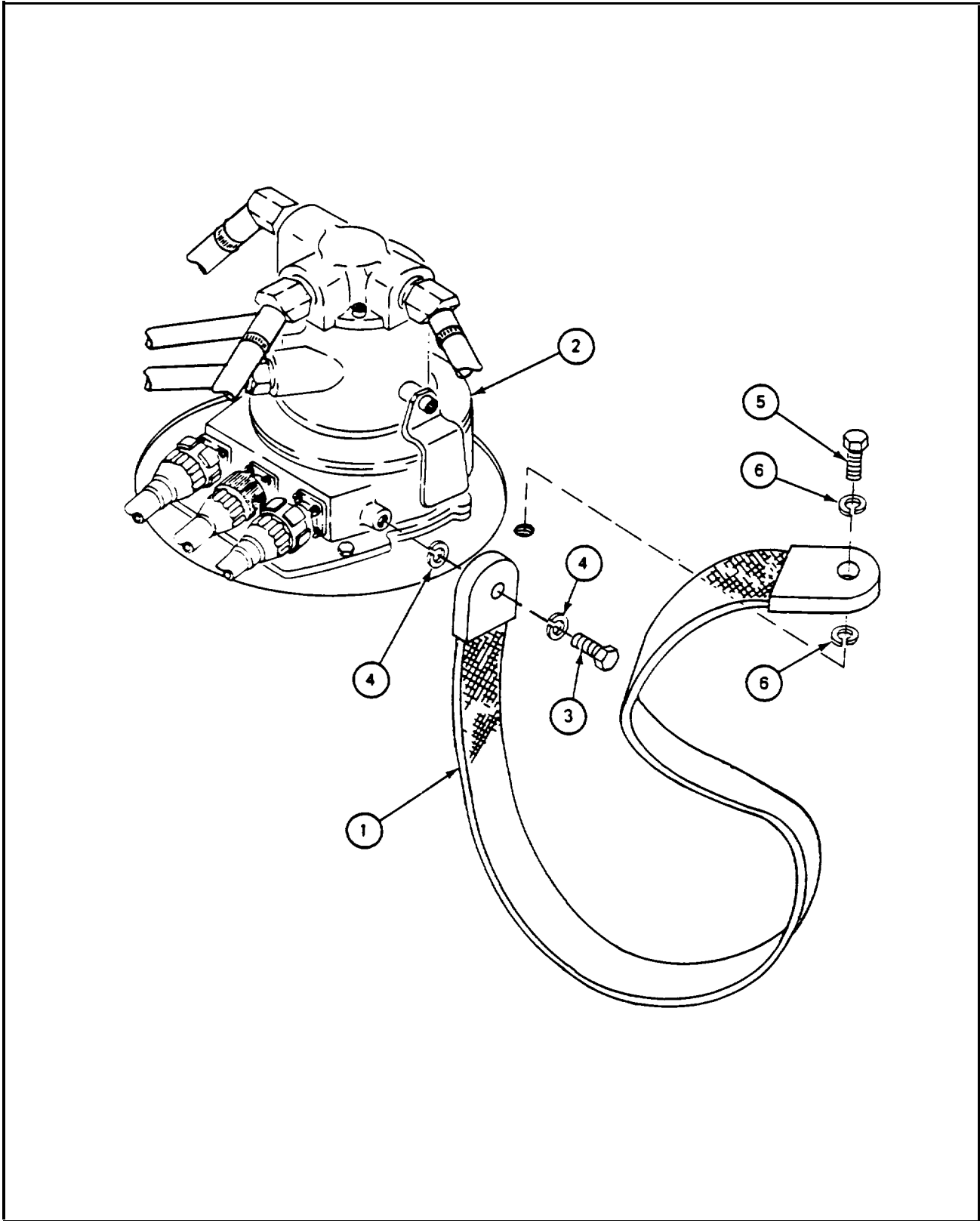
PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

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

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

FRAME 1	
Step	Procedure
1.	Using wrench, attach ground strap (1) to slipring (2) with screw (3) and two lockwashers (4).
2.	Using wrench, attach ground strap (1) to turret floor with screw (5) and two lockwashers (6).
NOTE	
Follow-on Maintenance Action Required:	
Install cover (para 3-3).	
END OF TASK	



3-11. BRACKET AND FITTINGS REMOVAL PROCEDURE

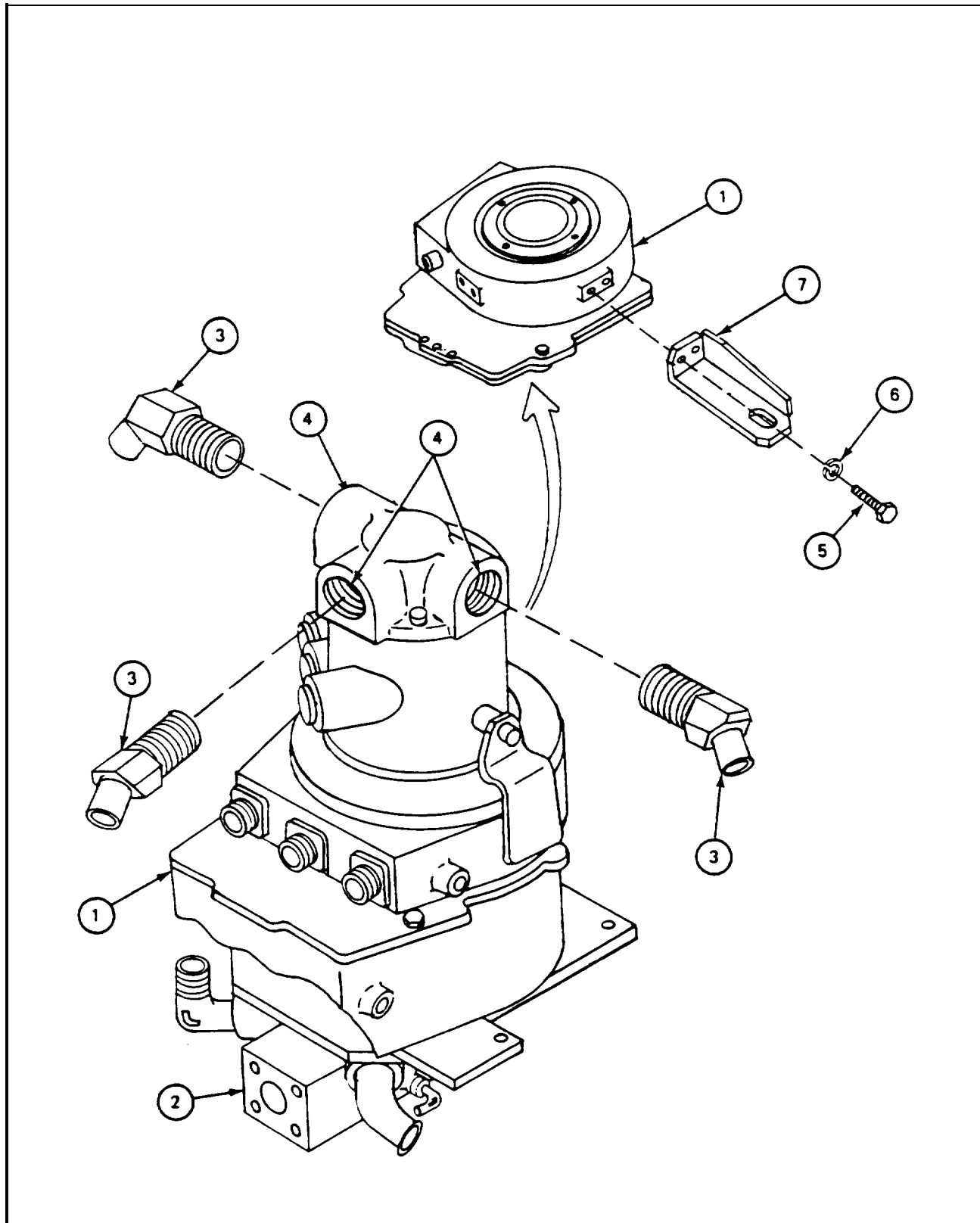
TOOLS: 1/2" socket (3/8" drive)
 3/8" drive ratchet
 12" adjustable wrench
 13/16" open end wrench
 16" adjustable wrench

SUPPLIES: Plugs (three) for air outlets
 Plug for hydraulic port (9/16 - 18 UNF)
 Plugs (two) for hydraulic ports (1-5/16 - 12 UN)

PERSONNEL: One

PRELIMINARY PROCEDURES: Remove turret electrical sliping (para 3-7)

FRAME 1	
Step	Procedure
1.	Set sliping (1) upright on bottom of post assembly (2).
2.	Using 12" adjustable wrench, remove three air fittings (3) from three air outlets (4). Put plugs in air outlets.
3.	Using socket wrench, remove two screws (5), two lockwashers (6), and bracket (7) from sliping (1).
	GO TO FRAME 2

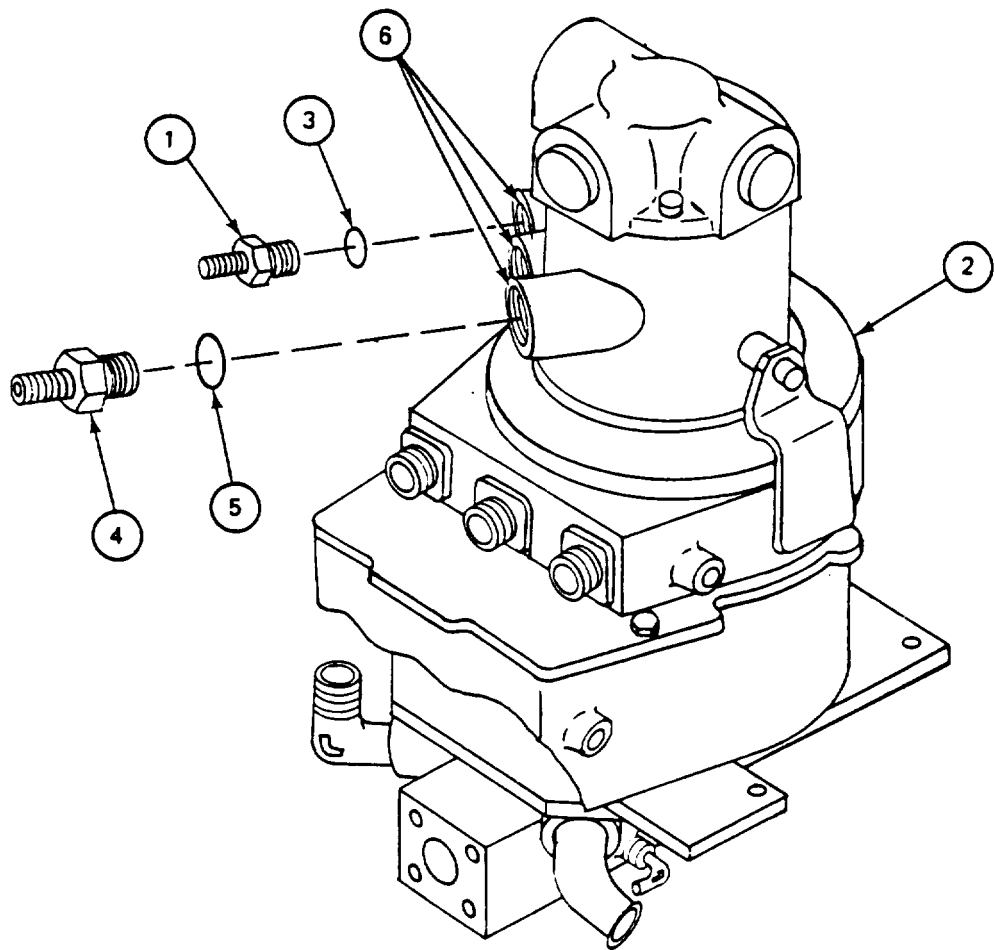


Para 3-11 Cont
3-55/(3-56 blank)

3-11. BRACKET AND FITTINGS REMOVAL PROCEDURE (CONT)

FRAME 2

Step	Procedure
1.	Using 13/16" wrench, remove fitting (1) from slipping (2). Remove packing (3) from fitting (1). Throw away packing.
2.	Using 16" adjustable wrench, remove two fittings (4) from slipping (2). Remove two packings (5) from two fittings (4). Throw away packings.
3.	Put plugs in three hydraulic ports (6). END OF TASK



3-12. BRACKET AND FITTINGS INSTALLATION PROCEDURE

TOOLS: 1/2" socket (3/8" chive)
3/8" drive ratchet
12" adjustable wrench
13/16" open end wrench
16" adjustable wrench

SUPPLIES: Hydraulic fluid
Preformed packing (MS 28778-6)
Preformed packing (two) (MS 28778-16)
Caps (three) for air fittings
Cap for small hydraulic fitting
Caps (two) for large hydraulic fittings

PERSONNEL: One

GENERAL INSTRUCTIONS:

NOTE

If new sliping is to be installed, fittings and bracket should be removed from old sliping (para 3-11) and used on new sliping. New bracket and fittings are needed only if old ones are worn out or broken.

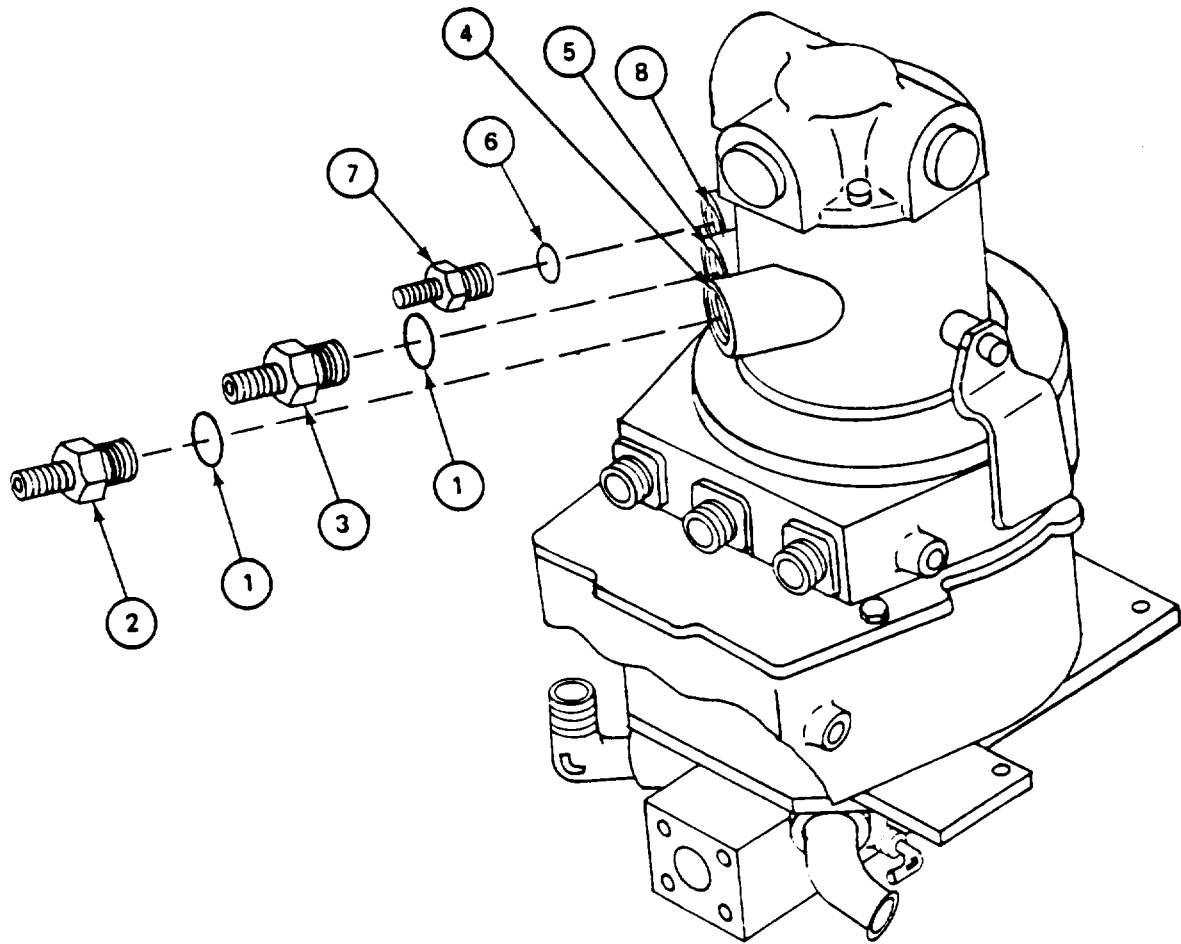
3-12. BRACKET AND FITTINGS INSTALLATION PROCEDURE (CONT)

FRAME 1	
Step	Procedure
1.	Lightly coat two packings (1) with hydraulic fluid. Put two packings (1) on two fittings (2) and (3).
2.	Remove plugs from two ports (4) and (5).
3.	Using 16" adjustable wrench, install two fittings (2) and (3) in two ports (4) and (5).
4.	Lightly coat packing (6) with hydraulic fluid. Put packing (6) on fitting (7).
5.	Remove plug from port (8).
6.	Using 13/16" wrench, install fitting (7) in port (8).
7.	Put caps on three fittings (2), (3), and (7).
	GO TO FRAME 2

Para 3-12 Cont

Change 2

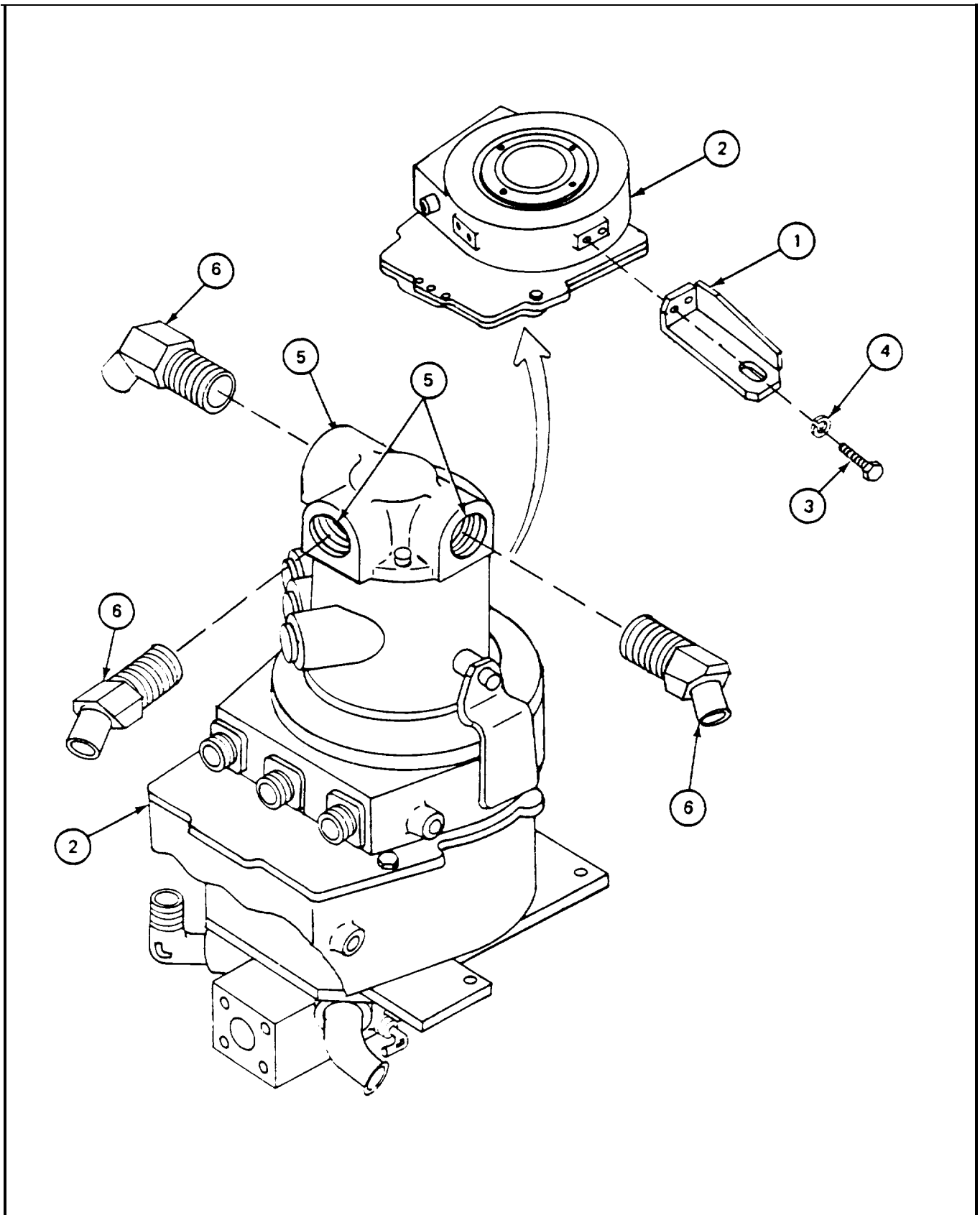
3-59



Para 3-12 Cont

3-12. BRACKET AND FITTINGS INSTALLATION PROCEDURE (CONT)

FRAME 2	
Step	Procedure
1.	Using socket wrench, attach bracket (1) to slipring (2) with two screws (3) and two lockwashers (4).
2.	Remove plugs from three air outlets (5).
3.	Using 12" adjustable wrench, install three fittings (6) in three air outlets (5). Turn fittings as needed to point in direction shown in illustration.
4.	Put caps on three fittings (6).
	NOTE
	Follow-on Maintenance Action Required:
	Install turret electrical slipring (para 3-8)
	END OF TASK



Para 3-12 Cont

3-62

Change 2

CHAPTER 4
GRENADE BOX RETAINING BRACKET

4-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Removal	Task	
			Installation
Grenade Box Retaining Bracket	4-2		4-3

4-2. GRENADE BOX RETAINING BRACKET REMOVAL PROCEDURE

TOOLS: 1/2" combination wrench

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Radio Supports	FO-2	9

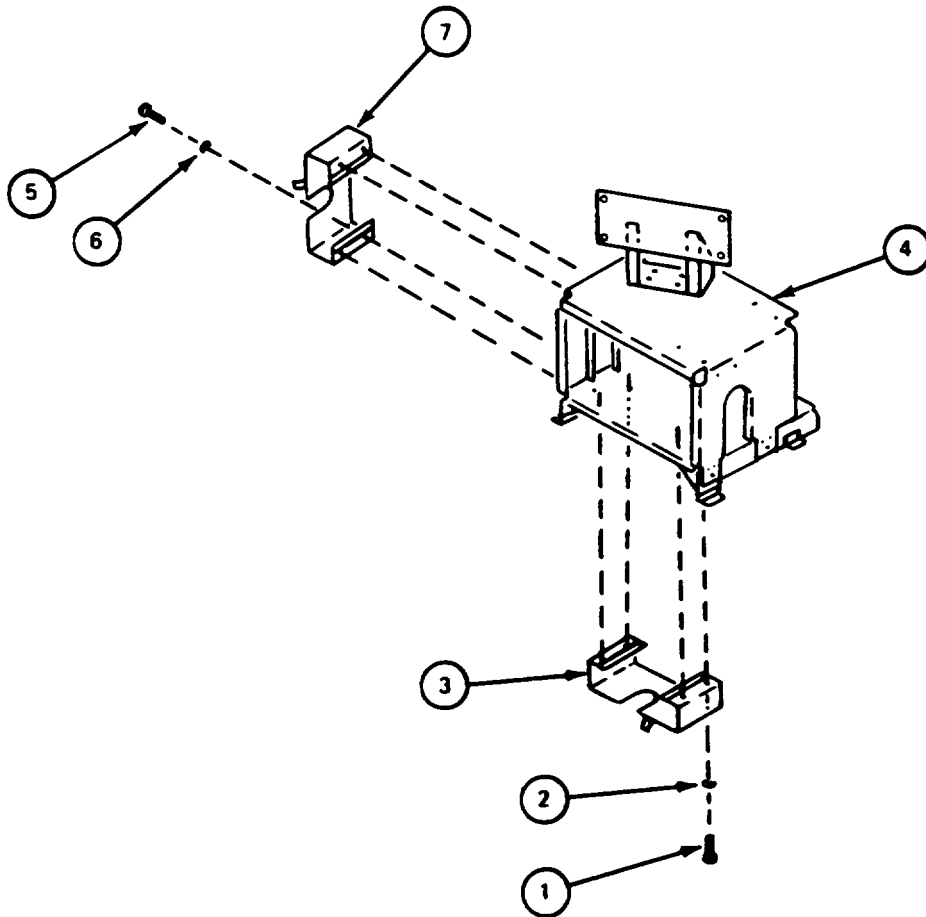
EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Radio set and radio mounts removed (VRC- 12, 46, 47 or 53)

PRELIMINARY PROCEDURES: Remove spare lamp box (para 5-2)

4-2. GRENADE BOX RETAINING BRACKET REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Using wrench, remove four screws (1) and four lockwashers (2) holding bottom grenade box retaining bracket (3) to radio support (4).
2.	Separate bottom grenade box retaining bracket (3) from radio support (4).
3.	Using wrench, remove four screws (5) and four lockwashers (6) holding side grenade box retaining bracket (7) to radio support (4).
4.	Separate side grenade box retaining bracket (7) from radio support (4).
END OF TASK	



4-3. GRENADE BOX RETAINING BRACKET INSTALLATION PROCEDURE

TOOLS: 1/2" combination wrench

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Radio Support	FO-2	9

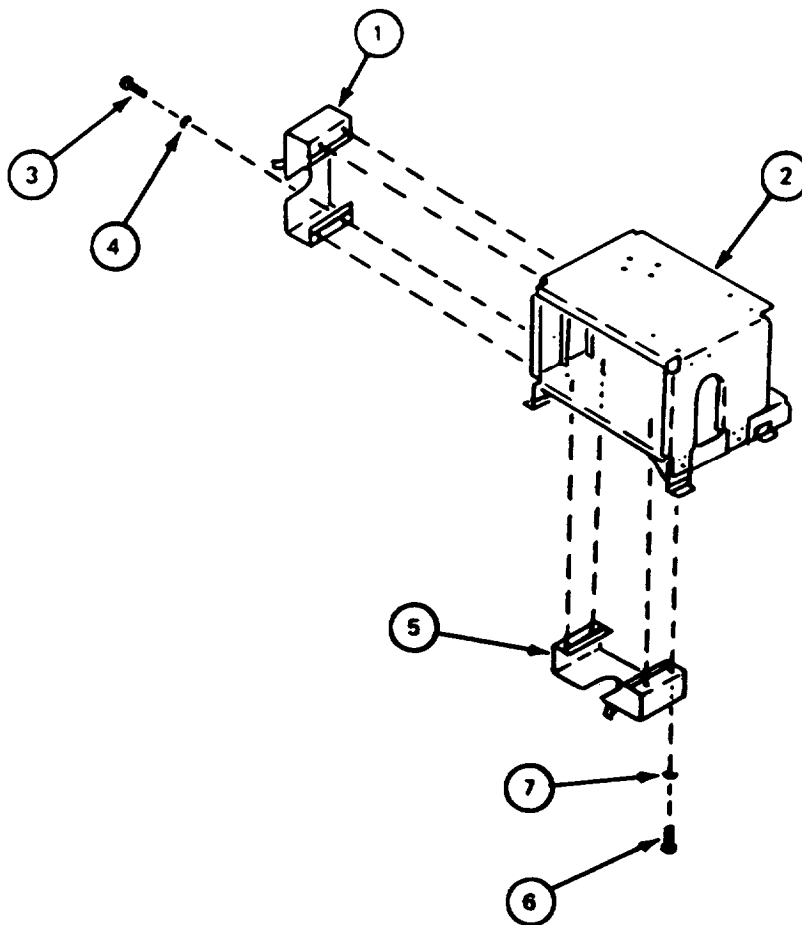
EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

PRELIMINARY PROCEDURES: Install lower radio support and upper radio support (para 2-6)

4-3. GRENADE BOX RETAINING BRACKET INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Using wrench, attach side grenade box retaining bracket (1) to radio support (2) with four screws (3) and four lockwashers (4).
2.	Using wrench, attach bottom grenade box retaining bracket (5) to radio support (2) with four screws (6) and four lockwashers (7).
<p style="text-align: center;">NOTE</p> <p style="text-align: center;">Follow-on Maintenance Action Required:</p> <p style="text-align: center;">Install spare lamp box (para 5-3).</p> <p>END OF TASK</p>	



Para 4-3 Cont
4-5/(4-6 blank)

CHAPTER 5
SPARE LAMP BOX

5-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Removal	Tasks	Installation
Spare Lamp Box	5-2		5-3

5-2. SPARE LAMP BOX REMOVAL PROCEDURE

TOOLS: Cross tip screwdriver
 7/16" socket (3/8" drive)
 3/8" drive ratchet
 3" extension (3/8" drive)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Radio Supports	FO-2	9

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

FRAME 1	
Step	Procedure
1.	Remove plastic lamp tray (1) from spare lamp box (2).
2.	Using screwdriver and socket wrench, remove two screws (3), two lockwashers (4) and two nuts (5) holding spare lamp box (2) to radio support (6).
3.	Separate spare lamp box (2) from radio support (6).

Para 5-2

5-2

5-3. SPARE LAMP BOX INSTALLATION PROCEDURE

TOOLS: Cross tip screwdriver
 7/16" socket (3/8" drive)
 3/8" drive ratchet
 3" extension (3/8" drive)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Radio Supports	FO-2	9

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

5-3. SPARE LAMP BOX INSTALLATION PROCEDURE (CONT)

FRAME 1	
Step	Procedure
<ol style="list-style-type: none"> 1. Put spare lamp box (1) on radio support (2). 2. Using screwdriver and socket wrench, attach spare lamp box (1) to radio support (2) with two screws (3), two lockwashers (4) and two nuts (5). 3. Put plastic tray (6) in spare lamp box (1). 	<p style="text-align: center;">NOTE</p> <p style="text-align: center;">Follow-on Maintenance Action Required: Install radio accessory bracket (para 2-7).</p> <p>END OF TASK</p>

CHAPTER 6
TURRET CONTROL BOX TO VENTILATING MOTOR LEAD

6-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Removal	Tasks	Installation
Turret Control Box To Ventilating Motor Lead	6-2		6-3

6-2. TURRET CONTROL BOX TO VENTILATING MOTOR LEAD REMOVAL PROCEDURE

SUPPLIES: Masking tape (item 25, App. A)

PERSONNEL: One

REFERENCES: JPG for procedures to:
 Disconnect electrical connectors
 Remove cable clamps

EQUIPMENT LOCATION INFORMATION:

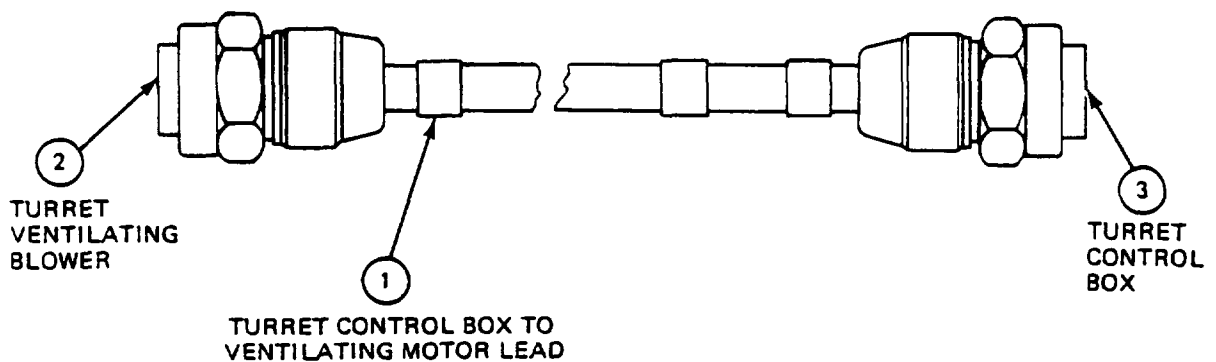
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Ventilating Blower	FO-2	7
Turret Ventilating Blower Control Box	FO-3	2

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

6-2. TURRET CONTROL BOX TO VENTILATING MOTOR LEAD REMOVAL PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Disconnect lead (1) from turret ventilating blower (2) and turret control box (3) (JPG).
2.	Remove all cable clamps holding lead (1) to turret bustle (JPG).
3.	Remove lead (1) from each cable clamp.
4.	Using hand, attach each cable clamp to turret bustle with screw and lockwasher, as required. Using masking tape, tag each cable clamp as it is put back.
5.	Remove lead (1). END OF TASK



Para 6-2 Cont

6-3. TURRET CONTROL BOX TO VENTILATING MOTOR LEAD INSTALLATION PROCEDURE

PERSONNEL: One

REFERENCES: JPG for procedures to:
Connect electrical connectors
Connect cable clamps

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Ventilating Blower	FO-2	7
Turret Ventilating Blower Control Box	FO-3	2

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

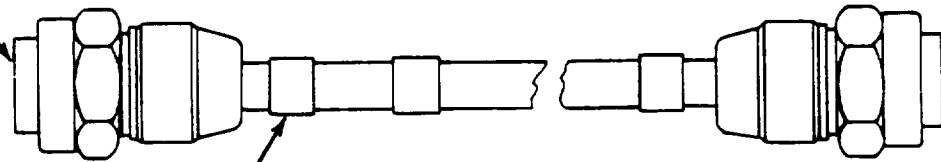
**6-3. TURRET CONTROL BOX TO VENTILATING MOTOR LEAD
INSTALLATION PROCEDURE (CONT)**

FRAME 1

Step	Procedure
<ol style="list-style-type: none"> 1. 2. 	<p>Using masking tape tags on cable clamps as a guide, put lead (1) in approximate position in turret.</p> <p>Connect lead (1) connector to turret ventilating blower (2) and turret control box (3) (JPG).</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Use masking tape tags to find cable clamps which hold harness or lead to equipment. Remove masking tape as each cable clamp is attached.</p> <ol style="list-style-type: none"> 3. 4. <p>END OF TASK</p>

TURRET
VENTILATING
BLOWER

2



1

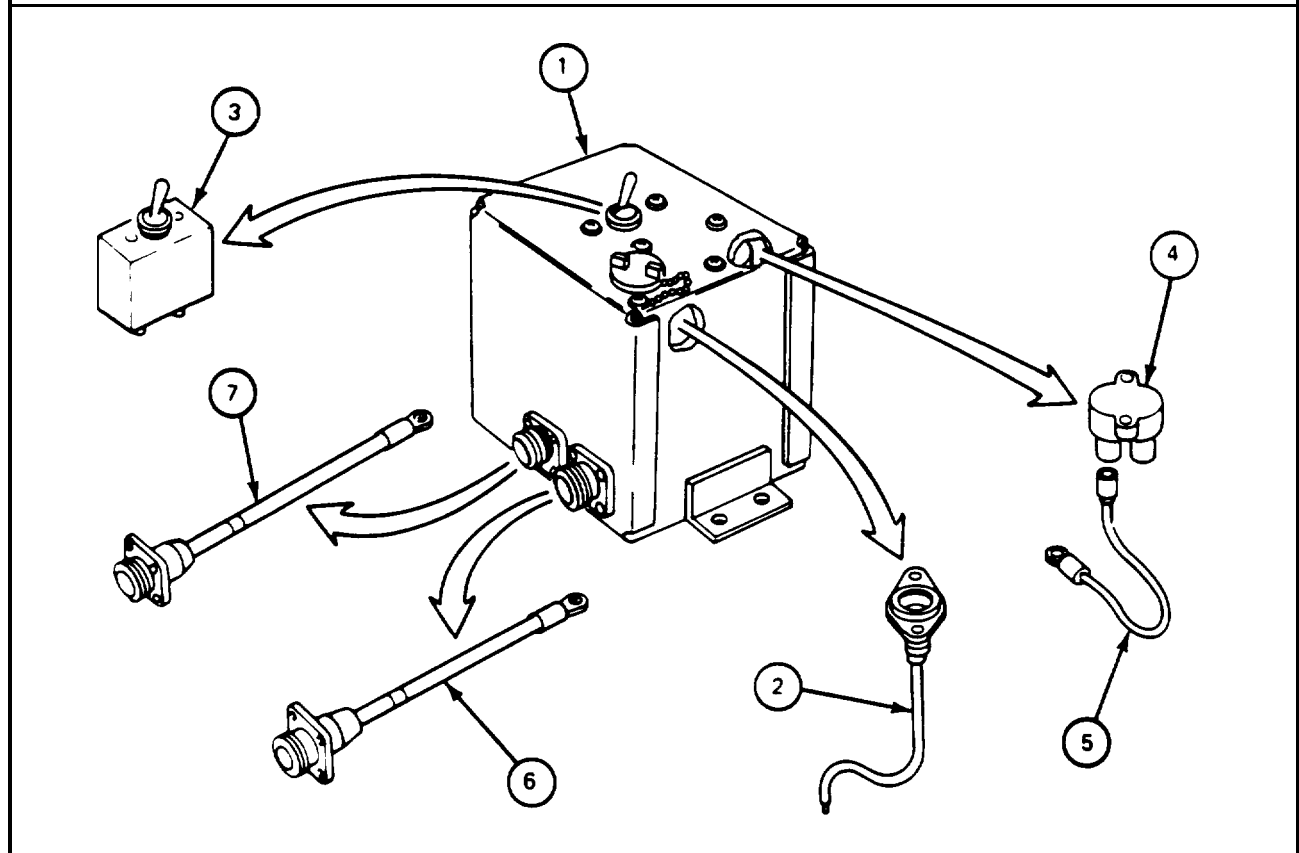
TURRET CONTROL BOX TO
VENTILATING MOTOR LEAD

3
TURRET
CONTROL
BOX

CHAPTER 7
TURRET VENTILATING BLOWER CONTROL BOX

7-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Inspection	Test	Removal	Tasks		
				Installation	Disassembly	Assembly
1. Turret Ventilating Blower Control Box	7-2	7-3	7-4	7-5	7-6	7-7
2. Utility Outlet	7-8	7-9	...	...
3. Switch	7-10	7-11	...	...
4. Circuit Breaker	7-12	7-13	...	...
5. Electrical Lead and Connector (10905683)	7-14	7-15	...	...
6. Electrical Lead and Connector (10905680)	7-16	7-17	...	...
7. Electrical Lead and Connector (10905681)	7-16	7-17	...	...



Para 7-1

7-2

7-2. TURRET VENTILATING BLOWER CONTROL BOX INSPECTION PROCEDURE

PERSONNEL: One

REFERENCES: JPG for procedure to repair electrical leads

PRELIMINARY PROCEDURES: Remove turret ventilating blower control box (para 7-4)

GENERAL INSTRUCTIONS:

NOTE

If any part is bad, order repair part or next higher assembly. Refer to section index (para 7-1) for replacement of parts.

FRAME 1	
Step	Procedure
1.	Look into bottom of control box to check electrical leads for cuts, wear, or burned insulation.
2.	Make sure all screws are in place.
	END OF TASK

Para 7-2

7-3/(7-4 blank)

7-3. TURRET VENTILATING BLOWER CONTROL BOX TEST PROCEDURE

TEST EQUIPMENT Multimeter

PERSONNEL: One

REFERENCES: JPG for procedure to use multimeter

PRELIMINARY PROCEDURES: Remove turret ventilating blower control box (para 7-4)

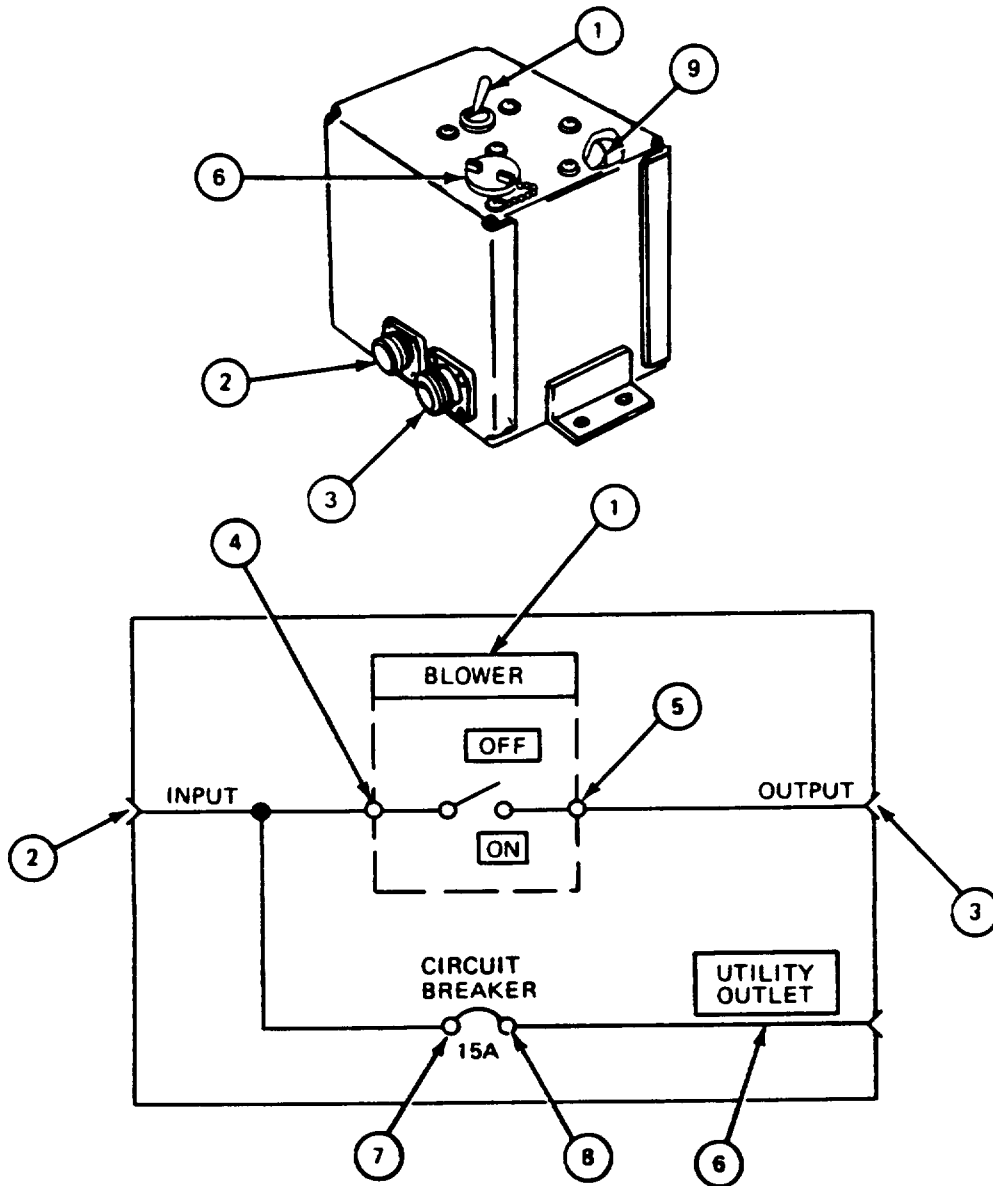
GENERAL INSTRUCTIONS:

NOTE

If normal indication is not obtained, do inspection (para 7-2) and continuity check (JPG) on items listed in Probable Fault column. Refer to section index (para 7-1) for replacement of parts.

7-3. TURRET VENTILATING BLOWER CONTROL BOX TEST PROCEDURE (CONT)

FRAME 1			
Step	Procedure	Normal Indication	Probable Fault
1.	Set blower switch (1) to ON.	...	...
NOTE			
If normal indication is obtained in step 2, go to step 6.			
2.	Check continuity between (2) and (3) (JPG).	Less than 2 ohms	Bad switch (1), electrical lead (2), or electrical lead (3)
3.	Check continuity between (4) and (5) (JPG).	Less than 2 ohms	Bad switch (1)
4.	Check continuity between (2) and (4) (JPG).	Less than 2 ohms	Bad electrical lead (2)
5.	Check continuity between (3) and (5) (JPG).	Less than 2 ohms	Lead between (3) and (5) bad.
NOTE			
If normal indication is obtained in step 6. omit steps 7 thru 9. Otherwise, do steps 7 thru 9.			
6.	Check continuity between (2) and (6) (JPG).	Less than 2 ohms	Bad circuit breaker or electrical lead
7.	Check continuity between (2) and (7) (JPG).	Less than 2 ohms	Bad electrical lead between (2) and (7)
8.	Check continuity between (6) and (8) (JPG).	Less than 2 ohms	Bad electrical lead between (6) and (8)
9.	Check continuity between (7) and (8) (JPG).	Less than 2 ohms	Bad circuit breaker (9)
NOTE			
If normal indication was obtained in steps 1 thru 9, turret ventilating blower control box is good.			
END OF TASK			



7-4. TURRET VENTILATING BLOWER CONTROL BOX REMOVAL PROCEDURE

TOOLS: 7/16" socket (3/8" drive)
 3/8" drive ratchet
 12" extension (3/8" drive)
 12" adjustable 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
Turret Ventilating Blower Control Box	FO-2	7

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

FRAME 1	
Step	Procedure
1.	Using wrench, disconnect two cables (1) from control box (2) (JPG).
2.	Using socket wrench, remove four screws (3) and four lockwashers (4) that attach control box (2) to turret. Remove control box. END OF TASK

7-5. TURRET VENTILATING BLOWER CONTROL BOX INSTALLATION PROCEDURE

TOOLS: 7/16" socket (3/8" drive)
 3/8" drive ratchet
 12" extension (3/8" drive)
 12" adjustable wrench

PERSONNEL: One

REFERENCES: JPG for procedure to connect electrical connectors
 TM 9-2350-222-10 for procedure to operate blower

EQUIPMENT LOCATION INFORMATION:

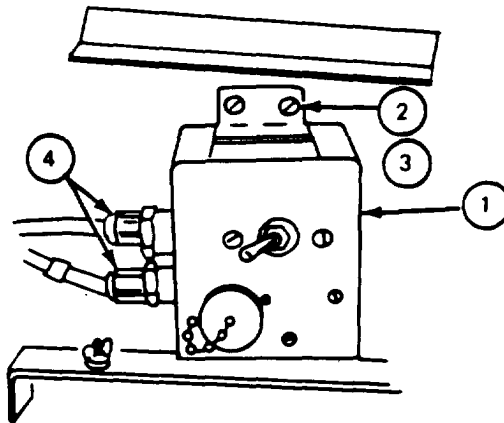
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7
Turret Ventilating Blower Control Box	FO-2	7

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

**7-5. TURRET VENTILATING BLOWER CONTROL BOX INSTALLATION
PROCEDURE (CONT)**

FRAME 1

Step	Procedure
1.	Using socket wrench, attach control box (1) to turret with four screws (2) and four lockwashers (3).
2.	Using wrench, connect two cables (4) to control box (1) (JPG).
<p style="text-align: center;">NOTE</p> <p style="text-align: center;">Follow-on Maintenance Action Required:</p> <p style="text-align: center;">Operate turret ventilating blower to make sure it works properly (TM- 10).</p> <p>END OF TASK</p>	



**7-6. TURRET VENTILATING BLOWER CONTROL BOX DISASSEMBLY
PROCEDURE**

PERSONNEL: One

PRELIMINARY PROCEDURES: Remove turret ventilating blower control box (para 7-4)
Test turret ventilating blower control box (para 7-3)**FRAME 1**

Step	Procedure
1.	Remove utility outlet (para 7-8).
2.	Remove switch (para 7-10).
3.	Remove circuit breaker (para 7-12).
4.	Remove electrical lead and connector (10905680) (para 7-16).
5.	Remove electrical lead and connector (10905681) (para 7-16).
6.	Remove electrical lead (10905683) (para 7-14).
END OF TASK	

7-7. TURRT VENTILATING BLOWER CONTROL BOX ASSEMBLY PROCEDURE

PERSONNEL: One

FRAME 1		
Step	Procedure	
1.	Install electrical lead and connector (10905681) (para 7-17).	
2.	Install electrical lead and connector (10905680) (para 7-17).	
3.	Install circuit breaker (para 7-13).	
4.	Install switch (para 7-11).	
5.	Install utility outlet (para 7-9).	
6.	Install electrical lead (10905683) (para 7-15). <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Follow-on Maintenance Action Required:</p> <p style="text-align: center;">Test turret ventilating blower control box (para 7-3).</p> <p>END OF TASK</p>	

7-8. UTILITY OUTLET REMOVAL PROCEDURE

TOOLS: Flat tip screwdriver

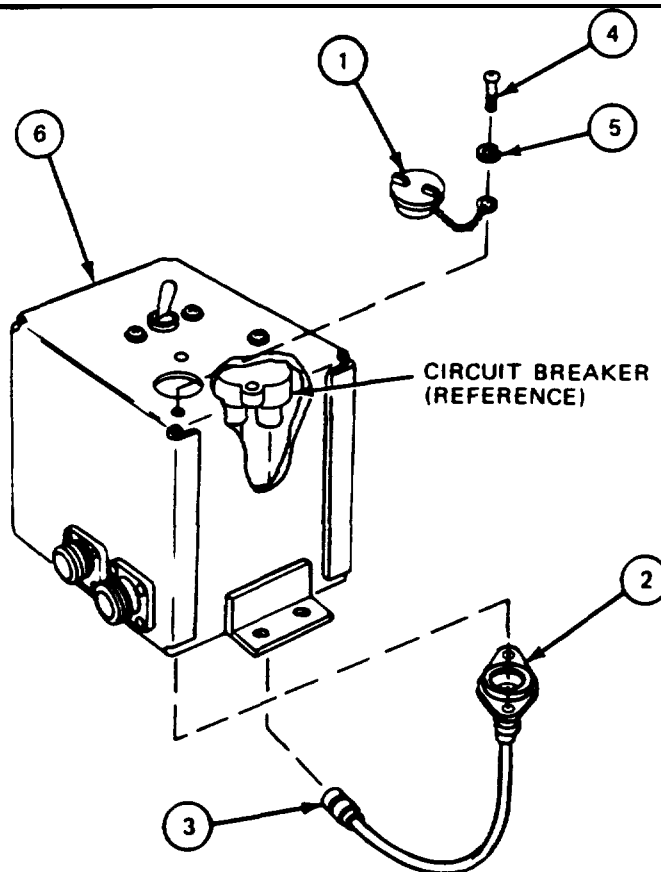
PERSONNEL: One

REFERENCES: JPG for procedure to disconnect electrical connectors

PRELIMINARY PROCEDURES: Remove turret ventilating blower control box (para 7-4)

FRAME 1

Step	Procedure
1.	Unscrew cover (1) from utility outlet (2).
2.	Disconnect electrical connector (3) from circuit breaker (JPG).
3.	Using screwdriver, remove two screws (4) and two lockwashers (5) that attach utility outlet (2) to control box (6).
4.	Remove cover (1) and utility outlet (2) from control box (6). END OF TASK



Para 7-8

7-13

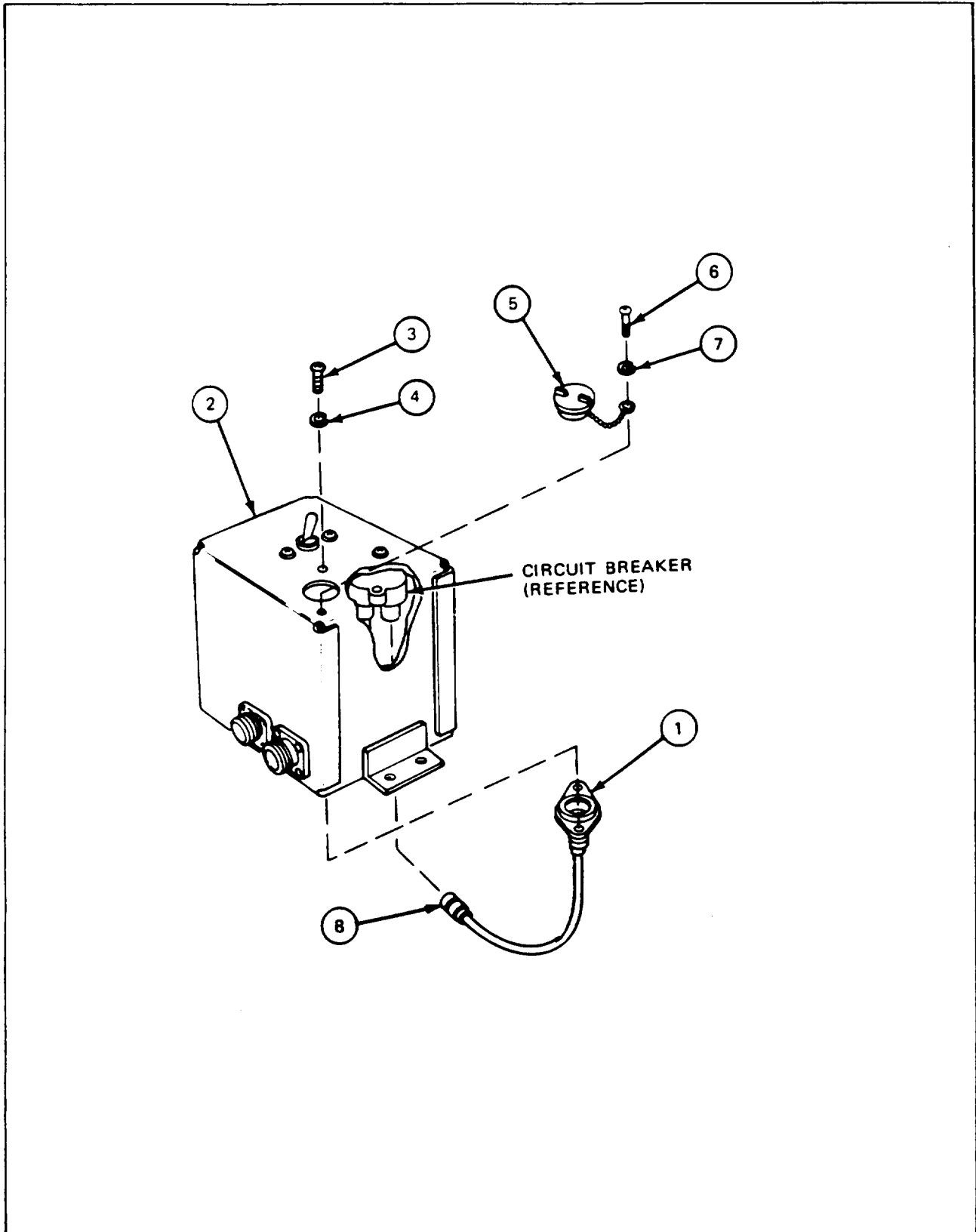
7-9. UTILITY OUTLET INSTALLATION PROCEDURE

TOOLS: Flat tip screwdriver

PERSONNEL: One

REFERENCES: JPG for procedure to connect electrical connectors

FRAME 1	
Step	Procedure
1.	Using screwdriver, attach utility outlet (1) to control box (2) with screw (3) and lockwasher (4).
2.	Using screwdriver, attach cover (5) to control box (2) with screw (6) and lockwasher (7).
3.	Connect electrical connector (8) to circuit breaker (JPG).
4.	Screw cover (5) on utility outlet (1).
	NOTE
	Follow-on Maintenance Action Required: Test turret ventilating blower control box (para 7-3).
	END OF TASK



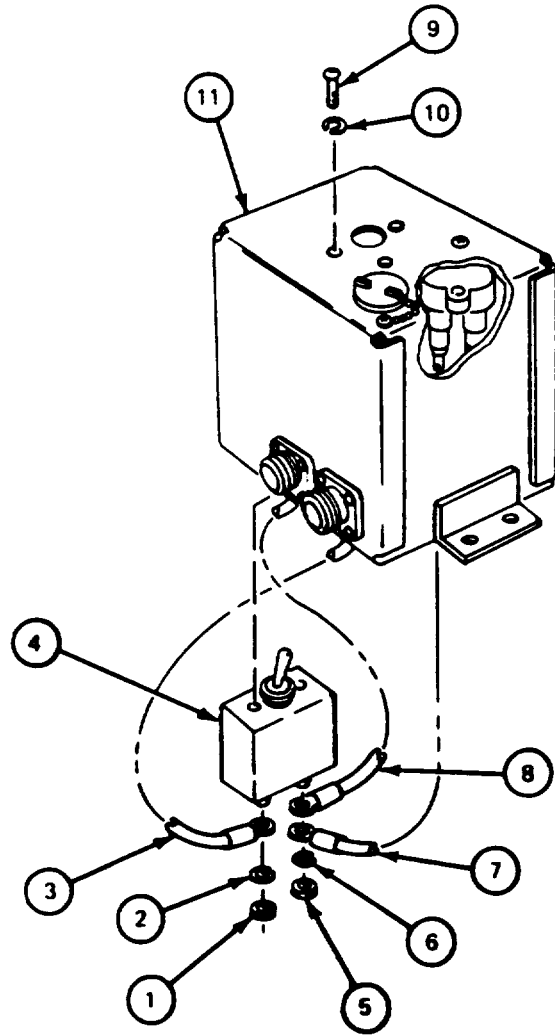
7-10. SWITCH REMOVAL PROCEDURE

TOOLS: Flat tip screwdriver
 3/8" drive ratchet
 7/16" socket (3/8" drive)
 5" extension (3/8" drive)

PERSONNEL: One

PRELIMINARY PROCEDURES: Remove turret ventilating blower control box (para 7-4)

FRAME 1	
Step	Procedure
1.	Using socket wrench, remove nut (1) and lockwasher (2) that attach electrical lead (3) to switch (4).
2.	Remove electrical lead (3) from switch (4).
3.	Using socket wrench, remove nut (5) and lockwasher (6) that attach electrical leads (7) and (8) to switch (4).
4.	Remove electrical leads (7) and (8) from switch (4).
5.	Using screwdriver, remove two screws (9) and two lockwashers (10) that attach switch (4) to control box (11).
6.	Remove switch (4) from control box (11).
	END OF TASK

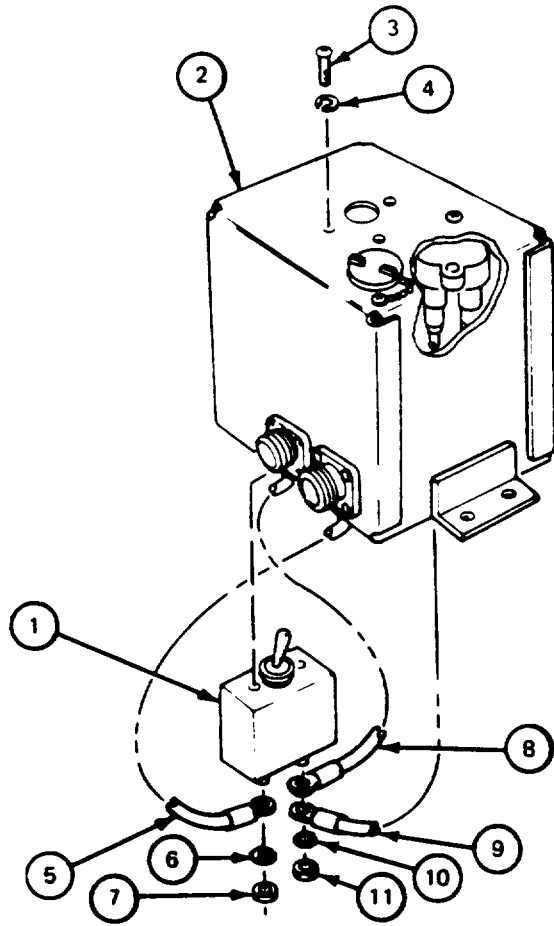


7-11. SWITCH INSTALLATION PROCEDURE

TOOLS: Flat tip screwdriver
 7/16" socket (3/8" drive)
 3/8" drive ratchet
 5" extension (3/8" drive)

PERSONNEL: One

FRAME 1	
Step	Procedure
1.	Using screwdriver, attach switch (1) to control box (2) with two screws (3) and two lockwashers (4).
2.	Using socket wrench, attach electrical lead (5) to switch (1) with lockwasher (6) and nut (7).
3.	Using socket wrench, attach electrical leads (8) and (9) to switch (1) with lockwasher (10) and nut (11).
NOTE	
Follow-on Maintenance Action Required:	
Test turret ventilating blower control box (para 7-3).	
END OF TASK	



7-12. CIRCUIT BREAKER REMOVAL PROCEDURE

TOOLS: Flat tip screwdriver
Needle nose pliers

PERSONNEL: One

REFERENCES: JPG for procedure to disconnect electrical connectors

PRELIMINARY PROCEDURES: Remove turret ventilating blower control box (para 7-4)

FRAME 1	
Step	Procedure
1.	Disconnect electrical connectors (1) and (2) (JPG).
2.	Using screwdriver and needle nose pliers, remove two screws (3), two nuts (4) and two lockwashers (5) that attach circuit breaker (6) to control box (7).
3.	Remove circuit breaker (6) from control box (7).
END OF TASK	

7-13. CIRCUIT BREAKER INSTALLATION PROCEDURE

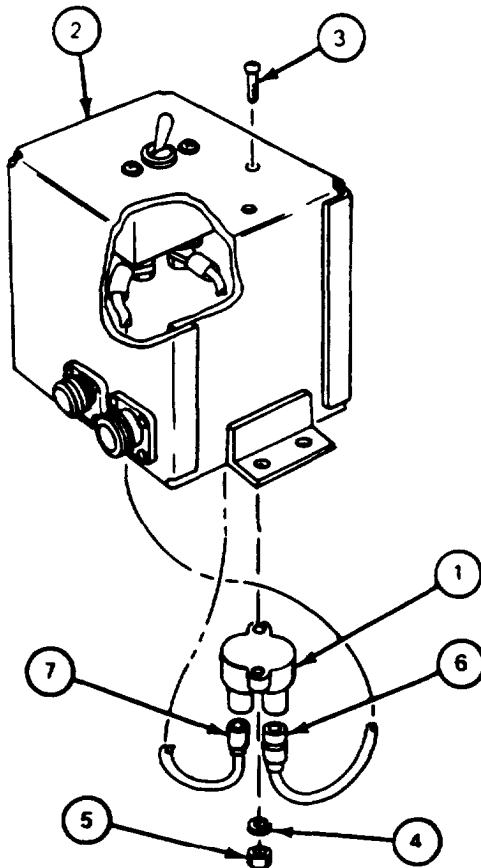
TOOLS: Flat tip screwdriver
Needle nose pliers

PERSONNEL: One

REFERENCES: JPG for procedure to connect electrical connectors

FRAME 1

Step	Procedure
1.	Using screwdriver and needle nose pliers, attach circuit breaker (1) to control box (2) with two screws (3), two lockwashers (4), and two nuts (5).
2.	Connect electrical connectors (6) and (7) (JPG). NOTE Follow-on Maintenance Action Required: Test turret ventilating blower control box (para 7-3). END OF TASK



7-14. ELECTRICAL LEAD AND CONNECTOR (10905683) REMOVAL PROCEDURE

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

PERSONNEL: One

REFERENCES: JPG for procedure to disconnect electrical connectors

PRELIMINARY PROCEDURES: Remove turret ventilating blower control box (para 7-4)

FRAME 1	
Step	Procedure
<ol style="list-style-type: none"> 1. 2. 3. 	<p>Disconnect electrical connector (1) from circuit breaker (JPG).</p> <p>Using socket wrench, remove nut (2) and lockwasher (3) that attach electrical leads (4) and (5) to switch.</p> <p>Remove electrical leads (4) and (5) from switch.</p> <p>END OF TASK</p>

Para 7-14

7-15. ELECTRICAL LEAD AND CONNECTOR (10905683) INSTALLATION PROCEDURE

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

PERSONNEL: One

REFERENCES: JPG for procedure to connect electrical connectors

FRAME 1	
Step	Procedure
<ol style="list-style-type: none"> 1. 2. 	<p>Using socket wrench, attach electrical leads (1) and (2) to switch with lockwasher (3) and nut (4).</p> <p>Connect electrical connector (5) to circuit breaker (JPG).</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Follow-on Maintenance Action Required: Test turret ventilating blower control box (para 7-3).</p> <p>END OF TASK</p>
<p>The diagram shows a perspective view of the turret ventilating blower control box. Two electrical leads, labeled 1 and 2, are shown being attached to a switch mechanism. Lead 1 is connected to a terminal on the left side of the switch, and lead 2 is connected to a terminal on the right side. A lockwasher, labeled 3, is used to secure the connection of lead 1, and a nut, labeled 4, is used to secure the connection of lead 2. An electrical connector, labeled 5, is shown being connected to a terminal on the circuit breaker mechanism. Labels 'SWITCH (REFERENCE)' and 'CIRCUIT BREAKER (REFERENCE)' point to their respective components. The numbered callouts 1 through 5 are enclosed in circles.</p>	

7-16. ELECTRICAL LEAD AND CONNECTOR 10905680 AND 10905681) REMOVAL PROCEDURE

TOOLS: Flat tip screwdriver
 7/16" socket (3/8" drive)
 5/16" open end wrench
 3/8 drive ratchet
 5" extension (3/8" drive)

PERSONNEL: One

PRELIMINARY PROCEDURES: Remove turret ventilating blower control box (para 7-4)

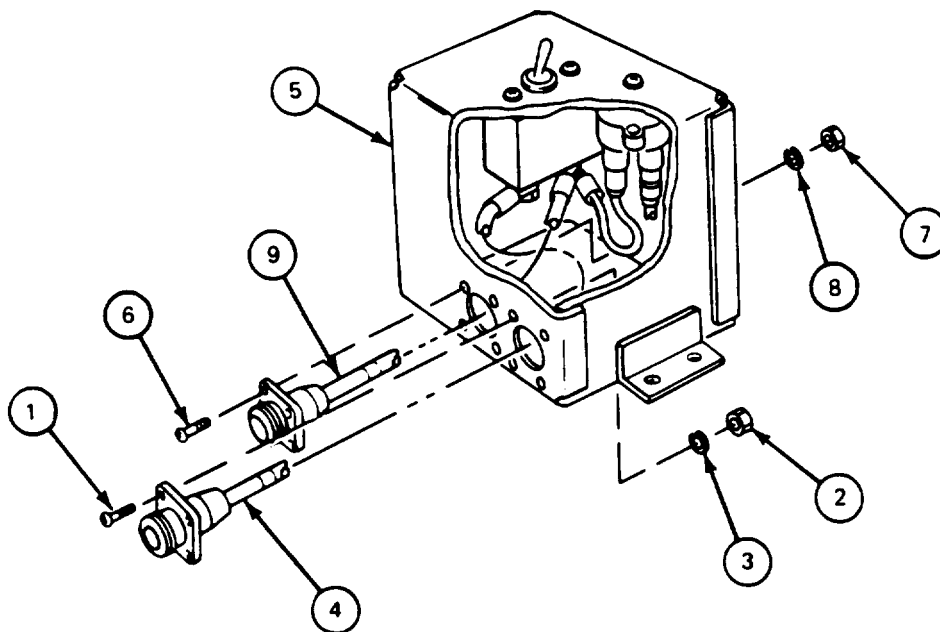
FRAME 1	
Step	Procedure
1.	Using socket wrench, remove nut (1) and lockwasher (2) that attach electrical lead (3) to switch (4).
2.	Remove electrical lead (3) from switch (4).
3.	Using socket wrench, remove nut (5) and lockwasher (6) that attach electrical leads (7) and (8) to switch (4).
4.	Remove electrical leads (7) and (8) from switch (4).
GO TO FRAME 2	

Para 7-16

**7-16. ELECTRICAL LEAD AND CONNECTOR (10905680 AND 10905681)
REMOVAL PROCEDURE (CONT)**

FRAME 2

Step	Procedure
1.	Using screwdriver and 5/16" wrench. remove four screws (1), four nuts (2), and four lockwashers (3) that attach connector and electrical lead (4) to control box (5).
2.	Remove connector and electrical lead (4) (10905680) from control box (5).
3.	Using screwdriver and 5/16" wrench, remove four screws (6), four nuts (7), and four lockwashers (8) that attach connector and electrical lead (9) to control box (5).
4.	Remove connector and electrical lead (9) (10905681) from control box (5). END OF TASK



Para 7-16 Cont

7-25

7-17. ELECTRICAL LEAD AND CONNECTOR (10905680 AND 10905681) INSTALLATION PROCEDURE

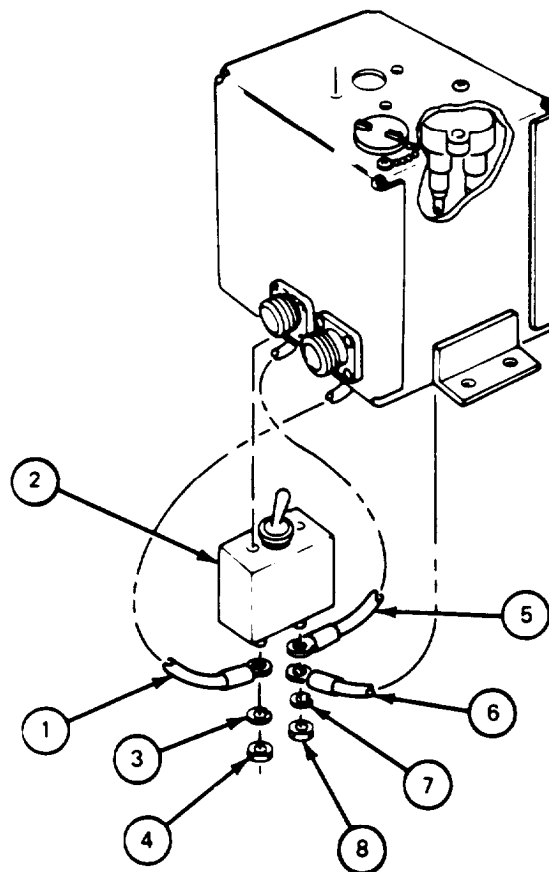
TOOLS: Flat tip screwdriver
 5/16" open end wrench
 7/16" socket (3/8" drive)
 3/8" drive ratchet
 5" extension (3/8" drive)

PERSONNEL: One

FRAME 1	
Step	Procedure
<ol style="list-style-type: none"> 1. Put connector and long electrical lead (1) (10905681) into control box (2). 2. Using screwdriver and 5/16" wrench, attach connector (3) to control box (2) with four screws (4), four lockwashers (5), and four nuts (6). 3. Put connector and short electrical lead (7) (10905680) into control box (2). 4. Using screwdriver and 5/16" wrench, attach connector (8) to control box (2) with four screws (9), four lockwashers (10), and four nuts (11). <p>GO TO FRAME 2</p>	

7-17. ELECTRICAL LEAD AND CONNECTOR (0905680 AND 10905681) INSTALLATION PROCEDURE (CONT)

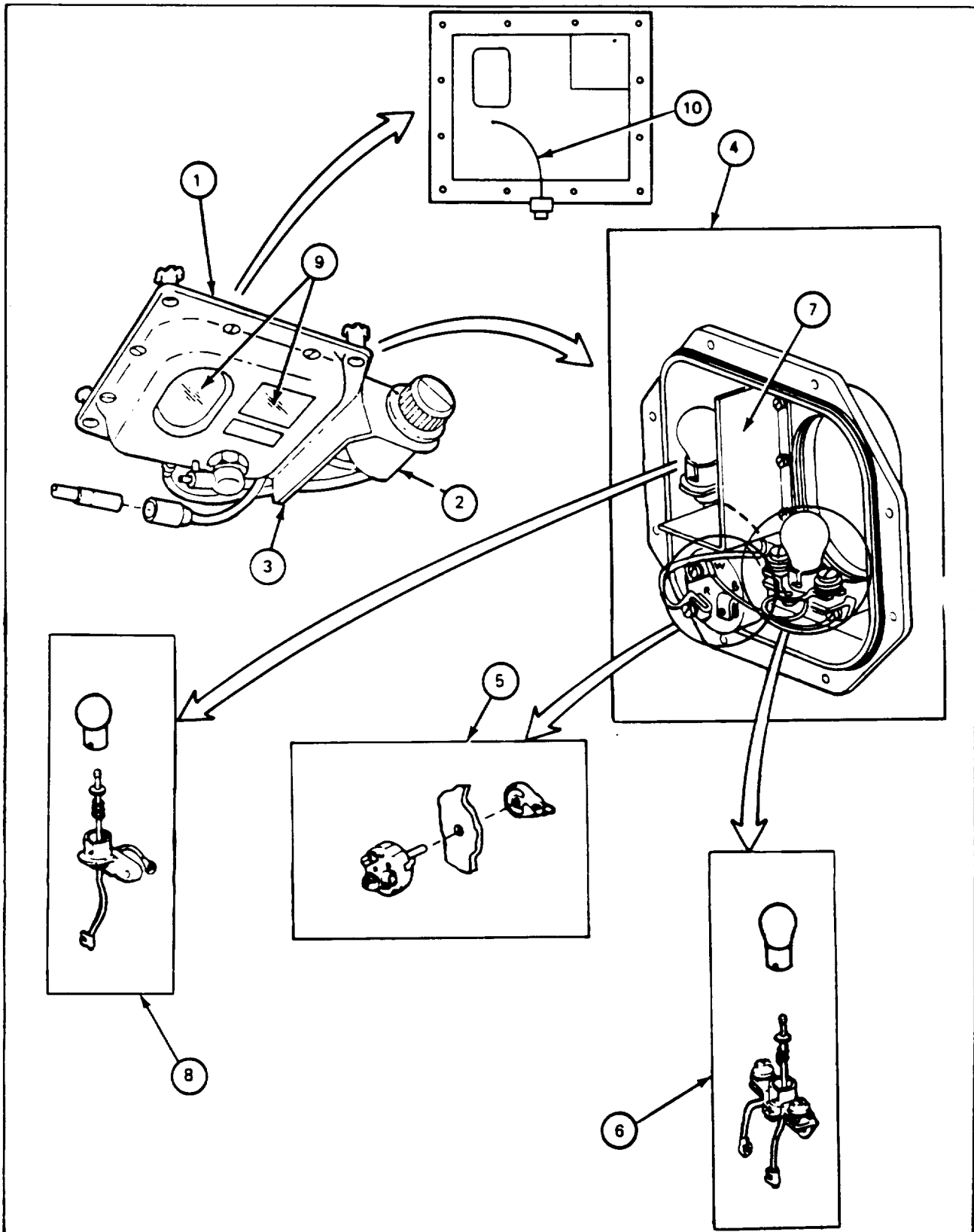
FRAME 2	
Step	Procedure
1.	Using socket wrench, attach electrical lead (1) to switch (2) with lockwasher (3) and nut (4).
2	Using socket wrench, attach electrical leads (5) and (6) to switch (2) with lockwasher (7) and nut (8).
<p>NOTE</p> <p>Follow-on Maintenance Action Required:</p> <p>Test turret ventilating blower control box (para 7-3).</p> <p>END OF TASK</p>	



CHAPTER 8
DOMELIGHT

8-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Test	Removal	Tasks		
			Installation	Disassembly	Assembly
1. Domelight	8-2	8-7	8-8	8-23	8-24
2. Rheostat	...	8-5	8-6	8-25	8-26
3. Bracket	...	8-5	8-6	8-25	8-26
4. Door	...	8-9	8-10		...
5. Switch	...	8-11	8-12		...
6. White Lamp	8-3	8-13	8-14		...
7. Partition	...	8-15	8-16		...
8. Blue Lamp	8-4	8-17	8-18		...
9. Lens	.	8-19	8-20		...
10. B Lead and Connector	..	8-21	8-22		...



Para 8-1 Cont
8-3/(3-4 blank)

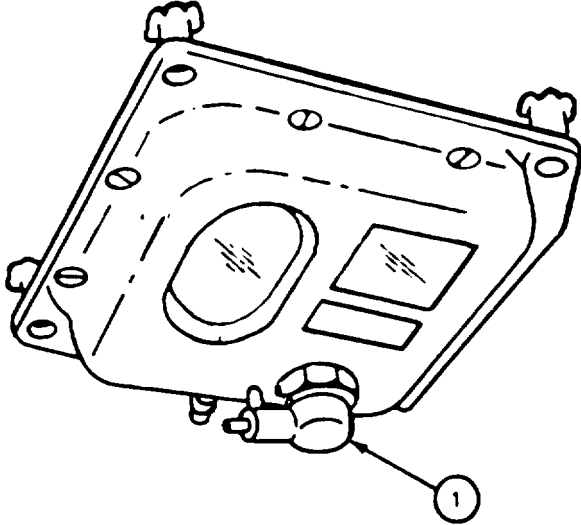
8-2. DOMELIGHT TEST PROCEDURE

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

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

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

FRAME 1		
Step	Procedure	Normal Indication
NOTE		
If normal indication is not obtained in step 1, do blue Lamp test (para 8-4).		
1.	Turn knob (1) fully clockwise.	Blue lamp lights
NOTE		
If normal indication is not obtained in step 2, do white light test (para 8-3).		
2	Turn knob (1) fully counterclockwise.	White lamp lights.
END OF TASK		
		

8-3. WHITE LAMP TEST PROCEDURE

TEST EQUIPMENT: Multimeter

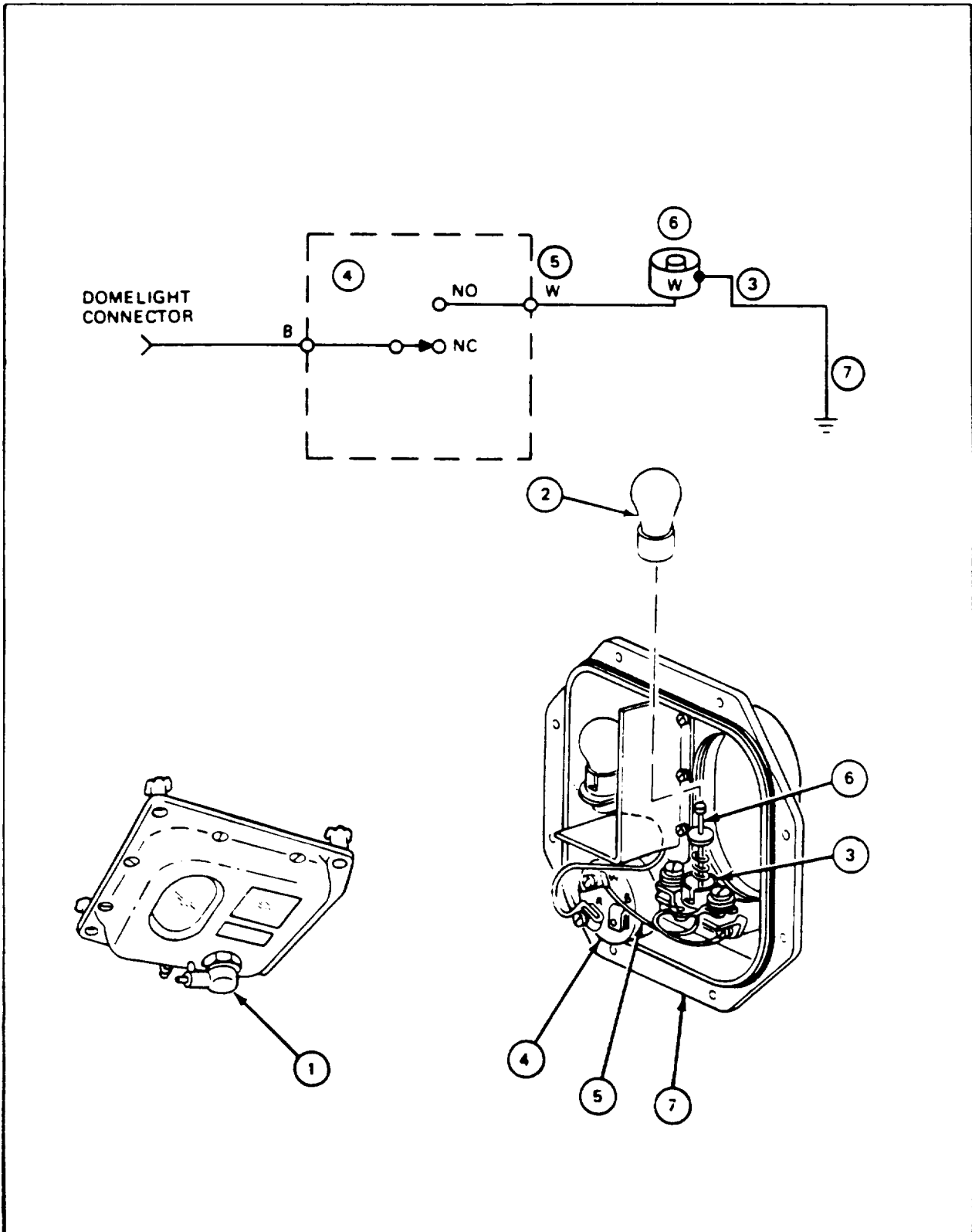
PERSONNEL: One

REFERENCES JPG for procedures to:
 Use multimeter
 Remove lamp

PRELIMINARY PROCEDURES: Remove domelight door (para 8-9)

FRAME 1											
Step	Procedure	Normal Indication	Probable Fault								
1.	Turn domelight knob (1) fully counterclockwise.										
2	Check domelight for any broken or loose wires. Repair or replace as necessary.										
3.	Remove white lamp (2) from socket (3) (JPG).										
NOTE											
If a normal indication is not obtained in step 4. go to para 8-1 for removal procedure of bad item listed in PROBABLE FAULT column											
4	Using multimeter. check continuity between following points (JPG):										
	<table style="width: 100%; border: none;"> <tr> <td style="text-align: right; width: 50%;">FROM</td> <td style="text-align: left; width: 50%;">TO</td> </tr> <tr> <td style="text-align: right;">Switch (4) pin B</td> <td style="text-align: left;">Switch (4) pin W</td> </tr> <tr> <td style="text-align: right;">W lead (5)</td> <td style="text-align: left;">Light socket center contact (6)</td> </tr> <tr> <td style="text-align: right;">Light socket (3) case</td> <td style="text-align: left;">Dome light door (7) (ground)</td> </tr> </table>	FROM	TO	Switch (4) pin B	Switch (4) pin W	W lead (5)	Light socket center contact (6)	Light socket (3) case	Dome light door (7) (ground)	Less than 2 ohms	Bad switch (4)
FROM	TO										
Switch (4) pin B	Switch (4) pin W										
W lead (5)	Light socket center contact (6)										
Light socket (3) case	Dome light door (7) (ground)										
		Less than 2 ohms	Bad W lead (5) or bad white light socket (3)								
		Less than 2 ohms	Bad white light socket (3)								
	END OF TASK										

Para 8-3



8-4. BLUE LAMP TEST PROCEDURE

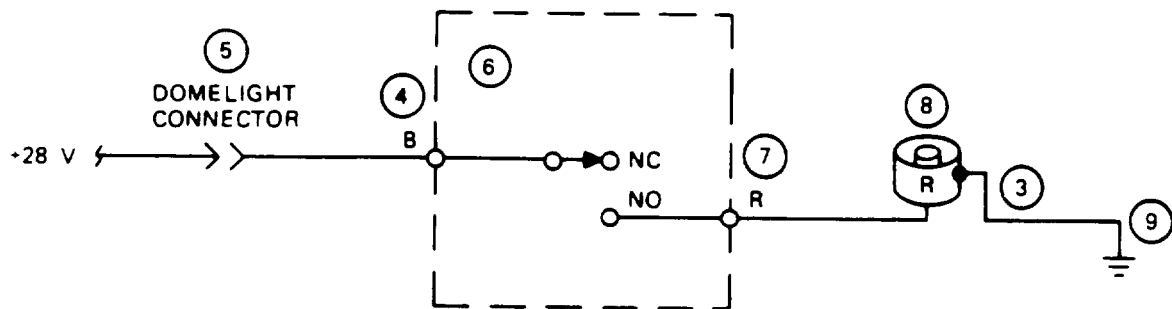
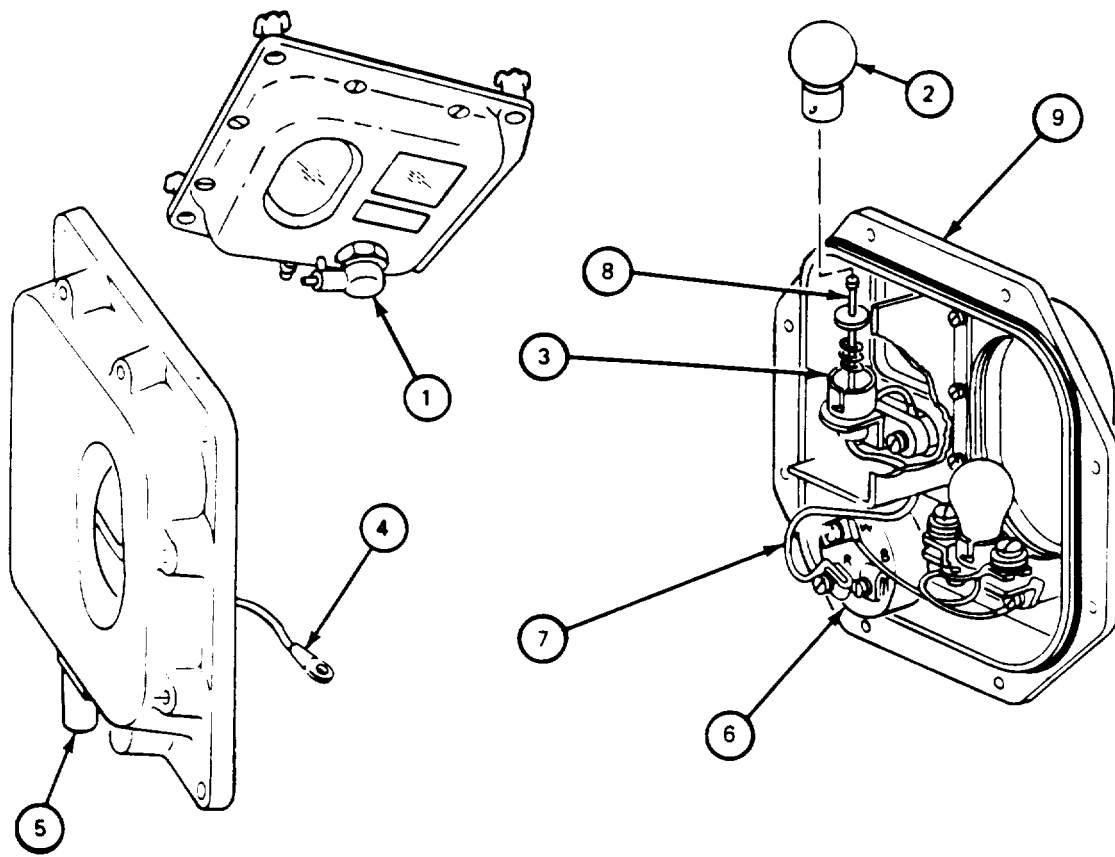
TEST EQUIPMENT: Multimeter

PERSONNEL: One

REFERENCES: JPG for procedures to:
 Use multimeter
 Remove lamp

PRELIMINARY PROCEDURES: Remove domelight door (para 8-9)

FRAME 1																							
Step	Procedure	Normal Indication	Probable Fault																				
1.	Turn domelight knob (1) fully clockwise.																						
2.	Check domelight for any broken or damaged part and broken or loose wires. Repair or replace as necessary.																						
3.	Rcmovc blue lamp (2) from socket (3) (JPG).																						
NOTE																							
If a normal indication is not obtained in step 4, go to para 8-1 for removal procedure of bad item listed in PROBABLE FAULT column.																							
4.	Using multimeter, check continuity between following points (JPG):																						
	<table border="0" style="width: 100%;"> <tr> <td style="width: 30%;">FROM</td> <td style="width: 30%;">TO</td> <td style="width: 30%;"></td> <td style="width: 10%;"></td> </tr> <tr> <td>B lead (4)</td> <td>Domelight connector (5) center contact</td> <td style="text-align: center;">Less than 2 ohms</td> <td style="text-align: center;">Bad B lead (4) or bad domelight connector (5)</td> </tr> <tr> <td>Switch (6) pin B</td> <td>Switch (6) pin R</td> <td style="text-align: center;">Less than 2 ohms</td> <td style="text-align: center;">Bad switch (6)</td> </tr> <tr> <td>R lead (7)</td> <td>Light socket (8) center contact</td> <td style="text-align: center;">Less than 2 ohms</td> <td style="text-align: center;">Bad R lead (7) or bad bluc light socket (3)I</td> </tr> <tr> <td>Light socket (3) case</td> <td>Domelight door (Y) (ground)</td> <td style="text-align: center;">Less than 2 ohms</td> <td style="text-align: center;">Bad bluc light socket (3)</td> </tr> </table>	FROM	TO			B lead (4)	Domelight connector (5) center contact	Less than 2 ohms	Bad B lead (4) or bad domelight connector (5)	Switch (6) pin B	Switch (6) pin R	Less than 2 ohms	Bad switch (6)	R lead (7)	Light socket (8) center contact	Less than 2 ohms	Bad R lead (7) or bad bluc light socket (3)I	Light socket (3) case	Domelight door (Y) (ground)	Less than 2 ohms	Bad bluc light socket (3)		
FROM	TO																						
B lead (4)	Domelight connector (5) center contact	Less than 2 ohms	Bad B lead (4) or bad domelight connector (5)																				
Switch (6) pin B	Switch (6) pin R	Less than 2 ohms	Bad switch (6)																				
R lead (7)	Light socket (8) center contact	Less than 2 ohms	Bad R lead (7) or bad bluc light socket (3)I																				
Light socket (3) case	Domelight door (Y) (ground)	Less than 2 ohms	Bad bluc light socket (3)																				
	END OF TASK																						



8-5. RHEOSTAT AND BRACKET REMOVAL PROCEDURE

TOOLS: 7/16" socket (3/8" drive)
3/8" drive ratchet
5" 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
Gunner's Domelight	FO-1	1
Commander's Domelight	FO-3	3
Loader's Domelight	FO-4	4

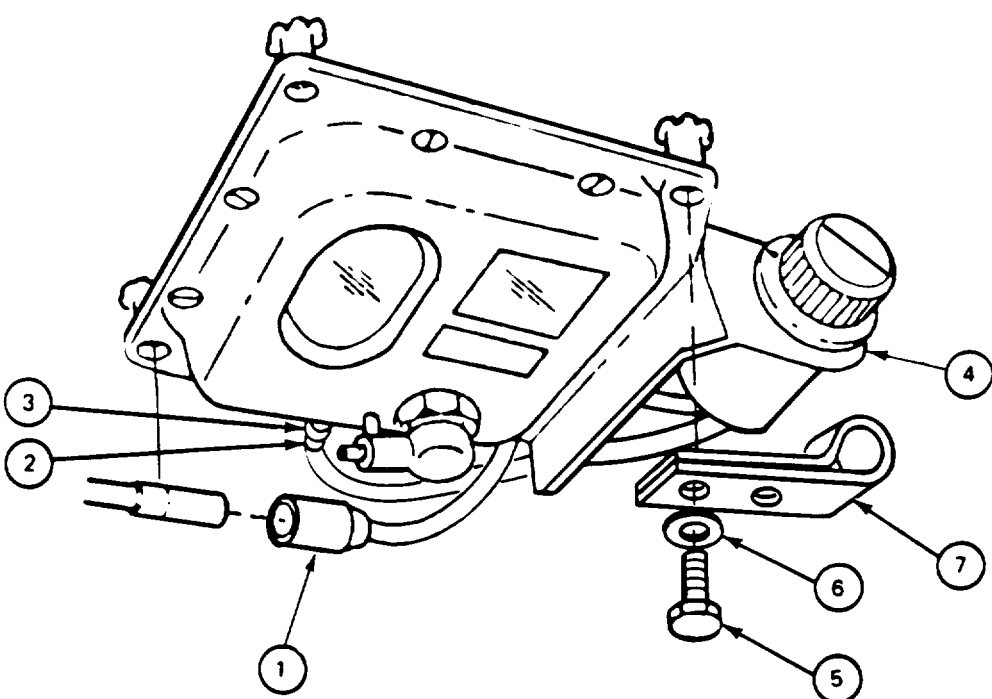
EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

GENERAL INSTRUCTIONS:

CAUTION

To prevent damage to domelight connector, do not let rheostat and bracket hang by wires during removal.

8-5. RHEOSTAT AND BRACKET REMOVAL PROCEDURE (CONT)

FRAME 1	
Step	Procedure
	<p style="text-align: center;">NOTE</p> <p>Rheostat electrical connector (1) lead is attached to domelight by a clamp (7). Clamp is not always in same place.</p> <p>Disconnect electrical connector (1) (JPG).</p> <p>Disconnect lead (2) from domelight connector (3).</p> <p>Hold rheostat and bracket (4) with one hand. Using socket wrench, remove two screws (5) and two washers (6).</p> <p>Remove clamp (7) and rheostat and bracket (4).</p> <p>END OF TASK</p>
	

8-6. RHEOSTAT AND BRACKET INSTALLATION PROCEDURE

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

PERSONNEL: One

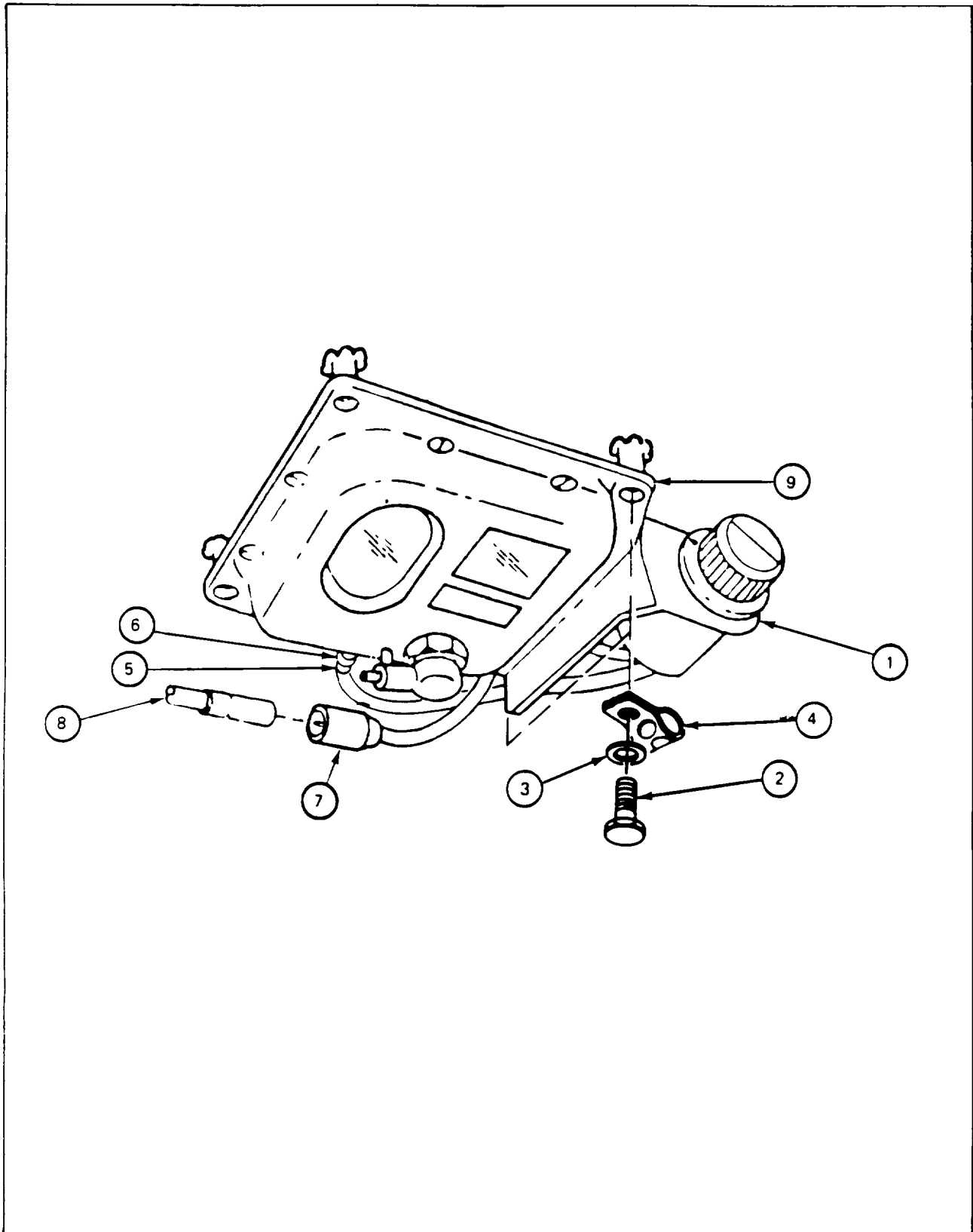
REFERENCES: JPG for procedure to connect electrical connectors

EQUIPMENT LOCATION INFORMATION:

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

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

FRAME 1	
Step	Procedure
1.	Put rheostat assembly and bracket (1) in place on red lamp side and put on two screws (2) and two washers (3). Make sure clamp (4) is attached on comer nearest switch. Clamp must not be in way of door access.
2.	Using socket wrench, tighten two screws (2).
3.	Connect electrical connector 5) to domelight receptacle (6) (JPG).
4.	Connect electrical connector 7) to vehicle power cable (8) (JPG).
NOTE	
Follow-on Maintenance Action Required:	
Test domelight for operation (para 8-2)	
END OF TASK	



Para 8-6 Cont
8-13/(8-14 blank)

8-7. DOMELIGHT REMOVAL PROCEDURE

TOOLS: 7/16" socket (3/8" drive)
 3/8" drive ratchet
 5" 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
Gunner's Domelight	FO-1	1
Commander's Domelight	FO-3	3
Loader's Domelight	FO-4	4

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

PRELIMINARY PROCEDURES: Remove rheostat and bracket (para 8-5)

FRAME 1	
Step	Procedure
1.	Hold domelight (1) with one hand.
2.	Using socket wrench, remove two screws (2) and two washers (3) and remove domelight (1).
END OF TASK	

The diagram shows a perspective view of a domelight assembly. A circular callout labeled '1' points to the outer rim of the domelight housing. Below the housing, two screws labeled '2' and two washers labeled '3' are shown in an exploded view, indicating they are to be removed from the assembly.

8-8. DOMELIGHT INSTALLATION PROCEDURE

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

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

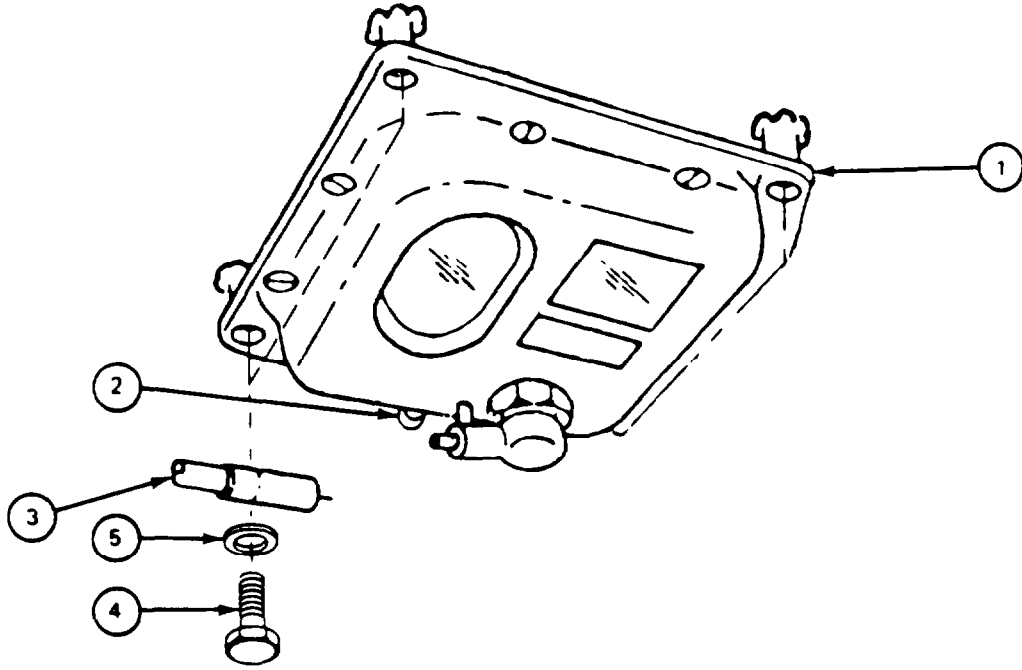
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Domelight	FO-1	1
Commander's Domelight	FO-3	3
Loader's Domelight	FO-4	4

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

8-8. DOMELIGHT INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Put domelight (1) in place with domelight receptacle (2) at nearest location to vehicle power cable (3).
2.	Hold domelight with one hand. Use other hand to put in and hand-tighten two screws (4) and two washers (5) on white lamp side to attach domelight to turret. Using socket wrench, tighten two screws (4).
<p style="text-align: center;">NOTE</p> <p style="text-align: center;">Follow-on Maintenance Action Required: Install rheostat and bracket (para 8-6).</p> <p>END OF TASK</p>	



8-9. DOOR REMOVAL PROCEDURE

TOOLS: Flat tip screwdriver

PERSONNEL: One

PRELIMINARY PROCEDURES: Remove domelight (para 8-7)

FRAME 1	
Step	Procedure
1.	Using screwdriver, loosen eight screws (1) holding door assembly (2) to body group (3). <p style="text-align: center;">NOTE</p> B lead (4) is connected to both door assembly (2) and body group (3). Use care to avoid breaking lead.
2.	Slowly lift off door assembly (2). Eight retaining rings (5) will hold screws (1) on body group.
3.	Using screwdriver, remove screw (6) and washer (7) to disconnect B lead (4) from pin B of switch (8).
END OF TASK	

The diagram illustrates the door removal process. On the left, the door assembly (2) is shown being lifted away from the body group (3). Eight retaining rings (5) are shown holding the screws (1) on the body group. The B lead (4) is shown connected to both the door assembly and the body group. A screw (6) and washer (7) are shown being removed from the B lead (4) to disconnect it from pin B of the switch (8).

8-10. DOOR INSTALLATION PROCEDURE

TOOLS: Flat tip screwdriver

PERSONNEL: One

FRAME 1	
Step	Procedure
1.	Make sure eight retaining rings (1) are holding eight screws (2) in body group (3). If retaining rings and screws are missing, replace them.
2.	Using screwdriver, install B lead (4) on pin B of switch (5) with screw (6) and washer (7).
3.	Lift body group (3) onto door (8). Align door with body group.
4.	Using screwdriver, tighten eight screws (2) to attach door to body group (3).
<p>NOTE</p> <p>Follow-on Maintenance Action Required: Install domelight (para 8-8).</p> <p>END OF TASK</p>	

Para 8-10

8-19

8-11. SWITCH REMOVAL PROCEDURE

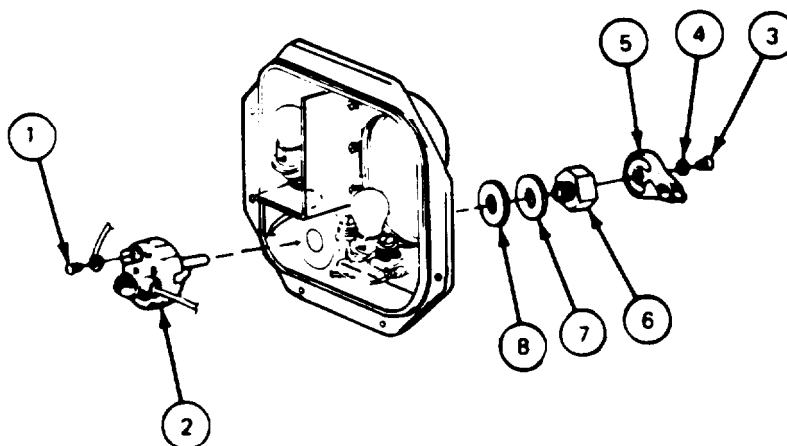
TOOLS: Flat tip screwdriver
 15/16" socket (1/2" drive)
 1/2" drive ratchet

PERSONNEL: One

PRELIMINARY PROCEDURES: Remove domelight (para 8-7)
 Remove door (para 8-9)

FRAME 1

Step	Procedure
1.	Using screwdriver, loosen screws (1) holding W and R wires. Remove wires from switch (2).
2.	Using screwdriver, remove screw (3), lockwasher (4) and knob (5).
3.	Using socket wrench, remove nut (6), flat washer (7), and gasket (8). Lift out switch (2).
END OF TASK	



8-12. SWITCH INSTALLATION PROCEDURE

TOOLS: Flat tip screwdriver
 15/16" socket (1/2" drive)
 1/2" drive ratchet

PERSONNEL: One

REFERENCES: JPG for procedure to apply sealing compound

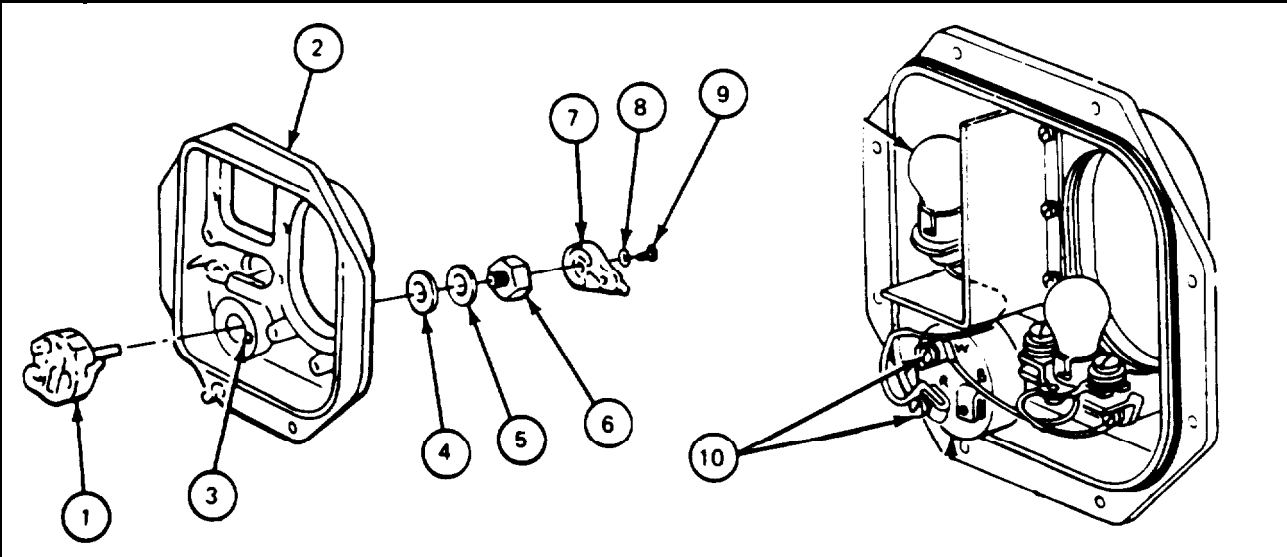
FRAME 1

Step	Procedure
1.	Put switch (1) in place in door assembly (2), aligning slot on switch with lug (3) on door.
2.	Using socket wrench, install gasket (4), flat washer (5), and nut (6) on switch (1) shaft. Tighten with socket.
3.	Put knob (7) on switch (1) shaft.
4.	Apply sealing compound to screw (9) (JPG). Using screwdriver, put in lockwasher (8) and screw (9) to hold knob (7).
5.	Connect W and R leads to switch (1). Using screwdriver, tighten screws (10).

NOTE

Follow-on Maintenance Action Required:
 Install door (para 8-10).

END OF TASK



8-13. WHITE LAMP REMOVAL PROCEDURE

TOOLS: Cross tip screwdriver (Phillips)
 Flat tip screwdriver

PERSONNEL: One

REFERENCES: JPG for procedure to remove lamps

PRELIMINARY PROCEDURES: Remove domelight (para 8-7)
 Remove door (para 8-9)

FRAME 1	
Step	Procedure
1. 2. 3.	Remove lamp (1) from socket (JPG). Using flat tip screwdriver, loosen screw (2) and remove W lead (3) from switch. Using Phillips screwdriver, remove two screws (4) holding socket (5). Lift out socket. END OF TASK

The diagram illustrates the lamp removal process. On the right, a lamp housing is shown with a lamp (1) seated in its socket. A screw (2) is positioned to be loosened from a switch mechanism. A wire (3) is shown being disconnected from the switch. On the left, the removed socket (5) is shown, held together by two screws (4). An arrow points from the housing towards the removed socket, indicating the direction of removal.

8-14. WHITE LAMP INSTALLATION PROCEDURE

TOOLS: Cross tip screwdriver (Phillips)
Flat tip screwdriver-

PERSONNEL: One

REFERENCES: JPG for procedure to replace lamps

FRAME 1	
Step	Procedure
<ol style="list-style-type: none"> 1. Put screw (1) though ground lead lug (2) and socket screw hole (3). 2. Using Phillips screwdriver, attach socket (4) to door assembly (5) with two screws (1). 3. Connect W lead (6) to W terminal (7). Using flat tip screwdriver, tighten screw (8). 4. Replace lamp (9) in socket (JPG). 	<p>NOTE</p> <p>Follow-on Maintenance Action Required: Install door (para 8-10).</p> <p>END OF TASK</p>
<p>The diagram illustrates the lamp installation process. It shows a perspective view of the door assembly (5) with a lamp (9) being inserted into a socket. A separate exploded view shows the components: screw (1), ground lead lug (2), socket screw hole (3), socket (4), W lead (6), W terminal (7), and a screw (8) used to secure the socket to the door assembly.</p>	

8-15. PARTITION REMOVAL PROCEDURE

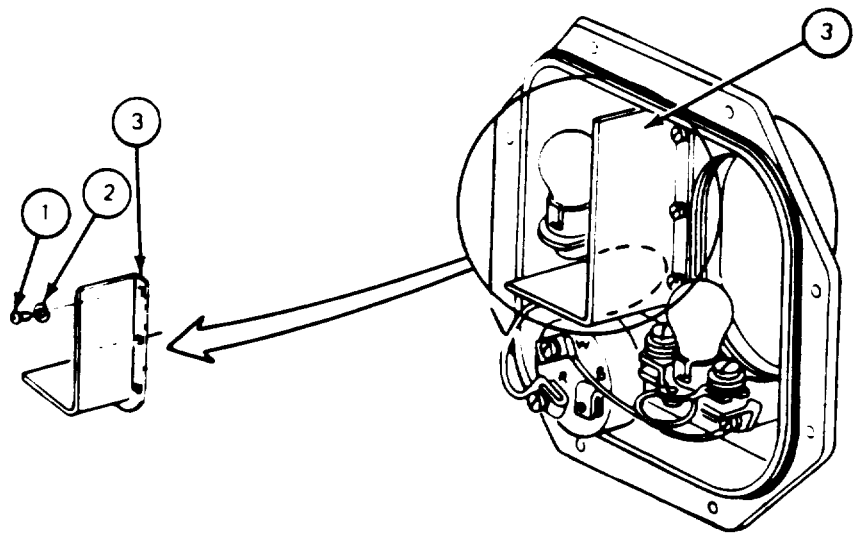
TOOLS: Cross tip screwdriver (Phillips)

PERSONNEL: One

PRELIMINARY PROCEDURES: Remove domelight (para 8-7)
 Remove door (para 8-9)

FRAME 1

Step	Procedure
1.	Using screwdriver, remove four screws (1) and four lockwashers (2). Lift out partition (3). END OF TASK



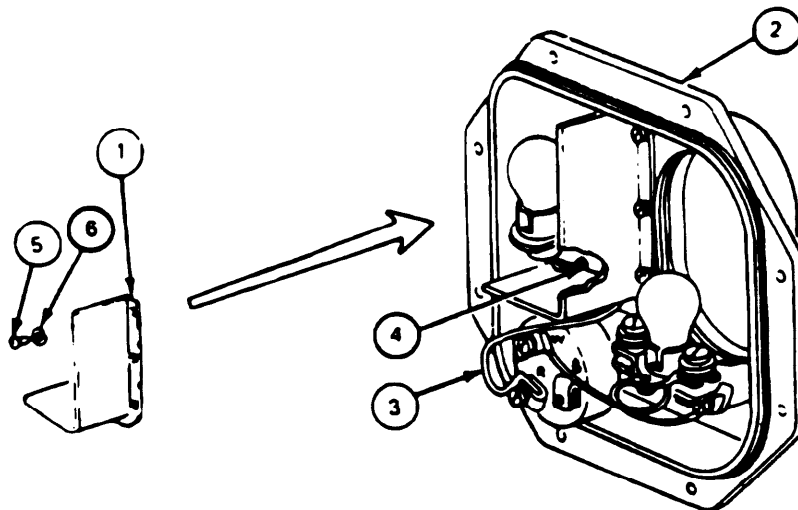
8-16. PARTITION INSTALLATION PROCEDURE

TOOLS: Cross tip screwdriver (Phillips)

PERSONNEL: One

FRAME 1

Step	Procedure
<ol style="list-style-type: none"> 1. 2. 	<p>Put partition (1) in place in door assembly (2). Make sure that R lead (3) is in channel (4) beneath partition.</p> <p>Using screwdriver, put in four screws (5) and four lockwashers (6) to hold partition (1) in place.</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Follow-on Maintenance Action Required: Install door (para 8-10).</p> <p>END OF TASK</p>



8-17. BLUE LAMP REMOVAL PROCEDURE

TOOLS: Flat tip screwdriver

PERSONNEL: One

REFERENCES JPG for procedure to remove lamps

PRELIMINARY PROCEDURES: Remove domelight (para 8-7)
 Remove door (para 8-9)
 Rcmovc partition (para 8-15)

FRAME 1	
Step	Procedure
1. 2. 3.	Remove lamp (1) from socket (JPG). Using screwdriver. loosen screw (2) and remove R lead (3) from switch. Using screwdriver, remove two screws (4) and washers (5) which hold socket (6). Lift out socket. END OF TASK

Para 8-17

8-26

Change 3

8-18. BLUE LAMP INSTALLATION PROCEDURE**TOOLS:** Flat tip screwdriver**PERSONNEL:** One**REFERENCES** JPG for procedure to replace lamps

FRAME 1	
Step	Procedure
1.	Put washer (1) on screw (2) and put screw through socket screw hole (3) and ground lead lug (4).
2.	Using screwdriver, attach socket (5) to door assembly (6) with two screws (2) and two washers (1).
3.	Connect R lead (7) to R terminal (8). Using screwdriver, tighten screw (9).
4.	Replace lamp (10) in socket (JPG).
<p>NOTE</p> <p>Follow-on Maintenance Action Required: Install partition (para 8-16).</p> <p>END OF TASK</p>	

8-19. LENS REMOVAL PROCEDURE

TOOLS: Cross tip screwdriver (Phillips)

PERSONNEL: One

PRELIMINARY PROCEDURES: Remove domelight (para 8-7)
 Remove door (para 8-9)
 Remove white lamp (para 8-13)
 Remove partition (para 8-15)
 Remove blue lamp (para 8-17)

FRAME 1	
Step	Procedure
1.	Using screwdriver, remove seven screws (1) which hold retainer (2).
2.	Lift out retainer (2), push up on and lift out white lens (3), white lens gasket (4), blue lens (5), and blue lens gasket (6). END OF TASK

8-20. LENS INSTALLATION PROCEDURE

TOOLS: Cross tip screwdriver (Phillips)

PERSONNEL: One

FRAME 1	
Step	Procedure
1.	Put blue lens gasket (1), blue lens (2), white lens gasket (3), and white lens (4) in place in dome light door (5).
2.	Put retainer (6) in place.
<p>NOTE</p> <p>Do not put screws in the three holes shown below used to hold partition.</p>	
3.	Using screwdriver, attach retainer (6) in position with seven screws (7).
<p>NOTE</p> <p>Follow-on Maintenance Action Required: Install blue lamp (para 8-18).</p>	
<p>END OF TASK</p>	

8-21. B LEAD AND CONNECTOR REMOVAL PROCEDURE

TOOLS Cross tip screwdriver (Phillips)

PERSONNEL: One

PRELIMINARY PROCEDURES: Remove domelight (para 8-7)
Remove door (para 8-9)

FRAME 1	
Step	Procedure
<ol style="list-style-type: none"> 1. Using screwdriver. remove two screws (1) from B lead connector (2). 2. Remove connector (2). B lead (3). and gasket (4) from body assembly (5). <p>END OF TASK</p>	

Para 8-21

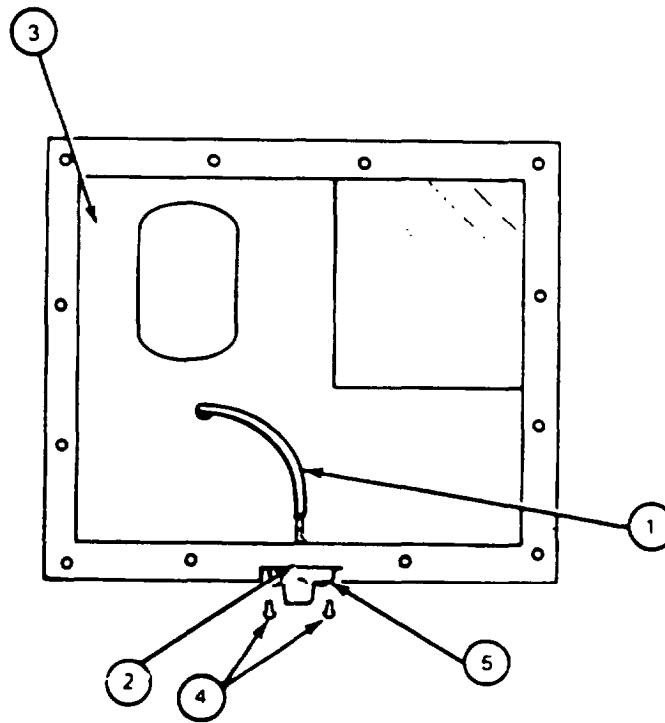
8-22. B LEAD AND CONNECTOR INSTALLATION PROCEDURE

TOOLS: Cross tip screwdriver (Phillips)

PERSONNEL: One

FRAME 1

Step	Procedure
1.	Put B lead (1) through gasket (2) and through hole in body assembly (3).
2.	Using screwdriver, put in two screws (4) attaching connector (5) to body assembly (3). <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Follow-on Maintenance Action Required: Install door (para 8-10)</p> <p>END OF TASK</p>

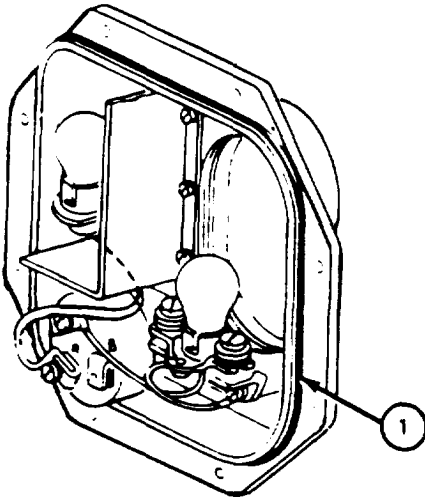


8-23. DOMELIGHT DISASSEMBLY PROCEDURE

PRELIMINARY PROCEDURES: Remove domelight (para 8-7)

FRAME 1	
Step	Procedure
1.	Remove door (para 8-9).
2.	Lift gasket (1) off domelight.
3.	Remove switch (para 8-11).
4.	Remove white lamp (para 8-13).
5.	Remove partition (para 8-1 5).
6.	Remove blue lamp (para & 17).
7.	Remove lens (para 8-19).
8.	Remove B lead and connector (para 8-21).
	END OF TASK

8-24. DOMELIGHT ASSEMBLY PROCEDURE

FRAME 1		
Step	Procedure	
1. 2. 3. 4. 5. 6. 7. 8.	Install B lead and connector (para 8-22). Install lens (para 8-20). Install blue lamp (para 8-18). Install partition (para 8-16). Install white lamp (para 8-14). Install switch (para 8-12). Install gasket (1) on domelight Install door (para 8-10). END OF TASK	
		

Para 8-24

Change 3

8-33

8-25. RHEOSTAT AND BRACKET DISASSEMBLY PROCEDURE

TOOLS 1/16" socket head screw key (Allen Wrench)
 9/16" box wrench

PERSONNEL: One

PRELIMINARY PROCEDURES: Remove rheostat and bracket (para 8-5)

FRAME 1	
Step	Procedure
1. 2. 3.	Using Allen wrench. loosen. but do not remove, two setscrews (1) on knob (2). Slide knob (2) off shaft. Using wrench. loosen. but do not remove. nut (3). Holding rheostat (4) in one hand. remove nut (3) and washer (5). Slide rheostat (4) out of bracket (6). END OF TASK

Para 8-25

8-26. RHEOSTAT AND BRACKET ASSEMBLY PROCEDURE

TOOLS: 1/16" socket head screw key (Allen wrench)
 9/16" box wrench

PERSONNEL: One

FRAME 1	
Step	Procedure
<ol style="list-style-type: none"> 1. Put rheostat (1) into bracket (2) 2. Using box wrench, attach rheostat (1) to bracket (2) with nut (3) and washer (4). 3. Put knob (5) on rheostat shaft. 4. Using Allen wrench, tighten two setscrews (6) holding knob (5) on rheostat shaft. <p>END OF TASK</p>	

CHAPTER 9

TURRET POWER AND SEARCHLIGHT RELAY BOX

9-1. MAINTENANCE PROCEDURES INDEX

	Equipment Item	Removal	Tasks	Installation
1.	Searchlight Relay Box	9-2		9-3
2.	Bracket	9-2		9-3

9-2. TURRET POWER AND SEARCHLIGHT RELAY BOX AND BRACKET REMOVAL PROCEDURE

- TOOLS:** Adjustable hook spanner wrench
 7/16 in. socket (3/8 in. drive)
 9/16 in. universal socket (3/8 in. drive)
 9/16 in. combination box and open end wrench
 3/8 in. drive ratchet
 12 in. adjustable wrench
 12 in. extension (3/8 in. drive)

PERSONNEL: One

REFERENCES: JPG for procedure to disconnect electrical connectors

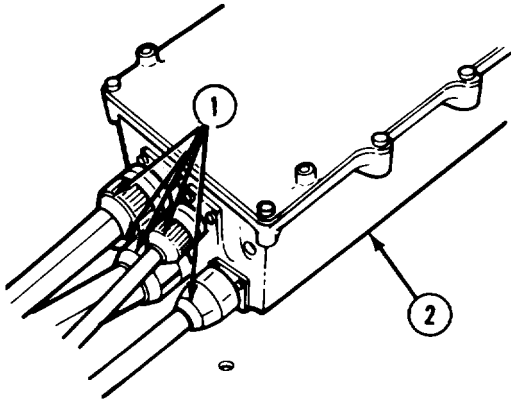
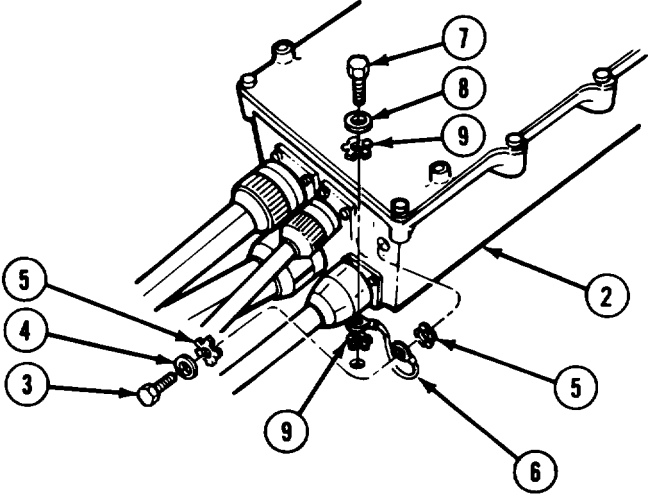
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Power and Searchlight Relay Box	FO-1	12
Turret Traverse Lock	FO-3	7

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

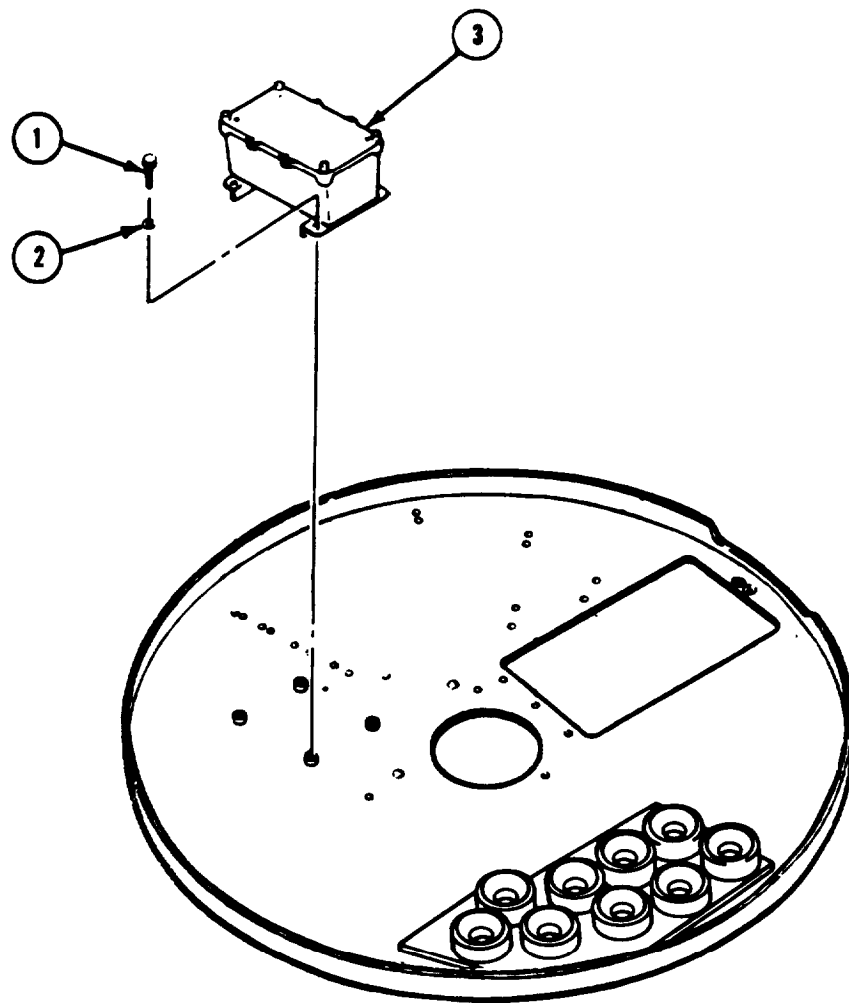
PRELIMINARY PROCEDURES: Remove gunner's seat (para 14-2)
 Remove gunner's footrest plate (para 2-26)

FRAME 1	
STEP	PROCEDURE
1.	Using spanner wrench and adjustable wrench, disconnect five cables (1) from turret power and searchlight relay box (2) (JPG).
2.	Using 7/16 in. socket wrench, remove screw (3) washer (4), two lockwashers (5) and ground lead (6) from turret power and searchlight relay box (2) (on late model only).
3.	Using 9/16 in. wrench, remove screw (7), washer (8), two lockwashers (9) and ground lead (6) from turret platform (on late model only).
GO TO FRAME 2	

9-2. TURRET POWER AND SEARCHLIGHT RELAY BOX AND BRACKET REMOVAL
PROCEDURE (CONT)

FRAME 2	
Step	Procedure
1.	Using 9/16 in. socket wrench, remove four screws (1) and four lockwashers (2) that attach turret power and searchlight relay box (3) to turret floor.
2.	Remove turret power and searchlight relay box (3). GO TO FRAME 3



9-2. TURRET POWER AND SEARCHLIGHT RELAY BOX AND BRACKET REMOVAL PROCEDURE (CONT)

FRAME 3	
Step	Procedure
	<p>1. Using 7/16" socket wrench, remove four screws (1) and four lockwashers (2) that attach two brackets (3) to turret power and searchlight relay box (4).</p> <p>2. Remove two brackets (3) from turret power and searchlight relay box (4).</p> <p>END OF TASK</p> <div><p>The diagram shows a perspective view of a rectangular turret power and searchlight relay box (4). Two L-shaped brackets (3) are attached to the bottom of the box. Four screws (1) and four lockwashers (2) are used to secure the brackets to the box. The callouts are: 1 - screws, 2 - lockwashers, 3 - brackets, and 4 - the relay box.</p></div>

9-3. TURRET POWER AND SEARCHLIGHT RELAY BOX AND BRACKET INSTALLATION PROCEDURE

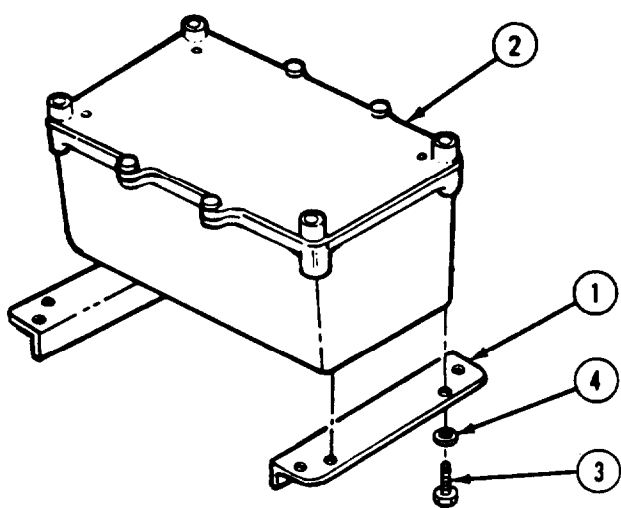
TOOLS: Adjustable hook spanner wrench
 7/16 in. socket (3/8 in. drive)
 9/16 in. socket (3/8 in. drive)
 9/16 in. combination box and open end wrench
 3/8 in. drive ratchet
 12 in. adjustable wrench
 12 in. extension (3/8 in. drive)

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

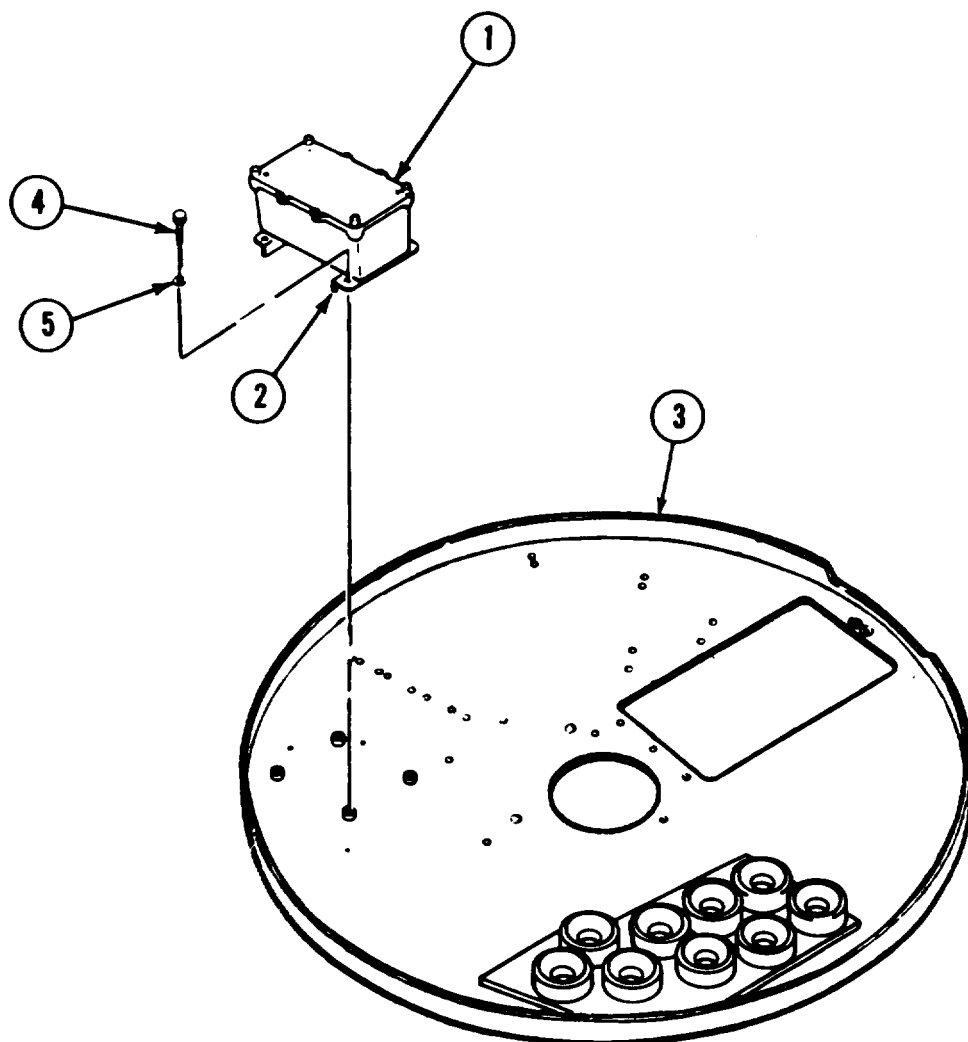
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Power and Searchlight Relay Box	FO-1	12
Turret Traverse Lock	FO-3	7

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

FRAME 1	
Step	Procedure
1.	Using 7/16 in. socket wrench, attach two brackets (1) to turret power and searchlight relay box (2) with four screws (3) and four lockwashers (4). GO TO FRAME 2
	

9-3. TURRET POWER AND SEARCHLIGHT RELAY BOX AND BRACKET INSTALLATION
PROCEDURE (CONT)

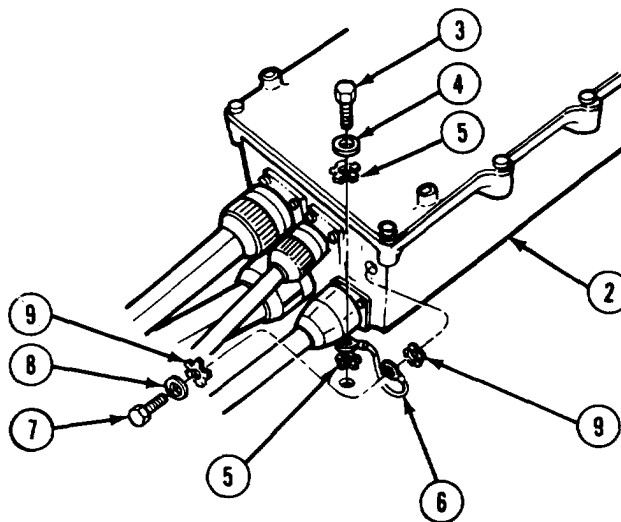
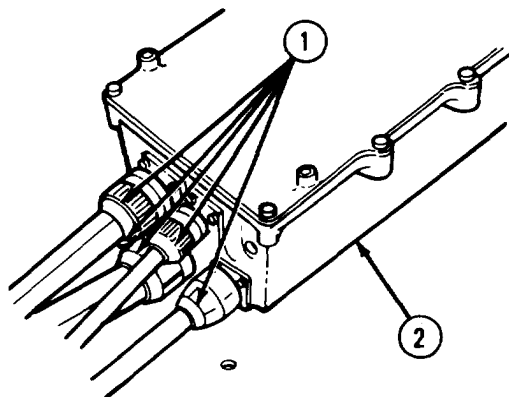
FRAME 2	
Step	Procedure
1.	Using 9/16 in. socket wrench, attach turret power and searchlight relay box (1) and two brackets (2) to turret floor (3) with four screws (4) and four lockwashers (5). GO TO FRAME 3



9-3. TURRET POWER AND SEARCHLIGHT RELAY BOX AND BRACKET INSTALLATION
PROCEDURE (CONT)

FRAME 3

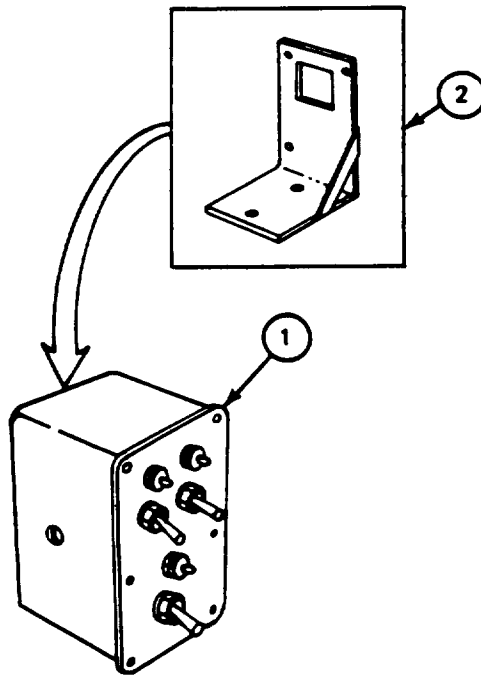
STEP	PROCEDURE
1.	Connect five cables (1) to turret power and searchlight relay box (2) (JPG).
2.	Using spanner wrench and adjustable wrench, tighten connectors.
3.	Using 9/16 in. wrench, install screw (3), washer (4) one lockwasher (5), ground lead (6), and other lockwasher (5) to turret platform (on late model only).
4.	Using 7/16 in. socket wrench, install screw (7), washer (8), one lockwasher (9), ground lead (6) and other lockwasher (9) to turret power and searchlight relay box (2) (on late model only).
<p>NOTE</p> <p>Follow-on Maintenance Action Required:</p> <p>Install gunner's footrest plate (para 2-27)</p> <p>Install gunner's seat (para 14-3)</p>	
<p>END OF TASK</p>	



CHAPTER 10 GUNNER'S CONTROL BOX

10-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Removal	Tasks	Installation
1. Gunner's Control Box	10-2		10-3
2. Mounting Bracket	10-4		10-5



10-2. GUNNER'S CONTROL BOX REMOVAL PROCEDURE

TOOLS: 7/16" combination wrench
Adjustable hook spanner 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
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
Turret traverse lock set 'to LOCKED

FRAME 1	
Step	Procedure
1.	Using spanner wrench, disconnect electrical connector (1) from gunner's control box (2) (JPG).
2.	Using combination wrench, remove three screws (3) and three lockwashers 4) that attach gunner's control box (2) to mounting bracket (5).
3.	Remove gunner's control box (2) from mounting bracket (5). END OF TASK

10-3. GUNNER'S CONTROL BOX INSTALLATION PROCEDURE

TOOLS: 7/16" combination wrench
Adjustable hook spanner wrench

PERSONNEL: One

REFERENCES: JPG for procedure to connect electrical connectors
TM 9-2350-222-10 for operation of gunner's control box

EQUIPMENT LOCATION INFORMATION:

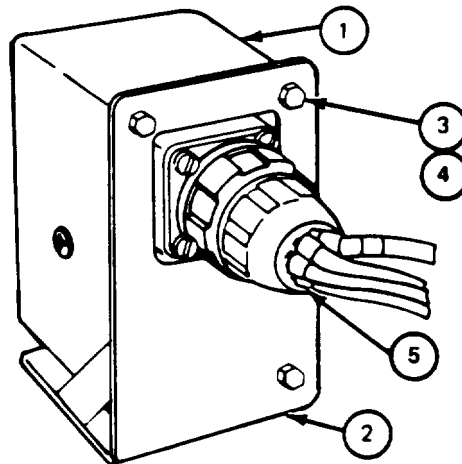
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Gunner's Control Box	FO-1	2
Turret Traverse Lock	FO-3	7

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

10-3. GUNNER'S CONTROL BOX INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Using combination wrench, attach gunner's control box (1) to mounting bracket (2) with three screws (3) and three lockwashers (4).
2.	Using spanner wrench, connect electrical connector (5) to gunner's control box (1) (JPG).
NOTE	
<p>Follow-on Maintenance Action Required: Check operation of 165-mm gun and 7.62-mm machine gun firing circuits to make sure gunner's control box is working properly (TM-10).</p>	
END OF TASK	



10-4. MOUNTING BRACKET REMOVAL PROCEDURE

TOOLS: 7/16" combination 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

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 (para 10-2)

FRAME 1	
Step	Procedure
1.	Using combination wrench, remove two screws (1) and two lockwashers (2) that attach mounting bracket (3) to gunner's control assembly.
2.	Remove mounting bracket (3).
	END OF TASK

10-5. MOUNTING BRACKET INSTALLATION PROCEDURE

TOOLS: 7/16" combination 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

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

FRAME 1

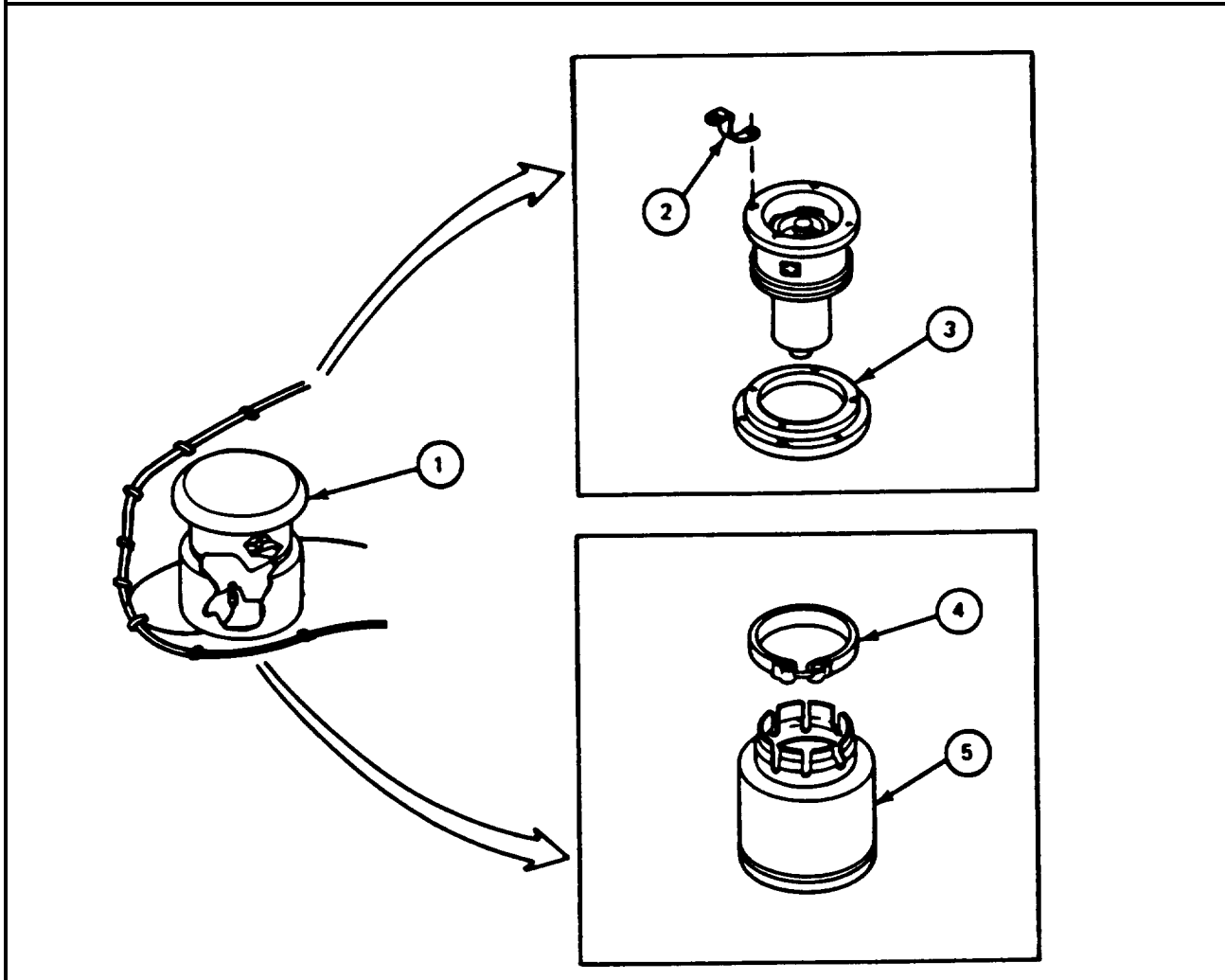
Step	Procedure
1.	<p>Using combination wrench, attach mounting bracket (1) to gunner's control assembly with two screws (2) and two lockwashers (3).</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Follow-on Maintenance Action Required:</p> <p style="text-align: center;">Install gunner's control box (para 10-3).</p> <p>END OF TASK</p>

The diagram illustrates the installation of a mounting bracket (1) onto a gunner's control assembly. A vertical screw (2) is shown passing through the bracket and into the assembly. A lockwasher (3) is positioned between the bracket and the assembly to secure the screw. The assembly is shown in a perspective view, with the bracket being attached to its side. The gunner's control assembly has a rectangular panel with a square cutout and several screws. The mounting bracket (1) is a U-shaped metal piece that fits around the side of the assembly.

CHAPTER 11 TURRET VENTILATING BLOWER

11-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Removal	Task	Installation
1 Turret Ventilating Blower	11-4		11-5
2 Ground Strap	11-6		11-7
3 Shock Mount	11-8		11-9
4 Clamp	11-2		11-3
5 Silencer	11-2		11-3



11-2. SILENCER AND CLAMP REMOVAL PROCEDURE

TOOLS: 3/8" open end wrench
 12" adjustable wrench

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Traverse Lock	FO-3	7
Turret Ventilating Blower	FO-2	7

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

PRELIMINARY PROCEDURES: Remove oddment tray right screen (para 2-38)

FRAME 1	
Step	Procedure
1.	Using open end wrench, loosen nut (1) on clamp (2).
2.	Pull down on silencer (3).
3.	Using adjustable wrench, disconnect cable (4) from turret ventilating blower (5).
4.	Pull clamp (2) off silencer (3).
END OF TASK	

The diagram illustrates the components involved in the silencer and clamp removal procedure. On the left, a circular clamp (2) is shown with a nut (1) on its top edge. On the right, a turret ventilating blower (5) is shown with a silencer (3) attached to its top. A cable (4) is connected to the blower. A mesh screen (2) is also shown to the right of the blower. Arrows indicate the relationship between the callouts and the parts.

Para 11-2

11-2

11-3. SILENCER AND CLAMP INSTALLATION PROCEDURE

TOOLS: 3/8" open end wrench
 12" adjustable wrench

SUPPLIES: Electrical insulating tape (item 24, App. A)

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for operation of turret ventilating blower

EQUIPMENT LOCATION INFORMATION:

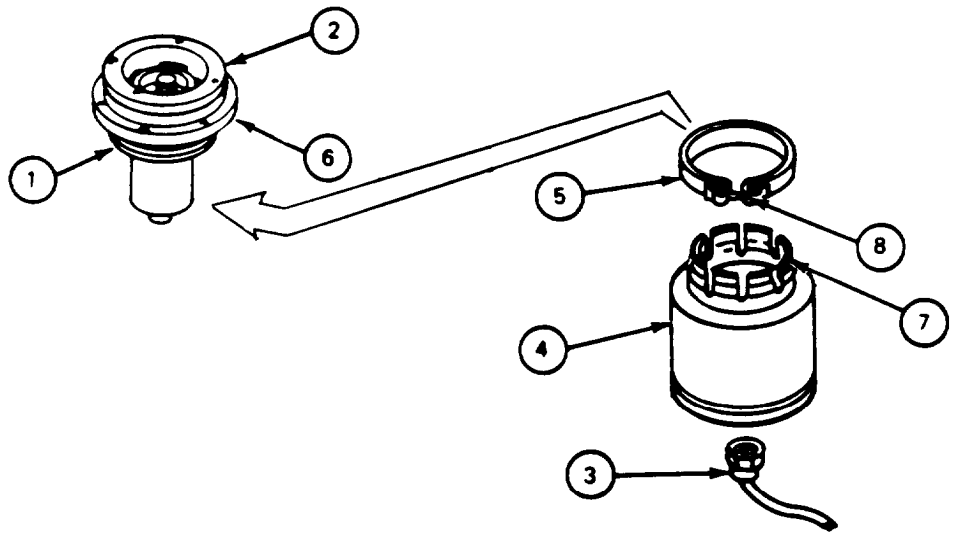
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Ventilating Blower	FO-2	7

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

PRELIMINARY PROCEDURES: Install turret ventilating blower (para 11-5)

11-3. SILENCER AND CLAMP INSTALLATION PROCEDURE (CONT)

FRAME 1	
Step	Procedure
1.	Replace electrical insulating tape (1) on case of turret ventilating blower (2), and lubricate with a light coat of grease if necessary.
2.	Pull cable (3) through silencer (4) and clamp (5). Using adjustable wrench, connect cable plug to connector (6) on bottom of blower (2).
3.	Put clamp (5) on collar (7) of silencer (4).
4.	Place silencer (4) over rubber insulating tape (1) on case of turret ventilating blower (2).
<div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">CAUTION</div> <p>Be careful not to damage insulating tape on case. If fit is too tight, remove clamp (5) and bend sections of collar (7) slightly. Put clamp (5) back on collar (7).</p>	
5.	Using open end wrench, tighten nut (8) on clamp (5).
<p>NOTE</p> <p>Follow-on Maintenance Action Required:</p> <p>Install oddment tray right screen (para 2-39). Check ventilating blower for proper operation (TM-10).</p>	
END OF TASK	



11-4. TURRET VENTILATING BLOWER REMOVAL PROCEDURE

TOOLS: 3/8" socket head screw key (Allen wrench)
 5/16" socket head screw key (Allen wrench)

PERSONNEL: Two

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Ventilating Blower	FO-2	7

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

PRELIMINARY PROCEDURES: Remove silencer and clamp (para 11-2)
 Remove turret ventilating blower cover (para 2-49)

FRAME 1	
Step	Procedure
1.	Using 5/16" Allen wrench, remove six screws (1) and six lockwashers (2). NOTE Two soldiers are needed in step 2 to lift out turret ventilating blower (3).
2.	Lift out turret ventilating blower (3).
3.	Remove and throw away gasket (4).
END OF TASK	

11-5. TURRET VENTILATING BLOWER INSTALLATION PROCEDURE

TOOLS: 3/8" socket head screw key (Allen wrench)
5/ 16" socket head screw key (Allen wrench)

SUPPLIES: Gasket

PERSONNEL: Two

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Turret Ventilating Blower	FO-2	7

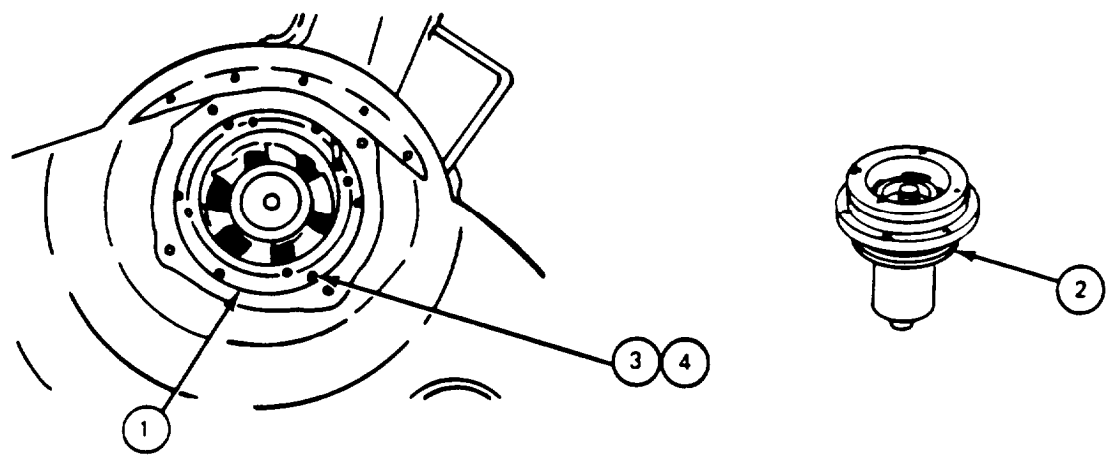
EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF

PRELIMINARY PROCEDURES: Install shock mount (para 11-9)
Install ground strap (para 11-7)

11-5. TURRET VENTILATING BLOWER INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
<ol style="list-style-type: none"> 1. 2. 3. 	<p>Put in gasket (1).</p> <p>Lower ventilating blower (2) into mounting hole in turret roof.</p> <p>Using 5/16" Allen wrench, attach turret ventilating blower (2) to turret with six screws (3) and six lockwashers (4).</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Follow-on Maintenance Action Required:</p> <p style="text-align: center;">Install turret ventilating blower cover (para 2-50)</p> <p style="text-align: center;">Install silencer and clamp (para 11-3).</p> <p>END OF TASK</p>



11-6. GROUND STRAP REMOVAL PROCEDURE

TOOLS: 3/16" socket head screw key (Allen wrench)
 Cross tip screwdriver (Phillips)
 7/16" open end wrench

PERSONNEL: One

PRELIMINARY PROCEDURES: Remove silencer and clamp (para 11-2)
 Remove turret ventilating blower cover (para 2-49)
 Remove turret ventilating blower (para 11-4)

FRAME 1	
Step	Procedure
1.	Using Allen wrench and open end wrench, remove one screw (1), two lockwashers (2), and one nut (3) that attach ground strap (4) to blower (5).
2.	Using screwdriver, remove one screw (6) and two lockwashers (7) that attach ground strap (4) to shock mount (8).
3.	Remove ground strap (6).
END OF TASK	

11-7. GROUND STRAP INSTALLATION PROCEDURE

TOOLS: Cross-tip screwdriver (phillips) Bit holder, 1/2 in. drive
 3/16 in. socket head screw key (allen wrench) Adapter, socket, 1/2 in. to 3/8 in. drive
 7/16 in. open end wrench 7/16 in. socket, 3/8 in. drive
 Screwdriver bit, phillips #2, 1/2 in. drive Torque wrench (3/8 in. drive (0-150 in. lb))

PERSONNEL One

PRELIMINARY PROCEDURES: Install shock mount (para 11-9)

FRAME 1	
STEP	PROCEDURE
1.	Using screwdriver, connect ground strap (1) to outer ring of shock mount (2) with one screw (3) and two lockwashers (4).
2.	Using torque wrench, screwdriver bit, bit holder, and adapter, tighten screw (3) to 16-20 in. lbs (1.8 to 2.3 N-m).
3.	Using allen wrench and open end wrench, connect ground strap (1) to inner ring of shock mount (2) and blower case (5) with one screw (6), two lockwashers (7), and one nut (8).
4.	Using allen wrench to hold screw (6), use torque wrench and socket and tighten nut (8) to 16-20 in. lbs (1.8 to 2.3 N-m).
<p>NOTE</p> <p>Follow-on Maintenance Action Required:</p> <p>Install turret ventilating blower (para 11-5).</p>	
<p>END OF TASK</p>	

11-8. **SHOCK MOUNT REMOVAL PROCEDURE**

TOOLS: 7/16 in. open end wrench
 3/16 in. socket head screw key (allen wrench)

PERSONNEL: One

PRELIMINARY PROCEDURES: Remove silencer and clamp (para 11-2)
 Remove turret ventilating blower cover (para 2-49)
 Remove turret ventilating blower (para 11-4)
 Remove ground strap (para 11-6)

FRAME 1	
STEP	PROCEDURE
1.	Using allen wrench and open end wrench, remove three screws (1), three lockwashers (2), and three nuts (3) that attach shock mount (4) to blower case (5).
2.	Remove shock mount (4) from blower case (5).
END OF TASK	

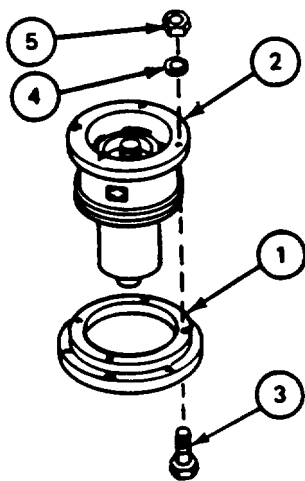
11-9. SHOCK MOUNT INSTALLATION PROCEDURE

TOOLS: 7/16" open end wrench
 3/16" socket head screw key (Allen wrench)

PERSONNEL: One

FRAME 1

Step	Procedure
1. 2.	Put shock mount (1) on blower case (2). Using Allen wrench and open end wrench, attach shock mount (1) to blower case (2) with three screws (3), three lockwashers (4), and three nuts (5). <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Follow-on Maintenance Action Required: Install ground strap (para 11-7)</p> <p>END OF TASK</p>



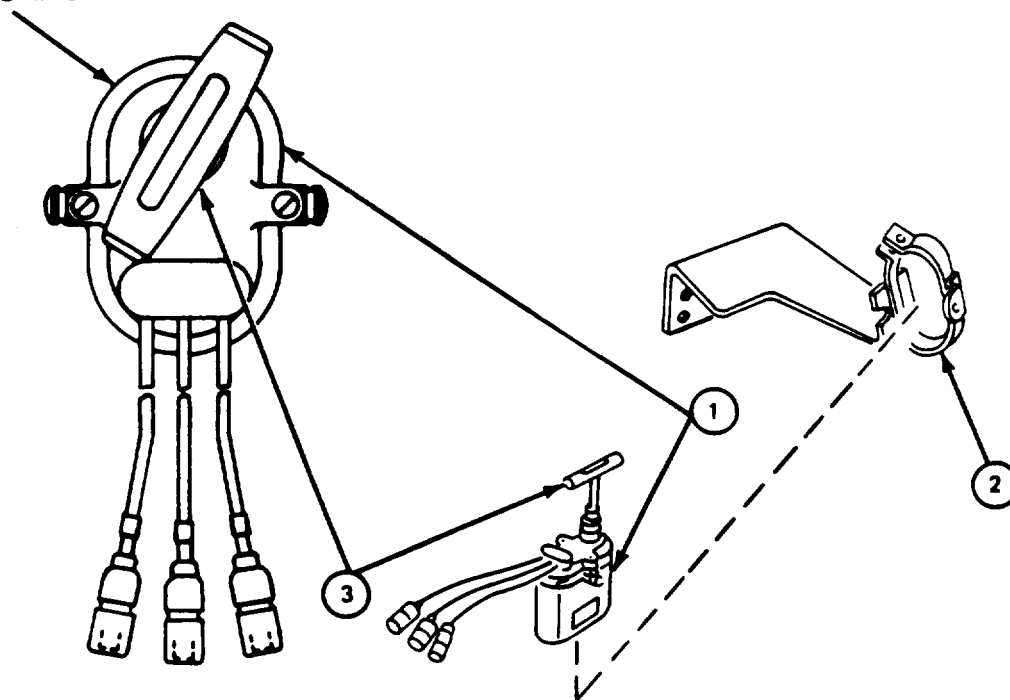
CHAPTER 12

BLASTING MACHINE

12-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Removal	Tasks	Installation
1. Blasting Machine	12-2		12-3
2. Mounting Support	12-4		12-5
3. Handle	12-6		12-7

BLASTING MACHINE



12-2. BLASTING MACHINE REMOVAL PROCEDURE

TOOLS: 7/16" combination wrench
Small pry bar (12 inch)

PERSONNEL: One

REFERENCES: JPG for procedure to disconnect electrical connectors
TM 9-2350-222-10 for procedure to depress gun

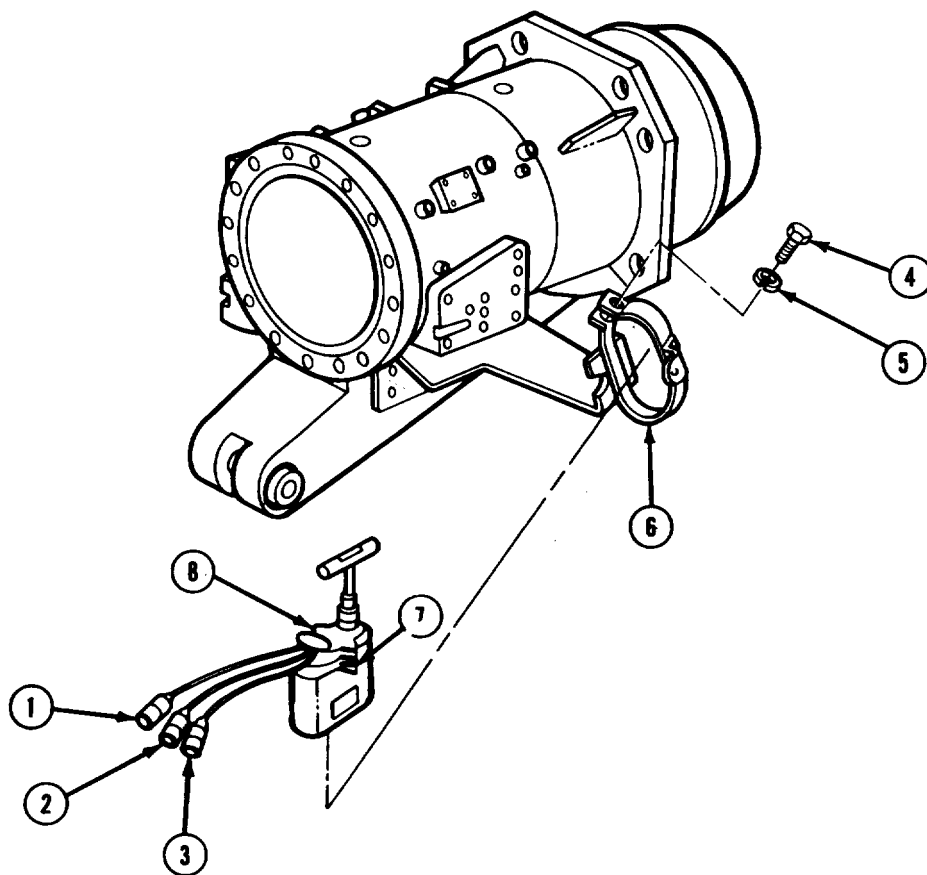
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CAL LOUT
Driver's Master Control Panel	FO-3	11
Blasting Machine	FO-1	20
Turret Traverse Lock	FO-3	7

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

12-2. **BLASTING MACHINE REMOVAL PROCEDURE (CONT)**

FRAME 1	
STEP	PROCEDURE
<ol style="list-style-type: none"> 1. Depress main gun over front slope (TM-10). 2. Disconnect blasting machine electrical connectors (1), (2), and (3) from wiring harness (JPC). 3. Using wrench, remove screw (4) and lockwasher (5) from clamp (6). 4. Using small pry bar, pry clamp (6) open enough to free guidepins (7) on blasting machine (8). Remove blasting machine. <p>END OF TASK</p>	



12-3. BLASTING MACHINE INSTALLATION PROCEDURE

TOOLS: 7/16 in. combination wrench

PERSONNEL: One

REFERENCES: JPG for procedure to connect electrical connectors
TM 9-2350-222-10 for procedures to:
Depress gun
Test blasting machine

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Blasting Machine	FO-1	20
Turret Traverse Lock	FO-3	7

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

12-3. BLASTING MACHINE INSTALLATION PROCEDURE (CONT)

FRAME 1	
Step	PROCEDURE
1.	Depress main gun over front slope (TM-10).
2.	Put blasting machine (1) in place in clamp (2).
3.	Using wrench, put screw (3) and lockwasher (4) into clamp (2) and tighten.
4.	Connect blasting machine electrical connectors (5), (6), and (7) to respective connectors of wiring harness (JPG).
<p>NOTE</p> <p>Follow-on Maintenance Action Required:</p> <p>Test blasting machine (TM-10).</p>	
<p>END OF TASK</p>	

12-4. MOUNTING SUPPORT REMOVAL PROCEDURE

TOOLS 1/2 in. combination wrench

PERSONNEL One

REFERENCES TM 9-2350222-10 for procedure to depress gun

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Blasting Machine	FO-1	20
Turret Traverse Lock	FO-3	7

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

PRELIMINARY PROCEDURES: Remove blasting machine (para 12-2)

12-4. MOUNTING SUPPORT REMOVAL PROCEDURE (CONT)

FRAME 1	
Step	Procedure
1.	Depress main gun over front slope (TM- 10).
2.	Using wrench. remove four bolts (1), four lockwashers (2) and four flat washers (3) that attach mounting support (4) to gun recoil cylinder.
3.	Remove mounting support (4) from gun recoil cylinder.
END OF TASK	

12-5. MOUNTING SUPPORT INSTALLATION PROCEDURE

TOOLS: 1/2" combination wrench

PERSONNEL: One

REFERENCES: TM 9-2350222-10 for procedure to depress gun

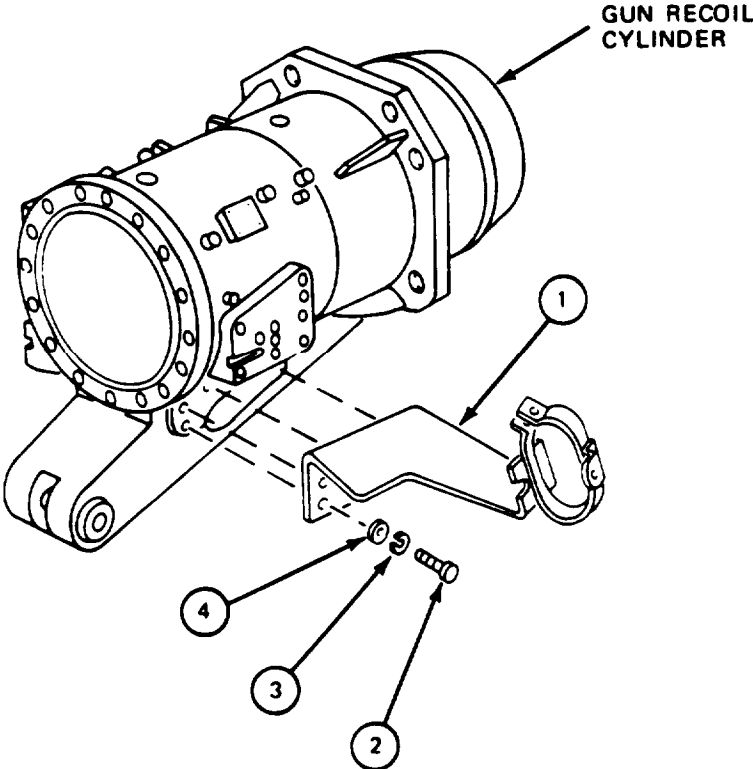
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Blasting Machine	FO-1	20
Turret Traverse Lock	FO-3	7

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

12-5. MOUNTING SUPPORT INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1. Depress main gun over front slope (TM-10). 2. Put mounting support (1) in mounting position on gun recoil cylinder. 3. Using wrench, attach mounting support (1) with four bolts (2), four lockwashers (3) and four flat washers (4).	
END OF TASK	
	

12-6. HANDLE REMOVAL PROCEDURE

TOOLS: 1/8" drive pin punch
 8 oz ball peen hammer
 Slip joint pliers

PERSONNEL: One

PRELIMINARY PROCEDURES: Remove blasting machine (para 12-2)

FRAME 1	
Step	Procedure
1.	Using hammer and punch, tap spring pin (1) until pin (1) is almost out of handle (2).
2.	Using pliers, pull pin (1) out.
3.	Pull handle (2) out from blasting machine (3).
END OF TASK	

The diagram illustrates the handle removal procedure. It shows a rectangular blasting machine (3) with three cables extending from its bottom. A handle (2) is attached to the top. A spring pin (1) is shown being inserted into the handle. A hammer and punch are shown tapping the pin. A pair of pliers is shown pulling the pin out of the handle.

12-7. HANDLE INSTALLATION PROCEDURE

TOOLS: 1/8" drive pin punch
 8 oz ball peen hammer
 Slip joint pliers

SUPPLIES: Spring pin

PERSONNEL: One

FRAME 1	
Step	Procedure
1.	Put handle (1) in blasting machine (2) shaft.
2.	Line up hole in handle (1) with hole in shaft (2).
3.	Using pliers, push new pin (3) through hole in handle (1) and blasting machine (2) shaft.
4.	Using hammer and punch, tap pin (3) all the way in.
END OF TASK	

CHAPTER 13

FIRE EXTINGUISHER MOUNTING BRACKET

13-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Removal	Tasks	
			Installation
Fire Extinguisher (C02) Mounting Bracket	13-2		13-3
Fire Extinguisher (Halon) Mounting Bracket	13-4		13-5

13-2. **FIRE EXTINGUISHER (C02) MOUNTING BRACKET REMOVAL PROCEDURE**

TOOLS 9/16 in. socket (3/8 in. drive)
3/8 in. drive ratchet

PERSONNEL One

REFERENCES: TM 9-2350-222-10 for procedure to remove fire extinguisher

EQUIPMENT LOCATION INFORMATION:

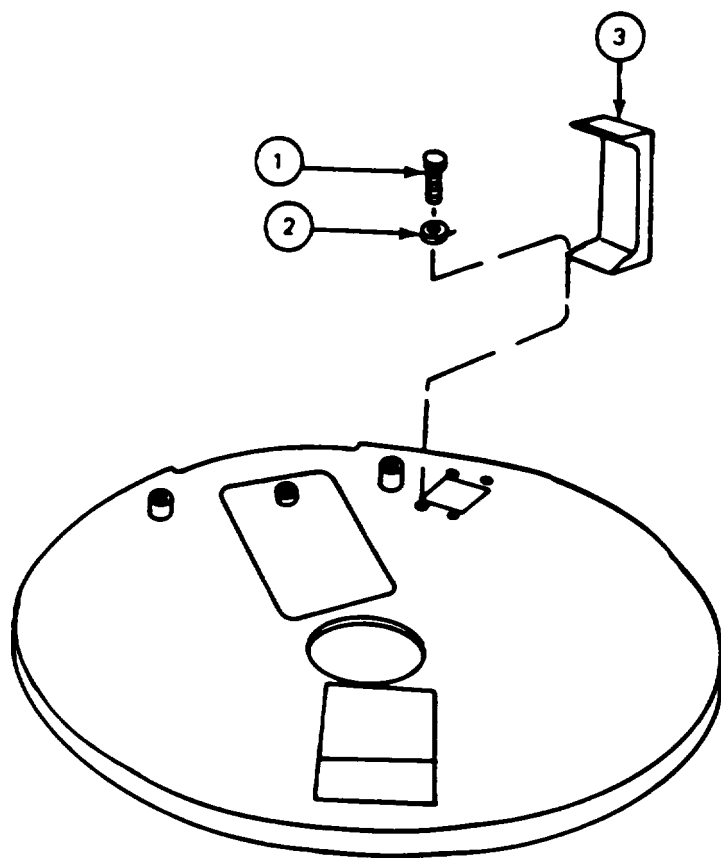
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Fire Extinguisher Mounting Bracket	FO-4	14

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Fire extinguisher removed (TM -10)

13-2. FIRE EXTINGUISHER (C02) MOUNTING BRACKET REMOVAL PROCED (CONT)

FRAME 1

Step	Procedure
1.	Using socket wrench, remove four screws (1) and four lockwashers (2).
2.	Remove fire extinguisher bracket (3). END OF TASK



13-3. FIRE EXTINGUISHER (C02) MOUNTING BRACKET INSTALLATION PROCEDURE

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

PERSONNEL: One

REFERENCES TM 9-2350-222-10 for procedure to install fire extinguisher (C02)

EQUIPMENT LOCATION INFORMATION:

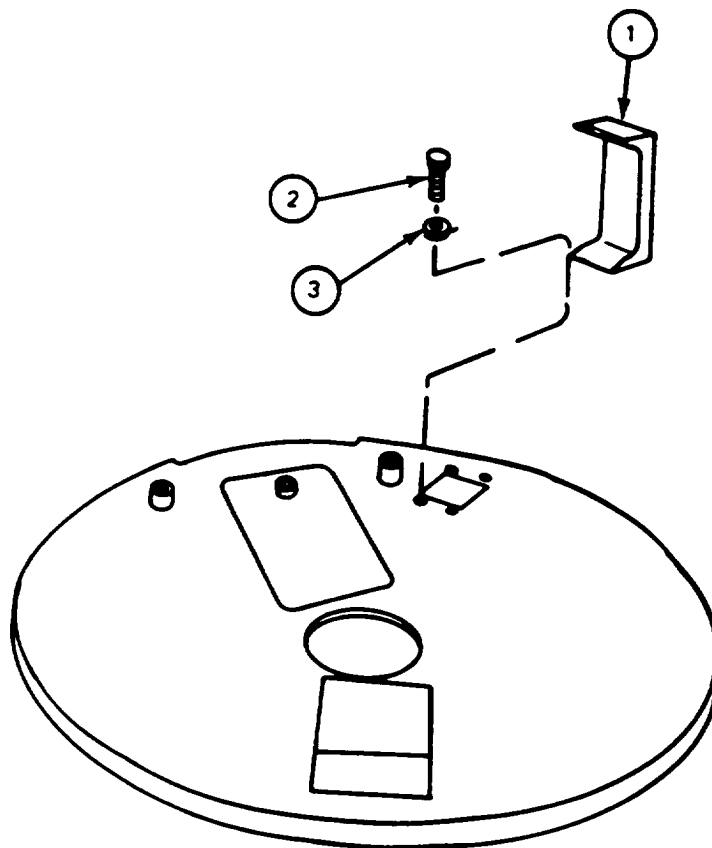
EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Fire Extinguisher Mounting Bracket	FO-4	14

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

13-3. FIRE EXTINGUISHER (C02) MOUNTING BRACKET INSTALLATION PROCEDURE (CONT)

FRAME 1

Step	Procedure
1.	Put fire extinguisher mounting bracket (1) on turret floor. Line up screw holes.
2.	Using socket wrench, attach bracket (1) to floor with four screws (2) and four lockwashers (3).
<p>NOTE</p> <p>Follow-on Maintenance Action Required:</p> <p>Install fire extinguisher (TM -10).</p> <p>END OF TASK</p>	



13-4. FIRE EXTINGUISHER (HALON) MOUNTING BRACKET REMOVAL PROCEDURE

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

PERSONNEL: One

REFERENCES TM 9-2350-222-10 for procedure to remove fire extinguisher

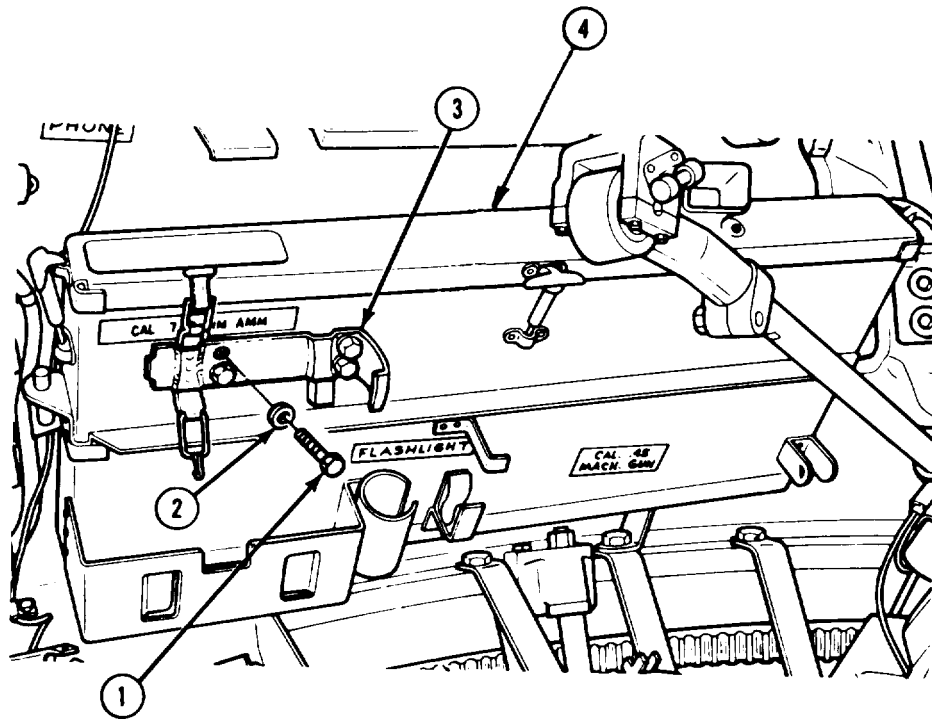
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Fire Extinguisher Mounting Bracket	FO-4	27

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Fire extinguisher removed (TM -10)

13-4. FIRE EXTINGUISHER (HALON) MOUNTING BRACKET REMOVAL PROCEDURE (CONT)

FRAME 1	
Step	Procedure
1.	Using socket and ratchet, remove four screws (1) and four lockwashers (2). Throw away lockwashers (2).
2.	Remove mounting bracket (3) from ready ammunition box (4).
3.	Inspect mounting bracket (3) for cracks or breaks. If not damaged, set aside for later use.
END OF TASK	



13-5. FIRE EXTINGUISHER (HALON] MOUNTING BRACKET INSTALLATION PROCEDURE

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

SUPPLIES: Lockwasher, MS35338 (four required)

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedure to remove fire extinguisher

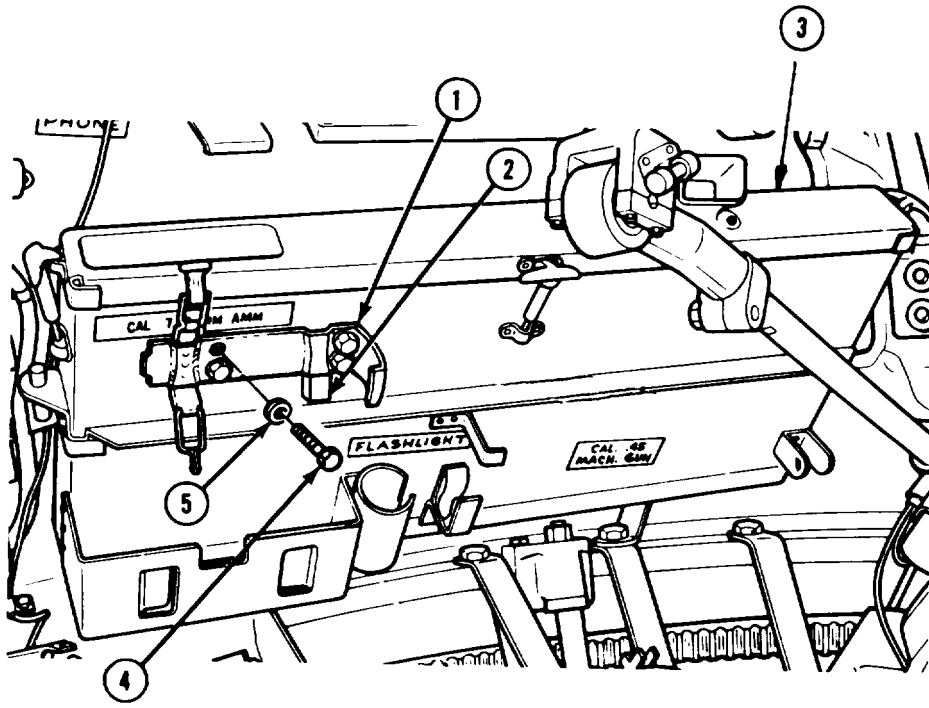
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Driver's Master Control Panel	FO-3	11
Fire Extinguisher Mounting Bracket	FO-4	27

EQUIPMENT CONDITION: Driver's master control panel MASTER BATTERY switch set to OFF
Fire extinguisher removed (TM-10)

13-5. FIRE EXTINGUISHER (HALON) MOUNTING BRACKET INSTALLATION PROCEDURE (CONT)

FRAME 1	
Step	Procedure
<ol style="list-style-type: none"> 1. 2. 	<p>Place mounting bracket (1) on two aluminum posts (2) at ready ammunition box (3).</p> <p>Using socket and ratchet, install four screws (4) and four new lockwashers (5).</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Follow-on Maintenance Action Required:</p> <p style="text-align: center;">Install fire extinguisher (TM-10).</p> <p>END OF TASK</p>



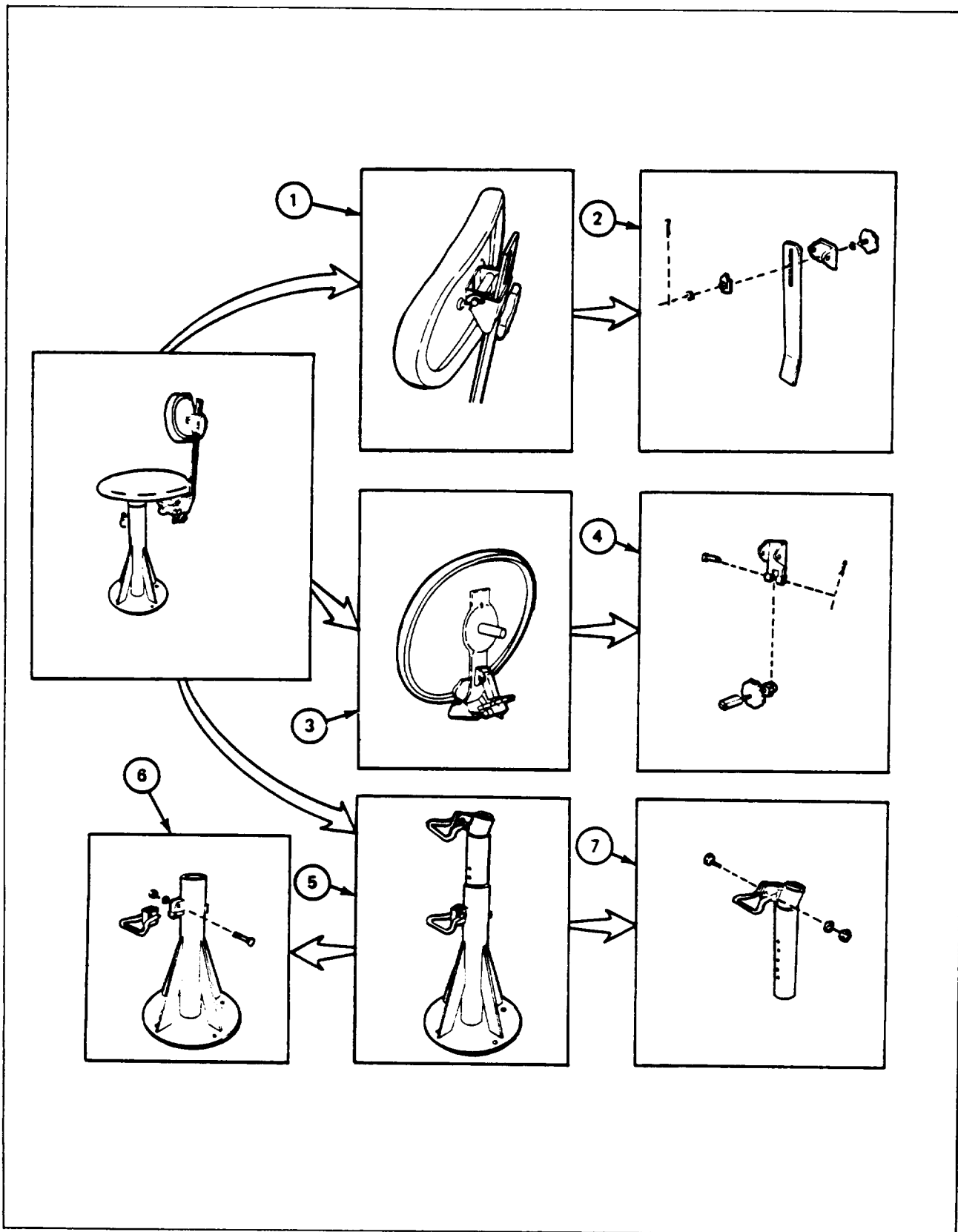
CHAPTER 14
GUNNER'S SEAT

14-1. MAINTENANCE PROCEDURES INDEX

Equipment Item	Removal	Installation	Tasks	
			Disassembly	Assembly
1. Backrest	14-2	14-3	14-6	14-7
2. Height Adjust Knob and Bracket	...	...	14-8	14-9
3. Seat	14-2	14-3	14-10	14-11
4. Angle Adjust Knob and Bracket	...	...	14-12	14-13
5. Pedestal	144	14-5	14-14	14-15
6. Seat Height Handle	...	...	14-16	14-17
7. Seat Pivot Handle	...	...	14-18	14-19

Para 14-1

14-2



14-2. BACKREST AND SEAT REMOVAL PROCEDURE

PERSONNEL: One

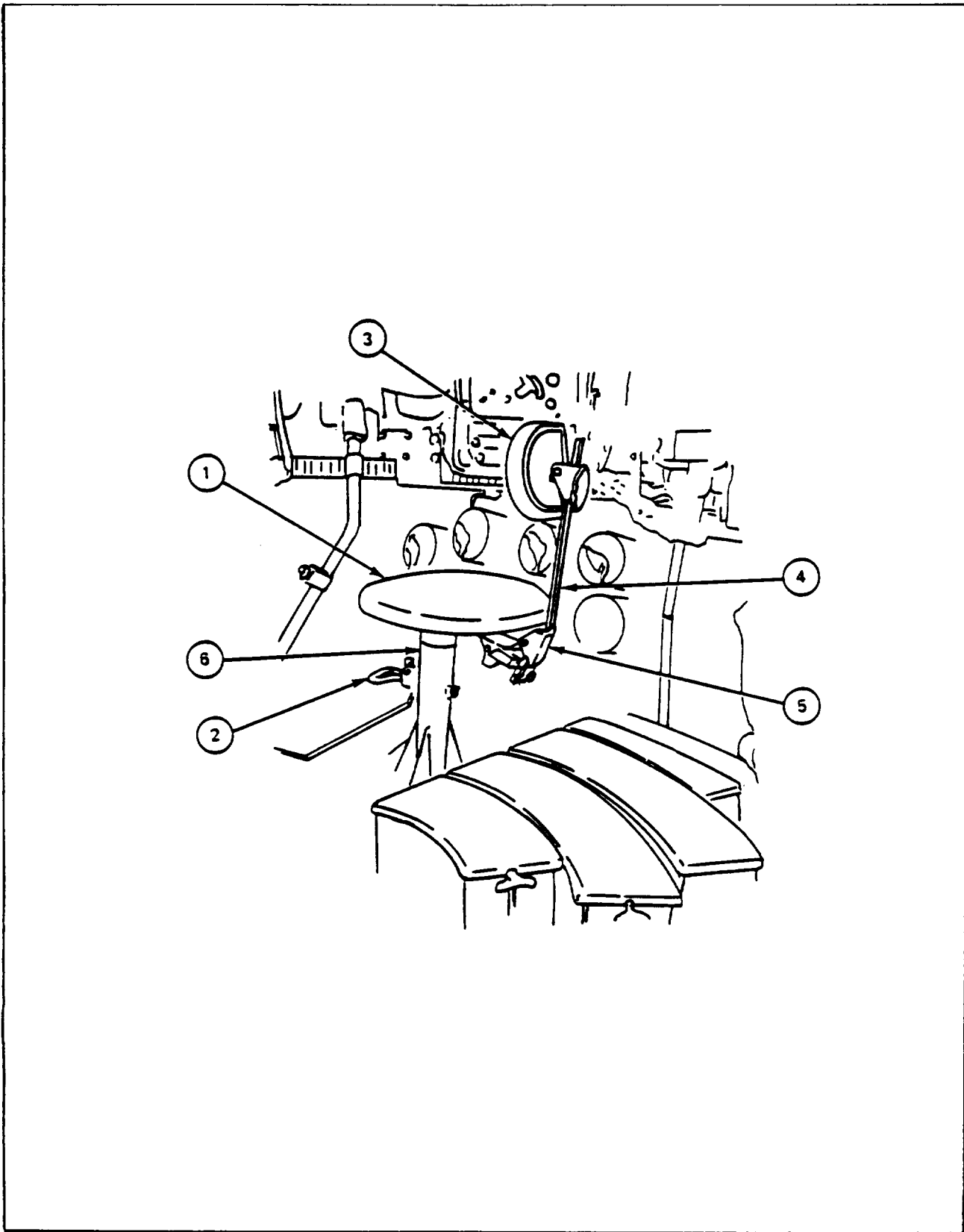
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT
Gunner's Seat

FOLDOUT
FO- 1

CALLOUT
14

FRAME 1	
Step	Procedure
1.	Sit on gunner's seat (1) to hold it down, <div style="text-align: center;">WARNING</div> <p>Gunner's seat is spring loaded and may injure you if spring pressure is not released slowly.</p>
2.	While sitting on gunner's seat (1). push seat height adjust handle (2) down and let seat (1) come all the way up while slowly getting off seat.
3.	Lift backrest (3) and support (4) out of backrest tilt bracket (5).
4.	Lift gunner's seat (1) out of pedestal support (6).
	END OF TASK



Para 14-2 Cont

14-5

14-3. BACKREST AND SEAT INSTALLATION PROCEDURE

PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT
Gunner's Seat

FOLDOUT
FO- 1

CALLOUT
14

FRAME 1	
Step	Procedure
<ol style="list-style-type: none"> 1. Put gunner's seat (1) in pedestal support (2). 2. Put backrest (3) and support (4) in backrest tilt bracket (5). 3. Sit on gunner's seat (1) and push seat height adjust handle (6) down. Let go of handle when desired seat height is obtained. <p>END OF TASK</p>	

14-4. PEDESTAL REMOVAL PROCEDURE

TOOLS: 9/16" socket (1/2" drive)
 1/2" drive ratchet
 12" extension (1/2" drive)

PERSONNEL: One

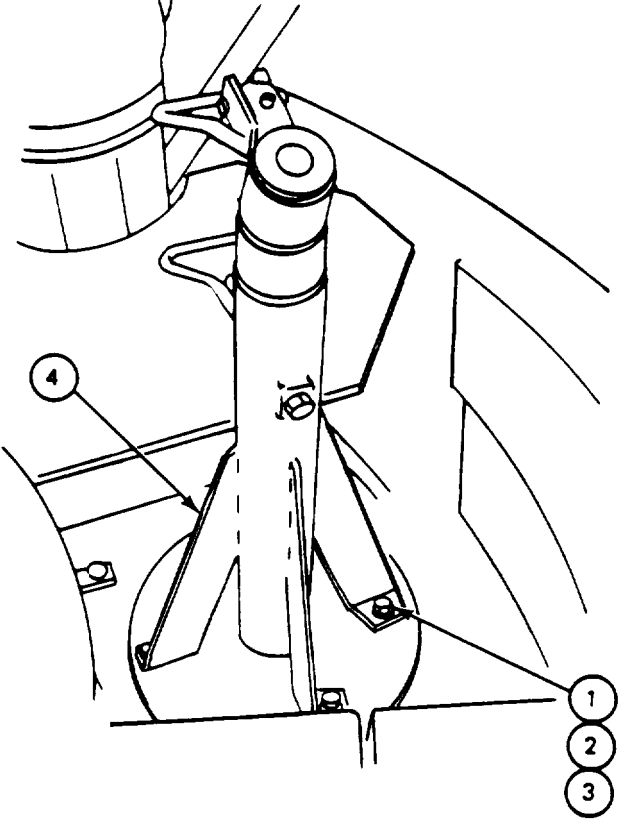
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Gunner's Seat	FO-1	14
Turret Traverse Lock	FO-3	7

EQUIPMENT CONDITION: Turret traverse lock set to LOCKED

PRELIMINARY PROCEDURES: Remove gunner's footrest plate (para 2-26)
 Remove gunner's backrest and seat (para 14-2)

14-4. PEDESTAL REMOVAL PROCEDURE (CONT)

FRAME 1		
Step	Procedure	
1.	Using socket wrench. remove four screws (1), four lockwashers (2), four flat washers (3). and pedestal (4). END OF TASK	
		

Para 14-4 Cont

14-5. PEDESTAL INSTALLATION PROCEDURE

TOOLS: 9/16" socket (1/2" drive)
1/2" drive ratchet
12" extension (1/2" drive)

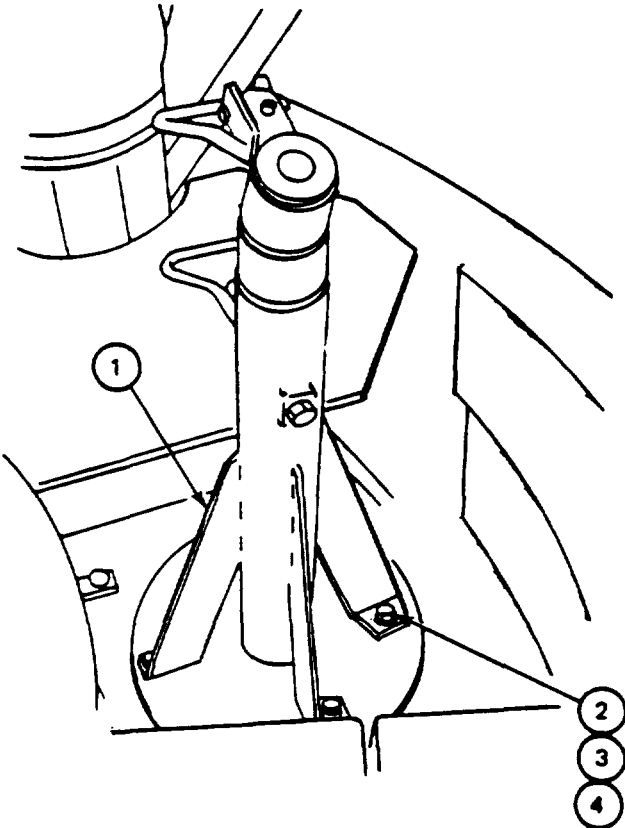
PERSONNEL: One

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Gunner's Seat	FO-1	14
Turret Traverse Lock	FO-3	7

EQUIPMENT CONDITION: Turret traverse lock set to LOCKED

14-5. PEDESTAL INSTALLATION PROCEDURE (CONT)

FRAME 1		
Step	Procedure	
	<p>Using socket wrench, attach pedestal (1) to turret floor with four screws (2), four flat washers (3), and four lockwashers (4).</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Follow-on Maintenance Action Required:</p> <p style="text-align: center;">Install gunner's footrest plate (para 2-27).</p> <p style="text-align: center;">Install gunner's backrest and seat (para 14-3).</p> <p>END OF TASK</p>	
		

14-6. BACKREST DISASSEMBLY PROCEDURE

TOOLS: Round nose pliers
Putty knife

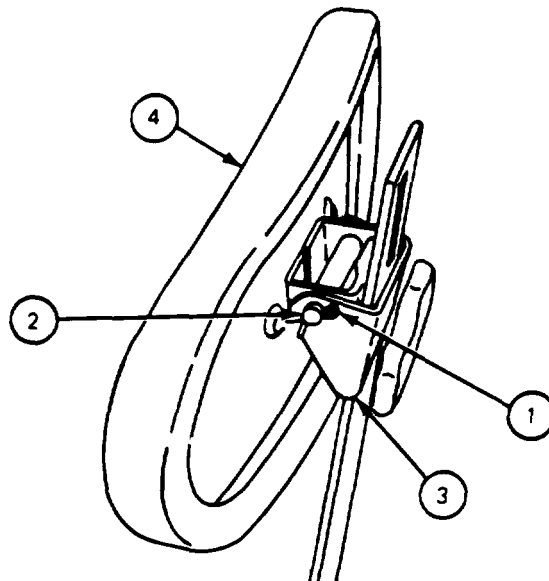
PERSONNEL: One

REFERENCES: JPG for procedure to remove cotter pins

PRELIMINARY PROCEDURES: Remove backrest from gunner's seat (para 14-2)

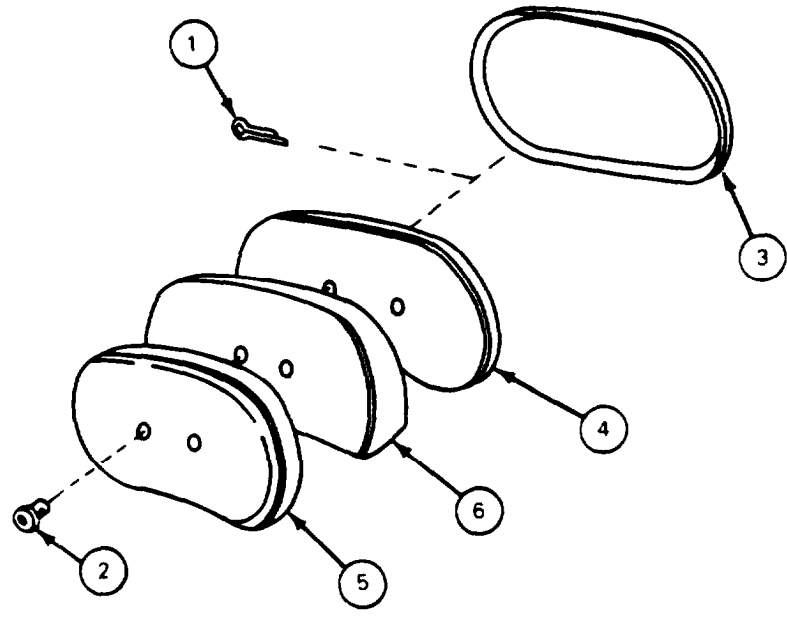
FRAME 1

Step	Procedure
1.	Using pliers, remove cotter pin (1) from pin (2) (JPG).
2.	Remove pin (2) from support bracket (3).
3.	Remove backrest (4) from backrest mounting bracket (3). GO TO FRAME 2



14-6. BACKREST DISASSEMBLY PROCEDURE (CONT)

FRAME 2	
Step	Procedure
1.	Using pliers, remove two cotter pins (1) from two retaining sleeves (2). Remove retaining sleeves (JPG).
2.	Remove molded rubber (3) from rim of backrest frame (4).
3.	Remove cover (5) from pad (6).
<p>NOTE</p> <p>Pad is glued to frame.</p>	
4.	Using putty knife, remove pad (6) from backrest frame (4).
<p>END OF TASK</p>	



14-7. BACKREST ASSEMBLY PROCEDURE

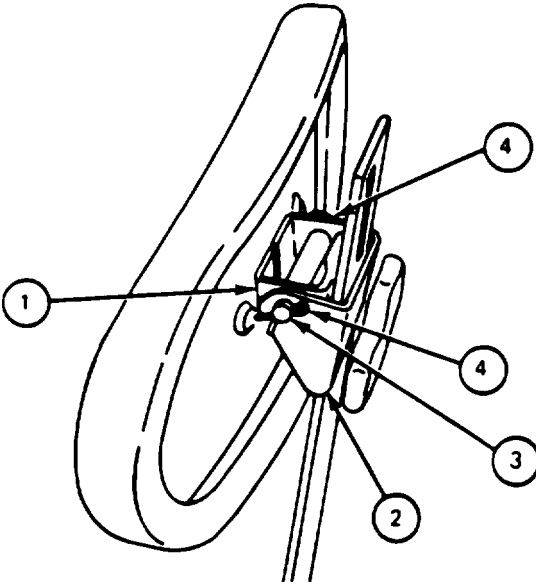
SUPPLIES: Adhesive (item 3.1, App. A)

PERSONNEL One

FRAME 1	
Step	Procedure
1.	Put a coating of adhesive on surface of backrest frame (1).
2.	Put pad (2) on backrest frame (1).
3.	Put cover (3) on pad (2).
4.	Put molded rubber (4) on rim of backrest frame (1).
5.	Put two retainers (5) through cover (3), pad (2), and backrest frame (1).
6.	Using pliers, put two cotter pins (6) through two retainers (5).
GO TO FRAME 2	

The diagram shows an exploded view of the backrest assembly components. Component 1 is the backrest frame, a large oval-shaped metal ring. Component 2 is a rectangular pad with rounded corners. Component 3 is a cover, another rectangular piece with rounded corners. Component 4 is a molded rubber ring that fits around the inner edge of the backrest frame. Component 5 consists of two retainers, which are small metal plates with holes. Component 6 is a cotter pin, shown being inserted through the retainers. Dashed lines indicate the assembly path and alignment of the parts.

14-7. BACKREST ASSEMBLY PROCEDURE (CONT)

FRAME 2	
Step	Procedure
<ol style="list-style-type: none"> 1. 2. 3. 	<p>Put backrest bracket (1) mounting holes in line with support bracket (2) mounting holes.</p> <p>Put in pin (3).</p> <p>Using pliers. put cotter pin (4) through pin (3).</p> <p>END OF TASK</p>
	

Para 14-7 Cont

14-8. HEIGHT ADJUST KNOB AND BRACKET DISASSEMBLY PROCEDURE

TOOLS: Round nose pliers

PERSONNEL: One

REFERENCES: JPG for procedure to remove cotter pins

PRELIMINARY PROCEDURES: Remove backrest from backrest mounting bracket (para 14-6)

FRAME 1	
Step	Procedure
1.	Using pliers, remove cotter pin (1) from threaded part of adjust knob (2) (JPG).
2.	Remove flat washer (3).
3.	Unscrew adjust knob (2) from locking plate (4).
4.	Remove backrest support (5), backrest mounting bracket (6) and lockwasher (7) from adjust knob (2).
END OF TASK	

14-9. HEIGHT ADJUST KNOB AND BRACKET ASSEMBLY PROCEDURE

PERSONNEL: One

REFERENCES: JPG for procedure to install cotter pins

FRAME 1	
Step	Procedure
1.	Put threaded part of adjust knob (1) through lockwasher (2), backrest mounting bracket (3) and backrest support (4).
2.	Put locking plate (5) in slot of backrest support (4).
3.	Screw adjust knob (1) into locking plate (5).
4.	Put flat washer (6) on threaded part of adjust knob (1).
5.	Using pliers, put cotter pin (7) through threaded part of adjust knob (1) (JPG).
END OF TASK	

14-10. SEAT DISASSEMBLY PROCEDURE

TOOLS: Pliers
Putty knife

PERSONNEL: One

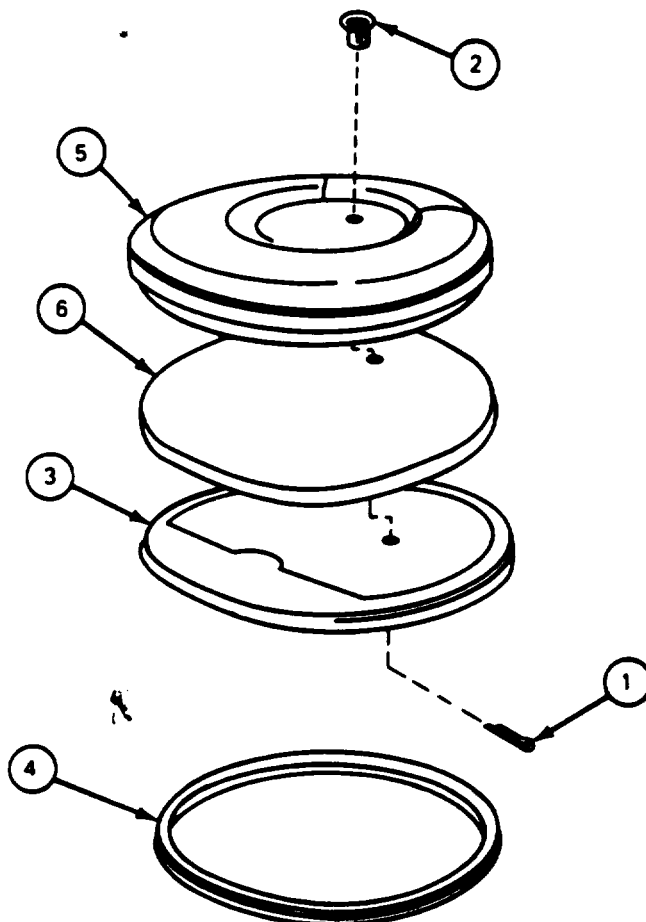
REFERENCES: JPG for procedure to remove cotter pins

PRELIMINARY PROCEDURES: Remove gunner's seat (para 14-2)

FRAME 1	
Step	Procedure
1.	Using pliers, remove cotter pin (1) and headed pin (2) from seat (3) (JPG).
2.	Using pliers, remove cotter pin (4) and headed pin (5) from seat (3) (JPG).
3.	Remove angle adjust assembly (6) from seat (3). GO TO FRAME 2

14-10. SEAT DISASSEMBLY PROCEDURE (CONT)**FRAME 2**

Step	Procedure
1. 2. 3. 4.	Using pliers, remove cotter pin (1) from retaining sleeve (2). Remove retaining sleeve (2) from seat pan (3). Remove rubber (4) from rim of seat pan (3). Remove seat cover (5) from seat pad (6).
	NOTE
	Pad is glued to seat pan.
5.	Using putty knife, remove seat pad (6) from seat pan (3).
	END OF TASK



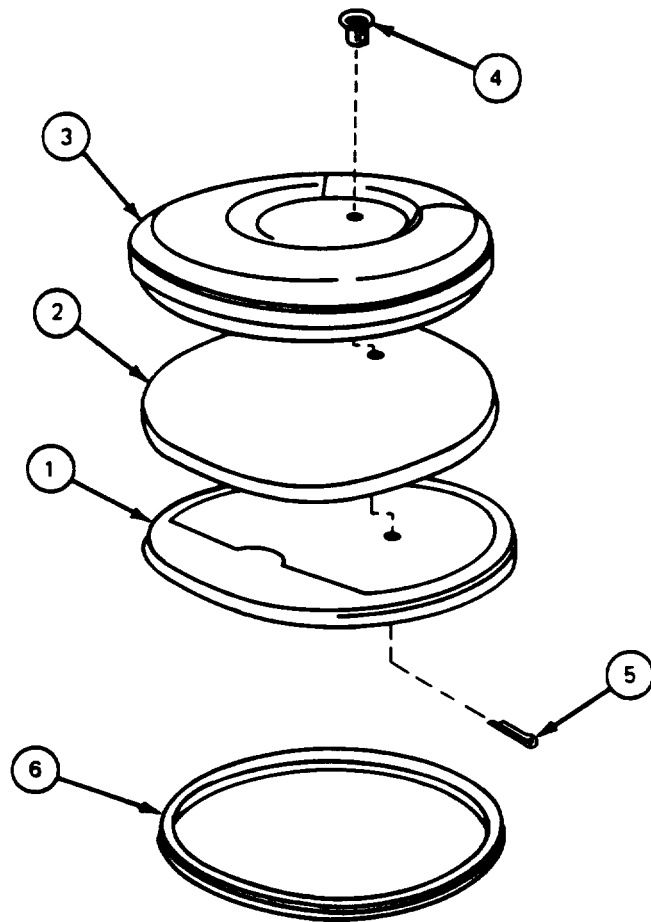
14-11. SEAT ASSEMBLY PROCEDURE

TOOLS: Plastic face hammer
Round nose pliers

SUPPLIES: Adhesive (item 3.1, App. A).

PERSONNEL One

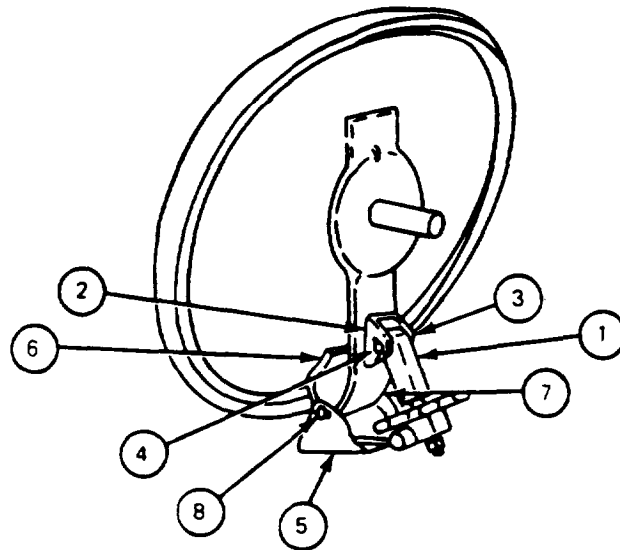
FRAME 1	
Step	Procedure
1.	Put a coating of adhesive on surface of seat pan (1).
2.	Put seat pad (2) on seat pan (1).
3.	Put seat cover (3) on seat pad (2).
4.	Put retainer (4) through cover (3), seat pad (2), and seat pan (1).
5.	Using pliers, put cotter pin (5) through retainer (4).
6.	Using hammer, tap rubber (6) into rim of seat pan (1).
	GO TO FRAME 2



14-11. SEAT ASSEMBLY PROCEDURE (CONT)

FRAME 2

Step	Procedure
1.	Put pin hole of clevis (1) in line with pin holes in bracket (2).
2.	Put headed pin (3) through bracket (2) and clevis (1).
3.	Using pliers, put cotter pin (4) through headed pin (3) (JPG).
4.	Put pin holes of bracket (5) in line with pin holes in seat bracket (6).
5.	Put headed pin (7) through pin holes in seat bracket (6) and bracket (5).
6.	Using pliers, put cotter pin (8) through pin (7) (JPG). END OF TASK



14-12. ANGLE ADJUST KNOB AND BRACKET DISASSEMBLY PROCEDURE

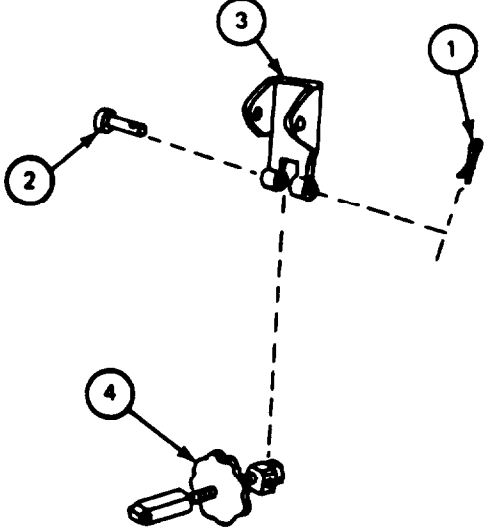
TOOLS: 9/16" combination wrench
 Bench vise
 Pliers

PERSONNEL: One

REFERENCES: JPG for procedure to remove cotter pins

PRELIMINARY PROCEDURES: Remove angle adjust knob and bracket from seat (para 14-10)

FRAME 1	
Step	Procedure
1.	Using pliers, remove cotter pin (1) from headed pin (2) (JPG).
2.	Remove headed pin (2) from angle adjust bracket (3).
3.	Remove angle adjust knob assembly (4) from bracket (3).
	GO TO FRAME 2



The diagram shows a mechanical assembly with four numbered callouts. Callout 1 points to a cotter pin. Callout 2 points to a headed pin. Callout 3 points to an angle adjust bracket. Callout 4 points to an angle adjust knob assembly. Dashed lines indicate the relative positions and connections between these components.

Para 14-12

14-23

14-12. ANGLE ADJUST KNOB AND BRACKET DISASSEMBLY PROCEDURE (CONT)

FRAME 2	
Step	Procedure
1.	Using bench vise. hold rim of adjust knob (1).
2.	Using wrench. remove self-locking nut (2) and flat washer (3) from adjust knob (1). Throw away self-locking nut.
3.	Remove adjust knob (1) from bench vise.
4.	Unscrew block (4) and clevis (5) from adjust knob (1).
	END OF TASK

The diagram shows a mechanical assembly consisting of a central knob with a gear-like rim. Five numbered callouts point to specific parts: 1 points to the outer rim of the knob; 2 points to a self-locking nut on the central shaft; 3 points to a flat washer on the central shaft; 4 points to a rectangular block attached to the side of the knob; and 5 points to a clevis pin inserted through the block and the knob's shaft.

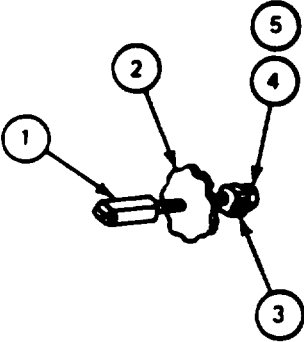
14-13. ANGLE ADJUST KNOB AND BRACKET ASSEMBLY PROCEDURE

TOOLS: Torque wrench, 3/8" drive (0-50 foot-pounds)
 9/16" socket (3/8" drive)
 Round nose pliers
 Bench vise

SUPPLIES: New self-locking nut

PERSONNEL: One

REFERENCES: JPG for procedures to:
 Install cotter pins
 Use torque wrench

FRAME 1		
Step	Procedure	
1.	Screw clevis (1) half way on longest threaded part of adjust knob (2).	
2.	Using bench vise. hold rim of adjust knob (2).	
3.	Put in block (3) and flat washer (4).	
4.	Using torque wrench. put in self-locking nut (5) and tighten to 26 foot-pounds (JPG). GO TO FRAME 2	
 <p>The diagram shows a central adjust knob (2) with a clevis (1) attached to its longest threaded part. A block (3) and a flat washer (4) are positioned between the knob and a bracket. A self-locking nut (5) is being tightened onto the knob's threads.</p>		

14-13. ANGLE ADJUST KNOB AND BRACKET ASSEMBLY PROCEDURE (CONT)

FRAME 2		
Step	Procedure	
1.	Put angle adjust assembly (1) on bracket (2).	
2.	Put headed pin (3) through arms of bracket (2) and hole in block (4).	
3.	Using pliers, put cotter pin (5) through hole in pin (3) (JPG).	
<p>The diagram illustrates the assembly process. At the top, a bracket (2) is shown with two arms. A headed pin (3) is being inserted through these arms and a hole in a block (4) below. A cotter pin (5) is shown being inserted into the end of the headed pin (3). Below the bracket, an angle adjust knob (1) is shown being attached to the bottom of the bracket. Dashed lines connect the parts to show their relative positions and the path of assembly.</p>		
<p>END OF TASK</p>		

14-14. PEDESTAL DISASSEMBLY PROCEDURE

TOOLS: 3/4" combination wrench

PERSONNEL: Two

PRELIMINARY PROCEDURES: Remove seat and backrest (para 14-2)
Remove pedestal (para 14-4)

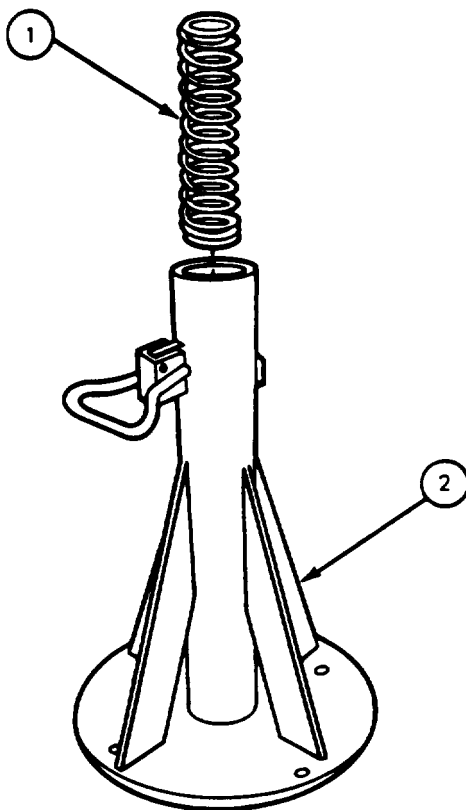
14-14. PEDESTAL DISASSEMBLY PROCEDURE (CONT)

FRAME 1	Step	Procedure
		<div style="border: 1px solid black; padding: 5px; text-align: center; margin-bottom: 10px;"> <p>WARNING</p> </div> <p>Upper pedestal support is spring loaded and may injure you unless spring pressure is released slowly.</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Use two soldiers for this task.</p> <ol style="list-style-type: none"> 1. Soldier A: Hold down pedestal support (1) against spring. Soldier B: Using wrench, remove screw (2) and lockwasher (3) from pedestals (4). 2. Soldier A: While holding down pedestal support (1), push down on handle (5). 3. Soldier A: Slowly ease off pressure on pedestal support (1). 4. Remove pedestal support (1). <p>GO TO FRAME 2</p>
		<div style="text-align: center;"> </div>

4-14. PEDESTAL DISASSEMBLY PROCEDURE (CONT)

FRAME 2

Step	Procedure
1	Soldier A: Remove spring (1) from pedestal (2). END OF TASK



14-15. PEDESTAL ASSEMBLY PROCEDURE

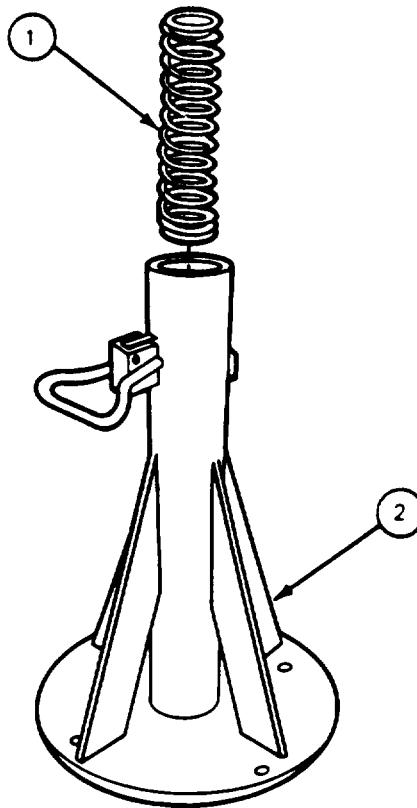
TOOLS: 3/4" combination wrench

SUPPLIES: New bolt

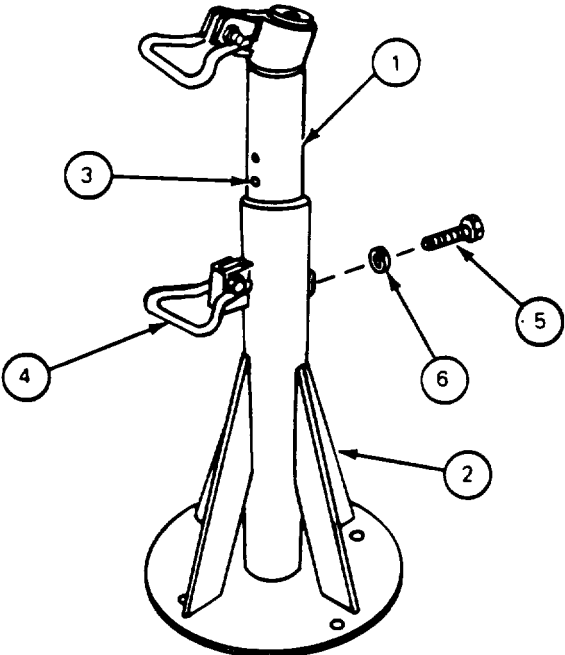
PERSONNEL: Two

FRAME 1

Step	Procedure
1.	Soldier A: Put spring (1) in pedestal (2). GO TO FRAME 2



4-15. PEDESTAL ASSEMBLY PROCEDURE (CONT)

FRAME 2		
Step	Procedure	
<ol style="list-style-type: none"> 1. 2. 3. 	<p>Soldier A: Put pedestal support (1) on spring in pedestal (2).</p> <p>Soldier A: Align locking pin holes (3) with the locking pin of handle (4).</p> <p>Soldier A: Pull up on handle (4).</p> <div style="text-align: center; border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>WARNING</p> </div> <p style="text-align: center;">Pedestal support (1) is under spring pressure and you can be injured if it is not held down.</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Use two soldiers for this task.</p> <ol style="list-style-type: none"> 4. 5. <p>Soldier A: Hold down pedestal support (1) against spring.</p> <p>Soldier B: Using wrench, put screw (5) and washer (6) through pedestal (2) and into slot of pedestal support (1).</p> <p>END OF TASK</p>	
		

14-16. SEAT HEIGHT HANDLE DISASSEMBLY PROCEDURE

TOOLS: 7/16" combination wrench (two)
3/32" drift pin punch
Hammer

PERSONNEL: One

PRELIMINARY PROCEDURES: Disassemble pedestal (para 14-14)

FRAME 1	
Step	Procedure
1.	Using one wrench on head of screw (1), self-locking nut (2), and flat washer (3) from pedestal (4). Throw away self-locking nut.
2.	Lift up handle (5) and remove it from pedestal (4). GO TO FRAME 2

The diagram shows a seat height handle assembly. A central vertical pedestal (4) is mounted on a circular base. A handle (5) is attached to the side of the pedestal. A screw (1) is shown being removed from the top of the pedestal. A self-locking nut (2) and a flat washer (3) are shown being removed from the top of the pedestal. The handle (5) is shown being lifted up from the pedestal (4).

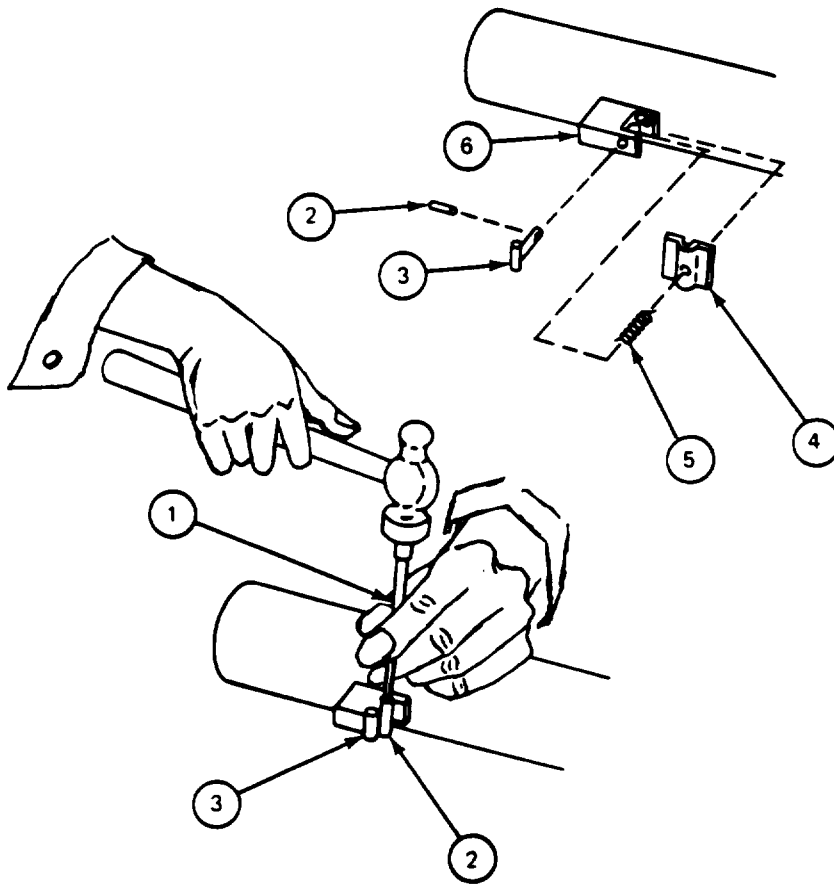
14-16. SEAT HEIGHT HANDLE DISASSEMBLY PROCEDURE (CONT)

FRAME 2

Step

Procedure

1. Using hammer and punch (1). remove spring pin (2) from locking pin (3).
 2. Remove locking pin (3). retainer (4) and spring (5) from handle bracket (6).
- END OF TASK



Para 14-16 Cont

14-33

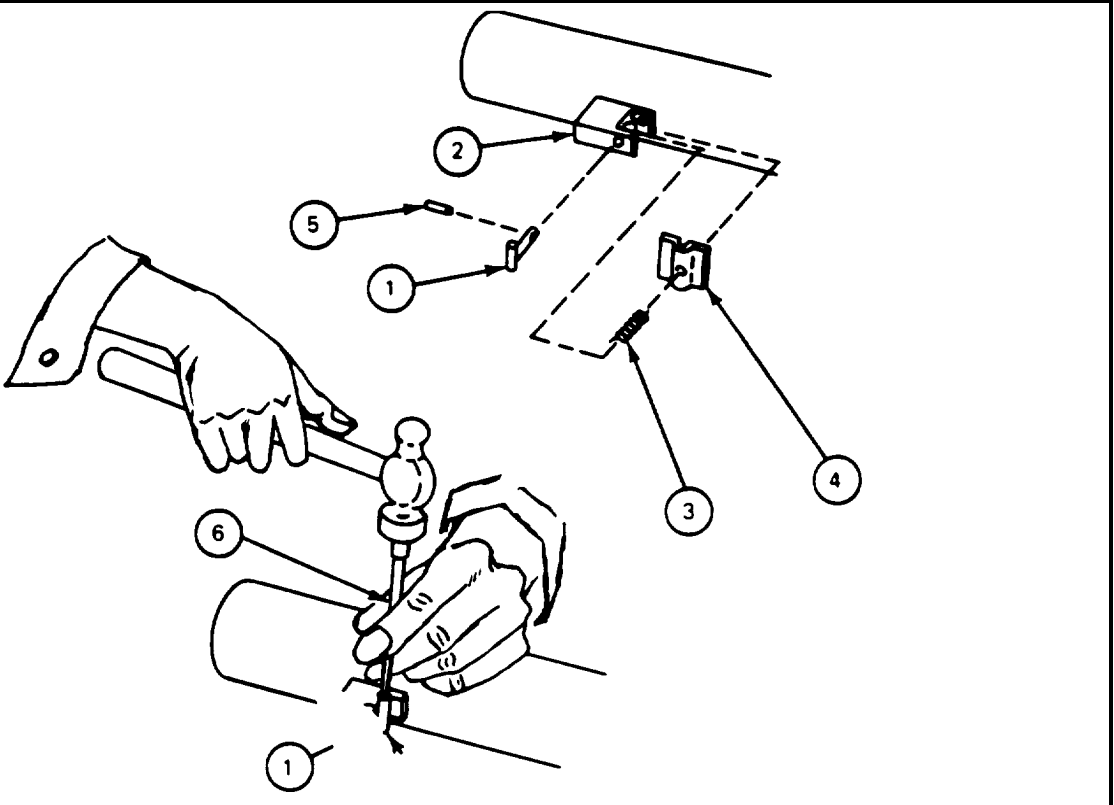
14-17. SEAT HEIGHT HANDLE ASSEMBLY PROCEDURE

TOOLS: 7/16" combination wrench (two)
3/32" drift pin punch
Hammer

SUPPLIES: New spring pin
New self-locking nut

PERSONNEL: One

FRAME 1	
Step	Procedure
1. 2. 3. 4.	Put locking pin (1) half way into handle bracket (2). Put spring (3) and retainer (4) on locking pin (1). Press retainer (4) against spring (3) so that spring pin (5) can be put in its mounting hole in locking pin (1). Using hammer and punch (6), tap spring pin (5) into locking pin (1). GO TO FRAME 2

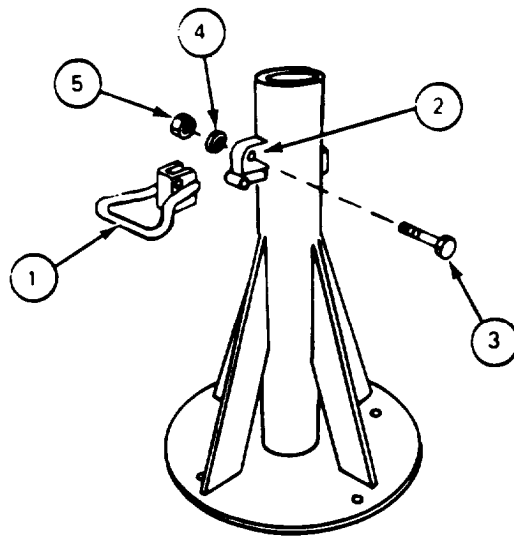


The diagram illustrates the assembly process for the seat height handle. It shows a perspective view of the handle bracket (2) with a locking pin (1) inserted. A spring (3) and a retainer (4) are positioned on the locking pin. A spring pin (5) is shown being inserted into a hole in the locking pin. A hand is shown using a hammer and a drift pin punch (6) to tap the spring pin (5) into the locking pin (1).

14-17. SEAT HEIGHT HANDLE ASSEMBLY PROCEDURE (CONT)

FRAME 2

Step	Procedure
1. 2.	Put handle (1) on support handle bracket (2). Using one wrench on head of screw and other wrench on nut, put in screw (3), flat washer (4), and self-locking nut (5). END OF TASK



14-18. SEAT PIVOT HANDLE DISASSEMBLY PROCEDURE

TOOLS: 7/16" combination wrench (two)
 3/32" drift pin punch
 Hammer

PERSONNEL: One

PRELIMINARY PROCEDURES: Remove upper pedestal support from pedestal (para 14-14)

FRAME 1	
Step	Procedure
1.	Using one wrench on head of screw and other wrench on nut, remove screw (1), self-locking nut (2), and flat washer (3) from support handle bracket (4). Throw away self-locking nut.
2.	Pull handle (5) away from support handle bracket (4). GO TO FRAME 2

Para 14-18

14-18. SEAT PIVOT HANDLE DISASSEMBLY PROCEDURE (CONT)

FRAME 2	
Step	Procedure
1.	Using hammer and punch, remove spring pin (1) from locking pin (2).
2.	Remove locking pin (2), retainer (3), and spring (4) from support handle bracket (5). END OF TASK

The diagram illustrates the disassembly of a seat pivot handle. It shows a cylindrical support handle bracket (5) with a locking pin (2) inserted into its end. A spring pin (1) is shown being removed from the locking pin (2). The locking pin (2) is shown with a retainer (3) and a spring (4) attached to its end. Dashed lines indicate the assembly's structure and the location of the components.

14-19. SEAT PIVOT HANDLE ASSEMBLY PROCEDURE

TOOLS: 7/16" combination wrench (two)
 3/32" drift pin punch
 Hammer

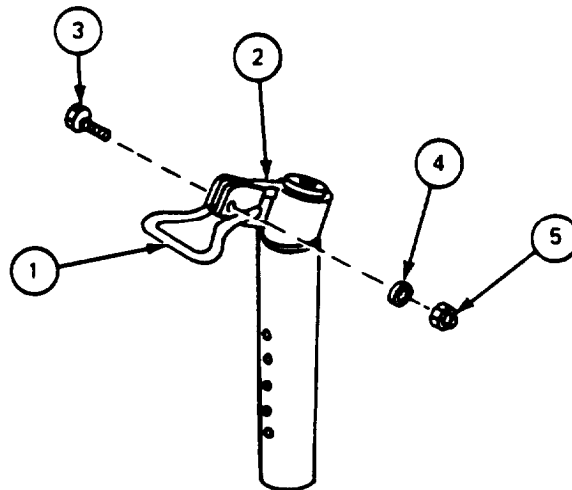
SUPPLIES: New spring pin
 New self-locking nut

PERSONNEL: One

FRAME 1	
Step	Procedure
<ol style="list-style-type: none"> 1. 2. 3. 4. 	<p>Put locking pin (1) half way into handle bracket (2).</p> <p>Put spring (3) and retainer (4) on locking pin (1),</p> <p>Press retainer (4) against spring (3) so that spring pin (5) can be put in its mounting hole in locking pin (1).</p> <p>Using hammer and punch, tap spring pin (5) into locking pin (1).</p> <p>GO TO FRAME 2</p>

14-19. SEAT PIVOT HANDLE ASSEMBLY PROCEDURE (CONT)

FRAME 2	
Step	Procedure
1.	Put handle (1) on support handle bracket (2).
2.	Using one wrench on head of screw and other wrench on nut, put in screw (3), flat washer (4), and self-locking nut (5). END OF TASK



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COMMANDER'S POWER CONTROL	3	38-1
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COMMANDER'S SWING SEAT	2	23-1
CONTACT ASSY (10940956)	1	Part of 3-12 3-13
CONTACT ASSY (10941022)	1	Part of 3-12 3-13
CONTACT ASSY (11594237)	1	Part of 3-12 3-13
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Chief of Staff

Official:

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----------	------------	------------	-----------

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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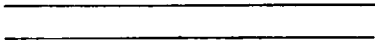
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1 AUG 74

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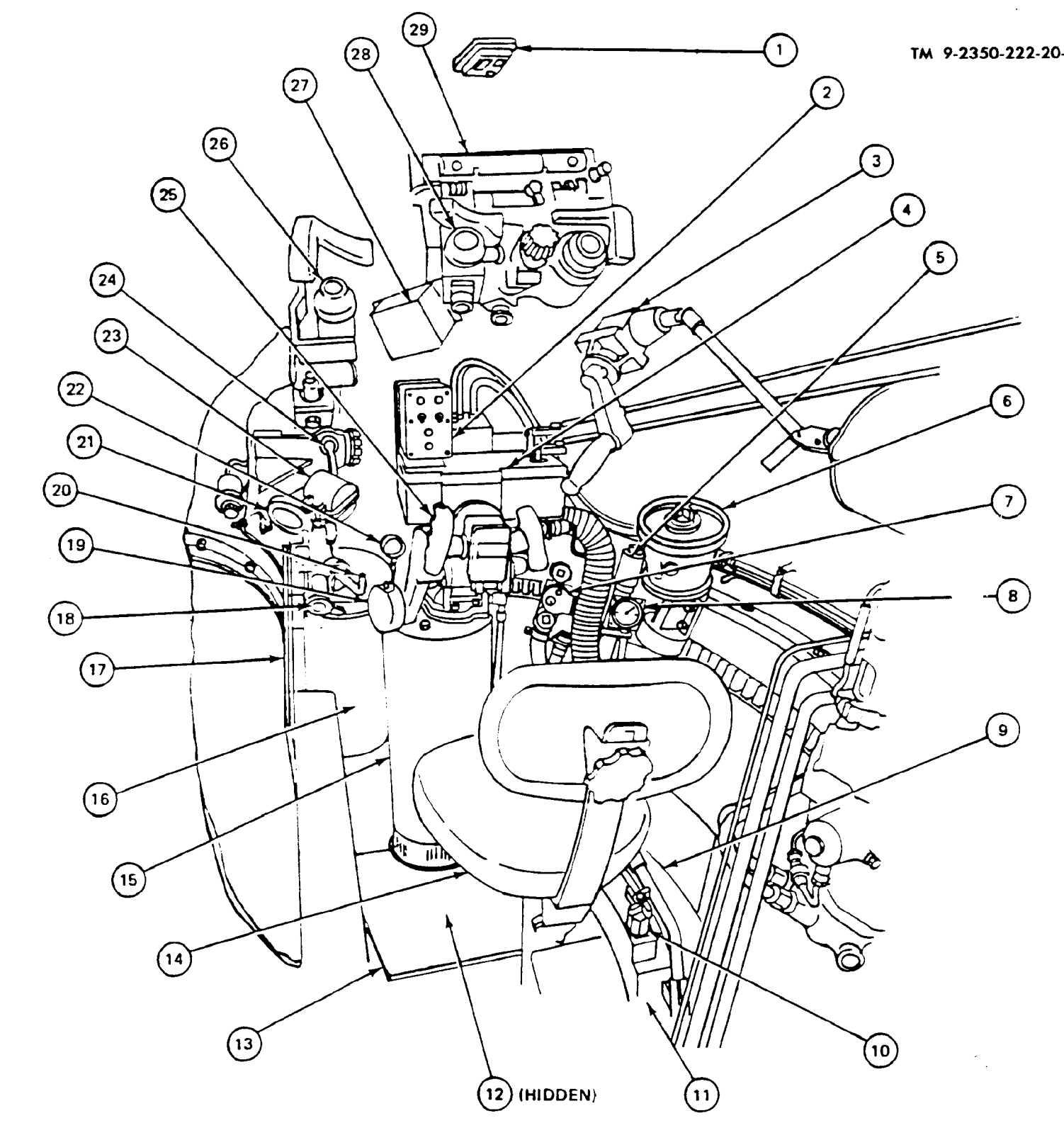
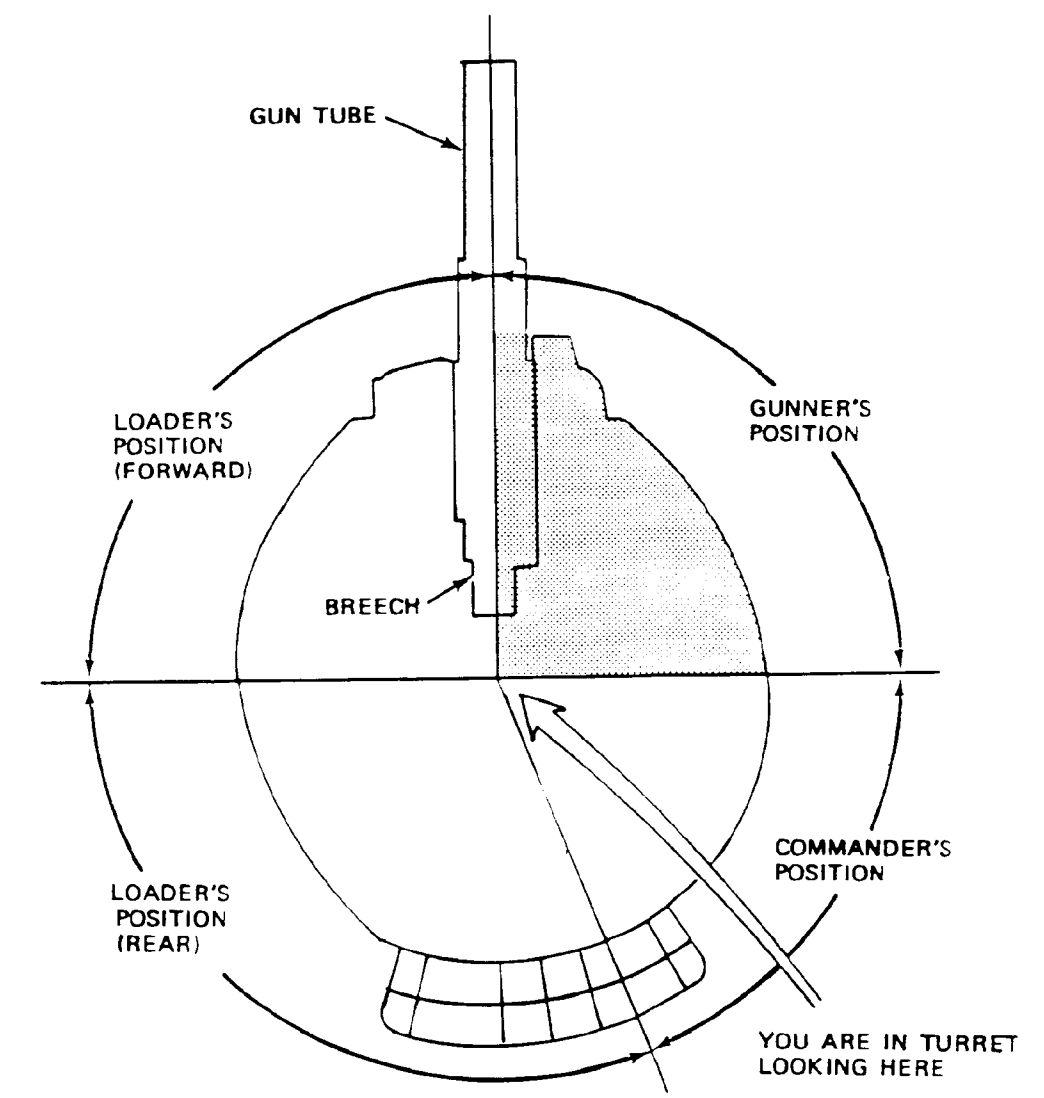
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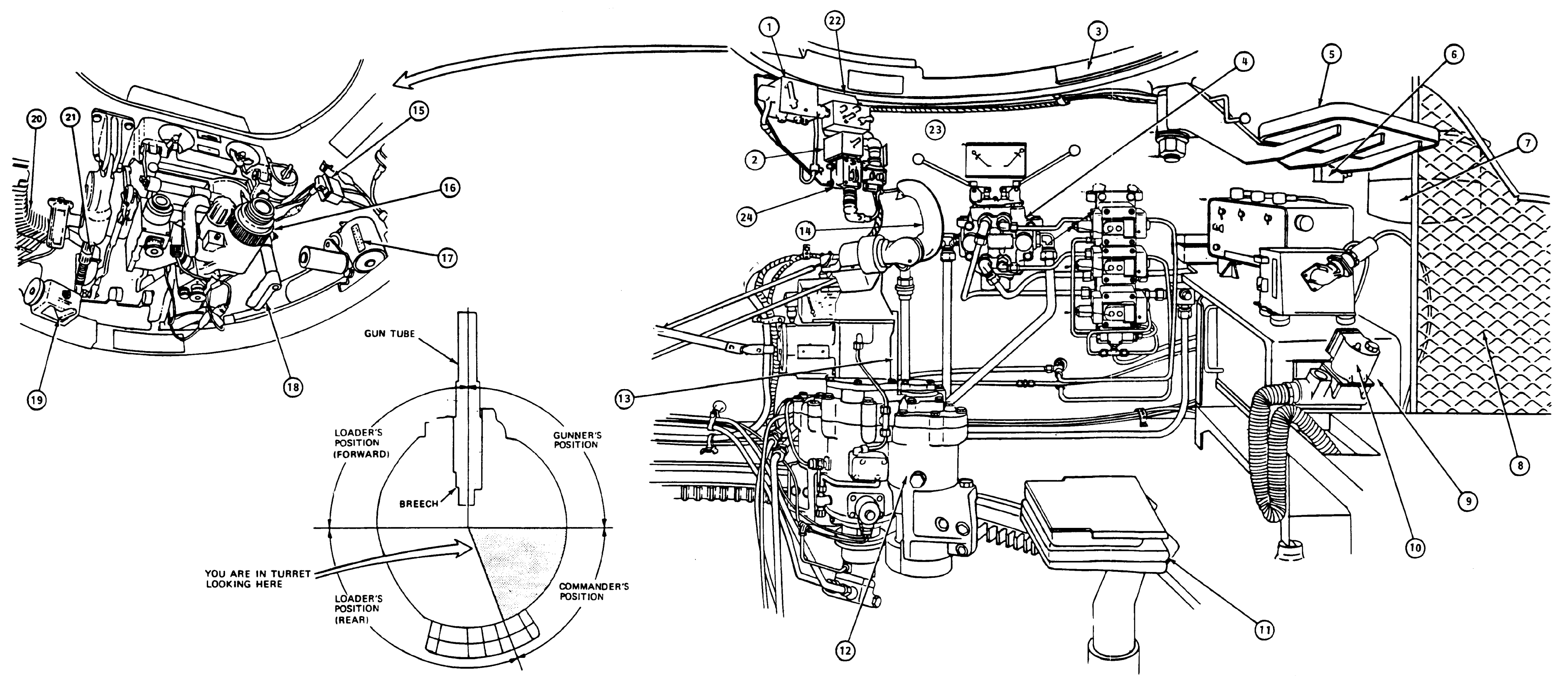
TEAR ALONG DOTTED LINE

- 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

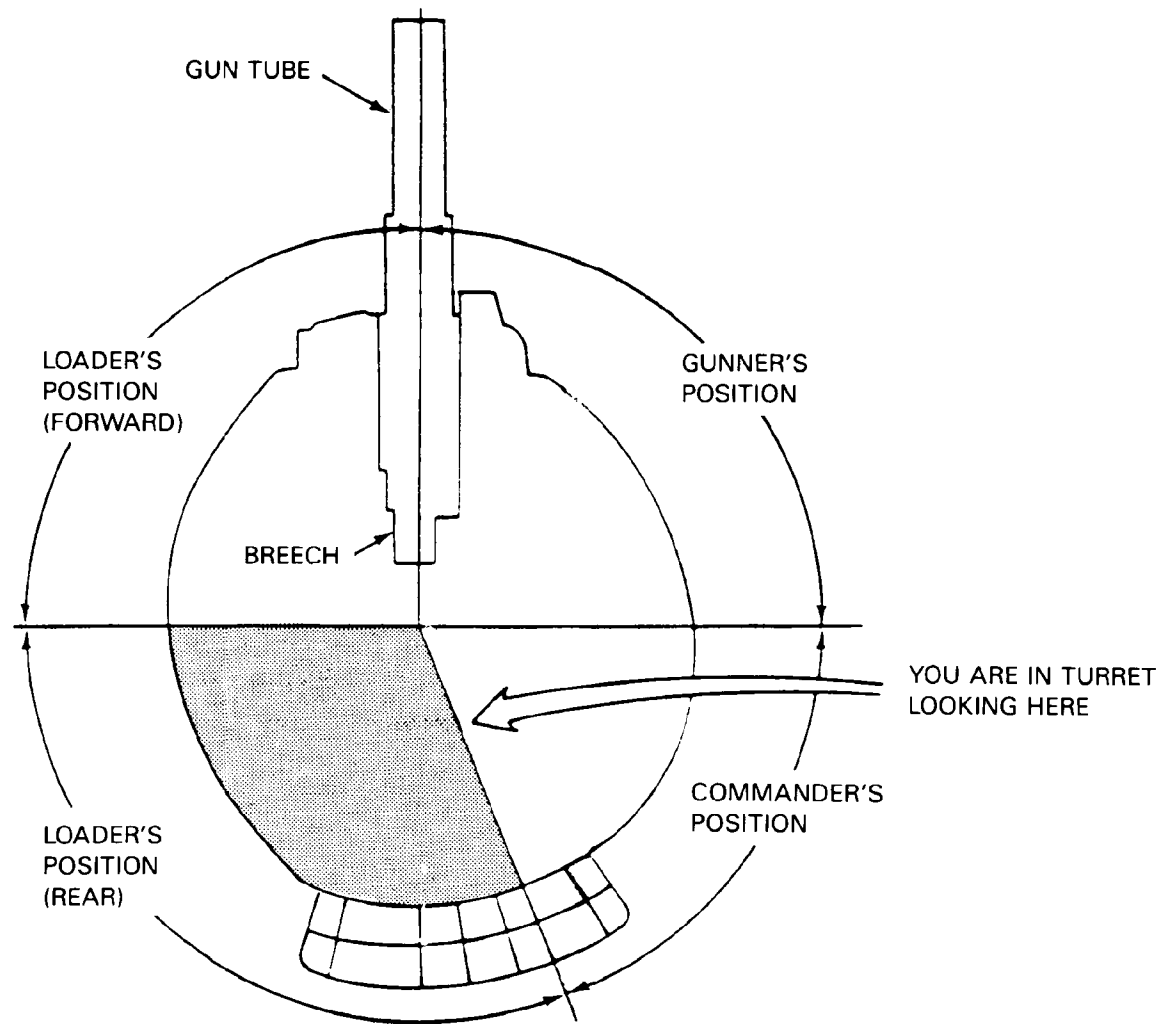


FO-1. EQUIPMENT LOCATION INFORMATION - GUNNER'S POSITION

- 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
 22. SEARCH LIGHT CONTROL BOX
 23. SMOKE GRENADE PUSHBUTTON UNIT
 24. SMOKE GRENADE POWER BOX

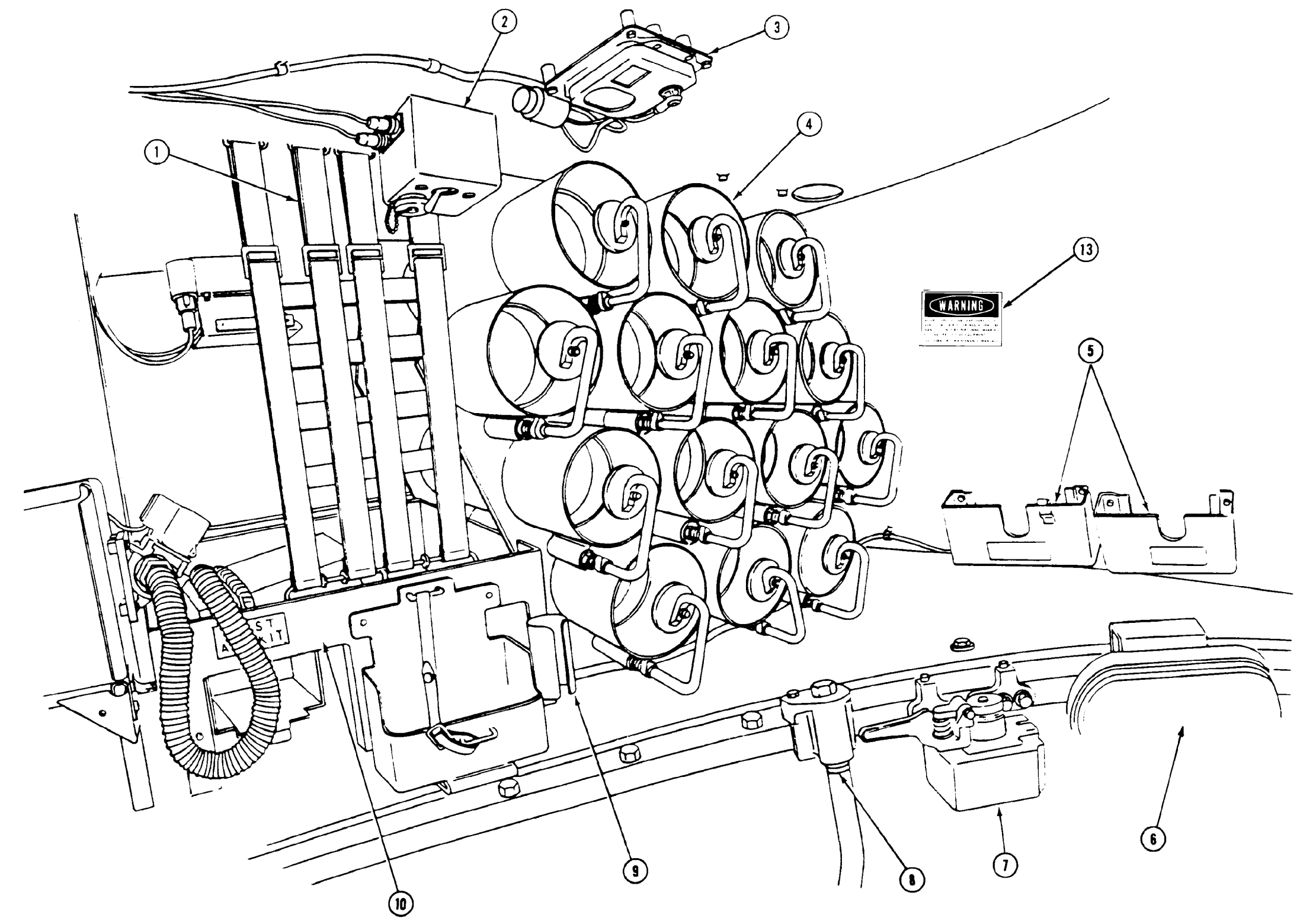


FO-2. EQUIPMENT LOCATION INFORMATION - COMMANDER'S POSITION



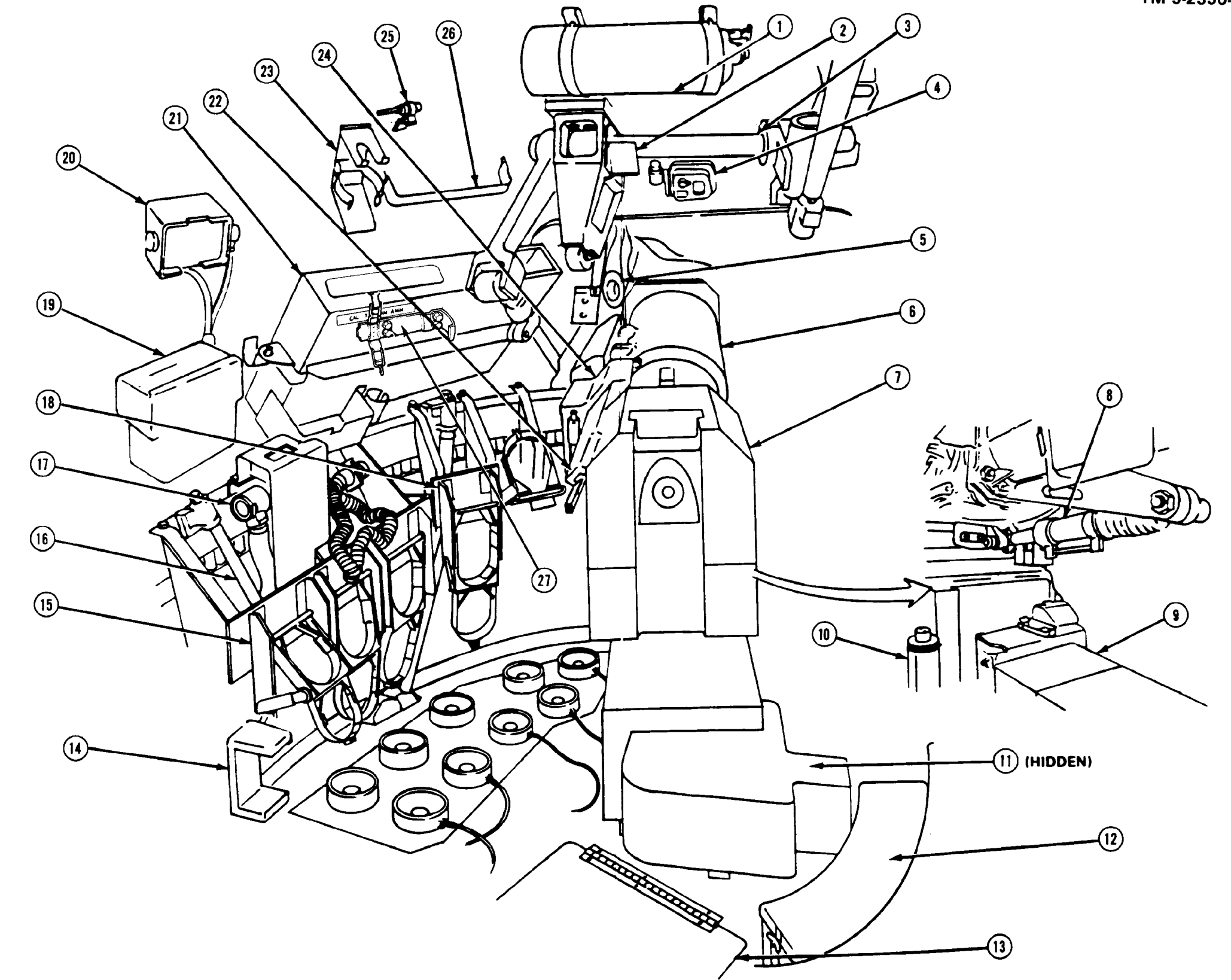
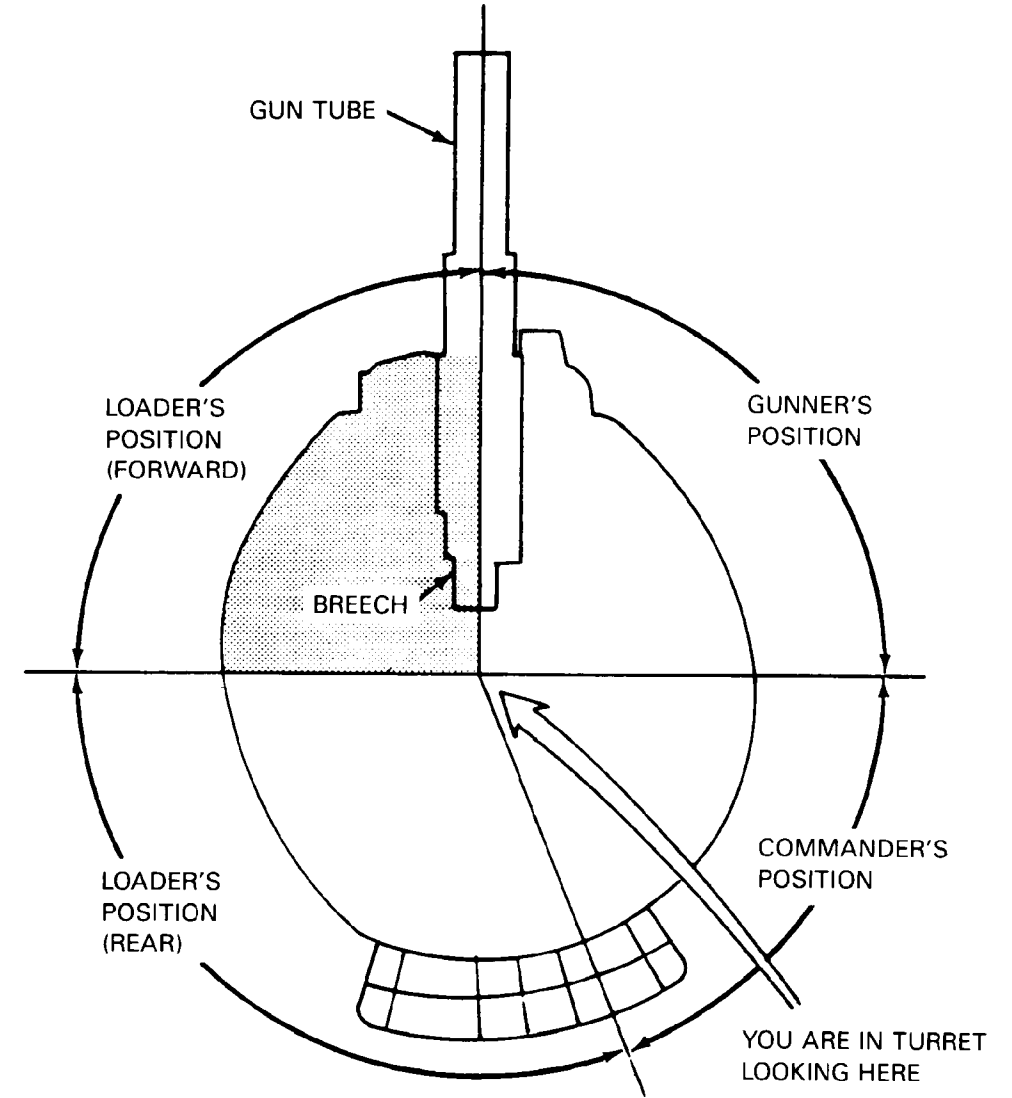
LEGEND:

- 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



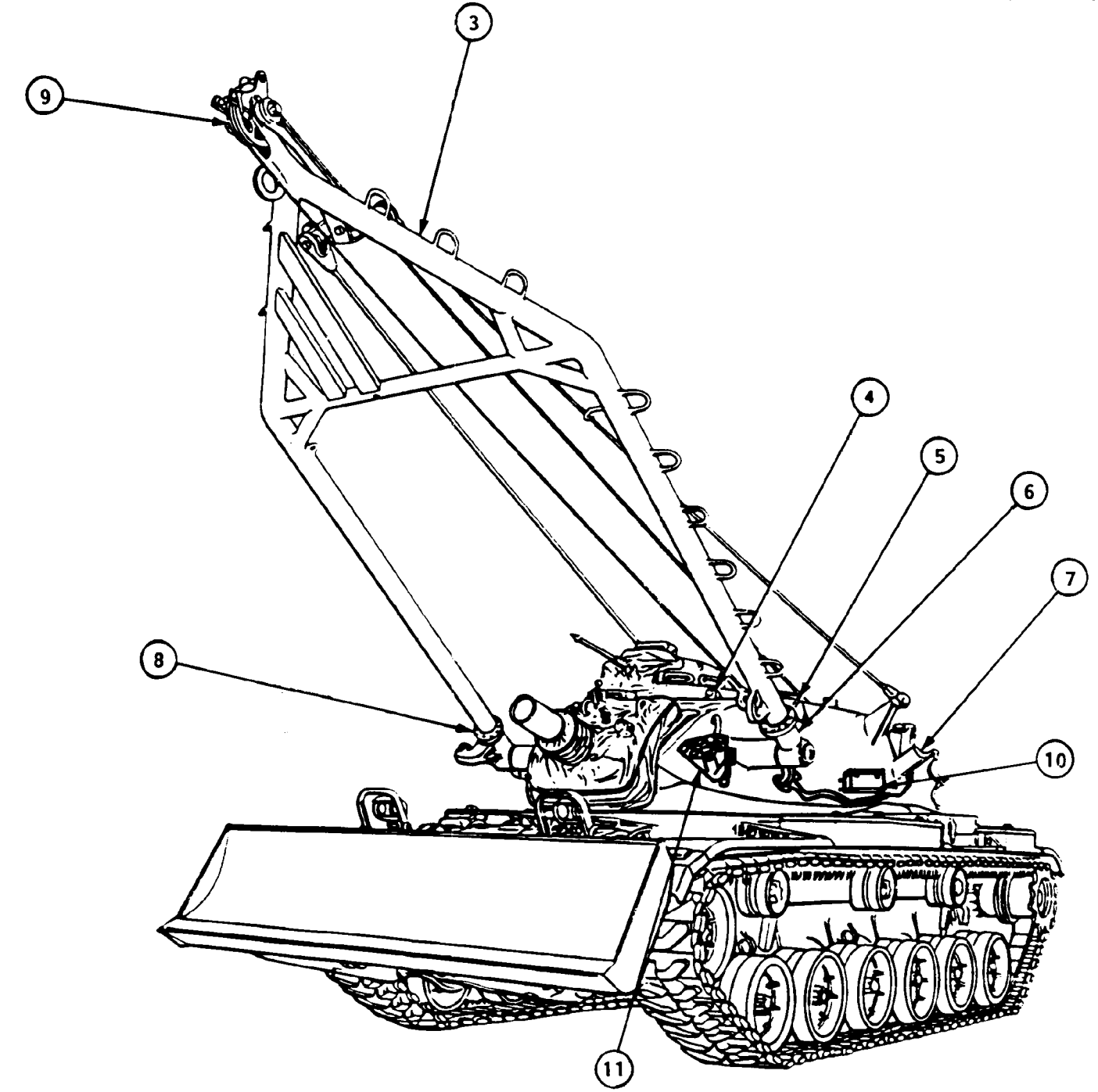
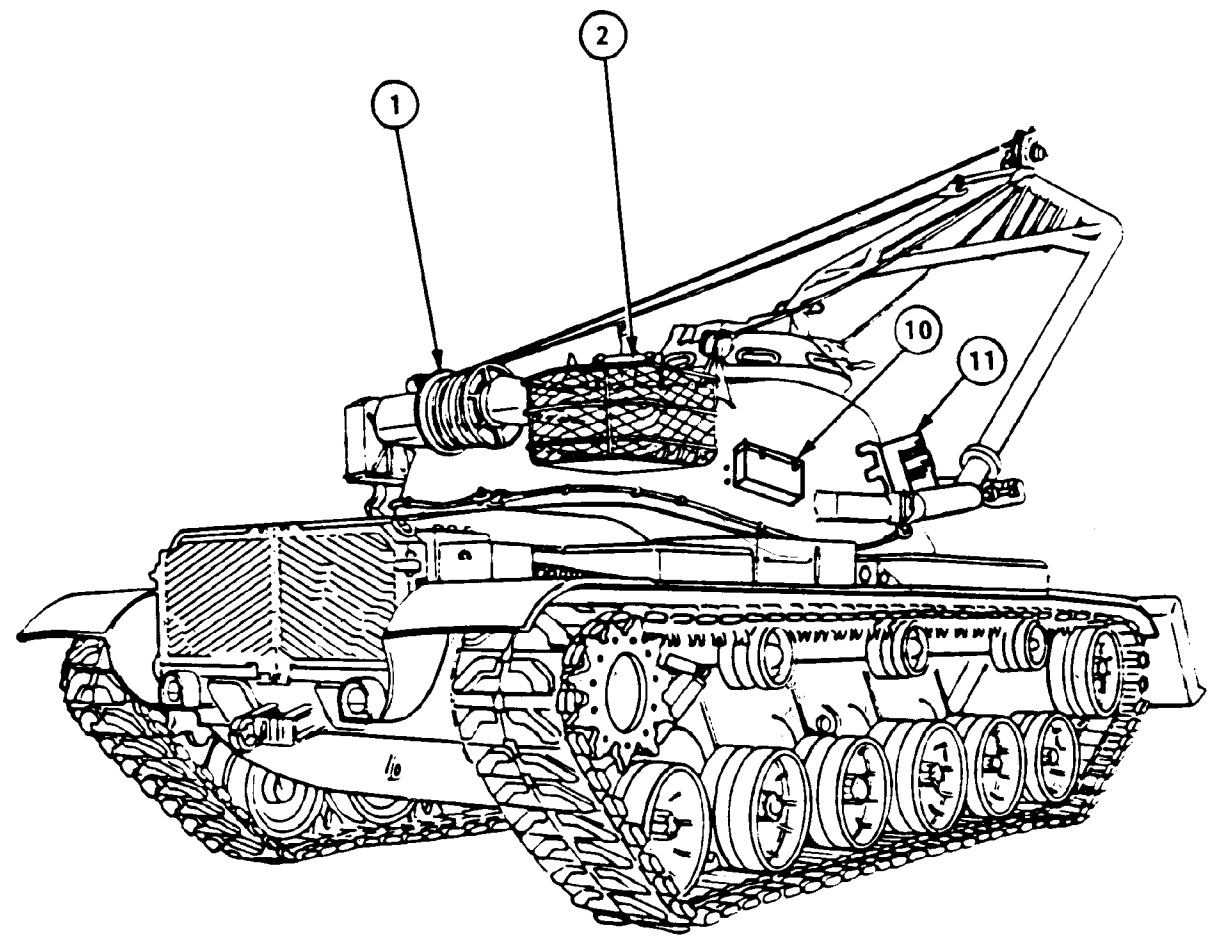
F0-3. EQUIPMENT LOCATION INFORMATION - LOADER'S POSITION (REAR)

- 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
 - 10. SMOKE GRENADE STOWAGE BOX
 - 11. SMOKE GRENADE DISCHARGER



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

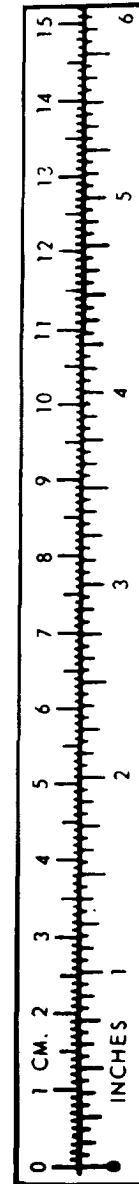
TEMPERATURE

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

APPROXIMATE CONVERSION FACTORS

<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>
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

<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>
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



TA089991

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**TURRET FOR COMBAT ENGINEER
VEHICLE, M728 (2350-00-795-1797),
VOLUME III, PART 1, MAINTENANCE**

1980