Changes 1-2 incorporated.

TECHNICAL BULLETIN

M1A1 TANK URBAN SURVIVABILITY KIT (TUSK) OPERATOR, UNIT MAINTENANCE AND TROUBLESHOOTING, REPAIR PARTS AND SPECIAL TOOLS LIST

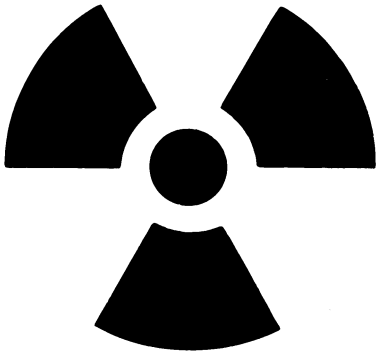
This Technical Bulletin includes information to support operation, troubleshooting, and maintenance on the Tank Urban Survivability Kit for Abrams M1A1 tanks. Use this Technical Bulletin in conjunction with government approved fielded M1A1 Technical Manuals TM 9-2350-264-10 series, TM 9-2350-264-20-2 series and TM 9-2350-264-20-1 series.

HEADQUARTERS, DEPARTMENT OF THE ARMY

AUGUST 2007

PCN 312 102371 00

WARNING



RADIATION HAZARD

Safety Precautions

This item contains radioactive material. Control of this radioactive material is mandated by federal law. Immediately report any suspected lost or damaged items to your Radiation Safety Officer (RSO). If your RSO cannot be reached contact the TACOM-RI Safety Office at 309-782-6499 DSN 793-6499.

1. Tritium (H3).

a. Fire control devices contain luminescent phosphor activated by radioactive tritium gas sealed in glass capsules. The self-luminous sources are regulated by a Nuclear Regulatory Commission (NRC) license issued to RI (12-00722-06). Removal of the sources in the field is prohibited by Federal law.

b. Users of fire control devices are required to perform visual checks of the fire control equipment before, during, and after operation. A loss of illumination may indicate the source is broken. Do not attempt to repair a non-illuminated instrument in the field. Removal of non-illuminated tritium module(s) is not authorized. Wear disposable gloves and remove the next higher assembly. Double bag assembly in plastic bags and mark bag: ″BROKEN TRITIUM DEVICE-DO NOT OPEN″. Notify RSO and request disposition instructions from RI National Inventory Control Point (NICP). If breakage occurs while handling the device, restrict area and immediately notify your RSO. The RSO will notify RI License Manager and NICP for disposition instructions.

c. Maintenance and indoor storage areas are to be well ventilated and surveyed quarterly by RSO to monitor for tritium contamination. Limit indoor storage to 1000 curies per separate room. Ensure work benches are covered with absorbent paper (e.g., craft paper) and spare parts in the maintenance area kept to a minimum. Additional safety precautions and emergency procedures are in TM 9-254, General Maintenance Procedures for Fire Control Materiel.

2. Thorium (Th232).

a. The anti-reflective coating on all thermal optics in the gunner's primary sight are coated with thorium fluoride (ThF4) which is slightly radioactive. The only potential hazard involves ingestion or inhalation of this coating material. Contact CECOM Safety Office at (908) 427-3112, DSN 987-3112 for radiological control instructions of broken lenses. Contact your RSO for further information prior to performing maintenance on subject items. CECOM holds the NRC license (29-01022-14) for the thorium coating used on the gunner's primary sight. The RSO will notify RI NICP for disposition instructions.

b. The M1 series tank contains a turbine engine combustor liner. The liner is a metallic alloy composed of thorium 232 evenly dispersed in nickel. If the liner breaks or melts, call your RSO. In coordination with RSO, bag liner and all pieces. RSO will notify TACOM NICP for disposition instructions. Disposal is not authorized below depot level. Unserviceable combustor liners will be disposed of as radioactive waste or sent to a licensed thorium rework facility in the Army. The combustor liner is a nonrepairable component. The only maintenance function allowed is replacement with a new one. Combustor liners separated from vehicle engines will be tagged/labeled with the words ″RADIOACTIVE MATERIAL-TH232″ and otherwise labeled in accordance with MIL-STD-129. The combustor liner is regulated through a Department of Army (DA) Authorization A21-12-05, issued to TACOM.

3. Depleted Uranium (DU or U238). DU is a metal used in munitions and M1A1/M1A2 tank armor because of its high density. Damage or fire to the DU munitions/armor may result in contaminated smoke, ash, or dust (refer to TB 9-1300-278). DU is an internal health hazard if inhaled, ingested, or embedded in skin. It presents both radiological and toxicological effects. If handling bare metal is necessary, gloves must be worn. Operations Support Command (OSC) holds the NRC license for the DU munitions (SUC 1380). The RSO will notify the OSC License Manager and OSC NICP for disposition instructions for unserviceable ammunition. The armor is completely encased and presents no hazard unless it is opened up exposing the DU armor. The RSO will notify the TACOM License Manager and TACOM NICP for disposition instructions if armor is ruptured or penetrated. TACOM holds the NRC license for the DU armor (SUB 1536). Exposure to radiation in the crew compartment of an undamaged tank, by the DU munitions and armor, is minimal.

4. Engine Spark Igniters. The engines of the M1 series tank contain engine igniters that have nickel 63, cesium 137, and krypton 85 radioactive materials. Hazards exist with these items when they are broken open or when they are stored in bulk quantities. If either of these conditions exist the RSO must be notified. The RSO will take action to mitigate the conditions and notify TACOM NICP. The spark igniters are licensed through a Department of Army (DA) Authorization A21-12-04, issued to TACOM.

Identification and Disposal

Radioactive materials are identified by warning labels. These labels should not be removed and should be replaced immediately when necessary. Dispose of radioactive materials in accordance with AR 11-9, Army Radiation Safety Program. Command NICP information is contained in TB 43-0116, Identification of Radioactive Items in the Army.

Rules and Regulation

Copies of the following rules and regulations may be obtained from the commands listed in the paragraph below.

1. Title 10 CFR Part 19 - Notices, Instructions, and Reports to Workers; Inspections

2. Title 10 CFR Part 20 - Standards for Protection Against Radiation

3. Title 10 CFR Part 21 - Reporting of Defects and Noncompliance

4. NRC License, license conditions, and license application

Additional Information

1. Upon notification of fire/breakage or theft/loss of licensed materials, RSO should immediately notify the license manager at the following appropriate offices:

a. Tritium Fire Control Devices: U.S. Army TACOM-RI, ATTN: AMSTA-LC-RS, Rock Island, IL 61299-7630, COM (309) 782-2965/6228/2995 or DSN 793-2965/6228/2995, fax COM (309) 782-6758 or DSN 793-6758.

b. Thorium Coated Optics: HQ, CECOM, ATTN: AMSEL-SF-RER, Fort Monmouth, NJ 07703-5024, COM (908) 427-3112/4427 or DSN 987-3112/4427.

c. Thorium Combustor Liners, DU Armor, and Engine Spark Igniters: HQ, TACOM, ATTN: AMSTA-CZ, Warren, MI 48397-5000, COM (586) 574-7635/6121 or DSN 786-7635/6121.

d. DU Ammunition: HQ, OSC, ATTN: AMSOS-SF, Rock Island, IL 61299-6000, COM (309) 782-2969/0338 or DSN 793-2969/0338.

2. Contact the base safety office for the name and telephone number of your RSO.

RSO: _____ TELEPHONE: _____

First Aid

For further information on first aid, see FM 4-25.11.

WARNING

You can be blinded if you look into a laser beam when you are not wearing laser safety goggles. Never aim the laser rangefinder at personnel.

If laser beam reflects from a flat, mirrorlike surface, it can blind you unless you are wearing laser safety goggles.

All people who work downrange of the laser must wear laser safety goggles. Laser safety goggles, NSN 4240-00-258-2054, or an approved substitute, will protect you.

Treat the laser rangefinder as a direct-fire weapon, with hazardous range of 8000 meters. Observe the following precautions when the laser rangefinder is being used:

1. **Never fire the laser rangefinder at a target less than 10 meters away.**
2. **Never fire the laser rangefinder at flat glass or mirrorlike targets.**
3. **Never fire the laser rangefinder if gunner's primary sight window is cracked.**
4. **Fire the laser rangefinder only at approved laser targets on an approved laser-firing range.**
5. **Report through the chain of command if:**

a. An unprotected person may have been in the beam path and closer than 8000 meters when the laser rangefinder was fired.

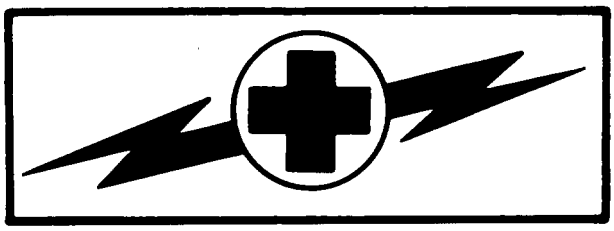
b. An unprotected person was looking at a flat glass or mirrorlike surface when the laser rangefinder was fired at it.

NOTE

Person in charge must arrange for necessary eye examination and report in accordance with AR 385-40 and AR 385-63.

6. **Make sure you get laser safety training before you work near an operating laser.**

WARNING



HIGH VOLTAGE

is used in the operation of this equipment.

DEATH ON CONTACT

may result if personnel fail to observe safety precautions.

Never work on electronic equipment unless there is at least one other person nearby who is familiar with the operation and hazards of that equipment. That person should also be competent in giving first aid. When operators help a technician, they must be warned about dangerous areas.

Whenever possible, shut off the power supply to equipment before beginning work. When working inside the equipment with power off, take special care to ground capacitors likely to hold a dangerous potential.

Be careful not to contact high-voltage connections when installing or operating this equipment.

Whenever possible, keep one hand away from the equipment to reduce the hazard of current flowing through vital organs of the body.

WARNING

Do not be misled by the term low voltage. Voltages as low as 50 volts may cause death.

For artificial respiration, refer to FM 4-25.11.

WARNING

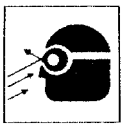
CARBON MONOXIDE (EXHAUST GAS) CAN KILL YOU

Carbon monoxide is without color or smell, but can kill you. Breathing air with carbon monoxide produces symptoms of headache, dizziness, loss of muscular control, a sleepy feeling, and coma. Brain damage or death can result from heavy exposure. Carbon monoxide occurs in the exhaust fumes of fuel-burning heaters and internal combustion engines, and in fumes caused by firing. Carbon monoxide can become dangerously concentrated under conditions of no air movement. Precautions must be followed to insure crew safety when the personnel heater or main or auxiliary engine of any vehicle is operated for any purpose.

1. **DO NOT operate personnel heater or engine of vehicle in a closed place unless the place is well-ventilated.**
2. **DO NOT idle engine for long periods of time without the NBC main system or the TURRET BLOWER switch on. If tactical situation permits, open hatches.**
3. **DO NOT operate Nuclear, Biological, Chemical (NBC) system or use M25A1 mask to protect against carbon monoxide. They will only get rid of odors which would normally indicate the presence of carbon monoxide.**
4. **DO NOT operate Nuclear, Biological, Chemical (NBC) system or use M42 mask to protect against carbon monoxide. They will only get rid of odors which would normally indicate the presence of carbon monoxide.**
5. **DO NOT drive any vehicle with inspection plates, cover plates, or engine compartment doors removed unless necessary for maintenance purposes.**
6. **DO NOT fire main gun or coax machinegun without NBC main system on, or with commander's and loader's hatches open.**
7. **BE ALERT at all times during vehicle operation for exhaust odors and exposure symptoms. If either is present, IMMEDIATELY VENTILATE personnel compartments. If symptoms persist, remove affected crew to fresh air; keep warm; DO NOT PERMIT PHYSICAL EXERCISE; if necessary, give artificial respiration and get immediate medical attention (see FM 4-25.11).**

THE BEST DEFENSE AGAINST CARBON MONOXIDE POISONING IS GOOD VENTILATION.

WARNING



MIL-C-81302 CLEANING COMPOUND (FREON) CAN KILL YOU

MIL-C-81302 Cleaning Compound (Freon) is a liquid without color that, during use, quickly turns to a gas heavier than air. Freon gas replaces oxygen needed for breathing and can kill you. Breathing high doses of air with Freon gas can cause a sleepy feeling, loss of concentration, a heavy feeling in the head, loss of muscle control, a change in heartbeat, or coma. Brain damage or death can result from heavy exposure. Freon gas can become dangerously concentrated under conditions of no air movement, such as in the bottom of a tank turret, or in a driver's station.

Freon can cause skin rash, and can blind you if it gets in your eyes.

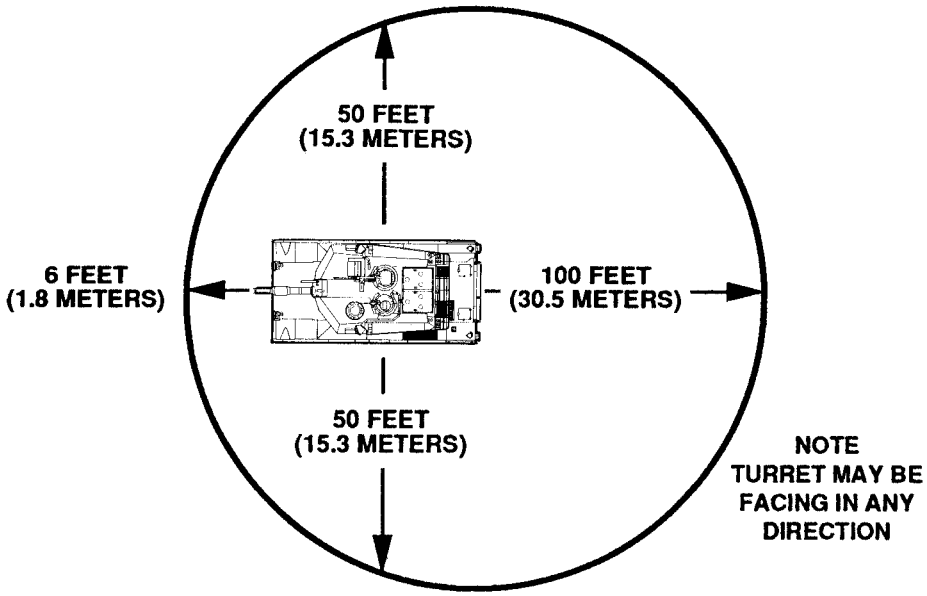
Precautions must be followed to insure crew safety when Freon is being used for any purpose:

1. **DO NOT use Freon from an open container. Use only 16-ounce, or smaller, aerosol cans of Freon. The use of any other size or type of Freon is not allowed. Use the smallest amount of Freon possible to do a task.**
2. **DO NOT use Freon in a closed place unless the place has a lot of moving air. DO NOT use in a closed place by yourself, use the ″Buddy System″.**
3. **BE ALERT at all times for exposure symptoms when using Freon. Ignoring exposure symptoms can prevent escape from closed places. If symptoms are present, IMMEDIATELY REMOVE AFFECTED CREW TO FRESH AIR. DO NOT PERMIT PHYSICAL EXERCISE; if necessary, give artificial respiration, and get immediate medical attention. DO NOT GIVE STIMULANTS, such as coffee.**
4. **DO NOT use Freon near open fire. Freon may decompose and can produce poisonous gases that can cause injury or death.**
5. **ALWAYS WEAR protective clothing and rubber gloves when using Freon. Wash immediately with mild soap and water if Freon gets on skin or clothing. Do not wear clothing wet with Freon; remove and wash clothing before reuse.**
6. **ALWAYS WEAR safety glasses when using Freon. If Freon gets in your eyes, flush them with water for 15 minutes and then get medical attention.**

WARNING

SINGLE HEARING PROTECTION REQUIRED

Wear hearing protection during engine operation. Consult diagram below to determine where hearing protection is required. Single hearing protection includes earplugs, earmuffs, attenuating Combat Vehicle Crewman (CVC) helmet, or headset. Failure to wear hearing protection can result in hearing damage.



WARNING

DOUBLE HEARING PROTECTION REQUIRED

Noise levels during ground hop support system operation exceed allowable limits. Wear double hearing protection during operation of this system. Double hearing protection consists of wearing earplugs or earmuffs, with either an attenuating Combat Vehicle Crewman (CVC) helmet or headset. Failure to wear double hearing protection can result in hearing damage.

ADDITIONAL HEARING PROTECTION REQUIREMENTS

TABLE 1

Time limit in minutes per 24 hours for personnel in tank wearing CVC helmet or CVC helmet with earplugs.

Speed MPH	CVC Helmet	CVC and Earplugs
Idle	780	NO LIMIT
10	83	NO LIMIT
20	27	480
30	22	282
40	16	174

NOTE

The idle condition includes idling up to 1300 rpm, all air handlers on, NBC system on, and other tank noise sources, inside the tank, operating.

TABLE 2

Time limit in minutes per 24 hours for personnel in tank wearing VIS CVC helmet with ANR ON and OFF.

Speed MPH	VIS CVC, ANR OFF	VIS CVC, ANR ON	Earplugs, VIS CVC, ANR ON or OFF
Idle	NO LIMIT	NO LIMIT	NO DATA
10	123	1154	NO DATA
20	36	347	NO DATA
30	29	269	NO DATA
40	23	138	NO DATA

NOTE

- **The idle condition includes idling up to 1300 rpm, all air handlers on, NBC system on, and other tank noise sources, inside the tank, operating.**

- **If a combination of speeds is used, the ANR should be on if the total distance traveled at any speed is expected to be more than 12 miles in any 24-hour period. With the ANR on, the limit is 92 miles.**

WARNING

HEALTH/ENVIRONMENTAL HAZARD

Gas particulate filters use ACS Whetlerite Carbon which contains Chromium VI. Chromium VI is a known carcinogen if inhaled or swallowed. Damaged or unusable filters are classified as hazardous waste:

1. **DO NOT throw away any damaged or unusable filters as ordinary trash.**
2. **DO turn in damaged or unusable filters to your hazardous waste management office or local Defense Reutilization and Marketing Office (DRMO).**
3. **Gas particulate filters are completely safe to handle and use if they are not damaged in such a way that carbon leaks from them. In the unlikely event that carbon should leak, use protection such as dust respirator to cover nose and mouth and put carbon in container such as self-sealing plastic bag; turn in to the hazardous waste management office or DRMO.**
4. **Disposal of hazardous waste is restricted by the Resource Conservation and Recovery Act as amended (42 U.S.C.A. sec 6901 et seq). Violation of these laws is subject to severe criminal penalties.**

WARNING

NBC

NUCLEAR, BIOLOGICAL, OR CHEMICAL

HANDLE CAREFULLY

After Nuclear, Biological, or Chemical (NBC) exposure of this vehicle, all air filters must be handled with extreme caution. Unprotected personnel may experience injury or death if residual toxic agents or radioactive material are present. If vehicle is exposed to chemical or biological agents, servicing personnel must wear protective mask, hood, protective overgarment, and chemical-protective gloves and boots. All contaminated air filters must be placed in double-lined plastic bags and swiftly moved to a segregation area away from the work site. The same procedure applies for radioactive dust contamination; however, the company NBC team should measure the radiation prior to filter removal to determine the extent of safety procedures required in accordance with the NBC Annex to the unit Standing Operating Procedures (SOP). The segregation area in which the contaminated air filters are temporarily stored must be marked with appropriate NBC placards. Final disposal of contaminated air filters shall be in accordance with local SOP.

WARNING

GUN/TURRET MOVEMENT

DO NOT PLACE ANY PART OF THE BODY THROUGH THE OPENING BETWEEN DRIVER'S STATION AND TURRET UNLESS TURRET LOCK IS LOCKED AND TURRET POWER IS OFF.

DO NOT PLACE ANY PART OF THE BODY ABOVE/BELOW THE MAIN GUN BREECH UNLESS MAIN GUN ELEVATION TRAVEL LOCK IS LOCKED AND TURRET POWER IS OFF.

Alert crew by announcing ″POWER″ and make sure all areas around turret, main gun, and breech are cleared before operating main gun or turret, or before operating palm switches. Injury or death could result if turret is traversed while body parts are extended between turret and hull or if main gun is moved while body parts are near breech or gun tube.

Keeps hands away from operating breech.

When palm switches are depressed, main gun or turret can move suddenly if any of the following conditions exist:

1. **MRS UPDATE menu is displayed on gunner's control and display panel.**
2. **GUN/TURRET DRIVE switch on loader's panel is in POWERED position and FIRE CONTROL MODE switch on gunner's primary sight is in NORMAL or EMERGENCY position.**
3. **GUN/TURRET DRIVE switch on loader's panel is moved to or from EL UNCPL position.**
4. **FIRE CONTROL MODE switch is in NORMAL or EMERGENCY position and main gun is over rear deck and is below 0 degrees elevation.**
5. **AMMO SELECT pushbutton is pushed to change from one ammo type to another.**
6. **TARGET RANGE is changed.**
7. **BALLISTIC SOLUTIONS run in NORMAL mode, with hydraulics active.**

WARNING

Dry Cleaning Solvent is toxic and flammable. To avoid injury, wear protective goggles and gloves and use in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and do not breathe vapors. Do not use near open fire or excessive heat. The flash point for Type I Dry Cleaning Solvent is 100° F (38° C), and for Type II is 140° F (60° C). If you become dizzy while using Dry Cleaning Solvent, get fresh air immediately and get medical aid. If contact with eyes is made, wash your eyes with water and get medical aid immediately.

WARNING

Adhesive burns easily and can give off harmful vapors. To avoid injury, keep away from open fire and use in a well-ventilated area.

WARNING

Cleaning compound can cause skin rash and give off harmful vapors. To avoid injury, use in a well-ventilated area. Wash immediately with soap and water if compound gets on skin or clothing.

WARNING

Sealing compound burns easily and can give off harmful vapors. To avoid injury, keep away from open fire and use in a well-ventilated area.

WARNING

FRH hydraulic fluid may contain tricresyl phosphate which, if taken internally, can produce paralysis. Hydraulic fluid may be absorbed through the skin. Wear long sleeves, gloves, goggles, and faceshield. If FRH gets in eyes, wash them immediately and get medical aid immediately. If FRH gets on skin, thoroughly wash with soap and water. Wash hands thoroughly prior to eating or smoking. Application of these measures is considered an effective control of the hazard.

Always wear safety glasses when working on the hydraulic system. If hydraulic fluid gets in your eyes, you can be blinded.

WARNING


Solvent burns easily and can give off harmful vapors. To avoid injury, keep away from open fire and use in a well-ventilated area.

WARNING

Heavy parts can crush you. Keep out from under and clear of heavy parts at all times.

WARNING

Compressed air used for cleaning purposes will not exceed 30 PSI. Use only with effective chip guarding and personal protective equipment (goggles/faceshield, gloves, etc.).

WARNING

Do not run bare hand on metal braided cable or hoses. Wires on cables or hoses can cut you. Wear protective gloves.

WARNING

Be sure vehicle master power is off before you work on any part of the electrical system. You can get electrical shock or burns if power is on.

WARNING

Do not put a trouble light within 2 inches (5.08 cm) of a fire sensor. A trouble light too near a fire sensor can cause fire extinguishers to discharge. If fire extinguishers are discharged, tank should be evacuated and aired within 5 minutes.

WARNING

Do not get lubricating oil on skin or clothing. Lubricating oil may cause skin rash. If oil gets on skin or clothing, wash immediately with soap and water.

WARNING

Follow the safety precautions listed in TM 9-1005-213-10 when you handle or remove commander's weapon. Commander's weapon may fire and cause injury or death if you do not follow precautions.

WARNING

Wear protective clothing when you handle contaminated nuclear/biological/chemical filters. Contaminated nuclear/biological/chemical filters can cause serious illness or death.

WARNING

Adhesives, cleaning solvents, and sealing compounds are harmful to skin and clothing, can burn easily, and give off harmful vapors. Use adhesives, cleaning solvents, and sealing compounds away from open fire and in a well-ventilated area.

WARNING

Ammunition containing explosives must be handled with care at all times. The explosive in primers and fuses is very sensitive to shock and high temperature. If ammunition is dropped, thrown, tumbled, or dragged, an explosion may result, causing death or injury and destruction of equipment. Disassembly of ammunition is not authorized.

WARNING

Verify that coax machinegun is cleared. Failure to clear machinegun could result in injury or death.

WARNING

Do not exceed 10 mph during performance of the stabilization lurch test. A sudden stop from speeds greater than 10 mph could cause injury to personnel.

WARNING

Make sure that grenade launchers are empty while performing grenade test. Failure to remove grenades could cause injury or death.

WARNING

Before testing turret systems using test leads and breakout box, or any maintenance task, lock main gun and turret before turning vehicle power on. High RFI signals could cause gun to slam into its stops and/or the turret to slew at a high rate. If main gun or turret must be unlocked, ensure areas around tank and above and below main gun breech are kept clear of personnel/equipment to prevent injury to personnel and damage to equipment.

WARNING

Look at sling and lifting points for breaks or wear before and during hoisting. Remove bad sling and install new sling. Sling can break and cause injury or death.

WARNING

Do not place trouble light within 2 inches (5.08 cm) of fire sensors. Sensors could cause extinguishers to discharge. Extinguisher gas will irritate eyes and throat and could be hazardous.

WARNING

Dome light must be in BLUE position before it can be opened or closed. Blue filter will be broken and could cause personal injury.

WARNING

Do not touch, ingest or inhale particles of a broken lens (front window of Infrared Viewer). This lens contains germanium, which is slightly toxic if ingested or inhaled. Glass may be sharp enough to cut personnel if touched. Dispose of germanium lenses in accordance with local environmental regulations.

WARNING

Unit maintenance should turn in system to decon lab since the following procedures are not for total decontamination. To avoid illness and injury, protective mask and gloves should be worn when handling loader's thermal weapon sight (LTWS) until total decontamination is completed by the decon lab.

WARNING

Do not open battery, dispose of in fire, heat above 212°F (100°C), expose to water, recharge, put in backwards, or mix with used or other battery types. Improper handling of batteries, as stated above, may cause battery to explode or leak and cause injury to personnel.

WARNING

Ensure weapon is not loaded and safety is on before installing Thermal Sight Module (TSM) to weapon. A loaded weapon may accidentally discharge causing injury to personnel.

WARNING

Do not recharge the lithium AA or Lithium-iron disulfide (Li-FeS2) batteries. Battery may explode causing injury to personnel, or damage to equipment.

WARNING

Do not short circuit battery terminals. If terminals are short-circuited, battery will be damaged.

WARNING

Before traversing turret, make sure driver's body is clear of turret or you could kill him.

WARNING

Make sure weapon is cleared before boresighting. Accidental firing of weapon can kill or seriously injure personnel.

WARNING

.50 cal Short Range Training Ammunition (SRTA) is lethal and may cause death or injury to personnel and damage to equipment.

WARNING

Make sure Rate of Fire System (RFS) control box arming switch is in the SAFE position.

WARNING

Once machinegun is charged, Counter Sniper/Anti-Materiel Gun Mount (CSAMM) mounted weapon will fire if trigger is pushed. Accidental firing of weapon can kill or seriously injure personnel.

WARNING

Do not use wiring harness if insulation is worn (exposing bare wire) or if cable has been cut. A worn or damaged harness can set off electrically detonated ammunition that could kill or injure personnel.

WARNING

To avoid eye injury, do not look directly into beam when spotlight is turned on.

WARNING

Weapon is fully operational once switch is in ARMED position and will fire if trigger is pushed. Accidental firing of weapon can kill or seriously injure personnel.

WARNING

Before doing any procedures or maintenance, unload machinegun and check receiver to make sure weapon is clear of ammunition or obstruction. Accidental firing of weapon can kill or seriously injure personnel.

WARNING

Xenon spotlight gets very hot. To avoid injury, do not touch spot light with bare hands for 5 minutes after spot light has been shut off.

WARNING

If .50 cal machinegun is removed from CSAMM and mounted in Commander's Weapon Station (CWS) mount, check headspace and timing. Failure to do so may result in injury or death to personnel and damage to equipment.

WARNING

Make sure bolt is forward before removing backplate. Spring-loaded parts may release and injure operator.

WARNING

If button is pressed down the with ARMED light lit, gun will fire and could injure or kill someone.

WARNING

Keep weapon pointed down range. Stay clear of muzzle end of barrel. Weapon can fire accidentally and kill or injure personnel.

WARNING

Weapon will fire if butterfly trigger is pushed. Accidental firing of weapon can kill or seriously injure personnel.

WARNING

Skirts are heavy. Do not open two skirts on same hinge line at same time. Check for missing hinge pin before opening skirt. Opening two skirts on same hinge line or opening any skirt with missing hinge pin may cause skirt to fall and injure someone.

WARNING

Always wear rubber gloves (NSN: 6515-01-150-2977) when using thinner (NSN: 8010-00-181-8080) to avoid absorption through the skin and to avoid de-fatting of the hands.

WARNING

Each armor tile contains high explosives and is considered an item of ammunition. Armor tiles must be handled with appropriate care at all times. Armor tiles should not be dropped, crushed, thrown, tumbled, dragged or subjected to drilling, cutting, burning, high temperatures (greater than 165 °F (74 °C)), high voltages, or welding. Improper handling of the armor tiles could result in serious injury or death.

WARNING

Do not attempt to disassemble the armor tiles for any reason. The armor tile is a totally enclosed, non-repairable item of ammunition. Attempts to disassemble the armor tiles could result in serious injury or death. Damaged or deteriorated armor tiles will be returned to the local ammunition supply point for disposition.

WARNING

Do not extend any part of body between turret and driver's station unless turret lock is set to LOCKED. You can be killed if turret is traversed while you are between turret and driver's station.

WARNING

Make sure driver's weight is being supported and nothing is under driver's seat when moving UPPER control handle to the unlock (red) position. Seat will drop rapidly and could cause injury.

WARNING

Do not place objects under driver's seat. A minimum 2-inch clearance should be maintained under seat. Objects placed under seat could cause injury.

WARNING

Driver must properly fasten and adjust four-point harness and leg straps for seat to work properly. Failure to properly fasten and adjust four-point harness and leg straps could result in injury or death.

WARNING

Driver's hatch must be closed when firing main gun, when either azimuth or elevation turret stabilization mode is in operation, or when turret and main gun are unlocked to prevent personal injury to driver.

WARNING

Do not operate driver's hatch while vehicle is moving except in case of emergency. Driver's hatch is heavy and can injure you.

WARNING

Make sure hatch locks in open position. Driver can be severely injured if hatch closes unexpectedly.

WARNING

Hatches must not be operated when tank is moving except in case of emergency.

WARNING

Failure to ensure that vehicle main engine is shut off before performing injured driver removal may result in damage to equipment and death or injury to personnel.

WARNING

Rescue knife is extremely sharp. Ensure personnel are clear of blade opening prior to use to prevent injury.

WARNING

Ensure crewmember's weight is supported prior to cutting any seat straps to prevent crewmember from falling.

WARNING

Unload all Class V items (armor tiles, ammunition) before welding on tank. Electrical currents induced in the vehicle by welding can explode ammunition.

WARNING

Armor tiles are heavy and require a two person lift. Attempting to lift armor tiles alone can cause injury.

WARNING

Armor tiles are painted with CARC paint which must be removed according to approved procedures. Cleaning CARC painted surfaces can release toxic fumes hazardous to your health.

C2

CHANGE

NO. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., 28 AUGUST 2009

TECHNICAL BULLETIN

M1A1 TANK URBAN SURVIVABILITY KIT (TUSK)

**OPERATOR,
UNIT MAINTENANCE
AND TROUBLESHOOTING,
REPAIR PARTS AND SPECIAL TOOLS LIST**

TB 9-2350-264-12&P-1, dated 31 August 2007, is changed as follows:

1. Remove old pages and insert new pages as indicated below.
2. New or changed material is indicated by a vertical bar in the margin of the page.

Remove Pages	Insert Pages
A thru D	A thru D
i thru iv	i thru iv
1-7 and 1-8	1-7 and 1-8
1-12.1/(1-12.2 blank)	1-12.1/(1-12.2 blank)
1-30.1/(1-30.2 blank)	1-30.1/(1-30.2 blank)
2-46.5 and 2-46.6	2-46.5 and 2-46.6
None	2-46.7/(2-46.8 blank)
3-1/(3-2 blank)	3-1 and 3-2
None	3-16.5 thru 3-16.8
3-77 and 3-78	3-77 and 3-78
3-81 and 3-82	3-81 and 3-82
3-82.1/(3-82.2 blank)	3-82.1 and 3-82.2
3-83 thru 3-88	3-83 thru 3-88
None	3-88.1/(3-88.2 blank)
3-89 and 3-90	3-89 and 3-90
None	3-90.1/(3-90.2 blank)
None	3-106.1 and 3-106.2
5-1 and 5-2	5-1 and 5-2
5-44.37 and 5-44.38	5-44.37 and 5-44.38

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

Remove Pages	Insert Pages
6F01-1 and Figure 6F02	6F01-1 and Figure 6F02
6F02-1 and Figure 6F03	6F02-1 and Figure 6F03
6F03-1 and Figure 6F04	6F03-1 and Figure 6F04
6F05-1 and Figure 6F06	6F05-1 and Figure 6F06
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6F08-1 and Figure 6F09	6F08-1 and Figure 6F09
6F10-1 and Figure 6F11	6F10-1 and Figure 6F11
6F11-1 and Figure 6F12	6F11-1 and Figure 6F12
6F12-1/(6F12-2 blank)	6F12-1/(6F12-2 blank)
None	BULK-1/(BULK-2 blank)
6I-1 thru 6I-11/(6I-12 blank)	6I-1 thru 6I-12
DA Form 2028 Sample Front and Back	DA Form 2028 Sample Front and Back
DA Form 2028 Front and Back	DA Form 2028 Front and Back
DA Form 2028 Front and Back	DA Form 2028 Front and Back
DA Form 2028 Front and Back	DA Form 2028 Front and Back
Front Cover and PIN	Front Cover and PIN

By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.
General, United States Army
Chief of Staff

Official:

JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army

0921801

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CHANGE

NO. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., 16 JUNE 2008

TECHNICAL BULLETIN

M1A1 TANK URBAN SURVIVABILITY KIT (TUSK)

OPERATOR, UNIT MAINTENANCE AND TROUBLESHOOTING, REPAIR PARTS AND SPECIAL TOOLS LIST

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Remove Pages	Insert Pages
q and r	q and r
A thru D	A thru D
i and ii	i and ii
1-1 thru 1-4	1-1 thru 1-4
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None	1-16.1/(1-16.2 blank)
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None	2-38.1 and 2-38.2

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

Remove Pages	Insert Pages
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6F01-1 and Figure 6F02	6F01-1 and Figure 6F02
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6F12-1/(6F12-2 blank)	6F12-1/ blank
6I-1 thru 6I-11/6I12 blank)	6I-1 thru 6I-11/ blank
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FP-7/(FP-8 blank)	FP-7/(FP-8 blank)
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Front Cover and Blank	Front Cover and PIN

By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.
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Original. . . . 0 . . . . . 31AUGUST 2007
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TOTAL NUMBER OF PAGES IN THIS PUBLICATION IS 696, CONSISTING OF THE FOLLOWING:

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*Zero in this column indicates an original page.

TECHNICAL BULLETIN

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., 31 AUGUST 2007

TECHNICAL BULLETIN

M1A1 TANK URBAN SURVIVABILITY KIT (TUSK) OPERATOR, UNIT MAINTENANCE AND TROUBLESHOOTING, REPAIR PARTS AND SPECIAL TOOLS LIST

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this publication. If you find any errors, or if you would like to recommend any improvements to the procedures in this publication, please let us know. The preferred method is to submit your DA Form 2028 (Recommended Changes to Publications and Blank Forms) through the Internet, on the Army Electronic Product Support (AEPS) website. The Internet address is https://aeps.ria.army.mil. The DA Form 2028 is located under the Public Applications section in the AEPS Public Home Page. Fill out the form and click on SUBMIT. Using this form on the AEPS will enable us to respond quicker to your comments and better manage the DA Form 2028 program. You may also mail, e-mail, or fax your comments or DA Form 2028 directly to the U.S. Army TACOM Life Cycle Management Command. The postal mail address is U.S. Army TACOM Life Cycle Management Command, ATTN: AMSTA-LCL-MPP/TECH PUBS, 1 Rock Island Arsenal, Rock Island, IL 61299-7630. The e-mail address is tacomlcmc.daform2028@us.army.mil. The fax number is DSN 793-0726 or Commercial (309) 782-0726.

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HOW TO USE THIS TECHNICAL BULLETIN

The safest, easiest, and best way to do maintenance on the unique components is to use this technical bulletin. Learning to use this technical bulletin is as easy as reading through the next few pages. Knowing what's in this technical bulletin and how to use it will save you time, work, and help you avoid exposing yourself to unnecessary hazards while you do your job.

So, where do you start?

Right here if this is the first time you are using this technical bulletin. Be sure to completely read this section on How To Use This Technical Bulletin first. There's a lot of information here you need to know.

ORGANIZATION

This technical bulletin contains operation and maintenance information for the equipment. It is divided into six chapters:

Chapter 1. Introduction-provides general information about the equipment.

Chapter 2. Operating Introduction-explains how to operate the equipment.

Chapter 3. Operation, Troubleshooting, and Maintenance-explains how to maintain equipment and diagnose malfunctions.

Chapter 4. Troubleshooting-explains how to use a step-by-step process for finding the cause of a problem and how to correct it.

Chapter 5. Unit Maintenance-explains what to do and how to repair something wrong with the components of the equipment.

Chapter 6. Repair Parts and Special Tools List (RPSTL) lists and authorizes spares and repair parts for performance of unit maintenance of the equipment.

HOW TO FIND PROCEDURES

Introduction go to page 1-1, Operating Instructions go to 2-1, Operation, Troubleshooting, and Maintenance go to page 3-1. If you are using the technical bulletin to perform Troubleshooting, go to page 4-1 and read PRINCIPLES OF OPERATION, and proceed to the instructions there. If you are using the technical bulletin to perform repair or replacement of a part that you already know is bad, you would start by locating the part to be replaced in the Unit Maintenance Procedure index located on page 5-1 of this technical bulletin. Once you have located the correct procedure, read through it to determine if you have everything you need to perform the job. Make sure all the equipment conditions have been met. Familiarize yourself with the potential hazards described by the WARNINGS and CAUTIONS. You must familiarize yourself with the entire maintenance procedure before beginning the maintenance task.

HOW TO USE A MAINTENANCE PROCEDURE

The first page of a maintenance procedure lists everything you will need to perform that procedure. The following paragraphs describe all the blocks of information you will find there.

TOOLS. Individual tools from your mechanic's tool kit will not be listed under this heading. If any tools from this kit are required, the tool kit itself will be listed as the first item. Tools from any other source will be listed with a reference to a National Stock Number or a part number.

HOW TO USE THIS TECHNICAL BULLETIN - (Continued)

SUPPLIES. If any expendable or consumable supplies are needed to perform the task, they will be listed under this heading reference to a National Stock Number. Replacement parts will be listed under this heading with part number (P/N) in parentheses. The inspection steps in the removal or disassembly procedure will tell you which parts to replace. Mandatory repair parts (parts that are destroyed in disassembly or not normally used again, such as gaskets and lockwashers) will be listed by Part Number.

PERSONNEL REQUIRED. The number of personnel required to perform the procedure will be listed here. You will find this heading only in procedures that require more than one person.

EQUIPMENT CONDITION. This heading will list only the special conditions you will have to meet in order to perform the procedure. In addition to these specific conditions the following general equipment conditions always apply unless otherwise specified:

- Tank parked, preferably on hard level surface
- Parking brake set
- MASTER POWER switch set to OFF
- Transmission shift control set to N (Neutral)

Procedures that must be completed before starting the specific job you are doing (Preliminary Procedures) will be listed in past tense with a page or TM reference. You will have to do all the procedures listed under ″EQUIPMENT CONDITION″ of those tasks also before starting the specific procedure you have set out to do. As an example, when the equipment condition of ″Small lightweight global-positioning receiver mount removed (page 4-3)″ is listed and you go to that procedure and find an equipment condition of ″Tank power disconnected (TM 9-2350-264-20-1),″ then you must do that procedure also.

REFERENCES. These are other technical publications you will need to do the task. This heading will appear only when other references are needed.

FEATURES OF THE NEW PROCEDURE FORMAT

MULTIPLE EXPERIENCE LEVEL COVERAGE. This means that the unit maintenance procedures are with both SUMMARY and DETAIL steps. The SUMMARY steps in all capital letters are basic steps that the experienced mechanic requires to perform the job. The detail steps, if needed, follow immediately and are lettered and shown in regular case letters. This reduces the material the experienced mechanic needs to review to perform a job.

PICTORIAL WARNINGS. Certain general warnings are shown by pictures rather than by text within procedures. Refer to the WARNINGS found just after the front cover of this technical bulletin, TM 9-2350-264-20-1 and TM 9-2350-264-20-2. You must become familiar with them. Until you are, always refer to the detailed WARNING in the front of this technical bulletin, TM 9-2350-264-20-1 and TM 9-2350-264-20-2. These pictorial warnings are just as important as the specific text warnings that are also used throughout the technical bulletin. When you see a pictorial warning in the very beginning of the procedure you should heed the precautions throughout. For example, when you see the following pictorial warning,

WARNING

then you should follow the precautions to wear protective goggles, use in a well-ventilated area, and keep away from open fire whenever you use dry cleaning solvent in the procedure. Failure to heed these warnings could result in injury or death to yourself or others.

HOW TO USE THIS TECHNICAL BULLETIN - (Continued)

USE OF TOOLS AND PERSONNEL. Each procedure lists the tool kits and tools that you will need for that procedure. The procedural steps will not tell you how and where to use common tools. Also, the procedural steps will not tell you which persons do which steps in procedures with more than one person. The mechanic responsible for the task should direct the rest of the personnel what to do. If you have difficulty determining what tools to use or how to use personnel, see your supervisor for help.

REFERENCES. References are made to page numbers within this technical bulletin. The multiple volume TM 9-2350-264-20-1, for example, is considered to be one TM, so references between volumes will be by TM number only and users will need to use the Alphabetical Index of that TM to find the information they need.

PROCEDURE ORGANIZATION. Most of the procedures in this technical bulletin fall into the category of either a replacement or repair. These procedures will contain both the removal and installation or the disassembly and assembly steps in the same procedure.

LOCATING COMPONENTS. The use of locator illustrations in this technical bulletin has been minimized. Locator illustrations are used to show locations of operating controls and major components located in the Operator's manual. Refer to the ″Principles of Operation″ and ″Controls and Indicators″ in TM 9-2350-264-10 for this information. In addition, equipment which is specifically located in the performance of the Equipment Conditions procedures will not normally have locators in the beginning of the procedure. Where locators are required, they are only used in the beginning of the Removal subtask. No locators are used in Installation subtasks. If for some reason you are in doubt of the location of a component, or if you still have trouble, see your supervisor.

CHAPTER 1
INTRODUCTION

CHAPTER INDEX

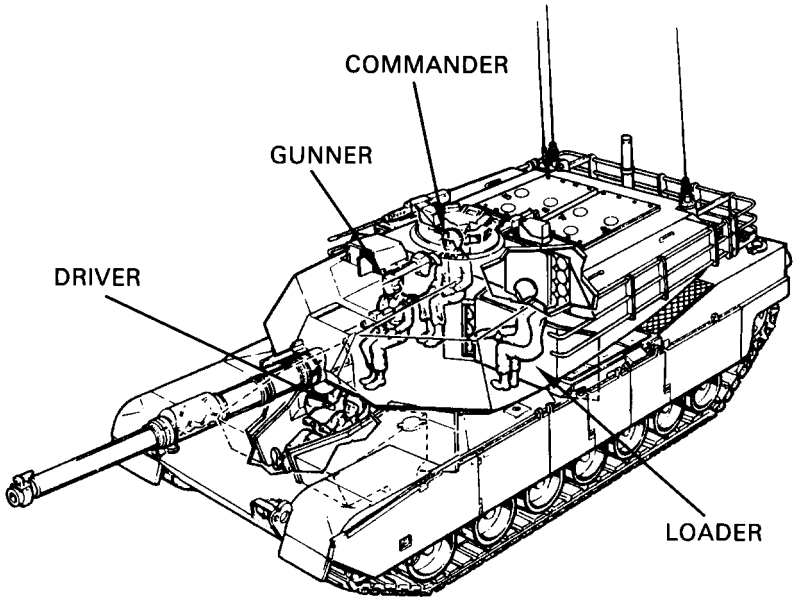
SECTION I. GENERAL INFORMATION

SCOPE

The Tank Urban Survivability Kit (TUSK) is an enhancement to the M1A1 vehicle to better protect the crewmembers from the threats found in an urban warfighting environment. Improved armor protection, an additional thermal weapon sight, a remotely operated machinegun and added communication equipment are included to better suit the tank to the situations encountered by today's tank crews.

This chapter gives crewmembers the information they need to operate the TUSK equipment under usual and unusual conditions. The technical bulletin also contains the data the crew needs to check the TUSK equipment for proper operation and to keep it serviceable. The technical bulletin contains special information for each crew station consisting of driver's station, commander's station, gunner's station, and loader's station.

The M1A1 TUSK is equipped with improved armor, displays, thermal sights, phone, intercom, driver's seat, and weaponry.



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SCOPE - Continued

ABRAMS REACTIVE ARMOR TILES (ARAT)/ABRAMS REACTIVE ARMOR TILES 2 (ARAT 2)

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

Destruction of armor tiles when subject to capture or abandonment will be undertaken by the user only when, in the judgment of the unit commander concerned, such action is necessary in accordance with orders of, or policy established by, the Army Commander. Refer to TM 43-0002-33.

POTENTIAL COLLATERAL DAMAGE

With the ARAT/ARAT 2 tiles on the turret sides and skirts, personnel should stay clear of the vehicle due to the potential of spall/fragment from the tiles when they function as intended. For detailed information, refer to TB 9-1375-257-13.

ARAT/ARAT 2 SAFETY AND HANDLING PRECAUTIONS

Do not attempt to disassemble the armor tiles for any reason. The armor tile is a totally enclosed, non repairable item of ammunition. Attempts to disassemble the armor tiles could result in serious injury or death. Damaged or deteriorated armor tiles will be returned to the local ammunition supply point (ASP) for disposition or repaired, see PMCS for ARAT or ARAT 2 Armor Tiles.

Handle unpackaged armor tiles carefully to prevent damage.

The weight of the ARAT tiles, plus dirt build-up in the rails, makes removal and installation of the tiles difficult. There is a potential to pinch fingers and hands when lifting ARAT armor tiles. Installing and removing ARAT tiles is a two-man operation. Handle with strap handles on top of tile box. Do not drop or drag armor tile. Total weight for ARAT and ARAT 2 tiles is 99 pounds. The ARAT tile alone weighs 65 pounds. Do not remove both tiles together; remove ARAT 2 tiles first then using two people remove ARAT tiles from tank.

Double hearing protection must be worn by all vehicle occupants during combat. Any standard earplugs, plus the DH132 Helmet, will provide adequate protection against the noise of a tile detonating from a warhead impact.

A tile, which was ignited, will remain very hot for some time after the fire has gone out, so be careful when approaching a tile that has burned; it and the surrounding tiles and metal structure of the vehicle can burn you.

Each armor tile contains high explosives and is considered an item of ammunition. Armor tiles must be handled with appropriate care at all times. Armor tiles should not be dropped, crushed, thrown, tumbled, dragged, or subjected to drilling, cutting, burning, high temperatures, high voltages, or welding. Improper handling of the armor tiles could result in injury. Because of the insensitive explosive used, there is no danger of a tile detonating if it is dropped or impacted by anything with less concentrated energy than a .50 cal. bullet or an anti-tank warhead. However, care must be taken in handling tiles (e.g., do not purposely throw or drop them when unloading) to avoid deformations which could make them difficult or impossible to mount properly.

SCOPE - Continued

GENERAL

Though they are quite insensitive to ignition, armor tiles are explosive loaded and must be treated accordingly. Detonation of the explosive in armor tiles requires an extreme stimulus, such as being hit by an anti-tank warhead, but the tiles can be made to ignite and burn by a much less energetic bullet impact or being subjected to a fire. The tiles are Class V items and require appropriate storage when not mounted on a vehicle. The tiles may be left mounted on the vehicle under almost any circumstances, including during most maintenance operations. See Vehicle Maintenance below for more information.

ARAT 2 consists of curved tiles which provide additional survival protection for the crew. The tiles on the hull are mounted to rails on the existing ARAT tiles. The tiles on the turret are mounted to rails which are attached to mounting plates. Currently, top row of turret ARAT 2 tiles (six per side; 12 total) on left and right side are not installed.

FIRE

If ignited by an incoming small arms round that penetrates its shell, an armor tile may burn until most of the explosive within it is consumed. Enough heat will be generated to warp adjacent hardware and tiles, but adjacent tiles will not usually be ignited unless their outer shell has been compromised, exposing their explosive to flame or heat from the burning tile. Thus, under combat conditions, the main problem from a burning tile will be from the smoke from the fire. It is not necessary to evacuate a vehicle with a burning tile; it is safe to stay buttoned-up under hostile conditions. If circumstances permit, it is advisable to extinguish a burning tile to avoid heat damage to adjacent hardware and tiles.

The most effective means of extinguishing a burning tile is a large amount of water. If a hose is not available, a water type fire extinguisher may be able to do the job if the water can be directed into the hole in the tile. Dry chemical extinguishers are generally ineffective on tile fires. In attempting to extinguish a tile fire, never plug the entry hole with the hose nozzle or anything else.

Extinguished tiles will remain very hot for some time after the fire has gone out, so be careful when approaching a tile that has burned; it and the surrounding metal structure and tiles can burn you.

All damaged tiles must be turned in to the ASP or other activity authorized to destroy explosive ordnance.

VEHICLE MAINTENANCE

All vehicle maintenance activities may be performed with the tiles mounted with the exception of welding and cutting. Tiles within three feet of a torch or other high heat source operation must be removed and adjacent tiles shielded with welding blankets. Appropriate fire extinguishing equipment should be kept immediately available during such operations. When tiles are removed to facilitate maintenance, they must be stored in accordance with appropriate quantity distance for their explosive weight (see TB 9-1375-257-13).

SCOPE - Continued

OTHER TILE SAFETY

Do not drop, drag, throw, tumble, or otherwise strike boxes containing armor tiles.

Store armor tiles in a dry, well-ventilated area, protected from the direct rays of the sun and other sources of excessive heat.

Once the armor tile has been removed from the package, be sure to handle carefully to prevent damage.

LOADER'S THERMAL WEAPON SIGHT (LTWS)

GENERAL

The thermal sight is a self-contained infrared imaging sensor mounted on the loader's weapon used for target acquisition (sighting) during conditions of low visibility.

TANK INFANTRY PHONE (TIP)

GENERAL

The TIP is a fifth full function crew station mounted externally on the right rear of the hull which connects to the tank's intercom system for use by dismounted troops.

LOADER'S ARMOR GUN SHIELD (LAGS)

GENERAL

The LAGS is an armor package to add protection for the loader while operating in the open hatch position. Two transparent armor windows protect the loader while affording visibility.

POWER DISTRIBUTION BOX (PDB)

GENERAL

The PDB provides additional power outlet utility jacks in turret of the tank for ancillary equipment. Many of the TUSK components are powered via the PDB's circuit breaker protected outlets.

COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM)

PURPOSE OF EQUIPMENT

The CSAMM device allows a .50 cal machinegun to be mounted externally and coaxially with the tank main gun. CSAMM may be fired in the combat mode to destroy enemy point and area targets using the tank's fire control system. Additionally, the CSAMM device may be used as a sub-caliber training device to replicate main gun firing. The CSAMM device also allows for firing of short range training ammunition (SRTA) to train crews in the use of CSAMM or the main gun in the urban gunnery environment.

A xenon spotlight is mounted alongside the weapon mount to aid in target acquisition and threat illumination.

SCOPE - Continued

REMOTE THERMAL SIGHT (RTS)

GENERAL

The RTS provides the tank commander with night vision capability by presenting a thermal scene in the commander's weapon station (CWS) display control module (DCM) eyepiece.

DRIVER'S HARNESS SYSTEM SEAT

GENERAL

The driver's harness system seat consists of a seat and a restraint system for the driver in the vehicle. It is fastened with a system of belts and retractors inside of the driver's station. By use of a control box with hand levers, the driver operates the retractors to change or adjust his sitting position.

BELLY ARMOR

GENERAL

The belly armor is a combination of armor plates that adds protection to the crew and to the vehicle. When installed, the belly armor offers additional protection to the crew from mine detonation under the vehicle hull.

LIST OF ABBREVIATIONS

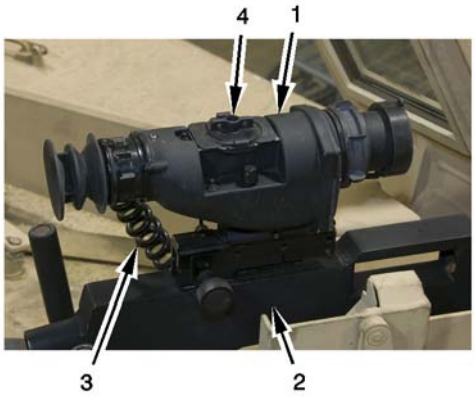
API-T	-	Armor Piercing Incendiary-Tracer
ARAT	-	Abrams Reactive Armor Tile
ARAT 2	-	Abrams Reactive Armor Tile 2
ASP	-	Ammunition Supply Point
AUTO	-	Automatic
AUX	-	Auxiliary
BIT	-	Built In Test
BLK	-	Black
CAL	-	Calibrate
CB	-	Circuit Breaker
cm	-	Centimeter
CSAMM	-	Counter Sniper/Anti-Materiel Gun Mount
CVC	-	Combat Vehicle Crewman
CWS	-	Commander's Weapon Station
CWSS	-	Commander's Weapon Station Sight
D	-	Down
DA	-	Department of the Army
DCM	-	Display Control Module
DoD	-	Department of Defense
DODAC	-	Department of Defense Ammunition Code
DODIC	-	Department of Defense Inventory Code
DOT	-	Department of Transportation
EAPU	-	External Auxiliary Power Unit
EXT	-	External
F	-	Fire
FBCB2	-	Force XXI Battle Command Brigade and Below
FLIR	-	Forward Looking Infrared
FOV	-	Field of View
GPS	-	Gunner's Primary Sight
HMD	-	Helmet Mounted Display
HTH	-	High Test Hypochlorite
HYD/HYDR	-	Hydraulic
IED	-	Improvised Explosive Device
INT	-	Intercom
INU	-	Inertial Navigation Unit
IR	-	Infrared
kg	-	Kilogram
L	-	Left
LAGS	-	Loader's Armor Gun Shield
lb	-	Pound
LED	-	Light Emitting Diode
LTWS	-	Loader's Thermal Weapon Sight
MOPP	-	Mission Oriented Protective Posture
MOUT	-	Military Operations on Urban Terrain

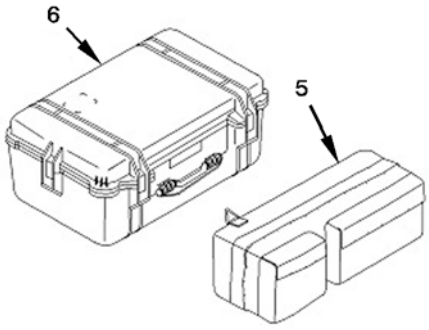
LIST OF ABBREVIATIONS - Continued

MST	-	Master
MWTS	-	Medium Weapon Thermal Sight
NBC	-	Nuclear, Biological, Chemical
NFOV	-	Narrow Field of View
NiMH	-	Nickel Metal Hydride
Nm	-	Newton Meter
NSN	-	National Stock Number
O/R	-	Override
PAM	-	Pamphlet
PDB	-	Power Distribution Box
PETN	-	Penthrite
PJS	-	Pulse Jet System
PMCS	-	Preventive Maintenance Checks and Services
POL	-	Polarity
PTT	-	Push to Talk
PWR	-	Power
R	-	Right
RDX	-	Cyclotrimethylenetrinitramine
RET ADJ	-	Reticle Adjust
RET SEL	-	Reticle Select
RFS	-	Rate of Fire System
RTN	-	Return
RTS	-	Remote Thermal Sight
SLAP	-	Saboted Light Armor Penetrator
SLAP-T	-	Saboted Light Armor Penetrator-Tracer
SOP	-	Standing Operating Procedure
SRTA	-	Short Range Training Ammunition
TIP	-	Tank Infantry Phone
TIS	-	Thermal Imaging System
TRU	-	Thermal Receiver Unit
TSM	-	Thermal Sight Module
TUR	-	Turret
TUSK	-	Tank Urban Survivability Kit
U	-	Up
UN	-	United Nations
UTCP	-	Upgraded Tank Commander's Panel
VBIED	-	Vehicle Borne Improvised Explosive Device
VDC	-	Volts Direct Current
VEH	-	Vehicle
VIS	-	Vehicle Intercommunications System
VID SEL	-	Video Select
VOX	-	Voice Activated Keying
VPA	-	Vehicle Power Adapter
VRC	-	Vehicular Radio Communications
WFOV	-	Wide Field of View
WHT	-	White
WK	-	Work
ZOOM	-	Electronic Zoom

SECTION II. EQUIPMENT DESCRIPTION

LOADER'S THERMAL WEAPON SIGHT (LTWS)





THERMAL SIGHT MODULE (TSM) BODY ASSEMBLY (1): Houses internal optical and electronic components.

MOUNT (2): Universal attachment interface between thermal sight and weapon bracket.

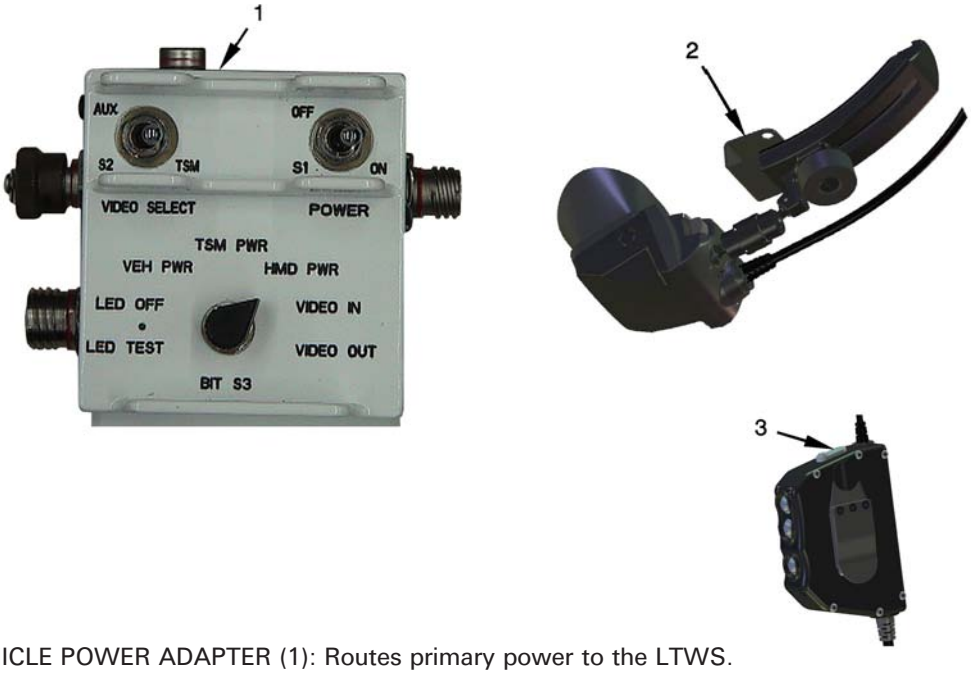
CORD (3): Supplies vehicle power and video interconnection.

BATTERY PACK (4): Holds system batteries.

CARRYING CASE (5): Soft cloth bag with storage compartments for thermal sight, cleaning kit, two batteries, manual, and weapon bracket. Provides straps for soldier to hand carry or strap on back.

TRANSIT/STORAGE CASE (6): Hard case used for transportation and storage.

LOADER'S THERMAL WEAPON SIGHT (LTWS) - Continued



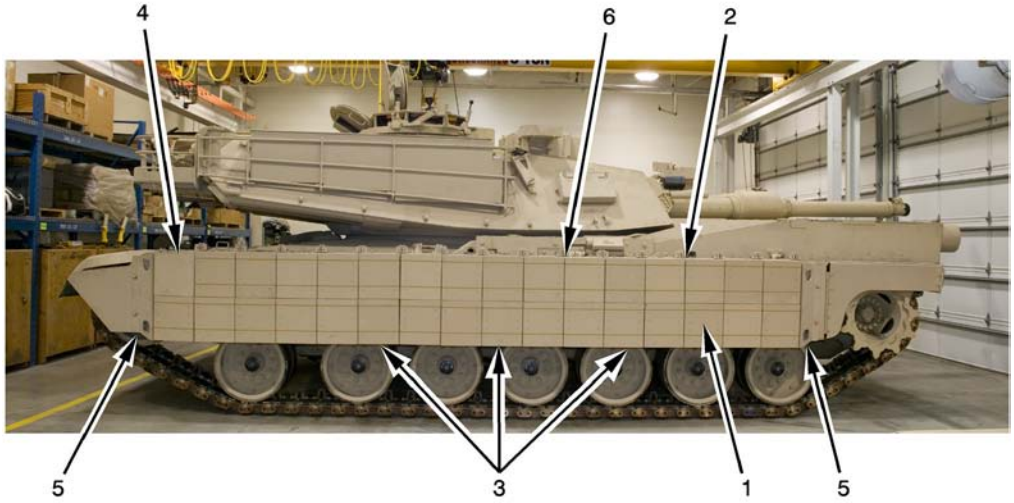
VEHICLE POWER ADAPTER (1): Routes primary power to the LTWS.

HELMET MOUNTED DISPLAY (2): Displays image from the TSM.

DISPLAY CONTROL MODULE (3): Provides video scan conversion, power conditioning, and displays control functions.

5t1011

ABRAMS REACTIVE ARMOR TILE (ARAT)



SKIRTS (1): The ARAT skirts replace the standard skirts on the vehicle. They are lighter than the regular skirts to minimize added weight.

RAILS (2): The rails are attached to the skirts.

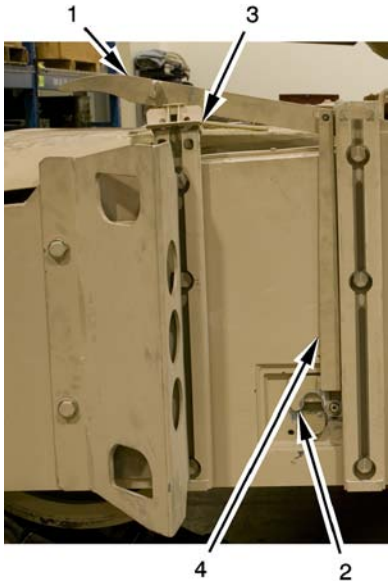
TILE BOXES (3): There are 62 tiles boxes, 31 per side.

SPACER BOX (4): There are two spacer boxes, one per each front skirt.

BRUSH GUARDS (5): There are four brush guards, two per side.

RAILS CAPS (6): There are 32 rails caps, 16 per side.

ABRAMS REACTIVE ARMOR TILE (ARAT) - Continued



LATCH HANDLE (1): Connected to the latch rod and latch fork assembly to secure skirt number one.

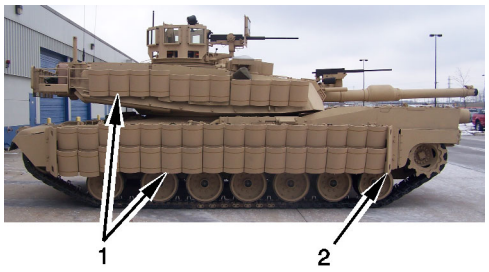
LATCH FORK (2): When engaged, secures skirt number one.

RAIL CAP PIN (3): Secures latch handle.

LATCH ROD (4): Connects latch handle to latch fork.

5t1053

ABRAMS REACTIVE ARMOR TILE 2 (ARAT 2)



NOTE

ARAT 2 tiles are a Class V item.

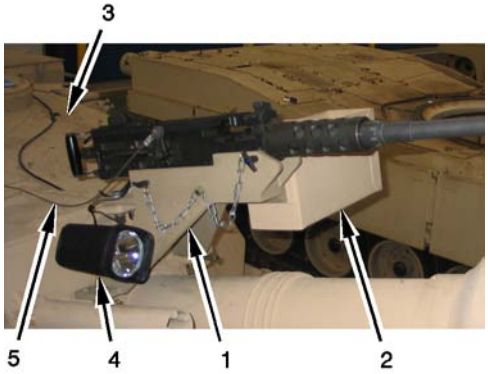
ARAT 2 TILES (1): ARAT 2 tiles have a curved shield design. Tiles are mounted to rails which are secured with quick release pins. There are 32 tiles on each side of the hull. There are 10 tiles on the left side of the turret. There are 11 tiles on the right side of the turret.

BRUSH GUARDS (2): There are four brush guards, two per side. The ARAT 2 brush guards have replaced the ARAT brush guards and are deeper to accommodate the ARAT 2 tiles.

RAILS (3): Rails for the tiles pivot and allow the tiles to be secured into two different positions with quick release pins. They are mounted to the hull and turret. Rails on the hull are mounted to threaded holes in the ARAT tile boxes. The rails on the turret are attached to the mounting plates on the turret.

MOUNTING PLATES (4): There are three mounting plates on each side of the turret. ARAT 2 rails are fastened to the mounting plates.

COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM)



MOUNT (1): The mount is attached to the main gun mantlet. Deflection and elevation bolts are located at lower mount points.

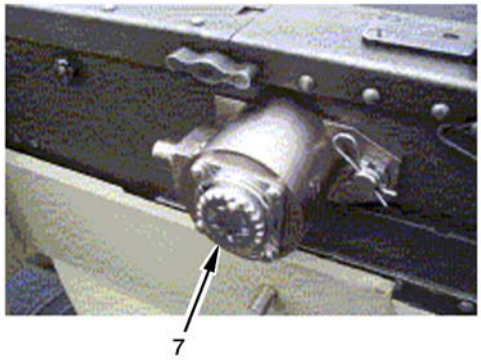
AMMUNITION CAN (2): The ammunition can is attached to the mount. The CSAMM can use either a 200 or 100 round ammunition box.

CABLE GUARDS (3): Protect wiring harness on top of turret.

SPOTLIGHT (4): The wide beam spotlight is mounted on the right side of the machinegun and has several uses. It gives the crew a better way to interrogate/look at potential IEDs/VBIEDs at night and to better identify pressure switch detonated IEDs located on the road. It also allows the crew to better see inside and outside of vehicles at checkpoints and roadblocks and can be used as a deterrent to stop oncoming vehicles without firing a weapon. The wide beam covers a large area for urban targets instead of a point target.

PULL CABLE ASSEMBLY (5): A heavy, wire rope that allows the loader to charge or perform immediate action on the .50 cal machinegun.

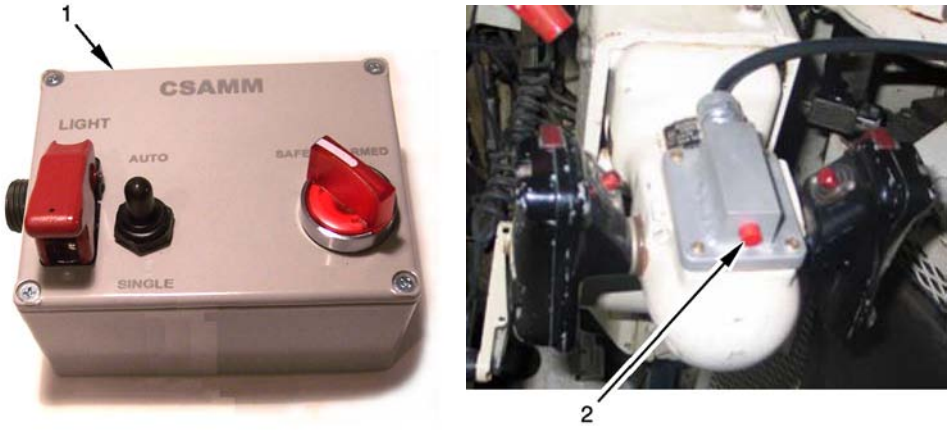
COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) - Continued



WIRING HARNESS (6): The wiring harness electrically connects the weapon with the remote trigger.

G-9 TYPE TRIGGER SOLENOID (7): The trigger solenoid allows remote firing of the .50 cal machinegun. Timing for the machinegun is set with the solenoid also.

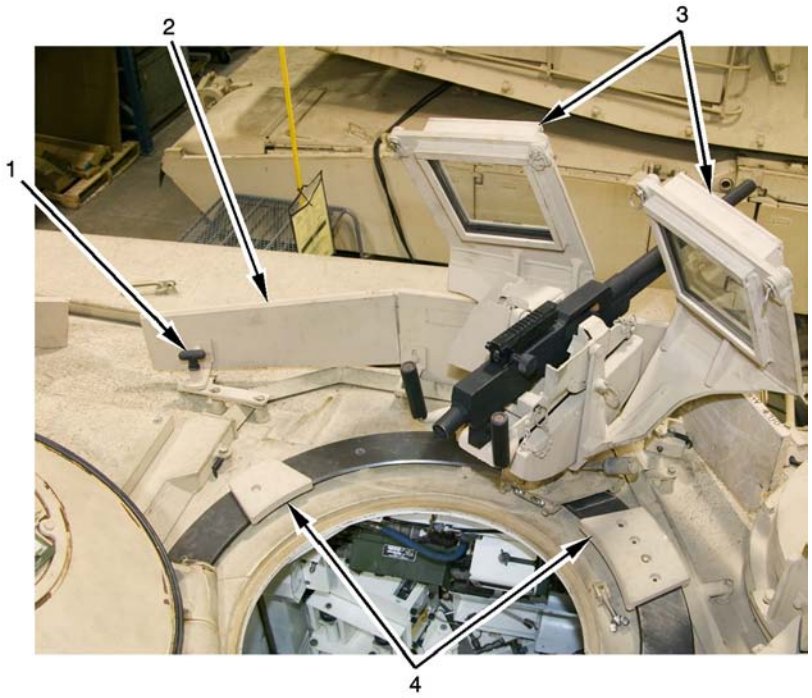
COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) - Continued



RATE OF FIRE SYSTEM (RFS) CONTROL BOX (1): The control box contains an illuminating arming switch, toggle selector switch (for single shot or fully automatic fire), and a spotlight ON/OFF switch.

TRIGGER BUTTON (2): Allows the gunner to remotely fire the machinegun using a separate trigger and firing circuit.

LOADER'S ARMORED GUN SHIELD (LAGS)



PULL HANDLE (1): Handle used to lift pin to rotate fence (2) away from loader's hatch.

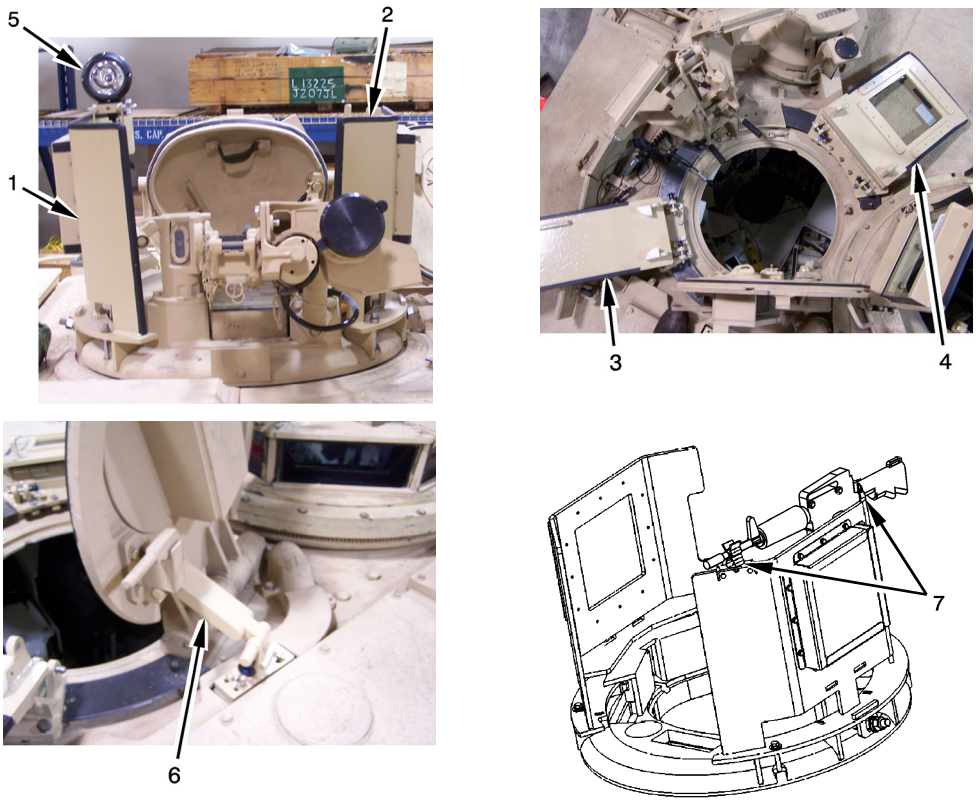
FENCE (2): Rear most section of armor. Hinged to clear a path of evacuation or upload main gun rounds.

ARMOR GLASS (3): Transparent armor located on each side of the machinegun.

STOP (4): Limits the azimuth travel of the machinegun on the skate.

5t1566

FORCE PROTECTION



COMMANDER'S OUTBOARD SHIELD (1): The commander's outboard shield is bolted to the commander's weapon station and has a large, replaceable ballistic window that is held in place by a bolted bracket assembly.

COMMANDER'S INBOARD SHIELD (2): The commander's inboard shield is bolted to the commander's weapon station and has a large, replaceable ballistic window that is held in place by a bolted bracket assembly.

LOADER'S OUTBOARD SHIELD (3): The loader's outboard shield is a solid ballistic shield bolted to the skate track. It has a raised and lowered position.

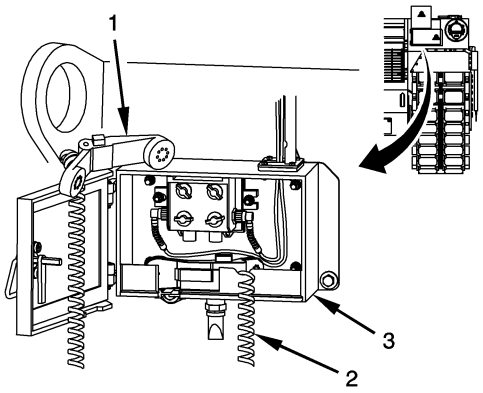
LOADER'S INBOARD SHIELD (4): The loader's inboard shield is bolted to the skate track and has one large replaceable ballistic windshield that is held in place by a bolted bracket assembly. It has a raised and lowered position.

COMMANDER'S SPOTLIGHT (5): The spotlight is attached to a bracket on the commander's outboard shield. The spotlight has an infrared cover. It is adjustable in elevation, depression, and traverse. The ON/OFF switch is located on the back.

LOADER'S HATCH LATCH (6): The loader's hatch latch raises the loader's hatch to a more elevated position.

COMMANDER'S M4 BRACKET (7): The M4 weapon bracket is attached to the commander's inboard shield. The rear notch for the buttstock is a cutout on the inboard shield.

TANK INFANTRY PHONE (TIP)

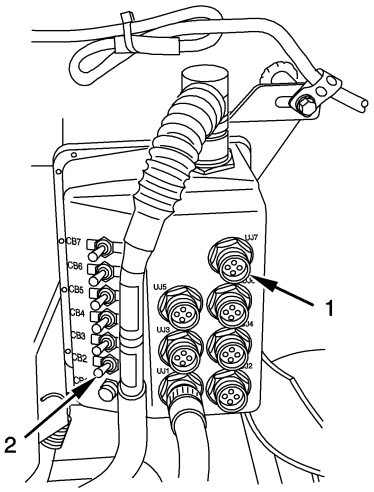


HANDSET (1): The handset is on the end of the extension cable.

EXTENSION CABLE (2): There is a 25-foot extension cable to operate the station away from the tank.

BOX (3): The box contains and protects the TIP station.

POWER DISTRIBUTION BOX (PDB)

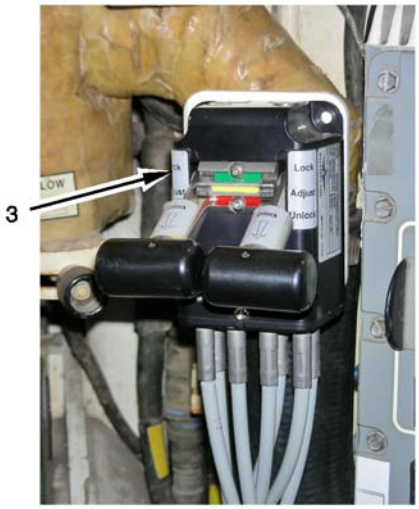


UTILITY JACKS (1): The utility jacks provide seven additional jacks in the turret.

CIRCUIT BREAKERS (2): There are seven manual circuit breakers on the power distribution box. There are three 6-amp, one 10-amp, two 15-amp, and one 35-amp breaker(s).

5t1250

DRIVER'S HARNESS SYSTEM SEAT

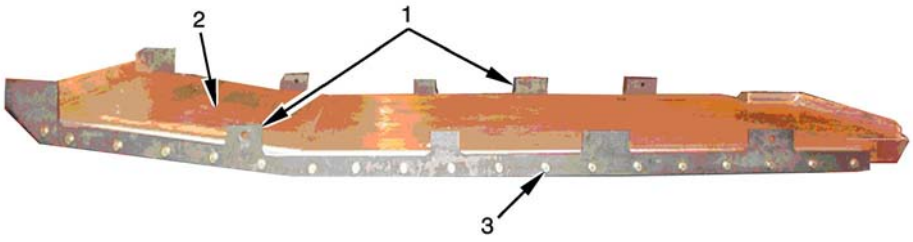


SEAT ASSEMBLY (1): The harness-type seat assembly consists of a seat area, back support, leg sleeves, and four-point harness and connectors for mounting in the vehicle.

RETRACTORS (2): Controls position of seat by lengthening or retracting belts connected to seat assembly.

CONTROL BOX (3): The control box contains two handles which operate the retractors.

BELLY ARMOR



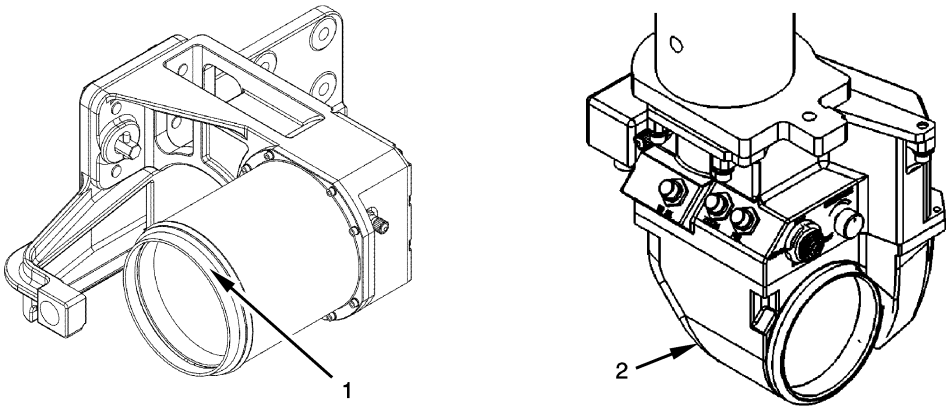
MOUNTING BRACKETS (1): The mounting brackets are attached to the hull beneath the crew compartment.

BELLY ARMOR PLATES (2): The belly armor plates attach to the mounting bracket to add armored protection to the underside of the hull.

BOLTS AND WASHERS (3): The 32 bolts and washers hold the armor plate to the mounting brackets.

5t1591

REMOTE THERMAL SIGHT (RTS)



Thermal Sight Module (TSM) (1): Provides tank commander with night vision capability.

Commander's Weapon Station (CWS) Display Control Module (DCM) Eyepiece (2): Displays thermal scene from TSM.

PERFORMANCE DATA

XM19 ARMOR TILE
- Length ..... 12.7 in (32.3 cm)
- Width ..... 14.3 in (36.3 cm)
- Thickness ..... 6.9 in (17.5 cm)
- Weight ..... 65 lbs (29.5 kg)
- Net Explosive Weight (per tile) ..... 7.0 lbs (3.2 kg)

Packing: Fiberboard Box, Barrier Bag, Wooden Box Pack
- XM19 Armor Tile ..... 1 per wooden box
- NEX EXPL WGT ..... 7.0 lbs (per box)

Packing Boxes XM19 Armor Tile
- Weight ..... 142 lbs (64.4 kg)
- Dimensions ..... 17 in x 14.3 in x 8.7 in (43.2 cm x 36.2 cm x 22.0 cm)

Palletization
- XM19 Armor Tile ..... 30 boxes per pallet

Shipping and Storage Data
- DOD Hazard Class/Div/SCG 1.4D
- DOT/UN Proper Shipping Name ...Articles, Explosive, N.O.S., (Not Otherwise Specified)
- UN Serial No 0352
- DOT Hazard Class 1.4D
- DOT Container Marking ....(PETN), UN0352 Articles, Explosive, N.O.S. (RDX), UN0352
- DODAC XM19/XM19 A1 ..... 1375-ML95

THERMAL SIGHT MODULE
- Length ..... 12.9 in (32.8 cm)
- Width ..... 3.3 in (8.4 cm)
- Height ..... 4.3 in (10.9 cm)
- Weight w/batteries ..... < 3.1 lbs (1.4 kg)

Battery Life (AA Lithium L91) power consumption at 82° F (28° C):
- 71% Standby Mode ..... 16.42 hours
- Emergency Mode ..... 10.52 hours

Battery Life (AA NiMH) power consumption at 82° F (28° C): *minimum 2000 mAh
- 71% Standby Mode ..... 12.39 hours
- Emergency Mode ..... 7.66 hours

FIELD OF VIEW (FOV)
- Zoom (Narrow) ..... 3 degrees
- Wide (FOV is one-third in zoom mode) ..... 9 degrees

MAGNIFICATION FACTOR
- Wide Field of View (WFOV) (3X) (Magnification is tripled in zoom mode) 1.30

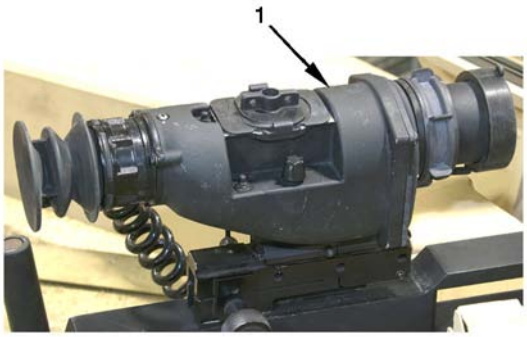
SECTION III. PRINCIPLES OF OPERATION

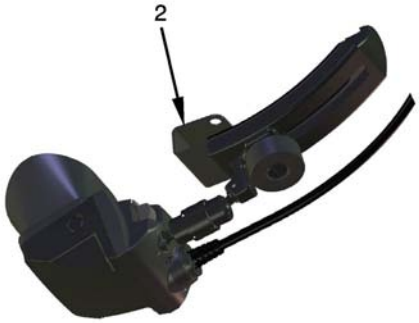
GENERAL

This section describes the operation of the tank urban survivability kit (TUSK) components and assemblies.

LOADER'S THERMAL WEAPON SIGHT (LTWS)

The loader's thermal weapon sight (LTWS) is a silent, lightweight, compact, durable, vehicle powered thermal sight module (TSM) (1) with the display viewable through the helmet mounted display (HMD) (2) controlled by the display control module (DCM) (3). The LTWS receives primary power from the tank through the vehicle power adapter (VPA) (4), with a secondary option of battery power. The LTWS is capable of target acquisition under conditions of limited visibility such as darkness, smoke, fog, dust, and haze. The LTWS operates effectively during daylight. The VPA (4) has the ability to receive an auxiliary visual signal. The LTWS or auxiliary can be selected by a toggle switch on the VPA (4).

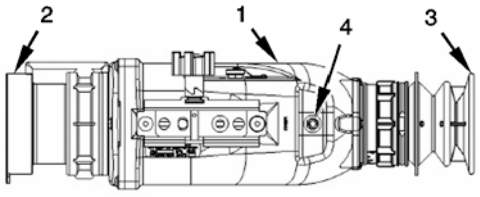




5t1241

LOADER'S THERMAL WEAPON SIGHT (LTWS) - Continued

THERMAL SIGHT MODULE. The thermal sight module (TSM) (1) is an independent thermal sight that is not cooled and mounts directly to the loader's weapon. The TSM (1) is an imaging sensor used for target acquisition under conditions of low visibility. Images are received through the objective lens (2), detected by the sensor, converted to digital data, processed, and then displayed for the user. The display can either be viewed on the TSM (1) by depressing the eyecup (3) or can be viewed by an exterior display with video out capabilities at a connector. The TSM (1) has a 3X digital zoom that can be operated by the RET SEL/ ZOOM button (4).



BOTTOM VIEW

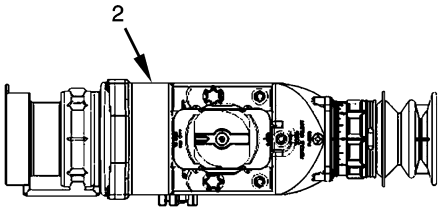
The TSM (1) can be powered by vehicle power through the external connector or battery power. The TSM (1) uses 8 AA batteries, but can operate with 4 AA batteries. Only battery life is shortened in this mode, no other performance is degraded.

5t1149

LOADER'S THERMAL WEAPON SIGHT (LTWS) - Continued

MODES OF OPERATION. The vehicle power adapter (VPA) (1) and turret power must be turned on before operation of the LTWS. When the LTWS is first turned on, the system begins a warmup period that lasts for up to 120 seconds depending on the ambient temperature. After the warmup period is complete, the LTWS may be placed in one of the following modes of operation:

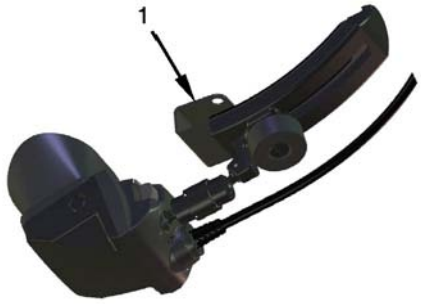
- Standby Mode. After the warmup period, the TSM (2) automatically enters standby mode, power is not applied to the eyepiece display or most electronics in order to extend battery life.
- On Mode. When the TSM (2) is in standby mode and pressure is applied to the eyecup, the TSM (2) switches to the on mode. Colder temperatures will cause the display to take longer to appear.
- Emergency Mode. When switched to emergency mode, the TSM (2) continuously applies power to the entire system and battery life is greatly reduced. In this mode, video processing is turned on and is enabled at the I/O connector for external viewing.



TOP VIEW

LOADER'S THERMAL WEAPON SIGHT (LTWS) - Continued

HELMET MOUNTED DISPLAY (HMD). The HMD (1) provides the loader the same image that is displayed in the eyecup of TSM. The image is provided from the TSM or an auxiliary input through the vehicle power adapter (VPA). The display can be positioned so that it can be viewed in either eye.

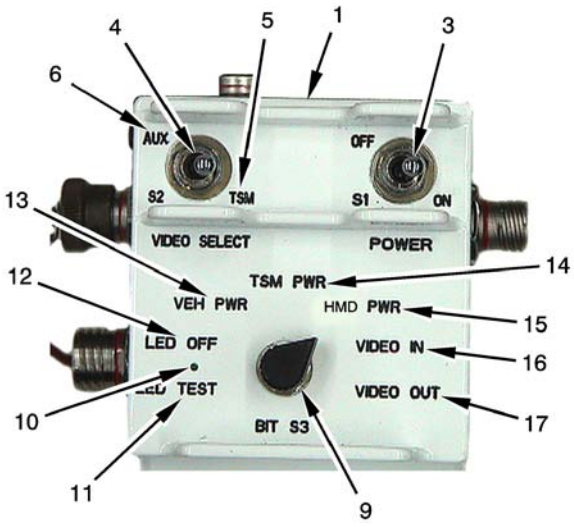


DISPLAY CONTROL MODULE (DCM). The DCM (2) provides video scan conversion, power conditioning, and display control functions for the loader while using the helmet mounted display. The DCM houses controls for adjusting brightness of the display using an up/down luminance switch, and provides an LED indicator that illuminates when a good video feed is detected.

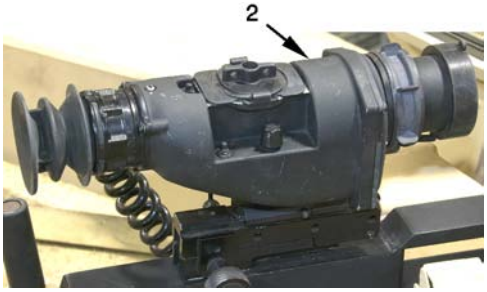
5t1154

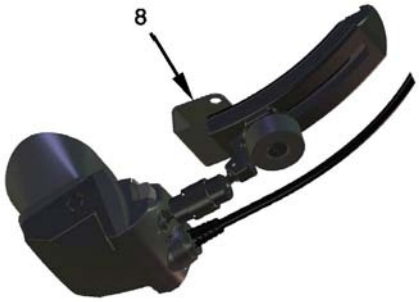
LOADER'S THERMAL WEAPON SIGHT (LTWS) - Continued

VEHICLE POWER ADAPTER (VPA). The VPA (1) is located at the dome light in the loader's station. VPA (1) is a control box for the thermal sight module (TSM) (2). The VPA (1) provides power to the TSM (2) and is controlled at the S1 power switch (3). The VPA (1) receives a video feed from TSM (2) and an auxiliary input. The video output is chosen at the S2 switch (4) by selecting either TSM (5) or AUX (6). The video output is sent out of J2 to the DCM (7) and then the HMD (8).



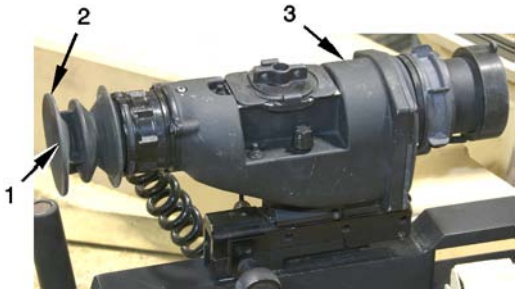
The VPA (1) also conducts BIT on LTWS with the S3 dial (9). The LED (10) will light up green when BIT passes. No light will appear if BIT fails. The function that the dial is pointed at is the only BIT conducted at that time. LED TEST (11) tests for a functioning LED (10). LED OFF (12) turns LED (10) off. VEH PWR (13) tests that vehicle power is going to VPA (1). TSM PWR (14) tests that power is going to TSM (2) through J1. HMD PWR (15) tests that power is going to the DCM (7) and then to the HMD (8) through J3. VIDEO IN (16) tests that video enters VPA (1) from TSM (2) or auxiliary input J4. VIDEO OUT (17) tests the video output to the DCM (7) and then to the HMD (8).





LOADER'S THERMAL WEAPON SIGHT (LTWS) - Continued

DISPLAY. During extreme cold conditions, the display (1) may remain blank until it is warm enough to display the reticle, indicators, and thermal scene. The image shown in the display (1) in the eyecup (2) of the TSM (3) and the screen on the HMD (4) is identical.



RETICLES. The TSM (3) provides various reticles corresponding to the various weapon systems it is used with. The TSM (3) provides a reticle for wide field of view (WFOV) and a reticle for zoom/narrow field of view (NFOV).

RETICLE SELECTION. Reticle selection is based on the weapon/system being used and the FOV selected.

RETICLE ADJUSTMENT. The position of the reticle is adjustable in azimuth and elevation and is displayed on the screen. The most recent position is stored in memory and is retained when power is removed.

ELECTRONIC ZOOM FUNCTION. The TSM (3) is equipped with a 3X electronic zoom. When the zoom is activated, the image size is tripled and at the same time the FOV is cut to one third.

5t1159

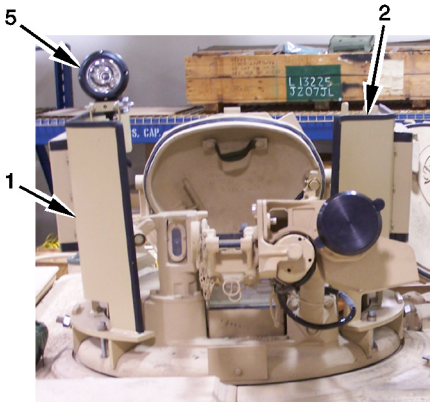
FORCE PROTECTION

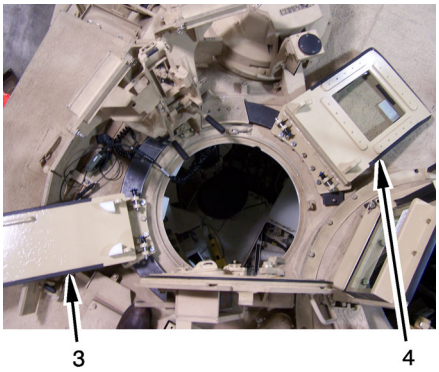
The force protection package provides additional protection for the commander and the loader when operating with an open hatch. The shields provide added armored protection. The spotlight is used as an accessory for urban combat operations and is operated by the commander. The loader's hatch latch allows the hatch to be further raised for rear protection. The commander's M4 bracket provides external stowage for the carbine while in open hatch position.

The commander's shields (1 and 2) provide protection to the commander's left and right side while in open hatch position. The shields are mounted to the commander's weapon station and have replaceable ballistic windows.

The loader's shields (3 and 4) provide protection to the loader's left rear and right front sides while in open hatch position. The shields are clamped to the skate track. The outboard shield (3) can be adjusted side to side with bolt clamps. The inboard shield (4) can also be adjusted with bolt clamps and has a replaceable ballistic windshield that is clamped to the shield.

The commander's spotlight (5) provides the commander with the capability to independently illuminate external areas during periods of limited visibility. Knobs on the spotlight mount allow the spotlight to be elevated or depressed and also to be traversed to the right and to the rear. The spotlight comes with an infrared filter.

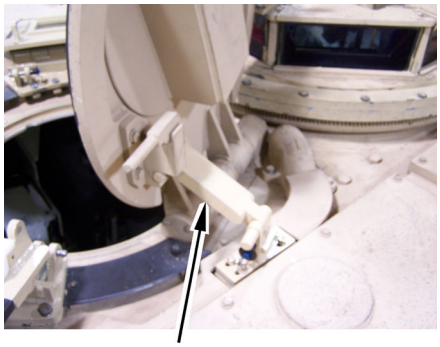


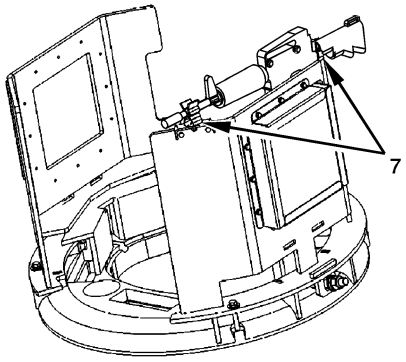


FORCE PROTECTION - Continued

The loader's hatch latch (6) allows the loader's hatch to be raised to a more elevated position which provides additional protection behind the loader.

The commander's M4 bracket (7) and notch in the inboard commander's shield provide the commander an external location to stow the M4 carbine when in open hatch position.

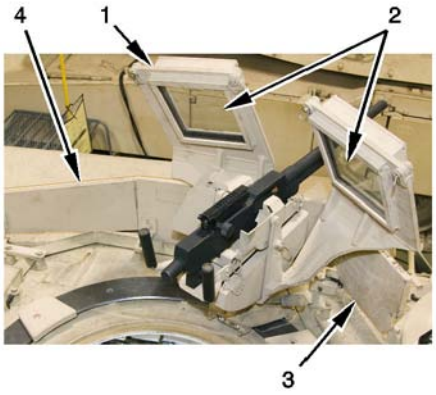




5t2000a

LOADER'S ARMOR GUN SHIELD (LAGS)

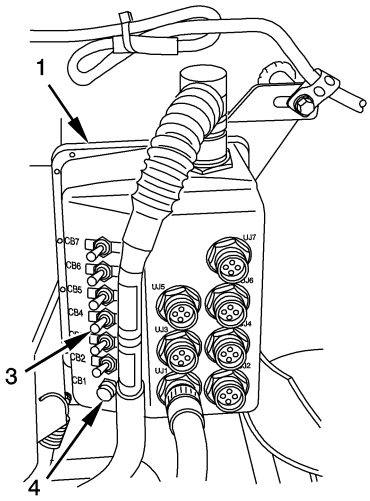
The loader's armor gun shield is an armor package to add protection for the loader when operating with an open hatch. The shield (1) replaces the current loader's M240 weapon mount. The operations to traverse and elevate the weapon are unchanged. Transparent armor (2) is added to each side of the weapon mount. If damaged, each plate of armor can be replaced. There is also a fence (3) mounted to the roof of the turret. The rear most section (4) is hinged to clear a path of evacuation or upload main gun rounds.

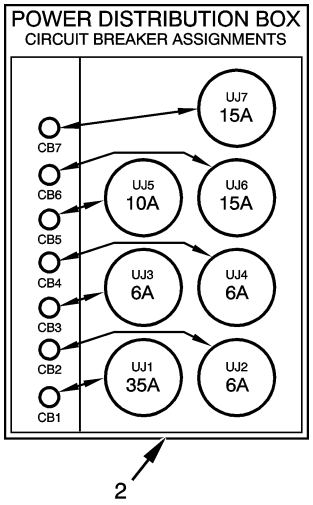


POWER DISTRIBUTION BOX (PDB)

The power distribution box (PDB) (1) provides additional utility jacks in the turret. There are seven manual circuit breakers on the PDB (1). The breakers are: one 35 amp, two 15 amp, one 10 amp, and three 6 amp. The utility jacks on the PDB have the same configuration as other utility jacks in the vehicle. A decal (2) shows the amperage associated with each utility jack.

The 6, 10, and 15 amp utility jacks are controlled by a toggle switch (3) for each circuit breaker. The 35 amp circuit breaker (4) needs to be depressed to reset.





5t1248

ABRAMS REACTIVE ARMOR TILES 2 (ARAT 2)

NOTE

- **ARAT 2 tiles are a Class V item.**
- **For additional information on tiles, see TB 9-1375-257-13.**
- **Appropriate warnings on ARAT 2 tiles are posted throughout this manual.**

ARAT 2 tiles (1) have a curved shield design that consists of an explosive sandwiched between metal plates. This provides additional crew survivability against shaped charge threats. Each tile (1) is self-sealed and designed not to be taken apart. There are no energetic subcomponents or initiating devices within the tiles (1). Tiles (1) are quite insensitive to initiation, except by an extreme stimulus such as an anti-tank warhead.

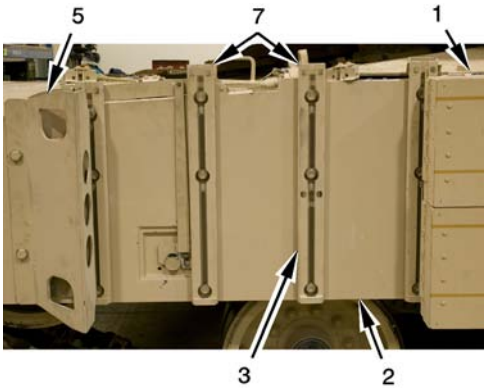
Tiles (1) can be locked in two different positions that are used for different tactical environments and in accordance with unit Standing Operating Procedure (SOP).

ABRAMS REACTIVE ARMOR TILES (ARAT)

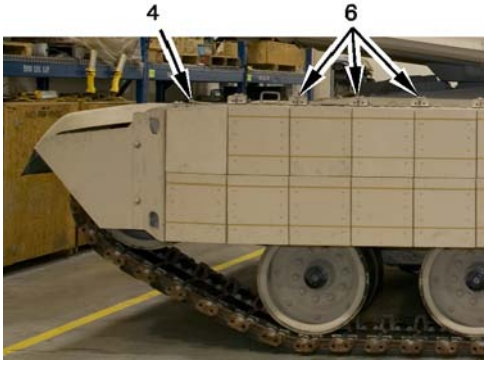
NOTE

Abrams reactive armor tiles (ARAT) are a Class V item.

Abrams reactive armor tiles (ARAT) (1) are applied to the ARAT skirts (2), increasing survivability of the vehicle and crew. ARAT consists of the following: skirts (2), rails (3), tiles (1), spacer box (4), brush guards (5), and rail caps (6). There are: 62 tiles (1), two spacer boxes (4), four brush guards (5) and 32 rail caps (6) per vehicle; (31 tile boxes, one spacer box, two brush guards, and 16 rail caps per side).

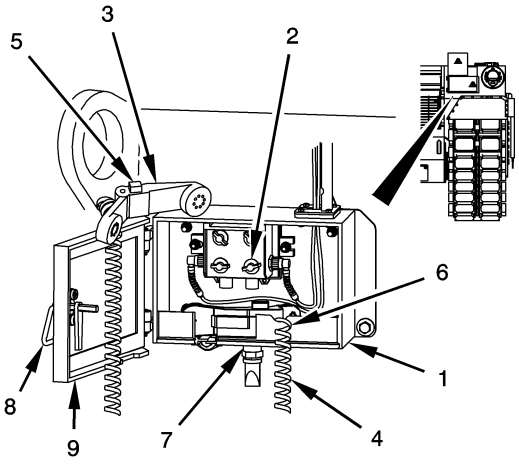


The rails (3) are attached to the skirts (2). The tiles (1) slide down on the brackets (7) and are secured in place. Each side of the vehicle has removable armor tiles (1). Each rail (3) on the tile (1) will slide into a mounting bracket (7). There are two tiles (1) stacked in 15 columns and one tile (1) with the spacer box (4) in the front skirt column on each side of the tank. The total is 31 tiles (1) and one spacer box (4) per side. Though they are quite insensitive to initiation, armor tiles (1) are explosive loaded and must be treated accordingly. Detonation of the explosive in armor tiles (1) requires an extreme stimulus, such as being hit by an anti-tank warhead, but the tiles (1) can be made to ignite and burn by a much less energetic bullet impact or being subjected to a fire.



TANK INFANTRY PHONE (TIP)

The tank infantry phone (TIP) (1) is a fifth full function crew station (2) in the tank's VIC-3 intercom system. The handset (3) is on the end of a 25 foot extension cable (4) so that the user can operate this station away from the tank by pressing the PTT button (5) on the handset (3). The TIP (1) can be operated with the door of the box closed, having the extension cable pass through the slot (6) on the bottom of the box. There is a drain (7) in the bottom of the box to allow water to drain from the TIP (1). Turning handle (8) clockwise and counterclockwise, allows TIP door (9) to be opened and latched closed.

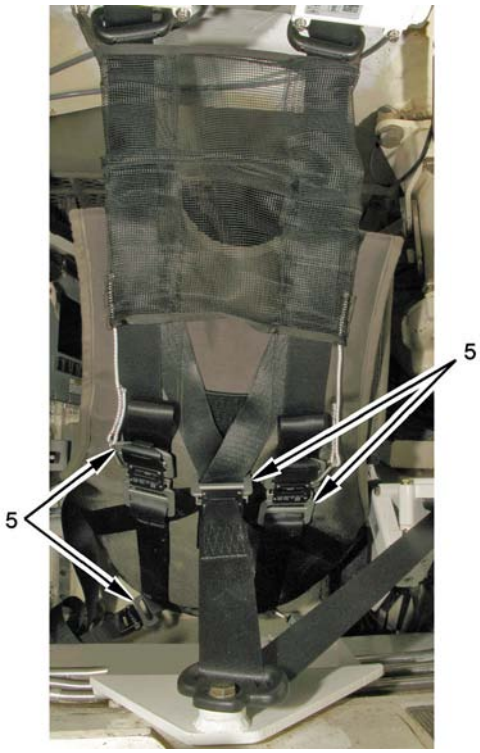


5t1097

DRIVER'S HARNESS SYSTEM SEAT

The driver's harness system seat consists of a seat assembly that is suspended from the vehicle chassis on adjustable belts. By suspending the seat assembly on belts, the driver is isolated from any sudden shock to vehicle chassis. A system of seven retractors house the belts that connect to the seat assembly. A head rest is attached to the two rear upper belts. A control box with two handles operates the retractors.

The seat assembly (1) consists of a seat area (2), back support (3), leg sleeves with straps (4), connectors (5) for mounting in the vehicle and a four-point harness (6). The back support (3) is a stiff cushion with lumbar padding to support the driver's back. The leg sleeves (4) are used to give more support to the legs when driving and to prevent fatigue. The four-point harness (6), consisting of left (7) and right (8) shoulder belts and left (9) and right (10) lap belts, is used to secure the driver into the seat. The four-point restraint fastens over the driver with a single buckle (11) on the right lap belt.



DRIVER'S HARNESS SYSTEM SEAT - Continued

The retractors house the belts that hold the seat in position. There are seven retractors that are controlled by the use of two handles housed in a separate control box. The four upper retractors, LEFT FRONT (LF) (12), RIGHT FRONT (RF) (13), LEFT UPPER (LU) (14), and RIGHT UPPER (RU) (15), are used for positioning in upward direction. The CENTER (C) (16) retractor is used to provide restraint and the two lower retractors LEFT LOWER (LL) (17) and RIGHT LOWER (RL) (18) are used to provide restraint and for positioning.

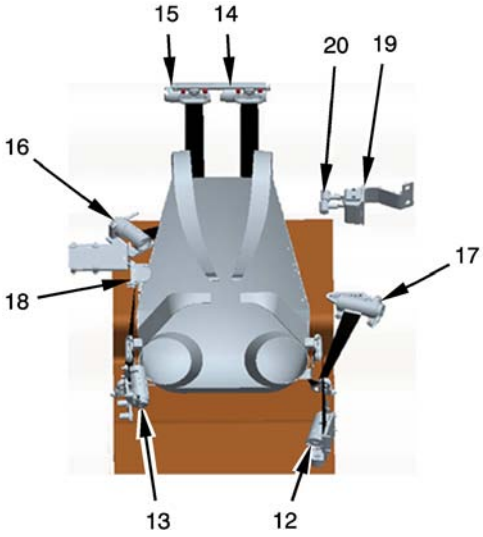
All retractors have three modes of function:

LOCK. The retractor is locked. The belt is kept in its current position. This prevents an inadvertent change of position. Also, if the driver opens his harness and leaves the vehicle, the seat will stay in position. When the driver is driving, the retractors are in the LOCK position.

ADJUST. The belt is retracted into the retractor. This mode is used when changing the sitting position upwards. The driver pulls himself into the new position and is kept there.

UNLOCK. The belt can be pulled freely to connect to the harness. If released, the belt is retracted back into the retractor. If the retractor was in the LOCK mode, it will then open and release the belt, enabling the driver to change position.

Control box (19) houses the two control handles (20) and is connected to the retractors via cables. Handles are marked UPPER and LOWER. The UPPER handle controls the four upper retractors and the LOWER handle controls two lower and center retractor. Handles have three operating positions which control the different functions of the retractors. Each handle position is color coded for quickly identifying retractor mode and determining current operational safety of the seat. The color code is: UNLOCK = red, ADJUST = yellow, LOCK = green.



5t1524

COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM)

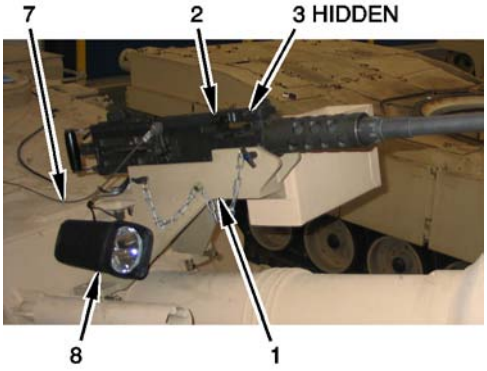
The CSAMM (1) allows a .50 cal machinegun (2) to be mounted externally on, and coaxially with, the main gun.

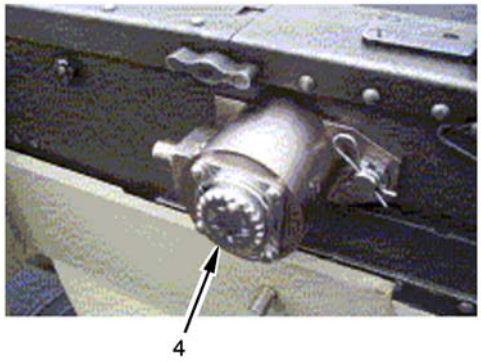
An electrical cable (3) and the G-9 trigger solenoid (4) allow the machinegun (2) to be fired remotely using a separate firing circuit and a trigger (5) from the gunner's station.

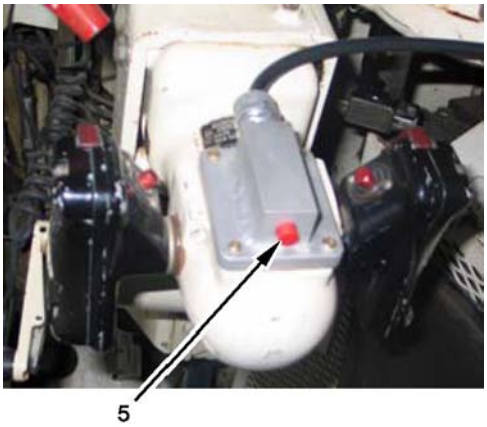
The firing circuit is controlled by a digital rate of fire system (RFS) (6). The RFS (6) allows the commander to arm the system and to select single shot or fully automatic fire.

The pull cable assembly (7) allows the loader to charge or perform immediate action on the machinegun (2).

The Xenon spotlight (8) is used as an accessory for urban combat operations. The spotlight is controlled by a toggle switch (9) on RFS (6) control box.

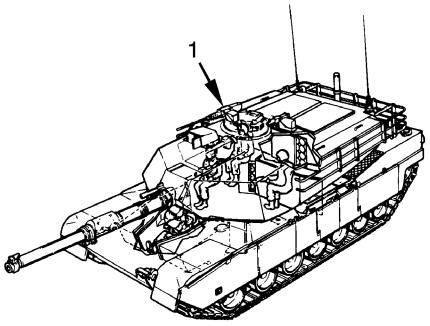


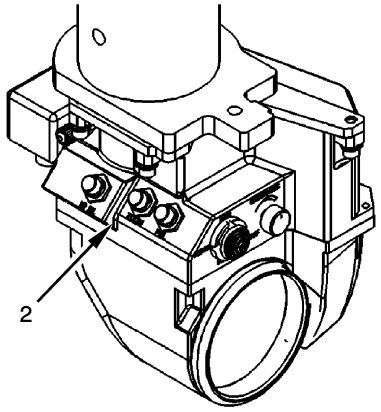




COMMANDER'S WEAPON STATION SIGHT (CWSS) .50 CAL THERMAL SIGHT/DAY TV SYSTEM

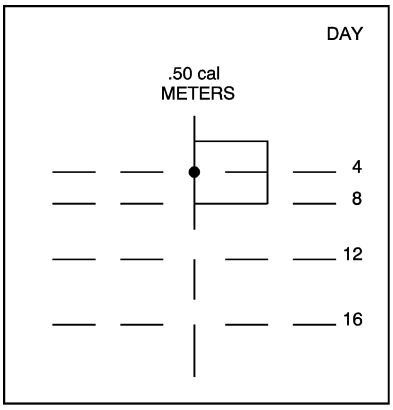
The CWS (1) enables the tank commander to engage enemy targets with small caliber firepower. CWSS is the sighting instrument for the CWS machinegun. The eyepiece for CWS sight is at the commander's weapon station. The CWSS includes a day TV and thermal night vision subsystem. CWSS offers a range of vision choices. The tank commander can select the day TV, the thermal system, or the GPS FLIR video (if a 2nd generation FLIR is installed in the M1A1) to be viewed through the eyepiece. The sight provides an optical 3X magnification for either the day sight or the thermal sight. The system provides 6x and 9x electronic magnification for the day sight and the thermal sight when the ZOOM button (2) is pressed.





The CWSS displays three symbols in the CWSS eyepiece. The weapon reticle (.50 cal or M240) selected, the sight selected, and self position information if the PLGR or DAGR are installed in M1A1.

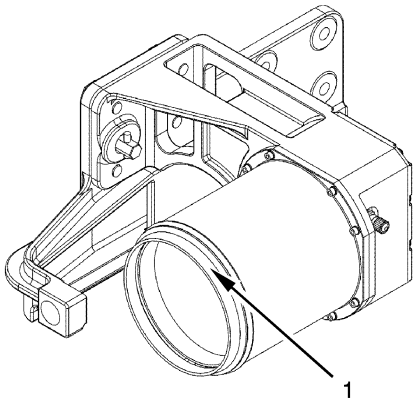
The lines or marks in the reticle are called STADIA LINES. The lines running up and down are for range. The lines running across the reticle are used to determine target lead.



5t1352

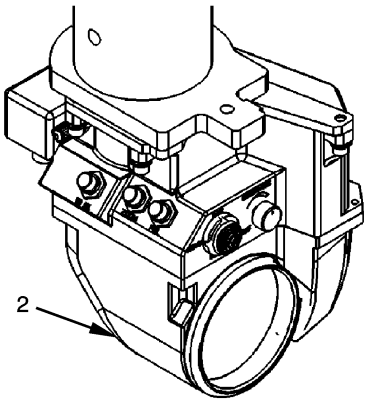
COMMANDER'S WEAPON STATION REMOTE THERMAL SIGHT (CWS RTS)

The commander's weapon station thermal sight module (CWS TSM) (1) provides tank commander with night vision capability by presenting a thermal scene in the commander's weapon station display control module (CWS DCM) (2). The CWS TSM picture can be viewed at 3X, 6X, or 9X magnification.



The CWS DCM is on whenever master power is on. CWS TSM is turned on and off from the CWS DCM brightness/control knob. In the 3X position the CWS TSM is operating in the optical field-of-view (FOV) in a 1:1 zoom (3X). When turned to 6X or 9X the CWS TSM is operating in an electronically zoomed FOV 2:1 zoom (6X) or a 3:1 zoom (9X).

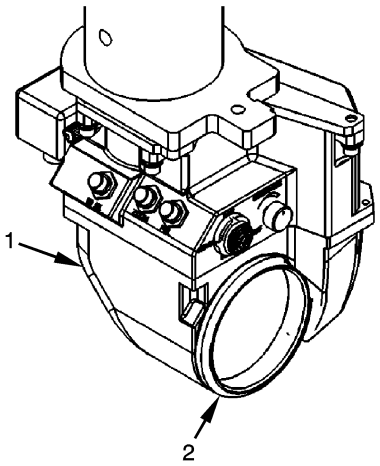
Heat sensors in CWS TSM detect target scene information. This scene information is converted to electrical signals processed by the TSM and displayed on the CWS DCM.



Every time the M2 or M240 machinegun is installed in the CWS, the TSM and day sight must be alined/boresighted to the gun point of aim.

COMMANDER'S WEAPON STATION (CWS) DAY SIGHT

The commander's weapon station display control module (CWS DCM) (1) provides tank commander with day vision capability by presenting a day TV picture in the CWS DCM eyepiece (2). The CWS day sight picture can be viewed at 3X, 6X, or 9X magnification.



The CWS DCM is on whenever master power is on. The day TV is turned on by the brightness control knob on CWS DCM. Once turned on, the day TV image should be present in the DCM within two seconds. In the 3X position, the CWS day sight is operating in the optical field-of-vision (FOV) in a 1:1 zoom (3X). When turned to 6X or 9X, the CWS day sight is operating in an electronically zoomed FOV 2:1 zoom (6X) or a 3:1 zoom (9X).

The CWS day sight uses a high resolution day TV. This scene information is converted to electrical signals processed by the day TV and sent for display on CWS DCM.

Every time the M2 or M240 machinegun is installed in the CWS, the TSM and day sight must be alined/boresighted to the gun point of aim.

5t1344

BELLY ARMOR

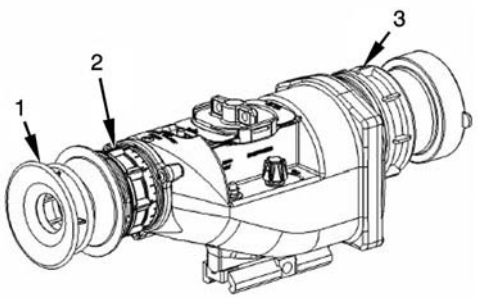
The belly armor (1) is a combination of armor plates, added to the hull of the vehicle beneath the crew compartment, to add protection to the crew and the vehicle. The belly armor offers additional protection to the crew from mine detonation under the vehicle. Adding the belly armor reduces vehicle ground clearance to 11.5 inches (29.2 centimeters).

CHAPTER 2

OPERATING INSTRUCTIONS

SECTION I. DESCRIPTION AND USE OF CONTROLS AND INDICATORS

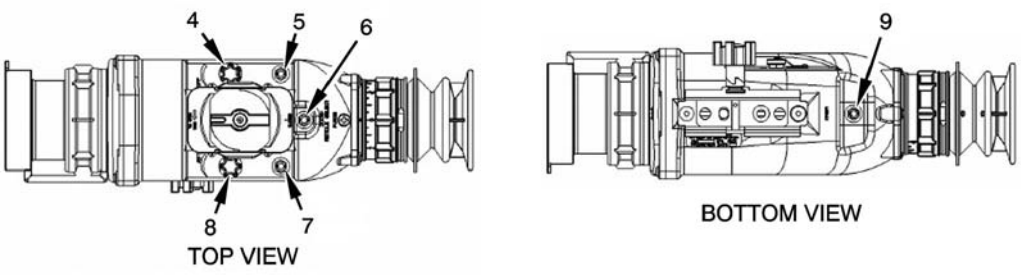
LOADER'S THERMAL WEAPON SIGHT (LTWS)



Key	Control or Indicator	Function
1	Eyecup	Controls STANDBY/ON operating modes when system power is on. When forward pressure is applied to eyecup, system is in ON mode. When pressure is removed for longer than 30 seconds, system returns to STANDBY mode. Eyecup must be depressed in all modes to illuminate display.
2	Diopter	Adjusts focus of reticle and indicators.
3	Objective lens focus	Adjusts focus of thermal scene from 10 meters (32.8 feet) (near) to infinity (far).

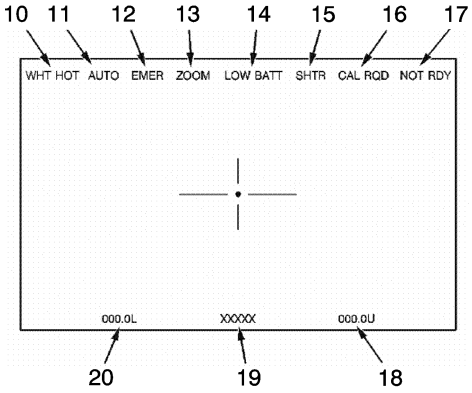
CONTROLS AND INDICATORS

LOADER'S THERMAL WEAPON SIGHT (LTWS) - Continued



Key	Control or Indicator	Function
4	Brightness	Turns system power on when pushed in and turned clockwise out of the OFF detent position. Adjusts brightness of display. Turns power off when pushed in and turned fully counterclockwise to the OFF detent position.
5	BLK/WHT	Controls polarity (white hot or black hot) of thermal scene. In black hot setting, target(s) hotter than background appear dark. In white hot setting, target(s) hotter than background appear light.
6	ZOOM/RETICLE SELECT	Toggles the zoom (NFOV), selects CAL mode, and controls selection and adjustment of reticles. Each time the switch is pressed and quickly released, the view alternates between normal and 3X electronic zoom. When the zoom (NFOV) is activated, the FOV is cut to one third.
7	Emergency	Places TSM in emergency mode, continuously applying power to entire system. Eyecup must be depressed to illuminate the display.
8	CONTRAST	Adjusts contrast of thermal scene. When turned fully clockwise to the AUTO detent position, contrast setting is automatically controlled by the TSM.
9	MENU	Cycles between three modes: calibration, reticle select, and reticle adjust, which can be selected by pressing the ZOOM/RETICLE select switch.

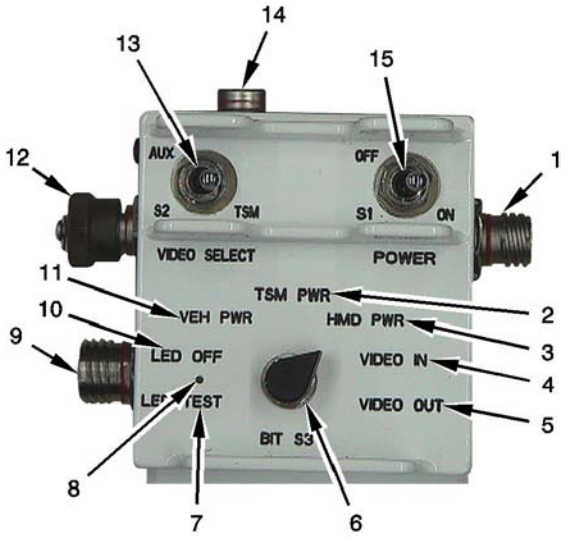
LOADER'S THERMAL WEAPON SIGHT (LTWS) - Continued



Key	Control or Indicator	Function
10	WHT HOT/BLK HOT indicators	Indicates the target polarity selected by the BLK/WHT switch.
11	AUTO indicator	Displays in automatic gain/contrast.
12	EMER indicator	Displays when system is placed in emergency mode.
13	ZOOM indicator	Indicates the zoom (NFOV) mode is selected.
14	LOW BATT indicator	When operating on battery power, displays when battery power is low. Once indicator is displayed, 5 to 35 minutes of AA lithium battery operating time remains, depending on ambient temperature.
15	SHTR indicator	Displays when shutter malfunctions.
16	CAL RQD	Displays when system needs calibrating.
17	NOT RDY indicator	Displays while system is in manual calibration mode.
18	Elevation indicator	Indicates the elevation zeroing adjustment of reticle. Displays the number of increments the reticle is up (U) or down (D) from the center zero position. Default is 000.0U.
19	Mode/Reticle indicator	Displays current mode, reticle adjustment mode, or reticle selected.
20	Azimuth indicator	Indicates the azimuth zeroing adjustment of reticle. Displays the number of increments the reticle is left (L) or right (R) from the center zero position. Default is 000.0L.

CONTROLS AND INDICATORS

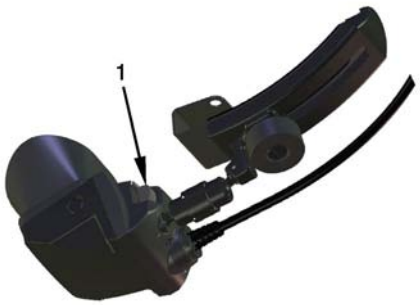
VEHICLE POWER ADAPTER (VPA)



Key	Control or Indicator	Function
1	J1 connector	Connects to W1, VPA power cable.
2	TSM PWR	Conducts BIT on power cable to TSM when BIT dial points at it.
3	HMD PWR	Conducts BIT on power cable to helmet mounted display (HMD).
4	VIDEO IN	Conducts BIT on video feed to VPA.
5	VIDEO OUT	Conducts BIT on video feed from VPA.
6	VPA BIT Dial	Selects BIT.
7	LED TEST	Conducts test on BIT LED.
8	BIT LED	LED will light up green when BIT passes. LED will not light up when BIT fails.
9	J2 connector	Connects to W2, TSM power and video input cable.
10	LED OFF	Turns off BIT LED.
11	VEH PWR	Conducts BIT on power cable to VPA.
12	J4 connector	Connects to W4, auxiliary video input cable.
13	VIDEO SEL switch	Controls video feed to HMD. TSM or auxiliary can be selected.
14	J3 connector	Connects to W3, HMD power and video output cable.
15	VPA power switch	Turns VPA ON and OFF.

5t1135

HELMET MOUNTED DISPLAY (HMD)



Key	Control or Indicator	Function
1	ON/OFF Switch	Turns HMD power on and off.

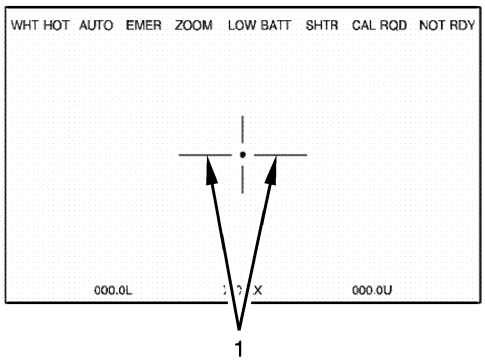
CONTROLS AND INDICATORS

DISPLAY CONTROL MODULE (DCM)

Key	Control or Indicator	Function
1	Brightness Up Button	Increases the brightness level to HMD.
2	Brightness Down Button	Decreases the brightness level to HMD.
3	NOT USED	

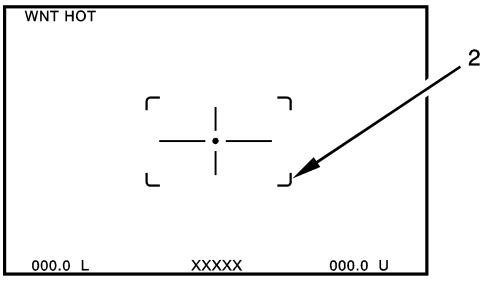
5t1162

RETICLE INDICATORS



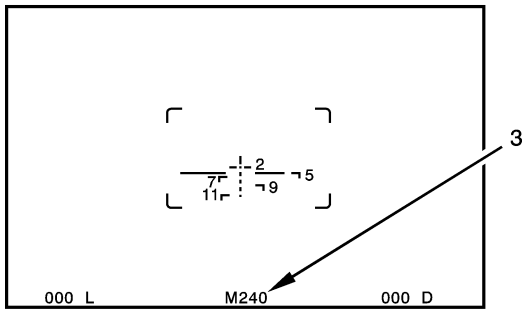
Key	Control or Indicator	Function
1	Zeroing aim line and aim point	The two horizontal lines to the left and right of the zeroing aim point are referred to as the zeroing aim line. The zeroing aim line is used on the M240 reticle. The zeroing aim lines serve two purposes: 1) For reticles with multiple aim points, they indicate which aim point to use when zeroing the TSM. 2) Serve as a means of measuring angles for combat preparations, directing fire, or range estimation.

RETICLE INDICATORS - Continued



Key	Control or Indicator	Function
2	Zoom (NFOV) area indicator	The four corners of the zoom (NFOV) area indicator outline the area of the thermal scene that will be magnified when zoom (NFOV) switch is set to zoom.

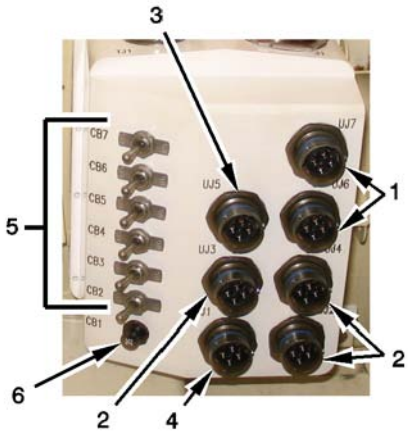
RETICLE INDICATORS - Continued



Key	Control or Indicator	Function
3	M240 reticles	The M240 reticles provide multiple aim point dots used for range estimation and target firing. Each aim point dot is used at a different range. The range at which a specific aim point dot is used is indicated on the side of the cross hair in the hundreds digit expressed in meters (example 8=800 meters). For the M240 reticles, the bottom of the line above the 200 meter (656 feet) aim point dot is used at 100 meters (328 feet). The vertical line next to the range digit reflects the height of a 5-foot man at the specified range. The horizontal line pointing to the range digit reflects the width of a 10-foot tank at the specified range. The vertical line above the 200 meter (656 feet) aim point reflects the height of a 5-foot man at 200 meters (656 feet). The horizontal line at the 200 meter (656 feet) aim point reflects the width of a 10-foot tank at 200 meters (656 feet).

CONTROLS AND INDICATORS

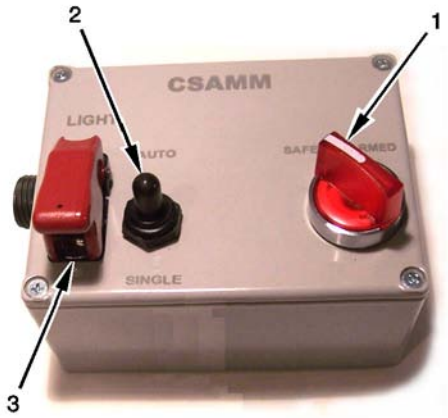
POWER DISTRIBUTION BOX (PDB)



Key	Control or Indicator	Function
1	15 Amp Utility Jacks	UJ6 controls power to the LTWS and is protected by a 15A manually resettable circuit breaker (CB3). UJ7 controls power to the CSAMM and is protected by a 15A manually resettable circuit breaker (CB7).
2	6 Amp Utility Jacks	Provides power limited to 6 amps at connectors UJ2, UJ3, and UJ4. UJ3 controls power to the RTS and is protected by a 6A manually resettable circuit breaker (CB3).
3	10 Amp Utility Jack	Provides power limited to 10 amps at connector UJ5.
4	35 Amp Utility Jack	Provides power limited to 35 amps at connector UJ1.
5	Circuit Breakers	Manually resettable circuit breakers for connectors UJ2 thru UJ7.
6	Push to Reset Circuit Breaker	Circuit breaker for UJ1. Reset by pressing.

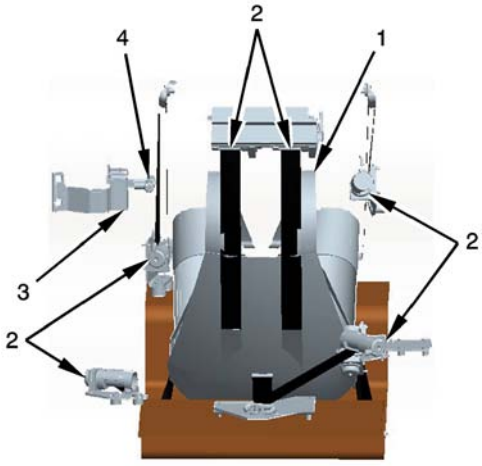
5t1196

COUNTER SNIPER/ANTI-MATERIEL MACHINEGUN MOUNT



Key	Control or Indicator	Function
1	Illuminating Arming Switch	When illuminated, indicates the system is armed and ready for function checks and machine gun timing.
2	Toggle Selector Switch	Switches the weapon between single shot and fully automatic fire.
3	Spotlight On/Off Switch	Turns spotlight on and off.

DRIVER'S HARNESS SYSTEM SEAT



Key	Control or Indicator	Function
1	Seat assembly	Provides seat, back support, leg sleeves, four-point harness and connectors for mounting in the vehicle.
2	Retractors	Control position of the seat assembly by lengthening or retracting belts connected from each retractor to seat assembly. Seven retractors are identified by attachment position on seat assembly: LEFT FRONT (LF), RIGHT FRONT (RF), LEFT UPPER (LU), RIGHT UPPER (RU), LEFT LOWER (LL), RIGHT LOWER (RL), CENTER (C).
3	Control box	Contains two control handles which operate the retractors.
4	Control handles	Front handle, marked ″UPPER″, controls four upper retractors (LF, RF, LU, RU). Rear handle, marked ″LOWER″, controls three lower retractors (LL, RL, C). Control handles can be moved independently or together through three positions: UNLOCK, ADJUST, and LOCK. Each position is color coded: UNLOCK (red)/ ADJUST (yellow)/ LOCK (green).

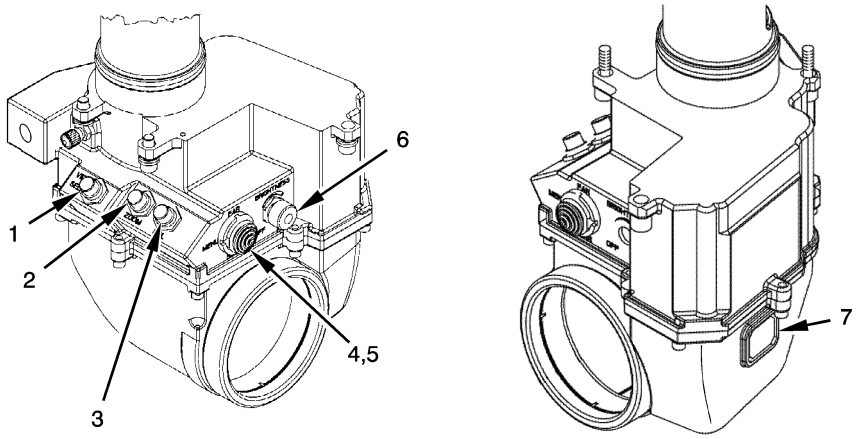
5t1525

DRIVER'S HARNESS SYSTEM SEAT - Continued

Key	Control or Indicator	Function
5	Four-point harness	Provides restraint and secures crewman in seat.
6	Leg straps	When fastened, forms the leg sleeves to support crewman's legs.
7	Retractor belt connectors	Provides connection points for mounting seat in vehicle. There are ten connectors on the seat assembly, only seven are used. Three lower connectors on seat back are not used.

CONTROLS AND INDICATORS

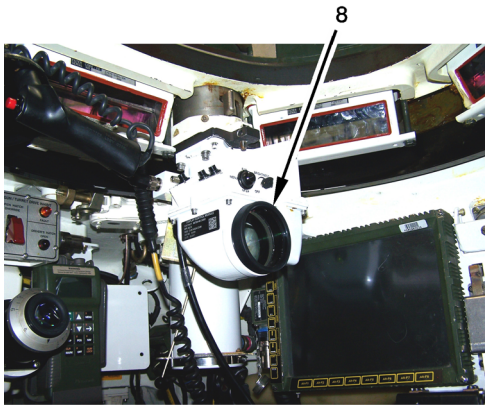
COMMANDER'S WEAPON STATION SIGHT WITH THERMAL SIGHT/DAY TV SYSTEM



Key	Control or Indicator	Function
1	VID SEL pushbutton	Tank commander can select thermal video, day TV video, or 2nd generation FLIR video from GPS.
2	ZOOM pushbutton	Electronically zooms thermal video or day TV video.
3	POL pushbutton	Selects white or black presentation of hot objects in the thermal video.
4	NEAR/FAR	Focuses thermal video image target.
5	MENU	Selects menu (reticle selection, boresight, BIT results, and self position).
6	BRIGHTNESS	Turns system on and off. Controls brightness of the display.
7	LEDs	Three green LEDs indicate the display control module is receiving power and operating properly.

5t1301

COMMANDER'S WEAPON STATION SIGHT WITH THERMAL SIGHT/DAY TV SYSTEM - Continued



Key	Control or Indicator	Function
8	Commander's weapon sight with thermal sight/ day TV system installed	Allows commander to aim commander's weapon using a ballistic reticle. Tank commander can select either a .50 cal or M240 reticle based on which machinegun is in commander's weapon station. Sight provides an optical 3X magnification for either day sight or thermal sight. System provides 6X and 9X electronic magnification for day sight and thermal sight.

SECTION II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

GENERAL

Preventive maintenance checks and services (PMCS) are performed to keep the equipment in operating condition and ready for its primary mission. The checks are to find, correct, or report problems. Crewmembers are to do the PMCS as shown in table 2-1.

Before you begin operating equipment, do BEFORE PMCS. Pay attention to WARNING and CAUTION statements. A WARNING means someone could be hurt. A CAUTION means equipment could be damaged.

During operation, do DURING PMCS.

After operation, do AFTER PMCS. Remember to read WARNING and CAUTION statements.

Do MONTHLY PMCS once a month. If tank has not been operated in a month, also do PMCS at the same time.

If you find something wrong when performing PMCS, fix it if you can, using troubleshooting and maintenance procedures contained within this technical bulletin.

The right-hand column of the PMCS table lists conditions that make the equipment not ready or not available for readiness reporting. The terms ″ready/available″ and ″mission capable″ refer to the same status - equipment is on hand and is able to perform its combat missions. Use DA Form 2404 to list faults you cannot fix and faults corrected by replacing parts. For further information on how to use this form, see PAM 750-8.

If tools required to perform PMCS are not listed in TM 9-2350-264-10 Appendix B, notify unit maintenance.

GENERAL - Continued

WARNINGS AND CAUTIONS

Always observe the WARNINGS and CAUTIONS appearing in your PMCS table. WARNINGS and CAUTIONS appear before applicable procedures. You must observe these WARNINGS and CAUTIONS to prevent serious injury to yourself and others or to prevent your equipment from being damaged.

EXPLANATION OF TABLE ENTRIES

ITEM NUMBER COLUMN. Numbers in this column are for reference. When completing DA Form 2404 (Army only) (Equipment Inspection and Maintenance Worksheet), include the item number for the check/service indicating a fault. Item numbers also appear in the order that you must do checks and services for the intervals listed.

INTERVAL COLUMN. This column tells you when you must do the procedure in the procedure column. BEFORE procedures must be done before you operate or use the equipment for its intended mission. DURING procedures must be done during the time you are operating or using the equipment for its intended mission. AFTER procedure must be done immediately after you have operated or used the equipment.

LOCATION, CHECK/SERVICE COLUMN. This column provides the location and the item to be checked or serviced. The item location is underlined.

PROCEDURE COLUMN. This column gives the procedure you must do to check or service the item listed in the check/service column to know if the equipment is ready or available for its intended mission or for operation. You must do the procedure at the time stated in the interval column.

NOT FULLY MISSION CAPABLE IF. If you find faults listed in this column, do not operate the equipment. Follow standard operating procedures for maintaining the equipment or reporting equipment failure.

NOTE

Request assistance from an ammunition inspector through the ammunition supply point (ASP) before turning in suspected unserviceable armor tiles.

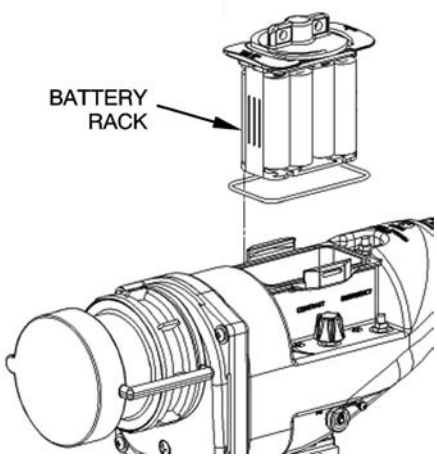
GENERAL - Continued

NOTE

The Not Fully Mission Capable column, in this PMCS, indicates that the TUSK equipment, not the tank, is not fully mission ready.

Table 2-1. Preventive Maintenance Checks and Services

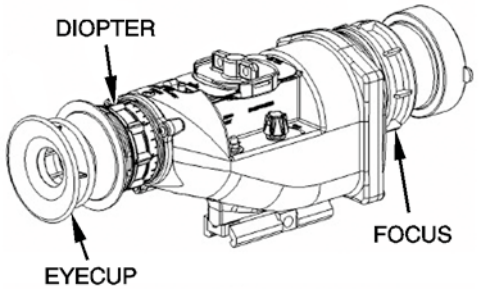
Item No.	Interval	Location Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
1	Before	LTWS - TSM Mount	Inspect mount for looseness, damage, or missing screws.	Mount is loose or screws are missing. Mount is damaged.
			CREWMEMBER	
2	Before	LTWS - TSM Battery Rack	a. Inspect battery cover, latches, and seal for cracks or breaks.	Battery cover does not close or is loose. Battery latches or seal are cracked or broken.
			b. Inspect battery tray and battery contacts for corrosion.	Battery tray or contacts are corroded.
			CREWMEMBER	
3	Before	LTWS - TSM Weapon Bracket	Inspect weapon bracket for damage.	Weapon bracket is damaged.



5t1171

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
4	Before	LTWS - TSM Objective Lens	a. Clean objective lens (see 3-80) and check lens for cracks, chips or missing cover.	Objective lens is cracked or chipped.
			b. Make sure focus ring turns.	Focus ring does not turn.
			CREWMEMBER	
5	Before	LTWS - TSM Eyepiece Lens and Eyecup	a. Check to make sure eyecup is not missing or damaged.	Eyecup is damaged or missing.
			b. Check operation of TSM while looking through eyepiece.	TSM does not operate properly.
			c. Clean eyepiece lens (see 3-80). Press on eyecup and check eyepiece lens for cracks, chips, or condensation.	Eyepiece lens is cracked or chipped. Condensation is visible inside eyepiece.
			d. Check to make sure that diopter ring turns.	Diopter ring does not turn.



5t1172

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
6	Before	LTWS - TSM LOW BATTERY indicator (AA lithium only)	CREWMEMBER **WARNING** **Do not open battery, dispose of in fire, heat above 212° F (100° C), expose to water, recharge, put in backwards, or mix with used or other battery types. Improper handling of batteries, as stated above, may cause battery to explode or leak and cause injury to personnel.** **NOTE** **The LOW BATTERY indicator is designed to work specifically with AA lithium batteries. If using non-lithium AA batteries, indicator may not illuminate before batteries run down.** If LOW BATTERY indicator is displayed, replace AA lithium batteries.	
7	Before	LTWS - VPA Connectors	CREWMEMBER Ensure all connectors are secured properly.	

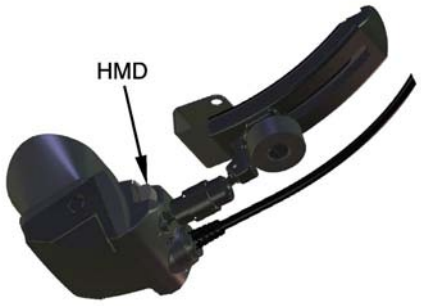
Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
8	Before	LTWS - BIT	Check operation of LTWS by conducting BIT on each component (see 3-45).	Notify unit maintenance if any component fails BIT.
			CREWMEMBER	
9	Before	LTWS - Cables	a. Inspect for breaks, loose or bent wires, and damaged pins or connectors. b. Ensure cable is tight at connection point.	Cables, wires, or pins are damaged or broken.
			CREWMEMBER	
10	Before	LTWS - Display Control Module (DCM)	a. Inspect housing for cracks or damage, missing or loose clip, and loose screws. b. Check for broken button seals.	Housing is cracked.

5t1599

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
11	Before	LTWS - Helmet Mounted Display (HMD)	CREWMEMBER **CAUTION** **To avoid damage, only clean display with water.** a. Clean exterior of display using clean, lint-free cloth (NSN: 8305-01-152-3587) and water.	
			b. Inspect housing for cracks or damage and loose screws.	Housing is cracked.
			c. Make sure ON/OFF switch is not damaged.	
			d. Make sure adjustment knob is not damaged.	Adjustment knob is not functional.
			e. Check display operation.	Display does not operate properly.
			f. Check for damage to display or any visual obstruction.	Display is not viewable.
			g. Check for missing eyecup.	Eyecup is missing.



5t1174

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
12	Before	ARAT - Armor Tiles	CREWMEMBER **CAUTION** **Do not remove damaged or exploded armor tiles before replacement armor tiles are made available.** **NOTE** • **Classifying the armor tile as not ready or available does not prevent the vehicle from performing its combat mission. Request assistance from an ammunition inspector through the Ammunition Supply Point (ASP) before turning in suspected unserviceable armor tiles.** • **All damaged tiles deemed to be unserviceable must be considered to have unconsumed explosives in them, even those thought to be burned out.** • **All damaged tiles must be turned in to the ASP or other activity with authorization to destroy explosive ordnance to assure destruction of all unconsumed explosives.**	

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
12	Before	ARAT - Armor Tiles Continued	a. Inspect for holes, punctures, or cracks. If damaged, return armor tiles to ASP for disposition.	Any holes, punctures, or cracks are present.
			b. Inspect for dents. Using scale on back cover, measure depth of any dent. If dent is more than 1/2-inch (1.3 cm) deep, return armor tile to ASP for disposition.	Dents are more than 1/2-inch (1.3 cm) deep.
			c. Inspect for distortion. Return distorted armor tiles to ASP for disposition.	Gap greater than 1-inch (2.5 cm) is present between adjacent armor tiles.
			d. Inspect for corrosion. If the surface is corroded, notify unit maintenance for touch-up painting. If more than half the surface is corroded, turn in for complete repainting. If shell is penetrated by corrosion, return armor tile to ASP for disposition.	Outer shell is penetrated by corrosion or more than half the surface is corroded.
			e. Inspect for scratches. If bare metal is visible, notify unit maintenance.	
			f. For additional inspection criteria for armor tiles, see TB 9-1375-257-13.	
			CREWMEMBER	
13	Before	ARAT - Rail Caps and Pins	Check that all caps and pins are present and serviceable.	Pin or cap are missing or unserviceable.

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
14	Before	ARAT - Armor Tile Brush Guard	a. Inspect for broken welds.	Welds are broken.
			b. Inspect for dents and bends.	Guards have dents or bends of sufficient size to create interference during armor tile installation.
			CREWMEMBER	
15	Before	Belly Armor	Inspect armor plate mounting.	Armor plate damage impedes vehicle mobility.

BELLY ARMOR

5t1589

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
15.1	Before	ARAT 2 - Armor Tiles	CREWMEMBER **CAUTION** **Do not remove damaged or exploded armor tiles before replacement armor tiles are made available.** **NOTE** • **Classifying the armor tile as not ready or available does not prevent the vehicle from performing its combat mission. Request assistance from an ammunition inspector through the Ammunition Supply Point (ASP) before turning in suspected unserviceable armor tiles.** • **All damaged tiles deemed to be unserviceable must be considered to have unconsumed explosives in them, even those thought to be burned out.** • **All damaged tiles must be turned in to the ASP or other activity with authorization to destroy explosive ordnance to assure destruction of all unconsumed explosives.** • **Currently, top row of turret ARAT 2 tiles (six per side; 12 total) on left and right side, are not installed.**	

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
15.1	Before	ARAT 2 - Armor Tiles Continued	a. Inspect for holes, punctures, or cracks. If damaged, return armor tiles to ASP for disposition.	Any holes, punctures, or cracks are present.
			b. Inspect for dents. Using scale on back cover, measure depth of any dent. If dent is more than 1/2-inch (1.3 cm) deep, return armor tile to ASP for disposition.	Dents are more than 1/2-inch (1.3 cm) deep.
			c. Inspect for distortion. Return distorted armor tiles to ASP for disposition.	Gap greater than 1-inch (2.5 cm) is present between adjacent armor tiles.
			d. Inspect for corrosion. If the surface is corroded, notify unit maintenance for touch-up painting. If more than half the surface is corroded, turn in for complete repainting. If shell is penetrated by corrosion, return armor tile to ASP for disposition.	Outer shell is penetrated by corrosion or more than half the surface is corroded.

Table 2-1. Preventive Maintenance Checks and Services

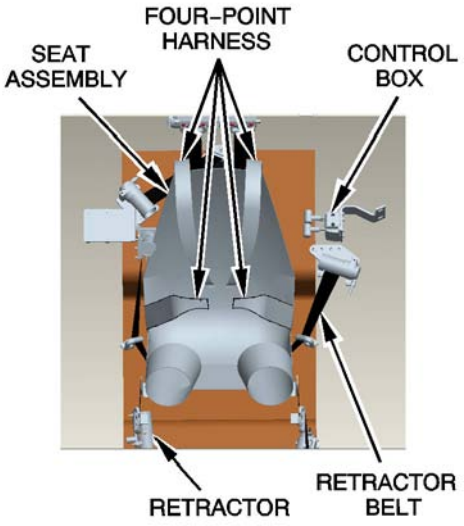
Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
15.1	Before	ARAT 2 - Armor Tiles Contin-ued	e. Inspect for scratches. If bare metal is visible, notify unit maintenance.	
			f. For additional inspection criteria for armor tiles, see TB 9-1375-257-13.	

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
15.2	Before	ARAT 2 - Armor Tile Brush Guard	a. Inspect for broken welds.	Welds are broken.
			b. Inspect for dents and bends.	Guards have dents or bends of sufficient size to create interference during armor tile installation.

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			DRIVER	
16	Before	Driver's Seat	a. Make sure that driver's seat can be adjusted.	Seat missing or inoperative.
			b. Check seat assembly and retractor belts for rips or tears.	Any rip or tear larger then 1/2-inch in seat assembly or any belt.
			c. Check operation of four-point harness and leg straps.	Four-point harness inoperative.
			d. Check retractors for mounting hardware and operation.	Any mounting bolts missing. Any retractor missing or inoperative.
			e. Check control handles for operation through all three operating positions.	Handle inoperative.



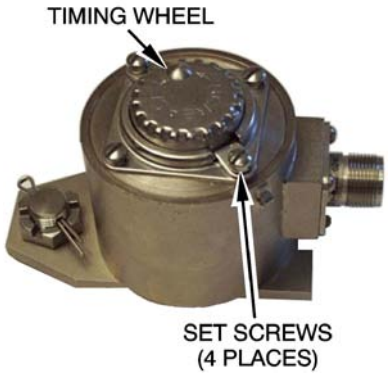
5t1528

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
17	Before	CSAMM Gun Mount	a. Clean mount with rags (NSN: 7920-00-205-1711) or brushes (NSN: 8020-00-297-6657) to remove oil, dirt, and contaminants.	
			b. Make sure all components, nuts, bolts, and lock washers are present with no signs of damage or corrosion.	Any mounting hardware is missing, damaged, or corroded.

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
18	Before	G-9 Type Solenoid	a. Clean solenoid with rags or brushes to remove oil, dirt, and contaminants.	
			b. Make sure solenoid is not dented or corroded.	Solenoid is dented or corroded.
			c. Make sure timing wheel set screws are present with no sign of damage.	Set screws are missing or damaged.
			d. Make sure electrical connector pins are not bent or corroded.	Pins are bent or corroded, notify unit maintenance.
			e. Make sure mounting wedge bolt, nut, and cotter pin are present and not damaged.	Bolt, nut, or cotter pin is missing or damaged.
			CREWMEMBER	
19	Before	Pull Cable Assembly	a. Inspect to make sure cable is not frayed, broken, or corroded.	Cable is frayed, broken, or corroded, notify unit maintenance.
			b. Check cable clamps for signs of looseness or wear.	Clamps are loose or worn.
			c. Make sure bolts and washers are present and not damaged.	Bolts or washers are missing or damaged.



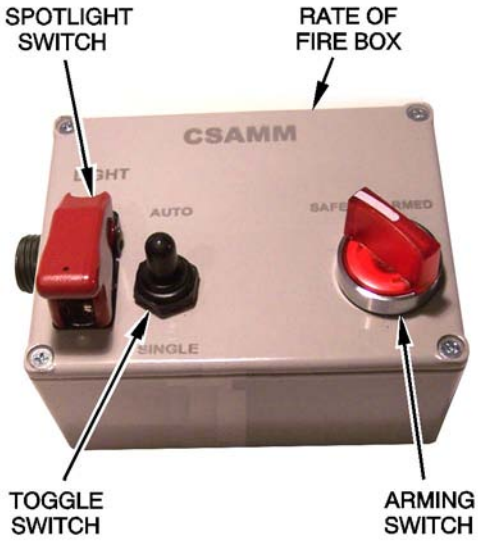
5t1176

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
20	Before	Rate of Fire System (RFS) Wire Harness Assembly	CREWMEMBER **WARNING** **Do not use wiring harness if insulation is worn (exposing bare wire) or if cable has been cut. A worn or damaged harness can set off electrically detonated ammunition that could kill or injure personnel.**	
			a. Inspect to make sure cable insulation is not cracked or worn.	Insulation is cracked or worn.
			b. Make sure all connectors are present and not damaged or corroded.	Connectors are missing, damaged, or corroded, notify unit maintenance.
			c. Make sure cable wiring is not broken or frayed.	Wiring is broken or frayed, notify unit maintenance.

Table 2-1. Preventive Maintenance Checks and Services

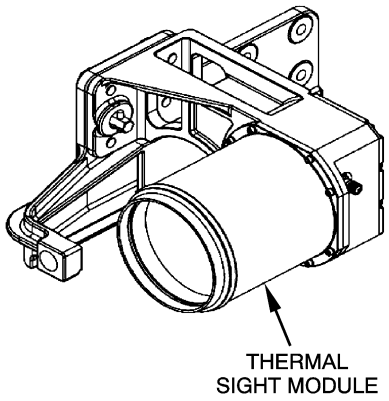
Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
21	Before	Rate of Fire System (RFS) Box	a. Clean control box with rags (NSN: 7920-00-205-1711) or brushes (NSN: 8020-00-297-6657) to remove oil, dirt, or contaminants.	
			b. Inspect to make sure the control box is not cracked or damaged.	Control box is cracked or damaged, notify unit maintenance.
			c. Make sure red arming switch, single shot/full auto toggle switch, and spot light switch are not broken or damaged.	Switches are broken or damaged, notify unit maintenance.



5t1177

Table 2-1. Preventive Maintenance Checks and Services

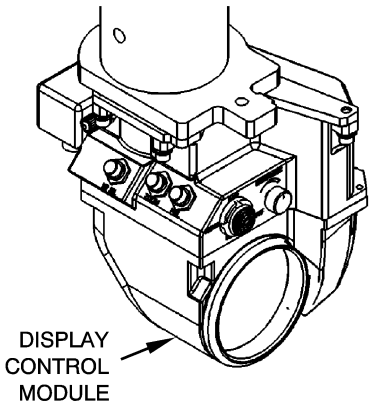
Item No.	Interval	Location Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
22	Before	Thermal Sight Module - Commander's Weapon Station (External)	a. Inspect TSM mount for looseness, damage, or missing screws.	Mount is loose or screws are missing. Mount is damaged.
			b. Clean lens (see 3-80) and check for cracks or chips.	Lens is cracked or chipped.



5t1303

Table 2-1. Preventive Maintenance Checks and Services

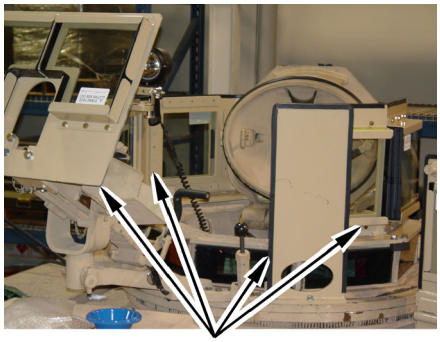
Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			COMMANDER	
22.1	Before	Display Control Module - Commander's Weapon Station (Internal)	a. Inspect DCM mount for looseness, damage, or missing screws.	Mount is loose or screws are missing. Mount is damaged.
			b. Check cables for tightness.	
			c. Check lens for damage.	Lens is cracked or chipped.
			d. Perform CWSS checkout (see TM 9-2350-264).	



5t1629a

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
22.2	Before	Force Protection - Commander's Armored Gun Shields	a. Inspect shields for rust, pin holes, or rusted through condition.	Metal in corroded area is unsound and small pin holes or rusted through condition is present.
			b. Make sure mounting bolts are present. Inspect bolts for looseness.	Missing or loose mounting bolts.
			c. Inspect shape and condition of shields for dents, warping, gouges, and penetration.	Bent, dented, or warped shields that interfere with operation. Complete penetration in shields (hole in armor). Multiple gouges 1/4-inch or deeper within 3-inches of each other.



ARMORED GUN SHIELDS

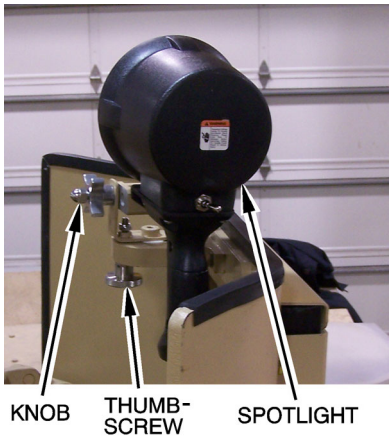
5t2000a

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
22.2	Before	Force Protection - Commander's Armored Gun Shields Continued	d. Inspect weld joints on shields for cracks. Chipped paint in weld areas can indicate flexing and cracking of joints.	Cracks that are 1-inch or longer in weld joint.
			e. Inspect ballistic glass in shield for rock chipping or cracks.	Cloudiness in glass. Rock chips or cracks with spider webbing.
			f. Inspect ballistic glass bracket assembly for missing bolts or warping.	More than one bolt per bracket is missing.
			g. Inspect M4 carbine bracket for excessive looseness or warping.	Missing or warped bracket.

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
22.3	Before	Force Protection - Commander's Spotlight	a. Clean lens using clean, lint free cloth (NSN: 8305-01-152-3587) and water.	
			b. Check operation of spotlight (see 3-16.1).	Spotlight does not operate properly.
			c. Check that infrared lens is present. Check for cracks, punctures, or tears.	Missing infrared lens. Punctures, cracks, or tears in lens assembly.
			d. Check that nylon spotlight cover is present. Make sure that cinch cord and zipper are functional.	
			e. Check lens for cracks or damage.	Cracked or damaged lens.
			f. Check that inclination knob, traverse thumbscrew, and associated hardware are present and functional.	Missing knob, thumbscrew, or associated hardware. Knob or thumbscrew does not hold position of spotlight or allow for adjustment.



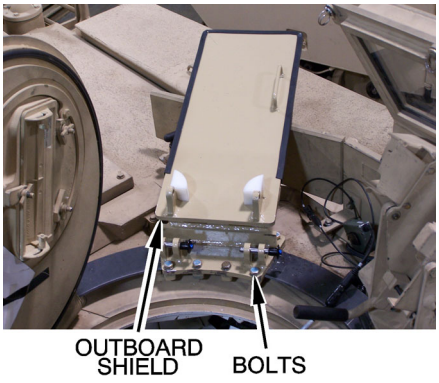
5t2000a

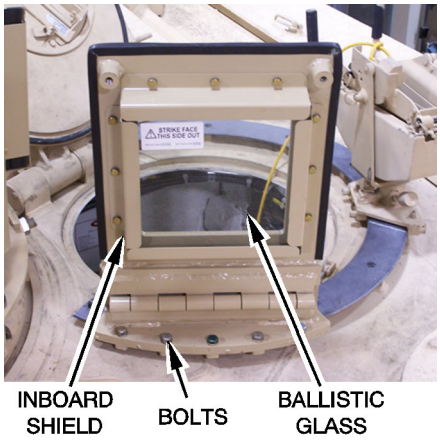
Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
22.3	Before	Force Protection - Commander's Spotlight Continued	g. Check that thumbscrew, knob, and associated hardware are present and functional. Thumbscrew should hold and adjust the position of the spotlight.	Missing thumbscrew, knob, or associated hardware. Thumbscrew does not hold position of spotlight or allow for adjustment.
			h. Check spotlight housing for cracks or damage.	Cracked housing.
			i. Make sure that spotlight rests securely in mount. If excessively loose, adjust mount, refer to COMMANDER'S SPOTLIGHT REMOVAL FORCE ADJUSTMENT (see 3-104.2).	Adjustable ball pins missing or not adjustable.

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
22.4	Before	Force Protection - Loader's Outboard and Inboard Shields	a. Inspect shields for rust, pinholes, or rusted through condition.	Metal in corroded area is unsound and small pinholes are present. Rusted through condition.
			b. Make sure that clamps and bolts are present. Inspect bolts for looseness.	Missing clamps and bolts or loose bolts. Less than three clamps with bolts are present.
			c. Inspect shape and condition of shields for dents, warping, gouges, and penetration.	Shields are bent, dented, warped, penetrated, or have multiple gouges 1/4-inch or deeper within 3-inches of each other.





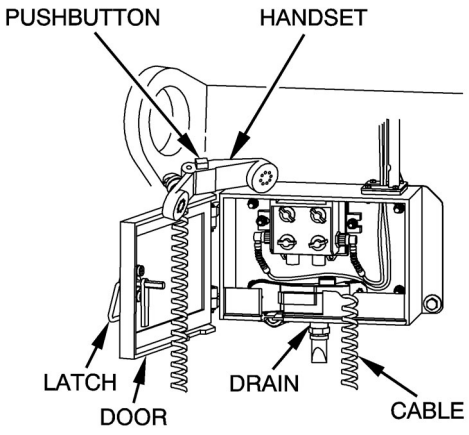
5t2000

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
22.4	Before	Force Protection - Loader's Outboard and Inboard Shields Continued	d. Inspect weld joints and hinges on shields for cracks. Chipped paint in weld areas can indicate flexing and cracking of joints.	Cracks are 1-inch or longer in weld joints. Noticeable cracks in hinges.
			e. Inspect ballistic glass bracket assembly in loader's inboard shield for missing bolts or warping.	Any bolt is missing.
			f. Inspect ballistic glass in loader's inboard shield for rock chipping or cracks.	Cloudiness in glass. Rock chips or cracks with spider webbing.
			g. Inspect to make sure that quick-release pins are present and functional.	Any quick-release pins are missing or inoperable.

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
22.5	Before	Tank Infantry Phone (TIP)	a. Check for operation of TIP according to OPERATE INTERCOM (see 3-1).	Communications inoperative.
			b. Check TIP box for holes, punctures, or cracks. Check condition of dust seal, if damaged notify unit maintenance.	Holes, punctures, or cracks allow fluids or elements to enter the housing.
			c. Check TIP box door for proper operation. Check hinges and latch mechanism for damage.	TIP box door latch mechanism does not allow proper operation. Hinges are damaged or torn.
			d. Check drain on bottom of TIP housing. Make sure it is present and will allow drainage. Remove debris if present.	



TANK INFANTRY PHONE (TIP)

5t1097a

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
22.5	Before	Tank Infantry Phone (TIP) Continued	e. Check TIP cable seal on bottom of phone box. Make sure it is present.	Rubber seal is missing or damaged.
			f. Check handset. Inspect for damaged connector or contacts. Inspect handset housing for cracks. Make sure pushbutton returns when depressed.	Damaged connectors or contacts prevent proper operation. Handset is cracked. Handset pushbutton does not press in or return to original position.
			g. Inspect for exposed wires in cable.	Exposed wires in cable.

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
23	During	LTWS - TSM LOW BATTERY indicator	Monitor LOW BATTERY indicator, if indicator appears, replace batteries when safe to do so.	
			CREWMEMBER	
24	During	LTWS - TSM Eyecup	Check to see if eyecup is in place.	Eyecup is missing.
			CREWMEMBER	
25	During	LTWS - TSM Display	Ensure full clear image is displayed. Adjust picture and display.	Display is not clear, notify unit maintenance.

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
26	After	LTWS - TSM Mount	Inspect mount for looseness, damage, or missing screws.	Mount is loose or screws are missing. Mount is damaged.
			CREWMEMBER	
27	After	LTWS - TSM Battery Rack	a. Inspect battery cover, latches, and seal for cracks or breaks.	Battery cover does not close or is loose. Battery latches or seal are cracked or broken.
			b. Inspect battery tray and battery contacts for corrosion.	Battery tray or contacts are corroded.
			CREWMEMBER	
28	After	LTWS - TSM Weapon Bracket	Inspect weapon bracket for damage.	Weapon bracket is damaged.

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
29	After	LTWS - TSM Objective Lens	a. Clean objective lens (see 3-80) and check lens for cracks, chips or missing cover.	Objective lens is cracked or chipped.
			b. Make sure focus ring turns.	Focus ring does not turn.
			CREWMEMBER	
30	After	LTWS - TSM Eyepiece Lens and Eyecup	a. Check to make sure eyecup is not missing or damaged.	Eyecup is damaged or missing.
			b. Check operation of TSM while looking through eyepiece.	TSM does not operate properly.
			c. Release pressure from eyecup.	
			d. Clean eyepiece lens. Press on eyecup and check eyepiece lens for cracks, chips, or condensation.	Eyepiece lens is cracked or chipped. Condensation is visible inside eyepiece.
			e. Check to make sure that diopter ring turns.	Diopter ring does not turn.

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
31	After	LTWS - TSM LOW BATTERY indicator (AA lithium only)	CREWMEMBER **WARNING** **Do not open battery, dispose of in fire, heat above 212° F (100° C), expose to water, recharge, put in backwards, or mix with used or other battery types. Improper handling of batteries, as stated above, may cause battery to explode or leak and cause injury to personnel.** **NOTE** **The LOW BATTERY indicator is designed to work specifically with AA lithium batteries. If using non-lithium AA batteries, indicator may not illuminate before batteries run down.** If LOW BATTERY indicator is displayed, replace AA lithium batteries.	
32	After	LTWS - VPA Connectors	CREWMEMBER Ensure all connectors are secured properly.	

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
33	After	LTWS - BIT	Check operation of LTWS by conducting BIT on each component (see 3-45).	Notify unit maintenance if any component fails BIT.
			CREWMEMBER	
34	After	LTWS - Cables	a. Inspect for breaks, loose or bent wires and damaged pins or connectors. b. Ensure cable is tight at connection point.	Cables, wires, or pins are damaged or broken.
			CREWMEMBER	
35	After	LTWS - Display Control Module (DCM)	a. Inspect housing for cracks or damage, missing or loose clip, and loose screws. b. Check for broken button seals.	Housing is cracked.

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
36	After	LTWS - Helmet Mounted Display (HMD)	CREWMEMBER **CAUTION** **To avoid damage, only clean display with water.** a. Clean exterior of display using clean, lint-free cloth (NSN: 8305-01-152-3587) and water.	
			b. Inspect housing for cracks or damage and loose screws.	Housing is cracked.
			c. Make sure ON/OFF switch is not broken.	
			d. Make sure adjustment knob is not damaged.	Adjustment knob is not functional.
			e. Check display operation.	Display does not operate properly.
			f. Check for damage to display or any visual obstruction.	Display is not viewable.
			g. Check for missing eyecup.	Eyecup is missing.

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
36.1	After	ARAT 2 - Armor Tiles	CREWMEMBER **CAUTION** **Do not remove damaged or exploded armor tiles before replacement armor tiles are made available.** **NOTE** • **Classifying the armor tile as not ready or available does not prevent the vehicle from performing its combat mission. Request assistance from an ammunition inspector through the Ammunition Supply Point (ASP) before turning in suspected unserviceable armor tiles.** • **All damaged tiles deemed to be unserviceable must be considered to have unconsumed explosives in them, even those thought to be burned out.** • **All damaged tiles must be turned in to the ASP or other activity with authorization to destroy explosive ordnance to assure destruction of all unconsumed explosives.** • **Currently, top row of turret ARAT 2 tiles (six per side; 12 total) on left and right side, are not installed.**	

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
36.1	After	ARAT 2 - Armor Tiles Continued	a. Inspect for holes, punctures, or cracks. If damaged, return armor tiles to ASP for disposition.	Any holes, punctures, or cracks are present.
			b. Inspect for dents. Using scale on back cover, measure depth of any dent. If dent is more than 1/2-inch (1.3 cm) deep, return armor tile to ASP for disposition.	Dents are more than 1/2-inch (1.3 cm) deep.
			c. Inspect for distortion. Return distorted armor tiles to ASP for disposition.	Gap greater than 1-inch (2.5 cm) is present between adjacent armor tiles.
			d. Inspect for corrosion. If surface is corroded, notify unit maintenance for touch-up painting. If more than half the surface is corroded, turn in for complete repainting. If shell is penetrated by corrosion, return armor tile to ASP for disposition.	Outer shell is penetrated by corrosion or more than half the surface is corroded.
			e. Inspect for scratches. If bare metal is visible, notify unit maintenance for touch-up painting.	
			f. For additional inspection criteria for armor tiles, see TB 9-1375-257-13.	

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
37	After	ARAT - Armor Tiles	CREWMEMBER **CAUTION** **Do not remove damaged or exploded armor tiles before replacement armor tiles are made available.** **NOTE** • **Classifying the armor tile as not ready or available does not prevent the vehicle from performing its combat mission. Request assistance from an ammunition inspector through the Ammunition Supply Point (ASP) before turning in suspected unserviceable armor tiles.** • **All damaged tiles deemed to be unserviceable must be considered to have unconsumed explosives in them, even those thought to be burned out.** • **All damaged tiles must be turned in to the ASP or other activity with authorization to destroy explosive ordnance to assure destruction of all unconsumed explosives.** a. Inspect for holes, punctures, or cracks. If damaged, return armor tiles to ASP for disposition.	Any holes, punctures, or cracks are present.

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
37	After	ARAT - Armor Tiles Continued	b. Inspect for dents. Using scale on back cover, measure depth of any dent. If dent is more than 1/2-inch (1.3 cm) deep, return armor tile to ASP for disposition.	Dents are more than 1/2-inch (1.3 cm) deep.
			c. Inspect for distortion. Return distorted armor tiles to ASP for disposition.	Gap greater than 1-inch (2.5 cm) is present between adjacent armor tiles.
			d. Inspect for corrosion. If surface is corroded, notify unit maintenance for touch-up painting. If more than half the surface is corroded, turn in for complete repainting. If shell is penetrated by corrosion, return armor tile to ASP for disposition.	Outer shell is penetrated by corrosion or more than half the surface is corroded.
			e. Inspect for scratches. If bare metal is visible, notify unit maintenance for touch-up painting.	
			f. For additional inspection criteria for armor tiles, see TB 9-1375-257-13.	

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
37.1	After	ARAT 2 - Armor Tile Brush Guard	a. Inspect for broken welds.	Welds are broken.
			b. Inspect for dents and bends.	Guards have dents or bends of sufficient size to create interference during armor tile installation.

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
38	After	ARAT - Rail Caps and Pins	Check that all caps and pins are present and serviceable.	Pin or cap is missing or unserviceable.
			CREWMEMBER	
39	After	ARAT - Armor Tile Brush Guard	a. Inspect for broken welds. If damaged, notify unit maintenance for replacement.	Guards have cracked welds, dents, or bends of sufficient size to create interference during armor tile installation.
			b. Inspect for dents and bends. If tile is so badly dented or bent as to prevent the proper mounting of the armor tiles, notify unit maintenance.	

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember: Procedure	Not Fully Mission Capable if:
			DRIVER	
40	After	Driver's Seat	a. Make sure that driver's seat can be adjusted.	Seat missing or inoperative.
			b. Check seat assembly and retractor belts for rips or tears.	Any rip or tear larger than 1/2-inch in seat assembly or any belt.
			c. Check operation of four-point harness and leg straps.	Four-point harness inoperative.
			d. Check retractors for mounting hardware and operation.	Any mounting bolts missing. Any retractor missing or inoperative.
			e. Check control handles for operation through all three operating positions.	Handle inoperative.
			CREWMEMBER	
41	After	Belly Armor	Inspect armor plate mounting.	Armor plate damage impedes vehicle mobility.
			CREWMEMBER	
42	After	CSAMM Gun Mount	a. Clean mount with rags (NSN: 7920-00-205-1711) or brushes (NSN: 8020-00-297-6657) to remove oil, dirt, and contaminants.	
			b. Make sure all components, nuts, bolts, and lock washers are present with no signs of damage or corrosion.	Any mounting hardware is missing, damaged, or corroded.

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
43	After	G-9 Type Solenoid	a. Clean solenoid with rags or brushes to remove oil, dirt, and contaminants.	
			b. Make sure solenoid is not dented or corroded.	Solenoid is dented or corroded.
			c. Make sure timing wheel set screws are present with no sign of damage.	Set screws are missing or damaged.
			d. Make sure electrical connector pins are not bent or corroded.	Pins are bent or corroded, notify unit maintenance.
			e. Make sure mounting wedge bolt, nut, and cotter pin are present and not damaged.	Bolt, nut, or cotter pin is missing or damaged.
			CREWMEMBER	
44	After	Pull Cable Assembly	a. Inspect to make sure cable is not frayed, broken, or corroded.	Cable is frayed, broken, or corroded, notify unit maintenance.
			b. Check cable clamps for signs of looseness or wear.	Clamps are loose or worn.
			c. Make sure bolts and washers are present and not damaged.	Bolts or washers are missing or damaged.

Table 2-1. Preventive Maintenance Checks and Services

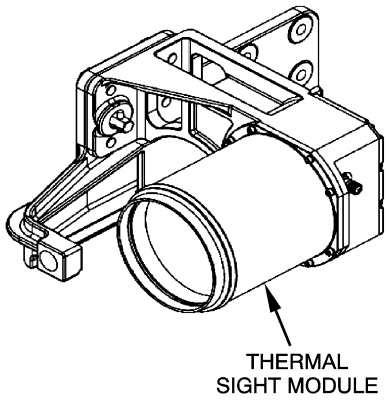
Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
45	After	Rate of Fire System (RFS) Wire Harness Assembly	CREWMEMBER **WARNING** **Do not use wiring harness if insulation is worn (exposing bare wire) or if cable has been cut. A worn or damaged harness can set off electrically detonated ammunition that could kill or injure personnel.** a. Inspect to make sure cable insulation is not cracked or worn.	Insulation is cracked or worn.
			b. Make sure all connectors are present and not damaged or corroded.	Connectors are missing, damaged, or corroded, notify unit maintenance.
			c. Make sure cable wiring is not broken or frayed.	Wiring is broken or frayed, notify unit maintenance.

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
46	After	Rate of Fire System (RFS) Box	a. Clean control box with rags or brushes or remove oil, dirt, or contaminants.	
			b. Inspect to make sure the control box is not cracked or damaged.	Control box is cracked or damaged, notify unit maintenance.
			c. Make sure red arming switch, single shot/full auto toggle switch, and spot light switch are not broken or damaged.	Switches are broken or damaged, notify unit maintenance.

Table 2-1. Preventive Maintenance Checks and Services

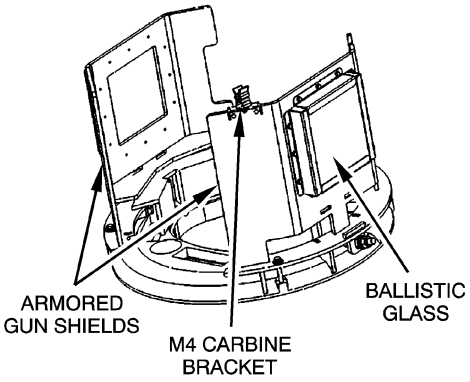
Item No.	Interval	Location Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
47	After	Thermal Sight Module - Commander's Weapon Station (External)	a. Inspect TSM mount for looseness, damage, or missing screws.	Mount is loose or screws are missing. Mount is damaged.
			b. Clean lens (see 3-80) and check for cracks or chips.	Lens is cracked or chipped.



5t1303

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
47.1	After	Force Protect -ion - Com- mander's Armored Gun Shields	a. Inspect shields for rust, pin holes, or rusted through condition.	Metal in corroded area is unsound and small pin holes or rusted through condition is present.
			b. Make sure mounting bolts are present. Inspect bolts for looseness.	Missing or loose mounting bolts.
			c. Inspect shape and condition of shields for dents, warping, gouges, and penetration.	Bent, dented, or warped shields that interfere with operation. Complete penetration in shields (hole in armor). Multiple gouges 1/4-inch or deeper within 3-inches of each other.



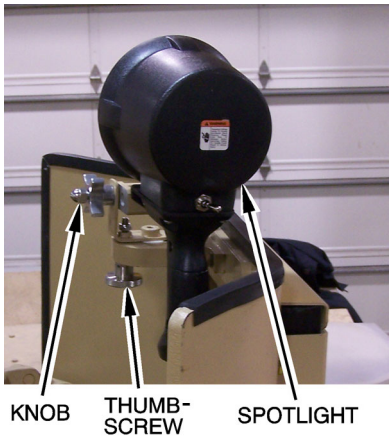
5t2000

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
47.1	After	Force Protect -ion - Com- mander's Armored Gun Shields Contin- ued	d. Inspect weld joints on shields for cracks. Chipped paint in weld areas can indi- cate flexing and cracking of joints.	Cracks that are 1-inch or longer in weld joint.
			e. Inspect ballistic glass in shield for rock chipping or cracks.	Cloudiness in glass. Rock chips or cracks with spider webbing.
			f. Inspect ballistic glass bracket assembly for miss- ing bolts or warping.	Any bolt is missing.
			g. Inspect M4 carbine bracket for excessive looseness or warping.	Missing or warped bracket.

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
47.2	After	Force Protect -ion - Com- mander's Spotlight	a. Clean lens using clean, lint free cloth (NSN: 8305-01-152-3587) and water.	
			b. Check operation of spotlight (see 3-16.1).	Spotlight does not operate properly.
			c. Check that infrared lens is present. Check for cracks, punctures, or tears.	Missing infrared lens. Punctures, cracks, or tears in lens assembly.
			d. Check that nylon spotlight cover is present. Make sure that cinch cord and zipper are functional.	
			e. Check lens for cracks or damage.	Cracked or damaged lens.
			f. Check that inclination knob, traverse thumbscrew and associated hardware are present and functional.	Missing knob, thumbscrew, or associated hardware. Knob or thumbscrew does not hold position of spotlight or allow for adjustment.



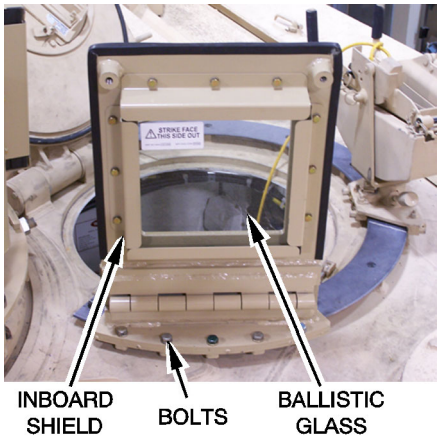
5t2000a

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
47.2	After	Force Protect -ion - Com- mander's Spotlight Contin- ued	g. Check that thumbscrew, knob, and associated hard- ware are present and func- tional. Thumbscrew should hold and adjust the position of the spotlight.	Missing thumbscrew, knob, or associated hardware. Thumb- screw does not hold position of spotlight or allow for adjustment.
			h. Check spotlight housing for cracks or damage.	Cracked housing.
			i. Make sure that spotlight rests securely in mount. If excessively loose, adjust mount, refer to COMMAND- ER'S SPOTLIGHT REMOVAL FORCE ADJUSTMENT (see 3-104.2).	Adjustable ball pins missing or not adjust- able.

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
47.3	After	Force Protection - Loader's Outboard and Inboard Shields	a. Inspect shields for rust, pinholes, or rusted through condition.	Metal in corroded area is unsound and small pinholes are present. Rusted through condition.
			b. Make sure that mounting clamps and bolts are present. Inspect bolts for looseness.	Missing clamps and bolts. Loose bolts. Less than three clamps with bolts present.
			c. Inspect shape and condition of shields for dents, warping, gouges, and penetration.	Shields are bent, dented, warped, penetrated, or have multiple gouges 1/4-inch or deeper within 3-inches of each other.
			d. Inspect weld joints on shields for cracks. Chipped paint in weld areas can indicate flexing and cracking of joints.	Cracks that are 1-inch or longer in weld joint. Noticeable cracks in hinges.



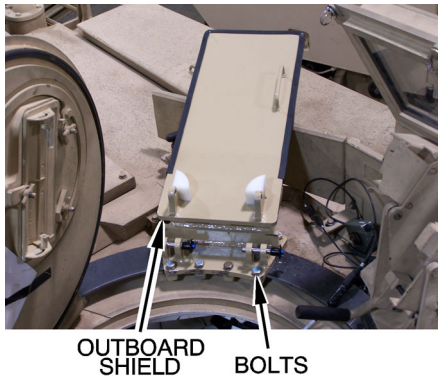


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Table 2-1. Preventive Maintenance Checks and Services - Continued

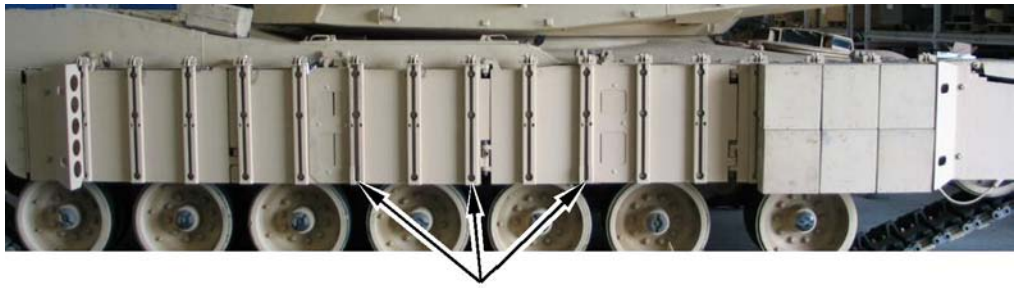
Item No.	Interval	Location: Item to Check/ Service	Crewmember: Procedure	Not Fully Mission Capable if:
47.3	After	Force Protection - Loader's Outboard and Inboard Shields Continued	CREWMEMBER e. Inspect ballistic glass bracket assembly in loader's inboard shield for missing bolts or warping. f. Inspect ballistic glass in loader's inboard shield for rock chipping or cracks. g. Inspect to make sure that quick-release pins are present and functional.	Any bolt is missing.
47.4	After	Pre-Cleaner	CREWMEMBER **NOTE** • **Traverse turret so main gun is over number 2 left roadwheel.** • **If equipped with ARAT 2, remove left front mounting plate on turret (see 3-90.1).** • **Access to sponson drain port is thru precleaner.** a. Clean dirt, leaves, and other debris from precleaner grille. b. Clean dirt, leaves, and other debris out of drain and surrounding area to make sure sponson drain port does not become clogged.	

Table 2-1. Preventive Maintenance Checks and Services - Continued

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
47.4	After	Pre-Cleaner Continued	CREWMEMBER c. Inspect top of precleaner and entire seal assembly for cracks or dents. d. Remove leaves, twigs, or other debris from top of precleaner. e. Close precleaner cover.	
47.5	After	Air Filter Elements	CREWMEMBER **NOTE** **This check will not be performed on vehicles with Pulse Jet System (PJS).** Remove, inspect, clean, and install three air cleaner assembly intake filter elements (see TM 9-2350-264-10).	

Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location: Item to Check/ Service	Crewmember Procedure	Not Fully Mission Capable if:
			CREWMEMBER	
48	Monthly	ARAT - Mounting Rails	a. Inspect for rust or missing paint. If rust is present or paint is missing, notify unit maintenance.	
			b. Inspect for broken welds. If damaged, notify unit maintenance for replacement.	Welds are broken.
			c. Inspect for broken rails. Attempt to straighten bent brackets with crowbar and hammer. If still damaged, notify unit maintenance.	Rails are broken and/or too bent to mount armor tiles.



5t1175

CHAPTER 3

OPERATION, TROUBLESHOOTING, AND MAINTENANCE ALL STATIONS

OPERATE INTERCOM (C-12357/VRC)

NOTE

- **To operate vehicle intercom (C-12357/VRC), refer to TM 9-2350-264-10.**
- **To operate tank infantry phone (TIP) only, begin with step A.**

A. Operate indicator control CD-82/VRC (see TM 9-2350-264-10).

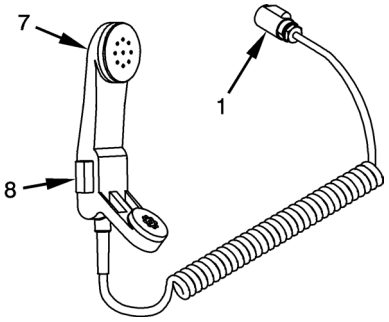
B. Connect cable (1) to intercommunication control set (2).

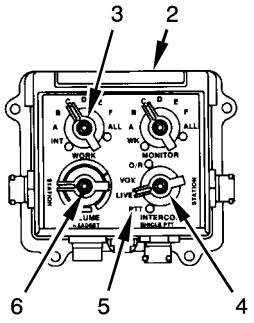
C. Set WORK switch (3) on intercommunication control set (2) to INT.

D. Set INTERCOM switch (4) on intercommunication control set (2) to PTT position (5).

E. Set VOLUME switch (6) on intercommunication control set (2) to yellow position.

F. Grasp the handset (7) and push and hold button (8) to talk.





ADJUST POSITION OF ARAT 2 TILE

WARNING

Although they are quite insensitive to initiation, armor tiles are explosively loaded and must be treated accordingly. Detonation of explosive in armor tiles requires an extreme stimulus, such as being hit by an anti-tank warhead, but tiles can be made to ignite and burn by a much less energetic bullet impact or being subjected to a fire.

NOTE

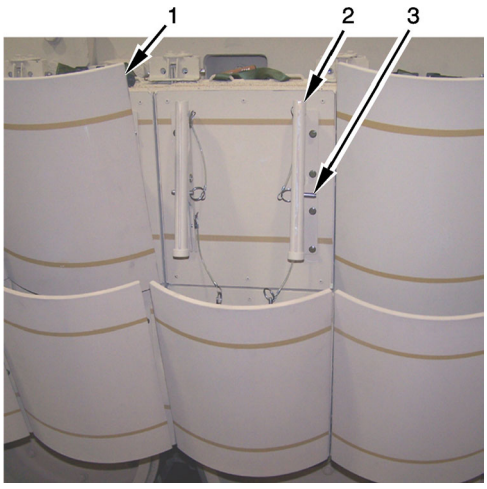
- **Position tile in accordance with unit Standing Operating Procedure (SOP).**
- **Sequence of tile adjustment shown below is necessary to prevent interference between bottom and top row of tiles.**

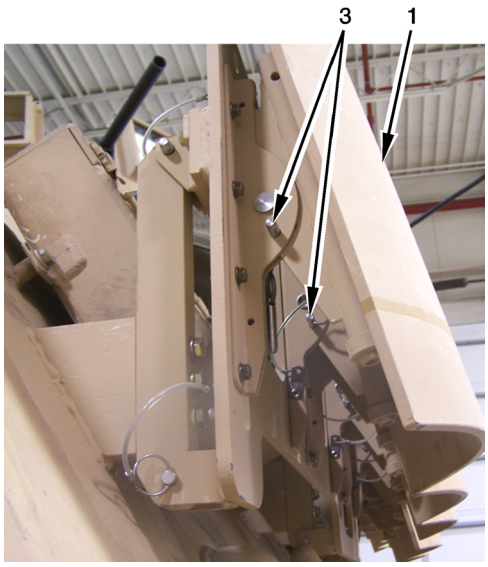
A. To adjust tile position on hull, do the following:

1. Remove tiles (1) from top row (see 3-82.2).
2. Tilt top row of rails (2) to required position and install quick-release pins (3).
3. Remove quick-release pins (3) from bottom row of rails (2).
4. Tilt bottom row of tiles (1) to required position and install quick-release pins (3).
5. Install tiles (1) to top row (see 3-82.2).

B. To adjust tile position on turret, do the following:

1. Remove quick-release pins (2).
2. Tilt tile (1) to required position.
3. Install quick-release pins (2).





5tarat2

PREPARE STATION FOR OPERATION (ENTER DRIVER'S STATION)

A. Mount and enter tank through loader's hatch (see TM 9-2350-264-10).

NOTE

Main gun must be over rear deck to enter driver's station from turret.

B. Make sure turret lock is set to LOCKED (see TM 9-2350-264-10).

C. Swing loader's safety guard open (see TM 9-2350-264-10).

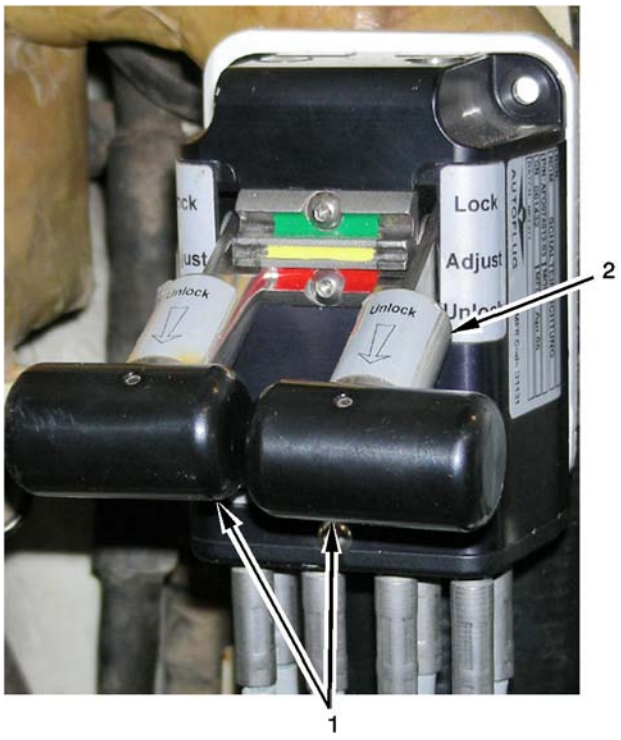
WARNING

Do not extend any part of body between turret and driver's station unless turret lock is set to LOCKED. You can be killed if turret is traversed while you are between turret and driver's station.

NOTE

When control handles are placed in the UNLOCK (red) position all retractor locks will immediately release.

D. Ensure seat control handles (1) are in the UNLOCK (red) position (2) (see ADJUST DRIVER'S HARNESS SYSTEM SEAT, page 3-5).



PREPARE STATION FOR OPERATION (ENTER DRIVER'S STATION) - Continued

CAUTION

Retractor belts will spool rapidly into retractor when disconnected from seat assembly with control handle in UNLOCK (red) position. Hold retractor belt and slowly allow belt to spool when disconnected to prevent damage to retractor or buckle.

E. Disconnect left upper retractor belt (3) from seat assembly (4) by squeezing latch buttons on buckle (5). Belt will spool into retractor (6).

F. Pull back of seat assembly (4) down and enter driver's station feet first.

G. Pull left shoulder belt (7) and right shoulder belt (8) as required to place over shoulders and ensure belts are not tangled or twisted.

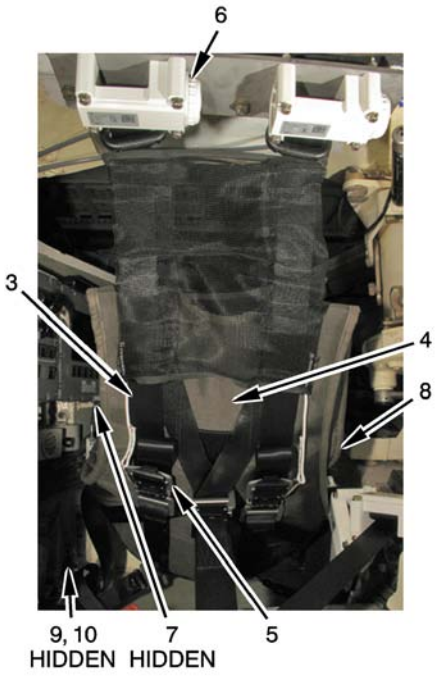
NOTE

- **Driver supporting their own weight will ease reconnection of retractor belt.**
- **Control handles must be placed into UNLOCK (red) position to un-spool belts from retractor.**

H. Second crewman in turret reach into driver's station and reconnect left upper retractor belt (3) to seat assembly (4).

I. Make sure parking brake is set (see TM 9-2350-264-10).

J. Make sure CREW FIRE extinguisher T-handle (9) and ENGINE FIRE extinguisher T-handle (10) are seated in mount. If not, notify unit maintenance.



5t1595

PREPARE STATION FOR OPERATION (ADJUST DRIVER'S HARNESS SYSTEM SEAT)

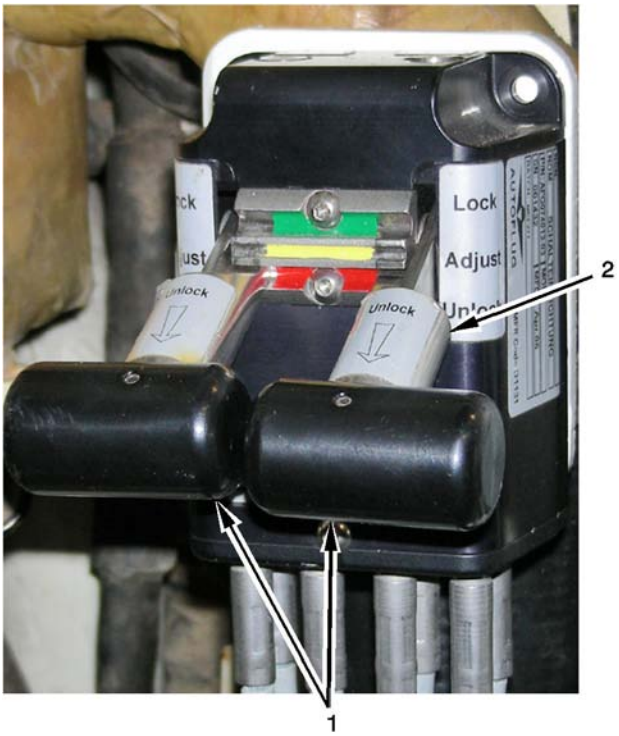
WARNING

- **Make sure driver's weight is being supported and nothing is under driver's seat when moving UPPER control handle to the UNLOCK (red) position. Seat will drop rapidly and could cause injury.**
- **Do not place objects under driver's seat. A minimum 2-inch clearance should be maintained under seat. Objects placed under seat could cause injury.**
- **Driver must properly fasten and adjust four-point harness and leg straps for seat to work properly. Failure to properly fasten and adjust four-point harness and leg straps could result in injury or death.**

NOTE

- **When control handles are placed in the UNLOCK (red) position all retractor locks will immediately release.**
- **In ADJUST (yellow) position retractors spool belts in only. Control handles must be placed into UNLOCK (red) position to un-spool belts from retractor.**
- **UPPER handle controls four upper retractors. LOWER handle controls three lower retractors.**
- **Seat is properly adjusted when driver's body is not touching any part of hull structure and all controls can be operated.**

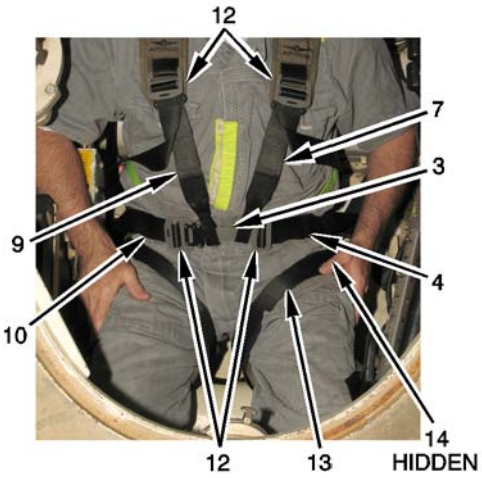
A. Make sure both control handles (1) are in UNLOCK (red) position (2).

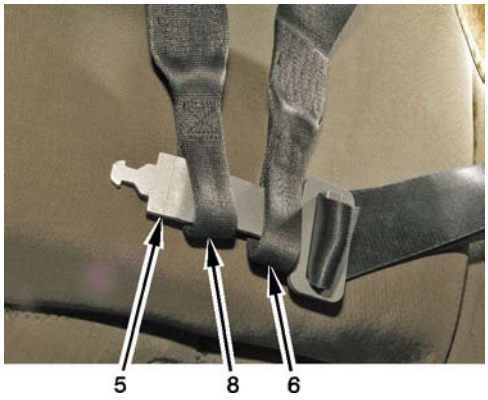


PREPARE STATION FOR OPERATION (ADJUST DRIVER'S HARNESS SYSTEM SEAT) - Continued

B. Buckle and adjust four-point harness (3) by doing the following:

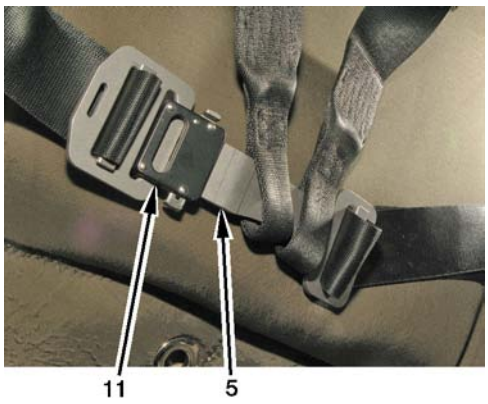
1. Pull left lap belt (4) as required and place across belt line. Make sure belt (4) is not tangled or twisted.
2. Place connector extension (5) through loop (6) at end of left shoulder belt (7).
3. Place connector extension (5) through loop (8) at end of right shoulder belt (9).
4. Pull right lap belt (10) as required to make sure belt (10) is not tangled or twisted and connect buckle (11) to connector extension (5).
5. Pull left lap belt (4) and right lap belt (10) ends to tighten lap belt or lift on left and right belt adjusters (12) to loosen lap belt as required to get a snug fit with buckle centered along beltline.
6. Pull left shoulder belt (7) and right shoulder belt (9) ends to tighten or lift on left and right belt adjusters (12) to loosen each shoulder harness as required to get a snug fit over each shoulder.





C. Fasten leg strap by doing the following:

1. Route strap (13) over leg and place through strap ring (14) on side of seat.
2. Pull strap (13) so that leg sleeve forms and seat/strap is snug around leg and fasten.
3. Repeat steps 1 and 2 for other leg.



5t1530

PREPARE STATION FOR OPERATION (ADJUST DRIVER'S HARNESS SYSTEM SEAT) - Continued

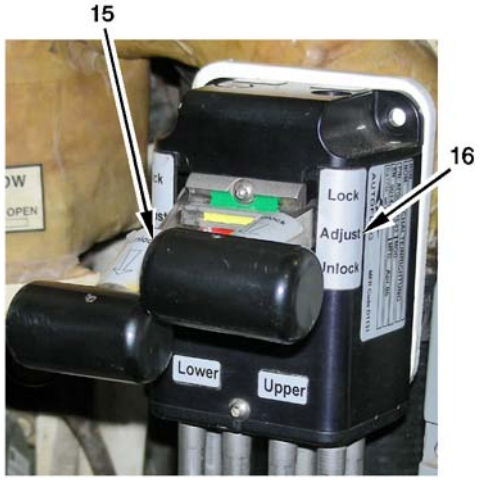
D. Pull out UPPER handle (15), move to ADJUST (yellow) position (16), and release.

NOTE

Each retractor will spool in its retractor belt as driver's weight is shifted off each belt.

E. Raise legs to desired position by alternately pulling up on each front retractor belt and lifting leg as required.

F. Raise body and back to desired position by holding onto handle (17) and pulling upward.



PREPARE STATION FOR OPERATION (ADJUST DRIVER'S HARNESS SYSTEM SEAT) - Continued

G. Move UPPER handle (15) to LOCK (green) position (18), and release.

H. Pull out LOWER handle (19) and move to ADJUST (yellow) position (16).

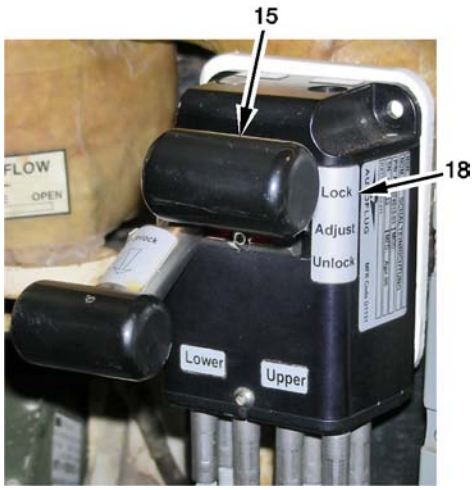
I. Move lower body left to right to tension lower belts for lateral support.

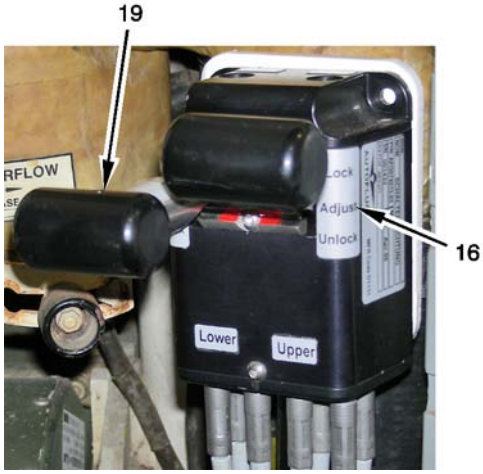
J. Press with feet to move lower body to rear as required.

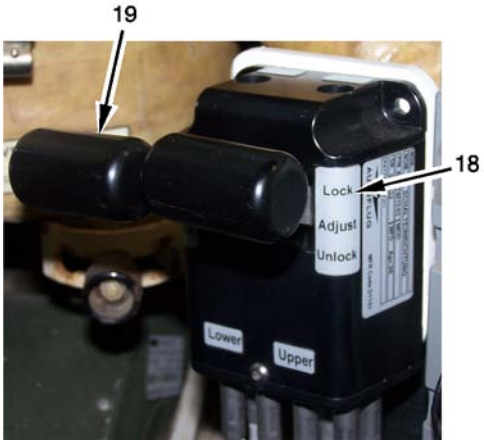
K. Move LOWER handle (19) to LOCK (green) position (18), and release.

L. Check that no portion of body is touching hull structure and controls can be operated. If body is touching hull structure or controls can not be operated, repeat steps D thru K as required.

M. If necessary, readjust four-point harness and leg straps.







PREPARE STATION FOR OPERATION (OPEN HATCH)

WARNING

- **Driver's hatch (1) must be closed when firing main gun, or when either azimuth or elevation turret stabilization mode is in operation to prevent personal injury to driver.**
- **Do not operate driver's hatch (1) while vehicle is moving except in case of emergency. Driver's hatch (1) is heavy and can injure you.**

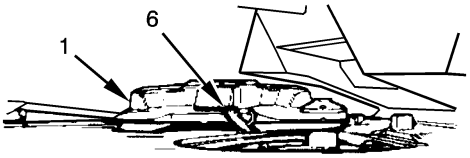
NOTE

Opening driver's hatch (1) will inhibit gun/turret drive (G/TD) operation. Prior to opening hatch (1), check with commander and make sure that it is okay to open hatch (1).

A. Reach over right shoulder with right hand and grasp hatch lifting handle (2).

B. Push and hold button (3).

C. Raise handle (2) until it engages in the stop, then let go of button (3) and handle (2).



D. Grasp hatch opening crank (4).

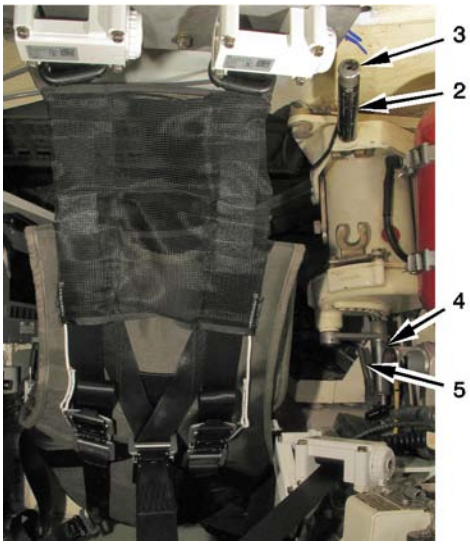
E. Squeeze hatch opening crank lever (5).

WARNING

Make sure hatch (1) locks in open position. Driver can be severely injured if hatch (1) closes unexpectedly.

F. Turn hatch opening crank (4) counterclockwise until hatch (1) locks open.

G. Make sure hatch hold (6) is down.

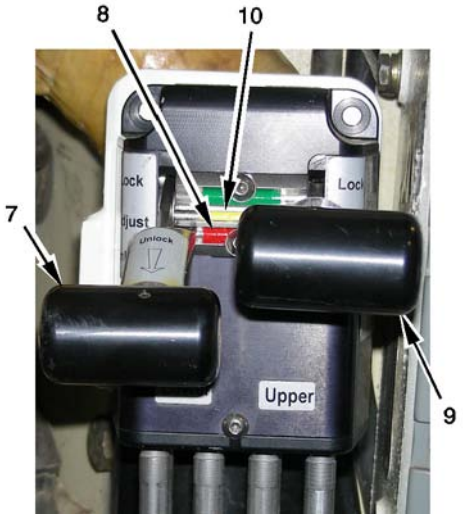


PREPARE STATION FOR OPERATION (OPEN HATCH) - Continued

WARNING

Ensure driver's weight is being supported and nothing is under driver's seat when moving UPPER control handle. If UPPER control handle is moved to the UNLOCK (red) position, seat will drop rapidly and could cause injury.

H. If driver's harness system seat has not been adjusted, do ADJUST DRIVER'S HARNESS SYSTEM SEAT procedures (see 3-5). If seat has been adjusted, place LOWER control handle (7) in the UNLOCK (red) position (8) and place the UPPER control handle (9) in the ADJUST (yellow) position (10), then do ADJUST SEAT (see 3-5), steps F thru M.



5t1592

POWER DOWN AND SECURE STATION (CLOSE DRIVER'S HATCH)

WARNING

- **Hatches must not be operated when tank is moving except in case of emergency.**
- **Ensure driver's weight is being supported and nothing is under driver's seat when moving UPPER control handle to the unlock (red) position. Seat will drop rapidly and could cause injury.**

A. To lower driver's harness system seat (1) for closing hatch, hold handle (2) and raise body weight from driver's seat (1). Move both control handles (3) to the UNLOCK (red) position (4) and lower seat.

NOTE

If latch (5) is hard to move, squeeze hatch handcrank (6) and turn clockwise to remove pressure.

B. Lift and hold latch (5) using left hand.

C. Squeeze hatch handcrank (6) using right hand.

D. Turn hatch hand crank (6) counter-clockwise about one turn.

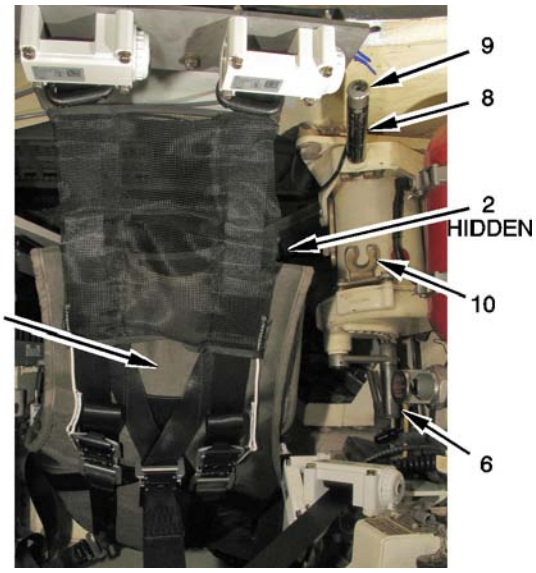
E. Let go of latch (5).

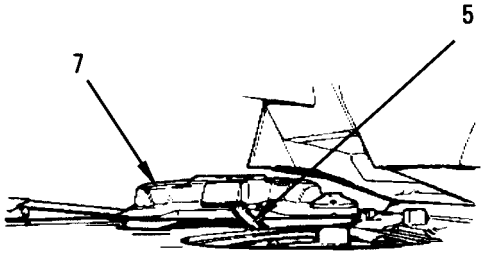
F. Turn hatch hand crank (6) counter-clockwise until hatch (7) is over opening.

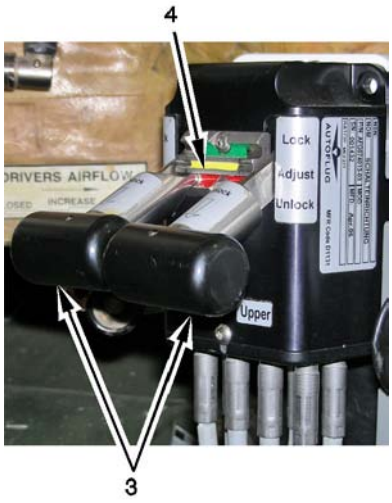
G. Reach over right shoulder with left hand and grasp hatch lifting handle (8).

H. Press and hold button (9).

I. Pull down handle (8) until it snaps into clip (10) and then let go.







EXIT TANK

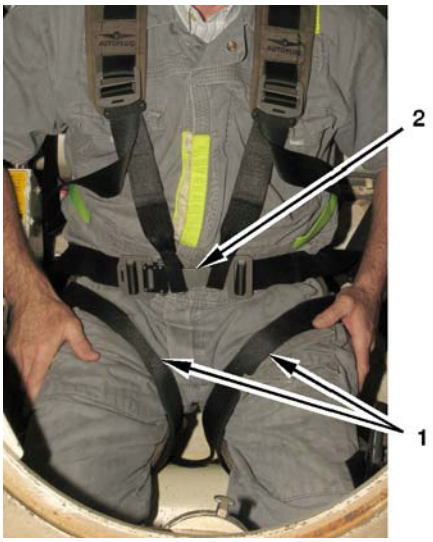
A. Have turret crewmember position main gun over back deck and lock turret lock (see TM 9-2350-264-10).

B. Disconnect CVC cord from intercommunication control set (see TM 9-2350-264-10).

C. Stow steer-throttle control (see TM 9-2350-264-10).

D. Unfasten and remove left and right leg straps (1).

E. Loosen, unbuckle, and remove four-point harness (2).



CAUTION

Retractor belts will spool rapidly into retractor when disconnected from seat assembly with control handle in UNLOCK (red) position. Hold retractor belt and slowly allow belt to spool when disconnected to prevent damage to retractor.

F. Using left hand, reach back and disconnect left upper retractor belt (3) from driver's harness system seat (4).

G. Swing safety guard (5) back against ammunition stowage box (6).

WARNING

Do not extend any part of body between turret and driver's station unless turret lock is set to LOCKED. You can be killed if turret is traversed while you are between turret and driver's station.

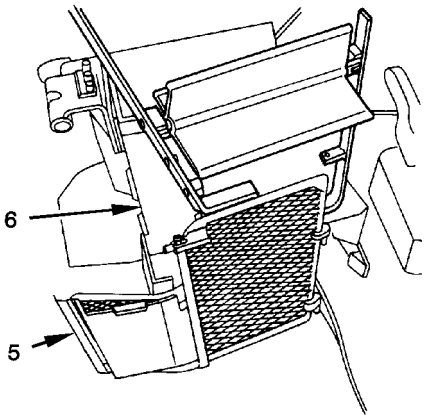
H. Move out of driver's seat and into turret.

I. Reach into driver's station and reconnect left upper retractor belt (3) to upper left belt connector (4).

J. Exit tank through loader's hatch (see TM 9-2350-264-10).

K. Close and lock loader's hatch (see TM 9-2350-264-10).

L. Dismount tank over front slope.



5t1536

OPERATE COMMANDER'S WEAPON STATION SIGHT (CWSS) WITH THERMAL SIGHT/DAY TV SYSTEM (PERFORM CWSS CHECKOUT)

Prepare CWSS for Operation

NOTE

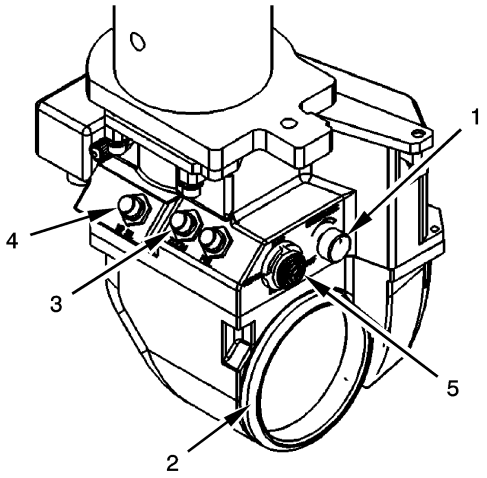
TSM rubber cap must be removed and master power must be on to operate commander's weapon station (CWS) thermal sight/day TV system (see TM 9-2350-264-10).

A. Make sure that the BRIGHTNESS knob (1) is turned all the way clockwise.

B. The day TV video will be available in the commander's weapon station sight (CWSS) eyepiece (2).

C. Select appropriate weapon.

1. Press and hold display control module (DCM) MENU button left until menu is displayed. Press MENU button up/down to highlight weapon. Press MENU button right to change weapon.



NOTE

The day TV system has a fixed focus. The focus control switch on the display will not work in day TV mode.

D. Look into the CWSS eyepiece (2) and lay CWS on a target at least 300 meters from tank and check day image.

E. Press the ZOOM pushbutton (3). Scene should zoom in FOV. Press the ZOOM pushbutton (3) again. Scene should zoom again. Press the ZOOM pushbutton (3) again. Scene should return to normal image.

F. Press VID SEL pushbutton (4) until the thermal video is present in the CWSS eyepiece (2).

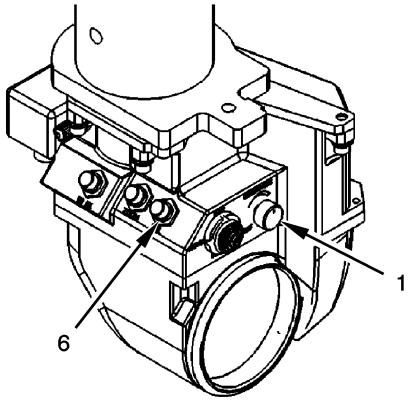
G. Look into the CWSS eyepiece (2) and lay CWS on a target at least 300 meters from tank and focus thermal image with focus switch (5) for optimum image sharpness.

H. Press the ZOOM pushbutton (3). Scene should zoom in FOV. Press the ZOOM pushbutton (3) again. Scene should zoom again. Press the ZOOM pushbutton (3) again. Scene should return to normal image.

OPERATE COMMANDER'S WEAPON STATION SIGHT (CWSS) WITH THERMAL SIGHT/DAY TV SYSTEM (PERFORM CWSS CHECKOUT) - Continued

Prepare CWSS for Operation - Continued

I. Press the POL pushbutton (6) and check that thermal image changes from white hot to black hot. Press the POL pushbutton (6) and check that thermal image changes back to white hot.



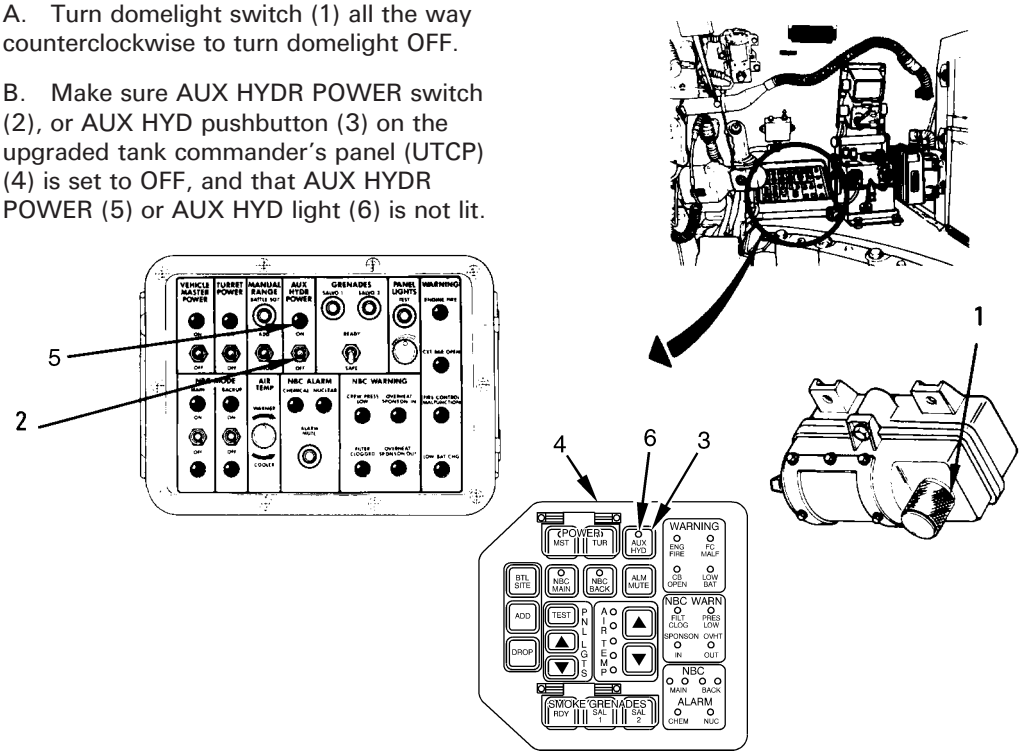
J. Turn the BRIGHTNESS knob (1) to the desired position as follows:

1. Leave system ON if it is to be used. While viewing display, adjust BRIGHTNESS knob (1) to achieve desired brightness.
2. Turning system off - Turn BRIGHTNESS knob (1) all the way counterclockwise to turn system OFF.

POWER DOWN AND SECURE STATION (POWER DOWN COMMANDER'S STATION AND TURRET)

A. Turn domelight switch (1) all the way counterclockwise to turn domelight OFF.

B. Make sure AUX HYDR POWER switch (2), or AUX HYD pushbutton (3) on the upgraded tank commander's panel (UTCP) (4) is set to OFF, and that AUX HYDR POWER (5) or AUX HYD light (6) is not lit.



5t1307

POWER DOWN AND SECURE STATION (POWER DOWN COMMANDER'S STATION AND TURRET) - Continued

WARNING

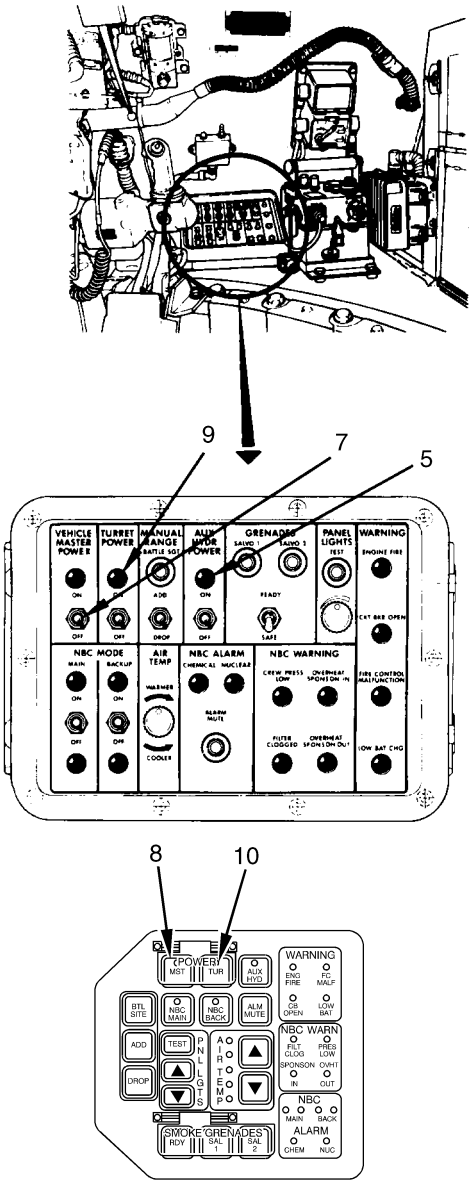
Never turn vehicle master power to OFF if engine is running. Tank may lurch forward if transmission is in neutral or pivot, and injury could occur. Also, damage to engine can result.

CAUTION

- **Ensure EAPU OUTPUT POWER switch is set to OFF to prevent electrical system lock-up (see TM 9-2350-264-10).**
- **If equipped with Force XXI Battle Command Brigade and Below (FBCB2), do not power down tank with FBCB2 running. FBCB2 software may get corrupted and FBCB2 will not power up again.**
- **If engine is running make sure nuclear, biological, chemical (NBC) main system is turned off before driver shuts down engine (see TM 9-2350-264-10).**
- **If hull systems have been operated, the driver shall power down the tank to make sure that the driver's master panel switches are set to the proper position before the VEHICLE MASTER POWER switch (7) or MST pushbutton (8) on UTCP equipped tanks is set to OFF. Damage to engine can result.**

NOTE

- **Make sure all other crew stations are ready for vehicle master power and turret power to be turned off.**
- **Turret power and TURRET POWER light (9) go off when VEHICLE MASTER POWER switch (7) is set to OFF.**
- **On UTCP equipped tanks, ensure turret power and TUR light (10) go off when MST pushbutton (8) is pressed to off.**
- **When engine is not running, auxiliary hydraulic power and AUX HYDR POWER light (5) also go off when VEHICLE MASTER POWER switch (7) is turned off.**



POWER DOWN AND SECURE STATION (POWER DOWN COMMANDER'S STATION AND TURRET) - Continued

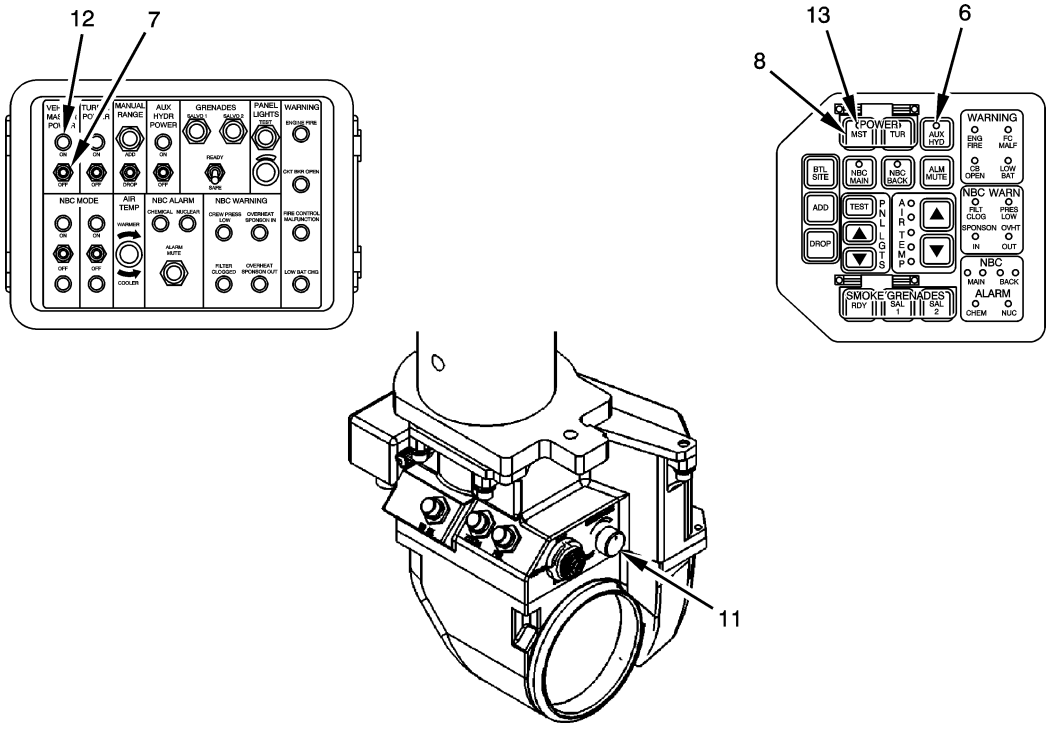
NOTE

- **On UTCP equipped tanks, when engine is not running, auxiliary hydraulic power and AUX HYD light (6) also go off when MST pushbutton (8) is set to off.**
- **DO IMMEDIATE ACTION FOR VEHICLE MASTER POWER FAILURE TO POWER DOWN (see TM 9-2350-264-10) if unit maintenance is not available.**
- **If equipped with forward looking infrared (FLIR), thermal receiver unit (TRU) cooling fan and internal navigation unit (INU) will remain on for 60 seconds after the master power is shut off.**

C. If equipped with FBCB2, make sure FBCB2 is not running. If running, shut down FBCB2 (see TM 9-2350-264-10) before shutting down tank.

D. Make sure that the display control module (DCM) goes off when BRIGHTNESS knob (11) is turned all the way counterclockwise to OFF position.

E. Set and hold VEHICLE MASTER POWER switch (7) to OFF. When VEHICLE MASTER POWER light (12) goes out, release VEHICLE MASTER POWER switch (7). If VEHICLE MASTER POWER light (12) does not go out, notify unit maintenance. On UTCP equipped tanks, press MST pushbutton (8). MST light (13) will go off. If MST light (13) does not go out, notify unit maintenance.



5t1605

OPERATE COMMANDER'S SPOTLIGHT

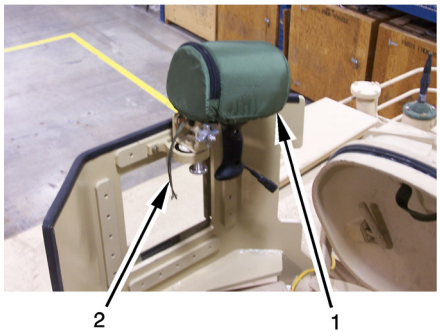
WARNING

To avoid eye injury, do not look directly into beam when spotlight is turned on.

NOTE

Spotlight draws 2.0 continuous amperes at 24-28 V dc. Vehicle batteries need to be monitored when using spotlight with engine off.

A. Remove spotlight cover (1) by loosening cinch cord (2). Stow spotlight cover (1).

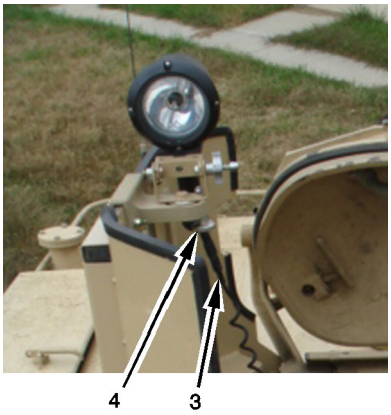


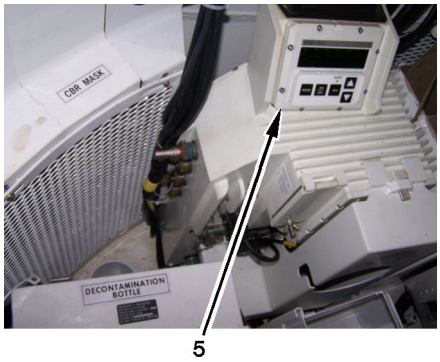
B. Connect spotlight cable connector P2 (3) to commander's spotlight connector J1 (4).

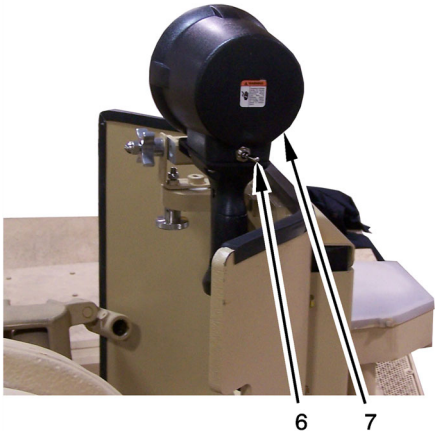
C. Turn on turret power.

D. Turn on power.

1. Set circuit breaker 33 on TNB or RTNB (5) to ON (see TM 9-2350-264-10).
2. Set power switch (6) on back of spotlight (7) to the on position. If spotlight does not illuminate, refer to REPLACE COMMANDER'S SPOTLIGHT BULB (see 3-104).



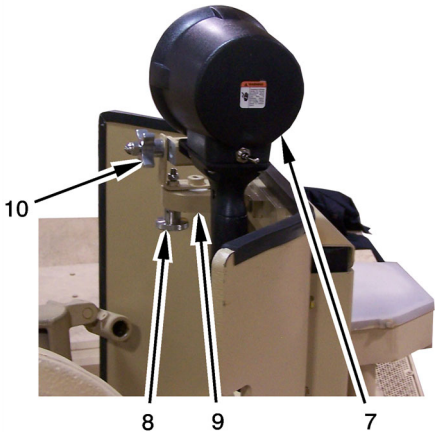




OPERATE COMMANDER'S SPOTLIGHT - Continued

E. Aim spotlight (7).

1. Loosen thumbscrew (8) on left of spotlight mount (9) to allow traverse movement of spotlight (7).
2. Tighten thumbscrew (8) to hold spotlight (7) in desired position.
3. Loosen thumbscrew (10) on spotlight mount (9) to allow elevation/depression of spotlight (7).
4. Tighten thumbscrew (10) to hold spotlight (7) in desired position.

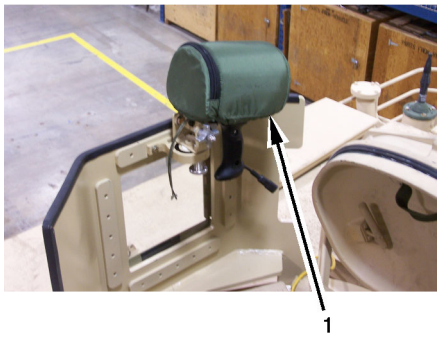


F. Operate spotlight (7) with infrared lens (11).

NOTE

When illuminated by infrared filter, area is viewable by all GEN III night vision goggles (NVGs) and GEN II NVGs with extended red response.

1. Remove infrared lens (11) from zippered pouch in front of spotlight cover (1).
2. While holding infrared lens (11) on the front of the spotlight (7), stretch lens strap (12) around rear of spotlight housing to secure lens (11).
3. Operate spotlight (7) as normal.
4. When no longer required, remove lens strap (12) from rear of spotlight (7) and stow infrared lens (11) in spotlight cover (1).

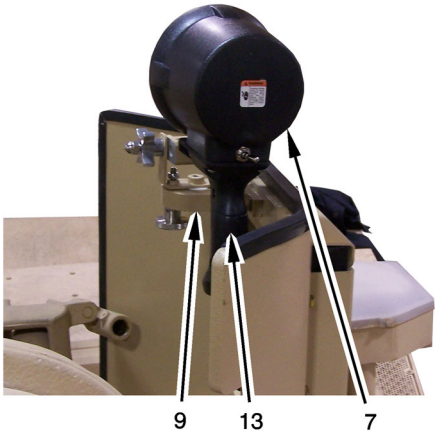


5t2000q

OPERATE COMMANDER'S SPOTLIGHT - Continued

G. Remove and install spotlight (7) in mount (9).

1. Firmly grasp spotlight handle (13).
2. Remove spotlight (7) from spotlight mount (9) using rearward force. If force required to remove spotlight from mount requires adjustment, refer to COMMANDER'S SPOTLIGHT REMOVAL FORCE ADJUSTMENT, (see 3-104.2).
3. Once removed from mount (9), operate spotlight (7) as necessary.
4. To install spotlight in mount (9), align spotlight pin (14) with spotlight mount (9).
5. Grasp spotlight handle (13) and push forward to fully engage spotlight pin (14) in spotlight mount (9). If force required to install spotlight in mount requires adjustment, refer to COMMANDER'S SPOTLIGHT REMOVAL FORCE ADJUSTMENT (see 3-104.2).



OPERATE COMMANDER'S SPOTLIGHT - Continued

H. Power down spotlight (7).

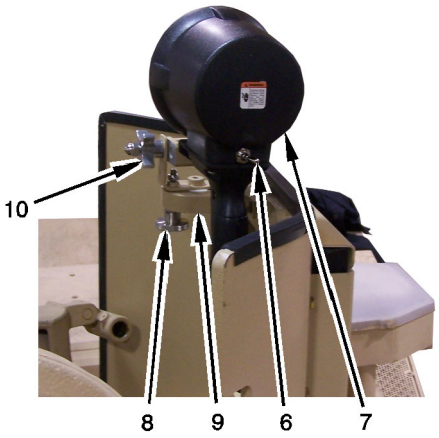
1. Set power switch (6) on back of spotlight (7), to off position.
2. Turn off TNB or RTNB (5) circuit breaker 33 (see TM 9-2350-264-10).
3. Disconnect spotlight cable connector P2 (3) from commander's spotlight connector J1 (4).
4. Stow spotlight cable inside turret.

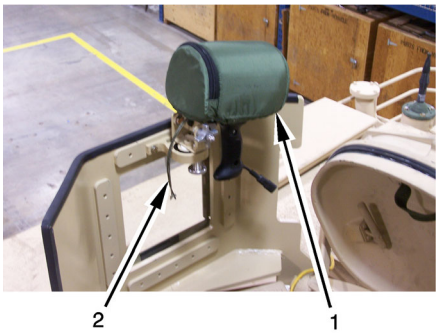
CAUTION

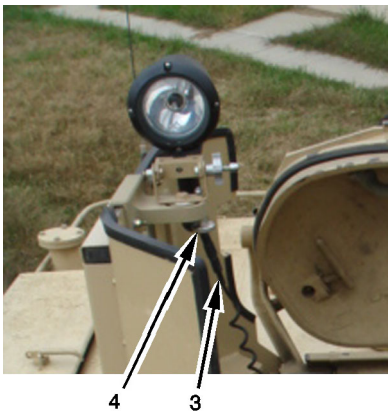
Ensure spotlight power is off or disconnected before placing cover over spotlight. Cover can melt and damage spotlight if in place when spotlight is powered on.

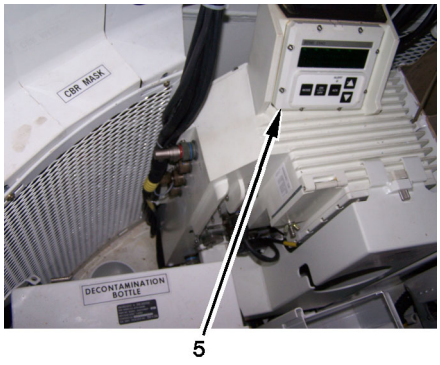
I. Secure spotlight (7).

1. Place spotlight cover (1) over spotlight (7).
2. Draw cinch cord (2) around spotlight (7).
3. Tighten thumbscrews (8, 10) to secure spotlight mount (9).









5t2000q4

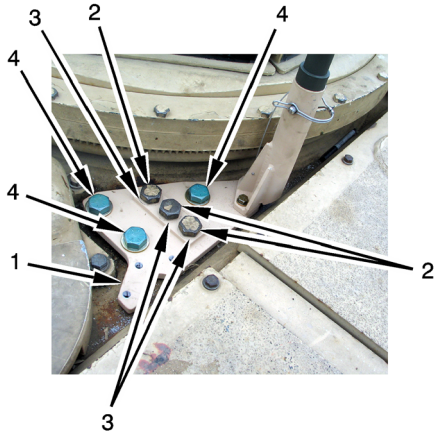
OPERATE COMMANDER'S SOLAR SHADE (INSTALL/REMOVE SOLAR SHADE MOUNT)

NOTE

- **If installing solar shade mount, perform step A.**
- **If removing solar shade mount, perform steps B thru D.**

A. To install solar shade mount (1), do the following:

1. Remove three lifting eye screws (2) and washers (3) from lifting eye holes in turret roof.
2. Apply antiseize compound (NSN: 8030-00-251-3980) to three solar shade mount screws (4).
3. Position mount (1) over lifting eye holes and install three mount screws (4) and washers (5). Tighten screws (4).
4. Install three lifting eye screws (2) and washers (3) in mount (1) and tighten.

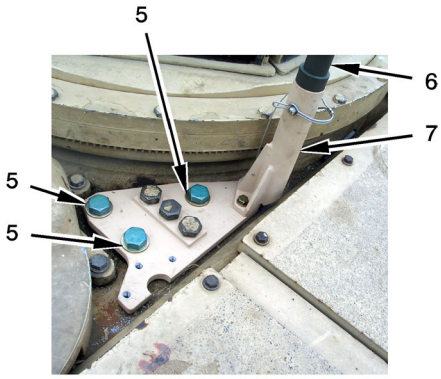


B. If installed, remove solar shade (6) (see 3-16.8).

C. Remove bracket (7) from mount (1) (see 3-16.6).

D. To remove mount (1), do the following:

1. Remove three lifting eye screws (2) and washers (3) from mount (1). Set screws (2) and washers (3) aside.
2. Remove three mount screws (4) and washers (5). Remove mount (1).
3. Install three lifting eye screws (2) and washers (3) in lifting eye locations in turret roof.



OPERATE COMMANDER'S SOLAR SHADE (INSTALL/REMOVE SOLAR SHADE BRACKET)

NOTE

- **When force protection kit is installed, solar shade bracket will be installed in left most position. When force protection kit is not installed, solar shade bracket will be installed in right most position.**
- **If installing solar shade bracket, perform step A.**
- **If removing solar shade bracket, perform steps B and C.**

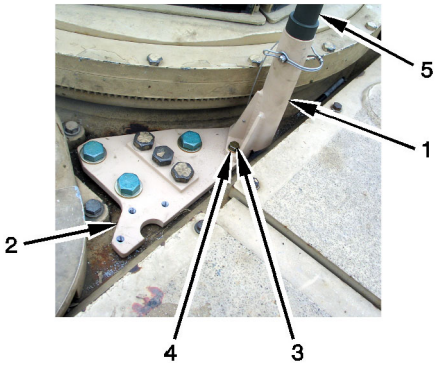
A. To install solar shade bracket (1) on solar shade mount (2), do the following:

1. Aline bracket (1) with holes in mount (2).
2. Secure bracket (1) on mount (2) using three screws (3) and washers (4).

B. If installed, remove solar shade (5) (see 3-16.8).

C. To remove solar shade bracket (1), do the following:

1. Remove three screws (3) and washers (4) from bracket (1).
2. Remove bracket (1) from mount (2).



4cshade

OPERATE COMMANDER'S SOLAR SHADE (REMOVE/INSTALL LANYARD ATTACHMENT AND SAFETY PIN)

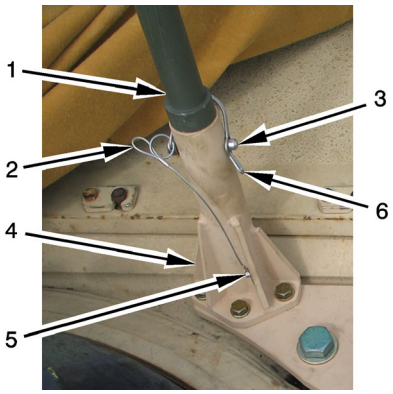
A. If installed, remove solar shade (1) (see 3-16.8).

B. To remove lanyard (2) with safety pin (3) from solar shade bracket (4), do the following:

1. Remove screw (5) from lanyard (2) and bracket (4).
2. Remove lanyard (2) and safety pin (3), replace as required.

C. To install lanyard (2) with safety pin (3), do the following:

1. Install screw (5) thru lanyard (2) and in bracket (4).
2. Install safety pin (3) with clip (6) in bracket (4).



OPERATE COMMANDER'S SOLAR SHADE (INSTALL/REMOVE SOLAR SHADE)

CAUTION

Do not leave solar shade installed while moving tank. Damage to equipment may occur.

NOTE

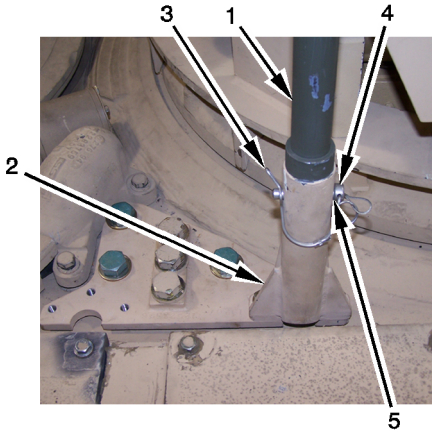
- **If installing solar shade, perform step A.**
- **If removing solar shade, perform step B.**

A. To install solar shade (1) in solar shade bracket (2), do the following:

1. Remove safety clip (3) from safety pin (4) and remove safety pin (4) from bracket (2).
2. Insert solar shade (1) in bracket (2).
3. Aline safety pin hole (5) in solar shade (1) with safety pin hole (5) in bracket (2).
4. Install safety pin (4) and lock in place with safety clip (3).

B. To remove solar shade (1) from solar shade bracket (2), do the following:

1. Remove safety clip (3) from safety pin (4) and remove safety pin (4) from bracket (2).
2. Remove solar shade (1) from bracket (2).
3. Install safety pin (4) into bracket (2) and lock in place with safety clip (3).



4cshade

OPERATE COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) (OPERATE SPOTLIGHT)

WARNING

To avoid eye injury, do not look directly into beam when spotlight is turned on.

NOTE

Spotlight draws 2.5 amperes at 24-28 VDC. Vehicle batteries need to be monitored when using spotlight with engine off.

A. Lift up cover (1) over switch (2) on RFS control box (3) marked LIGHT. Place spotlight switch (2) in ON position to turn on spotlight (4).

B. Use gunner's control handle assembly (see TM 9-2350-264-10) to aim spotlight (4).

OPERATE COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) (FIRE CSAMM MOUNTED WEAPON)

A. Load .50 cal machinegun (1). Refer to OPERATE COMMANDER'S WEAPON (LOAD WEAPON) (see TM 9-2350-264-10).

WARNING

Weapon will now fire if butterfly trigger is pushed. Accidental firing of weapon can kill or seriously injure personnel.

B. Move butterfly trigger safety (2) into F (fire) position.

C. POWER UP GUNNER'S STATION (see TM 9-2350-264-10).

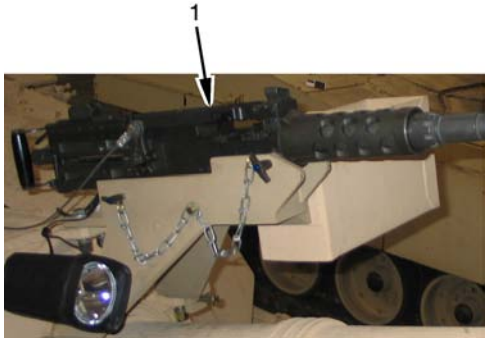
NOTE

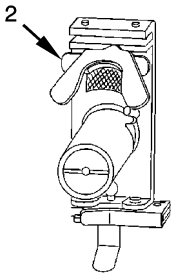
If thermal imaging system (TIS) is to be used, both GPS ballistic doors must be open (see TM 9-2350-264-10).

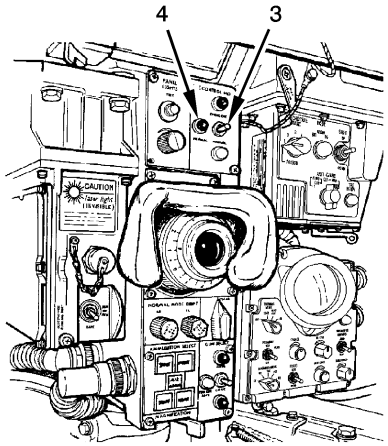
D. Open gunner's primary sight left (DAY) ballistic door (see TM 9-2350-264-10).

E. Tell loader to set GUN/TURRET DRIVE switch on loader's panel to POWERED for firing in NORMAL mode (see TM 9-2350-264-10).

F. Set FIRE CONTROL MODE switch (3) to NORMAL. Make sure NORMAL light (4) comes on.







5t1200

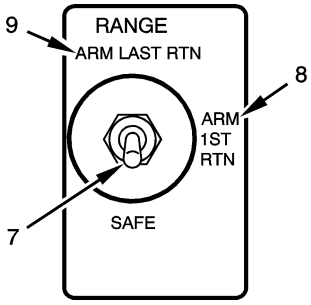
OPERATE COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) (FIRE CSAMM MOUNTED WEAPON) - Continued

WARNING

Weapon is fully operational once switch is in ARMED position and will fire if trigger is pushed. Accidental firing of weapon can kill or seriously injure personnel.

G. Tell commander to turn rate of fire system (RFS) control box arming switch (5) to ARMED position (6) and make sure switch (5) is illuminated.

H. Set laser rangefinder RANGE switch (7) to ARM 1st RTN (8) or ARM LAST RTN (9) as required.

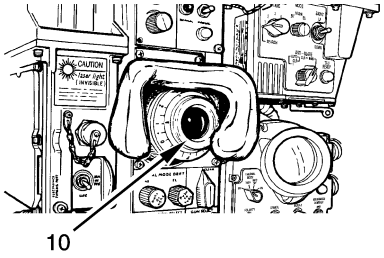


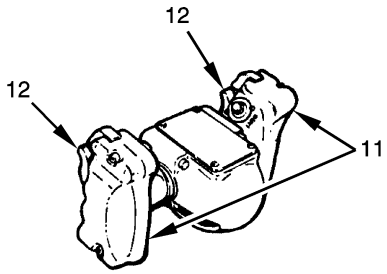
I. Look thru GPS eyepiece (10) and identify target in reticle view.

NOTE

If palm switches are released, gunner's handles, laser rangefinder pushbuttons, triggers, and gun stabilization system do not work.

J. Grasp gunner's handles (11) and squeeze palm switches (12). Move gunner's handles (11) to lay GPS reticle aiming cross on target aiming point. If target is moving, track target and keep GPS reticle aiming cross on target aiming point.



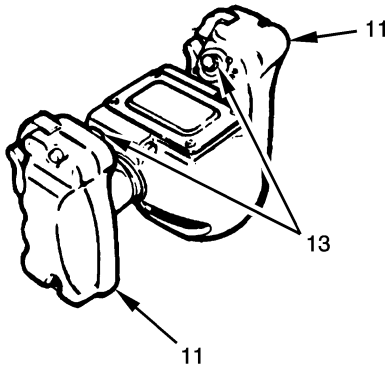


OPERATE COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) (FIRE CSAMM MOUNTED WEAPON) - Continued

NOTE

When moving target is being tracked in NORMAL MODE, the computer automatically inserts proper lead continuously after you range. When fire control system has been tracking for three seconds, correct lead is inserted and system is ready for firing 300 milliseconds (3/10-second) after ranging.

K. Push and release one or both laser rangefinder pushbuttons (13) on top of gunner's handles (11).

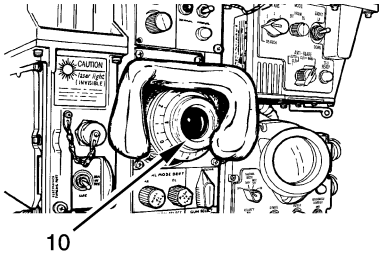


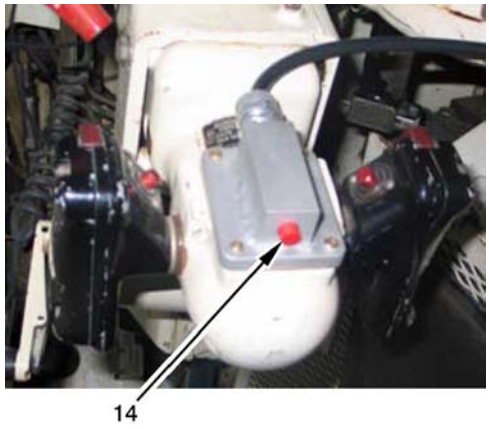
L. Check bottom of reticle view in GPS eyepiece (10) for range in meters, possible ("multiple returns" indication) horizontal bar, possible fault symbol. If fault symbol does appear, do troubleshooting (see TM 9-2350-264-10).

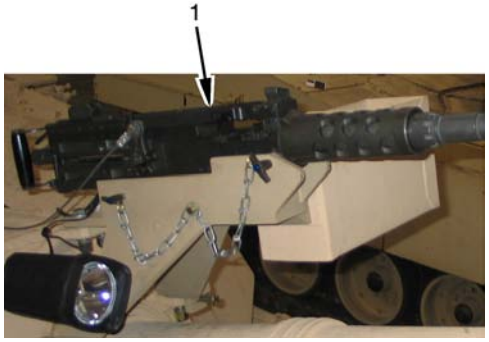
NOTE

If weapon fails to fire, clear machinegun (see 3-21) and do troubleshooting.

M. Fire CSAMM machinegun (1) by pressing trigger (14) on gunner's handles (11). Release trigger (14) to stop firing.







5t1205

OPERATE COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) (CLEAR MACHINEGUN)

WARNING

Keep weapon pointed down range. Stay clear of muzzle end of barrel. Weapon can fire accidentally and kill or injure personnel.

NOTE

If weapon failed to fire or misfired, OPERATE COMMANDER'S WEAPON (PERFORM FAILURE-TO-FIRE PROCEDURES) (see TM 9-2350-264-10).

Clear .50 cal machinegun, refer to OPERATE COMMANDER'S WEAPON (CLEAR COMMANDER'S WEAPON) (see TM 9-2350-264-10).

PREPARE THERMAL SIGHT MODULE (TSM) FOR OPERATION (UNPACK TRANSIT CASE)

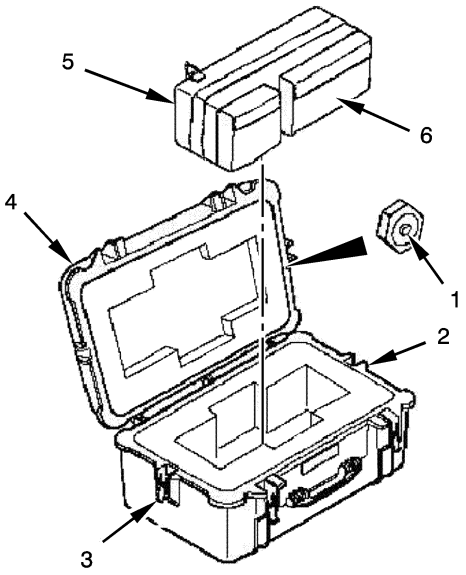
A. Press relief valve (1) on transit/storage case (2).

B. Release four latches (3) on transit/storage case (2) and open cover (4).

C. Remove carrying case (5) from transit/storage case (2) and obtain weapon bracket, if necessary, in accordance with local policy.

D. Place weapon bracket in pouch (6) of carrying case (5).

E. Close cover (4) on transit/storage case (2) and secure four latches (3).



PREPARE THERMAL SIGHT MODULE (TSM) FOR OPERATION (UNPACK CARRYING CASE)

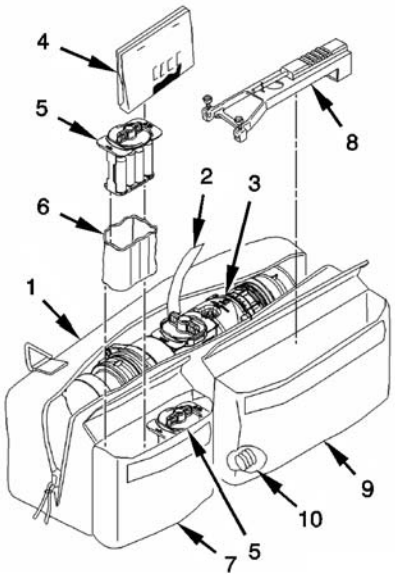
CAUTION

Avoid handling or carrying thermal sight module by the eyecup, objective lens cover, or battery cover latch. Any one of these items may detach from the system, causing it to drop.

A. Unzip carrying case (1), unfasten strap (2) and remove thermal sight module (TSM) (3). Remove manual (4), two battery racks (5), and protective cover (6) from pouch (7).

B. Remove weapon bracket (8), if present, from pouch (9) and check to see that lens cleaning kit (NSN: 6850-01-143-4488) (10) is present in pouch (9).

C. Zip carrying case (1) closed.



5t1099

PREPARE THERMAL SIGHT MODULE (TSM) FOR OPERATION (MOUNT TSM ON M240)

WARNING

Ensure weapon is not loaded and safety is on before installing thermal sight module (TSM) to weapon. A loaded weapon may accidentally discharge causing injury to personnel.

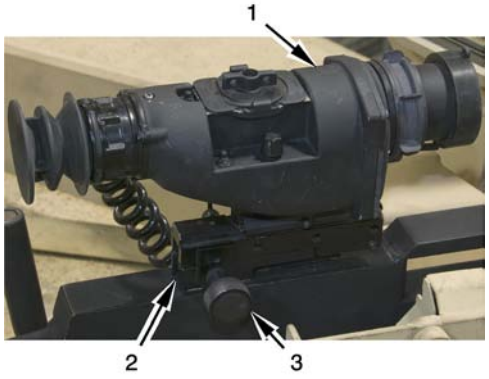
CAUTION

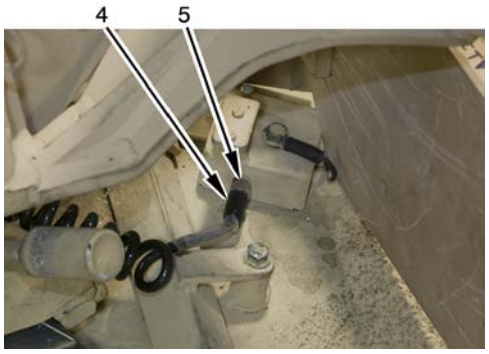
Avoid handling or carrying TSM by the eyecup, objective lens cover, or battery cover latch. Any one of these items may detach from the system, causing it to drop.

A. Install TSM (1) on rail (2) in slot T4 or T5.

B. Rotate knob (3) counterclockwise until it clicks three times.

C. Connect TSM harness (4) to connector (5) on turret.





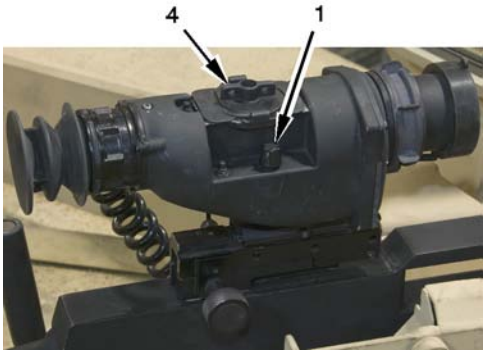
PREPARE THERMAL SIGHT MODULE (TSM) FOR OPERATION (INSTALL BATTERY RACK)

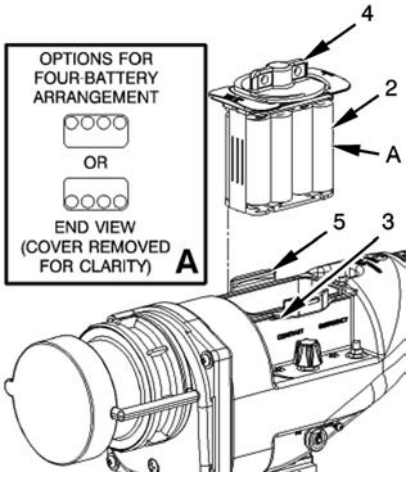
NOTE

- **Batteries are an alternate method to power the TSM. Operating TSM on battery power will not power the HMD.**
- **Ensure BRIGHTNESS knob (1) is set to the OFF position.**
- **Battery rack (2) may be installed forward or backward.**

A. Install battery rack (2) into battery box (3).

B. Turn battery rack cover latch (4) clockwise one-quarter turn engaging barrel hooks (5).





5t1101

PREPARE LOADER'S THERMAL WEAPON SIGHT (LTWS) FOR OPERATION (POWER UP AND OPERATE TSM)

CAUTION

Switch may be damaged if BRIGHTNESS knob is not pushed inward before turning knob clockwise out of OFF detent position.

NOTE

- **When engaging in wide field of view (WFOV), a shift of 0 to 2.5 meters at 1000 meters can occur during the initial burst due to WFOV reticle settling. After the initial burst, the reticle will be back on target. Reticle settling will occur each time the system is changed to WFOV.**
- **TSM begins a warm up period that lasts up to 120 seconds depending on ambient temperature when step A is performed.**

A. Turn on turret power (see TM 9-2350-264-10).

B. Turn on VPA.

1. Set OFF/ON switch S1 (1) to ON.
2. Set AUX/TSM switch S2 (2) to TSM.

C. Depress BRIGHTNESS knob (3) and turn fully clockwise to turn on TSM power.

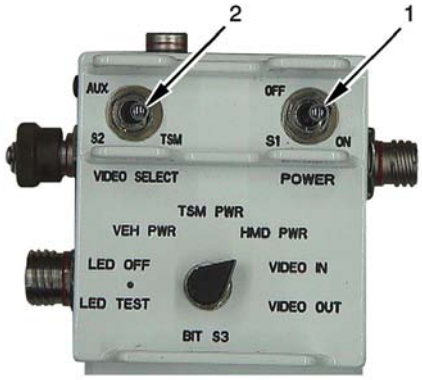
NOTE

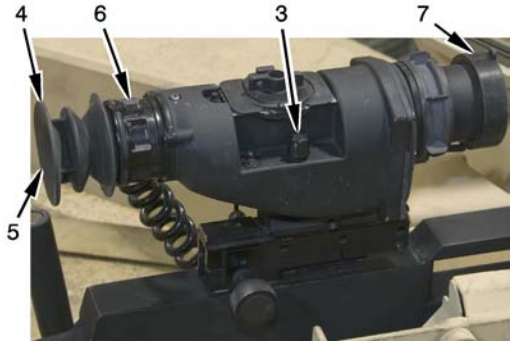
During warm up period, after display comes on, a gray scale is displayed for 33 seconds along bottom of display.

D. Push eyecup (4) to activate display (5). Adjust BRIGHTNESS knob (3) for optimum display.

E. Looking at indicators, adjust diopter (6) for best focus.

F. Remove objective lens cover (7).





PREPARE LOADER'S THERMAL WEAPON SIGHT (LTWS) FOR OPERATION (POWER UP AND OPERATE TSM) - Continued

NOTE

Thermal scene will not be optimized if operator does not wait for warm up period to complete.

G. Adjust CONTRAST knob (8) for best scene.

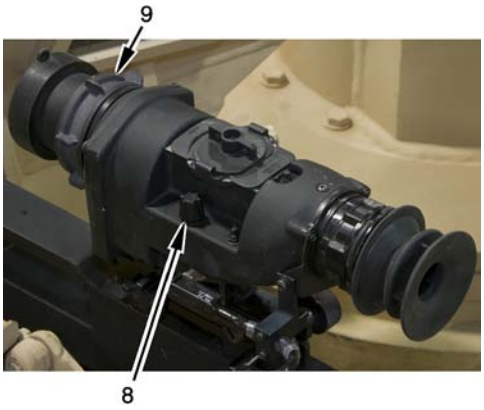
H. Adjust objective lens focus ring (9) for best picture.

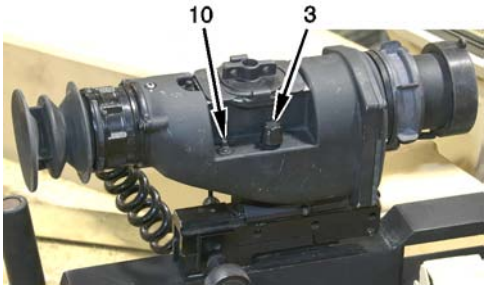
I. Re-adjust BRIGHTNESS knob (3) as needed.

NOTE

When in WHT HOT mode, if reticle is difficult to see due to a hot target, switch polarity to BLK HOT mode.

J. Using BLK/WHT switch (10), select polarity as desired.





5t1104

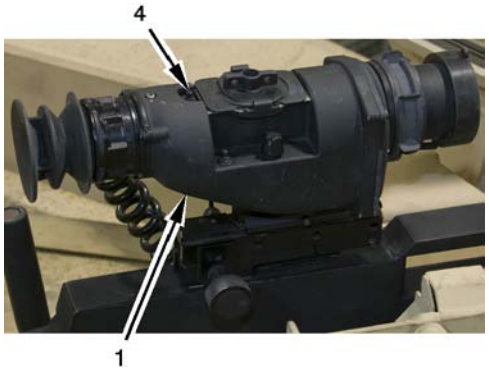
PREPARE LOADER'S THERMAL WEAPON SIGHT (LTWS) FOR OPERATION (RETICLE SELECTION ON THERMAL SIGHT MODULE (TSM))

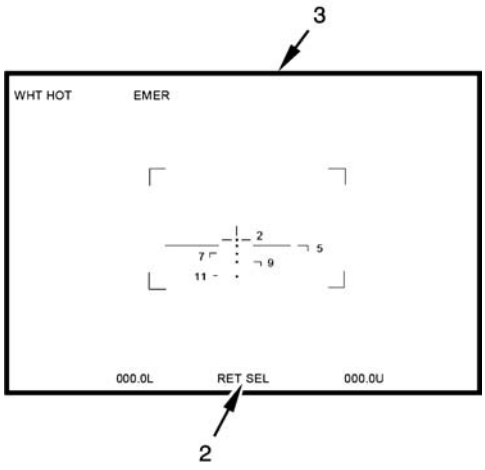
A. Press MENU (1) until RET SEL (2) appears on display (3).

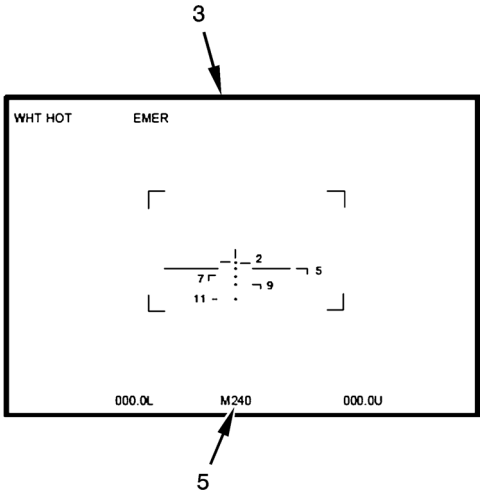
B. Press ZOOM/RETICLE SELECT (4) once to change reticle.

C. Press MENU (1) until M240 (5) appears on display.

D. Press ZOOM/RETICLE SELECT (4) to accept reticle.





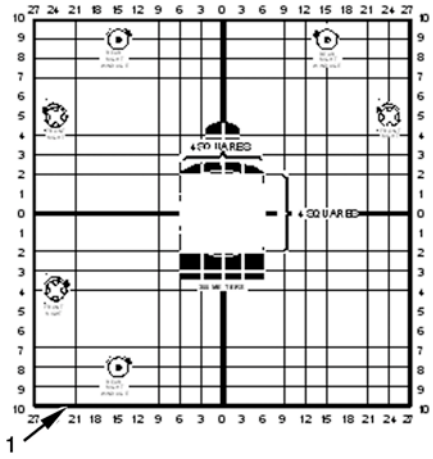


PREPARE LOADER'S THERMAL WEAPON SIGHT (LTWS) FOR OPERATION (ZEROING ADJUSTMENTS ON THERMAL SIGHT MODULE (TSM))

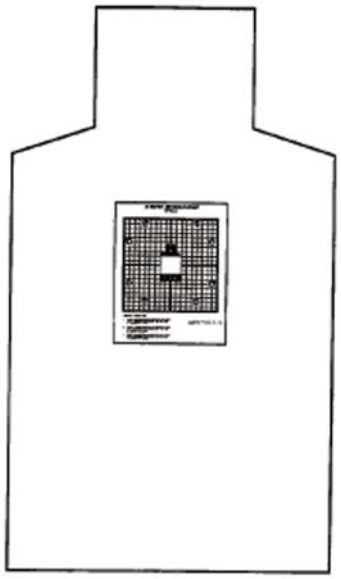
Zeroing M240 at 25 Meter Target

A. Modify a 25 meter zeroing target (NSN: 6920-01-482-0098) (1).

1. Cut a square hole, 4 squares wide by 4 squares high, in a 25 meter zeroing target (1).
2. Cut out a rectangle from corrugated cardboard box, the same size as the 25 meter zeroing target (1).
3. Estimate 2.5 cm from each side of cardboard rectangle and cut out a rectangular hole.
4. Tape corrugated cardboard frame to back of modified 25 meter zeroing target (1).



B. Affix target (1) to standard E-type silhouette or E-type thermal silhouette.



5t1612

PREPARE LOADER'S THERMAL WEAPON SIGHT (LTWS) FOR OPERATION (ZEROING ADJUSTMENTS ON THERMAL SIGHT MODULE (TSM)) - Continued

Zeroing M240 at 25 Meter Target - Continued

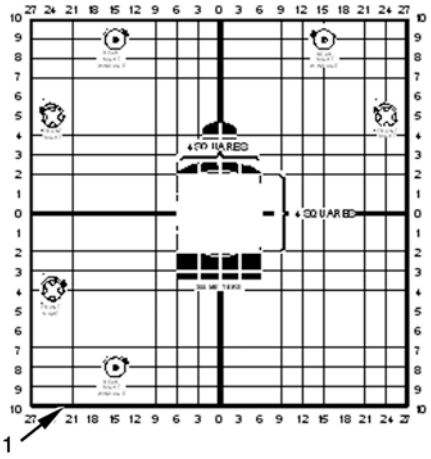
NOTE

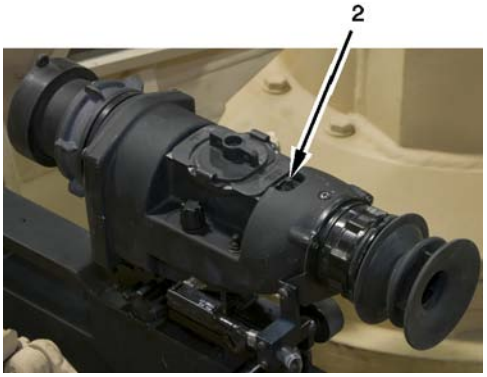
When removing and reinstalling a zeroed TSM on the same weapon, install in the same slot used for zeroing. Failure to do so may result in the TSM no longer being zeroed to the weapon.

C. Zeroing the M240 at 25 meters.

1. Place modified 25 meter zeroing target (1), mounted on E-type silhouette, at range of 25 meters.

2. Set ZOOM/RETICLE SELECT button (2) to wide position. ZOOM is not displayed in this position.





PREPARE LOADER'S THERMAL WEAPON SIGHT (LTWS) FOR OPERATION (ZEROING ADJUSTMENTS ON THERMAL SIGHT MODULE (TSM)) - Continued

Zeroing M240 at 25 Meter Target - Continued

NOTE

Make sure M240 is selected.

3. Set azimuth and elevation indicators to zero. Do the following steps:

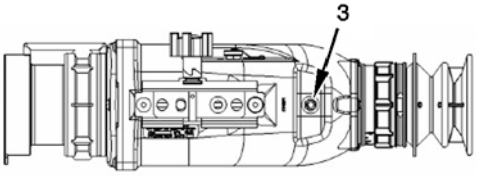
   a. Press MENU button (3) until RET ADJ is on display (4).

   b. If reticle needs to move up, press ZOOM/RETICLE SELECT button (2) to adjust elevation indicator (5) up to 000.0U.

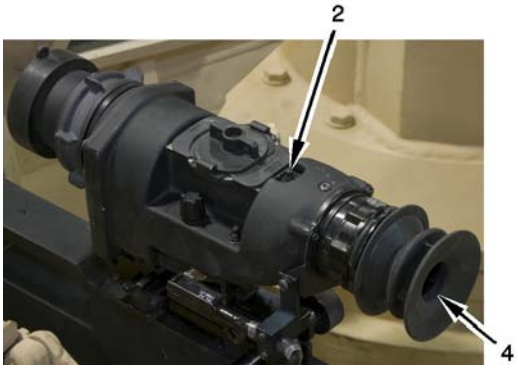
   c. If reticle needs to move down, press MENU button (3) once, then press ZOOM/RETICLE SELECT button (2) to adjust elevation indicator (5) down to 000.0U.

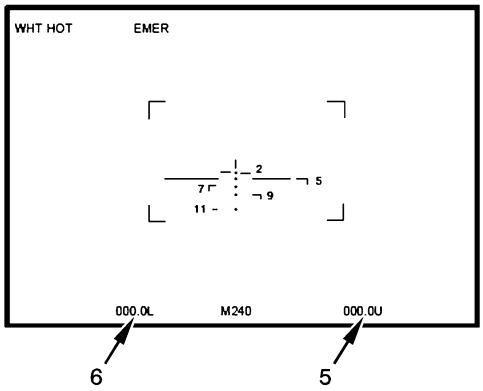
   d. If reticle needs to move left, press MENU button (3) once, then press ZOOM/RETICLE SELECT button (2) to adjust azimuth indicator (6) left to 000.0L.

   e. If reticle needs to move right, press MENU button (3) once, then press ZOOM/RETICLE SELECT button (2) to adjust azimuth indicator (6) right to 000.0L.



BOTTOM VIEW





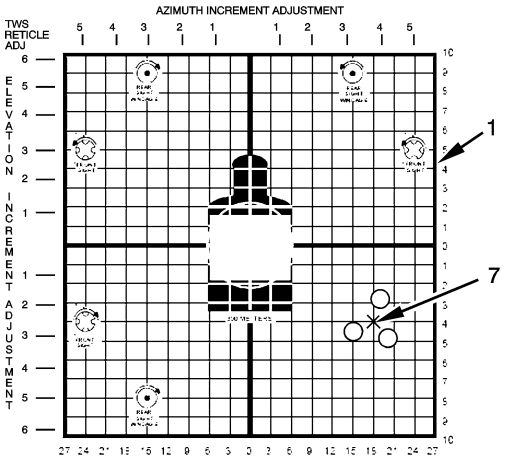
5t1111

PREPARE LOADER'S THERMAL WEAPON SIGHT (LTWS) FOR OPERATION (ZEROING ADJUSTMENTS ON THERMAL SIGHT MODULE (TSM)) - Continued

Zeroing M240 at 25 Meter Target - Continued

4. Aim center mass at 25 meter target (1) and fire three single rounds to obtain shot group. Locate center of shot group (7).

5. Retighten torque knob (8) until two clicks are heard.

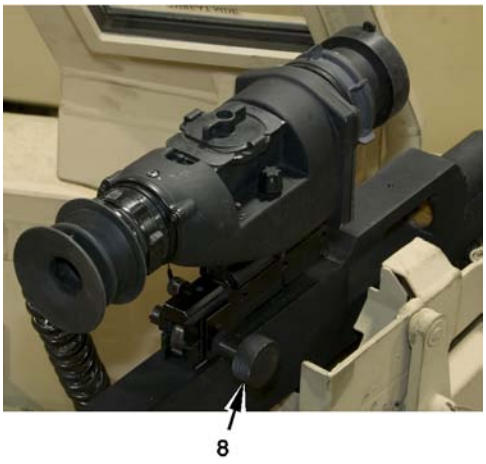


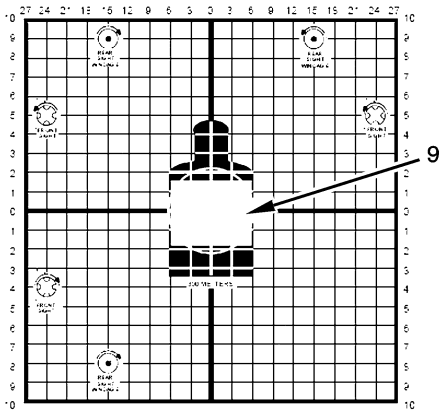
NOTE

- **The point of aim will always be the center of mass at 25 meter zeroing target.**
- **At 25 meter range, each increment of azimuth or elevation setting moves strike of the round 1-1/2 cm for TSM WFOV, 1/2 cm for TSM ZOOM (NFOV).**

6. Adjust reticle to move center of shot group to the desired point of impact.

   a. Measure distance in azimuth and elevation from the center of shot group to the desired point of impact (9).





PREPARE LOADER'S THERMAL WEAPON SIGHT (LTWS) FOR OPERATION (ZEROING ADJUSTMENTS ON THERMAL SIGHT MODULE (TSM)) - Continued

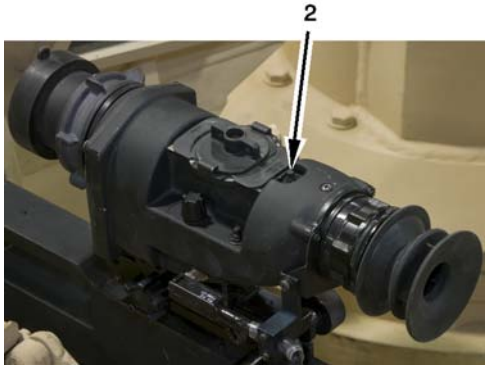
Zeroing M240 at 25 Meter Target - Continued

b. If center of shot group is above the desired point of impact, use the ZOOM/RETICLE SELECT button (2) to decrease the up (U) elevation setting or increase the down (D) elevation setting.

c. If center of shot group is below the desired point of impact, use the ZOOM/RETICLE SELECT button (2) to increase the up (U) elevation setting or decrease the down (D) elevation setting.

d. If center of shot group is left of the desired point of impact, use the ZOOM/RETICLE SELECT button (2) to decrease the left (L) azimuth setting or increase the right (R) azimuth setting.

e. If center of shot group is right of the desired point of impact, use the ZOOM/RETICLE SELECT button (2) to increase the left (L) azimuth setting or decrease the right (R) azimuth setting.

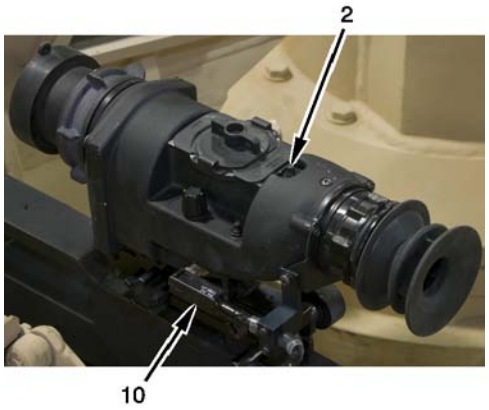


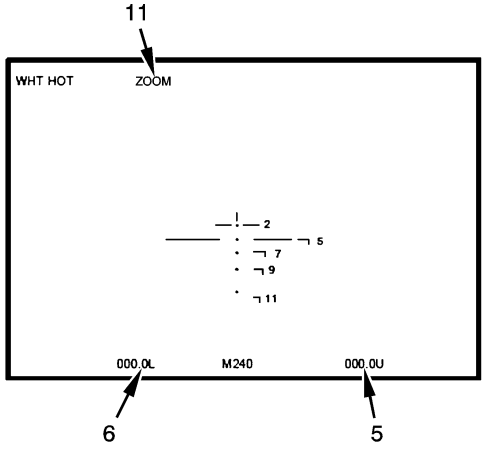
5t1116

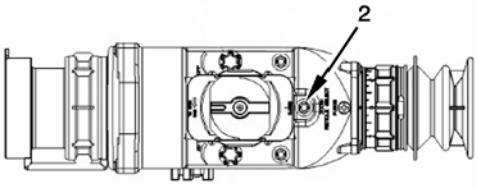
PREPARE LOADER'S THERMAL WEAPON SIGHT (LTWS) FOR OPERATION (ZEROING ADJUSTMENTS ON THERMAL SIGHT MODULE (TSM)) - Continued

Zeroing M240 at 25 Meter Target - Continued

7. Repeat steps C.4 and C.6 until weapon is zeroed. Weapon is zeroed when 5 of 6 consecutive shots are within the desired point of impact.
8. Record setting of bracket slot (10) azimuth indicator (6), and elevation indicator (5).
9. Press ZOOM/RETICLE SELECT button (2) until ZOOM indicator (11) is displayed and repeat steps C.3 thru C.8.







TOP VIEW

PREPARE LOADER'S THERMAL WEAPON SIGHT (LTWS) FOR OPERATION (ZEROING ADJUSTMENTS ON THERMAL SIGHT MODULE (TSM)) - Continued

Zeroing M240 at 25 Meter Target - Continued

D. To zero the M240 at a known distance, do the following:

NOTE

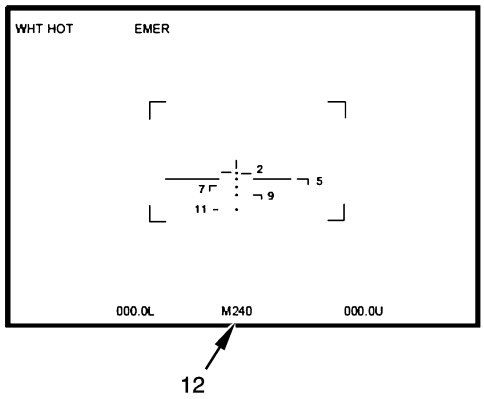
Select a target 500 or 700 meters away.

1. Select a target at a known distance.
2. Power up and operate TSM (see 3-27).
3. Select M240 reticle (12) (see 3-29).

NOTE

ZOOM is not on display when in wide position.

4. Set field of view (FOV) to wide position (see 3-29).
5. Assume a good firing position.
6. Fire one burst at center mass of known distance target. Observe impact or trace of rounds.
7. Tighten torque knob (8) until two clicks are heard.



5t1146

PREPARE LOADER'S THERMAL WEAPON SIGHT (LTWS) FOR OPERATION (ZEROING ADJUSTMENTS ON THERMAL SIGHT MODULE (TSM)) - Continued

Zeroing M240 at 25 Meter Target - Continued

8. Adjust reticle to move center of burst to center mass of target (see 3-30).

NOTE

At 500 meter range, to move strike of round approximately 1/2-meter, adjust azimuth or elevation setting by 2 increments.

a. If center of shot group is above the desired point of impact, use the ZOOM/RETICLE SELECT button (2) to decrease the up (U) elevation setting or increase the down (D) elevation setting.

b. If center of shot group is below the desired point of impact, use the ZOOM/RETICLE SELECT button (2) to increase the up (U) elevation setting or decrease the down (D) elevation setting.

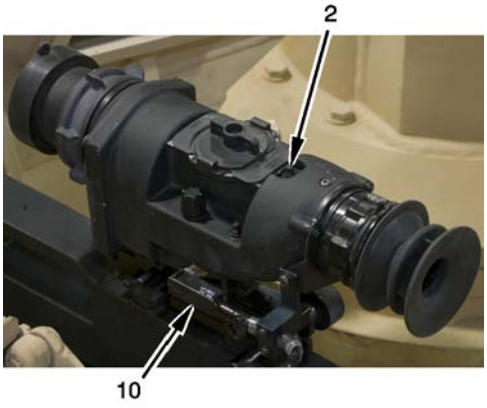
c. If center of shot group is left of the desired point of impact, use the ZOOM/RETICLE SELECT button (2) to decrease the left (L) azimuth setting or increase the right (R) azimuth setting.

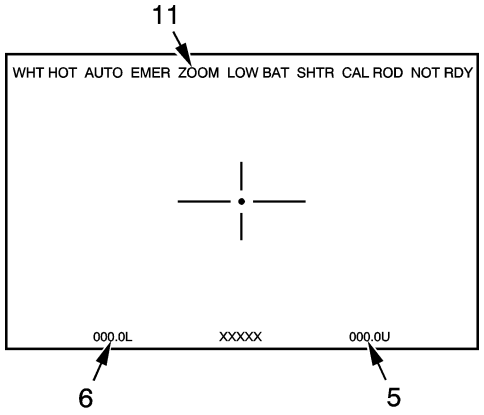
d. If center of shot group is right of the desired point of impact, use the ZOOM/RETICLE SELECT button (2) to increase the left (L) azimuth setting or decrease the right (R) azimuth setting.

9. Repeat steps D.6 and D.8 until burst lands on target.

10. Record setting of bracket slot (10), azimuth indicator (6) and elevation indicator (5).

11. Set FOV to ZOOM indicator (11) (NARROW) position (see 3-29) and perform steps D.6 thru D.10.





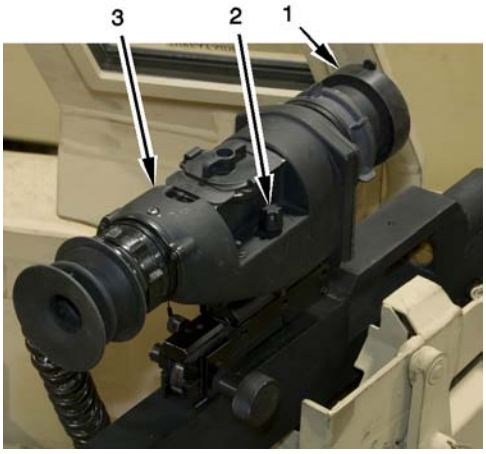
POWER DOWN AND SECURE LTWS (POWER DOWN THERMAL SIGHT MODULE (TSM))

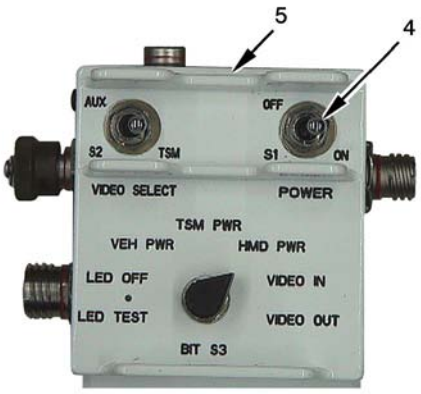
A. Cover objective lens (1).

B. Depress the BRIGHTNESS knob (2) and turn fully counterclockwise to power down thermal sight module (TSM) (3).

C. Set OFF/ON switch S1 (4) on VPA (5) to OFF.

D. Turn off vehicle master power (TM 9-2350-264-10).





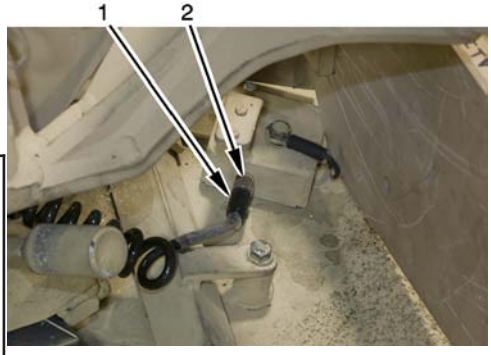
5t1121

STOW LOADER'S THERMAL WEAPON SIGHT (LTWS) (PACK CARRYING CASE)

Prepare Thermal Sight Module (TSM) for Storage

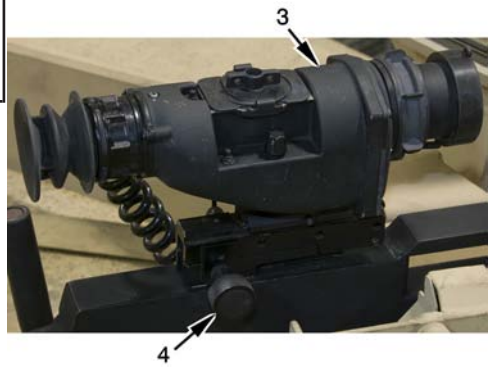
A. Disconnect TSM harness (1) from connector (2) on turret.

B. Remove thermal sight module (TSM) (3) from weapon by rotating locking knob (4).



WARNING

- **Do not recharge the lithium AA or Lithium-iron disulfide (Li-FeS2) batteries. Battery may explode causing injury to personnel, or damage to equipment.**
- **Do not short circuit battery terminals. If terminals are short-circuited, battery will be damaged.**

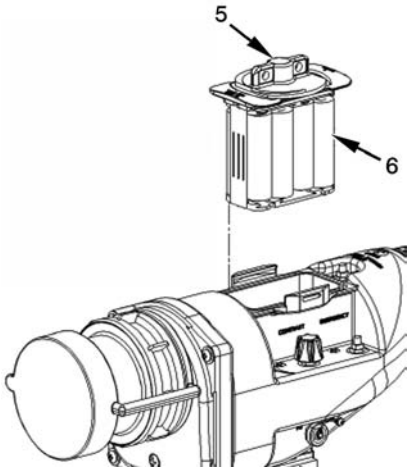


NOTE

Ensure BRIGHTNESS knob is set to the OFF detent position.

C. Turn battery rack cover latch (5) 1/4-turn counterclockwise.

D. Remove battery rack (6) from TSM (3).



STOW LOADER'S THERMAL WEAPON SIGHT (LTWS) (PACK CARRYING CASE) - Continued

Pack Carrying Case

E. Unzip carrying case (1).

CAUTION

Do not store batteries in a location above 140° F (60° C). Batteries will be damaged if stored in high heat location.

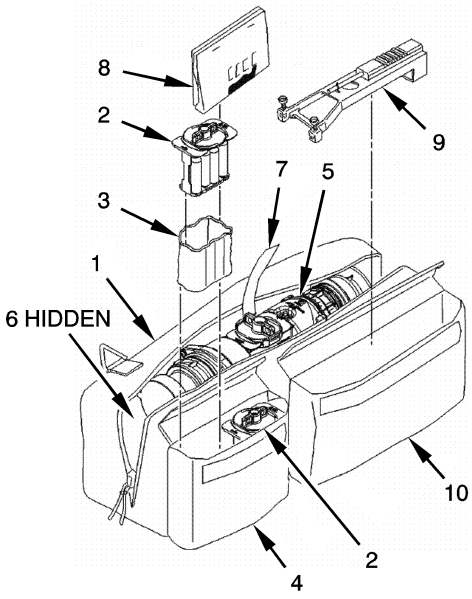
F. Insert battery rack (2) in protective cover (3) and place in pouch (4).

G. Place TSM (5) in preformed insert of carrying case (6) and secure using strap (7).

H. Place manual (8) in pouch (4) and close pouch (4).

I. Place weapon bracket (9) in pouch (10).

J. Zip closed carrying case (1).



5t1124

STOW LOADER'S THERMAL WEAPON SIGHT (LTWS) (PACK TRANSIT CASE)

CAUTION

- **The thermal sight module (TSM) should be transported in the soft carrying case and the hard transit case to prevent damage. If it is necessary to transport the TSM without the hard transit case, the TSM must be tied down or placed in the bustle rack.**
- **Do not store batteries in a location above 140° F (60° C). Batteries will be damaged if stored in high heat location.**

A. Press relief valve (1) on transit/storage case (2).

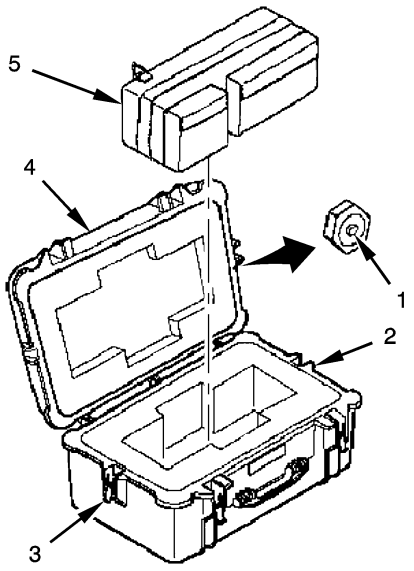
B. Release four latches (3) on transit/storage case (2) and open cover (4).

NOTE

TSM, cleaning kit (NSN: 6850-01-143-4488), manual, battery racks, and protective cover remain in carrying case when placed in transit/storage case.

C. Place carrying case (5) in transit/storage case (2).

D. Close cover (4) on transit/storage case (2) and secure four latches (3).



OPERATE LTWS USING HELMET MOUNTED DISPLAY (HMD) AND DISPLAY CONTROL MODULE (DCM)

Assemble and Attach Helmet Mounted Display (HMD)

A. Rotate HMD bracket (1) onto CVC (2) making sure HMD bracket (1) is fully seated on CVC (2).

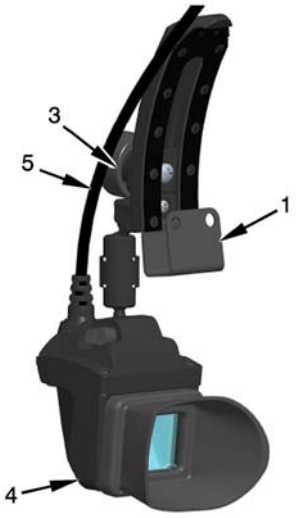
B. Loosen knob (3) and make sure HMD (4) is properly positioned for best viewing by selected eye.

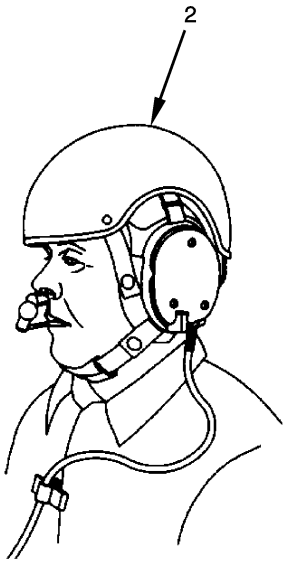
C. Tighten knob (3).

D. Route HMD cable (5) under CVC (2) cover.

E. Route cable (5) out of rear opening in CVC (2) cover.

F. Strap and route HMD cable (5) and CVC cable together.





5t1126

OPERATE LTWS USING HELMET MOUNTED DISPLAY (HMD) AND DISPLAY CONTROL MODULE (DCM) - Continued

Assemble and Attach Display Control Module (DCM)

A. Clip DCM (1) to shoulder. Clip (2) can be rotated by turning thumb screw (3) clockwise to loosen it.

B. Rotate clip (2) to desired position and turn thumb screw (3) clockwise to lock clip (2) in place.

C. Connect DCM (1) to HMD cable (4) that was routed under the CVC helmet (5).

D. Connect VPA video cable to DCM (1) cable.

OPERATE LTWS USING HELMET MOUNTED DISPLAY (HMD) AND DISPLAY CONTROL MODULE (DCM) - Continued

Operate System

A. Turn on HMD (1) by pushing ON/OFF switch (2).

B. Press top button (3) on DCM (4) to make HMD (1) brighten incrementally.

C. Press and hold top button (3) on DCM (4) to adjust HMD (1) to full brightness.

D. Press middle button (5) on DCM (4) to make HMD (1) darken incrementally.

E. Press and hold middle button (5) on DCM (4) to adjust HMD (1) to fully darken.

5t1194

OPERATE LOADER'S THERMAL WEAPON SIGHT (LTWS) (PERFORM LTWS BUILT-IN TEST (BIT))

A. Power up and operate TSM (see 3-27).

B. Assemble and attach HMD (see 3-42).

NOTE

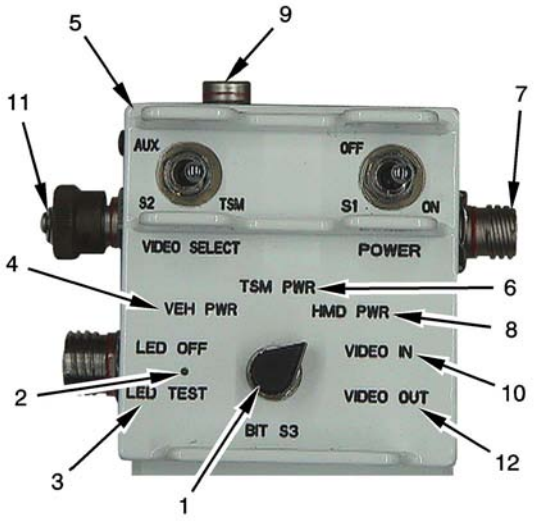
- **Vehicle power adapter (VPA) is capable of performing BIT on VPA LED, vehicle power going to the VPA, power going to the TSM through J1, power going to the DCM and to the HMD through J3, video entering the VPA or auxiliary input through J4, and video output to the DCM and the HMD.**
- **LED will not light if BIT test fails for selected test. Notify unit maintenance if any BIT test fails.**

C. Set BIT switch S3 (1) to desired test position.

NOTE

VPA LED (2) will light green to indicate BIT passed.

1. Set BIT switch S3 (1) to LED TEST (3) to verify LED (2) is functioning.
2. Set BIT switch S3 (1) to VEH PWR (4) to verify vehicle power is going to VPA (5).
3. Set BIT switch S3 (1) to TSM PWR (6) to verify vehicle power is going to TSM through J1 (7).
4. Set BIT switch S3 (1) to HMD PWR (8) to verify vehicle power is going to DCM and HMD through J3 (9).
5. Set BIT switch S3 (1) to VIDEO IN (10) to verify video signal enters VPA (5) from TSM or auxiliary input J4 (11).
6. Set BIT switch S3 (1) to VIDEO OUT (12) to verify video signal is output to the DCM and HMD.



OPERATE LOADER'S THERMAL WEAPON SIGHT (LTWS) (PERFORM LTWS BUILT-IN TEST (BIT)) - Continued

D. Set BIT switch S3 (1) to LED OFF (13) to reset LED (2).

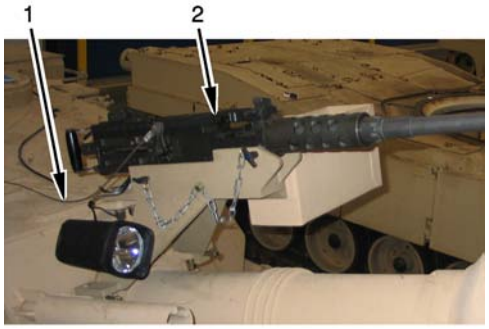
5t1199

OPERATE COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) (OPERATE PULL CABLE ASSEMBLY)

WARNING

Once machinegun is charged, counter sniper/anti-materiel gun mount (CSAMM) mounted weapon will fire if trigger is pushed. Accidental firing of weapon can kill or seriously injure personnel.

Pull hard on pull cable assembly (1) to charge or perform immediate action on .50 cal machinegun (2).



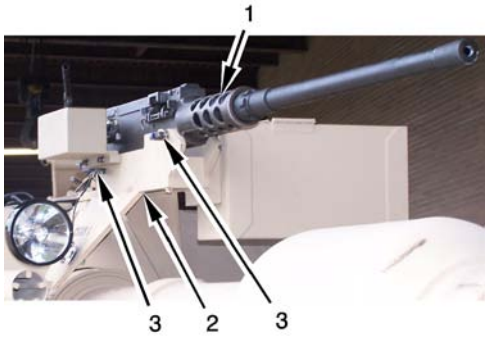
OPERATE COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) (LOAD .50 CAL MACHINEGUN)

A. Install fully assembled .50 cal machinegun (1) on mount (2). Insert front and rear mounting pins (3).

WARNING

Make sure rate of fire system (RFS) control box arming switch is in the SAFE position.

B. Load .50 cal machinegun (1). Refer to OPERATE COMMANDER'S WEAPON (LOAD WEAPON) (see TM 9-2350-264-10).



5t1221

PREPARE STATION FOR OPERATION (OPERATE LOADER'S HATCH FROM INSIDE TANK)

WARNING

Do not operate loader's hatch while tank is moving except in case of emergency. If you must operate loader's hatch while tank is moving, use extreme care. Loader's hatch is heavy and can injure you. When operating tank, loader's hatch should be locked in fully open, vertical, or fully closed position.

NOTE

Loader's hatch is spring loaded and will raise 3 to 4 inches (7.6 cm to 10.2 cm) when unlocked.

A. Open hatch (1).

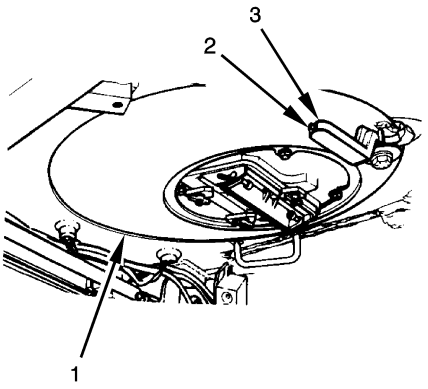
1. Squeeze release tab (2) and turn hatch handle (3) counterclockwise to unlock loader's hatch (1) from the inside.

NOTE

For fully open position, quick-release pin must be removed and hatch latch extension flipped back. Vertical position is shown.

2. Grasp handle (3) and push loader's hatch (1) open until it locks in hatch latch (4). Push loader's hatch open and lock in hatch latch extension (5) to place hatch in vertical position.

3. To lock hatch (1) in vertical position, lock hatch latch extension (5) in place with quick-release pin (6).



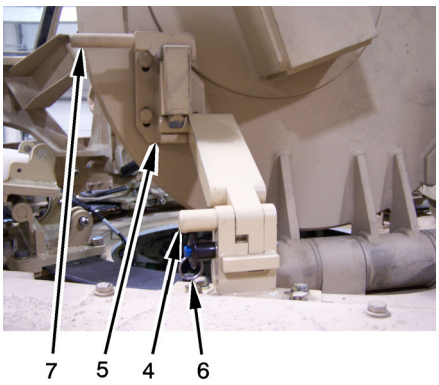
B. Close hatch (1).

1. Press up on exterior handle (7) to release loader's hatch (1).

2. Grasp hatch handle (3) and pull loader's hatch (1) closed.

3. Squeeze release tab (2) and turn hatch handle (3) clockwise.

4. Release tab to lock loader's hatch (1) from inside.



PREPARE STATION FOR OPERATION (RAISE/LOWER LOADER'S OUTBOARD AND INBOARD SHIELD)

NOTE

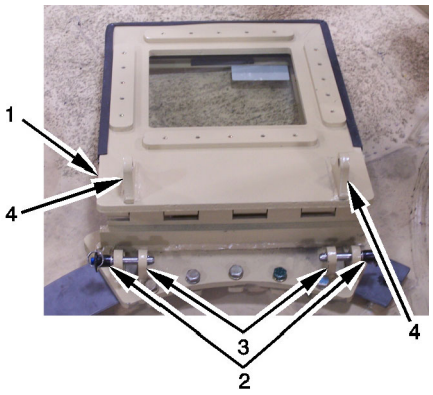
The following procedures apply to both the inboard and outboard shield.

A. Place shield (1) in raised position.

1. Remove both quick-release pins (2) from base latches (3).
2. Raise shield (1) and aline upright latches (4) with base latches (3).
3. Install both quick-release pins (2) through base latches (3).

B. Place shield (1) in lower position.

1. Hold loader's shield (1) with one hand and remove both quick-release pins (2) from base latches (3) with other.
2. Lower shield (1).
3. Retain both quick-release pins (2) by reinstalling through base latch (3).



5t2000

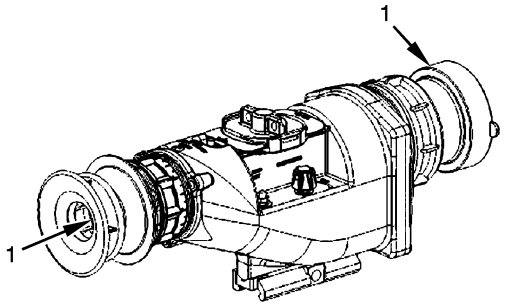
OPERATE LOADER'S THERMAL WEAPON SIGHT (LTWS) IN EXTREME COLD

NOTE

- **During cold temperatures, while not in use, batteries and battery racks should be kept close to the body to keep the batteries warm. Batteries will last longer and system will warm up faster if batteries are warm.**
- **The loader's thermal weapon sight (LTWS) can operate at temperatures as low as -35° F (-37° C). Avoid exposing objective lens to any source of moisture during cold weather. Lenses may fog up or frost over.**

To prevent lenses from fogging up or frosting over, perform the following:

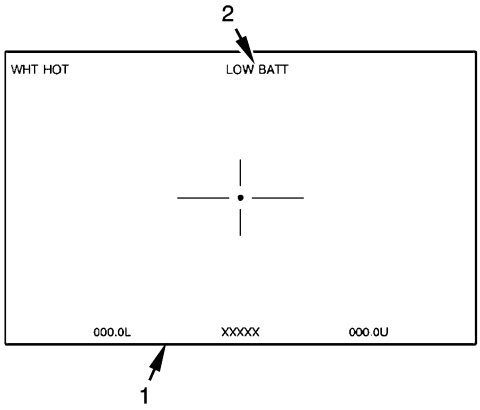
1. Clean lenses (see 3-80).
2. Coat lenses (1) with hand dishwashing compound (NSN: 7930-00-880-4454). Shake off excess compound, and allow to dry.



OPERATE LOADER'S THERMAL WEAPON SIGHT (LTWS) IN EXTREME HEAT

A. The thermal sight module (TSM) can be operated in temperatures up to 120° F (49° C).

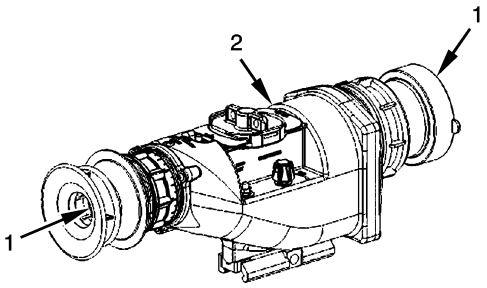
B. Batteries do not hold their charge well in extreme heat. Check display (1) often for LOW BATTERY indicator (2).



OPERATE LOADER'S THERMAL WEAPON SIGHT (LTWS) IN RAIN, FOG, OR HUMIDITY

A. In rainy, foggy, or humid conditions, observe the following precautions:

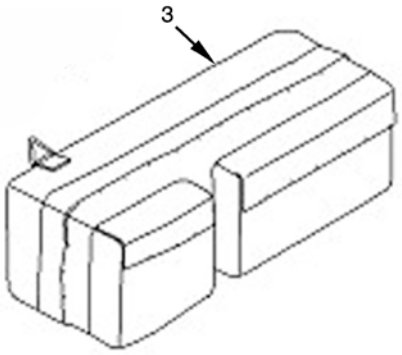
1. To prevent fogging of the objective lenses (1):
   a. Clean lenses (1) (see 3-80).
   b. Coat lenses (1) with hand dish-washing compound (NSN: 7930-00-880-4454), shake off excess compound, and allow to dry.



B. Dry all parts thoroughly after exposure to moisture.

C. Do not place thermal sight module (TSM) (2) in a wet or damp carrying case (3).

D. Keep carrying case (3) closed except to remove or replace equipment.



OPERATE LOADER'S THERMAL WEAPON SIGHT (LTWS) IN SALT WATER CONDITIONS

A. After exposure to salt water, clean all components with fresh water.

B. Dry all parts thoroughly after removing all traces of salt water.

5t1228

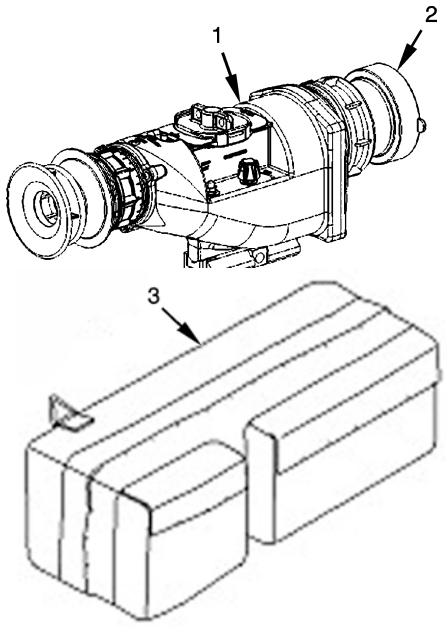
OPERATE LOADER'S THERMAL WEAPON SIGHT (LTWS) IN DUST OR SAND

A. Avoid pointing the thermal sight module (TSM) (1) into the wind to prevent dust and sand from pitting or scratching the objective lens (2).

B. Cover as much of the TSM (1) as possible to prevent damage to external surfaces.

C. Keep carrying case (3) closed except to remove or replace equipment.

D. Clean the eyepiece and objective lenses frequently (see 3-80).



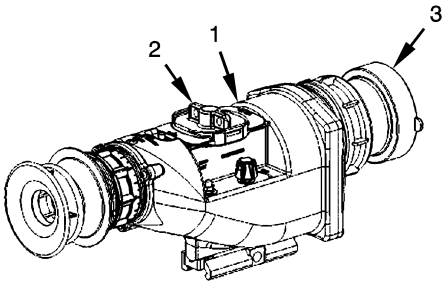
OPERATE LOADER'S THERMAL WEAPON SIGHT (LTWS) DURING FORDING

WARNING

Do not open battery, dispose of in fire, heat above 212° F (100° C), expose to water, recharge, put in backwards, or mix with used or other battery types. Improper handling of batteries, as stated above, may cause battery to explode or leak and cause injury to personnel.

A. Before fording with the thermal sight module (TSM) (1), ensure battery rack cover (2) and objective lens cover (3) are tightly secured.

B. After fording with the TSM (1), wipe exterior dry, clean eyepiece and objective lens (see 3-80), and ensure battery box is dry.



NUCLEAR, BIOLOGICAL, AND CHEMICAL (NBC) DECONTAMINATION OF LOADER'S THERMAL WEAPON SIGHT (LTWS)

WARNING

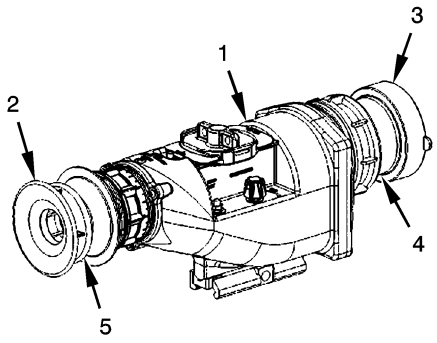
Unit maintenance should turn in system to decon site since the following procedures are not for total decontamination. To avoid illness and injury, protective mask and gloves should be worn when handling loader's thermal weapon sight (LTWS) until total decontamination is completed by the decon site.

NOTE

The thermal sight module (TSM) may be used while wearing mission oriented protective posture (MOPP) gear. Discard the entire carrying case if it is contaminated.

A. Chemical Decontamination. Use M295 decontamination kit to decontaminate thermal sight module (TSM) (1). After using M295 kit, perform steps A.3. thru A.5. below. If M295 is not available, decontaminate using the following procedures:

1. Decontaminate with rag (NSN: 7920-00-205-1711) and 5-percent solution of sodium hypochlorite (NSN: 6810-00-598-7316). Clean with rag dampened with general purpose detergent (NSN: 7930-00-559-9616) and water followed by fresh, clean water. Clean all external surfaces thoroughly, including hard to reach areas.
2. Dry all parts thoroughly.
3. Clean lenses (see 3-80).
4. If contaminated, tag components as contaminated prior to returning to unit maintenance.
5. Turn in TSM (1) to unit maintenance for eyecup (2) and objective lens cover (3) replacement and for decontamination of the objective lens assembly (4) and eyepiece lens assembly (5) with alcohol (NSN: 6810-01-463-6025).



5t1231

NUCLEAR, BIOLOGICAL, AND CHEMICAL (NBC) DECONTAMINATION OF LOADER'S THERMAL WEAPON SIGHT (LTWS) - Continued

B. Biological Decontamination. Use a cloth dampened with high test hypochlorite (HTH) (NSN: 6810-00-598-7316) or bleach (NSN: 6850-01-117-1989) to wash system followed by fresh, clean water rinse. Repeat steps A.2. thru A.5.

C. Nuclear Decontamination. Decontaminate components with brush (NSN: 8020-00-297-6657) and rinse in detergent (NSN: 7930-00-559-9616) and water followed by fresh, clean water. Repeat steps A.2. thru A.5.

UNUSUAL CONDITIONS

OPERATE POWER DISTRIBUTION BOX (PDB) - RESET CIRCUIT BREAKERS

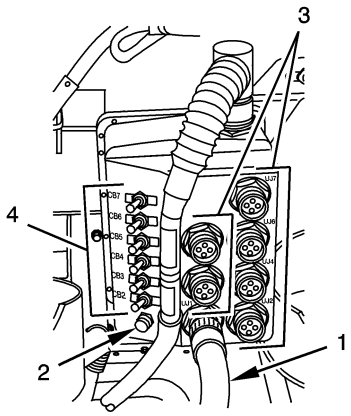
NOTE

Circuit breaker CB1 is used to control power supplied to connector UJ1. Circuit breakers CB2 through CB7 are used to control power supplied to connectors UJ2 through UJ7 respectively.

A. To reset circuit breaker CB1, associated with connector UJ1 (1), depress plunger of circuit breaker CB1 (2).

B. To supply power to or reset circuit breaker associated with connectors UJ2 through UJ7 (3), toggle CB2 through CB7 (4) to on position.

C. To turn off power to connectors UJ2 though UJ7 (3), toggle appropriate circuit breaker (4) to off position.



5t1232

OPERATE TANK INFANTRY PHONE (TIP) IN UNUSUAL WEATHER CONDITIONS

For procedures necessary to operate intercom system equipment in cold weather, refer to FM 31-70. For procedures necessary to operate intercom system equipment in mountain conditions, refer to FM 3-97.6. For procedures necessary to operate intercom system equipment in northern conditions, refer to FM 31-71.

TANK INFANTRY PHONE (TIP) IN NUCLEAR, BIOLOGICAL, AND CHEMICAL (NBC) DECONTAMINATION PROCEDURES

For procedures necessary to decontaminate intercom system equipment during NBC warfare conditions, see Chemical, Biological, and Radiological (CBR) Decontamination manual FM 3-11.5.

INSPECT BELLY ARMOR (INSPECT FOR BATTLE DAMAGE)

A. Inspect belly armor plate (1) for battle damage.

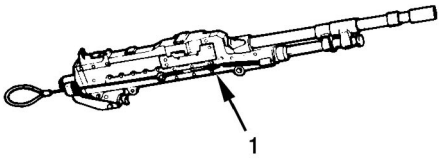
B. If damage to belly armor plate (1) would impede tank mobility, notify unit maintenance to have plate (1) cut off.

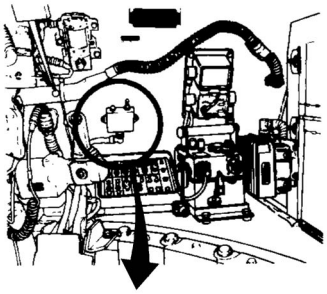
C. When mission permits, return vehicle to unit maintenance to have new plate (1) installed.

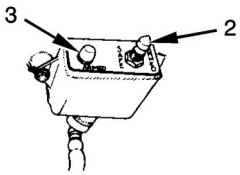
PREPARE COMMANDER'S STATION FOR ALTERNATE WEAPON (INSTALL M240 MACHINEGUN)

WARNING

- **Make sure M240 machinegun (1) is clear. Weapon can accidentally fire and injure or kill someone.**
- **Move SAFE/ARMED switch (2) to SAFE (left) position and then let go. Make sure red ARMED light (3) is not lit.**
- **Remember to always set manual safety to SAFE position until ready to fire. Accidental firing of weapons can kill or seriously injure personnel.**







CAUTION

Do not elevate or depress commander's weapon mount (4) without weapon installed. Commander's weapon station elevation crank handle assembly (5) could be damaged.

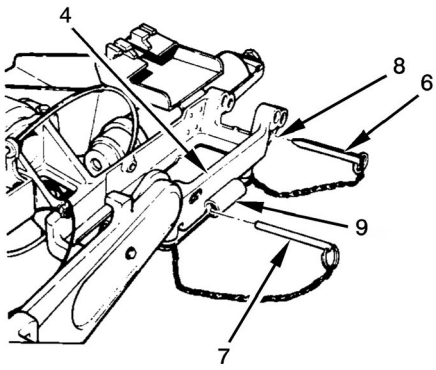
NOTE

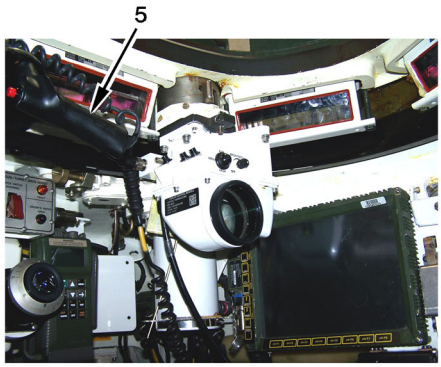
Actuator assembly must be removed from M240 machinegun (1) before it can be put into commander's weapon mount (4). Notify unit maintenance (small arms repair).

A. Remove .50 cal machinegun from commander's weapon mount (see TM 9-2350-264-10).

B. Remove flat mounting pin (6) and round mounting pin (7) from commander's weapon mount (4).

C. Put flat mounting pin (6) in hole (8) and round mounting pin (7) in stowage slot (9).





5t1607

PREPARE COMMANDER'S STATION FOR ALTERNATE WEAPON (INSTALL M240 MACHINEGUN) - Continued

D. Remove M240 machinegun mounting pins (9), (10) from commander's weapon mount (4). Let M240 machinegun mounting pins (9), (10) hang from commander's weapon mount (4).

E. Put M240 machinegun (1) with barrel installed into commander's weapon mount (4).

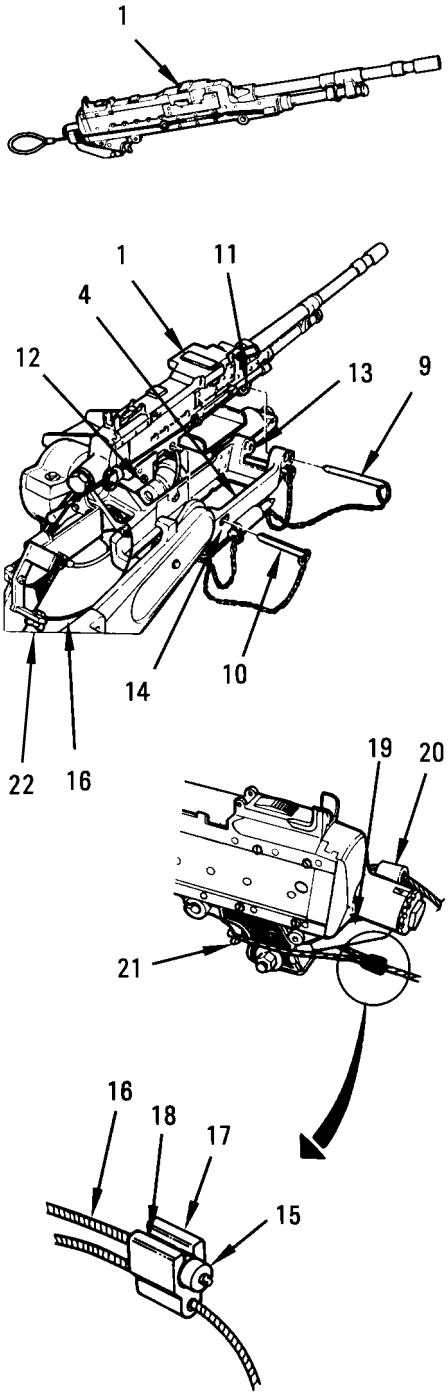
F. Line up front mounting hole (11) and rear mounting hole (12) with mounting holes (13), (14) and insert M240 machinegun mounting pins (9), (10).

G. Slide cable stop (15) at end of trigger cable (16) out of cable connector (17). Pull trigger cable (16) out of slot (18) in cable connector (17) and remove trigger cable (16) from its stowed position around bracket (19).

H. Position trigger cable (16) over rear of commander's weapon mount (4), around M240 charger guide (20), and over M240 trigger (21).

I. Place trigger cable (16) in slot (18) in cable connector (17) and pull slack out of trigger cable (16) until cable stop (15) is seated in cable connector (17) and trigger cable (16) is securely fastened around M240 trigger (21).

J. Adjust trigger cable (16) by loosening wingnut (22) and pulling trigger cable (16) until it is tight around M240 trigger (21) but M240 trigger (21) is not depressed. Tighten wingnut (22).



PREPARE COMMANDER'S STATION FOR ALTERNATE WEAPON (INSTALL M240 MACHINEGUN) - Continued

K. Depress M240 machinegun (1) and commander's weapon mount (4) to maximum depression by pulling out and turning elevation crank handle (23) clockwise.

L. Push in elevation crank handle (23) all the way to locked position.

M. Using adjustable wrench, 30-millimeter socket, and handle, unlock and loosen locknut (24).

N. Tighten equilibrator adjusting bolt (25) until you can turn locking lever (26) on rear of equilibrator (27) to cross position. This will lock out M2 spring.

O. Using 30-millimeter socket and handle, adjust equilibrator (27) by turning equilibrator adjusting bolt (25) until M240 machinegun (1) elevates and depresses smoothly with equal effort.

P. Using adjustable wrench, 30-millimeter socket, and handle, turn locknut (24) clockwise until locknut (24) is fully seated against mount.

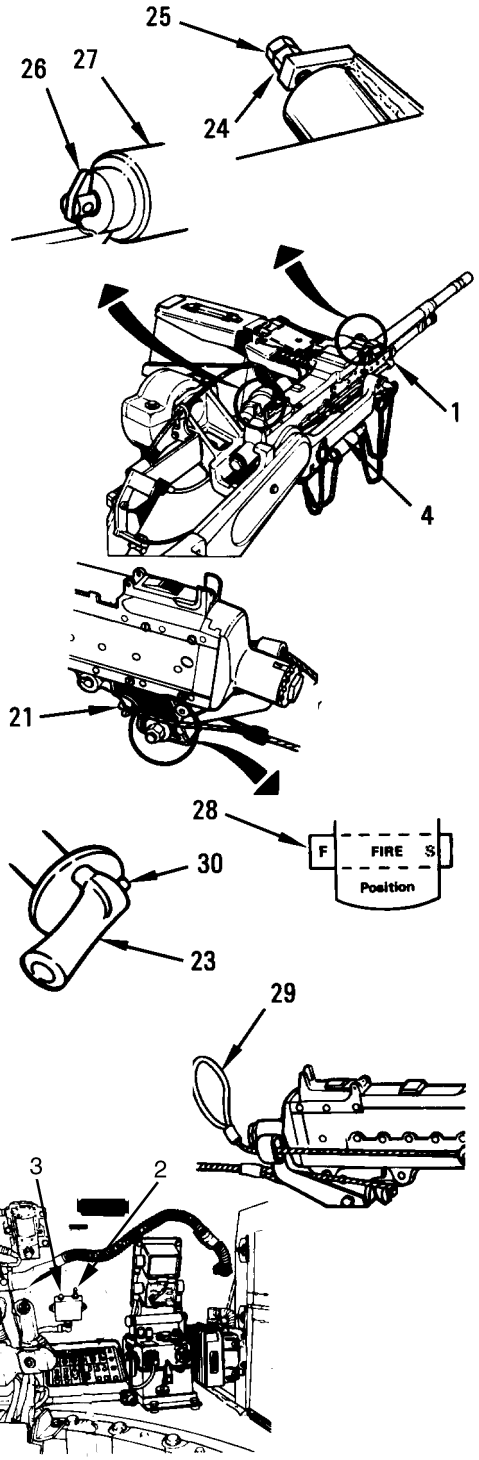
Q. Move safety (28) on M240 machinegun (1) to "F."

R. Pull charging handle (29) to the rear and charge M240 machinegun (1).

S. Set SAFE/ARMED switch (2) to ARMED (right) position and then let go. Make sure red ARMED light (3) is on.

T. Press button (30) to test M240 machinegun firing mechanism. You should hear a click. If click is not heard, troubleshoot M240 machinegun (1) (see TM 9-1005-313-10).

U. Set SAFE/ARMED switch (2) to SAFE (left) position and then let go. Make sure red ARMED light (3) goes off. If red ARMED light (3) does not go out, do troubleshooting (see 3-71).



4d0313

PREPARE COMMANDER'S STATION FOR ALTERNATE WEAPON (INSTALL M240 MACHINEGUN) - Continued

NOTE

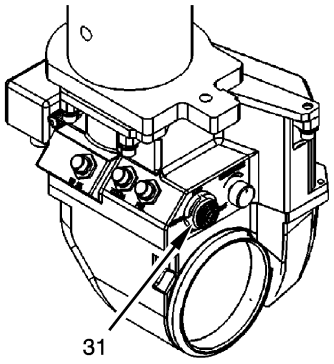
Make sure that ballistic reticle in display control module (DCM) is for M240 machinegun. Check that both the CWS day TV and thermal sight have been boresighted for the M240 machinegun.

V. Select appropriate weapon.

1. Press and hold DCM MENU button (31) left until menu is displayed. Press MENU button (31) up/down to highlight weapon. Press MENU button (31) right to change weapon.

W. Boresight CWSS day TV (see 3-112).

X. Boresight CWS thermal sight (see 3-112).



OPERATE COMMANDER'S STATION WITH ALTERNATE WEAPON (FIRE M240 MACHINEGUN)

WARNING

Remember to always set manual safety to SAFE position until ready to fire. Accidental firing of weapons can kill or seriously injure personnel.

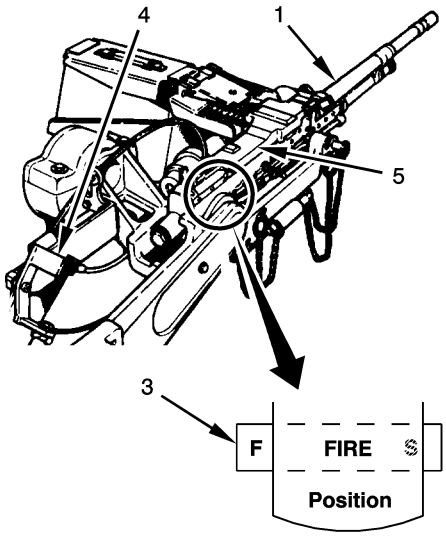
A. Install M240 machinegun (1) in commander's weapon mount (see 3-56).

NOTE

Make sure that ballistic reticle in display control module (DCM) is for M240 (2) machinegun. Check that both the CWS day TV and thermal sight have been boresighted for the M240 (2) machinegun.

B. Load M240 machinegun (1) (see 3-48).

C. Move safety (3) on M240 machinegun (1) to "F."

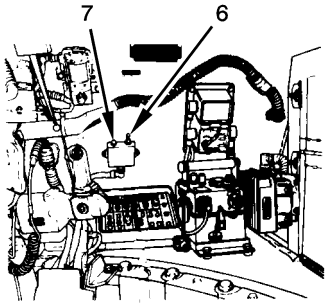


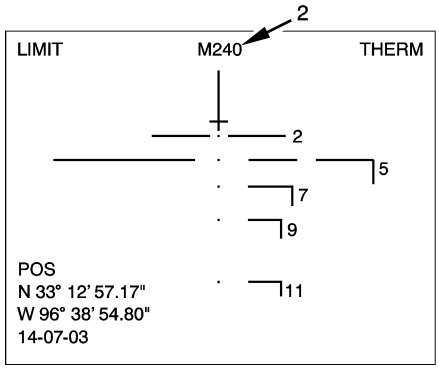
WARNING

- **M240 machinegun (1) will now fire if firing lever (4) is pushed.**
- **If M240 machinegun (1) has fired more than 200 rounds within 2 minutes or has fired a long, continuous burst, it is considered a HOT GUN.**
- **When the M240 machinegun (1) is hot, it can accidentally fire, causing injury or death. Keep all personnel clear of muzzle until M240 machinegun (1) has cooled.**
- **Keep cover (5) closed and M240 machinegun (1) pointed at target downrange. ALLOW M240 MACHINEGUN (1) TO COOL FOR AT LEAST 15 MINUTES.**

D. Alert crew on intercom by announcing "MACHINEGUN."

E. Move SAFE/ARMED switch (6) to ARMED (right) position and then let go. Be sure red ARMED light (7) comes on. If red ARMED light (7) does not come on, notify unit maintenance.





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OPERATE COMMANDER'S STATION WITH ALTERNATE WEAPON (FIRE M240 MACHINEGUN) - Continued

NOTE

- **For power mode operation of the commander's weapon station, (see TM 9-2350-264-10).**
- **For manual mode operation of the commander's weapon station, (see TM 9-2350-264-10).**

F. Look through DCM (8) or unity periscope (9) and steel sights underneath weapon, and lay machinegun on target using power or manual controls (see TM 9-2350-264-10).

G. To fire M240 machinegun (1), press down on button (10) on elevation crank handle (11). Release button (10) to cease firing.

NOTE

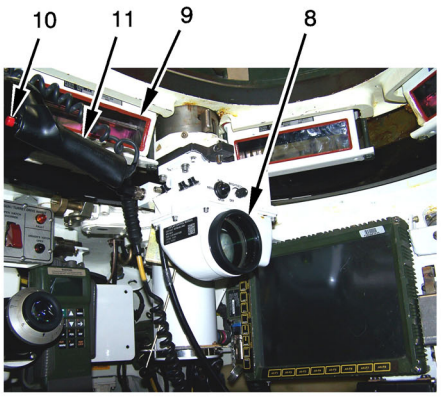
- **If M240 machinegun (1) does not fire, perform failure-to-fire procedures (see TM 9-2350-264-10).**
- **If M240 machinegun (1) does not cease firing, perform runaway firing procedures (see TM 9-2350-264-10).**

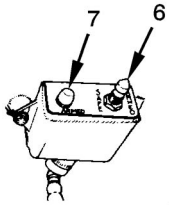
H. Alternate method of fire: Push on firing lever (4). Release firing lever (4) to cease firing.

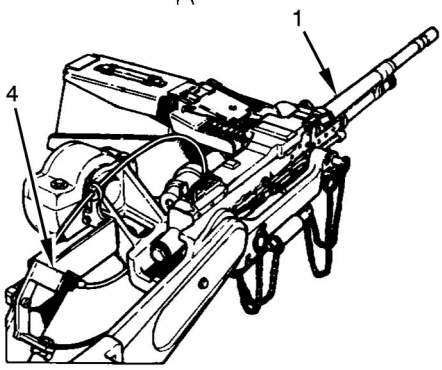
I. Move SAFE/ARMED switch (6) to SAFE (right) position and then let go. Make sure red ARMED light (7) goes out.

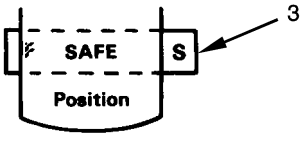
J. Clear M240 machinegun (1) (see TM 9-2350-264-10).

K. Move safety (3) on M240 machinegun (1) to "S."









REMOVE INJURED CREWMEMBER FROM TANK (REMOVE INJURED DRIVER THROUGH DRIVER'S HATCH)

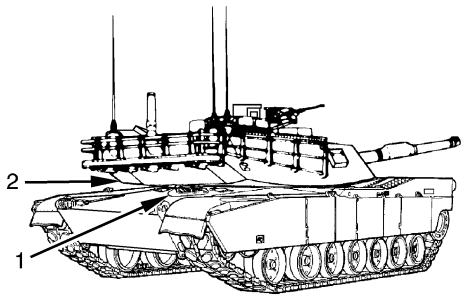
WARNING

Before traversing turret, make sure driver's body is clear of turret or you could kill him.

NOTE

- **Three crewmembers are needed to remove injured driver through driver's hatch (1).**
- **Use this procedure only if medical personnel are not available.**
- **If driver's hatch is open, go to step D.**

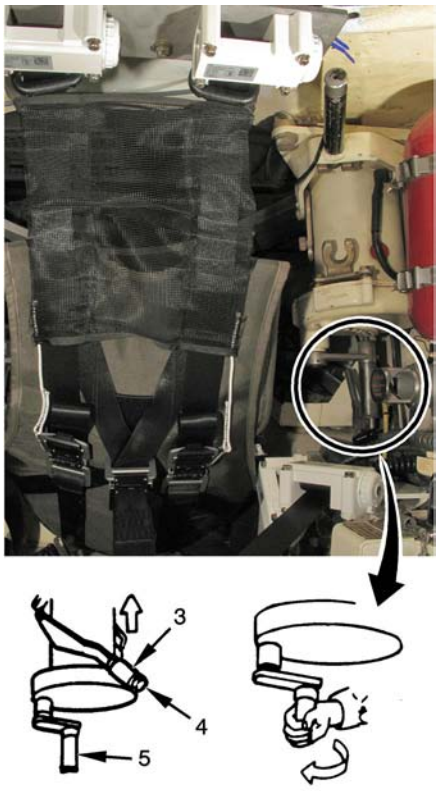
A. Crewmember in turret, traverse turret (see TM 9-2350-264-10) so that driver's hatch (1) is under rear of turret (2) and main gun is over rear deck.



B. Lock turret lock (see TM 9-2350-264-10).

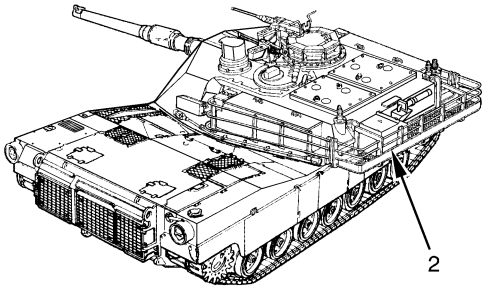
C. Crewmember in turret, open driver's hatch (1) as follows:

1. Swing loader's safety guard open (see TM 9-2350-264-10).
2. Reach into driver's compartment and grasp handle (3).
3. Press button (4) and push up on handle (3) all the way and then let go.
4. Turn crank (5) clockwise to open driver's hatch.
5. Swing loader's safety guard closed (see TM 9-2350-264-10).



D. Crewmember in turret, unlock turret lock (see TM 9-2350-264-10).

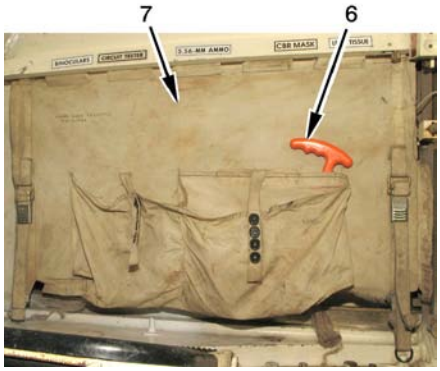
E. Crewmember in turret, traverse turret (see TM 9-2350-264-10) so that rear of turret (2) is over right or left side of tank.



REMOVE INJURED CREWMEMBER FROM TANK (REMOVE INJURED DRIVER THROUGH DRIVER'S HATCH) - Continued

F. Crewmember in turret, lock turret lock (see TM 9-2350-264-10).

G. Crewmember remove rescue knife (6) from commander's curtain (7) and keep for later use.

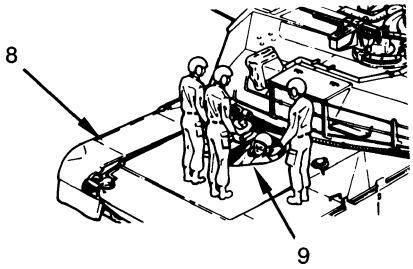


H. Three crewmembers, get on hull (8) around driver's hatch opening (9).

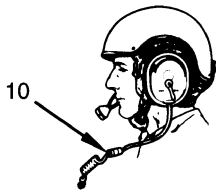
I. One crewmember on hull (8), reach into driver's hatch opening (9) and disconnect leads to driver's helmet at quick-disconnect (10).

WARNING

Failure to ensure that vehicle main engine is shut off before performing injured driver removal may result in damage to equipment and death or injury to personnel.



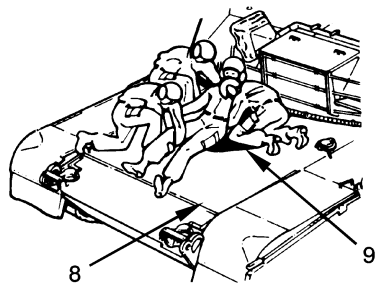
J. Stow driver's steer-throttle control (see TM 9-2350-264-10) and set shift selector to L (low).



5t1538

REMOVE INJURED CREWMEMBER FROM TANK (REMOVE INJURED DRIVER THROUGH DRIVER'S HATCH) - Continued

K. Crewmember on right side of driver's hatch opening (9) supports driver's weight by holding up on four-point harness (11). Crewmembers on left side of driver's hatch opening (9) places both UPPER (12) and LOWER (13) control handles into the unlock (red) position (14).



L. Crewmember on left side of driver's hatch opening (9) place UPPER control handle (12) into the ADJUST (yellow) position (15).

M. Using four-point harness (11), both crewmembers pull up on driver until driver's feet can be placed on floor directly under driver's torso.

N. Place driver's feet on floor.

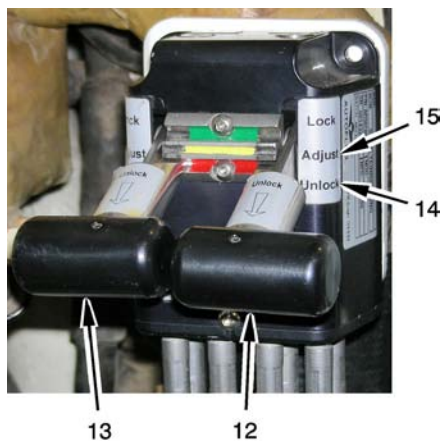
NOTE

- **If four-point harness will not release, use rescue knife to cut harness (see 3-66).**
- **Additional rescue knife is located next to left front retractor in driver's station.**

O. Release four-point harness (11) and leg straps (16).

P. All three crewmembers grasp driver as necessary and lift straight up and out of driver's compartment.

Q. Lay injured driver on hull (8) and give first aid.



USE RESCUE KNIFE

WARNING

- **Rescue knife is extremely sharp. Ensure personnel are clear of blade opening prior to use to prevent injury.**
- **Ensure crewmember's weight is supported prior to cutting any seat straps to prevent crewmember from falling.**

CAUTION

Use of rescue knife will result in damage to driver's seat and tank becoming non-mission capable. Only use rescue knife in extreme emergency.

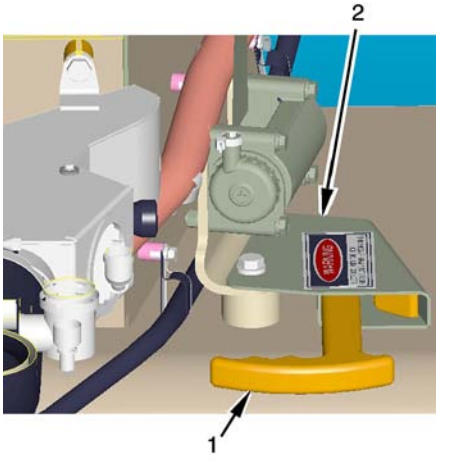
A. Pull rescue knife (1) from storage bracket (2) in driver's station or commander's curtain (3).

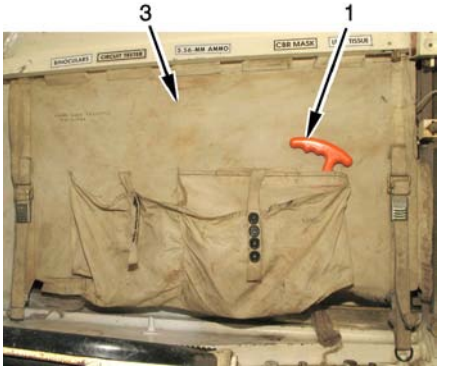
B. Hold knife (1) by handle and position strap to be cut into opening of V notch (4).

C. Using firm, steady pressure, pull knife (1) to cut belt or strap.

D. Repeat step C as required.

E. Replace knife (1) in storage bracket (2) in driver's station or commander's curtain (3) when mission permits.





5t1550

REMOVE INJURED CREWMEMBER FROM TANK (REMOVE INJURED CREWMEMBER THROUGH LOADER'S HATCH)

WARNING

Before traversing turret, make sure driver's body is clear of turret or you could kill him.

NOTE

- **Three crewmembers are needed to remove injured crewmember through loader's hatch.**
- **Use this procedure only if medical personnel are not available.**
- **To remove injured driver through loader's hatch, begin at step A.**
- **To remove another injured crewmember through loader's hatch, do steps C thru I and O thru S.**

A. Crewmember in turret, traverse turret (see TM 9-2350-264-10) so that driver's hatch (1) is under rear of turret (2) and main gun is over rear deck.

B. Lock turret lock (see TM 9-2350-264-10).

C. Open loader's hatch (see TM 9-2350-264-10).

D. If equipped with LAGS fence (3) only, lift pin (4) and rotate fence away from loader's hatch.

NOTE

If equipped with both LAGS fence (3) and force protection loader's shield (5), loader's shield (5) may lay on top of LAGS fence (3) for crewmember removal.

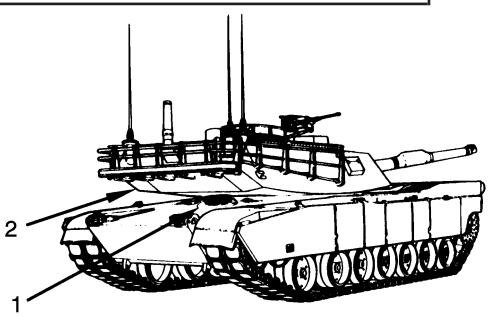
E. If equipped with force protection loader's shield (5), lower loader's shield (5) (see 3-48.2).

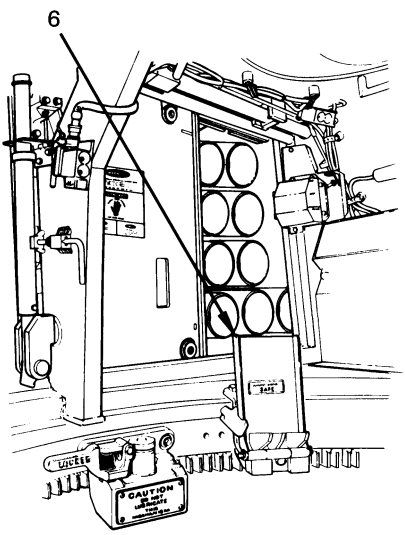
F. Prepare loader's machinegun for travel (see TM 9-2350-264-10).

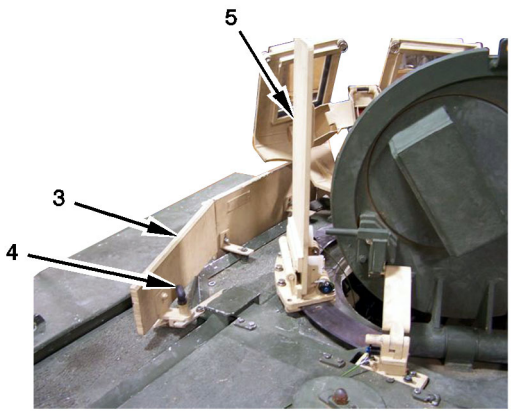
G. Stow loader's guards (see TM 9-2350-264-10).

H. Stow loader's seat (see TM 9-2350-264-10).

I. Swing knee switch (6) up to safe position.







REMOVE INJURED CREWMEMBER FROM TANK (REMOVE INJURED CREWMEMBER THROUGH LOADER'S HATCH) - Continued

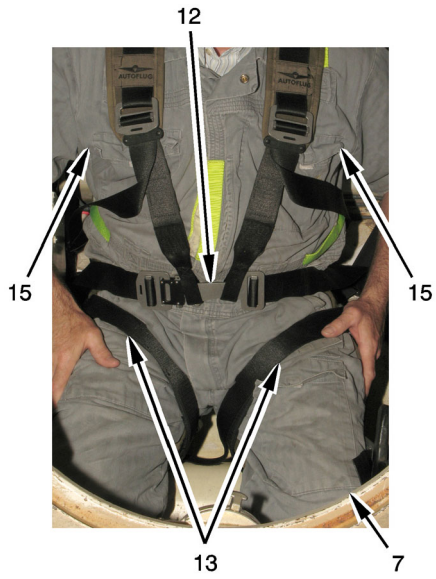
J. Swing loader's safety guard open (see TM 9-2350-264-10).

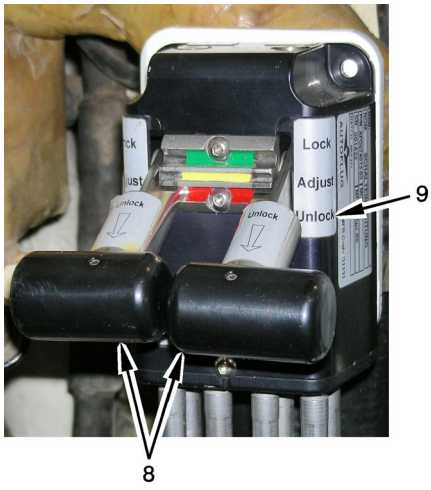
K. Crewmember in turret, reach into driver's station (7) and adjust seat as follows:

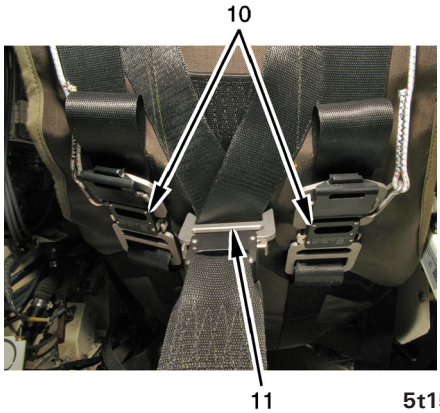
1. Place both seat control handles (8) into the UNLOCK (red) position (9).
2. Disconnect two upper retractor belts (10) and center retractor belt (11) on back of driver's seat and gently lower driver's head to floor.
3. Crewmember in turret reaches into driver's station and releases four-point harness (12) and leg straps (13).

L. Crewmember in turret, reach into driver's station (7) and disconnect lead to driver's helmet at quick-disconnect (14).

M. One crewmember in turret, grasp injured driver under arms (15) and pull up into turret. Another crewmember in turret, grasp injured driver and help pull injured driver into turret.



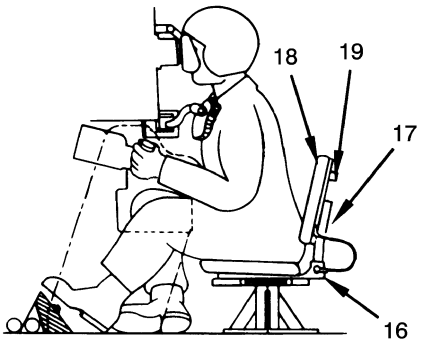




5t1543

REMOVE INJURED CREWMEMBER FROM TANK (REMOVE INJURED CREWMEMBER THROUGH LOADER'S HATCH) - Continued

N. If gunner is being removed, pull pins (16) from seat back posts (17) and pull off seat back (18) by grabbing strap (19).



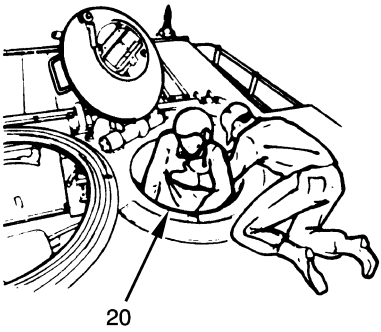
O. Two crewmembers in turret move injured crewmember to area under loader's hatch opening (20).

P. One crewmember, get on turret next to loader's hatch opening (20).

Q. Close loader's knee guard (see TM 9-2350-264-10).

R. Close loader's safety guard (see TM 9-2350-264-10).

S. All three crewmembers, lift injured crewmember through loader's hatch opening (20). Lay injured crewmember on turret and give first aid.



SYMPTOM (MALFUNCTION) INDEX

Troubleshooting Table

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

1. REMOTE THERMAL SIGHT (RTS) DOES NOT POWER UP

NOTE

- **If any turret networks box (TNB) circuit breaker is at OFF position and CB OPEN light is not lit, go to SYMPTOM 27 (refer to TM 9-2350-264-10) after completing SYMPTOM 1.**
- **If any redesigned turret networks box (RTNB) circuit breaker is at OFF, OFF (MANUAL), or TRIPPED position, and CKT BKR OPEN or CB OPEN light is not lit, notify unit maintenance after completing SYMPTOM 1. If an electronic circuit breaker on the redesigned turret networks box has been manually turned off, the CB OPEN light will not be lit until master power is cycled.**

Step 1. Check TNB circuit breaker CB22 or RTNB circuit breaker CB37.

a. If TNB circuit breaker CB22 is at OFF position, or if RTNB circuit breaker CB37 is at OFF or TRIPPED position, set to ON, go to step 2.

b. If TNB circuit breaker CB22 is at ON position, or if RTNB circuit breaker CB37 is at ON position, go to step 3.

Step 2. Check to see if RTS comes on.

a. If RTS comes on, continue with normal operation.

b. If RTS does not come on, notify unit maintenance.

Step 3. Check if any LED on right side of RTS display control module (DCM) is on.

a. If any LED is on, go to step 4.

b. If all LEDs are off, notify unit maintenance.

Step 4. Check day TV and thermal system for operation.

a. If day TV system operates and thermal system does not operate, go to symptom 3.

b. If thermal system operates and day TV system does not operate, go to symptom 2.

c. If both systems do not operate, notify unit maintenance.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

2. REMOTE THERMAL SIGHT (RTS) DAY TV SYSTEM DOES NOT WORK (THERMAL SIGHT WORKS)

Step 1. Make sure BRIGHTNESS/control knob on RTS display control module (DCM) is turned all the way clockwise.

Step 2. Press the VID SEL button on DCM until the display is set for day TV.

Step 3. Press the MENU button on DCM until the menu is displayed.

a. If menu is displayed, go to step 4.

b. If menu is not displayed, go to step 5.

Step 4. Perform .50 cal BIT.

a. If day TV image appears, continue mission.

b. If day TV image does not appear, BIT cannot be performed, or BIT shows day TV fault, go to step 5.

Step 5. Cycle MASTER POWER off, then to on.

a. If day TV image appears, continue mission.

b. If day TV image does not appear, BIT cannot be performed, or BIT shows day TV fault, notify unit maintenance.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

3. REMOTE THERMAL SIGHT (RTS) THERMAL SIGHT DOES NOT WORK (DAY TV SYSTEM WORKS)

Step 1. Make sure BRIGHTNESS/control knob on RTS display control module (DCM) is turned all the way clockwise.

Step 2. Press the VID SEL button on DCM until display is set for .50 caliber thermal.

Step 3. Press the MENU button on DCM until the menu is displayed.

a. If menu is displayed, go to step 4.

b. If menu is not displayed, go to step 5.

Step 4. Perform .50 cal BIT.

a. If thermal image appears, continue mission.

b. If thermal image does not appear, BIT cannot be performed, or BIT shows thermal sight fault, go to step 5.

Step 5. Cycle MASTER POWER off, then to on.

a. If thermal image appears, continue mission.

b. If thermal image does not appear, BIT cannot be performed, or BIT shows thermal sight fault, notify unit maintenance.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

4. LOADER'S THERMAL WEAPON SIGHT (LTWS) DOES NOT POWER UP

Step 1. Check power distribution box (PDB) circuit breaker CB6.

a. If PDB circuit breaker CB6 is off, go to step 2.

b. If PDB circuit breaker CB6 is not off, notify unit maintenance.

Step 2. Attempt to reset PDB circuit breaker CB6 (see 3-54).

a. If PDB circuit breaker CB6 will not reset or turns off again, notify unit maintenance.

b. If PDB circuit breaker CB6 stays on, continue mission.

5. LOADER'S THERMAL WEAPON SIGHT (LTWS) DOES NOT OPERATE PROPERLY

Step 1. Set TURRET POWER switch to ON.

Step 2. Set S1 on vehicle power adapter (VPA) to ON.

Step 3. Check if an LED comes on when BIT switch on VPA is set to any position (except LED off).

a. If any LED comes on, power to VPA is OK. Notify unit maintenance.

b. If an LED does not come on in any position of BIT switch, do procedure for symptom LOADER'S THERMAL WEAPON SIGHT (LTWS) DOES NOT POWER UP.

6. COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) DOES NOT POWER UP

Step 1. Check power distribution box (PDB) circuit breaker CB7.

a. If PDB circuit breaker CB7 is off, go to step 2.

b. If PDB circuit breaker CB7 is not off, notify unit maintenance.

Step 2. Attempt to reset PDB circuit breaker CB7 (see 3-54).

a. If PDB circuit breaker CB7 will not reset, or turns off again, notify unit maintenance.

b. If PDB circuit breaker CB7 stays on, continue mission.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

7. COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) .50 CAL MACHINEGUN DOES NOT FIRE OR FIRES ERRATICALLY

WARNING

Remember to always set manual safety to SAFE position until ready to fire. Accidental firing of weapons can kill or seriously injure personnel.

Step 1. Do immediate action for FAILURE-TO-FIRE for .50 cal machinegun (see TM 9-2350-264-10).

Step 2. Check headspace and timing (see TM 9-1005-213-10).

Step 3. Check electrical connectors at gun solenoid.

a. If electrical connectors are loose, tighten.

b. If electrical connectors are damaged, notify unit maintenance.

c. If electrical connectors are OK, go to step 4.

Step 4. Make sure SAFE/ARMED switch on rate of fire system (RFS) control box is set to ARMED (see 3-18).

Step 5. Gunner attempts to fire CSAMM mounted .50 cal machinegun from trigger while loader listens for a click from gun solenoid.

a. If gun solenoid clicks, go to step 6.

b. If gun solenoid does not click, notify unit maintenance.

Step 6. Check gun solenoid for mounting wedge tightness.

a. If gun solenoid is tight, go to step 7.

b. If gun solenoid is not tight, tighten gun solenoid mounting and repeat step 5.

Step 7. Check gun solenoid timing adjustment (see ST 3-20.12-6).

a. If gun solenoid is out of adjustment, do adjustment procedure (see ST 3-20.12-6).

b. If gun solenoid is adjusted properly, notify unit maintenance.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

8. COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) SPOTLIGHT DOES NOT OPERATE PROPERLY. CSAMM MACHINEGUN FIRES.

Step 1. Set MASTER POWER switch to OFF.

Step 2. Check + (positive) and — (negative) connections on spotlight.

a. If connections are not OK, go to step 3.

b. If connections are OK, notify unit maintenance.

Step 3. Connect + (positive) and/or — (negative) connections on spotlight.

a. If spotlight works, continue mission.

b. If spotlight does not work, notify unit maintenance.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

9. COMMANDER'S SPOTLIGHT DOES NOT POWER UP OR CIRCUIT BREAKER CB5 ON POWER DISTRIBUTION BOX SHUTS OFF

Step 1. Check turret networks box or redesigned turret networks box circuit breaker CB33 (refer to TM 9-2350-264-10).

NOTE

- **If any turret networks box circuit breaker is at OFF position and CKT BKR OPEN or CB OPEN light is not lit, go to SYMPTOM 27 (refer to TM 9-2350-264-10) after completing this symptom.**
- **If any redesigned turret networks box circuit breaker is at OFF, OFF (MANUAL), or TRIPPED position and CKT BKR OPEN or CB OPEN light is not lit, go to SYMPTOM 27 (refer to TM 9-2350-264-10) after completing this symptom. If an electronic circuit breaker on the redesigned turret networks box has been manually turned off, the CIRCUIT BREAKER OPEN light will not be lit until master power is cycled.**

a. If turret networks box or redesigned turret networks box circuit breaker CB33 is at OFF or TRIPPED position, go to step 2.

b. If turret networks box or redesigned turret networks box circuit breaker CB33 is at ON position, go to step 3.

Step 2. Attempt to reset turret networks box or redesigned turret networks box circuit breaker CB33 (refer to TM 9-2350-264-10).

a. If turret networks box or redesigned turret networks box circuit breaker CB33 will not reset or trips again, notify unit maintenance.

b. If turret networks box or redesigned turret networks box circuit breaker CB33 resets, continue mission.

Step 3. Check quick-disconnect cable connector on commander's spotlight.

a. If commander's spotlight quick-disconnect cable connector is loose, fully seat connector.

b. If commander's spotlight quick-disconnect cable connector is fully seated, notify unit maintenance.

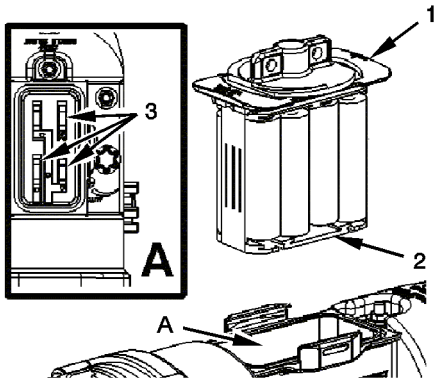
MAINTENANCE PROCEDURES

MAINTENANCE PROCEDURE INDEX

MAINTAIN LOADER'S THERMAL WEAPON SIGHT (BATTERY BOX AND/OR BATTERY RACK CLEANING)

A. Wipe battery box (1), battery box contacts (2), and battery rack contacts (3) with rags (NSN: 7920-00-205-1711) to remove dirt, grease or other foreign matter.

B. Inspect battery rack contacts (3) and battery box contacts (2) for damage, moisture, and corrosion. Turn in thermal sight to unit maintenance for repair as required.



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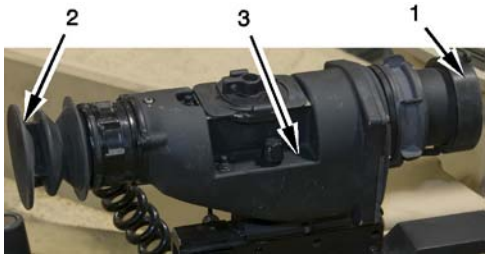
MAINTAIN LOADER'S THERMAL WEAPON SIGHT (EXTERIOR CLEANING)

A. Make sure objective lens cover (1) is closed and eyecup (2) is in place.

B. Wipe thermal sight module (TSM) (3) with rags (NSN: 7920-00-205-1711) to remove dust, dirt, grease, or other foreign matter.



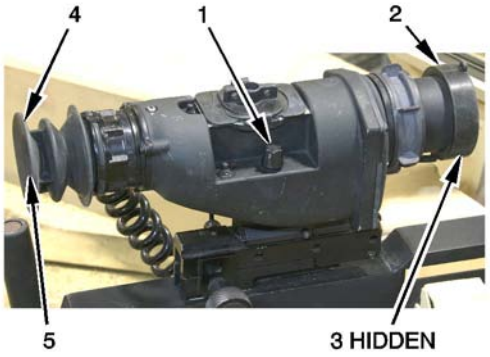
MAINTAIN THERMAL SIGHTS (CLEAN LENSES)

NOTE

- **This task can be used to clean lenses for loader's thermal weapon sight (LTWS) and remote thermal sight (RTS). To clean LTWS, do steps A thru K. To clean RTS, do steps L thru P.**
- **Make sure BRIGHTNESS knob (1) is in the OFF position.**

A. Open objective lens cover (2) to expose lens (3).

B. Remove cotton pads (NSN: 8140-01-072-4276) and hand dishwashing compound (NSN: 7930-00-880-4454) from pouch of carrying case.



NOTE

Do not use excessive amounts of lens cleaning solution for cleaning.

C. Blow off excessive sand and dust.

D. Rinse off mud with water.

E. Dampen small portion of cotton pad with lens cleaning solution.

CAUTION

Avoid excessive pressure when wiping lens. Foreign matter on lens may scratch lens when wiped off.

F. Gently wipe lens (3) with wet portion of cotton pad to remove any foreign matter.

G. Repeat steps E and F as necessary.

H. Gently wipe lens (3) with dry portion of cotton pad to remove lens cleaning solution and any smears or smudges.

I. Replace objective lens cover (2).

J. Push in and hold eyecup (4) to expose eyepiece lens (5).

K. Perform steps B thru G on eyepiece lens (5).

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MAINTAIN THERMAL SIGHTS (CLEAN LENSES) - Continued

NOTE

- **To clean RTS TSM, do all steps.**
- **To clean RTS DCM, do steps N, O, and P.**

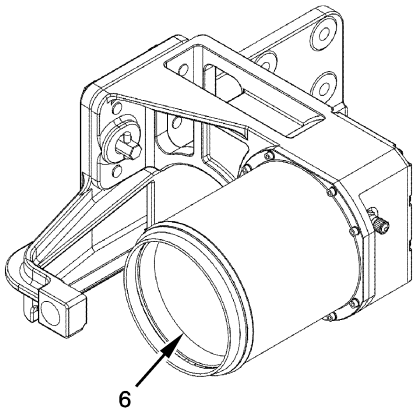
L. Blow off excessive sand and dust.

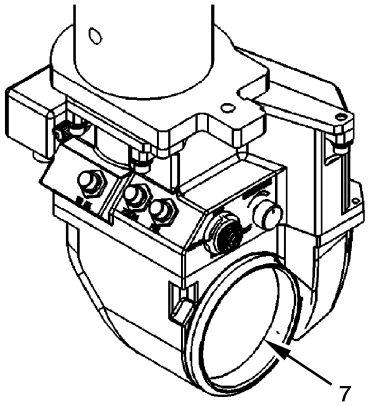
M. Rinse off mud with water.

N. Remove all dust from sight lenses (6, 7) by brushing lightly with clean brush (NSN: 8020-00-224-8024).

O. Using lens paper (NSN: 6640-00-285-4694) and lens cleaning compound (NSN: 6850-00-227-1887) and gently clean lenses (6, 7) using a circular motion.

P. Let lenses (6, 7) air dry.





MAINTAIN ABRAMS REACTIVE ARMOR TILES (REMOVE AND/OR REPLACE ARAT ARMOR TILE BOXES)

WARNING

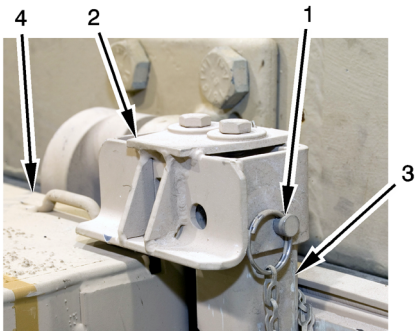
- **Safety precautions prescribed in AR 385-64, DA PAM 385-63, and DA PAM 385-64 are applicable for handling ARAT /ARAT 2 tiles.**
- **Although they are quite insensitive to initiation, armor tiles are explosively loaded and must be treated accordingly. Detonation of the explosive in armor tiles requires an extreme stimulus, such as being hit by an anti-tank warhead, but tiles can be made to ignite and burn by a much less energetic bullet impact or being subjected to a fire.**
- **ARAT tile boxes are heavy and require a two soldier lift. Attempting to lift ARAT tile boxes alone can cause injury.**
- **Before attempting to remove ARAT tile boxes, remove ARAT 2 tiles (see 3-82.2) if installed.**

CAUTION

- **Due to weight of armor tiles and to prevent strap from slipping, tie end of strap in knot prior to lifting.**
- **Always support tile when sliding into position on rails. Do not allow tile to drop to bottom of rails. Dropping tile can damage tile and rails.**

NOTE
Armor tiles are Class V items.

A. Remove rail cap pin (1).
B. Lift rail cap (2) from rails (3).
C. Install tiedown strap to tile for lifting.
D. To remove armor tiles (4):
   1. Position one crewmember on ground and one on hull.
   2. Crewmember on ground lifts tile (4) out of rail (3) while crewmember on hull pulls on carrying strap (5).
   3. Place tile (4) on hull.
   4. Both crewmembers lift and place tile (4) on ground.
   5. Repeat steps D.2 thru D.4 for remaining tiles.



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MAINTAIN ABRAMS REACTIVE ARMOR TILES (REMOVE AND/OR REPLACE ARAT ARMOR TILE BOXES) - Continued

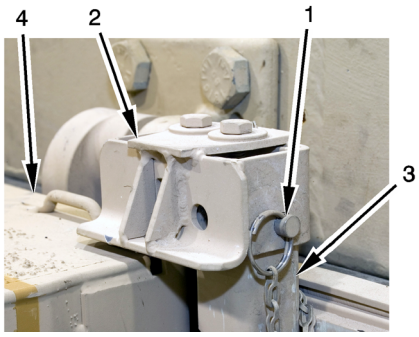
E. To install tiles (4):

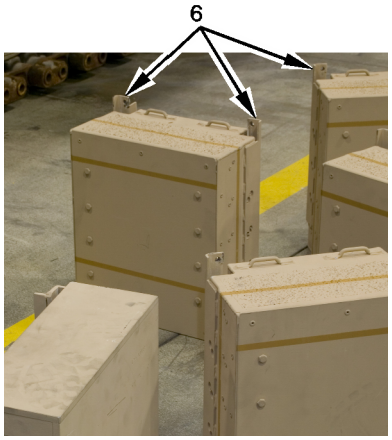
1. Crewmembers on ground lift up and place one tile (4) on hull.
2. Position one crewmember on ground and one on hull.
3. Crewmember on ground assists while crewmember on hull grasps tile (4) by carrying strap (5) and guides armor tile (4) so that flanges (6) engage first two rails (3).
4. Slide armor tile (4) down to bottom rail (3).
5. Repeat steps E.1 thru E.4 to install remaining tiles (4).

F. Remove strap (5) from tile (4).

G. Replace rail cap (2) from rail (3).

H. Replace cap pin (1).





5t1076

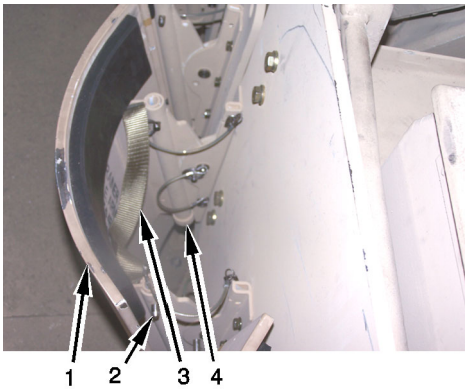
MAINTAIN ABRAMS REACTIVE ARMOR TILES (REMOVE AND/OR REPLACE ARAT 2 ARMOR TILES)

WARNING

- **Safety precautions prescribed in AR 385-64, DA PAM 385-63, and DA PAM 385-64 are applicable for handling of ARAT /ARAT 2 tiles.**
- **Although they are quite insensitive to initiation, armor tiles are explosively loaded and must be treated accordingly. Detonation of explosive in armor tiles requires an extreme stimulus, such as being hit by an anti-tank warhead, but tiles can be made to ignite and burn by a much less energetic bullet impact or being subjected to a fire.**

NOTE

- **Armor tiles are Class V items.**
- **If replacing ARAT 2 tiles on the hull, the top row must be removed before bottom row is removed.**
- **For additional crew safety information on ARAT 2 tiles, see TB 9-1375-257-13.**



A. To remove tiles (1), do the following:

1. Remove two quick-release pins (2).
2. Lift tile (1) by grasping tile strap (3) and lifting away from rails (4).

B. To install tiles (1), do the following:

1. Aline tile (1) with openings in rail (4).
2. Slide tile (1) down until tile rests against bottom of rail (4).
3. Secure tile (1) to rail (4) by installing two quick-release pins (2).

5tarat2

MAINTAIN ABRAMS REACTIVE ARMOR TILES (REMOVE AND/OR REPLACE SKIRT RAIL)

NOTE

Use this task for left or right side skirt rails. Left side skirt rail is shown.

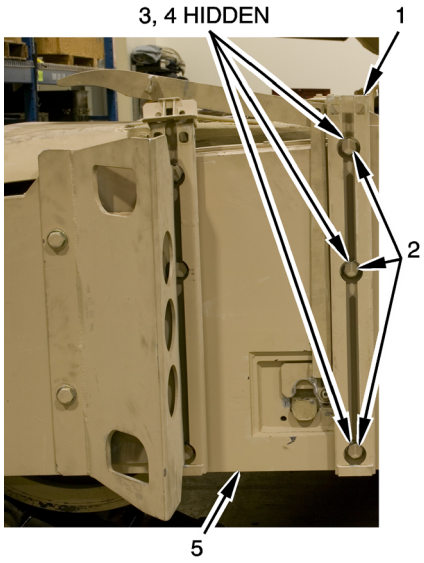
A. Remove ARAT and ARAT 2 tiles as required for access (see 3-82 and 3-82.2).

B. To remove skirt rail (1), do the following:

1. Remove screws (2), washers (3), and nuts (4) from studs on rail (1).
2. Remove rail (1) from skirt (5).

C. To replace rail (1), do the following:

1. Aline rail (1) with holes in skirt and loosely install three screws (2), six washers (3), and three nuts (4).
2. Tighten three nuts (4) and screws (2).



MAINTAIN ABRAMS REACTIVE ARMOR TILES (REMOVE AND/OR REPLACE SPLIT RAIL)

NOTE

Use this task for left or right side split rails. Left side split rail is shown.

A. Remove ARAT and ARAT 2 tiles as required for access (see 3-82 and 3-82.2).

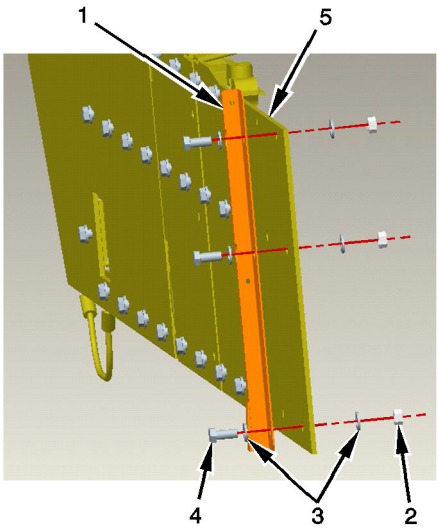
B. Open skirts for access as required (see 3-86 and 3-87).

C. To remove split rail (1), do the following:

1. Remove three nuts (2) and washers (3) from studs (4) on split rail (1).
2. Remove split rail (1) from skirt (5).

D. To replace split rail (1), do the following:

1. Place split rail (1) on skirt (5) with studs through holes in skirt (5).
2. Install three nuts (2) and washers (3) to three studs (4).
3. Tighten three nuts (2) and washers (3).



5t1058

MAINTAIN ABRAMS REACTIVE ARMOR TILES (REMOVE AND/OR REPLACE SPLIT RAIL EXTENSION)

NOTE

Use this task for any of the four split rail extensions on vehicle.

A. Remove ARAT and ARAT 2 tiles as required for access (see 3-82 and 3-82.2).

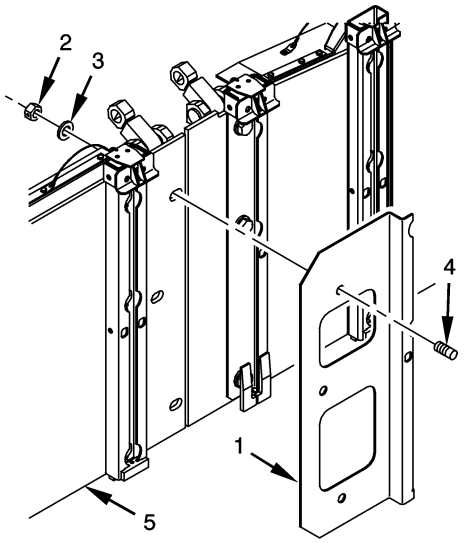
B. Open skirts for access as required (see 3-87).

C. To remove split rail extension (1), do the following:

1. Remove three nuts (2) and washers (3) from studs (4).
2. Remove extension (1) from skirt (5).

D. To replace split rail extension (1), do the following:

1. Place split rail extension (1) on skirt (5) with studs through holes in skirt (5).
2. Install three nuts (2) and washers (3) to studs (4).
3. Tighten three nuts (2) and washers (3).



MAINTAIN ABRAMS REACTIVE ARMOR TILES (OPEN/CLOSE FRONT SKIRT)

A. Remove ARAT and ARAT 2 tiles from hinge areas for access (see 3-82 and 3-82.2).

WARNING

Skirts are heavy. Do not open two skirts on same hinge line at same time. Check for missing hinge pin before opening skirt. Opening two skirts on same hinge line or opening any skirt with missing hinge pin may cause skirt to fall and injure someone.

CAUTION

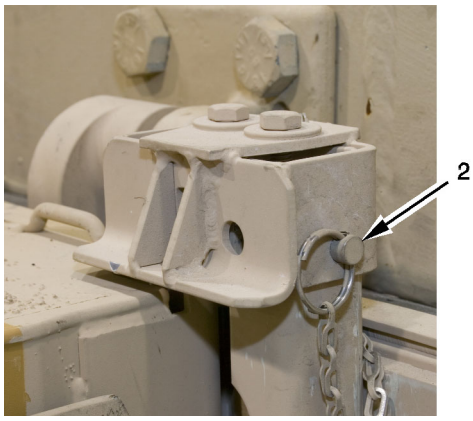
Make sure front skirt latches are fully closed to avoid damaging equipment.

B. To open the left/right front skirt (1), do the following:

1. Remove rail cap pin (2).
2. Remove spring pin from headed straight pin and set aside for later use.
3. Remove headed straight pin and set aside for later use.
4. Pull up latch handle (3) to release the latch mechanism (4). Open skirt (1) gently until locking arm reaches its limit and cannot be opened further.
5. Make sure skirt (1) number one is held open by slot of locking arm raised on shoulder of bolt.

C. To close the left/right front skirt (1), do the following:

1. If open, close front skirt (1).
2. Push down latch handle (3) to engage latch mechanism (4).
3. Insert rail cap pin (2) to secure latch handle (3).



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MAINTAIN ABRAMS REACTIVE ARMOR TILES (OPEN/CLOSE SKIRTS TWO THRU SIX)

WARNING

Skirts are heavy. Do not open two skirts on same hinge line at same time. Check for missing hinge pin before opening skirt. Opening two skirts on same hinge line or opening any skirt with missing hinge pin may cause skirt to fall and injure someone.

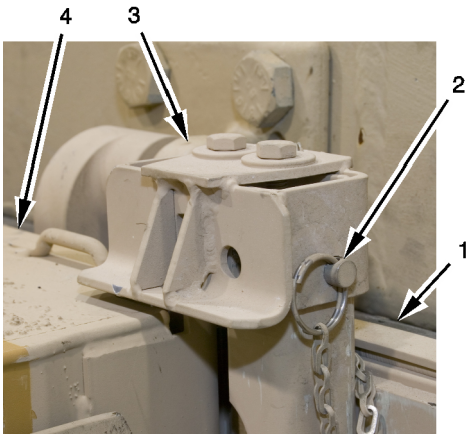
A. Remove ARAT and ARAT 2 tiles from hinge areas for access (see 3-82 and 3-82.2).

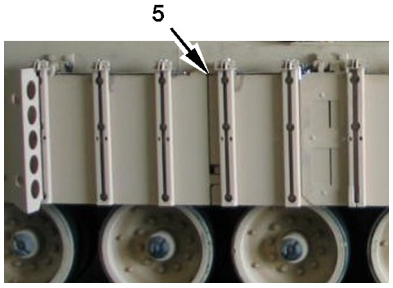
B. To open skirt (1), do the following:

1. Remove rail cap pin (2).
2. Lift rail cap (3) and remove armor tiles (4) covering hinge (5).
3. Unpin skirt (1).
4. Open skirt (1) (see TM 9-2350-264-10).

C. To close skirt (1), do the following:

1. Close the skirt (1).
2. Replace tiles (4).
3. Close rail cap (3).
4. Replace rail cap pin (2).
5. Replace skirt pin (2) to secure skirt (1) (see TM 9-2350-264-10).





MAINTAIN ABRAMS REACTIVE ARMOR TILES (REMOVE AND/OR REPLACE BRUSH GUARD)

WARNING

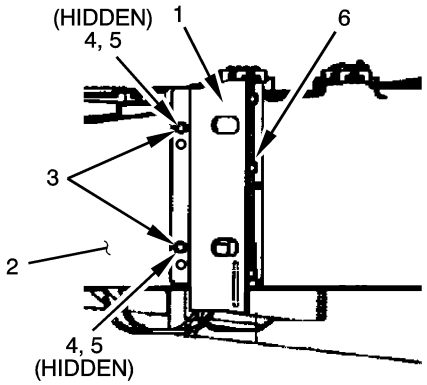
Skirt brush guards weigh 95 lbs (43 kg) each. To avoid injury, two crewmembers are needed to lift skirt brush guard.

NOTE

All skirt brush guards are interchangeable. Use this task to replace front brush guard or rear brush guard on either side of tank. Left side brush guards are shown.

A. To remove front brush guard (1), do the following:

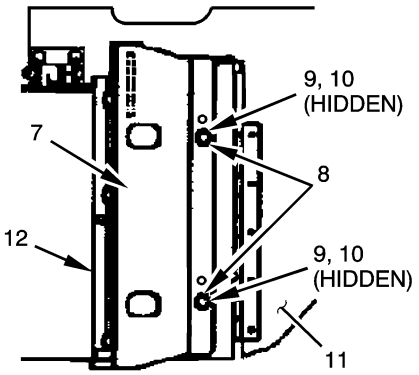
1. Open left or right side front fender (2) as required (see TM 9-2350-264-10).
2. Remove two screws (3), four washers (4), and two self-locking nuts (5) from front brush guard (1) and front fender (2).
3. Carefully lift and remove front brush guard (1) from skirt rail (6).



B. Inspect parts for damage. Replace as required.

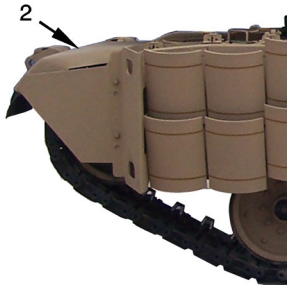
C. To install front brush guard (1), do the following:

1. Position front brush guard (1) on skirt rail (6) and aline upper holes on brush guard (1) with holes on front fender (2).
2. Install and tighten two screws (3), four washers (4), and two new self-locking nuts (5).
3. Close left or right side front fender (2) as required (see TM 9-2350-264-10).



D. To remove rear brush guard (7), do the following:

1. Remove two screws (8), four washers (9), and two self-locking nuts (10) from rear brush guard (7) and rear skirt (11).
2. Carefully lift and remove rear brush guard (7) from skirt rail (12).



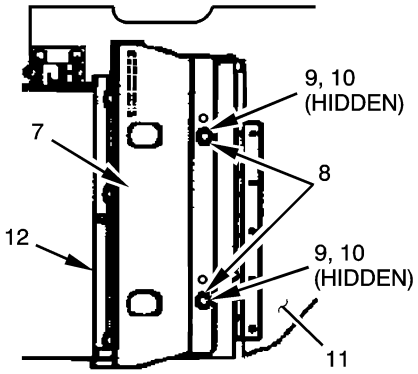
5tarat2

MAINTAIN ABRAMS REACTIVE ARMOR TILES (REMOVE AND/OR REPLACE BRUSH GUARD) - Continued

E. Inspect parts for damage. Replace as required.

F. To install rear brush guard (7), do the following:

1. Position rear brush guard (7) on skirt rail (12) and aline lower holes on brush guard (7) with holes on rear skirt (11).
2. Install and tighten two screws (8), four washers (9), and two new self-locking nuts (10).



MAINTAIN ABRAMS REACTIVE ARMOR TILES (CLEAN ARAT/ARAT 2 TILES)

CAUTION

- **Never use steel wire brushes or other rough abrasives such as steel wool or abrasive cloth on armor tiles to avoid damage to tiles.**
- **Do not use any solvent other than detergent and water or denatured alcohol to clean tiles to avoid damage.**

NOTE

Some debris may become lodged behind tiles and mounting hardware.

A. If debris is lodged behind tile(s) or mounting hardware, remove ARAT tile boxes (see 3-82) or ARAT 2 tile(s) (see 3-82.2) and remove debris.

B. Clean tile(s) with rags (NSN: 7920-00-205-1711) and denatured alcohol (NSN: 6810-00-201-0906) or rags and detergent (NSN: 7930-00-559-9616) and water.

C. Wipe tile(s) with a clean, dry rag.

D. If tile(s) were removed for cleaning, install ARAT tile boxes (see 3-82) or ARAT 2 tile(s) (see 3-82.2).

MAINTAIN ABRAMS REACTIVE ARMOR TILES (REMOVE RUST ON ARAT/ARAT 2 TILES)

WARNING

Armor tiles are painted with CARC paint which must be removed according to approved procedures. Cleaning CARC painted surfaces can release toxic fumes hazardous to your health.

A. Remove heavy rust and scale with a non-sparking, scratch wire brush (NSN: 7920-00-255-5135).

B. Buff steel surface clean with abrasive cloth (180 grit NSN: 5350-00-192-5051; or 220 grit NSN: 5350-00-192-9316; or 320 grit NSN: 5350-00-246-0330) or copper (NSN: 5350-00-255-7736) or brass metallic wool.

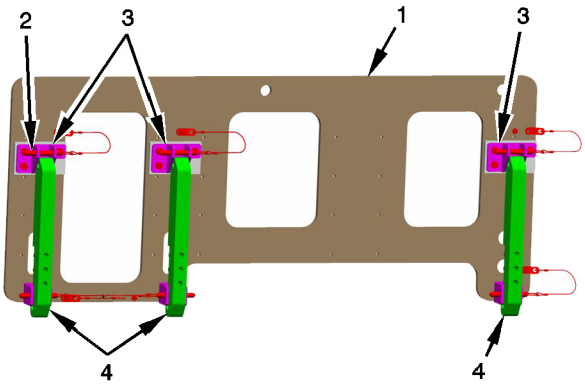
WARNING

Always wear rubber gloves (NSN: 6515-01-150-2977) when using thinner (NSN: 8010-00-181-8080) to avoid absorption through skin and to avoid de-fatting of hands.

C. Wipe the buffed surface with a clean wiping rag (NSN: 7920-00-205-1711) dampened with thinner.

D. Wipe surface with a clean, dry, wiping rag.

MAINTAIN ABRAMS REACTIVE ARMOR TILES (REMOVE/REPLACE LEFT FRONT ARAT 2 TURRET MOUNTING PLATE)



A. Traverse turret so main gun is over number two left road wheel.

B. Remove ARAT 2 tiles from front left mounting plate (1) (see 3-82.2).

C. To remove front left mounting plate (1), do the following:

1. Remove quick-release pins (2) from upper brackets (3).
2. Tilt mounting plate (1) away from upper brackets (3) using lower brackets (4) as a pivot point.
3. Remove mounting plate (1) from pivot slots on lower brackets (4).

D. Set mounting plate (1) on deck.

E. Inspect pre-cleaner and service three air cleaner assembly intake filter elements as required (see 2-17).

F. To install front left mounting plate (1), do the following:

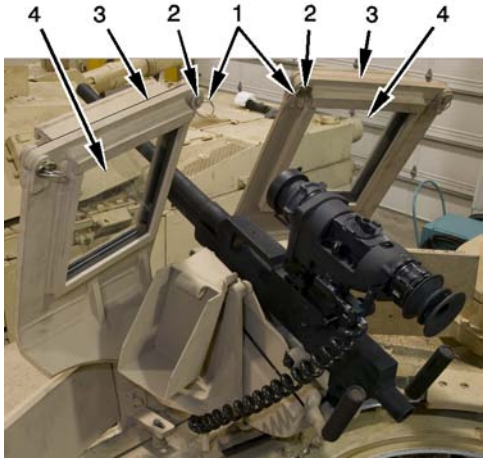
1. Install mounting plate (1) in pivot slots on lower brackets (4).
2. Tilt mounting plate (1) toward upper brackets (3) using lower brackets (4) as a pivot point.
3. Install quick-release pins (2) thru upper brackets (3).

G. Install ARAT 2 tiles on mounting plate (see 3-82.2).

MAINTAIN LOADER'S ARMORED GUN SHIELD (LAGS) (REMOVE/ INSTALL BALLISTIC GLASS)

A. Remove retaining ring (1) from pin (2).

B. Remove pin (2) from retaining bracket (3).



NOTE

Ballistic glass (4) has THREAT SIDE on the side that needs to face away from the loader.

C. Lift retaining bracket (3) to remove/ install ballistic glass (4). For installing, position glass so that the THREAT SIDE (5) is facing away from loader.

D. Close retaining bracket (3).

E. Install pin (2) in retaining bracket (3).

F. Install retaining ring (1) in pin (2).

MAINTAIN DRIVER'S HARNESS SYSTEM SEAT (REMOVE/INSTALL DRIVER'S HARNESS SYSTEM SEAT ASSEMBLY)

A. Traverse turret as needed to gain access to driver's station (see TM 9-2350-264-10).

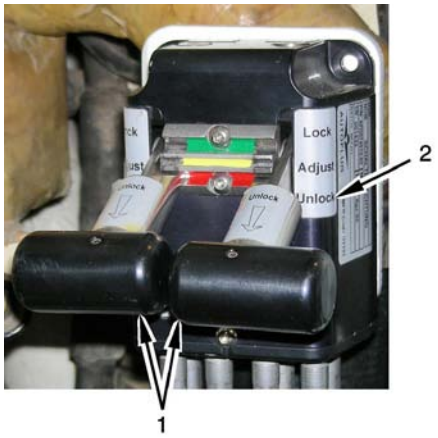
B. Make sure turret lock is set to LOCKED (see TM 9-2350-264-10).

C. Swing loader's safety guard open (see TM 9-2350-264-10).

WARNING

Do not extend any part of body between turret and driver's station unless turret lock is set to LOCKED (see TM 9-2350-264-10). You can be killed if turret is traversed while you are between turret and driver's station.

D. Ensure seat control handles (1) are in the UNLOCK (red) position (2).

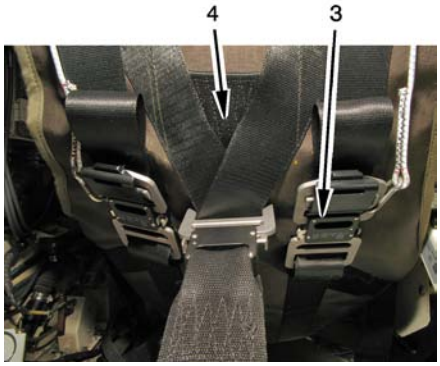


CAUTION

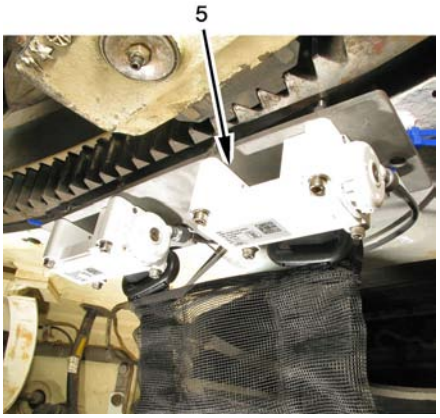
Retractor belts will spool rapidly into retractor when disconnected from seat assembly with control handle in unlock position. Hold retractor belt and slowly allow belt to spool when disconnected to prevent damage to retractor.

E. To remove seat assembly do the following:

1. Press buttons on upper right retractor belt buckle (3) to release belt from seat assembly (4) slowly allowing belt to spool into retractor (5).
2. Repeat step 1 for six remaining retractor belts.
3. Remove seat assembly (4) from driver's station.



F. Clean seat assembly (4) with detergent (NSN: 7930-00-559-9616) and water as required.



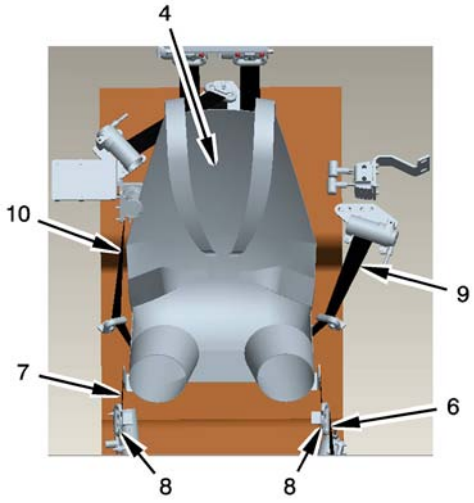
5t1553

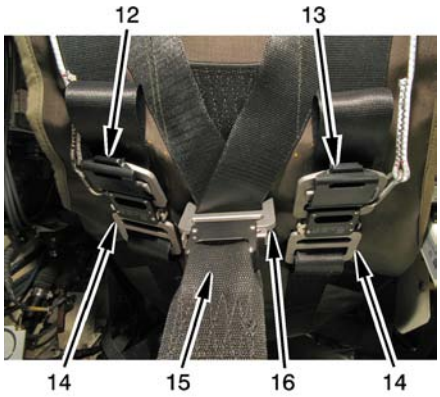
MAINTAIN DRIVER'S HARNESS SYSTEM SEAT (REMOVE/INSTALL DRIVER'S HARNESS SYSTEM SEAT ASSEMBLY) - Continued

G. To install seat assembly (4) do the following:

1. Connect left front retractor belt (6) and right front retractor belt (7) to front belt connectors (8) on seat assembly (4).
2. Connect left lower retractor belt (9) and right lower retractor belt (10) to bottom belt connectors (11) on seat assembly (4).
3. Connect left upper retractor belt (12) and right upper retractor belt (13) to upper left and upper right belt connectors (14) on seat assembly (4).
4. Connect center retractor belt (15) to upper center belt connector (16) on seat assembly (4).

H. Close loader's safety guard (see TM 9-2350-264-10).





MAINTAIN COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) (INSTALL GUN MOUNT)

NOTE

- **CSAMM mount requires no modification of .50 cal machinegun and can use either the with M10 charger or the flex.**
- **Cable guard can be mounted on either right or left side of machinegun, depending on which type you have.**

A. Park vehicle on level ground.

B. Place main gun at zero elevation (see TM 9-2350-264-10).

C. Attach 200 round ammunition can (1) to CSAMM (2) with four bolts (3) provided. Tighten bolts (3).

NOTE

All paint must be removed from mounting surface on main gun mantlet, notify unit maintenance.

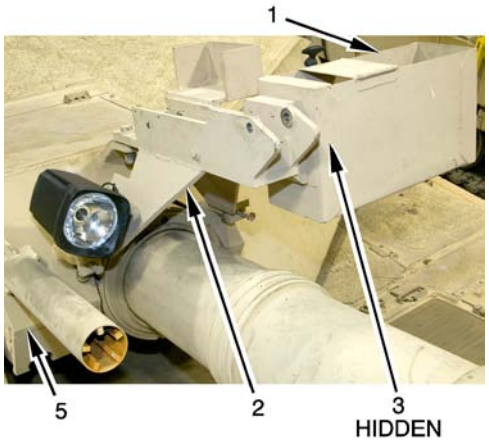
D. Place assembled mount (2) and cable guard (4) on main gun front mantlet (5) and insert two top mounting bolts (6), washers (7), cable guard (4), lockwashers (8), and lock nuts (9) in top mounting point on mantlet (5).

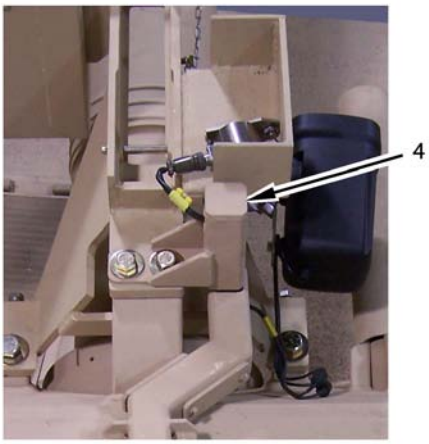
E. Install two lower mounting bolts (10), washers (11), lockwashers (12), and lock nuts (13) in lower mounting points in mantlet (5).

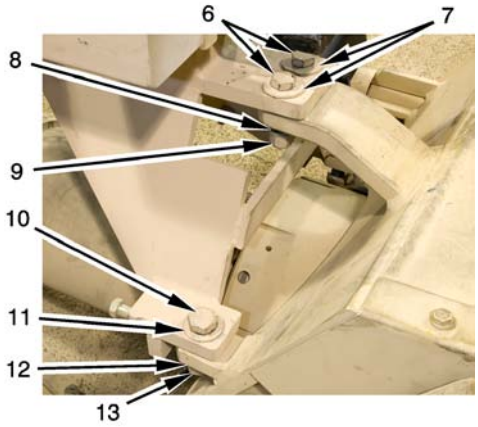
NOTE

Do not over tighten bolts and nuts so that adjustments can be made during boresighting and zeroing procedure (ST 3-20.12-6).

F. Snug bolts (6, 10) and lock nuts (9, 13).







5t1077

MAINTAIN COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) (INSTALL GUN MOUNT) - Continued

WARNING

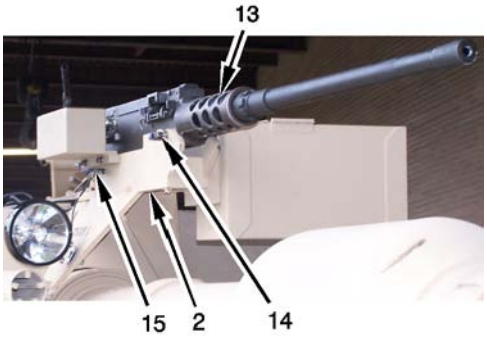
Before doing any maintenance, unload machinegun and check receiver to make sure weapon is clear of ammunition or obstruction. Accidental firing of weapon can kill or seriously injure personnel.

G. Install fully assembled .50 cal machinegun (13) on mount (2). Insert front and rear mounting pins (14, 15).

H. Install G-9 solenoid (see 3-97).

I. Install spotlight (see 3-101).

J. Attach pull cable assembly (see 3-99).



MAINTAIN COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) (REMOVE GUN MOUNT)

WARNING

Before doing any maintenance, unload machinegun and check receiver to make sure weapon is clear of ammunition or obstruction. Accidental firing of weapon can kill or seriously injure personnel.

NOTE

Cable guard can be mounted on either right or left side of machinegun, depending on which type you have.

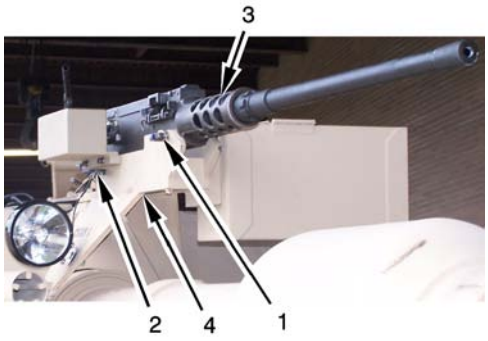
A. Place main gun at zero elevation (see TM 9-2350-264-10).

B. Detach pull cable assembly (see 3-100).

C. Remove G-9 solenoid from machinegun (see 3-98).

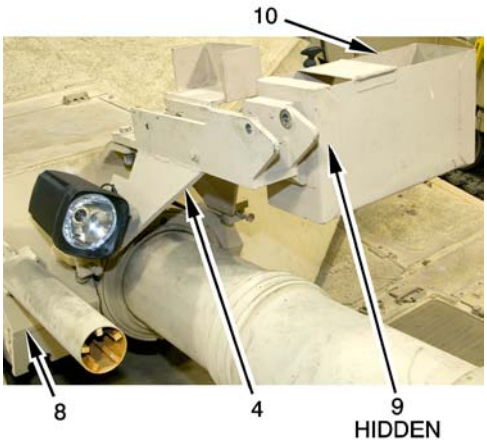
D. Remove spotlight from mount (see 3-102).

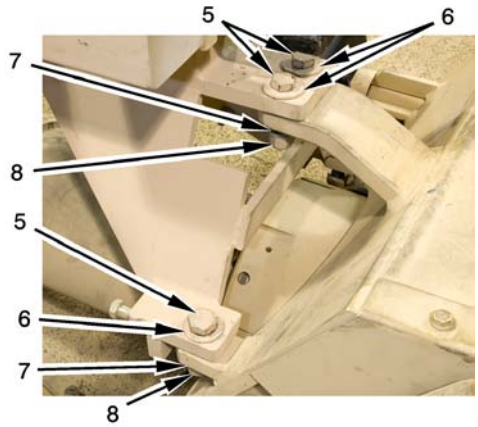
E. Remove front and rear machinegun mounting pins (1, 2). Remove machinegun (3) from mount (4).



F. Remove four bolts (5), washers (6), lockwashers (7), and lock nuts (8) from mount (4). Remove mount (4) from mantlet (8).

G. Remove four bolts (9) from ammunition can (10). Remove can (10) from mount (4).





5t1209

MAINTAIN COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) (INSTALL G-9 SOLENOID)

WARNING

Before doing any maintenance, unload machinegun and check receiver to make sure weapon is clear of ammunition or obstruction. Accidental firing of weapon can kill or seriously injure personnel.

NOTE

- **Solenoid fits on left side of M2HB flex with charging handle or on right side of M2HB with M10 charging cable.**
- **Make sure flat side of sear slide is facing side where G-9 solenoid is to be attached. Sear slide is on rear of bolt. If flat side of sear slide is not facing solenoid, remove bolt, remove sear slide, and reinstall with flat side facing solenoid (see TM 9-1005-213-10).**

A. Install gun mount (see 3-94).

B. Remove cotter pin (1) and loosen nut (2), but do not remove mounting bolt wedge (3) from solenoid (4).

C. Face electrical connector (5) on solenoid (4) toward muzzle of machinegun (6). Insert loosened wedge (3) into small rectangular hole (7) on left or right side of machinegun (6).

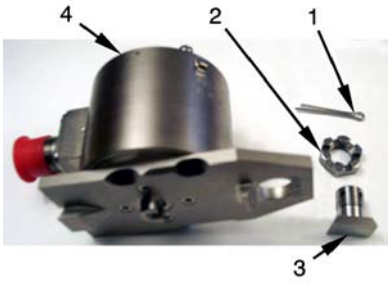
D. Insert forward lip of solenoid (4) into large rectangular hole (8).

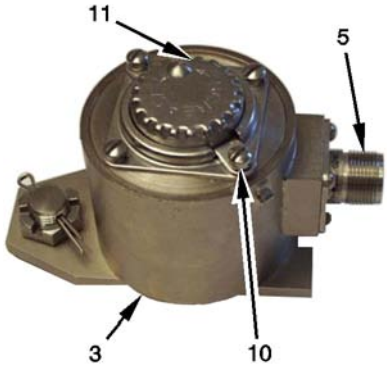
E. Make sure that wedge (3) is flush on inside of side plate (9) on machinegun (6).

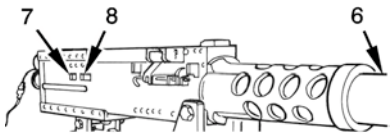
F. Tighten wedge (3). Do not over tighten. Install cotter pin (1).

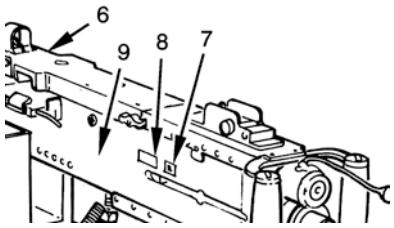
G. Loosen two solenoid timing wheel screws (10) and turn timing wheel (11) all the way clockwise until it stops. Leave timing wheel (11) in this position.

H. Connect harness to solenoid connector (5).









MAINTAIN COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) (REMOVE G-9 SOLENOID)

WARNING

Before doing any maintenance, unload machinegun and check receiver to make sure weapon is clear of ammunition or obstruction. Accidental firing of weapon can kill or seriously injure personnel.

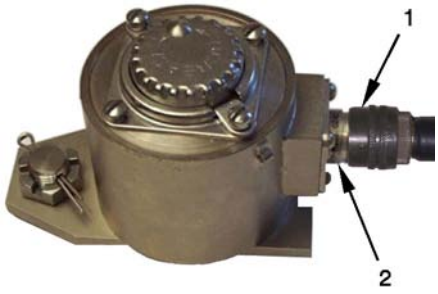
A. Remove harness (1) from electrical connector (2).

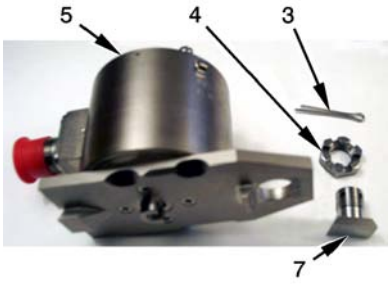
B. Remove cotter pin (3) and loosen nut (4).

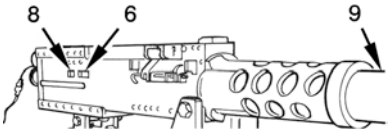
C. Remove lip of solenoid (5) from large rectangular hole (6).

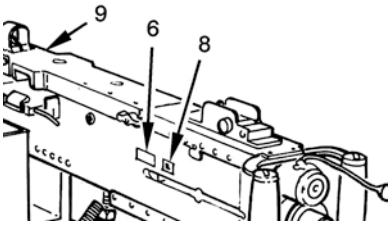
D. Remove wedge (7) from small rectangular hole (8) on left or right side of machinegun (9).

E. Tighten nut (4) and insert cotter pin (3).









5t1212

MAINTAIN COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) (ATTACH PULL CABLE ASSEMBLY)

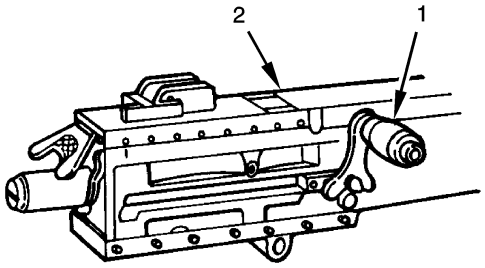
WARNING

Before doing any maintenance, unload machinegun and check receiver to make sure weapon is clear of ammunition or obstruction. Accidental firing of weapon can kill or seriously injure personnel.

NOTE

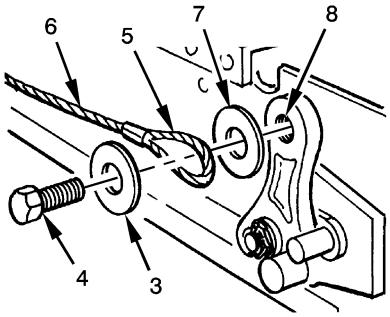
- **If you have M2HB flex machinegun, begin with step A.**
- **If you have M2HB machinegun with M10 charger, begin with step E.**

A. Remove charging handle (1) from machinegun (2).



B. Install one washer (3) on 7/16-inch bolt (4) and insert bolt (4) with washer (3) through small loop (5) on end of pull cable (6).

C. Install second washer (7) on bolt (4) and insert bolt (4) into hole (8) left open by removal of charging handle (1).

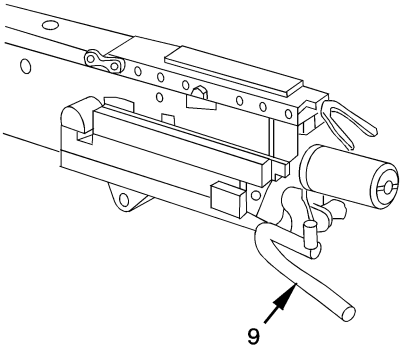


D. Tighten bolt (4). If bolt (4) hits side of machinegun (2), back out, add another washer (3) (P/N 43NWUS8Z) and tighten again. Go to step H.

E. Loop small end of pull cable (6) over M10 charging handle (9).

F. Install cable clamp or wire tie on end of charging handle (9) to prevent pull cable (6) from coming off charging handle (9).

G. Route pull cable (6) to loader's hatch.



MAINTAIN COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) (DETACH PULL CABLE ASSEMBLY)

WARNING

Before doing any maintenance, unload machinegun and check receiver to make sure weapon is clear of ammunition or obstruction. Accidental firing of weapon can kill or seriously injure personnel.

NOTE

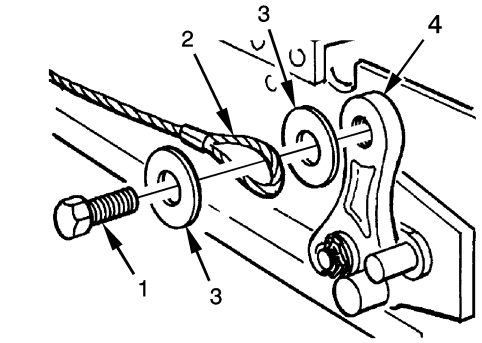
- **If equipped with M2HB flex machinegun, perform steps A and B.**
- **If equipped with M2HB machinegun with M10 charger, perform steps C and D.**

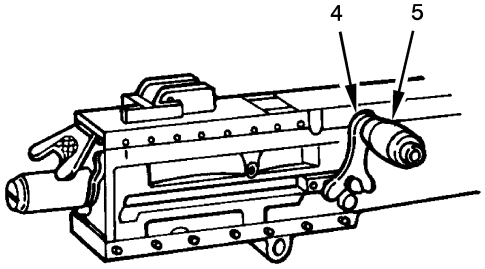
A. Remove bolt (1), cable loop (2), and washers (3) from charging lever (4).

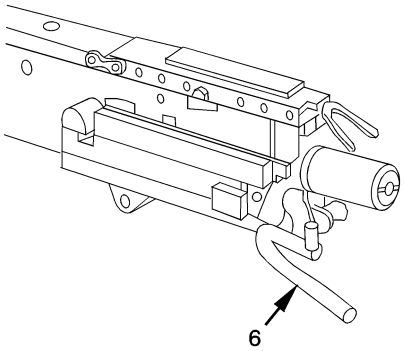
B. Install charging handle (5) in charging lever (4).

C. Remove cable clamp or wire tie from charging handle (6).

D. Remove cable loop (2) from charging handle.







5t1216

MAINTAIN COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) (INSTALL XENON SPOT LIGHT)

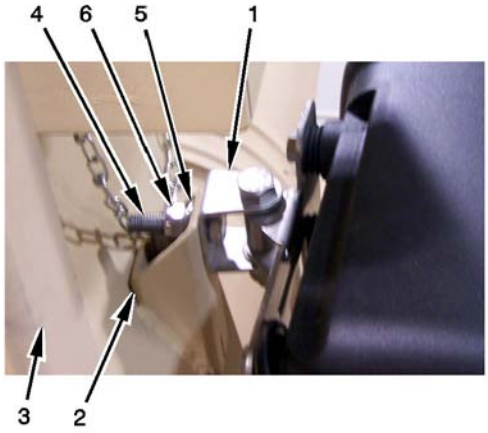
NOTE

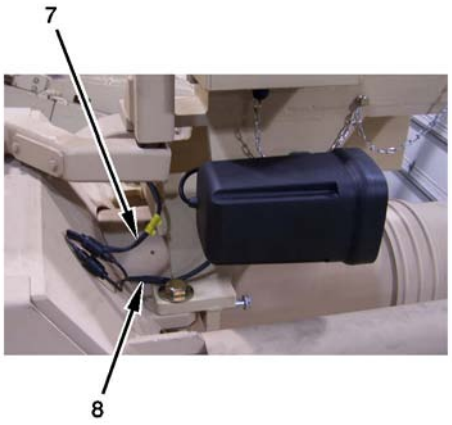
- **Deflection and elevation of spotlight is set with mounting bolt and elevation bolt provided.**
- **Xenon spotlight should be set in alignment with CSAMM's .50 cal machinegun when boresighting and zeroing is performed.**
- **Xenon spotlight mounts on right side of CSAMM.**

A. Aline hole in spotlight mount (1) with hole on right support plate (2) of CSAMM (3).

B. Install bolt (4), lockwasher (5), and lock nut (6).

C. Connect harness (7) to spotlight harness (8).





MAINTAIN COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) (REMOVE XENON SPOT LIGHT)

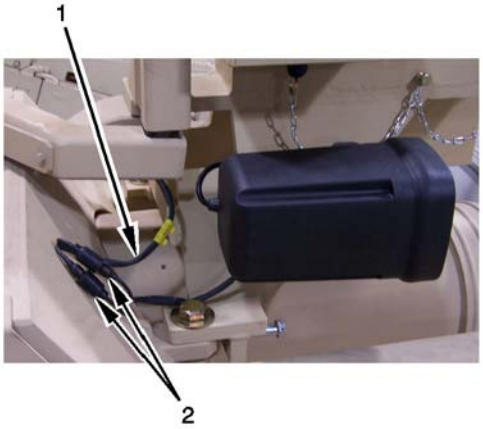
WARNING

Xenon spotlight gets very hot. To avoid injury, do not touch spotlight with bare hands for 5 minutes after spotlight has been shut off.

A. Remove harness (1) from electrical connectors (2).

B. Remove bolt (3), lockwasher (4), and lock nut (5) from spotlight mount (6) and right support plate (7) of CSAMM (8).

C. Remove spotlight (9).



5t1218

MAINTAIN COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) (CHECK/SET HEADSPACE ON .50 CAL MACHINEGUN)

NOTE

Headspace is set for the .50 cal machinegun per TM 9-1005-213-10.

To check and/or set headspace on machinegun, refer to TM 9-1005-213-10.

MAINTAIN COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) (TIME .50 CAL MACHINEGUN WITH G-9 SOLENOID)

NOTE

Timing is set using the G-9 solenoid per ST 3-20.12-6.

To time the .50 cal machinegun with the G-9 type solenoid, refer to ST 3-20.12-6.

MAINTAIN COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) (BORESIGHTING CSAMM)

NOTE

A .50 cal muzzle boresight device enhances the boresighting of the CSAMM .50 cal machinegun.

To boresight the machinegun, refer to ST 3-20.12-6.

MAINTAIN COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) (ZEROING CSAMM)

To zero the machinegun, refer to ST 3-20.12-6.

MAINTAIN FORCE PROTECTION (REPLACE COMMANDER'S SPOTLIGHT BULB)

Remove Commander's Spotlight Bulb

WARNING

- **Spotlight contains hazardous voltage inside. Disconnect from power cord and wait 5 minutes before servicing.**
- **Bulb gets very hot and can burn you. Allow bulb to cool down before replacing.**

A. Remove spotlight from mount and disconnect cord, OPERATE COMMANDER'S SPOTLIGHT (see 3-16.1).

B. Remove four mounting screws (1) from retaining cap (2).

C. Loosen four screws (3) securing mounting bracket (4) and handle (5) to spotlight housing (6).

D. Slide retaining cap (2) up and away from spotlight face.

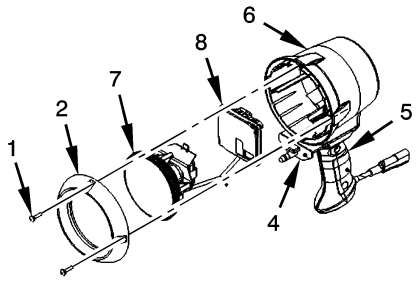
E. Slide bulb housing (7) and ballast (8) out of spotlight housing (6).

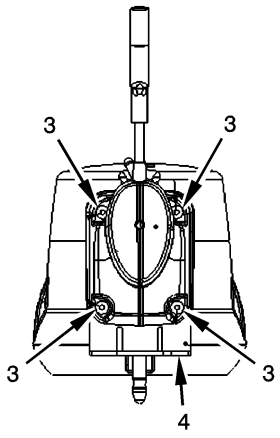
F. Remove power cord (9) from back of bulb (10).

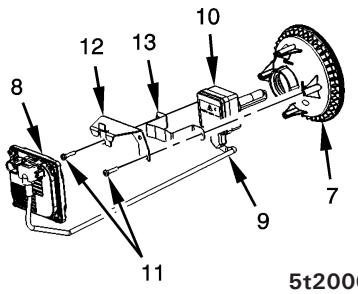
G. Remove two screws (11) from retaining brackets (12, 13) and bulb housing (7).

H. Remove bulb (10) from bulb housing (7).

I. Inspect all parts for damage. Replace as required.







5t2000a

MAINTAIN FORCE PROTECTION (REPLACE COMMANDER'S SPOTLIGHT BULB) - Continued

Install Commander's Spotlight Bulb

WARNING

Spare bulb contains gas under pressure and could shatter causing flying fragments. To avoid injury, wear eye protection, protect bulb from abrasions or scratches, and avoid directly touching bulb.

A. Aline notch on bulb (1) with key on bulb housing (2) and insert bulb (1) into bulb housing (2).

B. Position two retaining brackets (3, 4) and secure brackets (3, 4) to bulb housing (2) with two screws (5).

C. Attach power cord (6) to receptacle on back of bulb (1).

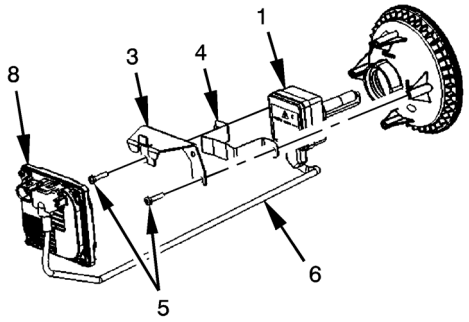
D. With plugs facing toward back of spotlight housing (7), insert ballast (8) into bulb housing (2) ensuring ballast (8) is resting on support bracket inside spotlight housing (7).

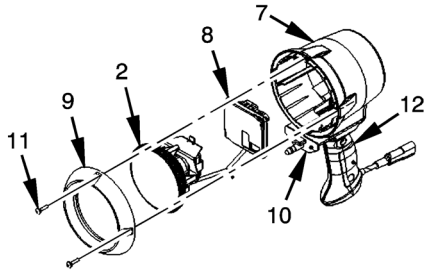
E. Aline bulb housing (2) in spotlight housing (7) by alining tab on retaining bracket (3) with slot in spotlight housing (7).

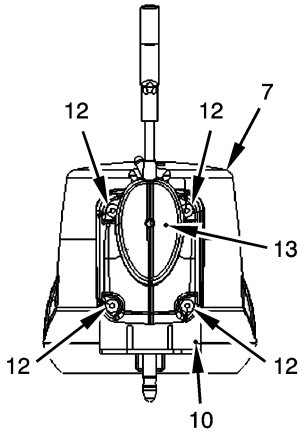
F. Make sure retaining cap (9) and bracket (10) are properly alined. Install four screws (11).

G. Install four screws (12) securing mounting bracket (10) and handle (13) to spotlight housing.

H. Install spotlight in mount and connect cord, OPERATE COMMANDER'S SPOTLIGHT (see 3-16.1).







MAINTAIN FORCE PROTECTION (COMMANDER'S SPOTLIGHT REMOVAL FORCE ADJUSTMENT)

NOTE

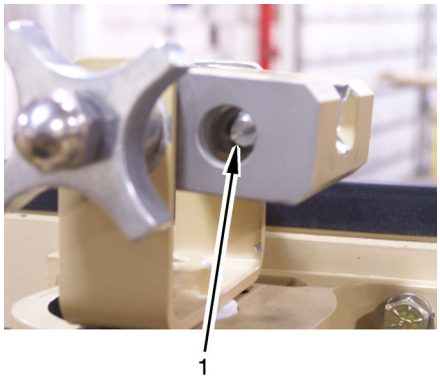
- **The following procedure applies to both the inboard and outboard ball pin screws. Both sides should be equally adjusted. Inboard screw is shown.**
- **Turn screw counterclockwise to decrease the spotlight removal force. Turn screw clockwise to increase the spotlight removal force.**

A. Remove spotlight from mount and disconnect cord, OPERATE COMMANDER'S SPOTLIGHT (see 3-16.1).

B. Turn screws to adjust removal force.

C. Remove and install spotlight, OPERATE COMMANDER'S SPOTLIGHT (see 3-16.1), as required to check adjustment of removal force.

D. Install spotlight in mount and connect cord, OPERATE COMMANDER'S SPOTLIGHT (see 3-16.1).



5t2000

ABRAMS REACTIVE ARMOR TILE (ARAT)/ARAT REACTIVE ARMOR TILE 2 (ARAT 2)

WARNING

- **Each armor tile contains high explosives and is considered an item of ammunition. Armor tiles must be handled with appropriate care at all times. Armor tiles should not be dropped, crushed, thrown, tumbled, dragged or subjected to drilling, cutting, burning, high temperatures (greater than 165° F (74° C)), high voltages, or welding, Improper handling of the armor tiles could result in serious injury or death.**
- **Do not attempt to disassemble the armor tiles for any reason. The armor tile is a totally enclosed, non-repairable item of ammunition. Attempts to disassemble the armor tiles could result in serious injury or death. Damaged or deteriorated armor tiles will be returned to the local ammunition supply point for disposition.**
- **Unload all Class V items (armor tiles, ammunition) before welding on tank. Electrical currents induced in the vehicle by welding can explode ammunition.**

The Abrams reactive armor tile (ARAT)/Abrams reactive armor tile 2 (ARAT 2) is normally safe to handle. Hazardous conditions can arise and should be handled as indicated in TB 9-1375-257-13.

The armor tiles are a Class V item and are referred to as reactive armor tiles. There is no initiating device inside of the tile, and the tile is not vulnerable to burning or deflagration from a small arms threat.

The explosive used in the ARAT/ARAT 2 is known as LF2XA and is a subtle variant of the LF2 explosive. Each ARAT/ARAT 2 tile is a self contained sealed box containing elements of metal and explosive known as cassettes. A cassette consists of the explosive sandwiched between two metal plates. The tile is sealed and designed not to be taken apart.

With the ARAT/ARAT 2 tiles on the turret sides and skirts, personnel should stay clear of the vehicle due to the potential of spall/fragment from the tiles when they function as intended. For detailed information, refer to TB 9-1375-257-13.

COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM)

The recommended M240 .50 cal ammunitions to use the CSAMM are as follows:

COMBAT Situations.

- M903/M962 SLAP/SLAP-T. DODIC: A518
- M20, API-T, DODIC: A585/A542
- MK 211 Multipurpose, Linked 4 MK-211/1 M17, M9 Linked, DODIC: A607/ A608
- M8 API/M20 API-T. DODIC: A576/A577

TRAINING Situations (Subcaliber).

- M962 SLAP-T, Linked M9. DODIC: A518
- M20, API-T, Linked M9, DODIC: A585/A543
- M17, Tracer, Linked M9, DODIC: A572
- M33 Ball/M17 Tracer, Linked M9, DODIC: A557

WARNING

.50 cal short range training ammunition (SRTA) is lethal and may cause death or injury to personnel and damage to equipment.

TRAINING Situation (Urban Gunnery in MOUT Sites).

- M858 Ball/M860 Tracer, Short Range Training Ammunition (SRTA), Linked M9, DODIC: A602
- M860 Tracer, Short T/Range Training Ammunition (SRTA), Linked M9, DODIC: A595

ADDITIONAL AUTHORIZATION LIST

SECTION I. INTRODUCTION

SCOPE

This appendix lists additional items you are authorized for the support of the M1A1 tank.

GENERAL

This list identifies items that do not have to accompany the M1A1 tank and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

EXPLANATION OF COLUMNS

Below is an explanation of columns found in the tabular listings:

a. Column (1) - NATIONAL STOCK NUMBER. Indicates the National Stock Number assigned to the item and will be used for requisitioning purposes.

b. Column (2) - DESCRIPTION. Indicates the item name listed in alphabetical sequence under the type document (i.e., CTA, MTOE, TDA, or JTA) which authorizes the item(s) to you. The entry for each item ends with the Commercial And Government Entity Code (CAGE) in parentheses followed by the part number.

c. Column (3) - U/M (Unit of Measure). Indicates the measure used in support of this equipment. This measure is expressed by an alphabetical abbreviation (e.g., EA, PR, SE).

d. Column (4) - QTY AUTH (Quantity Authorized). Indicates the quantity of the item authorized to be used with the equipment.

SECTION II. ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION CAGE & PART NUMBER	USABLE ON CODE	(3) U/M	(4) QTY AUTH
2350-01-571-1966	Kit, Accessory, Umbrella: (19207) 57K6455		EA	1
	Consisting of: Bracket Assy, Umbrella: (19207) 12521536		EA	1
	Washer, flat: (19207) 12387327-42		EA	3
	Screw, HEX HD, 3/4-10 x 2.000 LG: (05047) B1821BH075C200N		EA	3
	Desert Solscons Umbrella System (without sniper screen) (1X5J9) 1X5J9-4053		EA	1

BORESIGHT COMMANDER'S WEAPON STATION (CWS) SIGHT (.50 CAL THERMAL SIGHT/DAY TV SYSTEM) TO COMMANDER'S WEAPON - PRIMARY METHOD

NOTE

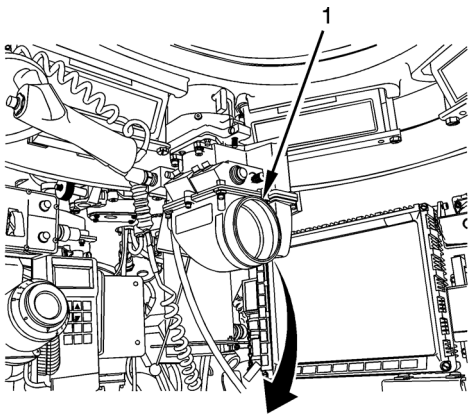
Make sure the display control module (DCM) (1) reticle has been set for use with the .50 cal machinegun. If alternate weapon (M240) is installed, alternate boresighting procedure has to be used.

A. Position tank on level ground.

B. Select boresight target (2) with defined right angle at a range as near 500 meters as possible.

C. Lase on target (2) using commander's handle (see TM 9-2350-264-10), if possible, to confirm range to boresight target (2).

D. Install commander's weapon (see TM 9-2350-264-10).



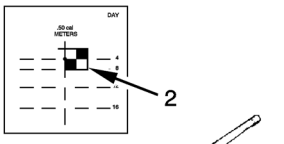
WARNING

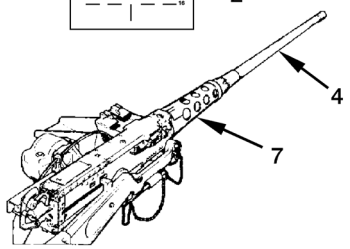
Make sure weapon is cleared before boresighting. Accidental firing of weapon can kill or seriously injure personnel.

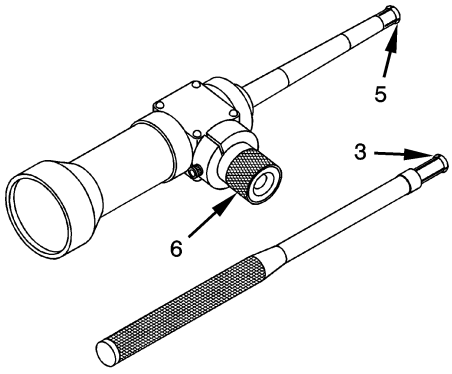
E. Insert .50 cal boresight device adapter (3) into machinegun barrel (4).

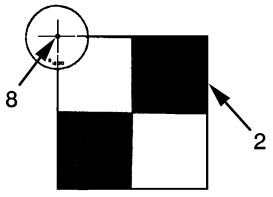
F. Insert .50 cal boresight device optical unit (5) into .50 cal boresight device adapter (3) with optical unit eyepiece (6) at 12 o'clock position.

G. Look through optical unit eyepiece (6) while manually traversing commander's weapon station (CWS) and elevating and depressing machinegun (7) (see TM 9-2350-264-10) to align boresight device reticle (8) with upper left corner of boresight target (2).







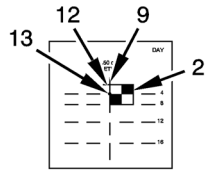


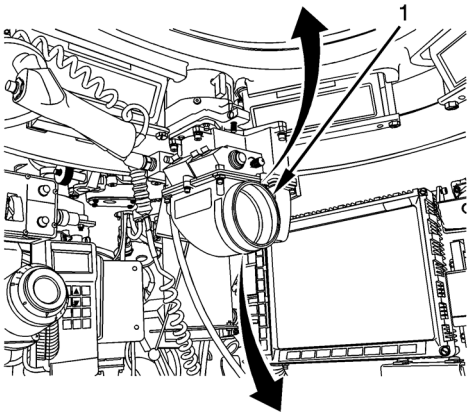
5t1584

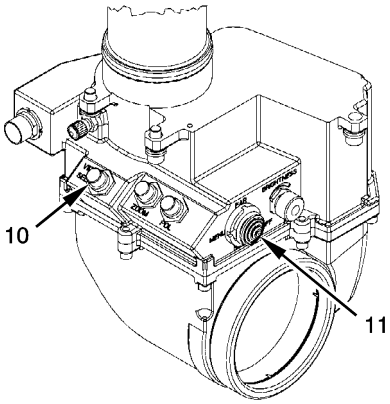
BORESIGHT COMMANDER'S WEAPON STATION (CWS) SIGHT (.50 CAL THERMAL SIGHT/DAY TV SYSTEM) TO COMMANDER'S WEAPON - PRIMARY METHOD - Continued

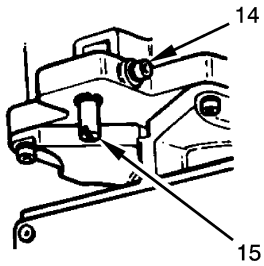
H. Without moving machinegun or CWS, look through DCM (1) and align boresight cross (9) of reticle on upper left corner of boresight target (2) as follows:

1. Press VID SEL (10) button on CWS DCM until day TV image is displayed.
2. Hold MENU button (11) on DCM to the left until menu is displayed in sight.
3. Using the MENU button (11) on DCM, toggle down until BORESIGHT is highlighted. Push switch right to select.
4. Using the MENU button (11) on DCM, toggle up and/or down placing the horizontal line (12) of the boresight cross (9) on top edge of boresight target (2).
5. Using the MENU button (11) on DCM, toggle left and/or right placing vertical line (13) of boresight cross (9) on left edge of boresight target (2). If reticle displacement in the DCM display is greater than L 5.00 or R 5.00, move reticle until it is R 0.00 then go to step 6. If less than L 5.00 or R 5.00, then go to step 9.
6. Loosen setscrew (14) with a 9/64-inch socket head key to allow control of horizontal adjustment control screw (15).
7. Adjust horizontal adjustment control screw (15) with a screwdriver, placing vertical line (13) of boresight cross (9) on left edge of boresight target (2).
8. Tighten setscrew (14) with 9/64-inch socket head key. Repeat step 5.









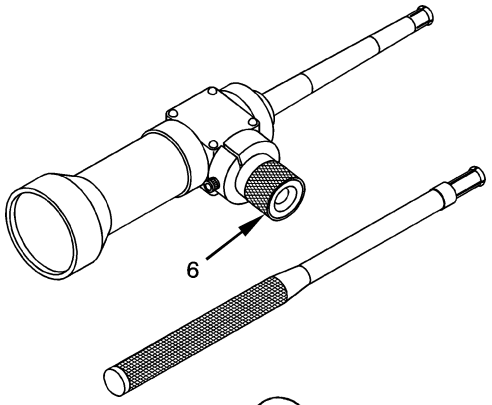
5t1583

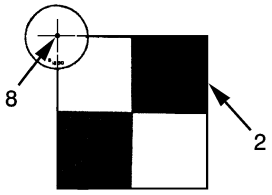
BORESIGHT COMMANDER'S WEAPON STATION (CWS) SIGHT (.50 CAL THERMAL SIGHT/DAY TV SYSTEM) TO COMMANDER'S WEAPON - PRIMARY METHOD - Continued

9. Look through optical unit eyepiece (6) and DCM sight (1) to see if boresight cross (9) is on upper left corner of boresight target (2).

10. If boresight cross (9) is not on upper left corner of boresight target (2), repeat BORESIGHT COMMANDER'S WEAPON SIGHT TO COMMANDER'S WEAPON - PRIMARY METHOD starting with step G. If boresight cannot be completed, notify unit maintenance.

11. If boresight device reticle (8) and boresight cross (9) are both on upper left corner of boresight target (2), machinegun is properly boresighted. Press the ZOOM button (16) to save the day TV boresight.



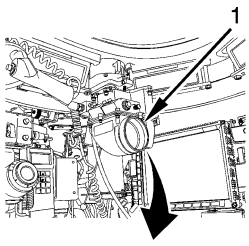


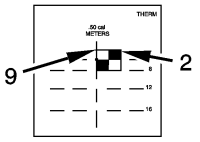
I. Without moving machinegun or CWS, look through DCM (1) and align thermal boresight cross (9) of reticle on upper left corner of boresight target (2) as follows:

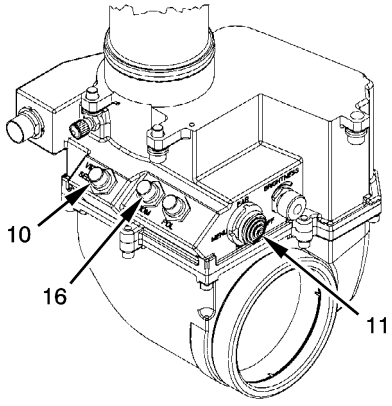
1. Press VID SEL button (10) on DCM until thermal image is displayed.

2. Hold MENU button (11) left on DCM until menu is displayed on sight.

3. Using the MENU button (11) on DCM toggle down until BORESIGHT is selected. Push switch right to select.







5t1313

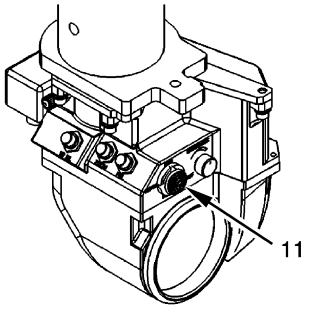
BORESIGHT COMMANDER'S WEAPON STATION (CWS) SIGHT (.50 CAL THERMAL SIGHT/DAY TV SYSTEM) TO COMMANDER'S WEAPON - PRIMARY METHOD - Continued

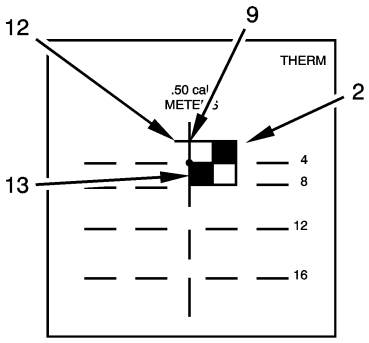
4. Using the MENU button (11) on DCM, toggle left and/or right placing vertical line (13) of boresight cross (9) on left edge of boresight target (2).

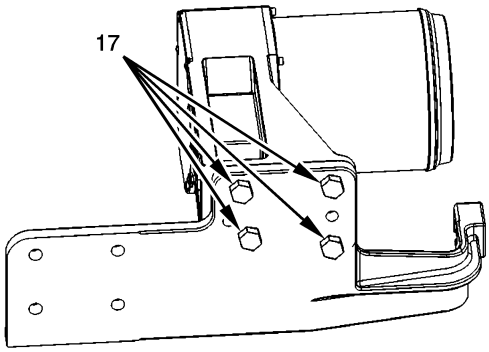
5. Using the MENU button (11) on DCM, toggle down and/or up placing the horizontal line (12) of the boresight cross (9) on top edge of boresight target (2). If reticle displacement displayed in the DCM display is greater than U 5.00 or D 5.00, then move reticle until it is U 0.00, then go to step 6. If less than U 5.00 or D 5.00, then go to step 8.

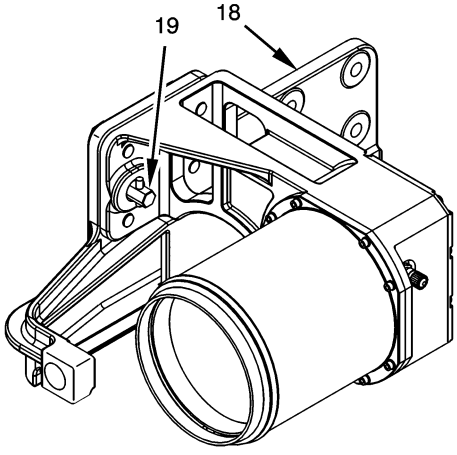
6. Loosen the four bolts (17) on the CWS equilibrator bracket (18). Adjust cam bolt (19), placing horizontal line (12) of the boresight cross (9) on top edge of the boresight target (2).

7. Tighten the four bolts (17) on the CWS equilibrator bracket (18). Repeat step 5. If display is still greater than U 5.00 or D 5.00 after repeating step 5, notify unit maintenance to perform weapon mount adjustment.









5t1317

BORESIGHT COMMANDER'S WEAPON STATION (CWS) SIGHT (.50 CAL THERMAL SIGHT/DAY TV SYSTEM) TO COMMANDER'S WEAPON - PRIMARY METHOD - Continued

8. Look through optical unit eyepiece (6) and DCM sight (1) to see if boresight cross (9) is on upper left corner of boresight target (2).

NOTE

Repeat procedure in step 9 only once, then go to step 10.

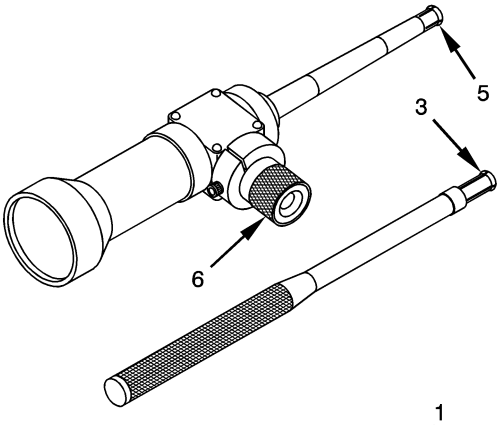
9. If boresight cross (9) is not on upper left corner of boresight target (2), repeat BORESIGHT COMMANDER'S WEAPON SIGHT TO COMMANDER'S WEAPON - PRIMARY METHOD starting with step I.

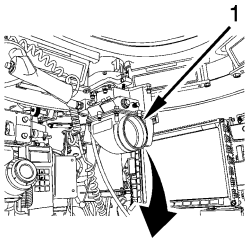
10. If boresight cross (9) is still not on upper left corner of boresight target (2), notify unit maintenance.

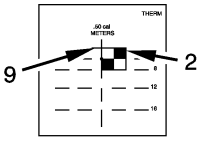
11. If boresight device reticle (8) and boresight cross (9) are both on upper left corner of boresight target (2), machinegun is properly boresighted. Press the ZOOM button (16) to save the thermal system boresight.

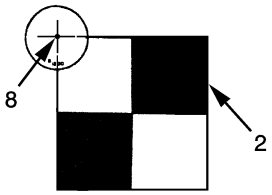
J. Remove .50 cal boresight device machinegun adapter (3) and boresight device optical unit (5) from machine gun barrel (4).

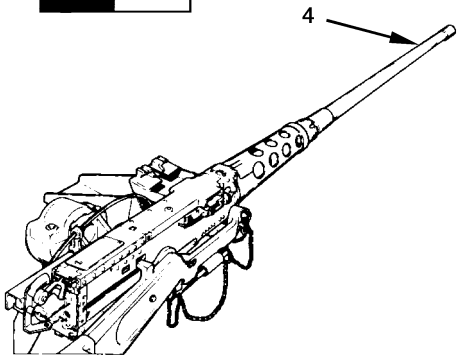
K. Check head space and timing (see TM 9-1005-213-10).

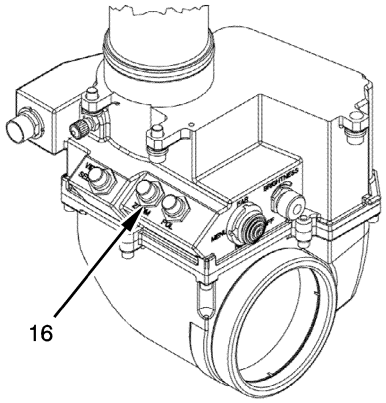












BORESIGHT COMMANDER'S WEAPON STATION SIGHT (.50 CAL THERMAL SIGHT/DAY TV SYSTEM) TO COMMANDER'S WEAPON - ALTERNATE METHOD

NOTE

Make sure the display control module (DCM) (1) day reticle is set for use with the .50 cal machinegun.

A. Position tank on level ground.

B. Select boresight target (2) with defined right angle at a range as near 500 meters as possible.

C. Lase on boresight target (2) using commander's handle (see TM 9-2350-264-10).

D. Install commander's weapon (see TM 9-2350-264-10).

WARNING

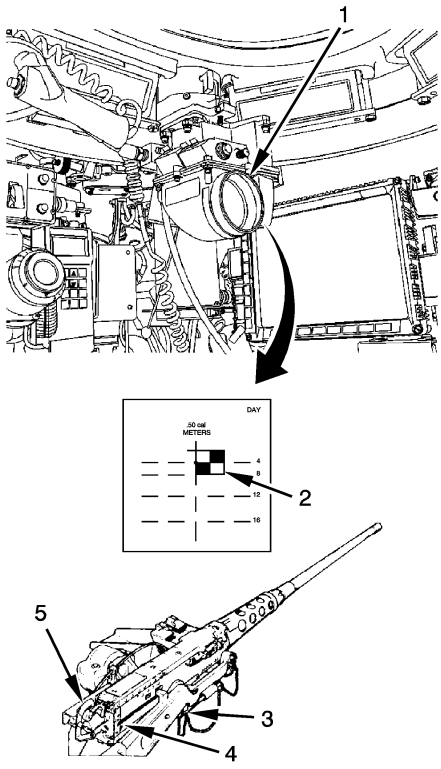
- **Make sure weapon is cleared before boresighting. Accidental firing of weapon can kill or seriously injure personnel.**
- **Make sure bolt is forward before removing backplate. Spring-loaded parts may release and injure operator.**

E. Remove rear mounting pin (3) and lift rear of machinegun (4) above firing roller (5).

F. Remove backplate and take bolt group out of receiver (see TM 9-1005-213-10).

G. Lower rear of machinegun (4) and insert rear mounting pin (3).

H. Look into back of receiver and out through machinegun barrel. Manually traverse CWS, and elevate or depress machinegun (see TM 9-2350-264-10) to aline the center of barrel on clearly defined aiming point.

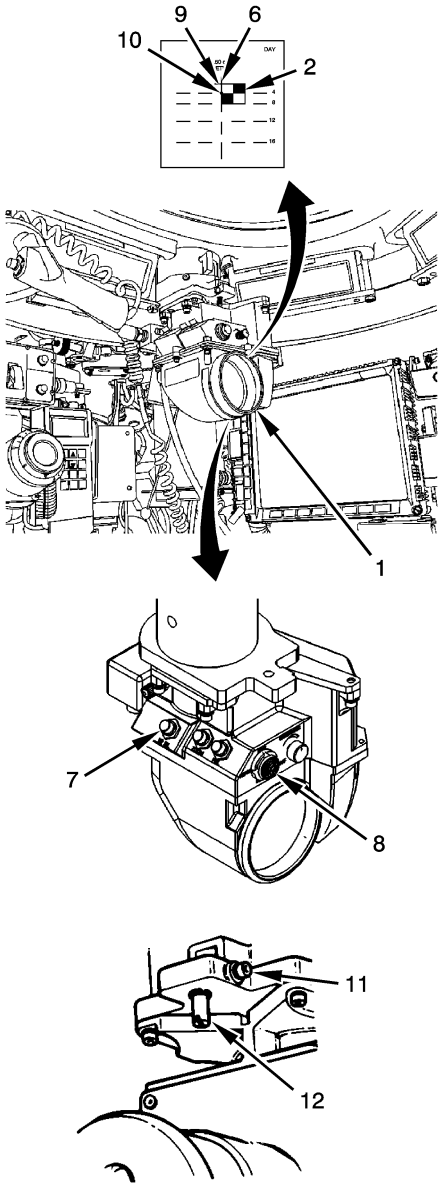


5t1580

BORESIGHT COMMANDER'S WEAPON STATION SIGHT (.50 CAL THERMAL SIGHT/DAY TV SYSTEM) TO COMMANDER'S WEAPON - ALTERNATE METHOD - Continued

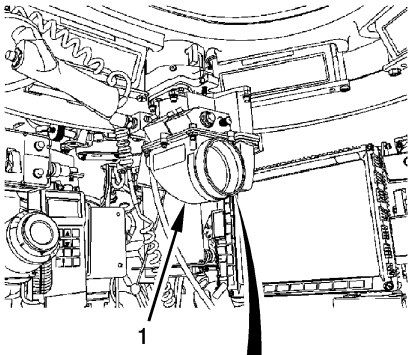
I. Without moving machinegun or CWS, look through DCM (1) and aline boresight cross (6) of reticle on upper left corner of boresight target (2) as follows:

1. Press VID SEL button (7) on DCM until day TV image is displayed.
2. Hold MENU button (8) on DCM to the left until menu is displayed in sight.
3. Using the MENU button (8) on DCM, toggle down until BORESIGHT is highlighted. Push switch right to select.
4. Using the MENU button (8) on DCM, toggle up and/or down placing the horizontal line (9) of the boresight cross (6) on top edge of target (2).
5. Using the MENU button (8) on DCM, toggle left and/or right placing the vertical line (10) of the boresight cross (6) on left edge of target (2). If reticle displacement in the DCM display is greater than L 5.00 or R 5.00, move reticle until it is R 0.00, then go to step 6. If less than L 5.00 or R 5.00, then go to step J.
6. Loosen setscrew (11) with a 9/64-inch socket head key to allow control of horizontal adjustment control screw (12).
7. Adjust horizontal adjustment control screw (12) with a screwdriver, placing vertical line (10) of boresight cross (6) on original aim point.
8. Tighten setscrew (11) with 9/64-inch socket head key. Repeat step 5.



BORESIGHT COMMANDER'S WEAPON STATION SIGHT (.50 CAL THERMAL SIGHT/DAY TV SYSTEM) TO COMMANDER'S WEAPON - ALTERNATE METHOD - Continued

J. Look through back of .50 cal receiver and out the gun barrel. Elevate, and then depress machinegun onto upper left hand corner of target (2) with elevation crank (see TM 9-2350-264-10).

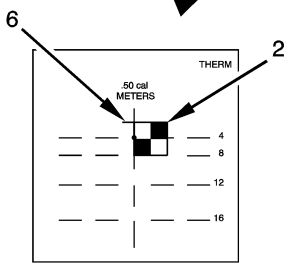


NOTE

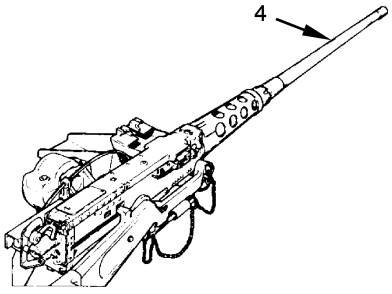
- **If boresight cross (6) is not on upper left corner of boresight target (2), notify unit maintenance.**
- **If machinegun (4) and boresight cross (6) are both on upper left corner of boresight target (2), machinegun (4) is properly boresighted.**

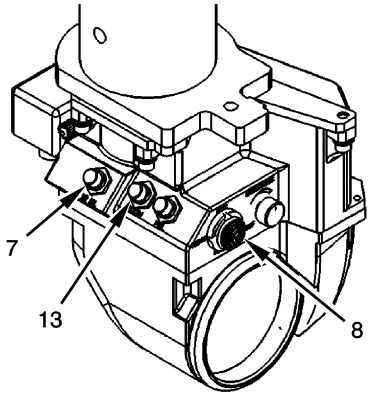
1. Press the ZOOM button (13) to save the day TV boresight.

K. Without moving machinegun or CWS, look through DCM (1) and aline thermal boresight cross (6) of reticle on upper left corner of target (2) as follows:



1. Press VID SEL button (7) on DCM until thermal image is displayed.
2. Hold MENU button (8) on DCM to the left until menu is displayed in sight.
3. Using the MENU button (8) on DCM, toggle down until BORE-SIGHT is highlighted. Push switch right to select.





5t1578

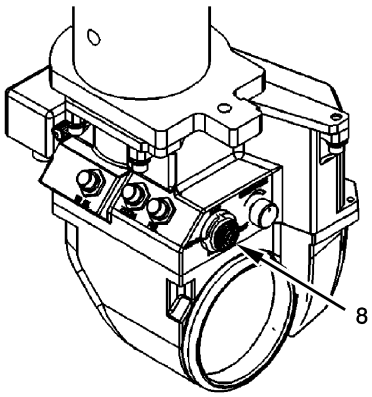
BORESIGHT COMMANDER'S WEAPON STATION SIGHT (.50 CAL THERMAL SIGHT/DAY TV SYSTEM) TO COMMANDER'S WEAPON - ALTERNATE METHOD - Continued

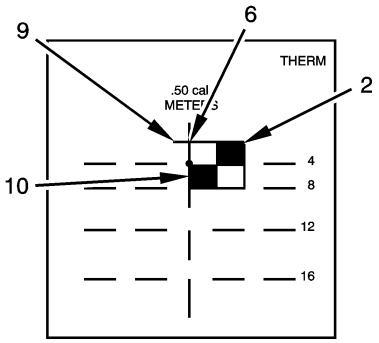
4. Using the MENU button (8) on DCM, toggle left and/or right placing the vertical line (10) of the boresight cross (6) on boresight target (2).

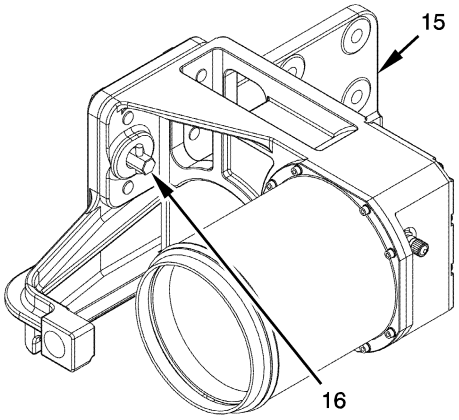
5. Using the MENU button (8) on DCM, toggle down and/or up placing the horizontal line (9) of the boresight cross (6) on original aimpoint (2). If reticle displacement displayed in the CWS display is greater than U 5.00 or D 5.00 then move reticle until it is U 0.00, then go to step 6. If less than U 5.00 or D 5.00 then go to step L.

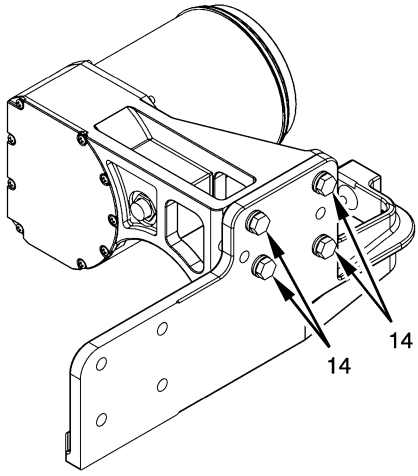
6. Loosen the four bolts (14) on the CWS equilibrator bracket (15). Adjust cam bolt (16) placing horizontal line (9) of the boresight cross (6) on original aimpoint.

7. Tighten the four bolts (14) on the CWS equilibrator bracket (15). Repeat step five.









5t1329

BORESIGHT COMMANDER'S WEAPON STATION SIGHT (.50 CAL THERMAL SIGHT/DAY TV SYSTEM) TO COMMANDER'S WEAPON - ALTERNATE METHOD - Continued

L. Look through back of .50 cal receiver and out the gun barrel. Elevate, and then depress machinegun onto upper left hand corner of boresight target (2) with elevation crank (see TM 9-2350-264-10).

NOTE

- **If boresight cross (6) is not on original aimpoint, notify unit maintenance.**
- **If machinegun (4) and boresight cross (6) are both on original aimpoint, machinegun (4) is properly boresighted.**

M. Look through the DCM sight (1) to see if boresight cross (6) is on original aimpoint. If it is, the machinegun is properly boresighted. Press the ZOOM button (13) to save the thermal system boresight.

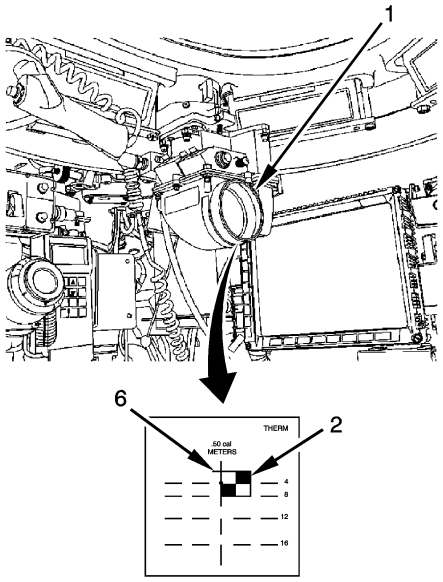
N. Remove rear mounting pin (3) and lift rear of machinegun (4) above roller (5).

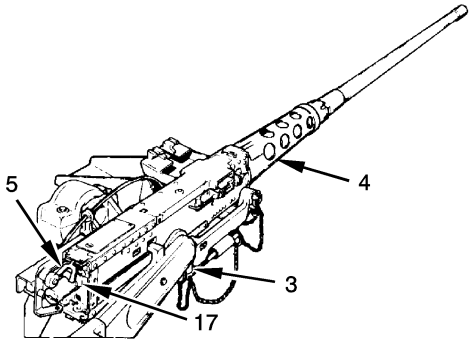
O. Put bolt group back into .50 cal receiver and install backplate (see TM 9-1005-213-10).

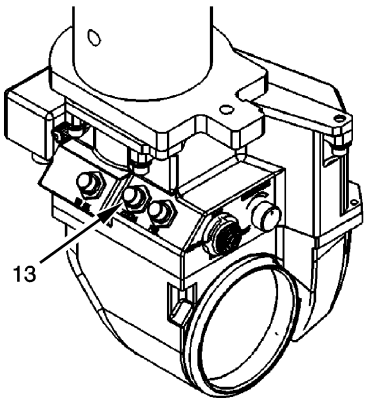
P. Lower rear of machinegun (4) and insert rear mounting pin (3).

Q. Ensure roller (5) is over machinegun butterfly trigger (17).

R. Check head space and timing (see TM 9-1005-213-10).







5t1577

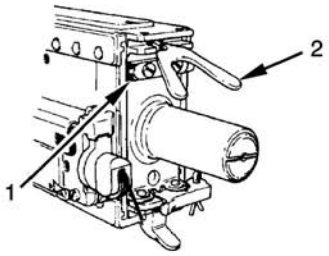
ZERO COMMANDER'S WEAPON STATION DAY TV SIGHT (.50 CAL THERMAL SIGHT/DAY TV SYSTEM)

A. Install commander's weapon (see TM 9-2350-264-10).

B. Boresight commander's weapon (see TM 9-2350-264-10).

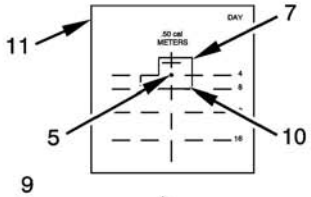
C. Load commander's weapon (see TM 9-2350-264-10).

D. Move butterfly trigger safety (1) until "F" can be seen.



WARNING

- **Weapon will now fire if butterfly trigger (2) is pushed. Accidental firing of weapon can kill or seriously injure personnel.**
- **If button (3) is pressed down with ARMED light (4) lit, gun will fire and could injure or kill someone.**



NOTE

Ensure display control module (DCM) is in DAY mode.

E. Lay 500 meter aiming point (5) in commander's weapon sight (CWS) (6) on center of target (7) 500 meters distant with manual controls (see TM 9-2350-264-10).

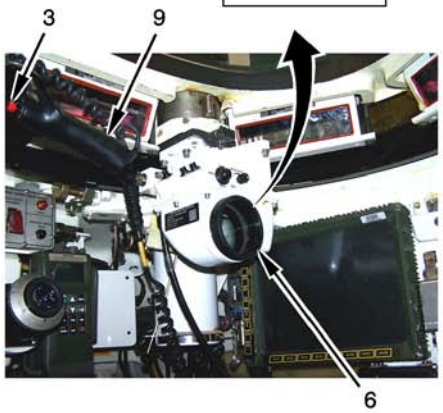
F. Set SAFE/ARMED switch (8) to ARMED (right) position then release and make sure ARMED light (4) is lit.

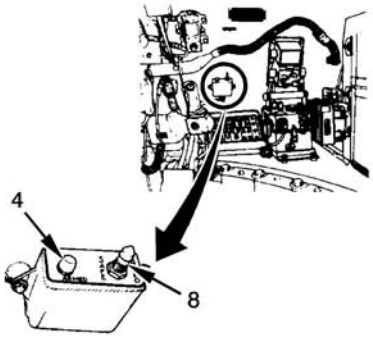
G. Alert crew on intercom by announcing "Caliber .50" .

H. Fire a burst of 10-20 rounds by pressing button (3) on CWS elevation crank handle (9). Release button (3) to cease firing.

I. Look at beaten zone (10) on target (7) in relation to aiming point (5) on sight reticle (11).

J. Set SAFE/ARMED switch (8) to SAFE (left) position and then release and make sure ARMED light (4) is not lit.



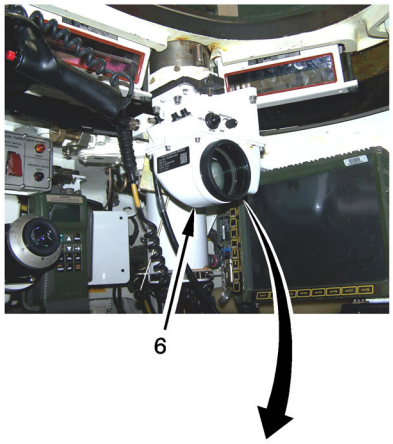


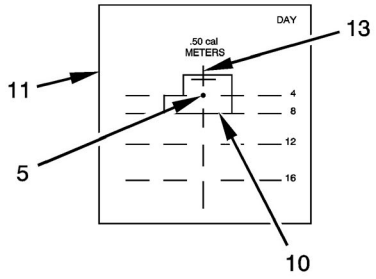
ZERO COMMANDER'S WEAPON STATION DAY TV SIGHT (.50 CAL THERMAL SIGHT/DAY TV SYSTEM) - Continued

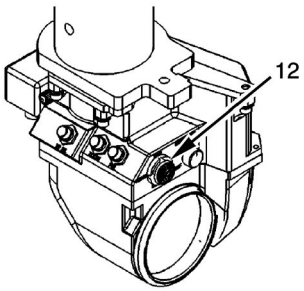
K. If aiming point (5) in sight reticle (11) is centered on beaten zone (10), zeroing is complete. If aiming point (5) is not in center of beaten zone (10), go to step L.

L. Without moving machinegun or CWS sight (6), aline aiming point (5) reticle (11) to center of beaten zone (10) as follows:

1. Ensure that DCM is still in DAY TV mode.
2. Hold MENU button (12) on DCM until menu is displayed in sight.
3. Using the MENU button (12) on DCM, toggle down until BORE-SIGHT is highlighted. Push switch right to select.
4. Using the MENU button (12) on DCM, toggle up and/or down placing aiming point (5) in the center of beaten zone (10).
5. Using the MENU button (12) on DCM, toggle left and/or right placing the vertical line (13) of aiming point (5) in center of beaten zone (10). If reticle displacement is moved more than 5 mils from original boresight values in any direction, RE-BORESIGHT CWS (see 3-107). If CWS cannot be zeroed after re-boresighting CWS, notify unit maintenance.







5t1337a

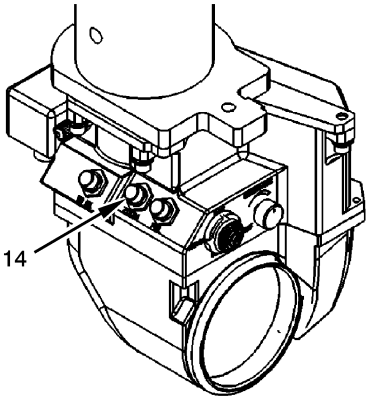
ZERO COMMANDER'S WEAPON STATION DAY TV SIGHT (.50 CAL THERMAL SIGHT/DAY TV SYSTEM) - Continued

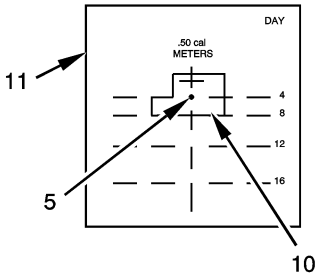
6. Press ZOOM button (14) to save day TV zero information.

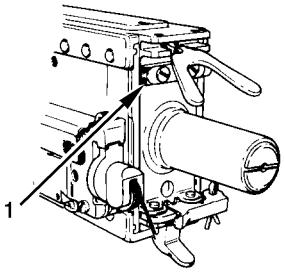
M. Repeat steps F thru K until aiming point (5) on sight reticle (11) is centered on beaten zone (10).

N. Move butterfly trigger safety (1) until S can be seen.

O. Clear commander's weapon (see TM 9-2350-264-10).







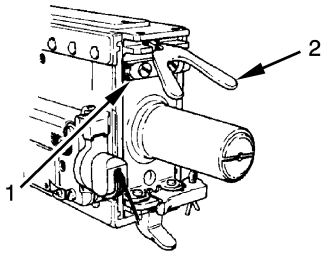
ZERO COMMANDER'S WEAPON STATION THERMAL SIGHT (.50 CAL THERMAL SIGHT/DAY TV SYSTEM)

A. Install commander's weapon (see TM 9-2350-264-10).

B. Boresight commander's weapon (see TM 9-2350-264-10).

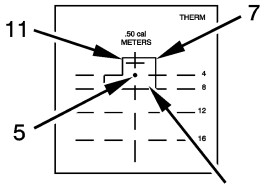
C. Load commander's weapon (see TM 9-2350-264-10).

D. Move butterfly trigger safety (1) until "F" can be seen.



WARNING

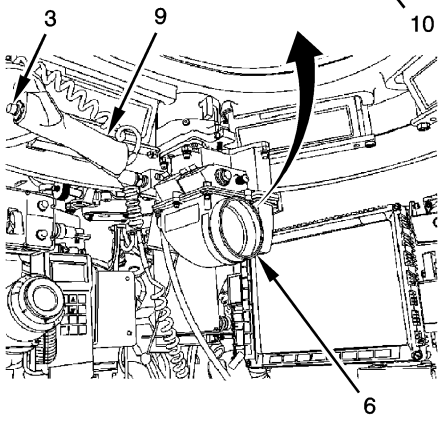
- **Weapon will now fire if butterfly trigger (2) is pushed. Accidental firing of weapon can kill or seriously injure personnel.**
- **If button (3) is pressed down with ARMED light (4) lit, gun will fire and could injure or kill someone.**



NOTE

Ensure display control module (DCM) is in thermal sight mode.

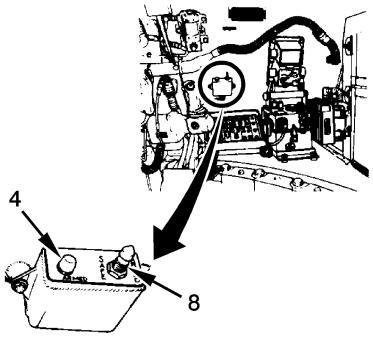
E. Lay 500 meter aiming point (5) in commander's weapon sight (CWS) (6) on center of target (7) 500 meters distant with manual controls (see TM 9-2350-264-10).



F. Set SAFE/ARMED switch (8) to ARMED (right) position then release and make sure ARMED light (4) is lit.

G. Alert crew on intercom by announcing "Caliber .50".

H. Fire a burst of 10-20 rounds by pressing button (3) on CWS elevation crank handle (9). Release button (3) to cease firing.



I. Look at beaten zone (10) on target (7) in relation to aiming point (5) on sight reticle (11).

J. Set SAFE/ARMED switch (8) to SAFE (left) position and then release and make sure ARMED light (4) is not lit.

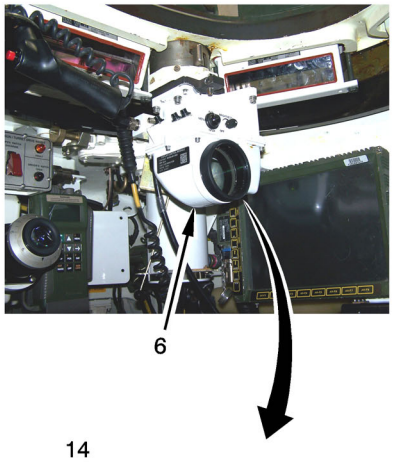
5t1574

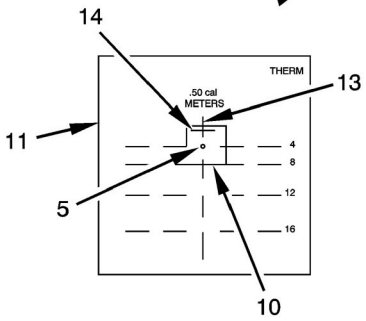
ZERO COMMANDER'S WEAPON STATION THERMAL SIGHT (.50 CAL THERMAL SIGHT/DAY TV SYSTEM) - Continued

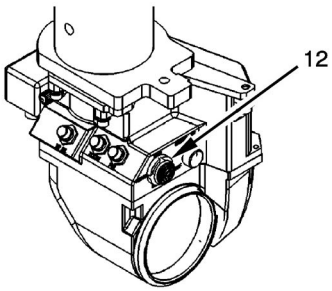
K. If aiming point (5) in sight reticle (11) is centered on beaten zone (10), zeroing is complete, go to step N. If aiming point (5) is not in center of beaten zone (10), go to step L.

L. Without moving machinegun or CWS sight (6), aline aiming point (5) reticle (11) to center of beaten zone (10) as follows:

1. Ensure that DCM is still in thermal sight mode.
2. Hold MENU button (12) on DCM to the left until menu is displayed in sight.
3. Using the MENU button (12) on DCM, toggle down until BORESIGHT is highlighted. Push switch right to select.
4. Using the MENU button (12) on DCM, toggle left and/or right placing the vertical line (13) of aiming point (5) in center of beaten zone (10).
5. Using the MENU button (12) on DCM, toggle up and/or down placing the horizontal line (14) of aiming point (5) in center of beaten zone (10). If reticle displacement is moved more than 5 mils from original boresight values in any direction, RE-BORESIGHT CWS (see 3-107). If CWS cannot be zeroed after re-boresighting CWS, notify unit maintenance.







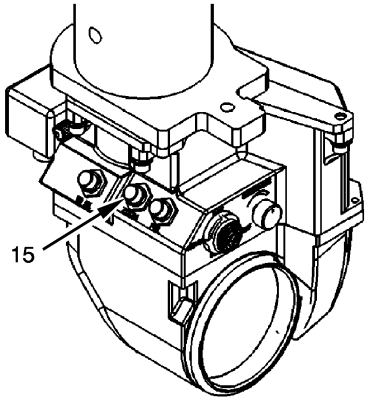
ZERO COMMANDER'S WEAPON STATION THERMAL SIGHT (.50 CAL THERMAL SIGHT/DAY TV SYSTEM) - Continued

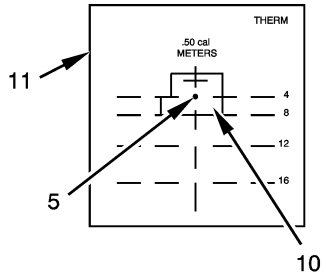
6. Press ZOOM button (15) to save day TV zero information.

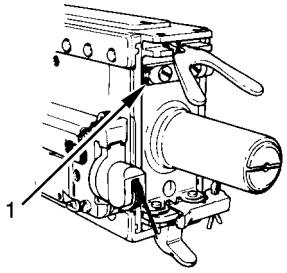
M. Repeat steps F thru K until aiming point (5) on sight reticle (11) is centered on beaten zone 10).

N. Move butterfly trigger safety (1) until S can be seen.

O. Clear commander's weapon (see TM 9-2350-264-10).







5t1350

CHAPTER 4

UNIT TROUBLESHOOTING

SECTION I. PRINCIPLES OF OPERATION

1-1. GENERAL. This section contains a functional description of equipment operation for the TUSK system for M1A1 tank. Schematic diagrams are located at the back of this TB.

NOTE

- The installation of the TUSK system may cause some additional faults to appear in non-TUSK components. Always begin troubleshooting your TUSK vehicle using this TB. If fault system is not listed in this TB, continue troubleshooting using your standard M1A1 TM (vehicles without embedded diagnostics) or IETM (vehicles with embedded diagnostics).
- All vehicle hardware configurations may not be covered by this TUSK TB, standard TM or IETM. If your configuration is not covered, use TUSK TB schematics along with TM 9-2350-264-24-1, TM 9-2350-264-24-2, and any other schematics as needed to complete troubleshooting.

1-2. TUSK SYSTEM.

1-2.1 Power Distribution System (TUSK). M1A1 vehicles can be equipped with a Power Distribution Box (PDB) installed on the turret wall, left of the main gun as part of the Tank Urban Survivability Kit (TUSK). The PDB interface taps into power for three subsystem kits that can be added to the tank: Remote Thermal Sight (RTS); Loader's Thermal Weapon Sight (LTWS); and Counter Sniper/Anti-Materiel Gun Mount (CSAMM). A power interface cable tees into existing power lines that feed from the 200A automatically resettable circuit breaker 2 in the Hull Power Distribution Box (HPDB), through the Hull/Turret Slipring (H/TSR), to either the Turret Networks Box (TNB) or to the Redesigned Turret Networks Box (RTNB). The existing power lines also feed power to and from the External Auxiliary Power Unit (EAPU), if installed. The PDB kit installation adds harness 1W501-TUSK between 1W100-9/P1 or 1W501-P1 and hull/turret slipring J6, and between 1W100-9/P4 or 1W501-P4 and hull/turret slipring J7, to provide input power to the PDB. Input power is distributed through seven manually resettable circuit breakers (CB1 thru CB7) to seven utility jack outputs (UJ1 thru UJ7).

The RTS is powered off of utility jack 3 (UJ3) on the PDB and is protected by a 6A manually resettable circuit breaker (CB3). The RTS interface harness connects from UJ3 on the PDB to the RTS Power Filter Module (PFM). The PFM provides filtered +15 V dc to other RTS components, including the Display Control Module (DCM) and Thermal Sight Module (TSM). The PFM also serves as a TSM video interface to other devices as required.

The LTWS is powered off of utility jack 6 (UJ6) on the PDB and is protected by a 15A manually resettable circuit breaker (CB6). The LTWS interface harness connects from UJ6 on the PDB to the LTWS Vehicle Power Adapter (VPA). The VPA distributes conditioned power to the LTWS components, which includes the Thermal Sight Module (TSM), Display Control Module (DCM), and Helmet Mounted Display (HMD). For additional information regarding the LTWS theory of operation, see LTWS TM 11-5855-314-12&P.

The CSAMM is powered off of utility jack 7 (UJ7) on the PDB and is protected by a 15A manually resettable circuit breaker (CB7). The CSAMM interface harness connects from UJ7 on the PDB to the CSAMM Rate of Fire System (RFS) control box and to the exterior harness which carries power to the gun solenoid and spotlight. For additional information regarding the CSAMM theory of operation, see TM CSAMM-12&P.

The commander's spotlight is powered off of utility jack 1 (UJ1) on the turret networks box (TNB) or redesigned turret networks box (RTNB) and is protected by a 25A manually resettable circuit breaker (CB33). If the vehicle has the blue force tracking (BFT) kit (also known as enhanced information system (EIS) kit) installed, then power comes from 1W215-EF/J2 or 1W222-EF/J2 connector (page 4-166). The commander's spotlight interface harness connects from UJ1 on the TNB/RTNB (or J2 on 1W215-EF or 1W222-EF BFT/EIS kit) to the commander's spotlight retractile cord to the commander's spotlight handle. An infrared lens, located in the rear pocket of the commander's spotlight cover, can be attached over the clear lens on the commander's spotlight as needed.

SECTION II. FAULT SYMPTOM INDEXES

This section contains symptom indexes which identify the correct procedure for troubleshooting a malfunction. A fault symptom index is included for each system/subsystem. Troubleshoot all tripped circuit breakers and cable disconnects before choosing any other symptom listed in the fault system index. Use TUSK TB schematics along with TM 9-2350-264-24-1 and TM 9-2350-264-24-2 as needed for troubleshooting.

TUSK System Fault Symptom Index

Symptom No.	Fault Symptom	Refer To
	TUSK SYSTEMS	
CSAMM-1	Counter Sniper/Anti-Materiel Gun Mount (CSAMM) Does Not Power Up	Page 4-14
CSAMM-2	Counter Sniper/Anti-Materiel Gun Mount (CSAMM) .50 Cal Machinegun Does Not Fire or Fires Erratically	Page 4-17
CSAMM-3	Counter Sniper/Anti-Materiel Gun Mount (CSAMM) Spotlight Does Not Operate Properly. CSAMM Machinegun Fires	Page 4-20
LTWS-1	Loader's Thermal Weapon Sight (LTWS) Does Not Power Up	Page 4-23
LTWS-2	Loader's Thermal Weapon Sight (LTWS) Does Not Operate Properly	Page 4-25
PDB CB-3	Circuit Breaker 3 On Power Distribution Box Shuts Off	Page 4-126
PDB CB-6	Circuit Breaker 6 On Power Distribution Box Shuts Off	Page 4-128
PDB CB-7	Circuit Breaker 7 On Power Distribution Box Shuts Off	Page 4-130
RTS-1	Remote Thermal Sight (RTS) Does Not Come On	Page 4-30
SPOTLIGHT-1	Commander's Spotlight Does Not Operate Properly	Page 4-34.1
TCB-33	Circuit Breaker 33 On Turret Networks Box or Redesigned Turret Networks Box Shuts Off	Page 4-130.2
TIP-1	Tank Infantry Phone (TIP) Does Not Operate	TM 11-5820-263-20&P

Turret Electrical System Fault Symptom Index

Symptom No.	Fault Symptom	Refer To
	VEHICLE/TURRET POWER CONTROL SUBSYSTEM (V/TPC)	
	Vehicle Master Power	
TNB V/TPC-5	NBC Back-up System, Commander's Weapon Station, And Communication System Do Not Work When VEHICLE MASTER POWER Switch Is Set To ON (Vehicles Equipped with Turret Networks Box)	Page 4-35
RTNB V/TPC-5	NBC Back-up System, Commander's Weapon Station, And Communication System Do Not Work When VEHICLE MASTER POWER Switch Is Set To ON (Vehicles Equipped with Redesigned Turret Networks Box)	Troubleshoot your problem using TUSK TB Schematics along with TM 9-2350-264-24-1 and TM 9-2350-264-24-2 as needed.

Turret Electrical System Fault Symptom Index (Continued)

Symptom No.	Fault Symptom	Refer To
	FIRING CIRCUITS SUBSYSTEM (FCS)	
	Main Gun	
AES-62	Commander And Gunner Cannot Fire Main Gun From Control Handles In NORMAL Mode Only	Refer to TM 9-2350-264-20-2* or IETM**.

Hydraulic and Gun/Turret Drive System Fault Symptom Index

Symptom No.	Fault Symptom	Refer To
	AZIMUTH/ELEVATION SUBSYSTEM (AES)	
	Azimuth/Elevation	
AES-1	Main Gun Slams And Turret Traverses In NORMAL And/Or EMERGENCY Mode With Commander's Or Gunner's Palm Switch Pressed	Refer to TM 9-2350-264-20-2* or IETM**.
AES-68	Commander's And/Or Gunner's Handle Can Move Gun And/Or Turret Without Pressing Palm Switches	Refer to TM 9-2350-264-20-2* or IETM**.
	Azimuth	
AES-3	Turret Traverses, Drifts, Or Chatters In NORMAL And/Or EMERGENCY Mode With Commander's Or Gunner's Palm Switch Pressed	Refer to TM 9-2350-264-20-2* or IETM**.
	Elevation	
AES-2	Main Gun Slams, Drifts, or Chatters In NORMAL And/Or EMERGENCY Mode With Commander's Or Gunner's Palm Switch Pressed	Refer to TM 9-2350-264-20-2* or IETM**.
AES-66	Gunner And Commander Cannot Elevate Or Depress Main Gun In NORMAL Mode	Refer to TM 9-2350-264-20-2* or IETM**.

*** Vehicles equipped with turret networks box, refer to TM 9-2350-264-20-2. If asked "Do you have STE test set?" answer "NO".**

**** Vehicles equipped with redesigned turret networks box, refer to IETM.**

Fire Control System Fault Symptom Index

Symptom No.	Fault Symptom	Refer To
	AUTO SELF TEST AND CABLE DISCONNECT SUBSYSTEM (ASTS)	
TNB ASTS-1	FIRE CONTROL MALFUNCTION Or FC MALF Light And F Symbol Come On. Computer Manual Self Test Shows No Failure (Vehicles Equipped with Turret Networks Box)	Page 4-42
RTNB ASTS-1	FIRE CONTROL MALFUNCTION Or FC MALF Light And F Symbol Come On. Computer Manual Self Test Shows No Failure (Vehicles Equipped with Redesigned Turret Networks Box)	Troubleshoot your problem using TUSK TB Schematics along with TM 9-2350-264-24-1 and TM 9-2350-264-24-2 as needed.
ASTS-2	FIRE CONTROL MALFUNCTION Or FC MALF Light Does Not Come On When PANEL LIGHTS Or PNL LGTS TEST Pushbutton Is Pressed	Refer to TM 9-2350-264-20-2* or IETM**.
ASTS-3	FIRE CONTROL MALFUNCTION Or FC MALF Light Does Not Come On With A Fire Control Or Harness Disconnected Malfunction. F Symbol On	Refer to TM 9-2350-264-20-2* or IETM**.
ASTS-4	F Symbol Does Not Come On With A Fire Control Or Harness Disconnected Malfunction. FIRE CONTROL MALFUNCTION Or FC MALF Light On	Refer to TM 9-2350-264-20-2* or IETM**.
TNB ASTS-5	FIRE CONTROL MALFUNCTION Or FC MALF Light And F Symbol Do Not Come On With A Fire Control Or Harness Disconnected Malfunction (Vehicles Equipped with Turret Networks Box)	Page 4-70
RTNB ASTS-5	FIRE CONTROL MALFUNCTION Or FC MALF Light And F Symbol Do Not Come On With A Fire Control Or Harness Disconnected Malfunction (Vehicles Equipped with Redesigned Turret Networks Box)	Troubleshoot your problem using TUSK TB Schematics along with TM 9-2350-264-24-1 and TM 9-2350-264-24-2 as needed.

*** Vehicles equipped with turret networks box, refer to TM 9-2350-264-20-2. If asked "Do you have STE test set?" answer "NO".**

**** Vehicles equipped with redesigned turret networks box, refer to IETM.**

Fire Control System Fault Symptom Index (Continued)

Symptom No.	Fault Symptom	Refer To
	AZIMUTH/ELEVATION (AES) AND COMPUTER (CS) SUBSYSTEM	
	Battle Range	
CS-6	Range Does Not Increase When MANUAL RANGE ADD-DROP Switch Is Set To ADD Position or ADD Pushbutton Is Pressed	Refer to TM 9-2350-264-20-2* or IETM**.
CS-7	Preset Range For Selected Ammunition Is Not Displayed When MANUAL RANGE BATTLE SGT Or BTL SITE Pushbutton Is Pressed	Refer to TM 9-2350-264-20-2* or IETM**.
CS-8	Range Does Not Decrease When MANUAL RANGE ADD-DROP Switch Is Set To DROP Position or DROP Pushbutton Is Pressed	Refer to TM 9-2350-264-20-2* or IETM**.
	Manual Self Test	
CS-17	FIRE CONTROL MALFUNCTION Or FC MALF Light And F Symbol Come On. Computer Manual Self Test Shows Failure Number 1	Refer to TM 9-2350-264-20-2* or IETM**.
CS-10	FIRE CONTROL MALFUNCTION Or FC MALF Light And F Symbol Come On. Computer Manual Self Test Shows Failure Number 2	Refer to TM 9-2350-264-20-2* or IETM**.
CS-9	FIRE CONTROL MALFUNCTION Or FC MALF Light And F Symbol Come On. Computer Manual Self Test Shows Failure Number 3	Refer to TM 9-2350-264-20-2* or IETM**.
AES-38	FIRE CONTROL MALFUNCTION Or FC MALF Light And F Symbol Come On. Computer Manual Self Test Shows Failure Number 4	Refer to TM 9-2350-264-20-2* or IETM**.
AES-63	FIRE CONTROL MALFUNCTION Or FC MALF Light And F Symbol Come On. Computer Manual Self Test Shows Failure Numbers 4, 5, And 7	Refer to TM 9-2350-264-20-2* or IETM**.
AES-39	FIRE CONTROL MALFUNCTION Or FC MALF Light And F Symbol Come On. Computer Manual Self Test Shows Failure Number 5	Refer to TM 9-2350-264-20-2* or IETM**.
AES-64	FIRE CONTROL MALFUNCTION Or FC MALF Light And F Symbol Come On. Computer Manual Self Test Shows Failure Numbers 5 And 7	Refer to TM 9-2350-264-20-2* or IETM**.
AES-50	FIRE CONTROL MALFUNCTION Or FC MALF Light And F Symbol Come On. Computer Manual Self Test Shows Failure Number 6	Refer to TM 9-2350-264-20-2* or IETM**.

*** Vehicles equipped with turret networks box, refer to TM 9-2350-264-20-2. If asked "Do you have STE test set?" answer "NO".**

**** Vehicles equipped with redesigned turret networks box, refer to IETM.**

Fire Control System Fault Symptom Index (Continued)

Symptom No.	Fault Symptom	Refer To
	Manual Self Test (continued)	
AES-51	FIRE CONTROL MALFUNCTION Or FC MALF Light And F Symbol Come On. Computer Manual Self Test Shows Failure Number 7	Refer to TM 9-2350-264-20-2* or IETM**.
CS-2	FIRE CONTROL MALFUNCTION Or FC MALF Light And F Symbol Come On. Computer Manual Self Test Shows Failure Number 400FA	Refer to TM 9-2350-264-20-2* or IETM**.
CS-11	Cannot Perform Computer Manual Self Test	Refer to TM 9-2350-264-20-2* or IETM**.
CS-12	Computer Control Panel Does Not Display Data	Refer to TM 9-2350-264-20-2* or IETM**.
	Computer Control Panel	
CS-13	Data Cannot Be Entered In Computer	Refer to TM 9-2350-264-20-2* or IETM**.
CS-14	Computer Control Panel Display Is Erratic And/Or Wrong	Refer to TM 9-2350-264-20-2* or IETM**.
CS-15	One Or More Computer Control Panel Pushbuttons Do Not Work	Refer to TM 9-2350-264-20-2* or IETM**.
CS-16	Computer Control Panel Stays Off When ON/OFF Switch Is Set To ON	Refer to TM 9-2350-264-20-2* or IETM**.
CS-18	Cannot Select BORESIGHT Or ZERO Mode On Computer Control Panel	Refer to TM 9-2350-264-20-2* or IETM**.
CS-22	Computer Control Panel Does Not Come On, AMMUNITION SELECT Lights Do Not Come On, And MANUAL RANGE BATTLE SGT Does Not Work	Refer to TM 9-2350-264-20-2* or IETM**.

*** Vehicles equipped with turret networks box, refer to TM 9-2350-264-20-2. If asked "Do you have STE test set?" answer "NO".**

**** Vehicles equipped with redesigned turret networks box, refer to IETM.**

Fire Control System Fault Symptom Index (Continued)

Symptom No.	Fault Symptom	Refer To
	Muzzle Reference Sensor	
CS-19	MRS Light Does Not Come On When MRS Lever Is Set To The IN Position	Refer to TM 9-2350-264-20-2* or IETM**.
CS-20	MRS Light Does Not Go Off When MRS Lever Is Set To The OUT Position	Refer to TM 9-2350-264-20-2* or IETM**.
CS-21	Main Gun Does Not Go To Zero Degrees When MRS System Is Energized And Gunner's Or Commander's Palm Switch Is Pressed	Refer to TM 9-2350-264-20-2* or IETM**.
	Gunner's Primary Sight Reticle	
AES-40	Computer Manual Self Test Shows Failure Number 6. Gunner's Primary Sight Reticle Stays To Extreme Left Or Right	Refer to TM 9-2350-264-20-2* or IETM**.
AES-41	Computer Manual Self Test Shows Failure Number 6. Gunner's Primary Sight Reticle Keeps Moving Back And Forth	Refer to TM 9-2350-264-20-2* or IETM**.
AES-42	Computer Manual Self Test Shows Failure Number 6. Gunner's Primary Sight Reticle Does Not Move In Azimuth	Refer to TM 9-2350-264-20-2* or IETM**.
AES-45	Gunner's Primary Sight Reticle Does Not Move Up Or Down When Either The Gunner's Or Commander's Control Is Moved In Normal Mode	Refer to TM 9-2350-264-20-2* or IETM**.
AES-48	Gunner's Primary Sight Reticle Bounces When Stopped Suddenly In NORMAL Or EMERGENCY Mode. Computer Manual Self Test May Display Failure Number 5 Or 7	Refer to TM 9-2350-264-20-2* or IETM**.
AES-49	Gunner's Primary Sight Reticle Does Not Move In NORMAL Or EMERGENCY Mode. Computer Manual Self Test Displays Failure Number 5 Or 7	Refer to TM 9-2350-264-20-2* or IETM**.
AES-56	Turret Does Not Counter-Rotate To Provide Lead Angle When Tracking A Moving Target	Refer to TM 9-2350-264-20-2* or IETM**.
AES-57	Gunner's Primary Sight Reticle Does Not Move In Elevation	Refer to TM 9-2350-264-20-2* or IETM**.
AES-58	Gunner's Primary Sight Reticle Does Not Move Smoothly In Elevation	Refer to TM 9-2350-264-20-2* or IETM**.

*** Vehicles equipped with turret networks box, refer to TM 9-2350-264-20-2. If asked "Do you have STE test set?" answer "NO".**

**** Vehicles equipped with redesigned turret networks box, refer to IETM.**

Fire Control System Fault Symptom Index (Continued)

Symptom No.	Fault Symptom	Refer To
	Gunner's Primary Sight Reticle (continued)	
AES-59	Cannot Hit Target Using Gunner's Primary Sight Reticle With Tank Moving. OK With Tank Stationary	Refer to TM 9-2350-264-20-2* or IETM**.
	Azimuth/Elevation	
AES-10	Main Gun And Turret Do Not Move In NORMAL And/Or EMERGENCY Mode. Hydraulic Pressure Gage Shows Between 1500 And 1700 PSI	Refer to TM 9-2350-264-20-2* or IETM**.
AES-14	Main Gun Does Not Elevate Or Depress And Turret Does Not Traverse In NORMAL Mode	Refer to TM 9-2350-264-20-2* or IETM**.
AES-18	FIRE CONTROL MODE Switch Does Not Hold In MANUAL Or EMERGENCY Positions	Refer to TM 9-2350-264-20-2* or IETM**.
AES-19	FIRE CONTROL MODE Switch Is Moved From NORMAL To EMERGENCY Position, But Main Gun And Turret Cannot Be Moved With Control Handles	Refer to TM 9-2350-264-20-2* or IETM**.
AES-21	FIRE CONTROL MODE Switch Is Moved From EMERGENCY To NORMAL Position, But Main Gun And Turret Do Not Stabilize	Refer to TM 9-2350-264-20-2* or IETM**.
AES-22	GUN/TURRET DRIVE Switch Is Moved From MANUAL To POWERED Position, But Main Gun And Turret Can Only Be Moved With Manual Controls. MANUAL Lights Remain On	Refer to TM 9-2350-264-20-2* or IETM**.
AES-31	Turret And Main Gun Do Not Move Using Gunner's Control, But Do Move Using Commander's Control	Refer to TM 9-2350-264-20-2* or IETM**.
AES-32	Turret And Main Gun Do Not Move Using Commander's Control, But Do Move Using Gunner's Control	Refer to TM 9-2350-264-20-2* or IETM**.
AES-43	Turret/Main Gun Oscillates In NORMAL Mode With Commander's Or Gunner's Palm Switches Pressed And Controls Centered	Refer to TM 9-2350-264-20-2* or IETM**.

*** Vehicles equipped with turret networks box, refer to TM 9-2350-264-20-2. If asked "Do you have STE test set?" answer "NO".**

**** Vehicles equipped with redesigned turret networks box, refer to IETM.**

Fire Control System Fault Symptom Index (Continued)

Symptom No.	Fault Symptom	Refer To
	Azimuth	
AES-11	Turret Does Not Traverse Using Commander's Control. Gunner's Control Works OK	Refer to TM 9-2350-264-20-2* or IETM**.
AES-12	Turret Does Not Traverse Using Gunner's Control. Commander's Control Works OK	Refer to TM 9-2350-264-20-2* or IETM**.
AES-13	Turret Drifts And NORMAL MODE DRIFT AZ Knob Has No Effect	Refer to TM 9-2350-264-20-2* or IETM**.
AES-29	Turret Does Not Traverse In NORMAL Or EMERGENCY Mode. OK In MANUAL Mode	Refer to TM 9-2350-264-20-2* or IETM**.
AES-30	Turret Does Not Remain Stable In Azimuth When Tank Is Turned Left Or Right	Refer to TM 9-2350-264-20-2* or IETM**.
AES-47	Turret And Gunner's Primary Sight Reticle Traverse In NORMAL Mode With Gunner's And Commander's Controls Centered And Either Gunner's Or Commander's Palm Switch Pressed	Refer to TM 9-2350-264-20-2* or IETM**.
AES-54	Erratic Tracking Of Turret In NORMAL Mode Only Using Gunner's Control	Refer to TM 9-2350-264-20-2* or IETM**.
AES-55	Erratic Tracking Of Turret In NORMAL Mode Only Using Commander's Control	Refer to TM 9-2350-264-20-2* or IETM**.

*** Vehicles equipped with turret networks box, refer to TM 9-2350-264-20-2. If asked "Do you have STE test set?" answer "NO".**

**** Vehicles equipped with redesigned turret networks box, refer to IETM.**

Fire Control System Fault Symptom Index (Continued)

Symptom No.	Fault Symptom	Refer To
	Elevation	
AES-15	Main Gun Slams Or Elevates Against Upper Stop When Traversing Over Rear Deck Interference Zone Or When EL UNCPL Mode Is Selected	Refer to TM 9-2350-264-20-2* or IETM**.
AES-16	Main Gun Does Not Depress Below Zero Degrees Outside Rear Deck Interference Zone	Refer to TM 9-2350-264-20-2* or IETM**.
AES-17	Main Gun Does Not Elevate Or Depress In NORMAL Or EMERGENCY Mode. OK In MANUAL Mode	Refer to TM 9-2350-264-20-2* or IETM**.
AES-20	GUN/TURRET DRIVE Switch Is Set To EL UNCPL Position, But Main Gun Remains Stabilized In Elevation	Refer to TM 9-2350-264-20-2* or IETM**.
AES-23	GUN/TURRET DRIVE Switch Is Moved From EL UNCPL To POWERED Position, But Main Gun Remains Uncoupled In Elevation And EL UNCPL Light Remains On	Refer to TM 9-2350-264-20-2* or IETM**.
AES-33	Main Gun Drifts In NORMAL Mode. NORMAL MODE DRIFT EL Knob Has No Effect	Refer to TM 9-2350-264-20-2* or IETM**.
AES-34	Main Gun Does Not Elevate Or Depress Using Gunner's Control. Commander's Control Works OK	Refer to TM 9-2350-264-20-2* or IETM**.
AES-35	Main Gun Does Not Elevate Or Depress Using Commander's Control. Gunner's Control Works OK	Refer to TM 9-2350-264-20-2* or IETM**.
AES-36	Main Gun Does Not Elevate To Zero Degrees When EL UNCPL Mode Is Selected	Refer to TM 9-2350-264-20-2* or IETM**.
AES-37	Main Gun Does Not Elevate To Zero Degrees While Traversing In Interference Zone	Refer to TM 9-2350-264-20-2* or IETM**.
AES-44	Main Gun Does Not Remain Stable In Elevation. Gun Follows Pitching Motion of Tank	Refer to TM 9-2350-264-20-2* or IETM**.

*** Vehicles equipped with turret networks box, refer to TM 9-2350-264-20-2. If asked "Do you have STE test set?" answer "NO".**

**** Vehicles equipped with redesigned turret networks box, refer to IETM.**

Fire Control System Fault Symptom Index (Continued)

Symptom No.	Fault Symptom	Refer To
	Elevation (continued)	
AES-46	Main Gun And Gunner's Primary Sight Reticle Elevate Or Depress In NORMAL Mode With Gunner's And Commander's Controls Centered And Either Gunner's Or Commander's Palm Switch Pressed	Refer to TM 9-2350-264-20-2* or IETM**.
AES-52	Erratic Tracking Of Main Gun In NORMAL Mode Only Using Gunner's Control	Refer to TM 9-2350-264-20-2* or IETM**.
AES-53	Erratic Tracking Of Main Gun In NORMAL Mode Only Using Commander's Control	Refer to TM 9-2350-264-20-2* or IETM**.
CS-21	Main Gun Does Not Go To Zero Degrees When MRS System Is Energized And Gunner's Or Commander's Palm Switch Is Pressed	Refer to TM 9-2350-264-20-2* or IETM**.
AES-61	Cannot Adjust Main Gun Drift In EMERGENCY Mode	Refer to TM 9-2350-264-20-2* or IETM**.
	Lights	
AES-24	NORMAL Light On Gunner's Primary Sight Lower Panel Does Not Come On When FIRE CONTROL MODE Switch Is Set To NORMAL Or Within 30 Seconds Of Setting TURRET POWER Switch To ON	Refer to TM 9-2350-264-20-2* or IETM**.
AES-25	EMERGENCY Light On Gunner's Primary Sight Lower Panel Does Not Come On When FIRE CONTROL MODE Switch Is Set To EMERGENCY. NORMAL Light OK	Refer to TM 9-2350-264-20-2* or IETM**.
AES-26	MANUAL Light On Gunner's Primary Sight Lower Panel And/Or Loader's Panel Does Not Come On When Turret Is Switched To MANUAL MODE With One Of The Manual Switches Or The Traversing Mechanism Palm Switch	Refer to TM 9-2350-264-20-2* or IETM**.
AES-27	POWERED Light On Loader's Panel Does Not Come On When GUN/TURRET DRIVE Switch Is Set To POWERED	Refer to TM 9-2350-264-20-2* or IETM**.
AES-28	EL UNCPL Light On Loader's Panel Does Not Come On When GUN/TURRET DRIVE Switch Is Set To EL UNCPL Position	Refer to TM 9-2350-264-20-2* or IETM**.

*** Vehicles equipped with turret networks box, refer to TM 9-2350-264-20-2. If asked "Do you have STE test set?" answer "NO".**

**** Vehicles equipped with redesigned turret networks box, refer to IETM.**

External Auxiliary Power Unit Fault Symptom Index

Symptom No.	Fault Symptom	Refer To
	EXTERNAL AUXILIARY POWER UNIT (EAPU)	
EAPU-6	ELECTRICAL SYSTEM Voltmeter On Vehicle Does Not Indicate Charging When OUTPUT POWER Switch On Remote Control Box Or Local Control Panel Is Set To ON	Page 4-132
EAPU-6A	ELECTRICAL SYSTEM Voltmeter On Vehicle Does Not Indicate Charging When OUTPUT POWER Switch On Remote Control Box Is Set To ON, But Works Correctly From Local Control Panel Of EAPU	Page 4-132
EAPU-10A	EAPU Shuts Down Automatically. The OUTPUT POWER ON Lamp On Remote Control Box Is Flashing	Page 4-141
	MISSILE COUNTERMEASURE DEVICE (MCD)	
MCD-1	Missile Countermeasure Device (MCD) Does Not Work	Page 4-143

SECTION III. TROUBLESHOOTING PROCEDURES

SYMPTOM CSAMM-1

COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) DOES NOT POWER UP

Tools:
- Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)
- Embedded diagnostics support kit (57K4116) (vehicles with redesigned turret networks box)
- Breakout box tool kit (NSN 5999-01-130-8077)
- Digital multimeter (NSN 6625-01-265-6000)
- TA1 continuity test probe kit (NSN 6625-01-102-6878) (vehicles with turret networks box)
- Universal test lead set (NSN 6625-01-121-0510) (as required) (vehicles with turret networks box)

Supplies:
- Electrical jumper (as required)

Equipment Condition:
- 1W810-CSAMM/P1 is connected to UJ7 on the power distribution box (PDB) (page 4-155).
- CB7 on the PDB is not tripping. If CB7 is tripping, do procedure PDB CB-7 Circuit Breaker 7 On Power Distribution Box Shuts Off (page 4-130).

NOTE

Read Section I, How To Do Troubleshooting, before doing any work (TM 9-2350-264-20-2).

1
- Set up tank controls for standard initial test conditions (TM 9-2350-264-20-2).
- Make sure SAFE/ARMED switch on CSAMM Rate of Fire System (RFS) control box is set to SAFE.
- Make sure LIGHT switch on CSAMM RFS control box is set to OFF.
- Make sure AUTO/SINGLE switch on CSAMM RFS control box is set to SINGLE.
- Make sure CB7 on power distribution box is set to ON.
- Set TURRET POWER switch to ON.
- Set NBC MODE BACKUP switch on tank commander's panel or NBC BACK switch on upgraded tank commander's panel to ON.
- Check if NBC backup system blower is operating.

Did NBC backup system blower come on?

YES

2
- Set NBC MODE BACKUP switch on tank commander's panel or NBC BACK switch on upgraded tank commander's panel to OFF.
- Set SAFE/ARMED switch on CSAMM RFS control box to ARMED.
- Check to see if SAFE/ARMED switch illuminates.

Did SAFE/ARMED switch illuminate?

NO

3
- Set NBC MODE BACKUP switch on tank commander's panel or NBC BACK switch on upgraded tank commander's panel to OFF.
- Set VEHICLE MASTER POWER switch to OFF.
- Refer to Fault Symptom Index (page 4-2) and do procedure for TNB V/TPC-5 or RTNB V/TPC-5 that matches your vehicle hardware configuration.

NO — YES

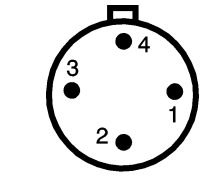
4

- Set SAFE/ARMED switch on CSAMM RFS control box to SAFE.
- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W810-CSAMM/P2 from J1 on CSAMM RFS control box (page 4-156).
- Set TURRET POWER switch to ON.
- Test for 18 to 30 V dc between contacts A (+) and B (-) on 1W810-CSAMM/P2.

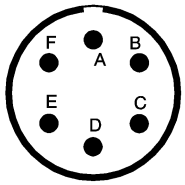
Does multimeter show 18 to 30 V dc?

5

- If CSAMM machinegun does not fire or fires erratically, do procedure for CSAMM-2, Counter Sniper/Anti-Material Gun Mount (CSAMM) .50 Cal Machinegun Does Not Fire Or Fires Erratically (page 4-17).
- If CSAMM machinegun fires but spotlight does not operate properly, do procedure for CSAMM-3, Counter Sniper/Anti-Material Gun Mount (CSAMM) Spotlight Does Not Operate Properly. CSAMM Machinegun Fires (page 4-20).



1W810–CSAMM/P1



1W810–CSAMM/P2

NO — YES

6

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W810-CSAMM/P1 from UJ7 on power distribution box (page 4-155).
- Connect jumper between contacts 1 and 2 on 1W810-CSAMM/P1.
- Test for continuity between contacts A and B on 1W810-CSAMM/P2.

Does multimeter show continuity?

7

- Replace CSAMM Rate Of Fire System (RFS) Assembly (page 5-35).
- Verify problem is solved.

YES

8

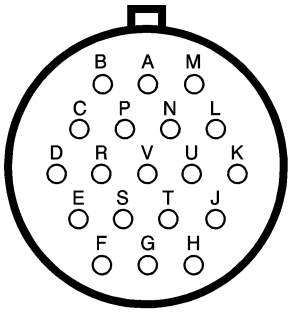
- Connect 1W810-CSAMM/P2 to J1 on CSAMM RFS control box (page 4-156).
- Connect breakout box to TEST 1 on turret networks box or TJ1 on redesigned turret networks box using CABLE NO. 1 and ADAPTER NO. 1 (page 4-151).
- Connect jumper between test points 7 and 9 on breakout box.
- Disconnect 1W501-TUSK/P1 from J1 on power distribution box (page 4-155).
- Test for continuity between contacts P and T on 1W501-TUSK/P1.

Does multimeter show continuity?

NO

9

- Replace electrical harness 1W810-CSAMM (page 5-36).
- Verify problem is solved.



1W501–TUSK/P1

YES

10

- Replace power distribution box (page 5-19).
- Verify problem is solved.

NO

11

- Connect 1W810-CSAMM/P1 to UJ7 on power distribution box (page 4-155).
- Replace wiring harness assembly 1W501-TUSK (page 5-21).
- Verify problem is solved.

SYMPTOM CSAMM-2

COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) .50 CAL MACHINEGUN DOES NOT FIRE OR FIRES ERRATICALLY

Tools:
- Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)
- Embedded diagnostic support kit (57K4116) (vehicles with redesigned turret networks box)
- Breakout box tool kit (NSN 5999-01-130-8077)
- Digital multimeter (NSN 6625-01-265-6000)
- TA1 continuity test probe kit (NSN 6625-01-102-6878) (vehicles with turret networks box)
- Universal test lead set (NSN 6625-01-121-0510) (as required) (vehicles with turret networks box)

Supplies:
- Electrical jumper (as required)

Equipment Condition:
- 1W810-CSAMM/P1 is connected to UJ7 on power distribution box (page 4-155).
- CB7 on the PDB is not tripping. If CB7 is tripping, do procedure for PDB CB-7, Circuit Breaker 7 On Power Distribution Box Shuts Off (page 4-130).
- With turret power on, SAFE/ARMED switch on CSAMM Rate of Fire System (RFS) control box illuminates when in ARMED position. If not, do procedure for CSAMM-1, Counter Sniper/Anti-Materiel Gun Mount (CSAMM) Does Not Power Up (page 4-14).

NOTE

Read Section I, How To Do Troubleshooting, before doing any work (TM 9-2350-264-20-2).

1

Is your problem that the CSAMM machinegun does not fire?

NO — YES

2

- Set up tank controls for standard initial test conditions (TM 9-2350-264-20-2).
- Make sure SAFE/ARMED switch on CSAMM RFS control box is set to SAFE.
- Make sure LIGHT switch on CSAMM RFS control box is set to OFF.
- Make sure AUTO/SINGLE switch on CSAMM RFS control box is set to SINGLE.
- Set circuit breaker CB7 on power distribution box to OFF.
- Disconnect 1W810-CSAMM/P2 from J1 on CSAMM RFS control box (page 4-156).

NOTE

If multimeter shows less than 5 ohms, leave test probes connected and go immediately to block 4.

- Test for less than 5 ohms between contacts on 1W810-CSAMM/P2 listed below:
  - C and E
  - D and all contacts except B

Does multimeter show less than 5 ohms?

YES — NO

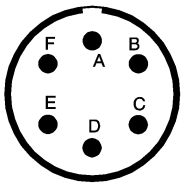
4

- Disconnect 1W810-CSAMM/J1 from 1W811-CSAMM/P2 (page 4-156).

Does multimeter show less than 5 ohms?

3

- Go to block 8 (page 4-18).



1W810–CSAMM/P2

5

- Set circuit breaker CB7 on power distribution box to ON.
- Replace CSAMM Rate Of Fire System (RFS) assembly (page 5-35).
- Verify problem is solved.

YES

6

- Set circuit breaker CB7 on power distribution box to ON.
- Replace electrical harness 1W810-CSAMM (page 5-36).
- Verify problem is solved.

NO

7

- Set circuit breaker CB7 on power distribution box to ON.
- Connect 1W810-CSAMM/P2 to J1 on CSAMM RFS control box (page 4-156).
- Replace electrical harness 1W811-CSAMM (page 5-40).
- Verify problem is solved.

From block 3

8

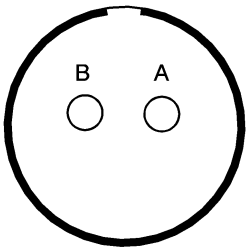
- Set up tank controls for standard initial test conditions (TM 9-2350-264-20-2).
- Make sure LIGHT switch on RFS control box is set to OFF.
- Make sure CB7 on power distribution box is set to ON.
- Set circuit breakers CB1 thru CB6 on power distribution box to OFF.
- Disconnect 1W811-CSAMM/P1 from J1 on CSAMM gun solenoid (page 4-157).
- Connect breakout box to TJ1 on hull power distribution box using CABLE NO. 1 and ADAPTER NO. 2 (page 4-152).

NOTE

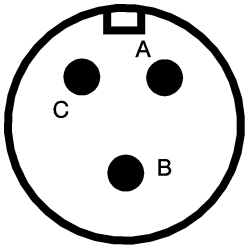
If multimeter does not show continuity, leave jumper connected until told to remove.

- Connect jumper between 9 and 30 on breakout box.
- Set AUTO/SINGLE switch on CSAMM RFS control box to AUTO.
- Set SAFE/ARMED switch on CSAMM RFS control box to ARMED.
- Test for continuity between contacts A and B on 1W811-CSAMM/P1 when CSAMM trigger button is pressed and held.

Does multimeter show continuity?



1W811–CSAMM/P1



1W810–CSAMM/J1

NO

9

- Disconnect 1W810-CSAMM/J1 from 1W811-CSAMM/P2 (page 4-156).
- Test for continuity between contacts A and C on 1W810-CSAMM/J1 when CSAMM trigger button is pressed and held.

Does multimeter show continuity?

YES

10

- Set circuit breakers CB1 thru CB6 on power distribution box to ON.
- Set SAFE/ARMED switch on CSAMM RFS control box to SAFE.
- Replace CSAMM gun solenoid.
  - Refer to Chapter 3.
- Verify problem is solved.

NO — YES

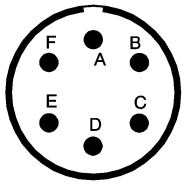
11

- Remove jumper on breakout box.
- Set SAFE/ARMED switch on CSAMM RFS control box to SAFE.
- Connect 1W811-CSAMM/P1 to J1 on CSAMM gun solenoid (page 4-157).
- Disconnect 1W810-CSAMM/P2 from J1 on CSAMM RFS control box (page 4-156).
- Test for continuity between contacts C and E on 1W810-CSAMM/P2 when CSAMM trigger button is pressed and held.

Does multimeter show continuity?

12

- Set circuit breakers CB1 thru CB6 on power distribution box to ON.
- Set SAFE/ARMED switch on CSAMM RFS control box to SAFE.
- Replace electrical harness 1W811-CSAMM (page 5-40).
- Verify problem is solved.



1W810–CSAMM/P2

YES — NO

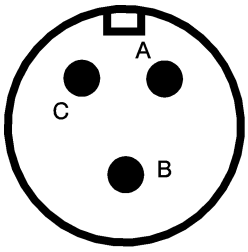
13

- Connect jumper between contacts B and D on 1W810-CSAMM/P2.
- Test for continuity between contacts A and C on 1W810-CSAMM/J1.

Does multimeter show continuity?

14

- Set circuit breakers CB1 thru CB6 on power distribution box to ON.
- Replace electrical harness 1W810-CSAMM (page 5-36).
- Verify problem is solved.



1W810–CSAMM/J1

YES — NO

15

- Connect 1W810-CSAMM/J1 to 1W811-CSAMM/P2 (page 4-156).
- Set circuit breakers CB1 thru CB6 on power distribution box to ON.
- Replace CSAMM Rate Of Fire System (RFS) assembly (page 5-35).
- Verify problem is solved.

16

- Set circuit breakers CB1 thru CB6 on power distribution box to ON.
- Replace electrical harness 1W810-CSAMM (page 5-36).
- Verify problem is solved.

SYMPTOM CSAMM-3

COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) SPOTLIGHT DOES NOT OPERATE PROPERLY. CSAMM MACHINEGUN FIRES.

Tools:
- Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)
- Embedded diagnostics support kit (57K4116) (vehicles with redesigned turret networks box)
- Breakout box tool kit (NSN 5999-01-130-8077)
- Digital multimeter (NSN 6625-01-265-6000)
- TA1 continuity test probe kit (NSN 6625-01-102-6878) (vehicles with turret networks box)
- Universal test lead set (NSN 6625-01-121-0510) (as required) (vehicles with turret networks box)

Supplies:
- Electrical jumper (as required)

Equipment Condition:
- 1W810-CSAMM/P1 is connected to UJ7 on power distribution box (page 4-155).
- CB7 on the PDB is not tripping. If CB7 is tripping, do procedure PDB CB-7 Circuit Breaker 7 On Power Distribution Box Shuts Off (page 4-130).

NOTE

Read Section I, How To Do Troubleshooting, before doing any work (TM 9-2350-264-20-2).

1

Is your problem that the CSAMM spotlight remains on when LIGHT switch on CSAMM Rate of Fire System (RFS) control box is set to OFF?

NO

2

- Set up tank controls for standard initial test conditions (TM 9-2350-264-20-2).
- Make sure SAFE/ARMED switch on CSAMM RFS control box is set to SAFE.
- Make sure AUTO/SINGLE switch on CSAMM RFS control box is set to SINGLE.
- Make sure CB7 on power distribution box is set to ON.
- Set circuit breakers CB1 thru CB6 on power distribution box to OFF.
- Disconnect 1W811-CSAMM/+ from spotlight + (page 4-157).
- Disconnect 1W811-CSAMM/- from spotlight - (page 4-157).
- Connect breakout box to TJ1 on hull power distribution box using CABLE NO. 1 and ADAPTER NO. 2 (page 4-152).
- Connect jumper between test points 9 and 30 on breakout box.

NOTE

If multimeter does not show continuity, leave jumper connected until told to remove.

- Set LIGHT switch on CSAMM RFS control box to ON.
- Test for continuity between + (positive) and - (negative) contacts on 1W811-CSAMM.

Does multimeter show continuity?

YES

3

- Go to block 10 (page 4-22).

NO — YES

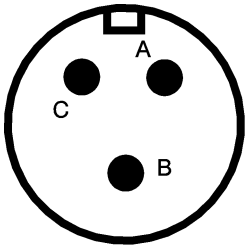
4

- Disconnect 1W810-CSAMM/J1 from 1W811-CSAMM/P2 (page 4-156).
- Test for continuity between contacts B and C on 1W810-CSAMM/J1.

Does multimeter show continuity?

5

- Set circuit breakers CB1 thru CB6 on power distribution box to ON.
- Replace CSAMM spotlight.
  - Refer to Chapter 3.
- Verify problem is solved.



1W810–CSAMM/J1

NO — YES

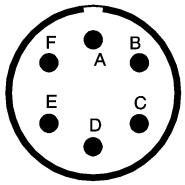
6

- Remove jumper on breakout box.
- Set circuit breakers CB1 thru CB6 on power distribution box to ON.
- Connect 1W811-CSAMM/+ to spotlight + (page 4-157).
- Connect 1W811-CSAMM/- to spotlight - (page 4-157).
- Disconnect 1W810-CSAMM/P2 from J1 on CSAMM RFS control box (page 4-156).
- Connect jumper between contacts B and F on 1W810-CSAMM/P2.
- Test for continuity between contacts B and C on 1W810-CSAMM/J1.

Does multimeter show continuity?

7

- Set circuit breakers CB1 thru CB6 on power distribution box to ON.
- Replace electrical harness 1W811-CSAMM (page 5-40).
- Verify problem is solved.



1W810–CSAMM/P2

YES — NO

8

- Connect 1W810-CSAMM/J1 to 1W811-CSAMM/P2 (page 4-156).
- Replace CSAMM Rate Of Fire System (RFS) assembly (page 5-35).
- Verify problem is solved.

9

- Replace electrical harness 1W810-CSAMM (page 5-36).
- Verify problem is solved.

From block 3

10

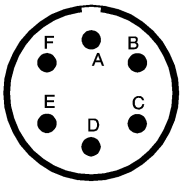
- Set up tank controls for standard initial test conditions (TM 9-2350-264-20-2).
- Make sure SAFE/ARMED switch on CSAMM RFS control box is set to SAFE.
- Make sure LIGHT switch on CSAMM RFS control box is set to OFF.
- Make sure AUTO/SINGLE switch on CSAMM RFS control box is set to SINGLE.
- Set circuit breaker CB7 on power distribution box to OFF.
- Disconnect 1W810-CSAMM/P2 from J1 on CSAMM RFS control box (page 4-156).

NOTE

If multimeter shows less than 5 ohms, leave test probes connected and go immediately to block 11.

- Test for less than 5 ohms between contact F and all other contacts on 1W810-CSAMM/P2.

Does multimeter show less than 5 ohms?



1W810–CSAMM/P2

YES — NO

11

- Disconnect 1W810-CSAMM/J1 from 1W811-CSAMM/P2 (page 4-156).

Does multimeter show less than 5 ohms?

12

- Set circuit breaker CB7 on power distribution box to ON.
- Replace CSAMM Rate Of Fire System (RFS) assembly (page 5-35).
- Verify problem is solved.

NO — YES

13

- Connect 1W810-CSAMM/P2 to J1 on CSAMM RFS control box (page 4-156).
- Set circuit breaker CB7 on power distribution box to ON.
- Replace electrical harness 1W811-CSAMM (page 5-40).
- Verify problem is solved.

14

- Set circuit breaker CB7 on power distribution box to ON.
- Replace electrical harness 1W810-CSAMM (page 5-36).
- Verify problem is solved.

SYMPTOM LTWS-1

LOADER'S THERMAL WEAPON SIGHT (LTWS) DOES NOT POWER UP

Tools:
- Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)
- Embedded diagnostics support kit (57K4116) (vehicles with redesigned turret networks box)
- Breakout box tool kit (NSN 5999-01-130-8077)
- Digital multimeter (NSN 6625-01-265-6000)
- TA1 continuity test probe kit (NSN 6625-01-102-6878) (vehicles with turret networks box)
- Universal test lead set (NSN 6625-01-121-0510) (as required) (vehicles with turret networks box)

Supplies:
- Electrical jumper (as required)

Equipment Condition:
- LTWS-W1/P1 is connected to UJ6 on the power distribution box (PDB) (page 4-155).
- CB6 on the PDB is not tripping. If CB6 is tripping, do procedure PDB CB-6 Circuit Breaker 6 On Power Distribution Box Shuts Off (page 4-128).

NOTE

Read Section I, How To Do Troubleshooting, before doing any work (TM 9-2350-264-20-2).

1

- Set up tank controls for standard initial test conditions (TM 9-2350-264-20-2).
- Make sure power switch S1 on LTWS vehicle power adapter is set to OFF.
- Make sure CB6 on power distribution box is set to ON.
- Set TURRET POWER switch to ON.
- Set NBC MODE BACKUP switch on tank commander's panel or NBC BACK switch on upgraded tank commander's panel to ON.
- Check if NBC backup system blower is operating.

Did NBC backup system blower come on?

YES

2

- Set NBC MODE BACKUP switch on tank commander's panel or NBC BACK switch on upgraded tank commander's panel to OFF.
- Set power switch S1 on LTWS Vehicle Power Adapter (VPA) to ON.

NOTE

If BIT S3 LED illuminates for any test, go immediately to block 5 (page 4-24).

- Run all LTWS VPA BIT S3 tests and observe the BIT S3 LED.

Did the BIT S3 LED illuminate for any test?

NO

3

- Set NBC MODE BACKUP switch on tank commander's panel or NBC BACK switch on upgraded tank commander's panel to OFF.
- Set VEHICLE MASTER POWER switch to OFF.
- Refer to Fault Symptom Index (page 4-2) and do procedure for TNB V/TPC-5 or RTNB V/TPC-5 that matches your vehicle hardware configuration.

NO — YES

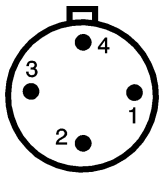
4

- Set power switch S1 on LTWS VPA to OFF.
- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect LTWS-W1/P2 from J1 on LTWS VPA (page 4-159).
- Set TURRET POWER switch to ON.
- Test for 18 to 30 V dc between contacts A (+) and B (-) on LTWS-W1/P2.

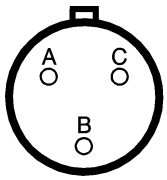
Does multimeter show 18 to 30 V dc?

5

- Do procedure for LTWS-2, Loader's Thermal Weapon System (LTWS) Does Not Operate Properly (page 4-25).



LTWS–W1/P1



LTWS – W1/P2

NO — YES

6

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect LTWS-W1/P1 from UJ6 on power distribution box (page 4-155).
- Connect jumper between contacts 1 and 2 on LTWS-W1/P1.
- Test for continuity between contacts A and B on LTWS-W1/P2.

Does multimeter show continuity?

7

- Replace LTWS vehicle power adapter (page 5-12).
- Verify problem is solved.

YES — NO

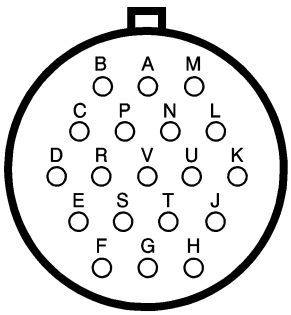
8

- Connect breakout box to TEST 1 on turret networks box or TJ1 on redesigned turret networks box using CABLE NO. 1 and ADAPTER NO. 1 (page 4-151).
- Connect jumper between test points 7 and 9 on breakout box.
- Disconnect 1W501-TUSK/P1 from J1 on power distribution box (page 4-155).
- Test for continuity between contacts N and S on 1W501-TUSK/P1.

Does multimeter show continuity?

9

- Replace LTWS Power Cable W1 (page 5-14).
- Verify problem is solved.



1W501–TUSK/P1

YES — NO

10

- Connect LTWS-W1/P2 to J1 on LTWS VPA (page 4-159).
- Replace power distribution box (page 5-19).
- Verify problem is solved.

11

- Connect LTWS-W1/P1 to UJ6 on power distribution box (page 4-155).
- Connect LTWS-W1/P2 to J1 on LTWS VPA (page 4-159).
- Replace wiring harness assembly 1W501-TUSK (page 5-21).
- Verify problem is solved.

SYMPTOM LTWS-2

LOADER'S THERMAL WEAPON SIGHT (LTWS) DOES NOT OPERATE PROPERLY

Tools:
- Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)
- Embedded diagnostics support kit (57K4116) (vehicles with redesigned turret networks box)
- Digital multimeter (NSN 6625-01-265-6000)
- TA1 continuity test probe kit (NSN 6625-01-102-6878) (vehicles with turret networks box)
- Universal test lead set (NSN 6625-01-121-0510) (as required) (vehicles with turret networks box)

Supplies:
- Electrical jumper (as required)

Equipment Condition:
- LTWS-W1/P1 is connected to UJ6 on power distribution box (page 4-155).
- CB6 on the PDB is not tripping. If CB6 is tripping, do procedure PDB CB-6 Circuit Breaker 6 On Power Distribution Box Shuts Off (page 4-128).

NOTE

Read Section I, How To Do Troubleshooting, before doing any work (TM 9-2350-264-20-2).

1

- Set up tank controls for standard initial test conditions (TM 9-2350-264-20-2).
- Set TURRET POWER switch to ON.
- Set POWER switch on LTWS vehicle power adapter (VPA) to ON.
- Set VIDEO SELECT switch on LTWS VPA to TSM.

NOTE

If BIT LED illuminates for any test, go immediately to block 2.

- Run LTWS VPA BIT S3 tests and observe the BIT S3 LED.
  - Refer to Chapter 3.

Did the BIT S3 LED illuminate for any test?

YES — NO

2

NOTE

If LTWS VPA BIT LED does not light for any test listed below, go immediately to block 5 (page 4-26).

- Set LTWS VPA BIT S3 switch to the following positions and check if BIT LED comes on.
  - LED TEST
  - VEH PWR
  - TSM PWR
  - HMD PWR

Does BIT S3 LED come on for all positions listed?

3

- Set LTWS VPA BIT S3 switch to LED OFF.
- Set MASTER POWER switch to OFF.
- Do procedure for LTWS-1, Loader's Thermal Weapon System (LTWS) Does Not Power Up (page 4-23).

YES

4

- Set LTWS VPA BIT S3 switch to VIDEO IN.
- Check if BIT S3 LED is lit.

Is LED lit?

NO

5

- Set LTWS VPA BIT S3 switch to LED OFF.
- Set POWER switch on LTWS VPA to OFF.
- Replace LTWS vehicle power adapter (page 5-12).
- Verify problem is solved.

YES

6

- Set VPA BIT S3 switch to VIDEO OUT.
- Check if BIT S3 LED is lit.

Is LED lit?

NO

7

- Go to block 16 (page 4-27).

YES

8

Is your problem with the thermal scene, adjustment/mode buttons, eyepiece activation function or clarity of image for the LTWS thermal sight module (TSM)?

NO

9

- Set LTWS VPA BIT S3 switch to LED OFF.
- Set POWER switch on LTWS VPA to OFF.
- Replace LTWS vehicle power adapter (page 5-12).
- Verify problem is solved.

NO

10

- Adjust LTWS TSM image for clear picture.
  - Refer to Chapter 3.
- Press LTWS TSM EMERGENCY button.
- Set helmet mounted display (HMD) ON/OFF switch to ON.

NOTE

Consider image content. Do not worry about image quality for this test.

- Check thermal image in HMD.

Can you see the same image in the HMD that was shown in the LTWS TSM?

YES

11

- Set LTWS VPA BIT S3 switch to LED OFF.
- Set POWER switch on LTWS VPA to OFF.
- Replace LTWS thermal sight module.
  - Refer to Chapter 3.
- Verify problem is solved.

YES

12

Can you adjust image brightness using brightness adjust button on LTWS display control module (DCM)?

NO

13

- Go to block 27 (page 4-29).

NO — YES

14

- Set HMD ON/OFF switch to OFF.
- Set LTWS VPA BIT S3 switch to LED OFF.
- Set POWER switch on LTWS VPA to OFF.
- Replace LTWS display control module.
  - Refer to Chapter 3.
- Verify problem is solved.

15

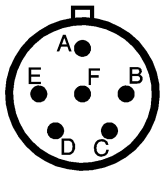
- Set HMD ON/OFF switch to OFF.
- Set LTWS VPA BIT S3 switch to LED OFF.
- Set POWER switch on LTWS VPA to OFF.
- Replace helmet mounted display.
  - Refer to Chapter 3.
- Verify problem is solved.

From block 7

16

- Set LTWS VPA BIT S3 switch to LED OFF.
- Set POWER switch on LTWS VPA to OFF.
- Set MASTER POWER switch to OFF.
- Check the following for proper connections:
  - LTWS-W2/P1 connected to J2 on LTWS VPA (page 4-159)
  - LTWS-W2/P2 connected to LTWS-W4/P1 (page 4-160)
  - LTWS-W4/P2 connected to J1 on LTWS thermal sight module (TSM) (page 4-160)

Are any connections loose?



LTWS–W2/P1

NO — YES

17

- Disconnect LTWS-W2/P1 from J2 on LTWS VPA (page 4-159).
- Disconnect LTWS-W4/P2 from J1 on LTWS TSM (page 4-160).

NOTE

If multimeter does not show greater than 100K ohms, leave test probes connected and go immediately to block 20 (page 4-28).

- Test for greater than 100K ohms between contacts listed below on LTWS-W2/P1:
  - A and connector body
  - A and all other contacts
  - C and connector body
  - C and all other contacts
  - D and connector body
  - D and all other contacts
  - E and connector body
  - E and all other contacts
  - F and connector body
  - F and all other contacts

Does multimeter show greater than 100K ohms for all tests?

18

- Tighten loose connections.
- Verify problem is solved.

YES — NO

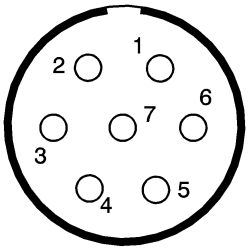
19

- Disconnect LTWS-W2/P2 from LTWS-W4/P1 (page 4-160).
- Connect jumper between contacts 1 and 2 on LTWS-W2/P2.
- Test for continuity between contacts A and B on LTWS-W2/P1.

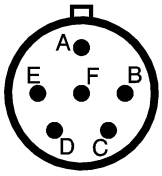
Does multimeter show continuity?

20

- Go to block 32 (page 4-29).



LTWS–W2/P2



LTWS–W2/P1

YES — NO

21

- Connect jumper between contacts 3 and 4 on LTWS-W2/P2.
- Test for continuity between contacts C and D on LTWS-W2/P1.

Does multimeter show continuity?

22

- Connect LTWS-W4/P2 to J1 on thermal sight module (page 4-160).
- Replace LTWS cable assembly W2 (page 5-15).
- Verify problem is solved.

YES — NO

23

- Connect jumper between contacts 5 and 6 on LTWS-W2/P2.
- Test for continuity between contacts E and F on LTWS-W2/P1.

Does multimeter show continuity?

24

- Connect LTWS-W4/P2 to J1 on thermal sight module (page 4-160).
- Replace LTWS cable assembly W2 (page 5-15).
- Verify problem is solved.

YES — NO

25

- Connect LTWS-W2/P1 to J2 on LTWS vehicle power adapter (page 4-159).
- Connect LTWS-W2/P2 to LTWS-W4/P1 (page 4-160).
- Replace thermal sight module.
  - Refer to Chapter 3.
- Verify problem is solved.
- If problem is not solved, replace wiring harness LTWS-W4.
  - Refer to Chapter 3.
- Verify problem is solved.

26

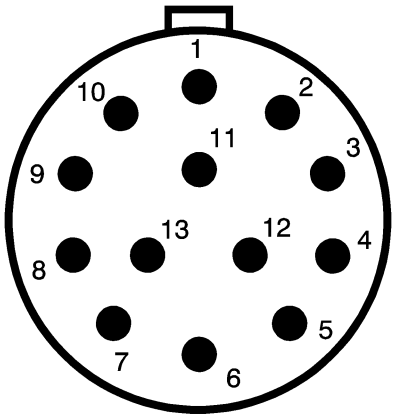
- Connect LTWS-W4/P2 to J1 on thermal sight module (page 4-160).
- Replace LTWS cable assembly W2 (page 5-15).
- Verify problem is solved.

From block 13

27

- Set VPA BIT S3 switch to LED OFF.
- Set POWER switch on VPA to OFF.
- Set MASTER POWER switch to OFF.
- Check the following for proper connections:
  - LTWS-W3/P1 connected to VPA-J3 (page 4-159)
  - LTWS-W3/P1 connected to DCM-J2 (page 4-158)
  - HMD-P1 connected to DCM-J1 (page 4-158)

Are any connections loose?



LTWS–W3/P1

NO

28

- Disconnect LTWS-W3/P1 from J3 on LTWS vehicle power adapter (page 4-159).
- Test for following resistance values between contacts on LTWS-W3/P1 listed below:
  - 2 and 3 (20K to 40K ohms)
  - 4 and 5 (50 to 100 ohms)

Does multimeter show correct values for both tests?

NO

30

- Replace wiring harness LTWS-W3.
  - Refer to Chapter 3.
- Verify problem is solved.
- If problem is not solved, replace display control module.
  - Refer to Chapter 3.
- Verify problem is solved.

YES

29

- Tighten loose connections.
- Verify problem is solved.

YES

31

- Connect LTWS-W3/P1 to J3 on LTWS vehicle power adapter (page 4-159).
- Replace helmet mounted display.
  - Refer to Chapter 3.
- Verify problem is solved.
- If problem is not solved, replace display control module.
  - Refer to Chapter 3.
- Verify problem is solved.

From block 20

32

- Disconnect LTWS-W2/P2 from LTWS-W4/P1 (page 4-160).

Does multimeter show greater than 100K ohms?

NO

33

- Connect LTWS-W4/P2 to J1 on thermal sight module (page 4-160).
- Replace LTWS cable assembly W2 (page 5-15).
- Verify problem is solved.

YES

34

- Connect LTWS-W2/P1 to J2 on LTWS vehicle power adapter (page 4-159).
- Replace wiring harness LTWS-W4.
  - Refer to Chapter 3.
- Verify problem is solved.

SYMPTOM RTS-1

REMOTE THERMAL SIGHT (RTS) DOES NOT COME ON

Tools:
- Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)
- Embedded diagnostics support kit (57K4116) (vehicles with redesigned turret networks box)
- Breakout box tool kit (NSN 5999-01-130-8077)
- Digital multimeter (NSN 6625-01-265-6000)
- TA1 continuity test probe kit (NSN 6625-01-102-6878) (vehicles with turret networks box)
- Universal test lead set (NSN 6625-01-121-0510) (as required) (vehicles with turret networks box)

Supplies:
- Electrical jumper (as required)

Equipment Condition:
- RTS-W1/P1 is connected to UJ3 on the power distribution box (PDB) (page 4-155).
- CB3 on the PDB is not tripping. If CB3 is tripping, do procedure PDB CB-3 Circuit Breaker 3 On Power Distribution Box Shuts Off (page 4-126).

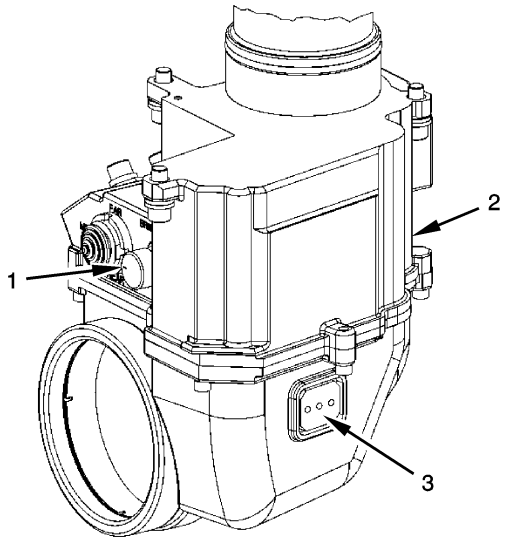
NOTE

Read Section I, How To Do Troubleshooting, before doing any work (TM 9-2350-264-20-2).

1

- Set up tank controls for standard initial test conditions (TM 9-2350-264-20-2).
- Make sure CB3 on power distribution box is set to ON.
- Make sure BRIGHTNESS knob (1) on RTS display control module (2) is rotated fully clockwise.
- Set TURRET POWER switch to ON.
- Set NBC MODE BACKUP switch on tank commander's panel or NBC BACK switch on upgraded tank commander's panel to ON.
- Check if NBC backup system blower is operating.

Did NBC backup system blower come on?



YES — NO

2

- Set NBC MODE BACKUP switch on tank commander's panel or NBC BACK switch on upgraded tank commander's panel to OFF.
- Check to see if any of the three RTS display control module LEDs (3) are illuminated.

Is any display control module LED illuminated?

3

- Set NBC MODE BACKUP switch on tank commander's panel or NBC BACK switch on upgraded tank commander's panel to OFF.
- Set VEHICLE MASTER POWER switch to OFF.
- Refer to Fault Symptom Index (page 4-2) and do procedure for TNB V/TPC-5 or RTNB V/TPC-5 that matches your vehicle hardware configuration.

NO — YES

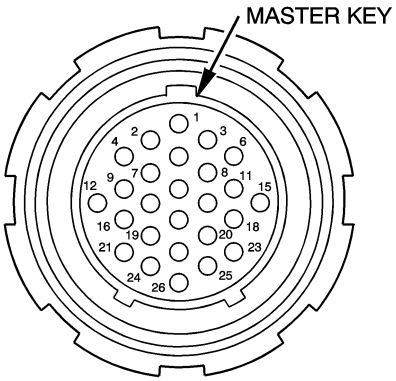
4

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect RTS-W2/P2 from J1 on RTS display control module (page 4-163).
- Set VEHICLE MASTER POWER switch to ON.
- Test for 14 to 17 V dc between contacts on RTS-W2/P2 listed below:
  - 1 (+) and 4 (-)
  - 2 (+) and 3 (-)

Did multimeter show 14 to 17 V dc for any set of contacts?

5

- Your problem is not covered by this technical bulletin. Notify your supervisor that the RTS system is faulty.



RTS–W2/P2

NO — YES

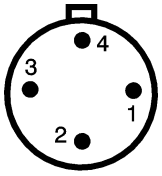
6

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect RTS-W1/P2 from J1 on RTS power filter module (page 4-161).
- Set VEHICLE MASTER POWER switch to ON.
- Test for 18 to 30 V dc between contacts on RTS-W1/P2 listed below:
  - A (+) and C (-)
  - B (+) and D (-)

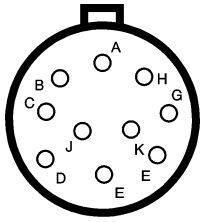
Did multimeter show 18 to 30 V dc for any set of contacts?

7

- Go to block 21 (page 4-34).



RTS–W1/P1



RTS–W1/P2

NO — YES

8

- Set VEHICLE MASTER POWER switch to OFF.
- Connect RTS-W2/P2 to J1 on RTS display control module (page 4-163).
- Disconnect RTS-W1/P1 from UJ3 on power distribution box (page 4-155).
- Connect jumper between contacts 1 and 2 on RTS-W1/P1.
- Test for continuity between contacts A and C on RTS-W1/P2.

Does multimeter show continuity?

9

- Go to block 14 (page 4-33).

YES — NO

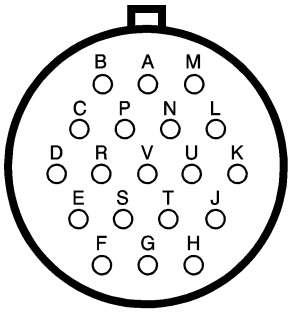
10

- Connect breakout box to TEST 1 on turret networks box or TJ1 on redesigned turret networks box using CABLE NO. 1 and ADAPTER NO. 1 (page 4-151).
- Connect jumper between test points 7 and 9 on breakout box.
- Disconnect 1W501-TUSK/P1 from J1 on power distribution box (page 4-155).
- Test for continuity between contacts K and G on 1W501-TUSK/P1.

Does multimeter show continuity?

11

- Replace RTS W1 cable assembly (page 5-29).
- Verify problem is solved.



1W501–TUSK/P1

YES — NO

12

- Connect RTS-W1/P2 to J1 on RTS power filter module (page 4-161).
- Replace power distribution box (page 5-19).
- Verify problem is solved.

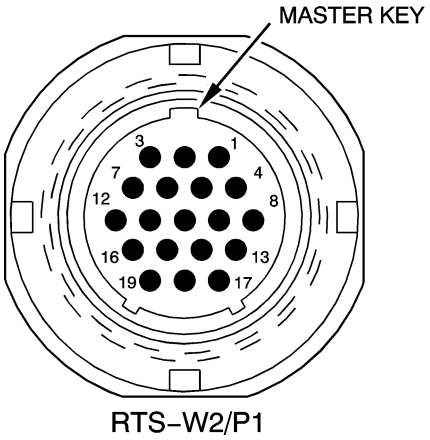
13

- Connect RTS-W1/P1 to UJ3 on power distribution box (page 4-155).
- Connect RTS-W1/P2 to J1 on RTS power filter module (page 4-161).
- Replace wiring harness assembly 1W501-TUSK (page 5-21).
- Verify problem is solved.

From block 9

14

Did multimeter show 18 to 30 V dc for both sets of contacts?



RTS–W2/P1

YES

15

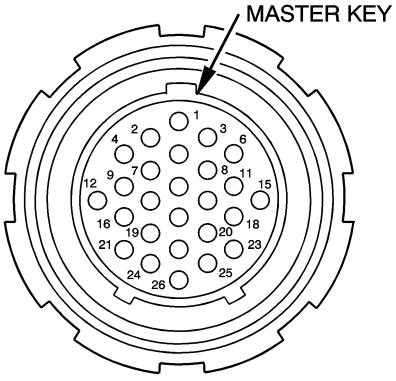
- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect RTS-W2/P1 from J2 on RTS power filter module (page 4-161).
- Connect jumper between contacts on RTS-W2/P1 listed below:
  - 1 and 4
  - 2 and 3
- Test for continuity between contacts on RTS-W2/P2 listed below:
  - 1 and 4
  - 2 and 3

Did multimeter show continuity for both sets of contacts?

NO

16

- Set VEHICLE MASTER POWER switch to OFF.
- Connect RTS-W2/P2 to J1 on RTS display control module (page 4-163).
- Replace RTS W1 cable assembly (page 5-29).
- Replace RTS power filter module (page 5-27).
- Verify problem is solved.



RTS–W2/P2

NO

17

Did multimeter show continuity for one set of contacts?

YES

18

- Connect RTS-W2/P2 to J1 on RTS display control module (page 4-163).
- Replace RTS power filter module (page 5-27).
- Verify problem is solved.

YES

19

- Replace RTS W2 cable assembly (page 5-31).
- Replace RTS power filter module (page 5-27).
- Verify problem is solved.

NO

20

- Connect RTS-W1/P2 to J1 on RTS power filter module (page 4-161).
- Replace RTS W2 cable assembly (page 5-31).
- Verify problem is solved.

From block 7

21

Did multimeter show 11 to 17 V dc for both sets of contacts?

NO

22

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect RTS-W2/P1 from J2 on RTS power filter module (page 4-161).
- Connect jumper between contacts on RTS-W2/P1 listed below:
  - 1 and 4
  - 2 and 3
- Test for continuity between contacts on RTS-W2/P2 listed below:
  - 1 and 4
  - 2 and 3

Did multimeter show continuity for both sets of contacts?

YES

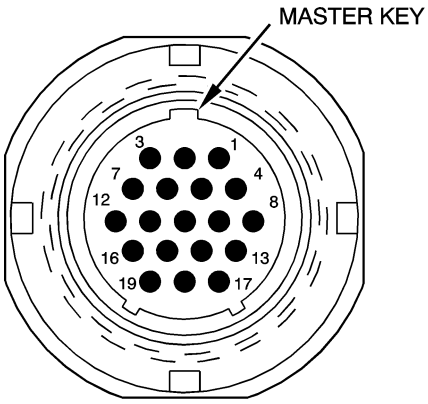
24

- Replace RTS display control module assembly (page 5-25).
- Replace RTS power filter module (page 5-27).
- Verify problem is solved.

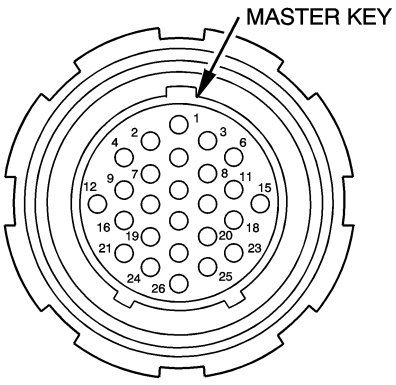
YES

23

- Replace RTS display control module assembly (page 5-25).
- Verify problem is solved.
- If problem is not solved, your problem is not covered by this technical bulletin. Notify your supervisor that the RTS system is faulty.



RTS–W2/P1



RTS–W2/P2

NO

25

- Replace RTS display control module assembly (page 5-25).
- Replace RTS W2 cable assembly (page 5-31).
- Verify problem is solved.

SYMPTOM SPOTLIGHT-1

COMMANDER'S SPOTLIGHT DOES NOT OPERATE PROPERLY

Tools:
- Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)
- Embedded diagnostics support kit (57K4116) (vehicles with redesigned turret networks box)
- Digital multimeter (NSN 6625-01-265-6000)
- TA1 continuity test probe kit (NSN 6625-01-102-6878) (vehicles with turret networks box)
- Universal test lead set (NSN 6625-01-121-0510) (as required) (vehicles with turret networks box)

Supplies:
- Electrical jumper (as required)

Equipment Condition:
- CB33 on turret networks box or redesigned turret networks box does not shut off (trip). If it does, do procedure TCB-33 Circuit Breaker 33 On Turret Networks Box or Redesigned Turret Networks Box Shuts Off (page 4-130.2).
- 1W815-SPOTLIGHT/P1 is connected to UJ1 on turret networks box or redesigned turret networks box (page 4-166). Or if vehicle is equipped with blue force tracking (BFT) kit (also known as enhanced information system (EIS) kit), 1W815-SPOTLIGHT/P1 is connected to J2 on 1W215-EF or 1W222-EF (page 4-166). If you have any other configuration, use schematics to perform troubleshooting.

NOTE
- Read Section I, How To Do Troubleshooting, before doing any work (TM 9-2350-264-20-2).
- Two different electrical configurations of 1W215-EF exist (page 4-166). This procedure applies to 1W215-EF with integrated utility jack (P/N 12489527).

1

- Set up tank controls for standard initial test conditions (TM 9-2350-264-20-2).
- Make sure CB33 on turret networks box or redesigned networks box is set to ON.
- Make sure commander's spotlight ON/OFF switch is set to OFF.

NOTE

1W215-EF or 1W222-EF harness is part of BFT/EIS kit.

- Check to see if 1W815-SPOTLIGHT/P1 is connected to 1W215-EF/J2 or 1W222-EF/J2 (page 4-166).

Is 1W815-SPOTLIGHT/P1 connected to 1W215-EF/J2 or 1W222-EF/J2?

YES

2

- Disconnect 1W815-SPOTLIGHT/P1 from 1W215-EF/J2 or 1W222-EF/J2 (page 4-166).
- Disconnect 1W215-EF/P1 or 1W222-EF/P1 from UJ1 on turret networks box or redesigned turret networks box (page 4-166).
- Connect 1W815-SPOTLIGHT/P1 to UJ1 on turret networks box or redesigned turret networks box (page 4-166).
- Set TURRET POWER switch to ON.
- Set commander's spotlight ON/OFF switch to ON.
- Check if spotlight turns on.

Did spotlight turn on?

NO

3

- Go to block 4 (page 4-34.2).

NO — YES

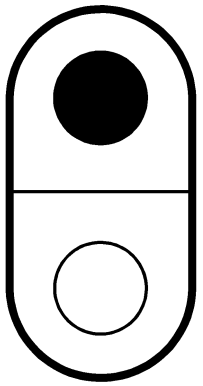
4

- If ON, set commander's spotlight ON/OFF switch to OFF.
- If ON, set MASTER POWER switch to OFF.
- Disconnect 1W816-SPOTLIGHT/P2 from commander's spotlight-J1 (page 4-165).
- Set TURRET POWER switch to ON.
- Test for 18 to 30 V dc between exposed (-) and shrouded (+) contacts on 1W816-SPOTLIGHT/P2.

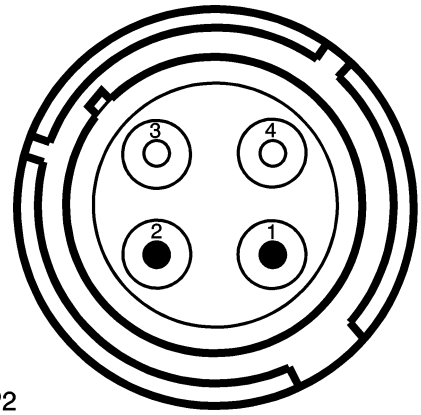
Does multimeter show 18 to 30 V dc?

5

- Set commander's spotlight ON/OFF switch to OFF.
- Set MASTER POWER switch to OFF.
- Disconnect 1W815-SPOTLIGHT/P1 from UJ1 on turret networks box or redesigned turret networks box (page 4-166).
- Replace 1W215-EF or 1W222-EF (TM 9-2350-264-20-2).
- Make sure 1W815-SPOTLIGHT/P1 is connected to 1W215-EF/J2 or 1W222-EF/J2 (page 4-166).
- Verify problem is solved.



1W816–SPOTLIGHT/P2



1W815–SPOTLIGHT/P1

NO — YES

6

- Set MASTER POWER switch to OFF.
- Disconnect 1W815-SPOTLIGHT/P1 from UJ1 on turret networks box or redesigned turret networks box (page 4-166).

NOTE

If multimeter does not show continuity, leave jumper connected until told to remove.

- Connect jumper between contacts 1 and 2 on 1W815-SPOTLIGHT/P1.
- Test for continuity between exposed (-) and shrouded (+) contacts on 1W816-SPOTLIGHT/P2.

Does multimeter show continuity?

7

- Set MASTER POWER switch to OFF.
- Connect 1W816-SPOTLIGHT/P2 to commander's spotlight-J1 (page 4-165).
- Replace commander's spotlight bulb.
  - Refer to Chapter 3.
- Verify problem is solved.
- If problem still exists, replace commander's spotlight.
  - Refer to Chapter 3.
- Verify problem is solved.
- If BFT/EIS kit is installed, do the following:.
  - Disconnect 1W815-SPOTLIGHT/P1 from UJ1 on turret networks box or redesigned turret networks box (page 4-166).
  - Connect 1W215-EF/P1 or 1W222-EF/P1 to UJ1 on turret networks box or redesigned turret networks box (page 4-166).
  - Connect 1W815-SPOTLIGHT/P1 to 1W215-EF/J2 or 1W222-EF/J2 (page 4-166).
  - Verify spotlight operation. Refer to Chapter 3.

NO — YES

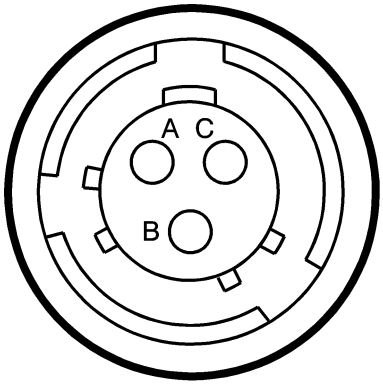
8

- Disconnect 1W816-SPOTLIGHT/P1 from 1W815-SPOTLIGHT/J1 (page 4-165).
- Test for continuity between contacts A and B on 1W815-SPOTLIGHT/J1.

Does multimeter show continuity?

9

- Replace turret networks box or redesigned turret networks box (TM 9-2350-264-20-2).
- If BFT/EIS kit is not installed, do the following:.
  - Make sure 1W815-SPOTLIGHT/P1 is connected to UJ1 on turret networks box or redesigned turret networks box (page 4-166).
  - Verify problem is solved.
- If BFT/EIS kit is installed, do the following:.
  - Make sure 1W215-EF/P1 or 1W222-EF/P1 is connected to UJ1 on turret networks box or redesigned turret networks box (page 4-166).
  - Make sure 1W815-SPOTLIGHT/P1 is connected to 1W215-EF/J2 or 1W222-EF/J2 (page 4-166).
  - Verify problem is solved.



1W815–SPOTLIGHT/J1

NO — YES

10

- Connect 1W816-SPOTLIGHT/P2 to commander's spotlight-J1 (page 4-165).
- Replace wiring harness 1W815-SPOTLIGHT (page 5-44.14).
- If BFT/EIS kit is not installed, do the following:.
  - Make sure 1W815-SPOTLIGHT/P1 is connected to UJ1 on turret networks box or redesigned turret networks box (page 4-166).
  - Verify problem is solved.
- If BFT/EIS kit is installed, do the following:.
  - Make sure 1W215-EF/P1 or 1W222-EF/P1 is connected to UJ1 on turret networks box or redesigned turret networks box (page 4-166).
  - Make sure 1W815-SPOTLIGHT/P1 is connected to 1W215-EF/J2 or 1W222-EF/J2 (page 4-166).
  - Verify problem is solved.

11

- If BFT/EIS kit is not installed, do the following:.
  - Make sure 1W815-SPOTLIGHT/P1 is connected to UJ1 on turret networks box or redesigned turret networks box (page 4-166).
  - Verify problem is solved.
- If BFT/EIS kit is installed, do the following:.
  - Make sure 1W215-EF/P1 or 1W222-EF/P1 is connected to UJ1 on turret networks box or redesigned turret networks box (page 4-166).
  - Make sure 1W815-SPOTLIGHT/P1 is connected to 1W215-EF/J2 or 1W222-EF/J2 (page 4-166).
  - Verify problem is solved.
- Replace wiring harness 1W816-SPOTLIGHT (page 5-44.14).
- Verify problem is solved.

SYMPTOM TNB V/TPC-5

NBC BACKUP SYSTEM, COMMANDER'S WEAPON STATION, AND COMMUNICATION SYSTEM DO NOT WORK WHEN VEHICLE MASTER POWER SWITCH IS SET TO ON (VEHICLES EQUIPPED WITH TURRET NETWORKS BOX)

Tools:
- Artillery and turret mechanics tool kit: ordnance (SC 5180-95-A12)
- Breakout box tool kit (NSN 5999-01-130-8077)
- Digital multimeter (NSN 6625-01-265-6000)
- TA1 continuity test probe kit (NSN 6625-01-102-6878)
- Universal test lead set (NSN 6625-01-121-0510)

Personnel Required:
- Two

Supplies:
- Electrical jumper (as required)

NOTE
- Read Section I, How To Do Troubleshooting, before doing any work (TM 9-2350-264-20-2).

1
- Connect breakout box to TJ1 on hull power distribution box using CABLE NO. 1 and ADAPTER NO. 2 (page 4-152).
- Set VEHICLE MASTER POWER switch to ON.
- Test for 18 to 30 V dc between 9 (-) and 30 (+) on breakout box.

Does multimeter show 18 to 30 V dc?

YES

2
- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 2W102-P1 from J4 on hull power distribution box (TM 9-2350-264-20-2).
- Connect breakout box to TEST 1 on turret networks box using CABLE NO. 1 and ADAPTER NO. 1 (page 4-151).
- Set circuit breakers 2 through 6 and 33 on turret networks box to OFF.
- Connect jumper between contacts A and B on 2W102-P1.

NOTE

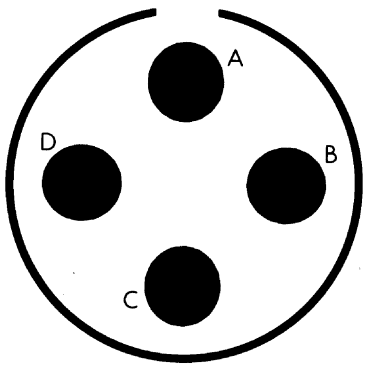
If multimeter does not show continuity, leave jumper connected for block 4 (page 4-36).

- Test for continuity between 7 and 9 on breakout box.

Does multimeter show continuity?

NO

3
- Go to block 14 (page 4-39).



2W102-P1

NO

4

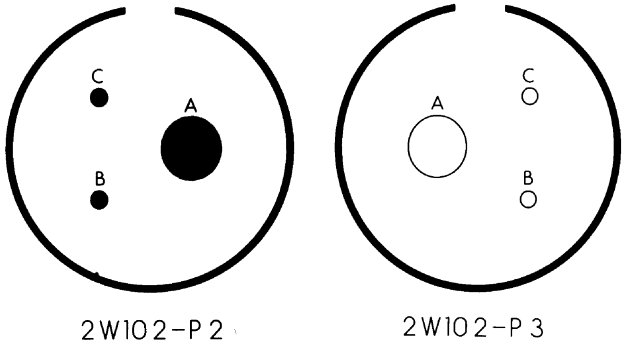
- Disconnect 2W102-P3 from J2 on hull/turret slipring (page 4-154).
- Disconnect 2W102-P2 from J1 on hull/turret slipring (page 4-154).
- Test for continuity between contact A on 2W102-P2 and contact A on 2W102-P3.

Does multimeter show continuity?

YES

5

- Set circuit breakers 2 through 6 and 33 on turret networks box to ON.
- Replace hull power distribution box.
  - Refer to TM 9-2350-264-20-1.
- Verify problem is solved.



YES

6

- Disconnect 1W501-TUSK/P2 from J7 on hull/turret slipring (page 4-154).
- Disconnect 1W501-TUSK/P3 from J6 on hull/turret slipring (page 4-154).

NOTE

If multimeter does not show continuity, leave jumper connected for remainder of test

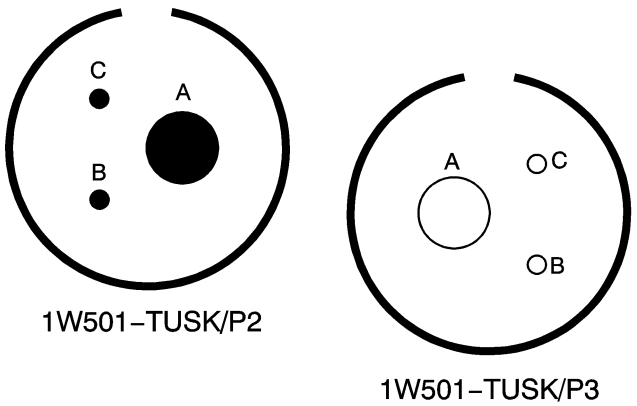
- Connect jumper between contact A on 1W501-TUSK/P2 and contact A on 1W501-TUSK/P3.
- Test for continuity between 7 and 9 on breakout box.

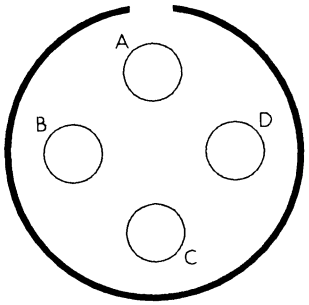
Does multimeter show continuity?

NO

7

- Set circuit breakers 2 through 6 and 33 on turret networks box to ON.
- Replace branched wiring harness 2W102.
  - Refer to TM 9-2350-264-20-2.
- Verify problem is solved.





1W100-9/P5
OR
1W501-P5

NO

8

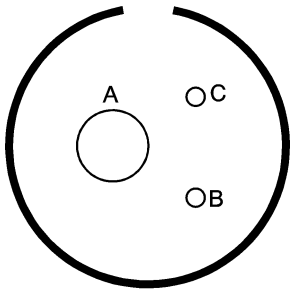
- Disconnect 1W100-9/P5 or 1W501-P5 from J13 on turret networks box (page 4-153).
- Test for continuity between contacts A and B on 1W100-9/P5 or 1W501-P5.

Does multimeter show continuity?

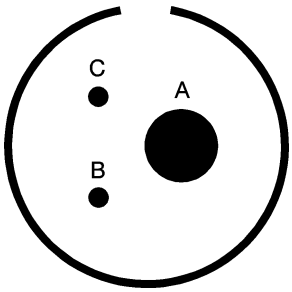
YES

9

- Set circuit breakers 2 through 6 and 33 on turret networks box to ON.
- Connect 2W102-P1 to J4 on hull power distribution box (TM 9-2350-264-20-2).
- Replace hull/turret slipring assembly (TM 9-2350-264-20-2).
- Verify problem is solved.



1W501–TUSK/J1
OR
1W100–9/P1
OR
1W501–P1



1W501–TUSK/J2
OR
1W100–9/P4
OR
1W501–P4

Does multimeter show continuity?

NO

10

- Disconnect 1W501-P4 or 1W100-9/P4 from 1W501-TUSK/J1 (page 4-154).
- Disconnect 1W501-P1 or 1W100-9/P1 from 1W501-TUSK/J2 (page 4-154).
- Test for continuity between contact A on 1W501-TUSK/J1 and contact A on 1W501-TUSK/J2.

YES

11

- Connect 1W501-TUSK/P3 to J6 on hull/turret slipring (page 4-154).
- Connect 1W501-TUSK/P2 to J7 on hull/turret slipring (page 4-154).
- Connect 2W102-P2 to J1 on hull/turret slipring (page 4-154).
- Connect 2W102-P3 to J2 on hull/turret slipring (page 4-154).
- Connect 2W102-P1 to J4 on hull power distribution box (TM 9-2350-264-20-2).
- Replace turret networks box
  - Refer to TM 9-2350-264-20-1
- Verify problem is solved.

NO

12

- Set circuit breakers 2 through 6 and 33 on turret networks box to ON.
- Connect 1W100-9/P5 or 1W501-P5 to J13 on turret networks box (page 4-153).
- Connect 2W102-P2 to J1 on hull/turret slipring (page 4-154).
- Connect 2W102-P3 to J2 on hull/turret slipring (page 4-154).
- Connect 2W102-P1 to J4 on hull power distribution box (TM 9-2350-264-20-2).
- Replace wiring harness assembly 1W501-TUSK (page 5-21).
- Verify problem is solved.

YES

13

- Set circuit breakers 2 through 6 and 33 on turret networks box to ON.
- Connect 1W501-TUSK/P3 to J6 on hull/turret slipring (page 4-154).
- Connect 1W501-TUSK/P2 to J7 on hull/turret slipring (page 4-154).
- Connect 2W102-P2 to J1 on hull/turret slipring (page 4-154).
- Connect 2W102-P3 to J2 on hull/turret slipring (page 4-154).
- Connect 2W102-P1 to J4 on hull power distribution box (TM 9-2350-264-20-2).
- Replace branched wiring harness assembly 1W100-9 (TM 9-2350-264-20-2) or branched wiring harness assembly 1W501 (page 5-73).
- Verify problem is solved.

From block 3

14

- Set VEHICLE MASTER POWER switch to OFF.
- Set circuit breakers 2 through 6 and 33 on turret networks box to OFF.
- Disconnect 2W102-P1 from J4 on hull power distribution box (TM 9-2350-264-20-2).
- Connect breakout box to TEST 1 on turret networks box using CABLE NO. 1 and ADAPTER NO. 1 (page 4-151).

NOTE

If multimeter shows less than 5 ohms, go immediately to block 15.

- Test for less than 5 ohms between 7 and test points on breakout box listed below:
  - 9 and 11

Does multimeter show less than 5 ohms?

YES

15

- Disconnect 2W102-P3 from J2 on hull/turret slipring (page 4-154).

NOTE

If multimeter shows less than 5 ohms, go immediately to block 19 (page 4-40).

- Test for less than 5 ohms between 7 and test points on breakout box listed below:
  - 9 and 11

Does multimeter show less than 5 ohms?

YES

17

- Disconnect 1W501-TUSK/P2 from J7 on hull/turret slipring (page 4-154).

NOTE

If multimeter shows less than 5 ohms, go immediately to block 17.

- Test for less than 5 ohms between 7 and test points on breakout box listed below:
  - 9 and 11

Does multimeter show less than 5 ohms?

NO

18

- Set circuit breakers 2 through 6 and 33 on turret networks box to ON.
- Replace branched wiring harness 2W102.
  - Refer to TM 9-2350-264-20-2.
- Verify problem is solved.

NO

16

- Set circuit breakers 2 through 6 and 33 on turret networks box to ON.
- Replace hull power distribution box.
  - Refer to TM 9-2350-264-20-1.
- Verify problem is solved.

YES — NO

19

- Disconnect 1W100-9/P4 or 1W501-P4 from 1W501-TUSK/J1 (page 4-154).

NOTE

If multimeter shows less than 5 ohms, go to block 21.

- Test for less than 5 ohms between 7 and test points on breakout box listed below:
  - 9 and 11

Does multimeter show less than 5 ohms?

20

- Set circuit breakers 2 through 6 and 33 on turret networks box to ON.
- Connect 2W102-P1 to J4 on hull power distribution box (TM 9-2350-264-20-2).
- Replace hull/turret slipring assembly (TM 9-2350-264-20-2).
- Verify problem is solved.

YES — NO

21

NOTE

If your tank does not have EAPU harness 1W501, go to block 23.

- Disconnect 1W501-P6 from J2 on power interface box assembly (TM 9-2350-264-20-2).

NOTE

If multimeter shows less than 5 ohms, go immediately to block 23.

- Test for less than 5 ohms between 7 and test points on breakout box listed below:
  - 9 and 11

Does multimeter show less than 5 ohms?

22

- Set circuit breakers 2 through 6 and 33 on turret networks box to ON.
- Connect 2W102-P1 to J4 on hull power distribution box (TM 9-2350-264-20-2).
- Connect 2W102-P3 to J2 on hull/turret slipring (page 4-154).
- Replace wiring harness assembly 1W501-TUSK (page 5-21).
- Verify problem is solved.

YES — NO

23

- Disconnect 1W100-9/P5 or 1W501-P5 from J13 on turret networks box (page 4-153).

NOTE

If multimeter shows less than 5 ohms, go immediately to block 25 (page 4-41).

- Test for less than 5 ohms between 7 and test points on breakout box listed below:
  - 9 and 11

Does multimeter show less than 5 ohms?

24

- Set circuit breakers 2 through 6 and 33 on turret networks box to ON.
- Connect 2W102-P1 to J4 on hull power distribution box (TM 9-2350-264-20-2).
- Connect 2W102-P3 to J2 on hull/turret slipring assembly (page 4-154).
- Connect 1W501-TUSK/P2 to J7 on hull/turret slipring assembly (page 4-154).
- Replace power interface box assembly (TM 9-2350-264-20-2).
- Verify problem is solved.

YES

25

- Connect 1W100-9/P4 or 1W501-P4 to J1 on 1W501-TUSK (page 4-154).
- Connect 2W102-P3 to J2 on hull/turret slipring (page 4-154).
- Connect 2W102-P1 to J4 on hull power distribution box (TM 9-2350-264-20-2).
- Connect 1W501-TUSK/P2 to J7 on hull/turret slipring assembly (page 4-154).
- If vehicle is equipped with EAPU harness 1W501, connect 1W501-P6 to J2 on power interface box assembly (TM 9-2350-264-20-2).
- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.

NO

26

- Set circuit breakers 2 through 6 and 33 on turret networks box to ON.
- Connect 2W102-P1 to J4 on hull power distribution box (TM 9-2350-264-20-2).
- Connect 2W102-P3 to J2 on hull/turret slipring (page 4-154).
- Connect 1W501-TUSK/P2 to J7 on hull/turret slipring assembly (page 4-154).
- Replace wiring harness assembly 1W100-9 (TM 9-2350-264-20-2) or branched wiring harness 1W501 (page 5-73).
- Verify problem is solved.

SYMPTOM TNB ASTS-1

FIRE CONTROL MALFUNCTION OR FC MALF LIGHT AND F SYMBOL COME ON. COMPUTER MANUAL SELF TEST SHOWS NO FAILURE (VEHICLES EQUIPPED WITH TURRET NETWORKS BOX)

Tools:
- Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)
- Breakout box tool kit (NSN 5999-01-130-8077)
- Digital multimeter (NSN 6625-01-265-6000)
- TA1 continuity test probe kit (NSN 6625-01-102-6878)
- Universal test lead set (NSN 6625-01-121-0510)

Supplies:
- Electrical jumper (as required)

Personnel Required:
- Two

Equipment Condition:
- FC MALF light works properly when PNL LGTS TEST button on the upgraded commander's panel or when PANEL LIGHTS TEST button on commander's control panel is pressed.

NOTE

Read Section I, How To Do Troubleshooting, before doing any work (TM 9-2350-264-20-2).

1

- Set up tank for standard initial test conditions (TM 9-2350-264-20-2).
- Connect breakout box to turret networks box TEST 2 using CABLE NO. 1 and ADAPTER NO. 1 (page 4-151).
- Set TURRET POWER switch to ON.
- Test for 4 to 6 V dc between 11 (-) and 22 (+) on breakout box.

Does multimeter show 4 to 6 V dc?

YES

2

- Test for 4 to 6 V dc between 11 (-) and 17 (+) on breakout box.

Does multimeter show 4 to 6 V dc?

YES

4

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W101-9/P2 or 1W118-9/P2 from J11 on turret networks box (TM 9-2350-264-20-2).
- Test for continuity between contacts A and J on 1W101-9/P2 or 1W118-9/P2.

Does multimeter show continuity?

NO

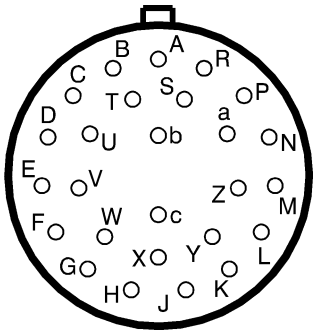
3

- Go to block 81 (page 4-53).

NO

5

- Go to block 21 (page 4-45).



1W101 – 9/P2
OR
1W118 – 9/P2

NO — YES

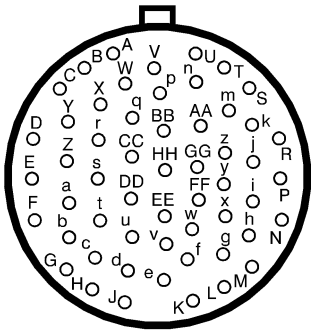
6

- Connect 1W101-9/P2 or 1W118-9/P2 to J11 on turret networks box (page 4-153).
- Disconnect 1W101-9/P1 or 1W118-9/P1 from J8 on hull/turret slipring (page 4-154).
- Connect jumper between contacts F and S on 1W101-9/P1 or 1W118-9/P1.
- Test for continuity between 16 and 17 on breakout box.

Does multimeter show continuity?

7

- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.



1W101 – 9/P1
OR
1W118 – 9/P1

YES — NO

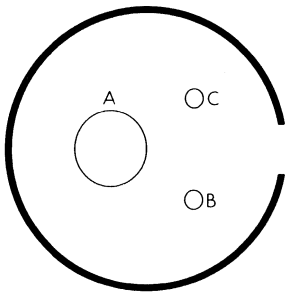
8

- Disconnect 1W100-9/P3 or 1W501-P3 from J9 on hull/turret slipring (page 4-154).
- Disconnect 1W100-9/P2 or 1W501-P2 from J10 on hull/turret slipring (page 4-154).
- Test for continuity between contact B on 1W100-9/P2 or 1W501-P2 and contact B on 1W100-9/P3 or 1W501-P3.

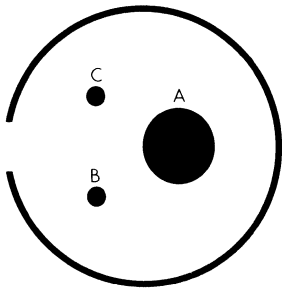
Does multimeter show continuity?

9

- Go to block 16 (page 4-45).



1W100-9/P2
OR
1W501-P2



1W100-9/P3
OR
1W501-P3

YES

10

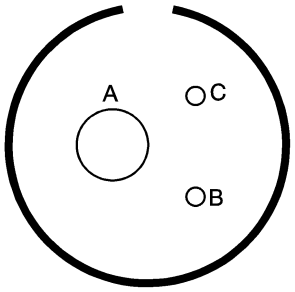
- Disconnect 1W501-TUSK/P2 from J7 on hull/turret slipring (page 4-154).
- Disconnect 1W501-TUSK/P3 from J6 on hull/turret slipring (page 4-154).
- Test for continuity between contact B on 1W501-TUSK/P2 and contact B on 1W501-TUSK/P3.

Does multimeter show continuity?

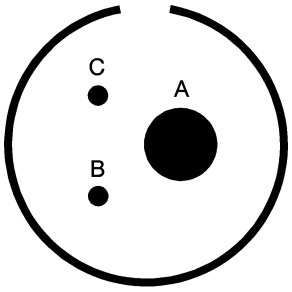
NO

11

- Connect 1W101-9/P1 or 1W118-9/P1 to J8 on hull/turret slipring (page 4-154).
- Replace wiring harness assembly 1W100-9 (TM 9-2350-264-20-2) or branched wiring harness 1W501 (page 5-73).
- Verify problem is solved.



1W501–TUSK/P3



1W501–TUSK/P2

NO

12

- Disconnect 1W100-9/P1 or 1W501-P1 from 1W501-TUSK/J2 (page 4-154).
- Disconnect 1W100-9/P4 or 1W501-P4 from 1W501-TUSK/J1 (page 4-154).
- Test for continuity between contact B on 1W100-9/P1 or 1W501-P1 and contact B on 1W100-9/P4 or 1W501-P4.

Does multimeter show continuity?

YES

13

- Replace hull/turret slipring assembly (TM 9-2350-264-20-2).
- Verify problem is solved.

NO

14

- Connect 1W101-9/P1 or 1W118-9/P1 to J8 on hull/turret slipring (page 4-154).
- Connect 1W501-TUSK/P2 to J7 on hull/turret slipring (page 4-154).
- Connect 1W501-TUSK/P3 to J6 on hull/turret slipring (page 4-154).
- Replace wiring harness assembly 1W100-9 (TM 9-2350-264-20-2) or branched wiring harness 1W501 (page 5-73).
- Verify problem is solved.

YES

15

- Connect 1W101-9/P1 or 1W118-9/P1 to J8 on hull/turret slipring (page 4-154).
- Replace wiring harness assembly 1W501-TUSK (page 5-21).
- Verify problem is solved.

From block 9

16

- Is vehicle equipped with Driver's Hatch Interlock (DHI)?

YES / NO

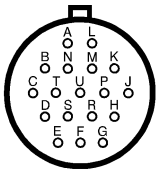
17

- Connect 1W118-9/P1 to J8 on hull/turret slipring (page 4-154).
- Disconnect 1W118-9/P6 from J1 on commander's alert panel (TM 9-2350-264-20-2).
- Connect jumper between contacts M and N on 1W118-9/P6.
- Test for continuity between 16 and 17 on breakout box.

Does multimeter show continuity?

18

- Replace wiring harness assembly 1W101-9 (TM 9-2350-264-20-2).
- Verify problem is solved.



1W118 – 9/P6

YES / NO

19

- Replace commander's alert panel assembly (TM 9-2350-264-20-2).
- Verify problem is solved.

20

- Replace wiring harness assembly 1W118-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 5

21

- Test for 4 to 6 V dc between 11 (-) and 18 (+) on breakout box.

Does multimeter show 4 to 6 V dc?

YES NO

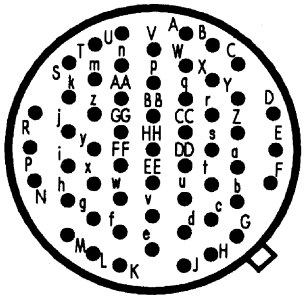
22

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W102-2/P1 or 1W102-9/P1 from J8 on turret networks box (page 4-153).
- Test for continuity between contacts A and L on 1W102-2/P1 or 1W102-9/P1.

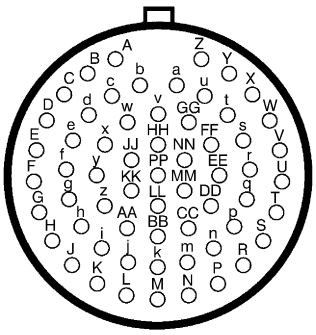
Does multimeter show continuity?

23

- Go to block 30.



1W102-2/P1
OR
1W102-9/P1



1W102-2/P2
OR
1W102-9/P2

NO YES

24

Is vehicle equipped with upgraded tank commander's panel?

25

- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.

YES NO

26

- Disconnect 1W102-2/P2 or 1W102-9/P2 from J1 on upgraded tank commander's panel (TM 9-2350-264-20-2).
- Connect jumper between contacts A and L on 1W102-2/P2 or 1W102-9/P2.
- Test for continuity between contacts A and L on 1W102-2/P1 or 1W102-9/P1.

Does multimeter show continuity?

27

- Go to block 163 (page 4-67).

YES NO

28

- Connect 1W102-2/P1 or 1W102-9/P1 to J8 on turret networks box (page 4-153).
- Replace upgraded tank commander's panel (TM 9-2350-264-20-2).
- Verify problem is solved.

29

- Replace wiring harness assembly 1W102-2 or wiring harness assembly 1W102-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 23

30

- Test for 4 to 6 V dc between 11 (-) and 19 (+) on breakout box.

Does multimeter show 4 to 6 V dc?

YES — NO

31

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W104-P1 from J9 on turret networks box (page 4-153).
- Test for continuity between contacts A and P on 1W104-P1.

Does multimeter show continuity?

32

- Go to block 42 (page 4-48).

NO — YES

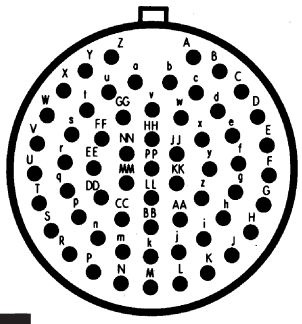
33

- Connect 1W104-P1 to J9 on turret networks box (page 4-153).
- Disconnect 1W104-P2 from J3 on gunner's primary sight (TM 9-2350-264-20-2).
- Connect jumper between contacts A and K on 1W104-P2.
- Test for continuity between 18 and 19 on breakout box.

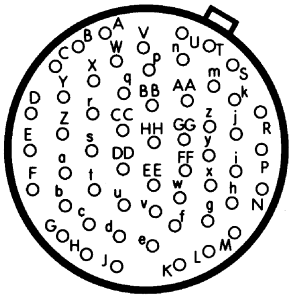
Does multimeter show continuity?

34

- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.



1W104-P1



1W104-P2

NO — YES

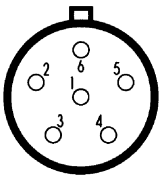
35

- Connect 1W104-P2 to J3 on gunner's primary sight (TM 9-2350-264-20-2).
- Disconnect 1W104-P3 from J1 on traversing mechanism (TM 9-2350-264-20-2).
- Connect jumper between contacts 5 and 6 on 1W104-P3.
- Test for continuity between 18 and 19 on breakout box.

Does multimeter show continuity?

36

- Replace lower panel assembly (TM 9-2350-264-20-2).
- Verify problem is solved.



1W104-P3

NO — YES

37

- Connect 1W104-P3 to J1 on traversing mechanism (TM 9-2350-264-20-2).
- Disconnect 1W104-P4 from J1 on turret valve (TM 9-2350-264-20-2).
- Disconnect 1W104-P5 from J2 on turret valve (TM 9-2350-264-20-2).
- Disconnect 1W104-P6 from J3 on turret valve (TM 9-2350-264-20-2).
- Disconnect 1W104-P7 from J4 on turret valve (TM 9-2350-264-20-2).

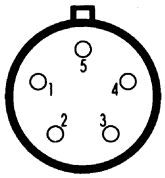
38

- Connect 1W104-P3 to J1 on traversing mechanism (TM 9-2350-264-20-2).
- Traversing mechanism switch is faulty. Notify support maintenance.

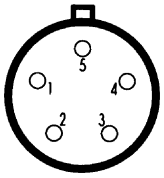
39

- Connect jumper between contacts 4 and 5 on 1W104-P4.
- Connect jumper between contacts 4 and 5 on 1W104-P5.
- Connect jumper between contacts 4 and 5 on 1W104-P6.
- Connect jumper between contacts 4 and 5 on 1W104-P7.
- Test for continuity between 18 and 19 on breakout box.

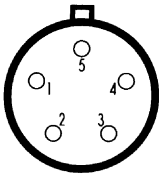
Does multimeter show continuity?



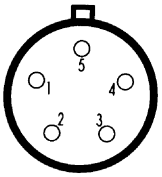
1W104-P4



1W104-P5



1W104-P6



1W104-P7

YES — 40

- Replace turret valve (TM 9-2350-264-20-2).
- Verify problem is solved.

NO — 41

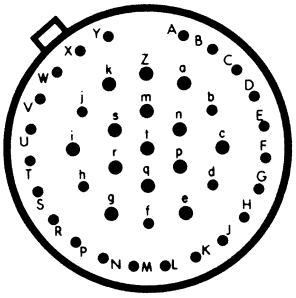
- Replace branched wiring harness 1W104 (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 32

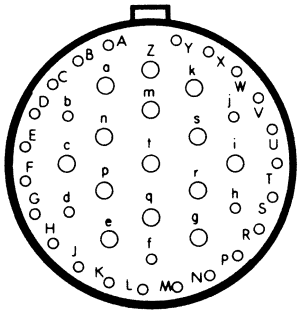
42

- Test for 4 to 6 V dc between 11 (-) and 20 (+) on breakout box.

Does multimeter show 4 to 6 V dc?



1W105-9/P1 OR 1W117-9/P1



1W105-9/P2 OR 1W117-9/P2

YES — 43

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W105-9/P1 or 1W117-9/P1 from J10 on turret networks box (page 4-153).
- Test for continuity between contacts A and N on 1W105-9/P1 or 1W117-9/P1.

Does multimeter show continuity?

NO — 44

- Go to block 57 (page 4-50).

NO — 45

- Connect 1W105-9/P1 or 1W117-9/P1 to J10 on turret networks box (page 4-153).
- Disconnect 1W105-9/P2 or 1W117-9/P2 from J1 on power control unit (TM 9-2350-264-20-2).
- Connect jumper between contacts f and Y on 1W105-9/P2 or 1W117-9/P2.
- Test for continuity between 19 and 20 on breakout box.

Does multimeter show continuity?

YES — 46

- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.

NO — YES

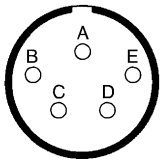
47

- Connect 1W105-9/P2 or 1W117-9/P2 to J1 on power control unit (TM 9-2350-264-20-2).
- Disconnect commander's control handle (1A231)-P1 from 1W105-9/J3 or 1W117-9/J3 (TM 9-2350-264-20-2).
- Connect jumper between contacts B and H on 1W105-9/J3 or 1W117-9/J3.
- Test for continuity between 19 and 20 on breakout box.

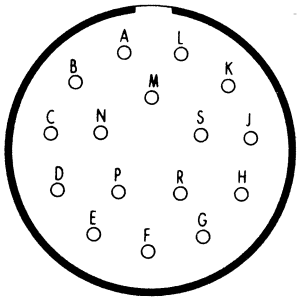
Does multimeter show continuity?

48

- Replace power control unit (TM 9-2350-264-20-2).
- Verify problem is solved.



1W105 – 9/J2
OR
1W117 – 9/J2



1W105 - 9/J3
OR
1W117 - 9/J3

NO — YES

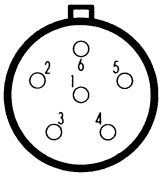
49

- Connect commander's control handle (1A231)-P1 to 1W105-9/J3 or 1W117-9/J3 (TM 9-2350-264-20-2).
- Disconnect blasting machine (1G100)-P1 or 1W108-2/P5 from 1W105-9/J2 or 1W117-9/J2 (TM 9-2350-264-20-2).
- Connect jumper between contacts D and E on 1W105-9/J2 or 1W117-9/J2.
- Test for continuity between 19 and 20 on breakout box.

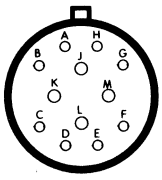
Does multimeter show continuity?

50

- Replace commander's control handle (TM 9-2350-264-20-2).
- Verify problem is solved.



1W105 - 9/P5
OR
1W117 - 9/P5



1W105 - 9/P3
OR
1W117 - 9/P3

NO — YES

51

- Connect blasting machine (1G100)-P1 or 1W108-2/P5 to 1W105-9/J2 or 1W117-9/J2 (TM 9-2350-264-20-2).
- Disconnect 1W105-9/P5 or 1W117-9/P5 from gearbox switch (1S230)-J1 (TM 9-2350-264-20-2).
- Connect jumper between contacts 5 and 6 on 1W105-9/P5 or 1W117-9/P5.
- Test for continuity between 19 and 20 on breakout box.

Does multimeter show continuity?

52

- If equipped, replace wiring harness 1W108-2 (TM 9-2350-264-20-2).
- If not, replace blasting machine (TM 9-2350-264-20-2).
- Verify problem is solved.

NO — YES

53

- Connect 1W105-9/P5 or 1W117-9/P5 to gearbox switch (1S230)-J1 (TM 9-2350-264-20-2).
- Disconnect 1W105-9/P3 or 1W117-9/P3 from J1 on motor brake (TM 9-2350-264-20-2).
- Connect jumper between contacts B and H on 1W105-9/P3 or 1W117-9/P3.
- Test for continuity between 19 and 20 on breakout box.

Does multimeter show continuity?

54

- Replace connector-switch (TM 9-2350-264-20-2).
- Verify problem is solved.

YES

55

- Replace motor brake (TM 9-2350-264-20-2).
- Verify problem is solved.

NO

56

- Replace wiring harness 1W105-9 or wiring harness 1W117-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 44

57

- Test for 4 to 6 V dc between 11 (-) and 21 (+) on breakout box.

Does multimeter show 4 to 6 V dc?

YES

58

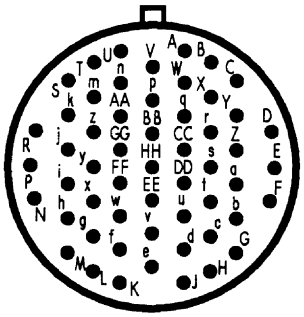
- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W106-P1 from J2 on turret networks box (page 4-153).
- Test for continuity between contacts A and J on 1W106-P1.

Does multimeter show continuity?

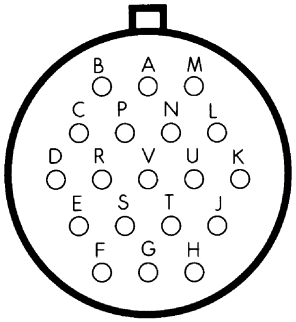
NO

59

- Go to block 68 (page 4-51).



1W106-P1



1W106-P2

NO

60

- Connect 1W106-P1 to J2 on turret networks box (TM 9-2350-264-20-2).
- Disconnect 1W106-P2 from J1 on loader's panel (TM 9-2350-264-20-2).
- Connect jumper between contacts A and G on 1W106-P2.
- Test for continuity between 20 and 21 on breakout box.

Does multimeter show continuity?

YES

61

- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.

NO

62

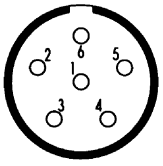
- Connect 1W106-P2 to J1 on loader's panel (TM 9-2350-264-20-2).
- Disconnect 1W111-P1 from 1W106-J1 (TM 9-2350-264-20-2).
- Connect jumper between contacts 5 and 6 on 1W106-J1.
- Test for continuity between 20 and 21 on breakout box.

Does multimeter show continuity?

YES

63

- Replace loader's panel (TM 9-2350-264-20-2).
- Verify problem is solved.



1W106-J1

NO — YES

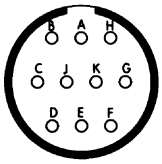
64

- Connect 1W111-P1 to 1W106-J1 (TM 9-2350-264-20-2).
- Disconnect loader's knee switch (1S101)-P1 from 1W106-J2 (TM 9-2350-264-20-2).
- Connect jumper between G and J on 1W106-J2.
- Test for continuity between 20 and 21 on breakout box.

Does multimeter show continuity?

65

- Replace wiring harness 1W111 (TM 9-2350-264-20-2).
- Verify problem is solved.



1W106-J2

YES — NO

66

- Replace loader's knee switch (TM 9-2350-264-20-2).
- Verify problem is solved.

67

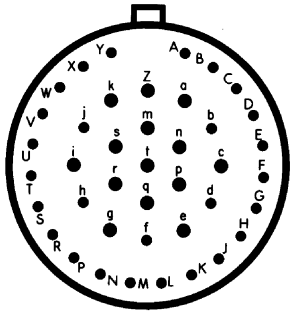
- Replace branched wiring harness 1W106 (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 59

68

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W107-9/P1 from J4 on turret networks box (page 4-153).
- Test for continuity between contacts A and N on 1W107-9/P1.

Does multimeter show continuity?



1W107-9/P1

NO — YES

69

Is main gun safety switch (1S100)-P1 connected to 1W108-2/J1 (TM 9-2350-264-20-2)?

70

- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.

NO — YES

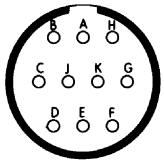
71

- Connect 1W107-9/P1 to J4 on turret networks box (page 4-153).
- Disconnect main gun safety switch (1S100)-P1 from 1W108-9/J1 (TM 9-2350-264-20-2).
- Connect jumper between contacts G and J on 1W108-9/J1.
- Test for continuity between 21 and 22 on breakout box.

Does multimeter show continuity?

72

- Go to block 166 (page 4-68).



1W108-9/J1

NO — YES

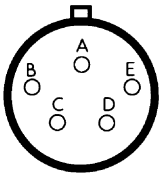
73

- Connect main gun safety switch (1S100)-P1 to 1W108-9/J1 (TM 9-2350-264-20-2).
- Disconnect 1W108-9/P3 from J1 on coax electrical solenoid (TM 9-2350-264-20-2).
- Connect jumper between contacts C and E on 1W108-9/P3.
- Test for continuity between 21 and 22 on breakout box.

Does multimeter show continuity?

74

- Replace main gun safety switch assembly (TM 9-2350-264-20-2).
- Verify problem is solved.



1W108-9/P3

NO — YES

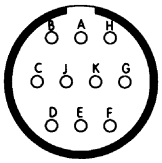
75

- Connect 1W108-9/P3 to J1 on coax electrical solenoid (TM 9-2350-264-20-2).
- Disconnect zero degree elevation switch (1S242)-P1 from 1W107-9/J2 (TM 9-2350-264-20-2).
- Connect jumper between contacts G and J on 1W107-9/J2.
- Test for continuity between 21 and 22 on breakout box.

Does multimeter show continuity?

76

- Replace electrical solenoid (TM 9-2350-264-20-2).
- Verify problem is solved.



1W107-9/J2

NO — YES

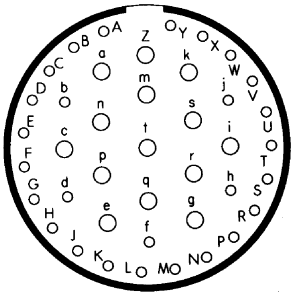
77

- Connect zero degree elevation switch (1S242)-P1 to 1W107-9/J2 (TM 9-2350-264-20-2).
- Disconnect 1W108-9/P1 from 1W107-9/J1 (TM 9-2350-264-20-2).
- Connect jumper between contacts A and N on 1W107-9/J1.
- Test for continuity between 21 and 22 on breakout box.

Does multimeter show continuity?

78

- Replace zero degree elevation switch (TM 9-2350-264-20-2).
- Verify problem is solved.



1W107-9/J1

YES — NO

79

- Replace wiring harness 1W108-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

80

- Replace branched wiring harness 1W107-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 3

81

- Test for 4 to 6 V dc between 11 (-) and 23 (+) on breakout box.

Does multimeter show 4 to 6 V dc?

YES

82

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W202-9/P1 from J7 on turret networks box (page 4-153).
- Disconnect 1W203-9/P1 from J3 on turret networks box (page 4-153).
- Test for continuity between contact s on 1W202-9/P1 and contact t on 1W203-9/P1.

Does multimeter show continuity?

NO

84

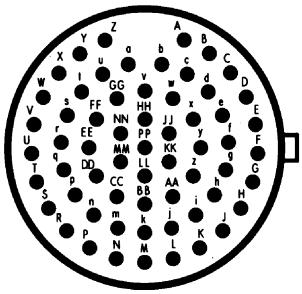
- Disconnect 1W202-9/P3 from J1 on line-of-sight electronics unit (TM 9-2350-264-20-2).
- Connect jumper between contacts A and s on 1W202-9/P3.
- Test for continuity between contacts F and s on 1W202-9/P1.

Does multimeter show continuity?

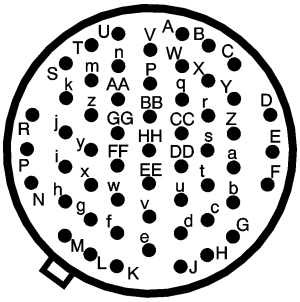
NO

83

- Go to block 98 (page 4-56).



1W202-9/P1

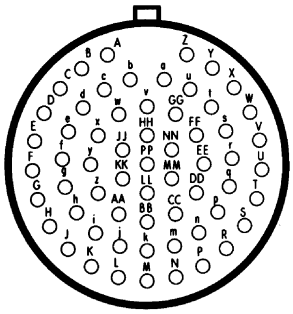


1W203-9/P1

YES

85

- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.



1W202-9/P3

YES — NO

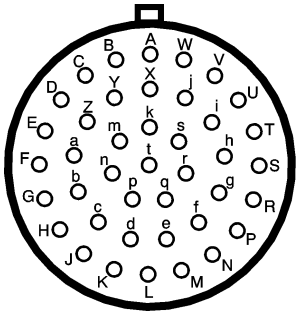
86

- Disconnect 1W203-9/P2 from J1 on gunner's primary sight (TM 9-2350-264-20-2).
- Connect jumper between contacts a and k on 1W203-9/P2.
- Test for continuity between contacts G and t on 1W203-9/P1.

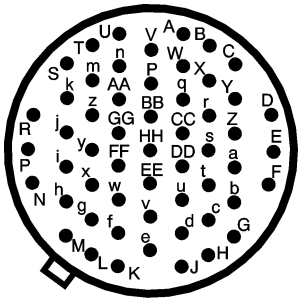
Does multimeter show continuity?

87

- Connect 1W203-9/P1 to J3 on turret networks box (page 4-153).
- Replace branched wiring harness 1W202-9 (TM 9-2350-264-20-2).
- Verify problem is solved.



1W203–9/P2



1W203–9/P1

YES — NO

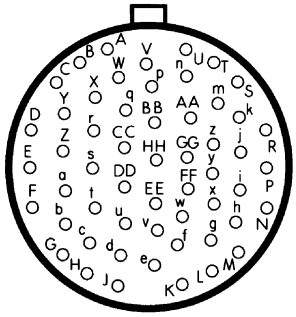
88

- Connect 1W202-9/P1 to J7 on turret networks box (page 4-153).
- Connect 1W202-9/P3 to J1 on line-of-sight electronics unit (TM 9-2350-264-20-2).
- Connect 1W203-9/P1 to J3 on turret networks box (page 4-153).
- Disconnect 1W206-P2 from J2 on gunner's primary sight (TM 9-2350-264-20-2).
- Connect jumper between contact k on 1W203-9/P2 and contact W on 1W206-P2.
- Test for continuity between 11 and 23 on breakout box.

Does multimeter show continuity?

89

- Connect 1W202-9/P1 to J7 on turret networks box (page 4-153).
- Connect 1W202-9/P3 to J1 on line-of-sight electronics unit (TM 9-2350-264-20-2).
- Replace branched wiring harness 1W203-9 (TM 9-2350-264-20-2).
- Verify problem is solved.



1W206–P2

NO — YES

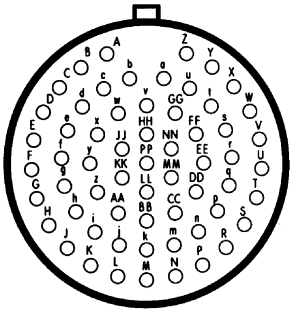
90

- Connect 1W203-9/P2 to J1 on gunner's primary sight (TM 9-2350-264-20-2).
- Connect 1W206-P2 to J2 on gunner's primary sight (TM 9-2350-264-20-2).
- Disconnect 1W202-9/P3 from J1 on line-of-sight electronics unit (TM 9-2350-264-20-2).
- Disconnect 1W206-P1 from J2 on line-of-sight electronics unit (TM 9-2350-264-20-2).
- Connect jumper between contact s on 1W202-9/P3 and contact EE on 1W206-P1.
- Test for continuity between 11 and 23 on breakout box.

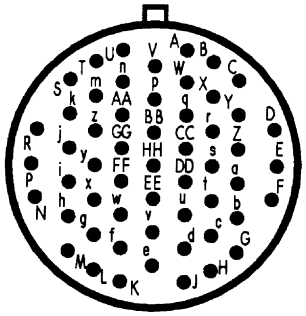
Does multimeter show continuity?

91

- Internal flex harness is faulty, replace gunner's primary sight body assembly (TM 9-2350-264-20-2).
- Verify problem is solved.



1W202-9/P3



1W206-P1

NO — YES

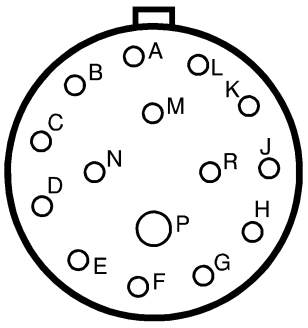
92

- Connect 1W202-9/P3 to J1 on line-of-sight electronics unit (TM 9-2350-264-20-2).
- Connect 1W206-P1 to J2 on line-of-sight electronics unit (TM 9-2350-264-20-2).
- Disconnect 1W206-P3 from 1W207-9/J1 (TM 9-2350-264-20-2).
- Connect jumper between contacts E and F on 1W206-P3.
- Test for continuity between 11 and 23 on breakout box.

Does multimeter show continuity?

93

- Replace line-of-sight electronics unit (TM 9-2350-264-20-2).
- Verify problem is solved.



1W206 – P3

YES NO

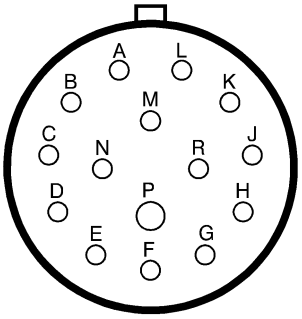
94

- Connect 1W206-P3 to 1W207-9/J1 (TM 9-2350-264-20-2).
- Disconnect 1W207-9/P1 from J1 on gun trunnion resolver (1A291) (TM 9-2350-264-20-2).
- Connect jumper between contacts E and F on 1W207-9/P1.
- Test for continuity between 11 and 23 on breakout box.

Does multimeter show continuity?

95

- Replace branched wiring harness 1W206 (TM 9-2350-264-20-2).
- Verify problem is solved.



1W207 – 9/P1

YES NO

96

- Gun trunnion resolver is faulty. Notify support maintenance.

97

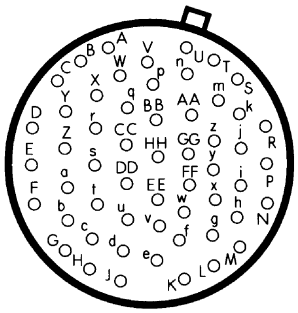
- Replace branched wiring harness 1W207-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 83

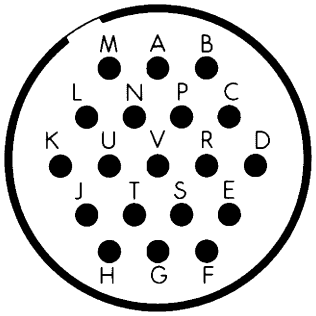
98

- Test for 4 to 6 V dc between 11 (-) and 24 (+) on breakout box.

Does multimeter show 4 to 6 V dc?



1W202-9/P2



CCP – J1

YES NO

99

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W202-9/P2 from J2 on computer electronics unit (TM 9-2350-264-20-2).
- Test for continuity between contact S on 1W202-9/P2 and 24 on breakout box.

Does multimeter show continuity?

100

- Go to block 107 (page 4-57).

NO YES

101

- Disconnect 1W202-9/P5 from J1 on computer control panel (TM 9-2350-264-20-2).
- Test for continuity between contacts F and N on computer control panel J1.

Does multimeter show continuity?

102

- Replace computer electronics unit (TM 9-2350-264-20-2).
- Verify problem is solved.

YES

103

- Disconnect 1W202-9/P1 from J7 on turret networks box (page 4-153).
- Test for continuity between contact PP on turret networks box J7 and 24 on breakout box.

Does multimeter show continuity?

NO

104

- Connect 1W202-9/P2 to J2 on computer electronics unit (TM 9-2350-264-20-2).
- Replace computer control panel (TM 9-2350-264-20-2).
- Verify problem is solved.

YES

105

- Replace branched wiring harness 1W202-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

NO

106

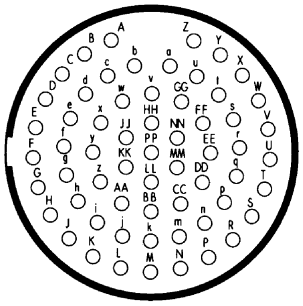
- Connect 1W202-9/P2 to J2 on computer electronics unit (TM 9-2350-264-20-2).
- Connect 1W202-9/P5 to J1 on computer control panel (TM 9-2350-264-20-2).
- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 100

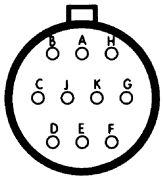
107

- Test for 4 to 6 V dc between 11 (-) and 25 (+) on breakout box.

Does multimeter show 4 to 6 V dc?



TNB – J7



1W203–9/P3

YES

108

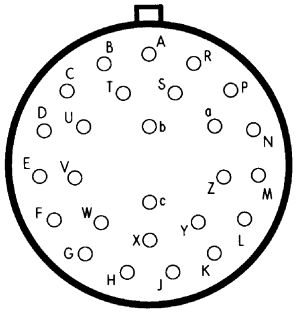
- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W204-9/P2 from J2 on laser rangefinder (TM 9-2350-264-20-2).
- Disconnect 1W203-9/P3 from J1 on laser rangefinder (TM 9-2350-264-20-2).
- Connect jumper between contact J on 1W203-9/P3 and contact B on 1W204-9/P2.
- Test for continuity between contact F on 1W204-9/P2 and 25 on breakout box.

Does multimeter show continuity?

NO

109

- Go to block 116 (page 4-58).



1W204–9/P2

NO

110

- Test for continuity between contacts B and F on 1W204-9/P2.

Does multimeter show continuity?

YES

111

- Replace laser rangefinder (TM 9-2350-264-20-2).
- Verify problem is solved.

YES

112

- Connect 1W204-9/P2 to J2 on laser rangefinder (TM 9-2350-264-20-2).
- Disconnect 1W203-9/P1 from J3 on turret networks box (page 4-153).
- Test for continuity between contact AA on turret networks box J3 and 25 on breakout box.

Does multimeter show continuity?

NO

113

- Connect 1W203-9/P3 to J1 on laser rangefinder (TM 9-2350-264-20-2).
- Replace branched wiring harness 1W204-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

YES

114

- Replace branched wiring harness 1W203-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

NO

115

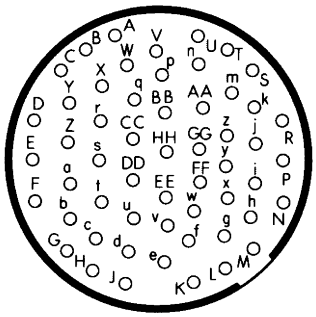
- Connect 1W203-9/P3 to J1 on laser rangefinder (TM 9-2350-264-20-2).
- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 109

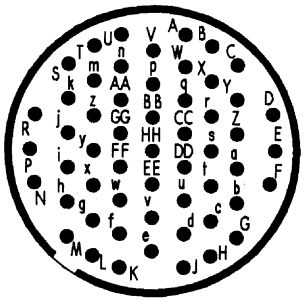
116

- Test for 4 to 6 V dc between 11 (-) and 26 (+) on breakout box.

Does multimeter show 4 to 6 V dc?



TNB – J3



CEU – J3

YES

117

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W204-9/P1 from J3 on computer electronics unit (TM 9-2350-264-20-2).
- Test for continuity between contact j on computer electronics unit J3 and 26 on breakout box.

Does multimeter show continuity?

NO

118

- Go to block 125 (page 4-60).

YES — NO

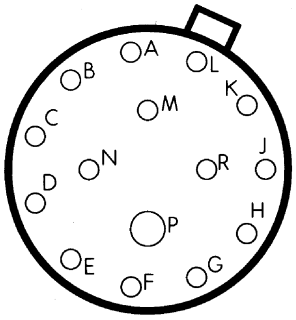
119

- Disconnect 1W204-9/P4 from 1W205-9/J1 (TM 9-2350-264-20-2).
- Connect jumper between contacts H and K on 1W204-9/P4.
- Test for continuity between contacts c and j on 1W204-9/P1.

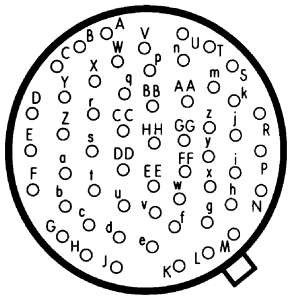
Does multimeter show continuity?

120

- Go to block 136 (page 4-61).



1W204-9/P4



1W204-9/P1

YES — NO

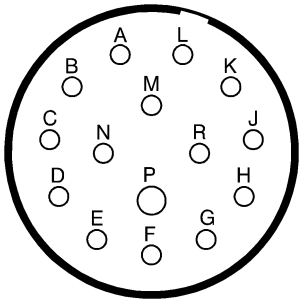
121

- Connect 1W204-9/P4 to 1W205-9/J1 (TM 9-2350-264-20-2).
- Disconnect crosswind sensor (1A253)-P1 from 1W205-9/J2 (TM 9-2350-264-20-2).
- Connect jumper between contacts c and j on 1W204-9/P1.
- Test for continuity between contacts H and K on 1W205-9/J2.

Does multimeter show continuity?

122

- Replace branched wiring harness 1W204-9 (TM 9-2350-264-20-2).
- Verify problem is solved.



1W205 – 9/J2

YES — NO

123

- Connect 1W204-9/P1 to J3 on computer electronics unit (TM 9-2350-264-20-2).
- Replace crosswind sensor (TM 9-2350-264-20-2).
- Verify problem is solved.

124

- Connect 1W204-9/P1 to J3 on computer electronics unit (TM 9-2350-264-20-2).
- Replace branched wiring harness 1W205-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 118

125

- Test for 4 to 6 V dc between 11 (-) and 27 (+) on breakout box.

Does multimeter show 4 to 6 V dc?

YES

126

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W204-9/P1 from J3 on computer electronics unit (TM 9-2350-264-20-2).
- Disconnect 1W201-9/P2 from J1 on computer electronics unit (TM 9-2350-264-20-2).
- Connect jumper between contact a on 1W204-9/P1 and contact BB on 1W201-9/P2.
- Test for continuity between contact W on 1W204-9/P1 and 27 on breakout box.

Does multimeter show continuity?

NO

128

- Disconnect 1W204-9/P3 from J1 on cant unit (TM 9-2350-264-20-2).
- Connect jumper between contacts G and H on 1W204-9/P3.
- Test for continuity between contacts W and a on 1W204-9/P1.

Does multimeter show continuity?

YES

130

- Connect 1W204-9/P3 to J1 on cant unit (TM 9-2350-264-20-2).
- Test for continuity between contacts a and W on 1W204-9/P1.

Does multimeter show continuity?

NO

131

- Connect 1W201-9/P2 to J1 on computer electronics unit (TM 9-2350-264-20-2).
- Replace branched wiring harness 1W204-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

NO

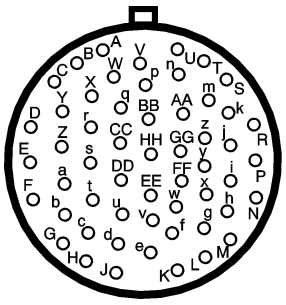
127

- Go to block 141 (page 4-62).

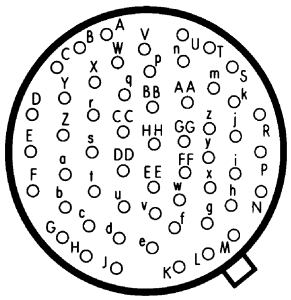
YES

129

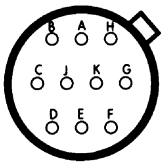
- Replace computer electronics unit (TM 9-2350-264-20-2).
- Verify problem is solved.



1W201-9/P2



1W204-9/P1



1W204-9/P3

YES — NO

132

- Connect 1W204-9/P1 to J3 on computer electronics unit (TM 9-2350-264-20-2).
- Disconnect 1W201-9/P1 from J6 on turret networks box (TM 9-2350-264-20-2).
- Test for continuity between contact NN on turret networks box J6 and 27 on breakout box.

Does multimeter show continuity?

133

- Connect 1W201-9/P2 to J1 on computer electronics unit (TM 9-2350-264-20-2).
- Connect 1W204-9/P1 to J3 on computer electronics unit (TM 9-2350-264-20-2).
- Replace cant unit assembly (TM 9-2350-264-20-2).
- Verify problem is solved.

YES — NO

134

- Replace branched wiring harness 1W201-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

135

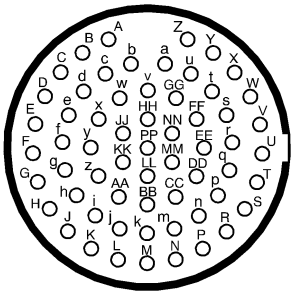
- Connect 1W201-9/P2 to J1 on computer electronics unit (TM 9-2350-264-20-2).
- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 120

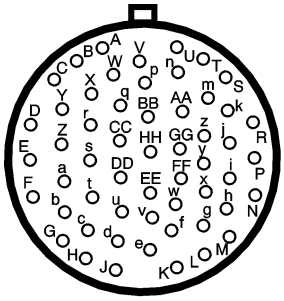
136

- Disconnect 1W201-9/P2 from J1 on computer electronics unit (TM 9-2350-264-20-2).
- Test for continuity between contact EE on 1W201-9/P2 and 26 on breakout box.

Does multimeter show continuity?



TNB–J6



1W201–9/P2

NO — YES

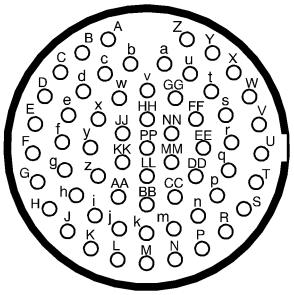
137

- Connect 1W204-9/P1 to J3 on computer electronics unit (TM 9-2350-264-20-2).
- Disconnect 1W201-9/P1 from J6 on turret networks box (page 4-153).
- Test for continuity between contact MM on turret networks box J6 and 26 on breakout box.

Does multimeter show continuity?

138

- Replace computer electronics unit (TM 9-2350-264-20-2).
- Verify problem is solved.



TNB–J6

YES — NO

139

- Replace branched wiring harness 1W201-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

140

- Connect 1W201-9/P2 to J1 on computer electronics unit (TM 9-2350-264-20-2).
- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 127

141

- Test for 4 to 6 V dc between 11 (-) and 28 (+) on breakout box.

Does multimeter show 4 to 6 V dc?

YES — NO

142

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W209-9/P1 from J2 on thermal electronics unit (TM 9-2350-264-20-2).
- Disconnect 1W202-9/P4 from J1 on thermal electronics unit (TM 9-2350-264-20-2).
- Connect jumper between contact A on 1W209-9/P1 and contact 54 on 1W202-9/P4.

NOTE

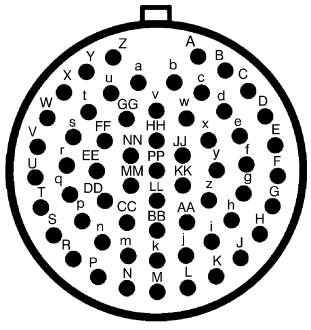
Leave jumper connected for block 144 (page 4-63).

- Test for continuity between contact d on 1W209-9/P1 and 28 on breakout box.

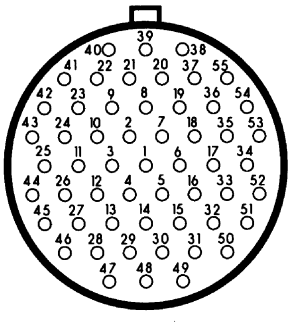
Does multimeter show continuity?

143

- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.



1W209 – 9/P1



1W202–9/P4

NO — YES

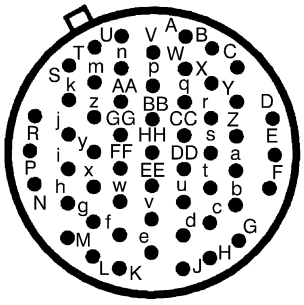
144

- Disconnect 1W210-9/P1 from J2 on thermal power control unit (TM 9-2350-264-20-2).
- Test for continuity between contact FF on 1W210-9/P1 and 28 on breakout box.

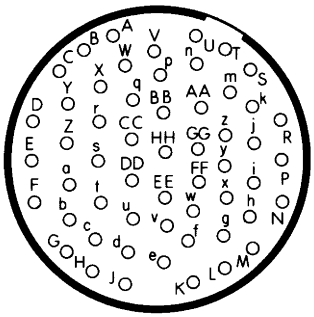
Does multimeter show continuity?

145

- Replace thermal electronics unit (TM 9-2350-264-20-2).
- Verify problem is solved.



1W210 – 9/P1



TPCU – J2

YES — NO

146

- Disconnect 1W208-9/P1 from J3 on thermal power control unit (TM 9-2350-264-20-2).
- Test for continuity on thermal power control unit between contact FF on J2 and contact t on J3.

Does multimeter show continuity?

147

- Go to block 154 (page 4-65).

YES — NO

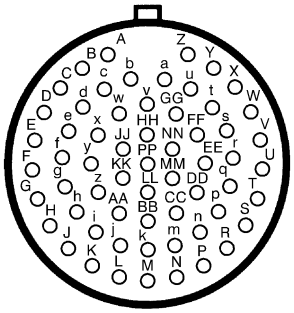
148

- Connect 1W202-9/P4 to J1 on thermal electronics unit (TM 9-2350-264-20-2).
- Connect 1W210-9/P1 to J2 on thermal power control unit (TM 9-2350-264-20-2).
- Disconnect 1W208-9/P2 from J1 on image control unit (TM 9-2350-264-20-2).
- Connect jumper between contacts A and PP on 1W208-9/P2.
- Test for continuity between contacts A and t on 1W208-9/P1.

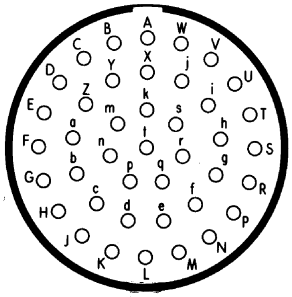
Does multimeter show continuity?

149

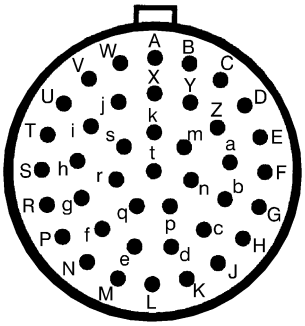
- Connect 1W202-9/P4 to J1 on thermal electronics unit (TM 9-2350-264-20-2).
- Connect 1W209-9/P1 to J2 on thermal electronics unit (TM 9-2350-264-20-2).
- Replace power control unit (TM 9-2350-264-20-2).
- Verify problem is solved.



1W208 – 9/P2



TPCU – J3



1W208 – 9/P1

YES — NO

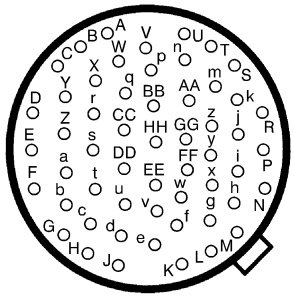
150

- Connect 1W208-9/P1 to J3 on thermal power control unit (TM 9-2350-264-20-2).
- Disconnect 1W209-9/P3 from J2 on image control unit (TM 9-2350-264-20-2).
- Connect jumper between contacts A and a on 1W209-9/P3.
- Test for continuity between contacts W and d on 1W209-9/P1.

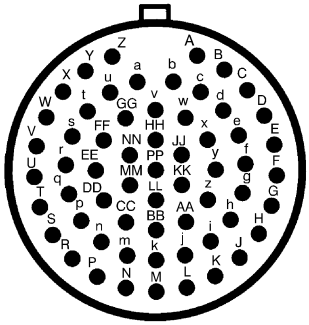
Does multimeter show continuity?

151

- Connect 1W209-9/P1 to J2 on thermal electronics unit (TM 9-2350-264-20-2).
- Replace branched wiring harness 1W208-9 (TM 9-2350-264-20-2).
- Verify problem is solved.



1W209 – 9/P3



1W209 – 9/P1

YES — NO

152

- Connect 1W209-9/P1 to J2 on thermal electronics unit (TM 9-2350-264-20-2).
- Replace image control unit (TM 9-2350-264-20-2).
- Verify problem is solved.

153

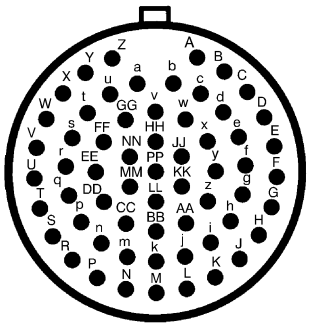
- Connect 1W208-9/P2 to J1 on image control unit (TM 9-2350-264-20-2).
- Replace branched wiring harness 1W209-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 147

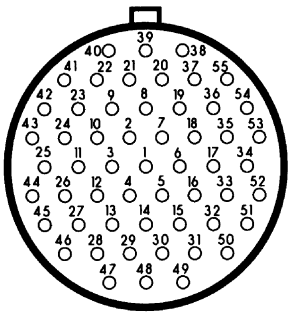
154

- Disconnect 1W210-9/P2 from J1 on thermal receiver unit (TM 9-2350-264-20-2).
- Disconnect 1W209-9/P2 from J2 on thermal receiver unit (TM 9-2350-264-20-2).
- Disconnect 1W210-9/P3 from J4 on thermal receiver unit (TM 9-2350-264-20-2).
- Connect jumper between contact A on 1W209-9/P1 and contact 54 on 1W202-9/P4.
- Connect jumper between contacts J and R on 1W210-9/P3.
- Connect jumper between contact W on 1W210-9/P2 and contact DD on 1W209-9/P2.
- Test for continuity between contact FF on 1W210-9/P1 and 28 on breakout box.

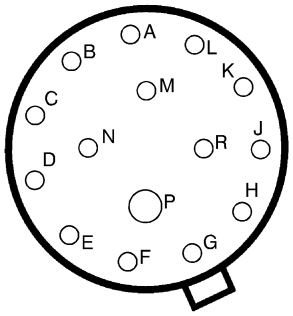
Does multimeter show continuity?



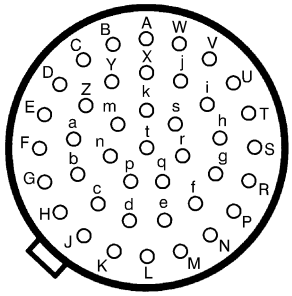
1W209 – 9/P1



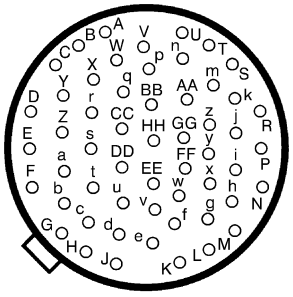
1W202-9/P4



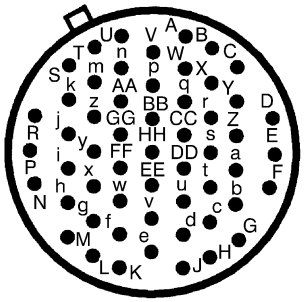
1W210 – 9/P3



1W210 – 9/P2



1W209 – 9/P2



1W210 – 9/P1

NO

155

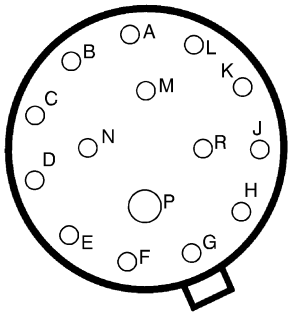
- Connect jumper between contacts J and R on 1W210-9/P3.
- Test for continuity between contact W on 1W210-9/P2 and contact FF on 1W210-9/P1.

Does multimeter show continuity?

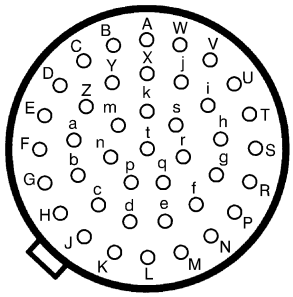
YES

156

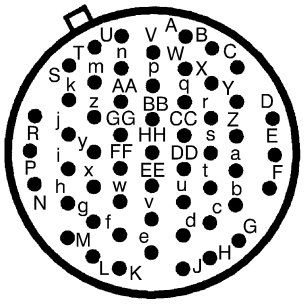
- Connect 1W210-9/P1 to J2 on thermal power control unit (TM 9-2350-264-20-2).
- Replace thermal receiver unit (TM 9-2350-264-20-2).
- Verify problem is solved.



1W210 – 9/P3



1W210 – 9/P2



1W210 – 9/P1

YES

157

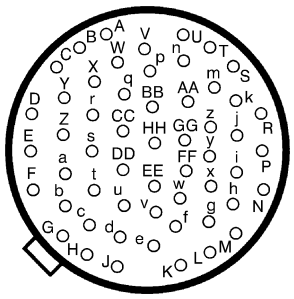
- Connect 1W210-9/P3 to J4 on thermal receiver unit (TM 9-2350-264-20-2).
- Connect 1W210-9/P2 to J1 on thermal receiver unit (TM 9-2350-264-20-2).
- Connect 1W210-9/P1 to J2 on thermal power control unit (TM 9-2350-264-20-2).
- Connect jumper between contacts A and DD on 1W209-9/P2.
- Test for continuity between contacts A and F on 1W209-9/P1.

Does multimeter show continuity?

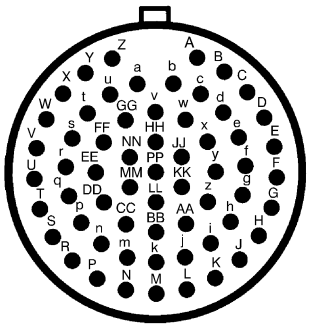
NO

158

- Connect 1W209-9/P1 to J2 on thermal electronics unit (TM 9-2350-264-20-2).
- Connect 1W202-9/P4 to J1 on thermal electronics unit (TM 9-2350-264-20-2).
- Connect 1W209-9/P2 to J2 on thermal receiver unit (TM 9-2350-264-20-2).
- Replace branched wiring harness 1W210-9 (TM 9-2350-264-20-2).
- Verify problem is solved.



1W209 – 9/P2



1W209 – 9/P1

YES — NO

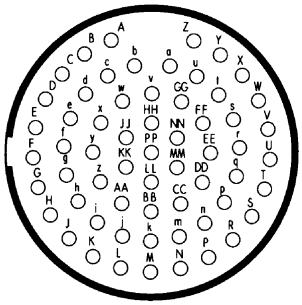
159

- Connect 1W209-9/P1 to J2 on thermal electronics unit (TM 9-2350-264-20-2).
- Connect 1W209-9/P2 to J2 on thermal receiver unit (TM 9-2350-264-20-2).
- Disconnect 1W202-9/P1 from J7 on turret networks box (page 4-153).
- Test for continuity between contact x on turret networks box J7 and 28 on breakout box.

Does multimeter show continuity?

160

- Connect 1W202-9/P4 to J1 on thermal electronics unit (TM 9-2350-264-20-2).
- Replace branched wiring harness 1W209-9 (TM 9-2350-264-20-2).
- Verify problem is solved.



TNB – J7

YES — NO

161

- Replace branched wiring harness 1W202-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

162

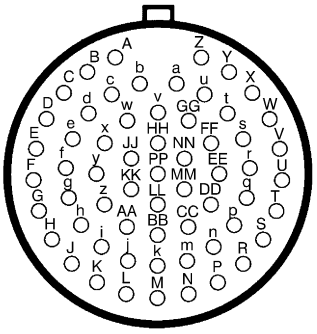
- Connect 1W202-9/P4 to J1 on thermal electronics unit (TM 9-2350-264-20-2).
- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 27

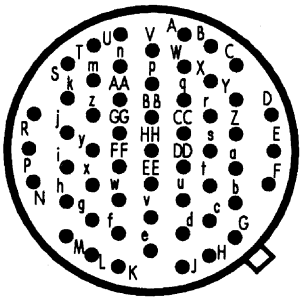
163

- Disconnect 1W102-9/P2 from J1 on tank commander's panel (TM 9-2350-264-20-2).
- Connect jumper between contacts A and L on 1W102-9/P2.
- Test for continuity between contacts A and L on 1W102-9/P1.

Does multimeter show continuity?



1W102 – 9/P2



1W102–9/P1

YES — NO

164

- Connect 1W102-9/P1 to J8 on turret networks box (page 4-153).
- Replace tank commander's panel assembly (TM 9-2350-264-20-2).
- Verify problem is solved.

165

- Replace wiring harness assembly 1W102-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 72

166

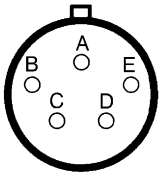
- Connect 1W107-9/P1 to J4 on turret networks box (page 4-153).
- Disconnect 1W108-2/P4 from J1 on primer diode box (TM 9-2350-264-20-2).
- Connect jumper between contacts D and E on 1W108-2/P4.

NOTE

Leave probes connected for remainder of test.

- Test for continuity between 21 and 22 on breakout box.

Does multimeter show continuity?



1W108 – 2/P4

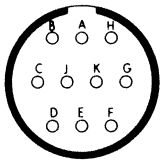
NO → 167

- Connect 1W108-2/P4 to J1 on primer diode box (TM 9-2350-264-20-2).
- Disconnect main gun safety switch (1S100)-P1 from 1W108-2/J1 (TM 9-2350-264-20-2).
- Connect jumper between contacts G and J on 1W108-2/J1.

Does multimeter show continuity?

YES → 168

- Replace primer diode box (TM 9-2350-264-20-2).
- Verify problem is solved.



1W108-2/J1

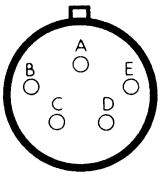
NO → 169

- Connect main gun safety switch (1S100)-P1 to 1W108-2/J1 (TM 9-2350-264-20-2).
- Disconnect 1W108-2/P3 from J1 on coax electrical solenoid (TM 9-2350-264-20-2).
- Connect jumper between contacts C and E on 1W108-2/P3.

Does multimeter show continuity?

YES → 170

- Replace main gun safety switch assembly (TM 9-2350-264-20-2).
- Verify problem is solved.



1W108-2/P3

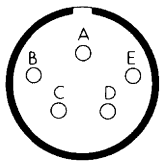
NO → 171

- Connect 1W108-2/P3 to J1 on coax electrical solenoid (TM 9-2350-264-20-2).
- Disconnect blasting machine (1G100)-P1 from 1W108-2/J2 (TM 9-2350-264-20-2).
- Connect jumper between contacts D and E on 1W108-2/J2.

Does multimeter show continuity?

YES → 172

- Replace electrical solenoid (TM 9-2350-264-20-2).
- Verify problem is solved.



1W108 – 2/J2

NO — YES

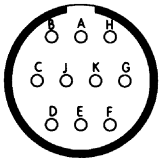
173

- Connect blasting machine (1G100)-P1 to 1W108-2/J2 (TM 9-2350-264-20-2).
- Disconnect zero degree elevation switch (1S242)-P1 from 1W107-9/J2 (TM 9-2350-264-20-2).
- Connect jumper between contacts G and J on 1W107-9/J2.

Does multimeter show continuity?

174

- Replace blasting machine (TM 9-2350-264-20-2).
- Verify problem is solved.



1W107-9/J2

NO — YES

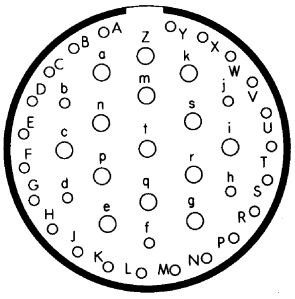
175

- Connect zero degree elevation switch (1S242)-P1 to 1W107-9/J2 (TM 9-2350-264-20-2).
- Disconnect 1W108-2/P1 from 1W107-9/J1 (TM 9-2350-264-20-2).
- Connect jumper between contacts A and N on 1W107-9/J1.

Does multimeter show continuity?

176

- Replace zero degree elevation switch (TM 9-2350-264-20-2).
- Verify problem is solved.



1W107-9/J1

YES — NO

177

- Replace wiring harness 1W108-2 (TM 9-2350-264-20-2).
- Verify problem is solved.

178

- Replace branched wiring harness 1W107-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

SYMPTOM TNB ASTS-5

FIRE CONTROL MALFUNCTION OR FC MALF LIGHT AND F SYMBOL DO NOT COME ON WITH A FIRE CONTROL OR HARNESS DISCONNECTED MALFUNCTION (VEHICLES EQUIPPED WITH TURRET NETWORKS BOX)

Tools:
- Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)
- Breakout box tool kit (NSN 5999-01-130-8077)
- Digital multimeter (NSN 6625-01-265-6000)
- TA1 continuity test probe kit (NSN 6625-01-102-6878)
- Universal test lead set (NSN 6625-01-121-0510)

Supplies:
- Electrical jumper (as required)

Personnel Required:
- Two

Equipment Condition:
- FC MALF light work's properly when PNL LGTS TEST button on upgraded tank commander's panel is pressed or when PANEL LIGHTS TEST button on tank commander's panel is pressed. If either one fails, go to ASTS-2 (TM 9-2350-264-20-2).

NOTE

Read Section I, How To Do Troubleshooting, before doing any work (TM 9-2350-264-20-2).

1

- Set up tank for standard initial test conditions (TM 9-2350-264-20-2).
- Be sure motor/brake POWER/MANUAL lever is set to MANUAL.
- Disconnect 1W200-9/P1 from J5 on turret networks box (page 4-153).
- Connect breakout box to turret networks box TEST 2 using CABLE NO. 1 and ADAPTER NO. 1 (page 4-151).
- Set TURRET POWER switch to ON.
- Test for 4 to 6 V dc between 11 (-) and 22 (+) on breakout box.

Does multimeter show 4 to 6 V dc?

YES

2

Does FIRE CONTROL MALFUNCTION or FC MALF light stay on?

YES

4

- Set VEHICLE MASTER POWER switch to OFF.
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Disconnect 1W200-9/P4 from J3 on gun/turret drive electronics unit (TM 9-2350-264-20-2).
- Set TURRET POWER switch to ON.

Does FIRE CONTROL MALFUNCTION or FC MALF light stay on?

NO

5

- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.

NO

3

- Go to block 40 (page 4-80).

YES

6

- Set VEHICLE MASTER POWER switch to OFF.
- Connect 1W200-9/P4 to J3 on gun/turret drive electronics unit (TM 9-2350-264-20-2).
- Disconnect 1W200-9/P15 from J14 on turret networks box (page 4-153).
- Set TURRET POWER switch to ON.
- Check if FIRE CONTROL MALFUNCTION or FC MALF light stays on.

Does FIRE CONTROL MALFUNCTION or FC MALF light stay on?

NO

7

- Go to block 134 (page 4-98).

YES

8

- Set VEHICLE MASTER POWER switch to OFF.
- Connect 1W200-9/P15 to J14 on turret networks box (page 4-153).
- Disconnect 1W203-9/P1 from J3 on turret networks box (page 4-153).
- Set TURRET POWER switch to ON.
- Test for 4 to 6 V dc between 11 (-) and 23 (+) on breakout box.

Does multimeter show 4 to 6 V dc?

NO

9

- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.

YES

10

- Set VEHICLE MASTER POWER switch to OFF.
- Connect 1W203-9/P1 to J3 on turret networks box (page 4-153).
- Set turret networks box circuit breaker 28 to OFF.
- Set TURRET POWER switch to ON.
- Test for greater than 1 V dc between 11 (-) and 24 (+) on breakout box.

Does multimeter show greater than 1 V dc?

NO

11

- Go to block 189 (page 4-109).

WARNING

Do not press range pushbutton on gunner's or commander's control handle when laser RANGE switch is set to ARM 1ST RTN or ARM LAST RTN. If pressed, laser may fire and cause eye damage to anyone within 8000 meters of laser projection.

YES

12

- Set VEHICLE MASTER POWER switch to OFF.
- Set turret networks box circuit breaker 28 to ON.
- Set laser RANGE switch to ARM LAST RTN.
  - Refer to TM 9-2350-264-10.
- Set TURRET POWER switch to ON.
- Test for 4 to 6 V dc between 11 (-) and 25 (+) on breakout box.

Does multimeter show 4 to 6 V dc?

NO

13

- Go to block 208 (page 4-112).

WARNING

Be sure laser RANGE switch is set to SAFE before setting VEHICLE MASTER POWER or TURRET POWER switch to OFF. If laser RANGE switch is set to ARM 1ST RTN or ARM LAST RTN when VEHICLE MASTER POWER or TURRET POWER switch is set to OFF, laser may fire. Eye damage may result to anyone within 8000 meters of laser projection.

Does multimeter show 4 to 6 V dc?

YES

14

- Set laser RANGE switch to SAFE.
  - Refer to TM 9-2350-264-10.
- Set VEHICLE MASTER POWER switch to OFF.
- Set turret networks box circuit breaker 27 to OFF.
- Set TURRET POWER switch to ON.
- Test for 4 to 6 V dc between 11 (-) and 26 (+) on breakout box.

NO

15

- Go to block 215 (page 4-114).

Does multimeter show greater than 1 V dc?

YES

16

- Set VEHICLE MASTER POWER switch to OFF.
- Set turret networks box circuit breaker 27 to ON.
- Disconnect 1W204-9/P3 from J1 on cant unit (TM 9-2350-264-20-2).
- Set TURRET POWER switch to ON.
- Test for greater than 1 V dc between 11 (-) and 27 (+) on breakout box.

NO

17

- Go to block 223 (page 4-115).

Does multimeter show 4 to 6 V dc?

YES

18

- Set VEHICLE MASTER POWER switch to OFF.
- Set turret networks box circuit breaker 22 to OFF.
- Set TURRET POWER switch to ON.
- Test for 4 to 6 V dc between 11 (-) and 28 (+) on breakout box.

NO

19

- Go to block 234 (page 4-118).

NO

20

- Set VEHICLE MASTER POWER switch to OFF.
- Set turret networks box circuit breaker 22 to ON.
- Disconnect 1W202-9/P1 from J7 on turret networks box (page 4-153).

NOTE

If multimeter shows less than 5 ohms, go immediately to block 23.

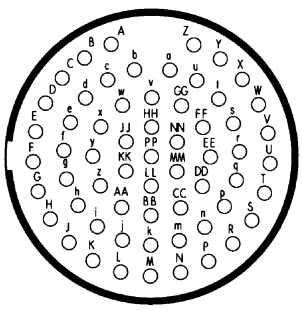
- Test for less than 5 ohms between contact x and contacts on turret networks box J7 listed below:
  - connector body
  - all other contacts

Does multimeter show less than 5 ohms?

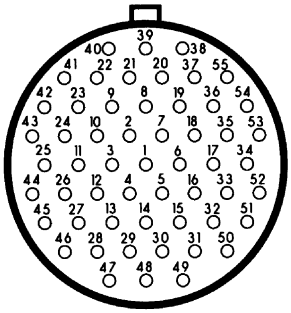
YES

21

- Set VEHICLE MASTER POWER switch to OFF.
- Connect 1W204-9/P3 to J1 on cant unit (TM 9-2350-264-20-2).
- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.



TNB – J7



1W202–9/P4

NO

22

- Disconnect 1W202-9/P4 from J1 on thermal electronics unit (TM 9-2350-264-20-2).

NOTE

If multimeter does not show greater than 100K ohms, go immediately to block 25 (page 4-75).

- Test for greater than 100K ohms between contact 54 and each contact on 1W202-9/P4 listed below:
  - contact 25
  - contact 43
  - connector body

Does multimeter show greater than 100K ohms for all tests?

YES

23

- Connect 1W204-9/P3 to J1 on cant unit (TM 9-2350-264-20-2).
- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.

YES

24

- Disconnect 1W209-9/P1 from J2 on thermal electronics unit (TM 9-2350-264-20-2).

NOTE

If multimeter does not show greater than 100K ohms, go immediately to block 27 (page 4-76).

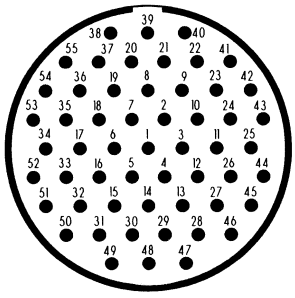
- Test for greater than 100K ohms between contact 54 and contacts on thermal electronics unit J1 listed below:
  - connector body
  - all other contacts
- Test for greater than 100K ohms between contact A and contacts on thermal electronics unit J2 listed below:
  - connector body
  - all other contacts
- Test for greater than 100K ohms between contact d and contacts on thermal electronics unit J2 listed below:
  - connector body
  - all other contacts

Does multimeter show greater than 100K ohms for all tests?

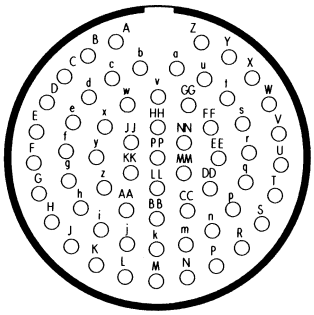
NO

25

- Connect 1W204-9/P3 to J1 on cant unit (TM 9-2350-264-20-2).
- Replace branched wiring harness 1W202-9 (TM 9-2350-264-20-2).
- Verify problem is solved.



TEU – J1



TEU – J2

YES — NO

26

- Disconnect 1W209-9/P2 from J2 on thermal receiver unit (TM 9-2350-264-20-2).

NOTE

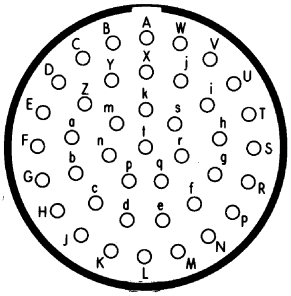
If multimeter does not show greater than 100K ohms, go immediately to block 29.

- Test for greater than 100K ohms between contact A and each contact on 1W209-9/P1 listed below:
  - contact FF
  - connector body

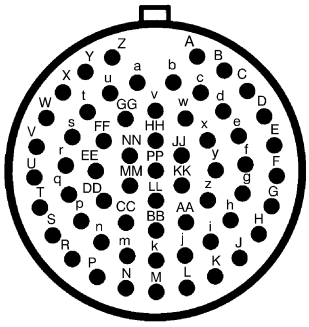
Does multimeter show greater than 100K ohms for all tests?

27

- Connect 1W202-9/P1 to J7 on turret networks box (page 4-153).
- Connect 1W204-9/P3 to J1 on cant unit (TM 9-2350-264-20-2).
- Replace thermal electronics unit (TM 9-2350-264-20-2).
- Verify problem is solved.



TPCU–J3



1W209–9/P1

YES — NO

28

- Disconnect 1W208-9/P1 from J3 on thermal power control unit (TM 9-2350-264-20-2).
- Disconnect 1W210-9/P1 from J2 on thermal power control unit (TM 9-2350-264-20-2).

NOTE

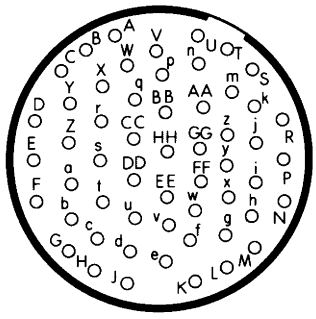
If multimeter does not show greater than 100K ohms, go immediately to block 31 (page 4-77).

- Test for greater than 100K ohms between contact t and contacts on thermal power control unit J3 listed below:
  - connector body
  - all other contacts
- Test for greater than 100K ohms between contact FF and contacts on thermal power control unit J2 listed below:
  - connector body
  - all other contacts

Does multimeter show greater than 100K ohms for all tests?

29

- Connect 1W202-9/P1 to J7 on turret networks box (page 4-153).
- Connect 1W202-9/P4 to J1 on thermal electronics unit (TM 9-2350-264-20-2).
- Connect 1W204-9/P3 to J1 on cant unit (TM 9-2350-264-20-2).
- Replace branched wiring harness 1W209-9 (TM 9-2350-264-20-2).
- Verify problem is solved.



TPCU–J2

YES — NO

30

- Disconnect 1W210-9/P3 from J4 on thermal receiver unit (TM 9-2350-264-20-2).
- Disconnect 1W210-9/P2 from J1 on thermal receiver unit (TM 9-2350-264-20-2).
- Connect jumper between contacts J and R on 1W210-9/P3.

NOTE

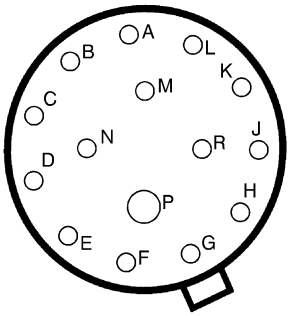
If multimeter does not show greater than 100K ohms, go immediately to block 33.

- Test for greater than 100K ohms between contact FF and each contact on 1W210-9/P1 listed below:
  - contact M
  - connector body

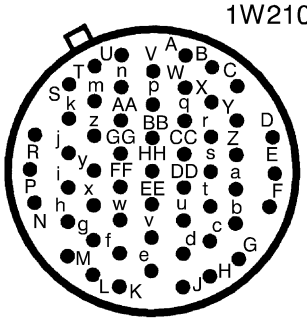
Does multimeter show greater than 100K ohms for all tests?

31

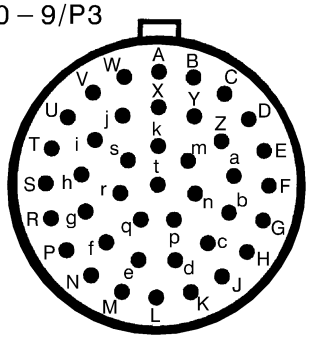
- Connect 1W202-9/P1 to J7 on turret networks box (page 4-153).
- Connect 1W202-9/P4 to J1 on thermal electronics unit (TM 9-2350-264-20-2).
- Connect 1W209-9/P1 to J2 on thermal electronics unit (TM 9-2350-264-20-2).
- Connect 1W209-9/P2 to J2 on thermal receiver unit (TM 9-2350-264-20-2).
- Connect 1W204-9/P3 to J1 on cant unit (TM 9-2350-264-20-2).
- Replace power control unit (TM 9-2350-264-20-2).
- Verify problem is solved.



1W210 – 9/P3



1W210 – 9/P1



1W208 – 9/P1

YES — NO

32

- Disconnect 1W208-9/P2 from J1 on image control unit (TM 9-2350-264-20-2).

NOTE

If multimeter does not show greater than 100K ohms, go immediately to block 35 (page 4-78).

- Test for greater than 100K ohms between contact t and each contact on 1W208-9/P1 listed below:
  - contact J
  - connector body

Does multimeter show greater than 100K ohms for all tests?

33

- Connect 1W202-9/P1 to J7 on turret networks box (page 4-153).
- Connect 1W202-9/P4 to J1 on thermal electronics unit (TM 9-2350-264-20-2).
- Connect 1W209-9/P1 to J2 on thermal electronics unit (TM 9-2350-264-20-2).
- Connect 1W208-9/P1 to J3 on thermal power control unit (TM 9-2350-264-20-2).
- Connect 1W209-9/P2 to J2 on thermal receiver unit (TM 9-2350-264-20-2).
- Connect 1W204-9/P3 to J1 on cant unit (TM 9-2350-264-20-2).
- Replace branched wiring harness 1W210-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

YES

34

NOTE

If multimeter does not show greater than 100K ohms, go immediately to block 36 (page 4-79).

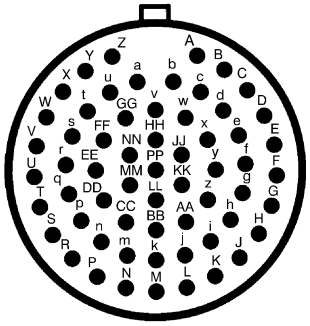
- Test for greater than 100K ohms between contact d and contacts on 1W209-9/P1 listed below:
  - connector body
  - all other contacts

Does multimeter show greater than 100K ohms for all tests?

NO

35

- Connect 1W202-9/P1 to J7 on turret networks box (page 4-153).
- Connect 1W202-9/P4 to J1 on thermal electronics unit (TM 9-2350-264-20-2).
- Connect 1W209-9/P1 to J2 on thermal electronics unit (TM 9-2350-264-20-2).
- Connect 1W210-9/P1 to J2 on thermal power control unit (TM 9-2350-264-20-2).
- Connect 1W210-9/P3 to J4 on thermal receiver unit (TM 9-2350-264-20-2).
- Connect 1W209-9/P2 to J2 on thermal receiver unit (TM 9-2350-264-20-2).
- Connect 1W210-9/P2 to J1 on thermal receiver unit (TM 9-2350-264-20-2).
- Connect 1W204-9/P3 to J1 on cant unit (TM 9-2350-264-20-2).
- Replace branched wiring harness 1W208-9 (TM 9-2350-264-20-2).
- Verify problem is solved.



1W209 – 9/P1

NO — YES

36

- Disconnect 1W209-9/P3 from J2 on image control unit (TM 9-2350-264-20-2).

NOTE

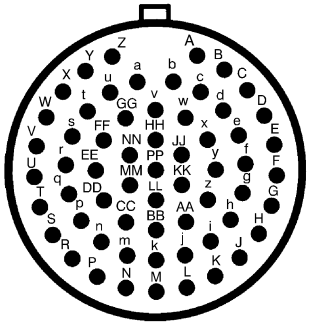
If multimeter does not show greater than 100K ohms, go immediately to block 38.

- Test for greater than 100K ohms between contact d and each contact on 1W209-9/P1 listed below:
  - contact t
  - connector body

Does multimeter show greater than 100K ohms for all tests?

37

- Connect 1W202-9/P1 to J7 on turret networks box (page 4-153).
- Connect 1W202-9/P4 to J1 on thermal electronics unit (TM 9-2350-264-20-2).
- Connect 1W209-9/P1 to J2 on thermal electronics unit (TM 9-2350-264-20-2).
- Connect 1W210-9/P1 to J2 on thermal power control unit (TM 9-2350-264-20-2).
- Connect 1W208-9/P1 to J3 on thermal power control unit (TM 9-2350-264-20-2).
- Connect 1W208-9/P2 to J1 on image control unit (TM 9-2350-264-20-2).
- Connect 1W204-9/P3 to J1 on cant unit (TM 9-2350-264-20-2).
- Replace thermal receiver unit (TM 9-2350-264-20-2).
- Verify problem is solved.



1W209 – 9/P1

NO — YES

38

- Connect 1W202-9/P1 to J7 on turret networks box (page 4-153).
- Connect 1W202-9/P4 to J1 on thermal electronics unit (TM 9-2350-264-20-2).
- Connect 1W210-9/P1 to J2 on thermal power control unit (TM 9-2350-264-20-2).
- Connect 1W208-9/P1 to J3 on thermal power control unit (TM 9-2350-264-20-2).
- Connect 1W208-9/P2 to J1 on image control unit (TM 9-2350-264-20-2).
- Connect 1W210-9/P3 to J4 on thermal receiver unit (TM 9-2350-264-20-2).
- Connect 1W210-9/P2 to J1 on thermal receiver unit (TM 9-2350-264-20-2).
- Connect 1W204-9/P3 to J1 on cant unit (TM 9-2350-264-20-2).
- Replace branched wiring harness 1W209-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

39

- Connect 1W202-9/P1 to J7 on turret networks box (page 4-153).
- Connect 1W202-9/P4 to J1 on thermal electronics unit (TM 9-2350-264-20-2).
- Connect 1W209-9/P1 to J2 on thermal electronics unit (TM 9-2350-264-20-2).
- Connect 1W208-9/P1 to J3 on thermal power control unit (TM 9-2350-264-20-2).
- Connect 1W210-9/P1 to J2 on thermal power control unit (TM 9-2350-264-20-2).
- Connect 1W210-9/P3 to J4 on thermal receiver unit (TM 9-2350-264-20-2).
- Connect 1W209-9/P2 to J2 on thermal receiver unit (TM 9-2350-264-20-2).
- Connect 1W210-9/P2 to J1 on thermal receiver unit (TM 9-2350-264-20-2).
- Connect 1W204-9/P3 to J1 on cant unit (TM 9-2350-264-20-2).
- Replace image control unit (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 3

40

- Test for 18 to 30 V dc between 11 (-) and 15 (+) on breakout box.

Does multimeter show 18 to 30 V dc?

YES

41

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W106-P1 from J2 on turret networks box (page 4-153).
- Set TURRET POWER switch to ON.
- Test for 4 to 6 V dc between 11 (-) and 21 (+) on breakout box.

Does multimeter show 4 to 6 V dc?

YES

43

- Set VEHICLE MASTER POWER switch to OFF.
- Connect 1W106-P1 to J2 on turret networks box (page 4-153).
- Disconnect 1W105-9/P1 or 1W117-9/P1 from J10 on turret networks box (page 4-153).
- Set TURRET POWER switch to ON.
- Test for 4 to 6 V dc between 11 (-) and 20 (+) on breakout box.

Does multimeter show 4 to 6 V dc?

YES

45

- Set VEHICLE MASTER POWER switch to OFF.
- Connect 1W105-9/P1 or 1W117-9/P1 to J10 on turret networks box (page 4-153).
- Disconnect 1W104-P1 from J9 on turret networks box (page 4-153).
- Set TURRET POWER switch to ON.
- Test for 4 to 6 V dc between 11 (-) and 19 (+) on breakout box.

Does multimeter show 4 to 6 V dc?

NO

42

- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.

NO

44

- Go to block 65 (page 4-84).

NO

46

- Go to block 82 (page 4-87).

YES — NO

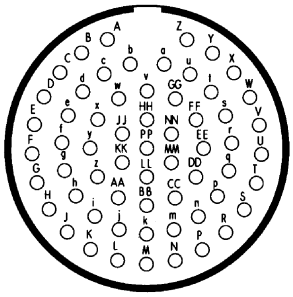
47

- Set VEHICLE MASTER POWER switch to OFF.
- Connect jumper between contacts A and P on turret networks box J9.
- Set TURRET POWER switch to ON.
- Test for 4 to 6 V dc between 11 (-) and 18 (+) on breakout box.

Does multimeter show 4 to 6 V dc?

48

- Go to block 91 (page 4-89).



TNB – J9

NO — YES

49

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W102-2/P1 or 1W102-9/P1 from J8 on turret networks box (page 4-153).
- Disconnect 1W101-9/P2 or 1W118-9/P2 from J11 on turret networks box (page 4-153).

NOTE

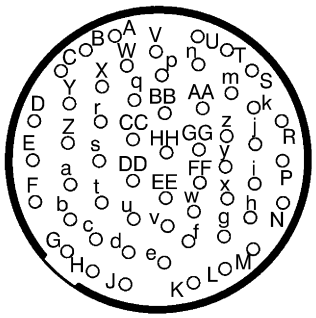
If multimeter shows less than 5 ohms, go immediately to block 52.

- Test for less than 5 ohms between contact A and contacts on turret networks box J8 listed below:
  - connector body
  - all other contacts
- Test for less than 5 ohms between contact L and contacts on turret networks box J8 listed below:
  - connector body
  - all other contacts

Does multimeter show less than 5 ohms?

50

- Go to block 104 (page 4-92).



TNB – J8

NO — YES

51

NOTE

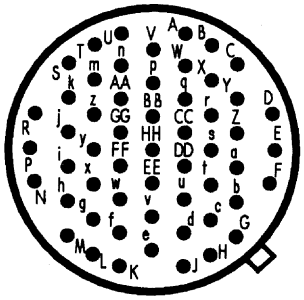
If multimeter shows less than 5 ohms, go immediately to block 54 (page 4-82).

- Test for less than 5 ohms between contact A and contacts on 1W102-2/P1 or 1W102-9/P1 listed below:
  - connector body
  - all other contacts except L

Does multimeter show less than 5 ohms?

52

- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.



1W102–2/P1
OR
1W102–9/P1

NO — YES

53

NOTE

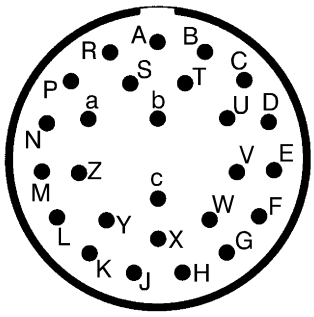
If multimeter shows less than 5 ohms, go immediately to block 56.

- Test for less than 5 ohms between contact A and contacts on turret networks box J11 listed below:
  - connector body
  - all other contacts
- Test for less than 5 ohms between contact J and contacts on turret networks box J11 listed below:
  - connector body
  - all other contacts

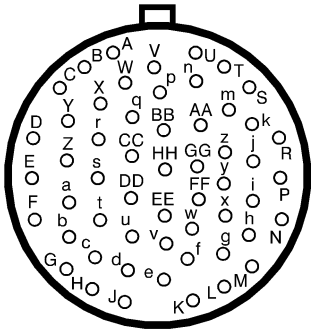
Does multimeter show less than 5 ohms?

54

- Go to block 124 (page 4-96).



TNB – J11



1W101 – 9/P1
OR
1W118 – 9/P1

NO — YES

55

- Disconnect 1W101-9/P1 or 1W118-9/P1 from J8 on hull/turret slipring (page 4-154).

NOTE

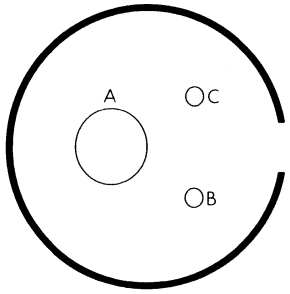
If multimeter shows less than 5 ohms, go immediately to block 58.

- Test for less than 5 ohms between contact F and contacts on 1W101-9/P1 or 1W118-9/P1 listed below:
  - connector body
  - all other contacts
- Test for less than 5 ohms between contact S and contacts on 1W101-9/P1 or 1W118-9/P1 listed below:
  - connector body
  - all other contacts

Does multimeter show less than 5 ohms?

56

- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.



1W100-9/P2
OR
1W501-P2

NO — YES

57

- Disconnect 1W100-9/P3 or 1W501-P3 from J9 on hull/turret slipring (page 4-154).
- Disconnect 1W100-9/P2 or 1W501-P2 from J10 on hull/turret slipring (page 4-154).
- Test for greater than 100K ohms between contacts P2-A and P2-B on 1W100-9/P2 or 1W501-P2.

Does multimeter show greater than 100K ohms?

58

- Go to block 129 (page 4-97).

YES

59

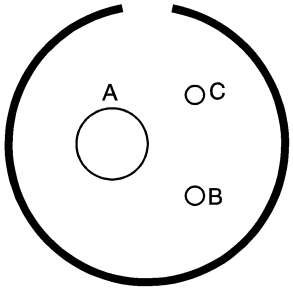
- Disconnect 1W501-TUSK/P3 from J6 on hull/turret slipring (page 4-154).
- Disconnect 1W501-TUSK/P2 from J7 on hull/turret slipring (page 4-154).
- Test for greater than 100K ohms between contacts P3-A and P3-B on 1W501-TUSK/P3.

Does multimeter show greater than 100K ohms?

NO

60

- Connect 1W101-9/P1 or 1W118-9/P1 to J8 on hull/turret slipring (page 4-154).
- Connect 1W101-9/P2 or 1W118-9/P2 to J11 on turret networks box (page 4-153).
- Connect 1W102-2/P1 or 1W102-9/P1 to J8 on turret networks box (page 4-153).
- Connect 1W104-P1 to J9 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Replace wiring harness assembly 1W100-9 (TM 9-2350-264-20-2) or branched harness 1W501 (page 5-73).
- Verify problem is solved.



1W501–TUSK/P3

NO

61

- Disconnect 1W100-9/P1 or 1W501-P1 from 1W501-TUSK/J2 (page 4-154).
- Disconnect 1W100-9/P4 or 1W501-P4 from 1W501-TUSK/J1 (page 4-154).
- Test for greater than 100K ohms between contacts P1-A and P1-B on 1W100-9/P1 or 1W501-P1.

Does multimeter show greater than 100K ohms?

YES

62

- Connect 1W101-9/P2 or 1W118-9/P2 to J11 on turret networks box (page 4-153).
- Connect 1W102-2/P1 or 1W102-9/P1 to J8 on turret networks box (page 4-153).
- Connect 1W104-P1 to J9 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Replace hull/turret slipring assembly (TM 9-2350-264-20-2).
- Verify problem is solved.

YES

63

- Connect 1W101-9/P1 or 1W118-9/P1 to J8 on hull/turret slipring (page 4-154).
- Connect 1W101-9/P2 or 1W118-9/P2 to J11 on turret networks box (page 4-153).
- Connect 1W102-2/P1 or 1W102-9/P1 to J8 on turret networks box (page 4-153).
- Connect 1W104-P1 to J9 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Replace wiring harness assembly 1W501-TUSK (page 5-21).
- Verify problem is solved.

NO

64

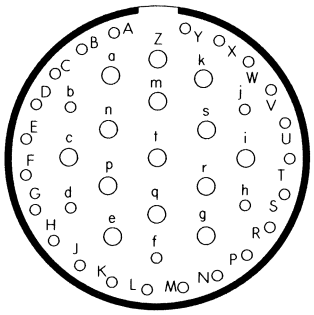
- Connect 1W101-9/P1 or 1W118-9/P1 to J8 on hull/turret slipring (page 4-154).
- Connect 1W101-9/P2 or 1W118-9/P2 to J11 on turret networks box (page 4-153).
- Connect 1W102-2/P1 or 1W102-9/P1 to J8 on turret networks box (page 4-153).
- Connect 1W104-P1 to J9 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Replace wiring harness assembly 1W100-9 (TM 9-2350-264-20-2) or branched harness 1W501 (page 5-73).
- Verify problem is solved.

From block 44

65

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W107-9/P1 from J4 on turret networks box (page 4-153).
- Connect jumper between contacts A and N on turret networks box J4.
- Set TURRET POWER switch to ON.
- Test for 4 to 6 V dc between 11 (-) and 21 (+) on breakout box.

Does multimeter show 4 to 6 V dc?



TNB-J4

YES

66

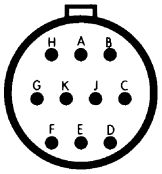
- Set VEHICLE MASTER POWER switch to OFF.
- Connect 1W107-9/P1 to J4 on turret networks box (page 4-153).
- Disconnect zero degree elevation switch (1S242)-P1 from 1W107-9/J2 (TM 9-2350-264-20-2).
- Test for less than 5 ohms between contact G and connector body on zero degree elevation switch (1S242)-P1.

Does multimeter show less than 5 ohms?

NO

67

- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.



1S242-P1

NO — YES

68

Is 1W108-2/P1 connected to 1W107-9/J1 (TM 9-2350-264-20-2)?

69

- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Connect 1W106-P1 to J2 on turret networks box (page 4-153).
- Replace zero degree elevation switch (TM 9-2350-264-20-2).
- Verify problem is solved.

NO — YES

70

- Disconnect 1W108-9/P1 from 1W107-9/J1 (TM 9-2350-264-20-2).
- Disconnect main gun safety switch (1S100)-P1 from 1W108-9/J1 (TM 9-2350-264-20-2).
- Disconnect 1W108-9/P3 from J1 on coax electrical solenoid (TM 9-2350-264-20-2).

NOTE

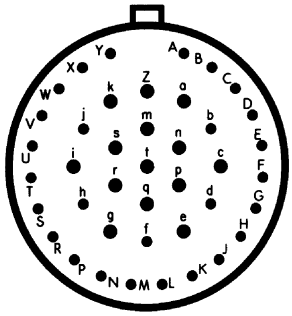
If multimeter shows less than 5 ohms, go immediately to block 73.

- Test for less than 5 ohms between contact A and contacts on 1W108-9/P1 listed below:
  - connector body
  - all other contacts
- Test for less than 5 ohms between contact N and contacts on 1W108-9/P1 listed below:
  - connector body
  - all other contacts

Does multimeter show less than 5 ohms?

71

- Go to block 241 (page 4-120).



1W108-9/P1

NO — YES

72

NOTE

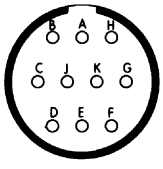
If multimeter shows less than 5 ohms, go immediately to block 75 (page 4-86).

- Test for less than 5 ohms between contact G and contacts on 1W108-9/J1 listed below:
  - connector body
  - all other contacts
- Test for less than 5 ohms between contact J and contacts on 1W108-9/J1 listed below:
  - connector body
  - all other contacts

Does multimeter show less than 5 ohms?

73

- Connect 1W106-P1 to J2 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Connect zero degree elevation switch (1S242)-P1 to 1W107-9/J2 (TM 9-2350-264-20-2).
- Replace wiring harness 1W108-9 (TM 9-2350-264-20-2).
- Verify problem is solved.



1W108-9/J1

NO — YES

74

NOTE

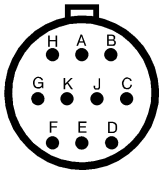
If multimeter does not show greater than 100K ohms, go immediately to block 77.

- Test for greater than 100K ohms between contact G on main gun safety switch (1S100)-P1 listed below:
  - connector body
  - all other contacts except J

Does multimeter show greater than 100K ohms for all tests?

75

- Connect 1W106-P1 to J2 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Connect zero degree elevation switch (1S242)-P1 to 1W107-9/J2 (TM 9-2350-264-20-2).
- Replace wiring harness 1W108-9 (TM 9-2350-264-20-2).
- Verify problem is solved.



1S100 – P1

YES — NO

76

NOTE

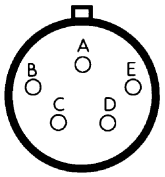
If multimeter does not show greater than 100K ohms, go immediately to block 79.

- Test for greater than 100K ohms between contact C and contacts on 1W108-9/P3 listed below:
  - connector body
  - all other contacts
- Test for greater than 100K ohms between contact E and contacts on 1W108-9/P3 listed below:
  - connector body
  - all other contacts

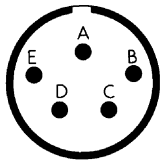
Does multimeter show greater than 100K ohms for all tests?

77

- Connect 1W106-P1 to J2 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Connect 1W108-9/P1 to 1W107-9/J1 (TM 9-2350-264-20-2).
- Connect 1W108-9/P3 to J1 on coax electrical solenoid (TM 9-2350-264-20-2).
- Connect zero degree elevation switch (1S242)-P1 to 1W107-9/J2 (TM 9-2350-264-20-2).
- Replace main gun safety switch (TM 9-2350-264-20-2).
- Verify problem is solved.



1W108-9/P3



COAXS-J1

YES — NO

78

NOTE

If multimeter does not show greater than 100K ohms, go immediately to block 80 (page 4-87).

- Test for greater than 100K ohms between contact E on coax electrical solenoid J1 listed below:
  - connector body
  - all other contacts except C

Does multimeter show greater than 100K ohms for all tests?

79

- Connect 1W106-P1 to J2 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Connect zero degree elevation switch (1S242)-P1 to 1W107-9/J2 (TM 9-2350-264-20-2).
- Replace wiring harness 1W108-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

NO — YES

80

- Connect 1W106-P1 to J2 on turret networks box (page 4-153).
- Connect 1W108-9/P1 to 1W107-9/J1 (TM 9-2350-264-20-2).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Connect zero degree elevation switch (1S242)-P1 to 1W107-9/J2 (TM 9-2350-264-20-2).
- Connect main gun safety switch (1S100)-P1 to 1W108-9/J1 (TM 9-2350-264-20-2).
- Replace electrical solenoid (TM 9-2350-264-20-2).
- Verify problem is solved.

81

- Connect 1W106-P1 to J2 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Connect 1W108-9/P3 to J1 on coax electrical solenoid (TM 9-2350-264-20-2).
- Connect main gun safety switch (1S100)-P1 to 1W108-9/J1 (TM 9-2350-264-20-2).
- Replace branched wiring harness 1W107-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 46

82

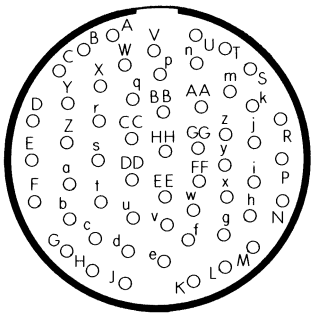
- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W106-P1 from J2 on turret networks box (page 4-153).

NOTE

If multimeter shows less than 5 ohms, go immediately to block 84.

- Test for less than 5 ohms between contact A and contacts on turret networks box J2 listed below:
  - connector body
  - all other contacts
- Test for less than 5 ohms between contact J and contacts on turret networks box J2 listed below:
  - connector body
  - all other contacts

Does multimeter show less than 5 ohms?



TNB – J2

NO — YES

83

- Disconnect loader's knee switch (1S101)-P1 from 1W106-J2 (TM 9-2350-264-20-2).

NOTE

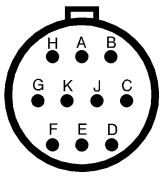
If multimeter does not show greater than 100K ohms, go immediately to block 86 (page 4-88).

- Test for greater than 100K ohms between contact J and contacts on loader's knee switch (1S101)-P1 listed below:
  - connector body
  - all other contacts except G

Does multimeter show greater than 100K ohms for all tests?

84

- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.



1S101 – P1

YES — NO

85

- Disconnect 1W106-P2 from J1 on loader's panel (TM 9-2350-264-20-2).

NOTE

If multimeter does not show greater than 100K ohms, go immediately to block 88.

- Test for greater than 100K ohms between contact A and contacts on loader's panel J1 listed below:
  - connector body
  - all other contacts except G

Does multimeter show greater than 100K ohms for all tests?

86

- Connect 1W105-9/P1 or 1W117-9/P1 to J10 on turret networks box (page 4-153).
- Connect 1W106-P1 to J2 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Replace loader's knee switch (TM 9-2350-264-20-2).
- Verify problem is solved.

YES — NO

87

- Disconnect 1W111-P1 from 1W106-J1 (TM 9-2350-264-20-2).

NOTE

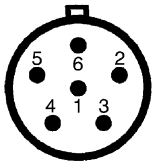
If multimeter does not show greater than 100K ohms, go immediately to block 89.

- Test for greater than 100K ohms between contact 5 and contacts on 1W111-P1 listed below:
  - connector body
  - all other contacts except 6

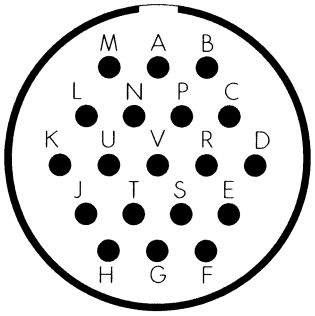
Does multimeter show greater than 100K ohms for all tests?

88

- Connect 1W105-9/P1 or 1W117-9/P1 to J10 on turret networks box (page 4-153).
- Connect 1W106-P1 to J2 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Connect loader's knee switch (1S101)-P1 to 1W106-J2 (TM 9-2350-264-20-2).
- Replace loader's panel (TM 9-2350-264-20-2).
- Verify problem is solved.



1W111 – P1



LP – J1

NO — YES

89

- Connect 1W105-9/P1 or 1W117-9/P1 to J10 on turret networks box (page 4-153).
- Connect 1W106-P1 to J2 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Connect 1W106-P2 to J1 on loader's panel (TM 9-2350-264-20-2).
- Connect loader's knee switch (1S101)-P1 to 1W106-J2 (TM 9-2350-264-20-2).
- Replace wiring harness 1W111 (TM 9-2350-264-20-2).
- Verify problem is solved.

90

- Connect 1W105-9/P1 or 1W117-9/P1 to J10 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Connect 1W111-P1 to 1W106-J1 (TM 9-2350-264-20-2).
- Replace branched wiring harness 1W106 (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 48

91

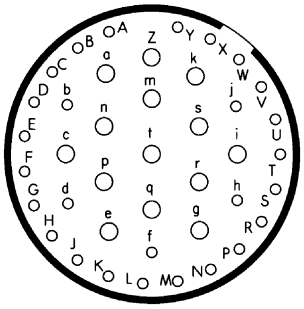
- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W105-9/P1 or 1W117-9/P1 from J10 on turret networks box (page 4-153).

NOTE

If multimeter shows less than 5 ohms, go immediately to block 93.

- Test for less than 5 ohms between contact A and contacts on turret networks box J10 listed below:
  - connector body
  - all other contacts
- Test for less than 5 ohms between contact N and contacts on turret networks box J10 listed below:
  - connector body
  - all other contacts

Does multimeter show less than 5 ohms?



TNB – J10

NO

92

- Disconnect 1W105-9/P2 or 1W117-9/P2 from J1 on power control unit (TM 9-2350-264-20-2).

NOTE

If multimeter does not show greater than 100K ohms, go immediately to block 95.

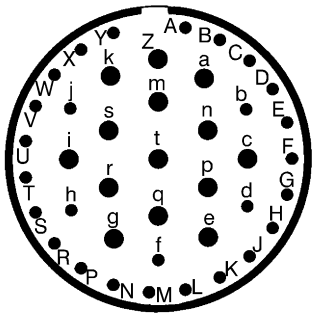
- Test for greater than 100K ohms between contact Y and contacts on power control unit J1 listed below:
  - connector body
  - all other contacts except f

Does multimeter show greater than 100K ohms for all tests?

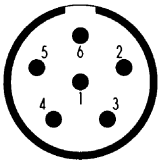
YES

93

- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.



CWSPU – J1



1S230 – J1

YES

94

- Disconnect 1W105-9/P5 or 1W117-9/P5 from gearbox switch (1S230)-J1 (TM 9-2350-264-20-2).

NOTE

If multimeter does not show greater than 100K ohms, go immediately to block 97 (page 4-90).

- Test for greater than 100K ohms between contact 5 and contacts on gearbox switch (1S230)-J1 listed below:
  - connector body
  - all other contacts except 6

Does multimeter show greater than 100K ohms for all tests?

NO

95

- Connect 1W105-9/P1 or 1W117-9/P1 to J10 on turret networks box (page 4-153).
- Connect 1W104-P1 to J9 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Replace power control unit (TM 9-2350-264-20-2).
- Verify problem is solved.

YES — NO

96

- Disconnect commander's power control handle (1A231)-P1 from 1W105-9/J3 or 1W117-9/J3 (TM 9-2350-264-20-2).

NOTE

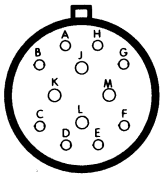
If multimeter does not show greater than 100K ohms, go immediately to block 99.

- Test for greater than 100K ohms between contact B and contacts on commander's control handle (1A231)-P1 listed below:
  - connector body
  - all other contacts except H

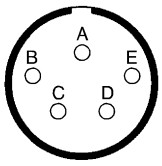
Does multimeter show greater than 100K ohms for all tests?

97

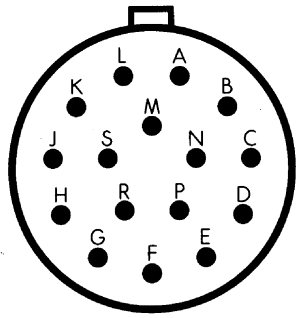
- Connect 1W105-9/P1 or 1W117-9/P1 to J10 on turret networks box (page 4-153).
- Connect 1W104-P1 to J9 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Connect 1W105-9/P2 or 1W117-9/P2 to J1 on power control unit (TM 9-2350-264-20-2).
- Replace connector-switch (TM 9-2350-264-20-2).
- Verify problem is solved.



1W105 - 9/P3
OR
1W117 - 9/P3



1W105 – 9/J2
OR
1W117 – 9/J2



1A231-P1

YES — NO

98

- Connect 1W105-9/P1 or 1W117-9/P1 to J10 on turret networks box (page 4-153).
- Connect 1W105-9/P2 or 1W117-9/P2 to J1 on power control unit (TM 9-2350-264-20-2).
- Connect 1W105-9/P5 or 1W117-9/P5 to gearbox switch (1S230)-J1 (TM 9-2350-264-20-2).
- Connect commander's power control handle (1A231)-P1 to 1W105-9/J3 or 1W117-9/J3 (TM 9-2350-264-20-2).
- Disconnect 1W105-9/P3 or 1W117-9/P3 from J1 on motor/brake (TM 9-2350-264-20-2).
- Connect jumper between contacts B and H on 1W105-9/P3 or 1W117-9/P3.
- Set TURRET POWER switch to ON.

Does FIRE CONTROL MALFUNCTION or FC MALF light stay on?

99

- Connect 1W105-9/P1 or 1W117-9/P1 to J10 on turret networks box (page 4-153).
- Connect 1W104-P1 to J9 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Connect 1W105-9/P5 or 1W117-9/P5 to gearbox switch (1S230)-J1 (TM 9-2350-264-20-2).
- Connect 1W105-9/P2 or 1W117-9/P2 to J1 on power control unit (TM 9-2350-264-20-2).
- Replace commander's control handle (TM 9-2350-264-20-2).
- Verify problem is solved.

NO — YES

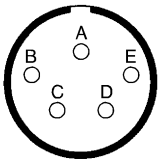
100

- Set VEHICLE MASTER POWER switch to OFF.
- Connect 1W105-9/P3 or 1W117-9/P3 to J1 on motor/brake (TM 9-2350-264-20-2).
- Disconnect blasting machine (1G100)-P1 or 1W108-2/P5 from 1W105-9/J2 or 1W117-9/J2 (TM 9-2350-264-20-2).
- Using mirror, connect jumper between contacts D and E on 1W105-9/J2 or 1W117-9/J2.
- Set TURRET POWER switch to ON.

Does FIRE CONTROL MALFUNCTION or FC MALF light stay on?

101

- Connect 1W104-P1 to J9 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Replace motor/brake (TM 9-2350-264-20-2).
- Verify problem is solved.



1W105 – 9/J2
OR
1W117 – 9/J2

YES — NO

102

- Connect 1W104-P1 to J9 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Replace blasting machine or wiring harness 1W108-2 (TM 9-2350-264-20-2).
- Verify problem is solved.

103

- Connect 1W104-P1 to J9 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Replace wiring harness 1W105-9 or wiring harness 1W117-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 50

104

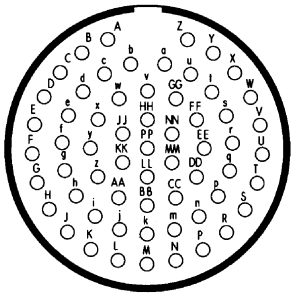
- Set VEHICLE MASTER POWER switch to OFF.

NOTE

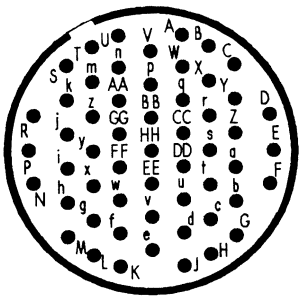
If multimeter shows less than 5 ohms, go immediately to block 106.

- Test for less than 5 ohms between contact A and contacts on turret networks box J9 listed below:
  - connector body
  - all other contacts
- Test for less than 5 ohms between contact P and contacts on turret networks box J9 listed below:
  - connector body
  - all other contacts

Does multimeter show less than 5 ohms?



TNB – J9



GPS – J3

NO

105

- Disconnect 1W104-P2 from J3 on gunner's primary sight (TM 9-2350-264-20-2).

NOTE

If multimeter does not show greater than 100K ohms, go immediately to block 108.

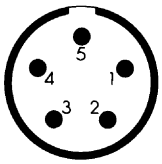
- Test for greater than 100K ohms between contact A and contacts on gunner's primary sight J3 listed below:
  - connector body
  - all other contacts except K

Does multimeter show greater than 100K ohms for all tests?

YES

106

- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.



HDV–J2

YES

107

- Disconnect 1W104-P5 from J2 on turret valve (TM 9-2350-264-20-2).

NOTE

If multimeter does not show greater than 100K ohms, go immediately to block 110 (page 4-93).

- Test for greater than 100K ohms between contact 5 and contacts on turret valve J2 listed below:
  - connector body
  - all other contacts except 4

Does multimeter show greater than 100K ohms for all tests?

NO

108

- Connect 1W104-P1 to J9 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Replace lower panel assembly (TM 9-2350-264-20-2).
- Verify problem is solved.

YES — NO

109

NOTE

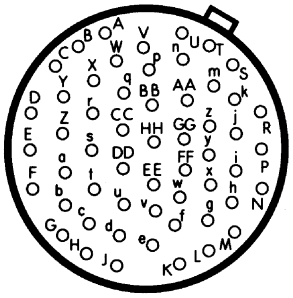
If multimeter does not show greater than 100K ohms, leave test probes connected and go immediately to block 112.

- Test for greater than 100K ohms between contact 5 and contacts on 1W104-P5 listed below:
  - connector body
  - all other contacts
- Test for greater than 100K ohms between contact A and contacts on 1W104-P2 listed below:
  - connector body
  - all other contacts

Does multimeter show greater than 100K ohms for all tests?

110

- Connect 1W104-P1 to J9 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Connect 1W104-P2 to J3 on gunner's primary sight (TM 9-2350-264-20-2).
- Replace turret valve (TM 9-2350-264-20-2).
- Verify problem is solved.



1W104-P2

YES — NO

111

- Disconnect 1W104-P7 from J4 on turret valve (TM 9-2350-264-20-2).

NOTE

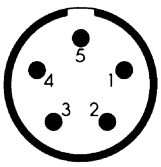
If multimeter does not show greater than 100K ohms, go immediately to block 114.

- Test for greater than 100K ohms between contact 4 and contacts on turret valve J4 listed below:
  - connector body
  - all other contacts except 5

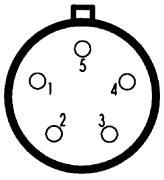
Does multimeter show greater than 100K ohms for all tests?

112

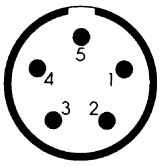
- Go to block 121 (page 4-95).



HDV-J4



1W104-P5



HDV-J1

YES — NO

113

- Disconnect 1W104-P4 from J1 on turret valve (TM 9-2350-264-20-2).

NOTE

If multimeter does not show greater than 100K ohms, go immediately to block 116 (page 4-94).

- Test for greater than 100K ohms between contact 4 and contacts on turret valve J1 listed below:
  - connector body
  - all other contacts except 5

Does multimeter show greater than 100K ohms for all tests?

114

- Connect 1W104-P2 to J3 on gunner's primary sight (TM 9-2350-264-20-2).
- Connect 1W104-P1 to J9 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Replace turret valve (TM 9-2350-264-20-2).
- Verify problem is solved.

YES

115

NOTE

If multimeter does not show greater than 100K ohms, leave test probes connected and go immediately to block 117.

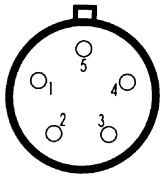
- Test for greater than 100K ohms between contact 5 and contacts on 1W104-P7 listed below:
  - connector body
  - all other contacts
- Test for greater than 100K ohms between contact 4 and contacts on 1W104-P4 listed below:
  - connector body
  - all other contacts

Does multimeter show greater than 100K ohms for all tests?

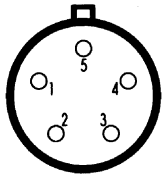
NO

116

- Connect 1W104-P2 to J3 on gunner's primary sight (TM 9-2350-264-20-2).
- Connect 1W104-P1 to J9 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Replace turret valve (TM 9-2350-264-20-2).
- Verify problem is solved.



1W104-P7



1W104-P4

NO

117

- Disconnect 1W104-P3 from J1 on traversing mechanism (TM 9-2350-264-20-2).

Does multimeter show greater than 100K ohms?

YES

118

- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Replace branched wiring harness 1W104 (TM 9-2350-264-20-2).
- Verify problem is solved.

NO

119

- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Replace branched wiring harness 1W104 (TM 9-2350-264-20-2).
- Verify problem is solved.

YES

120

- Connect 1W104-P1 to J9 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Connect 1W104-P2 to J3 on gunner's primary sight (TM 9-2350-264-20-2).
- Connect 1W104-P5 to J2 on turret valve (TM 9-2350-264-20-2).
- Connect 1W104-P7 to J4 on turret valve (TM 9-2350-264-20-2).
- Connect 1W104-P4 to J1 on turret valve (TM 9-2350-264-20-2).
- Traversing mechanism is faulty. Notify support maintenance.

From block 112

121

- Disconnect 1W104-P6 from J3 on turret valve (TM 9-2350-264-20-2).

Does multimeter show greater than 100K ohms?

NO

122

- Connect 1W200-9/P1 to J5 on turret networks box (TM 9-2350-264-20-2).
- Replace branched wiring harness 1W104 (TM 9-2350-264-20-2).
- Verify problem is solved.

YES

123

- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Connect 1W104-P1 to J9 on turret networks box (page 4-153).
- Connect 1W104-P2 to J3 on gunner's primary sight (TM 9-2350-264-20-2).
- Replace turret valve (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 54

124

Is vehicle equipped with upgraded tank commander's panel?

YES — NO

125

- Disconnect 1W102-2/P2 or 1W102-9/P2 from J1 on upgraded tank commander's panel (TM 9-2350-264-20-2).

NOTE

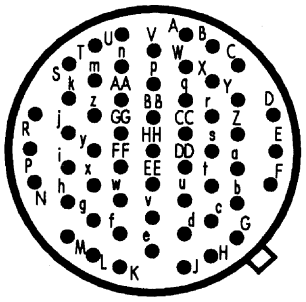
If multimeter does not show greater than 100K ohms, go immediately to block 128.

- Test for greater than 100K ohms between contacts on 1W102-2 or 1W102-9 listed below:
  - A and connector body and all other contacts on P1.
  - L and connector body and all other contacts on P1.
  - A and connector body and all other contacts on P2.
  - L and connector body and all other contacts on P2.

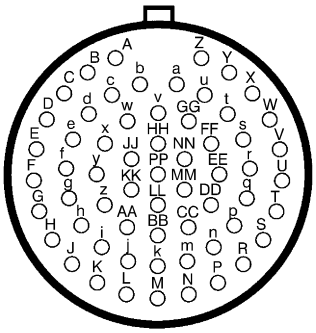
Does multimeter show greater than 100K ohms for all tests?

126

- Go to block 260 (page 4-125).



1W102-2/P1
OR
1W102-9/P1



1W102-2/P2
OR
1W102-9/P2

YES — NO

127

- Connect 1W101-9/P2 or 1W118-9/P2 to J11 on turret networks box (page 4-153).
- Connect 1W104-P1 to J9 on turret networks box (page 4-153).
- Connect 1W102-2/P1 or 1W102-9/P1 to J8 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Replace upgraded tank commander's panel (TM 9-2350-264-20-2).
- Verify problem is solved.

128

- Connect 1W101-9/P2 or 1W118-9/P2 to J11 on turret networks box (page 4-153).
- Connect 1W104-P1 to J9 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Replace wiring harness assembly 1W102-2 or wiring harness assembly 1W102-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 58

129

- Is vehicle equipped with Driver's Hatch Interlock (DHI)?

YES

130

- Disconnect 1W118-9/P6 from J1 on commander's alert panel (TM 9-2350-264-20-2).
- Connect a jumper between contacts M and N on commander's alert panel J1.

NOTE

If multimeter shows less than 5 ohms, go immediately to block 133.

- Test for less than 5 ohms between contact F and contacts on 1W118-9/P1 listed below:
  - connector body
  - all other contacts
- Test for less than 5 ohms between contact S and contacts on 1W118-9/P1 listed below:
  - connector body
  - all other contacts

Does multimeter show less than 5 ohms?

NO

132

- Connect 1W102-2/P1 or 1W102-9/P1 to J8 on turret networks box (page 4-153).
- Connect 1W104-P1 to J9 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Connect 1W118-9/P1 to J8 on hull/turret slipring (page 4-154).
- Replace commander's alert panel assembly (TM 9-2350-264-20-2).
- Verify problem is solved.

YES

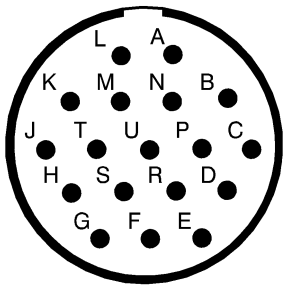
133

- Connect 1W102-2/P1 or 1W102-9/P1 to J8 on turret networks box (page 4-153).
- Connect 1W104-P1 to J9 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Replace wiring harness assembly 1W118-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

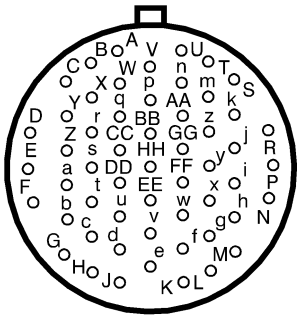
NO

131

- Connect 1W102-9/P1 to J8 on turret networks box (page 4-153).
- Connect 1W104-P1 to J9 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Replace wiring harness assembly 1W101-9 (TM 9-2350-264-20-2).
- Verify problem is solved.



CAP – J1



1W118 – 9/P1

From block 7

134

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W200-9/P8 from J1 on gunner's control handle (TM 9-2350-264-20-2).
- Set TURRET POWER switch to ON.

Does FIRE CONTROL MALFUNCTION or FC MALF light stay on?

NO

135

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W200-9/P7 from J1 on commander's control handle (TM 9-2350-264-20-2).
- Set TURRET POWER switch to ON.

Does FIRE CONTROL MALFUNCTION or FC MALF light stay on?

NO

137

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W200-9/P5 from J1 on reference gyroscope (TM 9-2350-264-20-2).
- Set TURRET POWER switch to ON.

Does FIRE CONTROL MALFUNCTION or FC MALF light stay on?

YES

138

- Go to block 162 (page 4-102).

YES

136

- Go to block 159 (page 4-102).

NO — YES

139

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W200-9/P6 from J1 on feed forward gyroscope (TM 9-2350-264-20-2).
- Set TURRET POWER switch to ON.

Does FIRE CONTROL MALFUNCTION or FC MALF light stay on?

140

- Go to block 165 (page 4-103).

NO — YES

141

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W200-9/P14 from J3 on elevation servomechanism (TM 9-2350-264-20-2).
- Set TURRET POWER switch to ON.

Does FIRE CONTROL MALFUNCTION or FC MALF light stay on?

142

- Go to block 168 (page 4-103).

NO — YES

143

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W200-9/P13 from J2 on elevation servomechanism (TM 9-2350-264-20-2).
- Set TURRET POWER switch to ON.

Does FIRE CONTROL MALFUNCTION or FC MALF light stay on?

144

- Go to block 171 (page 4-104).

NO — YES

145

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W200-9/P12 from J1 on elevation servomechanism (TM 9-2350-264-20-2).
- Set TURRET POWER switch to ON.

Does FIRE CONTROL MALFUNCTION or FC MALF light stay on?

146

- Go to block 174 (page 4-104).

NO — YES

147

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W200-9/P11 from J3 on traverse servomechanism (TM 9-2350-264-20-2).
- Set TURRET POWER switch to ON.

Does FIRE CONTROL MALFUNCTION or FC MALF light stay on?

148

- Go to block 177 (page 4-105).

NO — YES

149

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W200-9/P10 from J2 on traverse servomechanism (TM 9-2350-264-20-2).
- Set TURRET POWER switch to ON.

Does FIRE CONTROL MALFUNCTION or FC MALF light stay on?

150

- Go to block 180 (page 4-106).

NO — YES

151

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W200-9/P9 from J1 on traverse servomechanism (TM 9-2350-264-20-2).
- Set TURRET POWER switch to ON.

Does FIRE CONTROL MALFUNCTION or FC MALF light stay on?

152

- Go to block 183 (page 4-107).

NO — YES

153

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W200-9/P3 from J2 on gun/turret drive electronics unit (TM 9-2350-264-20-2).

NOTE

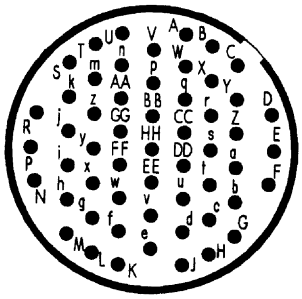
If multimeter does not show greater than 100K ohms, go immediately to block 156 (page 4-101).

- Test for greater than 100K ohms between contact U and contacts on gun/turret drive electronics unit J2 listed below:
  - connector body
  - all other contacts except y

Does multimeter show greater than 100K ohms for all tests?

154

- Go to block 186 (page 4-108).



GTD-J2

YES — NO

155

- Disconnect 1W200-9/P2 from J1 on gun/turret drive electronics unit (TM 9-2350-264-20-2).

NOTE

If multimeter does not show greater than 100K ohms, go immediately to block 157.

- Test for greater than 100K ohms between contact E and contacts on gun/turret drive electronics unit J1 listed below:
  - connector body
  - all other contacts except F

Does multimeter show greater than 100K ohms for all tests?

156

- Connect 1W200-9/P7 to J1 on commander's control handle (TM 9-2350-264-20-2).
- Connect 1W200-9/P8 to J1 on gunner's control handle (TM 9-2350-264-20-2).
- Connect 1W200-9/P5 to J1 on reference gyroscope (TM 9-2350-264-20-2).
- Connect 1W200-9/P6 to J1 on feed forward gyroscope (TM 9-2350-264-20-2).
- Connect 1W200-9/P12 to J1 on elevation servomechanism (TM 9-2350-264-20-2).
- Connect 1W200-9/P13 to J2 on elevation servomechanism (TM 9-2350-264-20-2).
- Connect 1W200-9/P14 to J3 on elevation servomechanism (TM 9-2350-264-20-2).
- Connect 1W200-9/P9 to J1 on traverse servomechanism (TM 9-2350-264-20-2).
- Connect 1W200-9/P10 to J2 on traverse servomechanism (TM 9-2350-264-20-2).
- Connect 1W200-9/P11 to J3 on traverse servomechanism (TM 9-2350-264-20-2).
- Replace gun/turret drive electronics unit (TM 9-2350-264-20-2).
- Verify problem is solved.

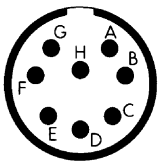
NO — YES

157

- Connect 1W200-9/P7 to J1 on commander's control handle (TM 9-2350-264-20-2).
- Connect 1W200-9/P8 to J1 on gunner's control handle (TM 9-2350-264-20-2).
- Connect 1W200-9/P5 to J1 on reference gyroscope (TM 9-2350-264-20-2).
- Connect 1W200-9/P6 to J1 on feed forward gyroscope (TM 9-2350-264-20-2).
- Connect 1W200-9/P12 to J1 on elevation servomechanism (TM 9-2350-264-20-2).
- Connect 1W200-9/P13 to J2 on elevation servomechanism (TM 9-2350-264-20-2).
- Connect 1W200-9/P14 to J3 on elevation servomechanism (TM 9-2350-264-20-2).
- Connect 1W200-9/P9 to J1 on traverse servomechanism (TM 9-2350-264-20-2).
- Connect 1W200-9/P10 to J2 on traverse servomechanism (TM 9-2350-264-20-2).
- Connect 1W200-9/P11 to J3 on traverse servomechanism (TM 9-2350-264-20-2).
- Replace gun/turret drive electronics unit (TM 9-2350-264-20-2).
- Verify problem is solved.

158

- Replace wiring harness assembly 1W200-9 (TM 9-2350-264-20-2).
- Verify problem is solved.



GTD-J1

From block 136

159

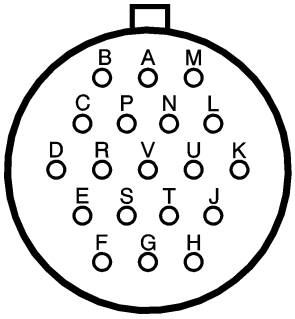
- Set VEHICLE MASTER POWER switch to OFF.

NOTE

If multimeter shows less than 5 ohms, go immediately to block 160.

- Test for less than 5 ohms between contact L and contacts on 1W200-9/P8 listed below:
  - connector body
  - all other contacts
- Test for less than 5 ohms between contact S and contacts on 1W200-9/P8 listed below:
  - connector body
  - all other contacts

Does multimeter show less than 5 ohms?



1W200–9/P8

YES — 160

- Replace wiring harness assembly 1W200-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

NO — 161

- Connect 1W200-9/P4 to J3 on gun/turret drive electronics unit (TM 9-2350-264-20-2).
- Replace gunner's control handle grip assembly (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 138

162

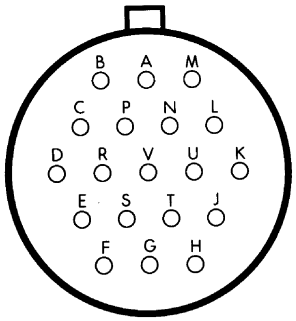
- Set VEHICLE MASTER POWER switch to OFF.

NOTE

If multimeter shows less than 5 ohms, go immediately to block 163.

- Test for less than 5 ohms between contact L and contacts on 1W200-9/P7 listed below:
  - connector body
  - all other contacts
- Test for less than 5 ohms between contact S and contacts on 1W200-9/P7 listed below:
  - connector body
  - all other contacts

Does multimeter show less than 5 ohms?



1W200-9/P7

YES — 163

- Replace wiring harness assembly 1W200-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

NO — 164

- Connect 1W200-9/P4 to J3 on gun/turret drive electronics unit (TM 9-2350-264-20-2).
- Connect 1W200-9/P8 to J1 on gunner's control handle (TM 9-2350-264-20-2).
- Replace commander's control handle assembly (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 140

165

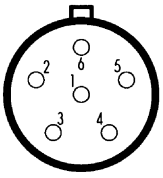
- Set VEHICLE MASTER POWER switch to OFF.

NOTE

If multimeter shows less than 5 ohms, go immediately to block 166.

- Test for less than 5 ohms between contact 5 and contacts on 1W200-9/P5 listed below:
  - connector body
  - all other contacts
- Test for less than 5 ohms between contact 6 and contacts on 1W200-9/P5 listed below:
  - connector body
  - all other contacts

Does multimeter show less than 5 ohms?



1W200-9/P5

YES — 166

- Replace wiring harness assembly 1W200-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

NO — 167

- Connect 1W200-9/P4 to J3 on gun/turret drive electronics unit (TM 9-2350-264-20-2).
- Connect 1W200-9/P8 to J1 on gunner's control handle (TM 9-2350-264-20-2).
- Connect 1W200-9/P7 to J1 on commander's control handle (TM 9-2350-264-20-2).
- Replace gun elevation reference gyroscope (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 142

168

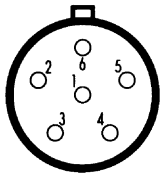
- Set VEHICLE MASTER POWER switch to OFF.

NOTE

If multimeter shows less than 5 ohms, go immediately to block 169.

- Test for less than 5 ohms between contact 5 and contacts on 1W200-9/P6 listed below:
  - connector body
  - all other contacts
- Test for less than 5 ohms between contact 6 and contacts on 1W200-9/P6 listed below:
  - connector body
  - all other contacts

Does multimeter show less than 5 ohms?



1W200-9/P6

YES — 169

- Replace wiring harness assembly 1W200-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

NO — 170

- Connect 1W200-9/P4 to J3 on gun/turret drive electronics unit (TM 9-2350-264-20-2).
- Connect 1W200-9/P8 to J1 on gunner's control handle (TM 9-2350-264-20-2).
- Connect 1W200-9/P7 to J1 on commander's control handle (TM 9-2350-264-20-2).
- Connect 1W200-9/P5 to J1 on reference gyroscope (TM 9-2350-264-20-2).
- Elevation servomechanism is faulty. Notify support maintenance.

From block 144

171

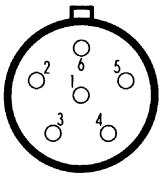
- Set VEHICLE MASTER POWER switch to OFF.

NOTE

If multimeter shows less than 5 ohms, go immediately to block 172.

- Test for less than 5 ohms between contact 5 and contacts on 1W200-9/P14 listed below:
  - connector body
  - all other contacts
- Test for less than 5 ohms between contact 6 and contacts on 1W200-9/P14 listed below:
  - connector body
  - all other contacts

Does multimeter show less than 5 ohms?



1W200-9/P14

YES

172

- Replace wiring harness assembly 1W200-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

NO

173

- Connect 1W200-9/P4 to J3 on gun/turret drive electronics unit (TM 9-2350-264-20-2).
- Connect 1W200-9/P8 to J1 on gunner's control handle (TM 9-2350-264-20-2).
- Connect 1W200-9/P7 to J1 on commander's control handle (TM 9-2350-264-20-2).
- Connect 1W200-9/P5 to J1 on reference gyroscope (TM 9-2350-264-20-2).
- Connect 1W200-9/P6 to J1 on feed forward gyroscope (TM 9-2350-264-20-2).
- Elevation servomechanism is faulty. Notify support maintenance.

From block 146

174

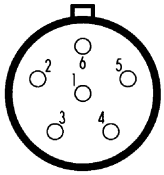
- Set VEHICLE MASTER POWER switch to OFF.

NOTE

If multimeter shows less than 5 ohms, go immediately to block 175 (page 4-105).

- Test for less than 5 ohms between contact 5 and contacts on 1W200-9/P13 listed below:
  - connector body
  - all other contacts
- Test for less than 5 ohms between contact 6 and contacts on 1W200-9/P13 listed below:
  - connector body
  - all other contacts

Does multimeter show less than 5 ohms?



1W200-9/P13

YES

175

- Replace wiring harness assembly 1W200-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 148

177

- Set VEHICLE MASTER POWER switch to OFF.

NOTE

If multimeter shows less than 5 ohms, go immediately to block 178 (page 4-106).

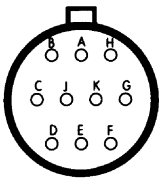
- Test for less than 5 ohms between contact E and contacts on 1W200-9/P12 listed below:
  - connector body
  - all other contacts
- Test for less than 5 ohms between contact F and contacts on 1W200-9/P12 listed below:
  - connector body
  - all other contacts

Does multimeter show less than 5 ohms?

NO

176

- Connect 1W200-9/P4 to J3 on gun/turret drive electronics unit (TM 9-2350-264-20-2).
- Connect 1W200-9/P7 to J1 on commander's control handle (TM 9-2350-264-20-2).
- Connect 1W200-9/P8 to J1 on gunner's control handle (TM 9-2350-264-20-2).
- Connect 1W200-9/P5 to J1 on reference gyroscope (TM 9-2350-264-20-2).
- Connect 1W200-9/P6 to J1 on feed forward gyroscope (TM 9-2350-264-20-2).
- Elevation servomechanism is faulty. Notify support maintenance.



1W200-9/P12

YES — NO

178

- Replace wiring harness assembly 1W200-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

179

- Connect 1W200-9/P4 to J3 on gun/turret drive electronics unit (TM 9-2350-264-20-2).
- Connect 1W200-9/P7 to J1 on commander's control handle (TM 9-2350-264-20-2).
- Connect 1W200-9/P8 to J1 on gunner's control handle (TM 9-2350-264-20-2).
- Connect 1W200-9/P5 to J1 on reference gyroscope (TM 9-2350-264-20-2).
- Connect 1W200-9/P6 to J1 on feed forward gyroscope (TM 9-2350-264-20-2).
- Elevation servomechanism is faulty. Notify support maintenance.

From block 150

180

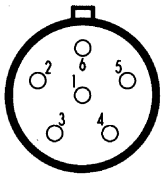
- Set VEHICLE MASTER POWER switch to OFF.

NOTE

If multimeter shows less than 5 ohms, go immediately to block 181.

- Test for less than 5 ohms between contact 5 and contacts on 1W200-9/P11 listed below:
  - connector body
  - all other contacts
- Test for less than 5 ohms between contact 6 and contacts on 1W200-9/P11 listed below:
  - connector body
  - all other contacts

Does multimeter show less than 5 ohms?



1W200-9/P11

YES — NO

181

- Replace wiring harness assembly 1W200-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

182

- Connect 1W200-9/P4 to J3 on gun/turret drive electronics unit (TM 9-2350-264-20-2).
- Connect 1W200-9/P7 to J1 on commander's control handle (TM 9-2350-264-20-2).
- Connect 1W200-9/P8 to J1 on gunner's control handle (TM 9-2350-264-20-2).
- Connect 1W200-9/P5 to J1 on reference gyroscope (TM 9-2350-264-20-2).
- Connect 1W200-9/P6 to J1 on feed forward gyroscope (TM 9-2350-264-20-2).
- Connect 1W200-9/P12 to J1 on elevation servomechanism (TM 9-2350-264-20-2).
- Connect 1W200-9/P13 to J2 on elevation servomechanism (TM 9-2350-264-20-2).
- Connect 1W200-9/P14 to J3 on elevation servomechanism (TM 9-2350-264-20-2).
- Traverse servomechanism is faulty. Notify support maintenance.

From block 152

183

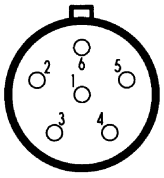
- Set VEHICLE MASTER POWER switch to OFF.

NOTE

If multimeter shows less than 5 ohms, go immediately to block 184.

- Test for less than 5 ohms between contact 5 and contacts on 1W200-9/P10 listed below:
  - connector body
  - all other contacts
- Test for less than 5 ohms between contact 6 and contacts on 1W200-9/P10 listed below:
  - connector body
  - all other contacts

Does multimeter show less than 5 ohms?



1W200-9/P10

YES

184

- Replace wiring harness assembly 1W200-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

NO

185

- Connect 1W200-9/P4 to J3 on gun/turret drive electronics unit (TM 9-2350-264-20-2).
- Connect 1W200-9/P7 to J1 on commander's control handle (TM 9-2350-264-20-2).
- Connect 1W200-9/P8 to J1 on gunner's control handle (TM 9-2350-264-20-2).
- Connect 1W200-9/P5 to J1 on reference gyroscope (TM 9-2350-264-20-2).
- Connect 1W200-9/P6 to J1 on feed forward gyroscope (TM 9-2350-264-20-2).
- Connect 1W200-9/P12 to J1 on elevation servomechanism (TM 9-2350-264-20-2).
- Connect 1W200-9/P13 to J2 on elevation servomechanism (TM 9-2350-264-20-2).
- Connect 1W200-9/P14 to J3 on elevation servomechanism (TM 9-2350-264-20-2).
- Traverse servomechanism is faulty. Notify support maintenance.

From block 154

186

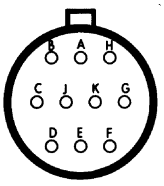
- Set VEHICLE MASTER POWER switch to OFF.

NOTE

If multimeter shows less than 5 ohms, go immediately to block 187.

- Test for less than 5 ohms between contact E and contacts on 1W200-9/P9 listed below:
  - connector body
  - all other contacts
- Test for less than 5 ohms between contact F and contacts on 1W200-9/P9 listed below:
  - connector body
  - all other contacts

Does multimeter show less than 5 ohms?



1W200-9/P9

YES

187

- Replace wiring harness assembly 1W200-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

NO

188

- Connect 1W200-9/P4 to J3 on gun/turret drive electronics unit (TM 9-2350-264-20-2).
- Connect 1W200-9/P7 to J1 on commander's control handle (TM 9-2350-264-20-2).
- Connect 1W200-9/P8 to J1 on gunner's control handle (TM 9-2350-264-20-2).
- Connect 1W200-9/P5 to J1 on reference gyroscope (TM 9-2350-264-20-2).
- Connect 1W200-9/P6 to J1 on feed forward gyroscope (TM 9-2350-264-20-2).
- Connect 1W200-9/P12 to J1 on elevation servomechanism (TM 9-2350-264-20-2).
- Connect 1W200-9/P13 to J2 on elevation servomechanism (TM 9-2350-264-20-2).
- Connect 1W200-9/P14 to J3 on elevation servomechanism (TM 9-2350-264-20-2).
- Traverse servomechanism is faulty. Notify support maintenance.

From block 11

189

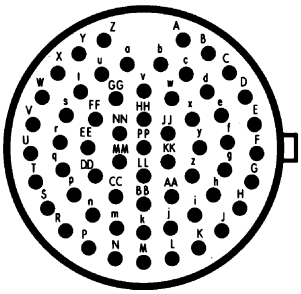
- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W202-9/P1 from J7 on turret networks box (page 4-153).
- Disconnect 1W206-P1 from J2 on line-of-sight electronics unit (TM 9-2350-264-20-2).

NOTE

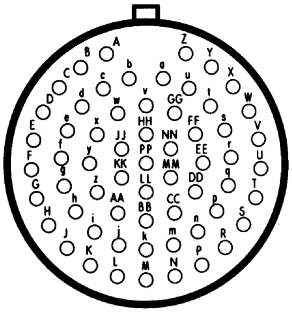
If multimeter does not show greater than 100K ohms, go immediately to block 190.

- Test for greater than 100K ohms between contact s and contacts on 1W202-9/P1 listed below:
  - connector body
  - all other contacts

Does multimeter show greater than 100K ohms for all tests?



1W202-9/P1



1W202-9/P3

NO — YES

190

- Disconnect 1W202-9/P3 from J1 on line-of-sight electronics unit (TM 9-2350-264-20-2).
- Test for greater than 100K ohms between contacts F and s on 1W202-9/P3.

Does multimeter show greater than 100K ohms?

191

- Go to block 194.

NO — YES

192

- Connect 1W203-9/P to J3 on turret networks box (page 4-153).
- Connect 1W206-P1 to J2 on line-of-sight electronics unit (TM 9-2350-264-20-2).
- Replace branched wiring harness 1W202-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

193

- Connect 1W202-9/P1 to J7 on turret networks box (page 4-153).
- Connect 1W203-9/P1 to J3 on turret networks box (page 4-153).
- Replace line-of-sight electronics unit (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 191

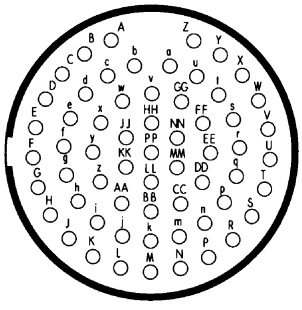
194

NOTE

If multimeter shows less than 5 ohms, go immediately to block 196 (page 4-110).

- Test for less than 5 ohms between contact s and contacts on turret networks box J7 listed below:
  - connector body
  - all other contacts

Does multimeter show less than 5 ohms?



TNB-J7

NO — YES

195

- Connect 1W206-P1 to J2 on line-of-sight electronics unit (TM 9-2350-264-20-2).
- Disconnect 1W206-P2 from J2 on gunner's primary sight (TM 9-2350-264-20-2).

NOTE

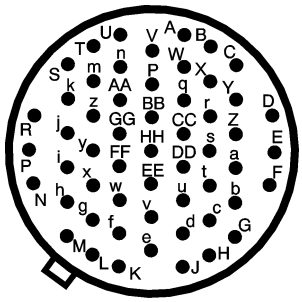
If multimeter does not show greater than 100K ohms, go immediately to block 198.

- Test for greater than 100K ohms between contact t and contacts on 1W203-9/P1 listed below:
  - connector body
  - all other contacts

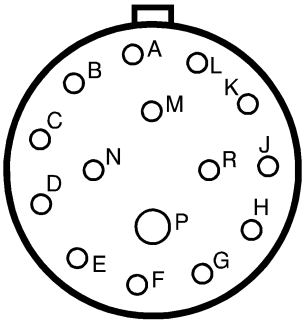
Does multimeter show greater than 100K ohms for all tests?

196

- Connect 1W206-P1 to J2 on line-of-sight electronics unit (TM 9-2350-264-20-2).
- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.



1W203–9/P1



1W206 – P3

YES — NO

197

- Connect 1W206-P2 to J2 on gunner's primary sight (TM 9-2350-264-20-2).
- Disconnect 1W206-P3 from 1W207-9/J1 (TM 9-2350-264-20-2).

NOTE

If multimeter does not show greater than 100K ohms, go immediately to block 200.

- Test for greater than 100K ohms between contact F and contacts on 1W206-P3 listed below:
  - connector body
  - all other contacts

Does multimeter show greater than 100K ohms for all tests?

198

- Connect 1W202-9/P1 to J7 on turret networks box (page 4-153).
- Connect 1W203-9/P1 to J3 on turret networks box (page 4-153).
- Internal flex harness is faulty; replace gunner's primary sight body assembly (TM 9-2350-264-20-2).
- Verify problem is solved.

YES — NO

199

- Disconnect 1W206-P1 from J2 on line-of-sight electronics unit (TM 9-2350-264-20-2).

NOTE

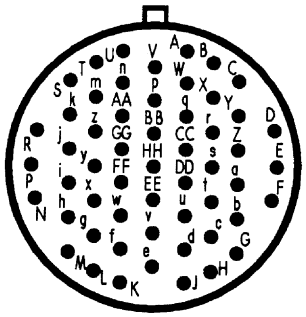
If multimeter does not show greater than 100K ohms, go immediately to block 202 (page 4-111).

- Test for greater than 100K ohms between contact EE and each contact on 1W206-P1 listed below:
  - contact n
  - connector body

Does multimeter show greater than 100K ohms for all tests?

200

- Go to block 205 (page 4-112).



1W206–P1

YES — NO

201

- Disconnect 1W207-9/P1 from J1 on gun trunnion resolver (TM 9-2350-264-20-2).
- Connect jumper between contacts E and F on 1W207-9/P1.
- Remove 1W207-9/J1 from bracket (TM 9-2350-264-20-2).

NOTE

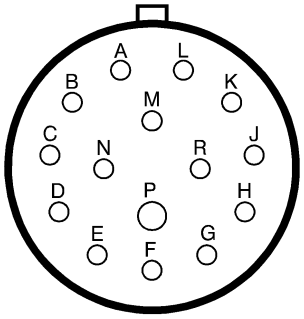
If multimeter does not show greater than 100K ohms, go immediately to block 203.

- Test for greater than 100K ohms between contact E and contacts on 1W207-9/J1 listed below:
  - connector body
  - all other contacts except F

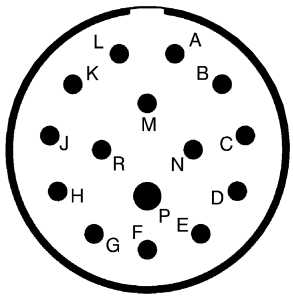
Does multimeter show greater than 100K ohms for all tests?

202

- Connect 1W202-9/P1 to J7 on turret networks box (page 4-153).
- Connect 1W203-9/P1 to J3 on turret networks box (page 4-153).
- Replace branched wiring harness 1W206 (TM 9-2350-264-20-2).
- Verify problem is solved.



1W207 – 9/P1



1W207 – 9/J1

NO — YES

203

- Connect 1W206-P1 to J2 on line-of-sight electronics unit (TM 9-2350-264-20-2).
- Connect 1W202-9/P1 to J7 on turret networks box (page 4-153).
- Connect 1W203-9/P1 to J3 on turret networks box (page 4-153).
- Replace branched wiring harness 1W207-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

204

- Connect 1W202-9/P1 to J7 on turret networks box (page 4-153).
- Connect 1W203-9/P1 to J3 on turret networks box (page 4-153).
- Connect 1W206-P1 to J2 on line-of-sight electronics unit (TM 9-2350-264-20-2).
- Connect 1W206-P3 to 1W207-9/J1 (TM 9-2350-264-20-2).
- Gun trunnion resolver is faulty. Notify support maintenance.

From block 200

205

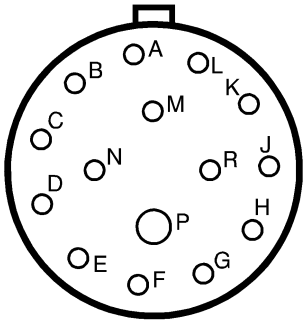
- Disconnect 1W206-P2 from J2 on gunner's primary sight (TM 9-2350-264-20-2).

NOTE

If multimeter does not show greater than 100K ohms, go immediately to block 206.

- Test for greater than 100K ohms between contact F and contacts on 1W206-P3 listed below:
  - connector body
  - all other contacts

Does multimeter show greater than 100K ohms for all tests?



1W206 – P3

NO

206

- Connect 1W202-9/P1 to J7 on turret networks box (page 4-153).
- Connect 1W203-9/P1 to J3 on turret networks box (page 4-153).
- Replace branched wiring harness 1W206 (TM 9-2350-264-20-2).
- Verify problem is solved.

YES

207

- Connect 1W202-9/P1 to J7 on turret networks box (page 4-153).
- Connect 1W203-9/P1 to J3 on turret networks box (page 4-153).
- Connect 1W206-P3 to 1W207-9/J1 (TM 9-2350-264-20-2).
- Internal flex harness is faulty; replace gunner's primary sight body assembly (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 13

208

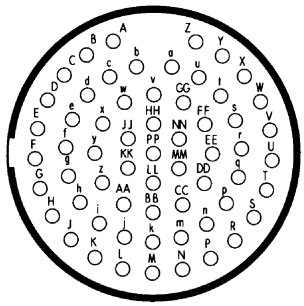
- Set VEHICLE MASTER POWER switch to OFF.
- Set circuit breaker 28 on turret networks box to ON.
- Disconnect 1W202-9/P1 from J7 on turret networks box (page 4-153).

NOTE

If multimeter shows less than 5 ohms, go immediately to block 210 (page 4-113).

- Test for less than 5 ohms between contact PP and contacts on turret networks box J7 listed below:
  - connector body
  - all other contacts

Does multimeter show less than 5 ohms?



TNB – J7

Does multimeter show greater than 100K ohms for all tests?

NO → 209

- Disconnect 1W202-9/P5 from J1 on computer control panel (TM 9-2350-264-20-2).
- Connect jumper between contacts F and N on 1W202-9/P5.
- Disconnect 1W202-9/P2 from J2 on computer electronics unit (TM 9-2350-264-20-2).

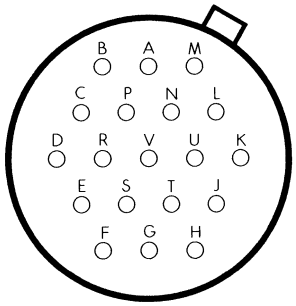
NOTE

If multimeter does not show greater than 100K ohms, go immediately to block 212.

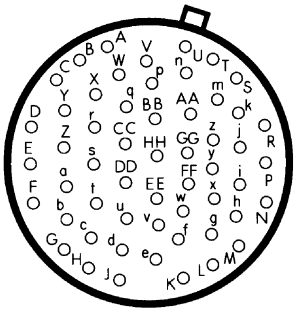
- Test for greater than 100K ohms between contact S and each contact on 1W202-9/P2 listed below:
  - contact M
  - connector body

YES → 210

- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.



1W202-9/P5



1W202-9/P2

Does multimeter show greater than 100K ohms for all tests?

YES → 211

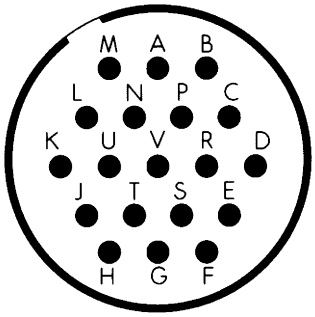
NOTE

If multimeter does not show greater than 100K ohms, go immediately to block 213.

- Test for greater than 100K ohms between contact N and contacts on computer control panel J1 listed below:
  - connector body
  - all other contacts except F

NO → 212

- Replace branched wiring harness 1W202-9 (TM 9-2350-264-20-2).
- Verify problem is solved.



CCP – J1

NO → 213

- Connect 1W202-9/P1 to J7 on turret networks box (page 4-153).
- Connect 1W202-9/P2 to J2 on computer electronics unit (TM 9-2350-264-20-2).
- Replace computer control panel (TM 9-2350-264-20-2).
- Verify problem is solved.

YES → 214

- Connect 1W202-9/P1 to J7 on turret networks box (page 4-153).
- Connect 1W202-9/P5 to J1 on computer control panel (TM 9-2350-264-20-2).
- Replace computer electronics unit (TM 9-2350-264-20-2).
- Verify problem is solved.

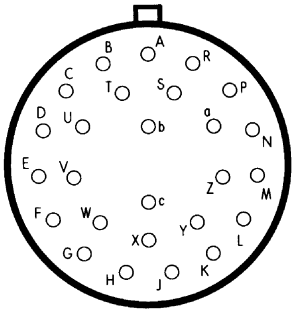
From block 15

215

- Multimeter did not show 4 to 6 V dc.
- Follow WARNING before proceeding with block 216.

WARNING

Be sure laser RANGE switch is set to SAFE before setting VEHICLE MASTER POWER or TURRET POWER switch to OFF. If laser RANGE switch is set to ARM 1ST RTN or ARM LAST RTN when VEHICLE MASTER POWER or TURRET POWER switch is set to OFF, laser may fire. Eye damage may result to anyone within 8000 meters of laser projection.



1W204-9/P2

216

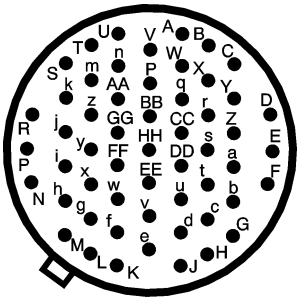
- Set laser RANGE switch to SAFE.
  - Refer to TM 9-2350-264-10.
- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W204-9/P2 from J2 on laser rangefinder (TM 9-2350-264-20-2).

NOTE

If multimeter does not show greater than 100K ohms, go immediately to block 218.

- Test for greater than 100K ohms between contact F and contacts on 1W204-9/P2 listed below:
  - connector body
  - all other contacts except B

Does multimeter show greater than 100K ohms for all tests?



1W203-9/P1

YES

217

- Disconnect 1W203-9/P3 from J1 on laser rangefinder (TM 9-2350-264-20-2).
- Disconnect 1W203-9/P1 from J3 on turret networks box (page 4-153).

NOTE

If multimeter does not show greater than 100K ohms, go immediately to block 220 (page 4-115).

- Test for greater than 100K ohms between contact AA and each contact on 1W203-9/P1 listed below:
  - contact p
  - connector body

Does multimeter show greater than 100K ohms for all tests?

NO

218

- Replace branched wiring harness 1W204-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

YES NO

219

NOTE

If multimeter shows less than 5 ohms, go immediately to block 221.

- Test for less than 5 ohms between contact AA and contacts on turret networks box J3 listed below:
  - connector body
  - all other contacts

Does multimeter show less than 5 ohms?

220

- Connect 1W204-9/P2 to J2 on laser rangefinder (TM 9-2350-264-20-2).
- Replace branched wiring harness 1W203-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

YES NO

221

- Connect 1W203-9/P3 to J1 on laser rangefinder (TM 9-2350-264-20-2).
- Connect 1W204-9/P2 to J2 on laser rangefinder (TM 9-2350-264-20-2).
- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.

222

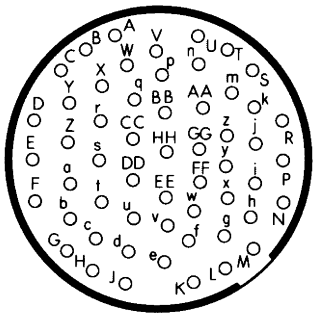
- Connect 1W203-9/P1 to J3 on turret networks box (page 4-153).
- Replace laser rangefinder (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 17

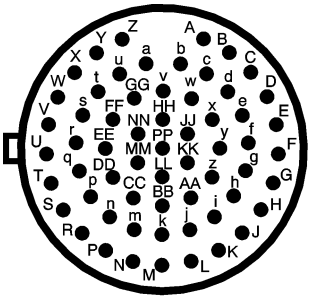
223

- Set VEHICLE MASTER POWER switch to OFF.
- Set circuit breaker 27 on turret networks box to ON.
- Disconnect 1W205-9/J2 from crosswind sensor (1A253)-P1 (TM 9-2350-264-20-2).
- Set TURRET POWER switch to ON.
- Test for 4 to 6 V dc between 11 (-) and 27 (+) on breakout box.

Does multimeter show 4 to 6 V dc?



TNB – J3



1W201–9/P1

NO YES

224

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W201-9/P2 from J1 on computer electronics unit (TM 9-2350-264-20-2).
- Disconnect 1W201-9/P1 from J6 on turret networks box (page 4-153).

NOTE

If multimeter does not show greater than 100K ohms, go immediately to block 227 (page 4-116).

- Test for greater than 100K ohms between contact MM and each contact on 1W201-9/P1 listed below:
  - contact F
  - connector body

Does multimeter show greater than 100K ohms for all tests?

225

- Replace crosswind sensor (TM 9-2350-264-20-2).
- Verify problem is solved.

YES — NO

226

NOTE

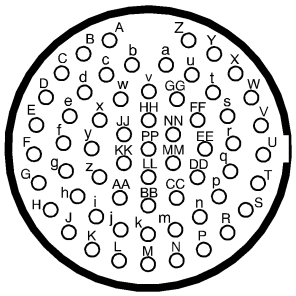
If multimeter shows less than 5 ohms, go immediately to block 229.

- Test for less than 5 ohms between contact MM and contacts on turret networks box J6 listed below:
  - connector body
  - all other contacts

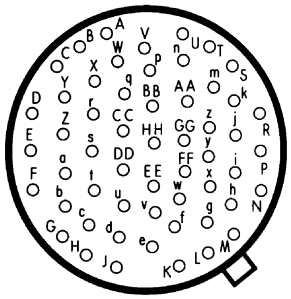
Does multimeter show less than 5 ohms?

227

- Connect crosswind sensor (1A253)-P1 to 1W205-9/J2 (TM 9-2350-264-20-2).
- Replace branched wiring harness 1W201-9 (TM 9-2350-264-20-2).
- Verify problem is solved.



TNB–J6



1W204-9/P1

NO — YES

228

- Disconnect 1W204-9/P1 from J3 on computer electronics unit (TM 9-2350-264-20-2).

NOTE

If multimeter does not show greater than 100K ohms, leave test probes connected and go immediately to block 230 (page 4-117).

- Test for greater than 100K ohms between contact j and each contact on 1W204-9/P1 listed below:
  - contact Z
  - connector body

Does multimeter show greater than 100K ohms for all tests?

229

- Connect 1W201-9/P2 to J1 on computer electronics unit (TM 9-2350-264-20-2).
- Connect crosswind sensor (1A253)-P1 to 1W205-9/J2 (TM 9-2350-264-20-2).
- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.

Does multimeter show greater than 100K ohms?

NO

230

- Disconnect 1W204-9/P4 from 1W205-9/J1 (TM 9-2350-264-20-2).

Does multimeter show greater than 100K ohms?

NO

232

- Connect 1W201-9/P2 to J1 on computer electronics unit (TM 9-2350-264-20-2).
- Connect 1W201-9/P1 to J6 on turret networks box (page 4-153).
- Connect crosswind sensor (1A253)-P1 to 1W205-9/J2 (TM 9-2350-264-20-2).
- Replace branched wiring harness 1W204-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

YES

231

- Connect 1W201-9/P1 to J6 on turret networks box (page 4-153).
- Connect crosswind sensor (1A253)-P1 to 1W205-9/J2 (TM 9-2350-264-20-2).
- Replace computer electronics unit (TM 9-2350-264-20-2).
- Verify problem is solved.

YES

233

- Connect 1W201-9/P1 to J6 on turret networks box (page 4-153).
- Connect 1W201-9/P2 to J1 on computer electronics unit (TM 9-2350-264-20-2).
- Connect 1W204-9/P to J3 on computer electronics unit (TM 9-2350-264-20-2).
- Replace branched wiring harness 1W205-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 19

234

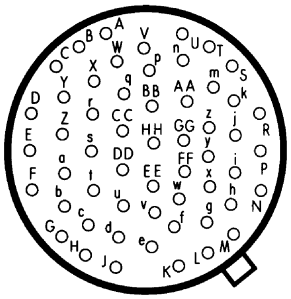
- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W204-9/P1 from J3 on computer electronics unit (TM 9-2350-264-20-2).

NOTE

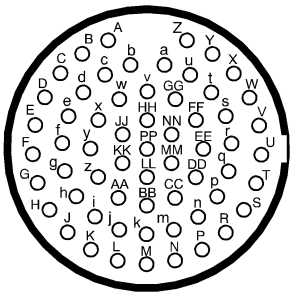
If multimeter does not show greater than 100K ohms, go immediately to block 236.

- Test for greater than 100K ohms between contact a and contacts on 1W204-9/P1 listed below:
  - connector body
  - all other contacts

Does multimeter show greater than 100K ohms for all tests?



1W204-9/P1



TNB–J6

YES

235

- Disconnect 1W201-9/P1 from J6 on turret networks box (page 4-153).

NOTE

If multimeter shows less than 5 ohms, go immediately to block 238 (page 4-119).

- Test for less than 5 ohms between contact NN and contacts on turret networks box J6 listed below:
  - connector body
  - all other contacts

Does multimeter show less than 5 ohms?

NO

236

- Replace branched wiring harness 1W204-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

NO — YES

237

- Disconnect 1W201-9/P2 from J1 on computer electronics unit (TM 9-2350-264-20-2).

NOTE

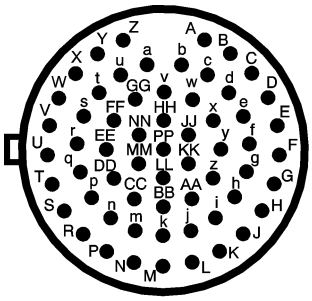
If multimeter does not show greater than 100K ohms, go immediately to block 239.

- Test for greater than 100K ohms between contact NN and each contact on 1W201-9/P1 listed below:
  - contact F
  - connector body

Does multimeter show greater than 100K ohms for all tests?

238

- Connect 1W204-9/P1 to J3 on computer electronics unit (TM 9-2350-264-20-2).
- Connect 1W204-9/P3 to J1 on cant unit (TM 9-2350-264-20-2).
- Replace turret networks box (TM 9-2350-264-20-2).
- Verify problem is solved.



1W201–9/P1

NO — YES

239

- Connect 1W204-9/P1 to J3 on computer electronics unit (TM 9-2350-264-20-2).
- Connect 1W204-9/P3 to J1 on cant unit (TM 9-2350-264-20-2).
- Replace branched wiring harness 1W201-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

240

- Connect 1W201-9/P1 to J6 on turret networks box (page 4-153).
- Connect 1W204-9/P3 to J1 on cant unit (TM 9-2350-264-20-2).
- Replace computer electronics unit (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 71

241

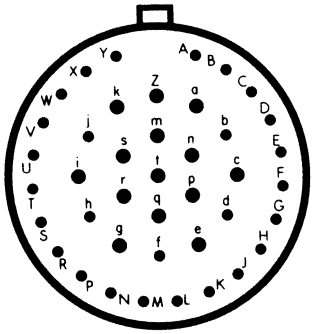
- Disconnect 1W108-2/P1 from 1W107-9/J1 (TM 9-2350-264-20-2).
- Disconnect 1W108-2/P4 from J1 on primer diode box (TM 9-2350-264-20-2).
- Disconnect main gun safety switch (1S100)-P1 from 1W108-2/J1 (TM 9-2350-264-20-2).
- Disconnect 1W108-2/P3 from J1 on coax electrical solenoid (TM 9-2350-264-20-2).
- Disconnect blasting machine (1G100)-P1 from 1W108-2/J2 (TM 9-2350-264-20-2).

NOTE

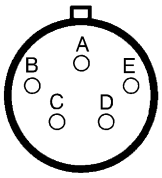
If multimeter does not show greater than 100K ohms, go immediately to block 243.

- Test for greater than 100K ohms between contact A and contacts on 1W108-2/P1 listed below:
  - connector body
  - all other contacts
- Test for greater than 100K ohms between contact N and contacts on 1W108-2/P1 listed below:
  - connector body
  - all other contacts

Does multimeter show greater than 100K ohms for all tests?



1W108-2/P1



1W108 – 2/P4

YES

242

NOTE

If multimeter does not show greater than 100K ohms, go immediately to block 245 (page 4-121).

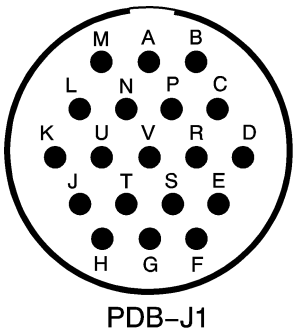
- Test for greater than 100K ohms between contact E and contacts on 1W108-2/P4 listed below:
  - connector body
  - all other contacts
- Test for greater than 100K ohms between contact D and contacts on 1W108-2/P4 listed below:
  - connector body
  - all other contacts

Does multimeter show greater than 100K ohms for all tests?

NO

243

- Connect 1W106-P1 to J2 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Connect zero degree elevation switch (1S242)-P1 to 1W107-9/J2 (TM 9-2350-264-20-2).
- Replace wiring harness 1W108-2 (TM 9-2350-264-20-2).
- Verify problem is solved.



PDB–J1

YES

244

NOTE

If multimeter does not show greater than 100K ohms, go immediately to block 247 (page 4-122).

- Test for greater than 100K ohms between contact E and contacts on primer diode box J1 listed below:
  - connector body
  - all other contacts except D

Does multimeter show greater than 100K ohms for all tests?

NO

245

- Connect 1W106-P1 to J2 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Connect zero degree elevation switch (1S242)-P1 to 1W107-9/J2 (TM 9-2350-264-20-2).
- Replace wiring harness 1W108-2 (TM 9-2350-264-20-2).
- Verify problem is solved.

YES — NO

246

NOTE

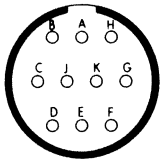
If multimeter does not show greater than 100K ohms, go immediately to block 249.

- Test for greater than 100K ohms between contact G and contacts on 1W108-2/J1 listed below:
  - connector body
  - all other contacts
- Test for greater than 100K ohms between contact J and contacts on 1W108-2/J1 listed below:
  - connector body
  - all other contacts

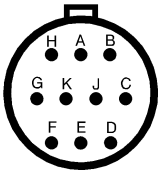
Does multimeter show greater than 100K ohms for all tests?

247

- Connect 1W106-P1 to J2 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Connect 1W108-2/P1 to 1W107-9/J1 (TM 9-2350-264-20-2).
- Connect main gun safety switch (1S100)-P1 to 1W108-2/J1 (TM 9-2350-264-20-2).
- Connect 1W108-2/P3 to J1 on coax electrical solenoid (TM 9-2350-264-20-2).
- Connect blasting machine (1G100)-P1 to 1W108-2/J2 (TM 9-2350-264-20-2).
- Connect zero degree elevation switch (1S242)-P1 to 1W107-9/J2 (TM 9-2350-264-20-2).
- Replace primer diode box (TM 9-2350-264-20-2).
- Verify problem is solved.



1W108-2/J1



1S100 – P1

YES — NO

248

NOTE

If multimeter does not show greater than 100K ohms, go immediately to block 251 (page 4-123).

- Test for greater than 100K ohms between contact G and contacts on main gun safety switch (1S100)-P1 listed below:
  - connector body
  - all other contacts except J

Does multimeter show greater than 100K ohms for all tests?

249

- Connect 1W106-P1 to J2 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Connect zero degree elevation switch (1S242)-P1 to 1W107-9/J2 (TM 9-2350-264-20-2).
- Replace wiring harness 1W108-2 (TM 9-2350-264-20-2).
- Verify problem is solved.

YES — NO

250

NOTE

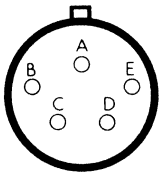
If multimeter does not show greater than 100K ohms, go immediately to block 253.

- Test for greater than 100K ohms between contact C and contacts on 1W108-2/P3 listed below:
  - connector body
  - all other contacts
- Test for greater than 100K ohms between contact E and contacts on 1W108-2/P3 listed below:
  - connector body
  - all other contacts

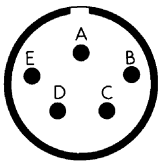
Does multimeter show greater than 100K ohms for all tests?

251

- Connect 1W106-P1 to J2 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Connect 1W108-2/P1 to 1W107-9/J1 (TM 9-2350-264-20-2).
- Connect 1W108-2/P4 to J1 on primer diode box (TM 9-2350-264-20-2).
- Connect 1W108-2/P3 to J1 on coax electrical solenoid (TM 9-2350-264-20-2).
- Connect blasting machine (1G100)-P1 to 1W108-2/J2 (TM 9-2350-264-20-2).
- Connect zero degree elevation switch (1S242)-P1 to 1W107-9/J2 (TM 9-2350-264-20-2).
- Replace main gun safety switch (TM 9-2350-264-20-2).
- Verify problem is solved.



1W108-2/P3



COAXS-J1

YES — NO

252

NOTE

If multimeter does not show greater than 100K ohms, go immediately to block 255 (page 4-124).

- Test for greater than 100K ohms between contact C and contacts on coax electrical solenoid J1 listed below:
  - connector body
  - all other contacts except E

Does multimeter show greater than 100K ohms for all tests?

253

- Connect 1W106-P1 to J2 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Connect zero degree elevation switch (1S242)-P1 to 1W107-9/J2 (TM 9-2350-264-20-2).
- Replace wiring harness 1W108-2 (TM 9-2350-264-20-2).
- Verify problem is solved.

YES NO

254

NOTE

If multimeter does not show greater than 100K ohms, go immediately to block 257.

- Test for greater than 100K ohms between contact D and contacts on 1W108-2/J2 listed below:
  - connector body
  - all other contacts
- Test for greater than 100K ohms between contact E and contacts on 1W108-2/J2 listed below:
  - connector body
  - all other contacts

Does multimeter show greater than 100K ohms for all tests?

255

- Connect 1W106-P1 to J2 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Connect 1W108-2/P1 to 1W107-9/J1 (TM 9-2350-264-20-2).
- Connect 1W108-2/P4 to J1 on primer diode box (TM 9-2350-264-20-2).
- Connect main gun safety switch (1S100)-P1 to 1W108-2/J1 (TM 9-2350-264-20-2).
- Connect blasting machine (1G100)-P1 to 1W108-2/J2 (TM 9-2350-264-20-2).
- Connect zero degree elevation switch (1S242)-P1 to 1W107-9/J2 (TM 9-2350-264-20-2).
- Replace electrical solenoid (TM 9-2350-264-20-2).
- Verify problem is solved.

YES NO

256

NOTE

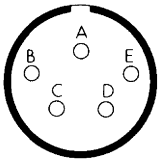
If multimeter does not show greater than 100K ohms, go immediately to block 259.

- Test for greater than 100K ohms between contact D and contacts on blasting machine (1G100)-P1 listed below:
  - connector body
  - all other contacts except E

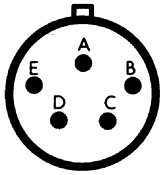
Does multimeter show greater than 100K ohms for all tests?

257

- Connect 1W106-P1 to J2 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Connect zero degree elevation switch (1S242)-P1 to 1W107-9/J2 (TM 9-2350-264-20-2).
- Replace wiring harness 1W108-2 (TM 9-2350-264-20-2).
- Verify problem is solved.



1W108 – 2/J2



1G100 – P1

YES NO

258

- Connect 1W106-P1 to J2 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Connect 1W108-2/P4 to J1 on primer diode box (TM 9-2350-264-20-2).
- Connect main gun safety switch (1S100)-P1 to 1W108-2/J1 (TM 9-2350-264-20-2).
- Connect 1W108-2/P3 to J1 on coax electrical solenoid (TM 9-2350-264-20-2).
- Connect blasting machine (1G100)-P1 to 1W108-2/J2 (TM 9-2350-264-20-2).
- Replace branched wiring harness 1W107-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

259

- Connect 1W106-P1 to J2 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Connect 1W108-2/P1 to 1W107-9/J1 (TM 9-2350-264-20-2).
- Connect 1W108-2/P4 to J1 on primer diode box (TM 9-2350-264-20-2).
- Connect main gun safety switch (1S100)-P1 to 1W108-2/J1 (TM 9-2350-264-20-2).
- Connect 1W108-2/P3 to J1 on coax electrical solenoid (TM 9-2350-264-20-2).
- Connect zero degree elevation switch (1S242)-P1 to 1W107-9/J2 (TM 9-2350-264-20-2).
- Replace blasting machine (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 126

260

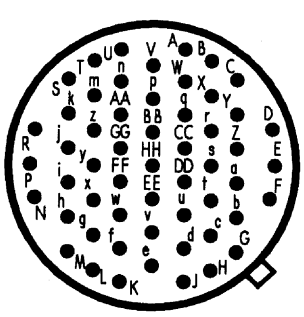
- Disconnect 1W102-9/P2 from J1 on tank commander's panel (TM 9-2350-264-20-2).

NOTE

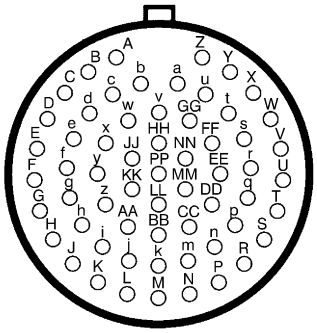
If multimeter does not show greater than 100K ohms, go immediately to block 262.

- Test for greater than 100K ohms between contacts on 1W102-9 listed below:
  - A and connector body and all other contacts on P1.
  - L and connector body and all other contacts on P1.
  - A and connector body and all other contacts on P2.
  - L and connector body and all other contacts on P2.

Does multimeter show greater than 100K ohms for all tests?



1W102-9/P1



1W102-9/P2

YES

261

- Connect 1W101-9/P2 or 1W118-9/P2 to J11 on turret networks box (page 4-153).
- Connect 1W104-P1 to J9 on turret networks box (page 4-153).
- Connect 1W102-9/P1 to J8 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Replace tank commander's panel assembly (TM 9-2350-264-20-2).
- Verify problem is solved.

NO

262

- Connect 1W101-9/P2 or 1W118-9/P2 to J11 on turret networks box (page 4-153).
- Connect 1W104-P1 to J9 on turret networks box (page 4-153).
- Connect 1W200-9/P1 to J5 on turret networks box (page 4-153).
- Replace wiring harness assembly 1W102-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

SYMPTOM PDBCB-3

CIRCUIT BREAKER CB3 ON POWER DISTRIBUTION BOX SHUTS OFF

Tools:
- Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)
- Breakout box tool kit (NSN 5999-01-130-8077)
- Digital multimeter (NSN 6625-01-265-6000)
- Embedded diagnostics support kit (57K4116) (vehicles with redesigned turret networks box)
- TA1 continuity test probe kit (NSN 6625-01-102-6878) (vehicles with turret networks box)
- Universal test lead set (NSN 6625-01-121-0510) (as required) (vehicles with turret networks box)

Equipment Condition:
- RTS-W1/P1 is connected to UJ3 on power distribution box (page 4-155).

NOTE

Read Section I, How To Do Troubleshooting, before doing any work (TM 9-2350-264-20-2).

1

- Set up tank conditions for standard initial test conditions (TM 9-2350-264-20-2).
- Make sure circuit breaker CB3 on power distribution box is set to ON.
- Set circuit breakers CB1, CB2 and CB4 thru CB7 on power distribution box to OFF.
- Connect breakout box to TJ1 on hull power distribution unit using CABLE NO. 1 and ADAPTER NO. 2 (page 4-152).

NOTE

If multimeter shows less than 5 ohms, leave test probes connected for remainder of test.

- Test for less that 5 ohms between test points 9 and 30 on breakout box.

Does multimeter show less than 5 ohms?

YES

2

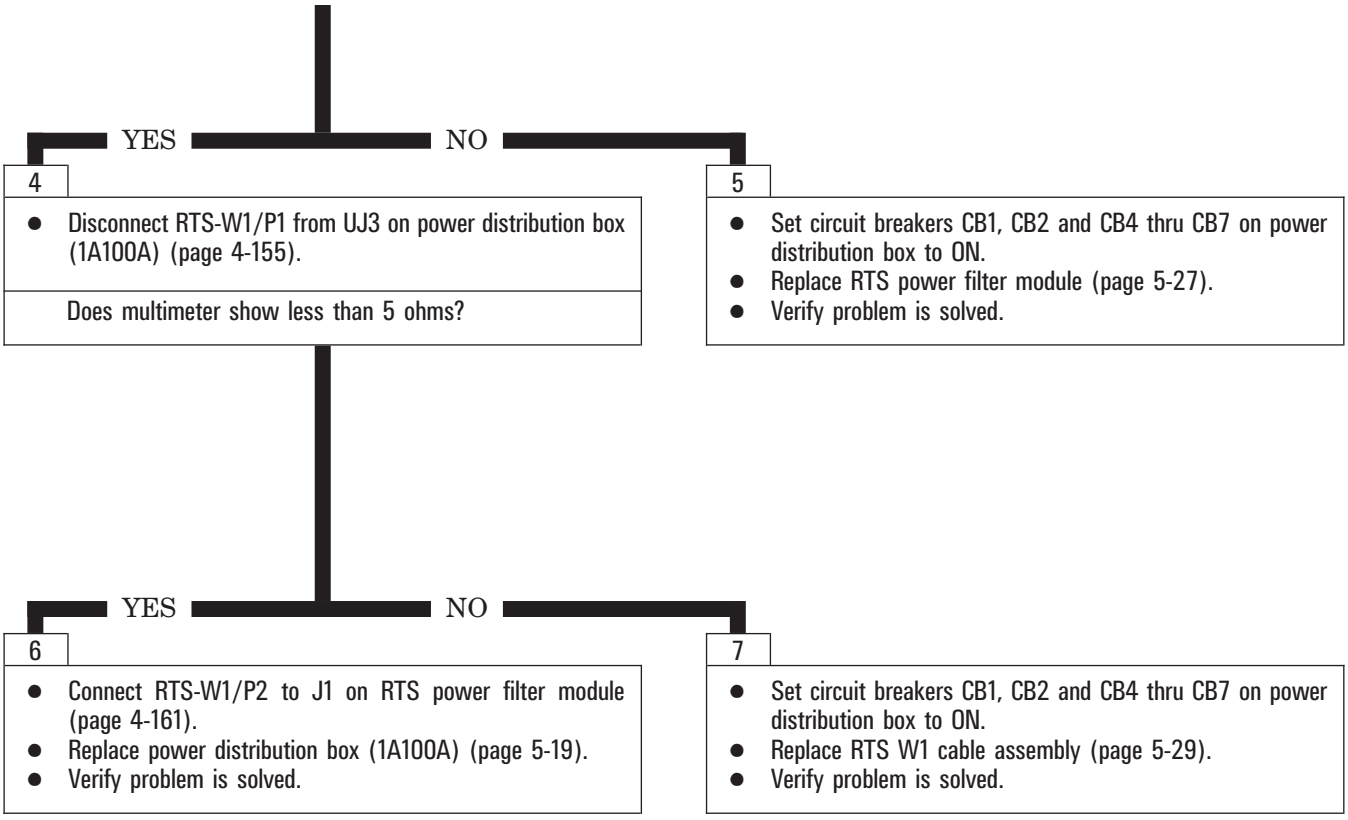
- Disconnect RTS-W1/P2 from J1 on RTS power filter module (page 4-161).

Does multimeter show less than 5 ohms?

NO

3

- Set circuit breakers CB1, CB2 and CB4 thru CB7 on power distribution box to ON.
- Replace RTS power filter module (page 5-27).
- Verify problem is solved.


YES
NO
4
Disconnect RTS-W1/P1 from UJ3 on power distribution box (1A100A) (page 4-155).
Does multimeter show less than 5 ohms?
5
Set circuit breakers CB1, CB2 and CB4 thru CB7 on power distribution box to ON.
Replace RTS power filter module (page 5-27).
Verify problem is solved.
YES
NO
6
Connect RTS-W1/P2 to J1 on RTS power filter module (page 4-161).
Replace power distribution box (1A100A) (page 5-19).
Verify problem is solved.
7
Set circuit breakers CB1, CB2 and CB4 thru CB7 on power distribution box to ON.
Replace RTS W1 cable assembly (page 5-29).
Verify problem is solved.

SYMPTOM PDBCB-6

CIRCUIT BREAKER CB6 ON POWER DISTRIBUTION BOX SHUTS OFF

Tools:
- Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)
- Breakout box tool kit (NSN 5999-01-130-8077)
- Digital multimeter (NSN 6625-01-265-6000)
- Embedded diagnostics support kit (57K4116) (vehicles with redesigned turret networks box)
- TA1 continuity test probe kit (NSN 6625-01-102-6878) (vehicles with turret networks box)
- Universal test lead set (NSN 6625-01-121-0510) (as required) (vehicles with turret networks box)

Equipment Condition:
- LTWS-W1/P1 is connected to UJ6 on power distribution box (page 4-155).

NOTE

Read Section I, How To Do Troubleshooting, before doing any work (TM 9-2350-264-20-2).

1

- Set up tank conditions for standard initial test conditions (TM 9-2350-264-20-2).
- Make sure circuit breaker CB6 on power distribution box is set to ON.
- Set circuit breakers CB1 thru CB5 and CB7 on power distribution box to OFF.
- Connect breakout box to TJ1 on hull power distribution unit using CABLE NO. 1 and ADAPTER NO. 2 (page 4-152)

NOTE

If multimeter shows less than 5 ohms, leave test probes connected for remainder of test.

- Test for less that 5 ohms between test points 9 and 30 on breakout box.

Does multimeter show less than 5 ohms?

YES

2

- Disconnect LTWS-W1/P2 from J1 on LTWS vehicle power adapter (page 4-159).

Does multimeter show less than 5 ohms?

NO

3

- Set circuit breakers CB1 thru CB5 and CB7 on power distribution box to ON.
- Replace LTWS vehicle power adapter (page 5-12).
- Verify problem is solved.

YES

4

- Disconnect LTWS-W1/P1 from UJ6 on power distribution box (1A100A) (page 4-155).

Does multimeter show less than 5 ohms?

NO

5

- Set circuit breakers CB1 thru CB5 and CB7 on power distribution box to ON.
- Replace LTWS vehicle power adapter (page 5-12).
- Verify problem is solved.

YES

6

- Connect LTWS-W1/P2 to J1 on LTWS vehicle power adapter (page 4-159).
- Replace power distribution box (1A100A) (page 5-19).
- Verify problem is solved.

NO

7

- Set circuit breakers CB1 thru CB5 and CB7 on power distribution box to ON.
- Replace LTWS power cable W1 (page 5-14).
- Verify problem is solved.

SYMPTOM PDBCB-7

CIRCUIT BREAKER CB7 ON POWER DISTRIBUTION BOX SHUTS OFF

Tools:
- Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)
- Breakout box tool kit (NSN 5999-01-130-8077)
- Digital multimeter (NSN 6625-01-265-6000)
- Embedded diagnostics support kit (57K4116) (vehicles with redesigned turret networks box)
- TA1 continuity test probe kit (NSN 6625-01-102-6878) (vehicles with turret networks box)
- Universal test lead set (NSN 6625-01-121-0510) (as required) (vehicles with turret networks box)

Equipment Condition:
- 1W810-CSAMM/P1 is connected to UJ7 on power distribution box (page 4-155).

NOTE

Read Section I, How To Do Troubleshooting, before doing any work (TM 9-2350-264-20-2).

1

- Make sure circuit breaker CB7 on power distribution box is set to ON.
- Set circuit breakers CB1 thru CB6 on power distribution box to OFF.
- Set AUTO/SINGLE switch on CSAMM Rate of Fire System (RFS) control box to AUTO.
- Set SAFE/ARMED switch on CSAMM RFS control box to ARMED.
- Set LIGHT switch on CSAMM RFS control box to ON.
- Disconnect 1W811-CSAMM/P1 from J1 on CSAMM gun solenoid (page 4-157).
- Connect breakout box to TJ1 on hull power distribution unit using CABLE NO. 1 and ADAPTER NO. 2 (page 4-152).

NOTE

If multimeter shows less than 5 ohms, leave test probes connected for remainder of test.

- Test for less that 5 ohms between test points 9 and 30 on breakout box while CSAMM trigger button is pressed and held.

Does multimeter show less than 5 ohms?

YES

2

- Disconnect 1W811-CSAMM/+ from spotlight + (page 4-157).
- Press and hold CSAMM trigger button.

Does multimeter show less than 5 ohms?

NO

3

- Set circuit breakers CB1 thru CB6 on power distribution box to ON.
- Replace CSAMM gun solenoid.
  - Refer to Chapter 3.
- Verify problem is solved.

YES — NO

4

- Disconnect 1W810-CSAMM/J1 from 1W811-CSAMM/P2 (page 4-156).
- Press and hold CSAMM trigger button.

Does multimeter show less than 5 ohms?

5

- Set circuit breakers CB1 thru CB6 on power distribution box to ON.
- Connect 1W811-CSAMM/P1 to J1 on CSAMM gun solenoid (page 4-157).
- Replace CSAMM spotlight.
  - Refer to Chapter 3.
- Verify problem is solved.

YES — NO

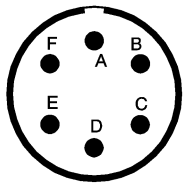
6

- Connect 1W811-CSAMM/P1 to J1 on CSAMM gun solenoid (page 4-157).
- Connect 1W811-CSAMM/+ to spotlight + (page 4-157).
- Disconnect 1W810-CSAMM/P1 from UJ7 on power distribution box (page 4-155).

Does multimeter show less than 5 ohms?

7

- Set circuit breakers CB1 thru CB6 on power distribution box to ON.
- Replace electrical harness 1W811-CSAMM (page 5-40).
- Verify problem is solved.



1W810–CSAMM/P2

NO — YES

8

- Set circuit breakers CB1 thru CB6 on power distribution box to ON.
- Connect 1W810-CSAMM/P1 to UJ7 on power distribution box (page 4-155).
- Disconnect 1W810-CSAMM/P2 from J1 on CSAMM RFS control box (page 4-156).
- Test for less than 5 ohms between contact B and all other contacts on 1W810-CSAMM/P2.

Does multimeter show less than 5 ohms?

9

- Connect 1W810-CSAMM/J1 to 1W811-CSAMM/P2 (page 4-156).
- Replace power distribution box (page 5-19).
- Verify problem is solved.

YES — NO

10

- Replace electrical harness 1W810-CSAMM (page 5-36).
- Verify problem is solved.

11

- Connect 1W810-CSAMM/J1 to 1W811-CSAMM/P2 (page 4-156).
- Replace CSAMM Rate Of Fire System (RFS) assembly (page 5-35).
- Verify problem is solved.

SYMPTOM TCB-33

CIRCUIT BREAKER 33 ON TURRET NETWORKS BOX OR REDESIGNED TURRET NETWORKS BOX SHUTS OFF

Tools:
- Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)
- Breakout box tool kit (NSN 5999-01-130-8077)
- Digital multimeter (NSN 6625-01-265-6000)
- Embedded diagnostics support kit (57K4116) (vehicles with redesigned turret networks box)
- TA1 continuity test probe kit (NSN 6625-01-102-6878) (vehicles with turret networks box)
- Universal test lead set (NSN 6625-01-121-0510) (as required) (vehicles with turret networks box)

Supplies:
- Electrical jumper (as required)

Equipment Condition:
- 1W815-SPOTLIGHT/P1 is connected to UJ1 on turret networks box or redesigned turret networks box (page 4-166). Or if vehicle is equipped with blue force tracking (BFT) kit (also known as enhanced information system (EIS) kit), 1W815-SPOTLIGHT/P1 is connected to J2 on 1W215-EF or 1W222-EF (page 4-166). If you have any other configuration, use schematics to perform troubleshooting.

NOTE
- Read Section I, How To Do Troubleshooting, before doing any work (TM 9-2350-264-20-2).
- Two different electrical configurations of 1W215-EF exist (page 4-166). This procedure applies to 1W215-EF with integrated utility jack (P/N 12489527).

1

- Set up tank conditions for standard initial test conditions (TM 9-2350-264-20-2).
- Make sure CB33 on turret networks box or redesigned turret networks box is set to ON.
- Make sure commander's spotlight ON/OFF switch is set to OFF.

NOTE

1W215-EF or 1W222-EF harness is part of BFT/EIS kit.

- Check to see if 1W815-SPOTLIGHT/P1 is connected to 1W215-EF/J2 or 1W222-EF/J2 (page 4-166).

Is 1W815-SPOTLIGHT/P1 connected to 1W215-EF/J2 or 1W222-EF/J2?

YES — NO

2

- Disconnect 1W815-SPOTLIGHT/P1 from 1W215-EF/J2 or 1W222-EF/J2 (page 4-166).
- Disconnect 1W215-EF/P1 or 1W222-EF/P1 from UJ1 on turret networks box or redesigned turret networks box (page 4-166).
- Connect 1W815-SPOTLIGHT/P1 to UJ1 on turret networks box or redesigned turret networks box (page 4-166).
- Set TURRET POWER switch to ON.
- Set commander's spotlight ON/OFF switch to ON.
- Check to see if CB33 on turret networks box or redesigned networks box is off (tripped).

Is CB33 off (tripped)?

3

- Go to block 4.

YES — NO

4

- If ON, set MASTER POWER switch to OFF.
- Make sure CB33 on turret networks box or redesigned networks box is set to ON.
- Disconnect 1W816-SPOTLIGHT/P2 from commander's spotlight-J1 (page 4-165).
- Connect breakout box to TEST1 on turret networks box or redesigned turret networks box using CABLE NO. 1 and ADAPTER NO. 7 (page 4-151).

NOTE

If multimeter shows less than 5 ohms, leave test probes connected for remainder of test.

- Test for less than 5 ohms between test points 9 and 104 on breakout box.

Does multimeter show less than 5 ohms?

5

- Set MASTER POWER switch to OFF.
- Disconnect 1W815-SPOTLIGHT/P1 from UJ1 on turret networks box or redesigned turret networks box (page 4-166).
- Connect 1W215-EF/P1 or 1W222-EF/P1 to UJ1 on turret networks box or redesigned turret networks box (page 4-166).
- Do procedure for TCB-33 in TM 9-2350-264-20-2 or IETM for your vehicle hardware configuration.
- After troubleshooting is complete, connect 1W815-SPOTLIGHT/P1 to 1W215-EF/J2 or 1W222-EF/J2 (page 4-166).
- Verify problem is solved.

YES

6

- Disconnect 1W816-SPOTLIGHT/P1 from 1W815-SPOTLIGHT/J1 (page 4-165).

Does multimeter show less than 5 ohms?

NO

7

- Replace commander's spotlight.
  - Refer to Chapter 3.
- Verify problem is solved.
- If BFT/EIS kit is installed, do the following:.
  - Disconnect 1W815-SPOTLIGHT/P1 from UJ1 on turret networks box or redesigned turret networks box (page 4-166).
  - Connect 1W215-EF/P1 or 1W222-EF/P1 to UJ1 on turret networks box or redesigned turret networks box (page 4-166).
  - Connect 1W815-SPOTLIGHT/P1 to 1W215-EF/J2 or 1W222-EF/J2 (page 4-166).
  - Verify spotlight operation. Refer to Chapter 3.

YES

8

- Connect 1W816-SPOTLIGHT/P2 to commander's spotlight-J1 (page 4-165).
- Disconnect 1W815-SPOTLIGHT/P1 from UJ1 on turret networks box or redesigned turret networks box (page 4-166).

Does multimeter show less than 5 ohms?

NO

9

- Replace wiring harness 1W816-SPOTLIGHT.
  - Refer to Chapter 5.
- Verify problem is solved.
- If BFT/EIS kit is installed, do the following:.
  - Disconnect 1W815-SPOTLIGHT/P1 from UJ1 on turret networks box or redesigned turret networks box (page 4-166).
  - Connect 1W215-EF/P1 or 1W222-EF/P1 to UJ1 on turret networks box or redesigned turret networks box (page 4-166).
  - Connect 1W815-SPOTLIGHT/P1 to 1W215-EF/J2 or 1W222-EF/J2 (page 4-166).
  - Verify spotlight operation. Refer to Chapter 3.

NO

10

- Replace wiring harness 1W815-SPOTLIGHT (page 5-44.14).
- Verify problem is solved.
- If BFT/EIS kit is installed, do the following:.
  - Disconnect 1W815-SPOTLIGHT/P1 from UJ1 on turret networks box or redesigned turret networks box (page 4-166).
  - Connect 1W215-EF/P1 or 1W222-EF/P1 to UJ1 on turret networks box or redesigned turret networks box (page 4-166).
  - Connect 1W815-SPOTLIGHT/P1 to 1W215-EF/J2 or 1W222-EF/J2 (page 4-166).
  - Verify spotlight operation. Refer to Chapter 3.

YES

11

- Connect 1W816-SPOTLIGHT/P1 to 1W815-SPOTLIGHT/J1 (page 4-165).
- Replace turret networks box or redesigned turret networks box (TM 9-2350-264-20-2).
- If BFT/EIS kit is not installed, do the following:.
  - Make sure 1W815-SPOTLIGHT/P1 is connected to UJ1 on turret networks box or redesigned turret networks box (page 4-166).
  - Verify problem is solved.
- If BFT/EIS kit is installed, do the following:.
  - Make sure 1W215-EF/P1 or 1W222-EF/P1 is connected to UJ1 on turret networks box or redesigned turret networks box (page 4-166).
  - Make sure 1W815-SPOTLIGHT/P1 is connected to 1W215-EF/J2 or 1W222-EF/J2 (page 4-166).
  - Verify problem is solved.

SYMPTOM EAPU-6 OR EAPU-6A

ELECTRICAL SYSTEM VOLTMETER ON VEHICLE DOES NOT INDICATE CHARGING WHEN OUTPUT POWER SWITCH ON REMOTE CONTROL BOX OR LOCAL CONTROL PANEL IS SET TO ON

ELECTRICAL SYSTEM VOLTMETER ON VEHICLE DOES NOT INDICATE CHARGING WHEN OUTPUT POWER SWITCH ON REMOTE CONTROL BOX IS SET TO ON, BUT WORKS CORRECTLY FROM LOCAL CONTROL PANEL OF EAPU

Tools:
- Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)
- Adapter No. 7 (P/N 12337167)
- Breakout box tool kit (NSN 5999-01-130-8077)
- Digital multimeter (NSN 6625-01-265-6000)
- Universal test lead set (NSN 6625-01-121-0510) (as required) (vehicles with turret networks box)
- Embedded diagnostics support kit (57K4116) (vehicles with redesigned turret networks box)

Supplies:
- Electrical jumper (as required)

NOTE

Read Section I, How To Do Troubleshooting, before doing any work (TM 9-2350-264-20-2).

1

- Set up tank controls for standard initial test conditions (TM 9-2350-264-20-2).
- Operate EAPU from local control panel.
  - Set REMOTE/LOCAL switch to LOCAL.
  - Set VEHICLE MASTER POWER switch to ON.
  - Set EAPU START/ON/STOP switch to START and then release.
  - After EAPU starts, set OUTPUT POWER switch to ON.

Does ELECTRICAL SYSTEM voltmeter on driver's instrument panel indicate charging?

YES

2

- Set OUTPUT POWER switch to OFF.
- Set EAPU START/ON/STOP switch to STOP.
- Set REMOTE/LOCAL switch to REMOTE.
- Set VEHICLE MASTER POWER switch to OFF.
- Connect breakout box to TJ4 on EAPU engine control unit using CABLE NO. 1 and ADAPTER NO. 7 (TM 9-2350-264-20-2).
- Set VEHICLE MASTER POWER switch to ON.
- Set START/ON/STOP switch on remote control box to START and then release.
- Test for 26 to 30 V dc between 32 (-) and 17 (+) on breakout box while OUTPUT POWER switch on remote control box is held to ON position.

Does multimeter show 26 to 30 V dc?

NO

3

- Go to block 17 (page 4-135).

YES — NO

4

- Test for 26 to 30 V dc between 32 (-) and 23 (+) on breakout box while OUTPUT POWER switch is held to ON position and note reading.
- Release OUTPUT POWER switch.
- Test for 26 to 30 V dc between 32 (-) and 23 (+) on breakout box.

Does multimeter show 26 to 30 V dc for either test?

5

- Go to block 10 (page 4-134).

YES — NO

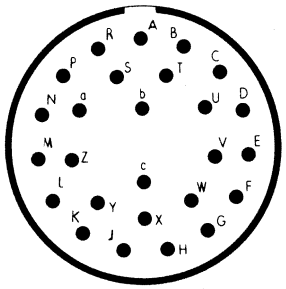
6

- Set OUTPUT POWER switch to OFF and then release.
- Set START/ON/STOP switch to STOP.
- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W503-P1 from J1 on remote control box (TM 9-2350-264-20-2).
- Set START/ON/STOP switch to ON.
- Test for greater than 100K ohms between contacts B and G on remote control box J1 while OUTPUT POWER switch is held to ON position.

Does multimeter show greater than 100K ohms?

7

- Set OUTPUT POWER switch to OFF and then release.
- Set START/ON/STOP switch to STOP.
- Set VEHICLE MASTER POWER switch to OFF.
- Engine control unit is faulty. Notify maintenance supervisor.
  - Refer to TM 9-6115-542-24&P.



RCB-J1

YES — NO

8

- Release OUTPUT POWER switch.
- Set START/ON/STOP switch to STOP.
- Connect 1W503-P1 to J1 on remote control box (TM 9-2350-264-20-2).
- Engine control unit is faulty. Notify maintenance supervisor.
  - Refer to TM 9-6115-542-24&P.

9

- Release OUTPUT POWER switch.
- Set START/ON/STOP switch to STOP.
- Replace remote control box (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 5

10

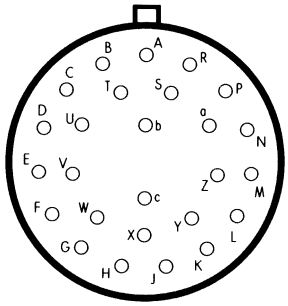
- Set OUTPUT POWER switch to OFF and then release.
- Set START/ON/STOP switch to STOP.
- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W503-P1 from J1 on remote control box (TM 9-2350-264-20-2).
- Connect jumper between 2 and 17 on breakout box.

NOTE

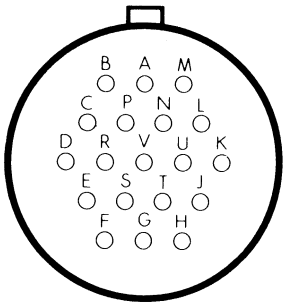
If multimeter does not show continuity, leave jumper connected for remainder of test.

- Test for continuity between contacts B and D on 1W503-P1.

Does multimeter show continuity?



1W503-P1



1W504-P1

NO

11

- Disconnect 1W504-P1 from 1W503-J1 (TM 9-2350-264-20-2).
- Test for continuity between contacts B and D on 1W504-P1.

Does multimeter show continuity?

YES

12

- Replace remote control box (TM 9-2350-264-20-2).
- Verify problem is solved.

NO

13

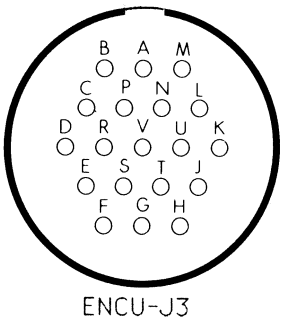
- Connect 1W503-P1 to J1 on remote control box (TM 9-2350-264-20-2).
- Disconnect 1W504-P2 from J3 on EAPU engine control unit (TM 9-2350-264-20-2).
- Test for continuity between contacts B and D on engine control unit J3.

Does multimeter show continuity?

YES

14

- Wiring harness 1W503 is faulty. Notify support maintenance.



ENCU-J3

NO

15

- Connect 1W504-P1 to 1W503-J1 (TM 9-2350-264-20-2).
- Engine control unit is faulty. Notify maintenance supervisor.
  - Refer to TM 9-6115-542-24&P.

YES

16

- Branched harness 1W504 is faulty. Notify maintenance supervisor.
  - Refer to TM 9-6115-542-24&P.

From block 3

17

- Set OUTPUT POWER switch to OFF.
- Set EAPU START/ON/STOP switch to STOP.
- Set TURRET POWER switch to ON.
- Set NBC MODE BACKUP or NBC BACK on UTCP switch to ON.

Does NBC backup system come on?

YES — NO

18

- Set NBC MODE BACKUP switch on TCP or NBC BACK switch on UTCP to OFF.
- Set VEHICLE MASTER POWER switch to OFF.

NOTE

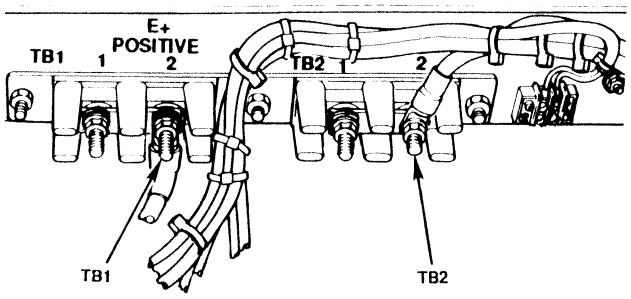
If multimeter shows less than 5 ohms, leave test probes connected for remainder of test.

- Test for less then 5 ohms between EAPU TB1 and TB2.

Does multimeter show less than 5 ohms?

19

- Set NBC MODE BACKUP switch on tank commander's panel or NBC BACK switch on upgraded tank commander's panel to OFF.
- Set VEHICLE MASTER POWER switch to OFF.
- Refer to Fault Symptom Index (page 4-2) and do procedure for TNB V/TPC-5 or RTNB V/TPC-5 that matches your vehicle hardware configuration.



NO — YES

20

- Set VEHICLE MASTER POWER switch to ON.
- Set EAPU START/ON/STOP switch to START and then release.
- After EAPU starts, set OUTPUT POWER switch to ON.
- Test for 26 to 30 V dc between EAPU TB2 (-) and TB1 (+).

Does multimeter show 26 to 30 V dc?

21

- Go to block 44 (page 4-140).

YES — NO

22

- Set OUTPUT POWER switch to OFF.
- Set EAPU START/ON/STOP switch to STOP.
- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W501-P6 from J2 on power interface box assembly (TM 9-2350-264-20-2).
- Connect jumper between EAPU TB1 and TB2.

NOTE

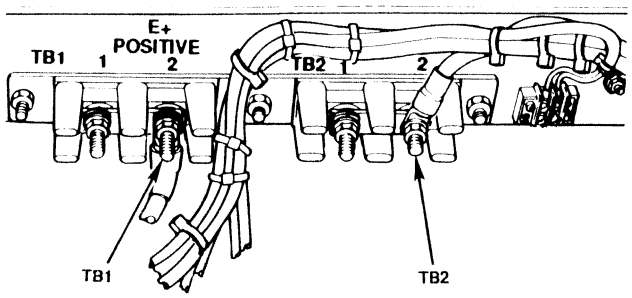
If multimeter does not show continuity, leave jumper connected for remainder of test.

- Test for continuity between contacts B and E on power interface box J2.

Does multimeter show continuity?

23

- Go to block 32 (page 4-138).



NO — YES

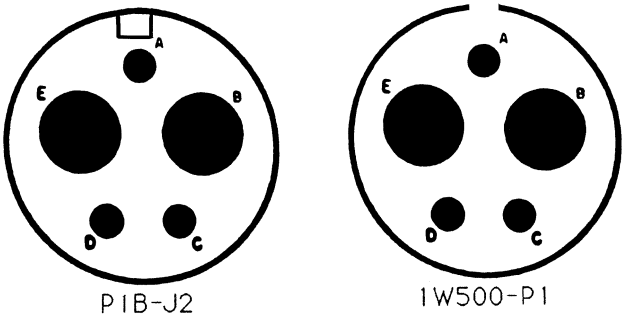
24

- Disconnect 1W500-P1 from J1 on power interface box assembly (TM 9-2350-264-20-2).
- Test for continuity between contacts B and E on 1W500-P1.

Does multimeter show continuity?

25

- Replace branched harness 1W501 (page 5-73).
- Verify problem is solved.



NO — YES

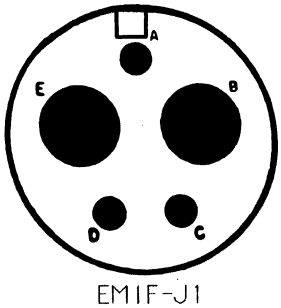
26

- Connect 1W501-P6 to J2 on power interface box assembly (TM 9-2350-264-20-2).
- Disconnect 1W500-P2 from J1 on electromagnetic interference filter box assembly (TM 9-2350-264-20-2).
- Test for continuity between contacts B and E on electromagnetic interference filter box J1.

Does multimeter show continuity?

27

- Replace power interface box (TM 9-2350-264-20-2).
- Verify problem is solved.



NO — YES

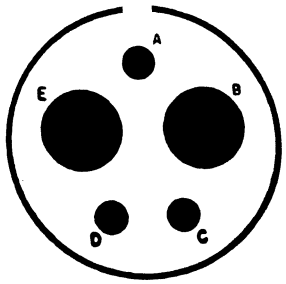
28

- Connect 1W500-P1 to J1 on power interface box assembly (TM 9-2350-264-20-2).
- Disconnect 1W502-P1 from J2 on electromagnetic interference filter box assembly (TM 9-2350-264-20-2).
- Test for continuity between contacts B and E on 1W502-P1.

Does multimeter show continuity?

29

- Harness assembly 1W500 is faulty. Notify support maintenance.



1W502-P1

NO — YES

30

- Connect 1W500-P2 to J1 on electromagnetic interference filter box assembly (TM 9-2350-264-20-2).
- Branched harness 1W502 is faulty. Notify maintenance supervisor.
  - Refer to TM 9-6115-542-24&P.

31

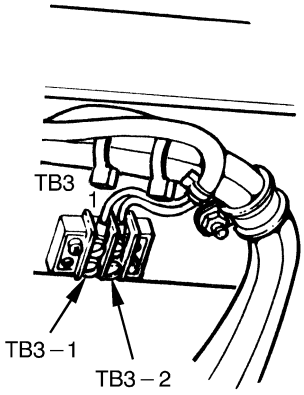
- Replace electromagnetic interference filter box (TM 9-2350-264-20-2).
- Verify problem is solved.

From block 23

32

- Set OUTPUT POWER switch to OFF.
- Set EAPU START/ON/STOP switch to STOP.
- Set VEHICLE MASTER POWER switch to OFF.
- Test for continuity between EAPU TB3-1 and TB3-2.

Does multimeter show continuity?



NO — YES

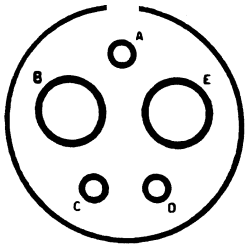
33

- Disconnect 1W500-P2 from J1 on electromagnetic interference filter box assembly (TM 9-2350-264-20-2).
- Test for continuity between contacts A and D on 1W500-P2.

Does multimeter show continuity?

34

- EAPU is faulty. Notify maintenance supervisor.
  - Refer to TM 9-6115-542-24&P.



1W500-P2

NO — YES

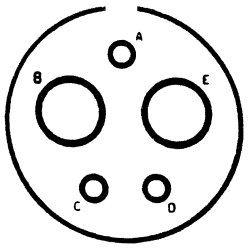
35

- Disconnect 1W501-P6 from J2 on power interface box assembly (TM 9-2350-264-20-2).
- Test for continuity between contacts A and D on 1W501-P6.

Does multimeter show continuity?

36

- Go to block 41 (page 4-139).



1W501-P6

YES — NO

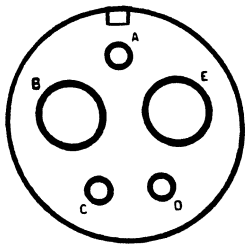
37

- Connect 1W501-P6 to J2 on power interface box assembly (TM 9-2350-264-20-2).
- Disconnect 1W500-P1 from J1 on power interface box assembly (TM 9-2350-264-20-2).
- Test for continuity between contacts A and D on power interface box assembly J1.

Does multimeter show continuity?

38

- Connect 1W500-P2 to J1 on electromagnetic interference filter box assembly (TM 9-2350-264-20-2).
- Replace branched harness 1W501 (page 5-73).
- Verify problem is solved.



PIB-J1

NO — YES

39

- Connect 1W500-P2 to J1 on electromagnetic interference filter box assembly (TM 9-2350-264-20-2).
- Replace power interface box (TM 9-2350-264-20-2).
- Verify problem is solved.

40

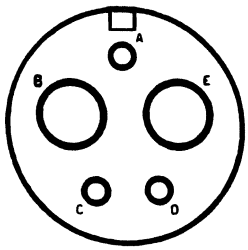
- Harness assembly 1W500 is faulty. Notify support maintenance.

From block 36

41

- Connect 1W500-P2 to J1 on electromagnetic interference filter box (TM 9-2350-264-20-2).
- Disconnect 1W502-P1 from J2 on electromagnetic interference filter box (TM 9-2350-264-20-2).
- Test for continuity between contacts A and D on electromagnetic interference filter box J2.

Does multimeter show continuity?



EMIF-J2

NO — YES

42

- Replace electromagnetic interference filter box (TM 9-2350-264-20-2).
- Verify problem is solved.

43

- Branched harness 1W502 is faulty. Notify maintenance supervisor.
  - Refer to TM 9-6115-542-24&P.

From block 21

44

- Disconnect 1W502-E1 from EAPU TB1.
  - Refer to TM 9-6115-542-24&P.

Does multimeter show less than 5 ohms?

NO

45

- Connect 1W502-E1 to EAPU TB1.
  - Refer to TM 9-6115-542-24&P.
- Disconnect 1W500-P2 from J1 on electromagnetic interference filter box assembly (TM 9-2350-264-20-2).

Does multimeter show less than 5 ohms?

YES

47

- Disconnect 1W502-P1 from J2 on electromagnetic interference filter box assembly (TM 9-2350-264-20-2).

Does multimeter show less than 5 ohms?

YES

49

- Connect 1W500-P2 to J1 on electromagnetic interference filter box assembly (TM 9-2350-264-20-2).
- Branched harness 1W502 is faulty. Notify maintenance supervisor.
  - Refer to TM 9-6115-542-24&P.

NO

50

- Replace electromagnetic interference filter box (TM 9-2350-264-20-2).
- Verify problem is solved.

NO

48

- Go to block 51.

YES

46

- EAPU is faulty. Notify maintenance supervisor.
  - Refer to TM 9-6115-542-24&P.

From block 48

51

- Connect 1W500-P2 to J1 on electromagnetic interference filter box assembly (TM 9-2350-264-20-2).
- Disconnect 1W500-P1 from J1 on power interface box assembly (TM 9-2350-264-20-2).

Does multimeter show less than 5 ohms?

YES

52

- Harness assembly 1W500 is faulty. Notify support maintenance.

NO

53

- Replace power interface box (TM 9-2350-264-20-2).
- Verify problem is solved.

SYMPTOM EAPU-10A

ENGINE SHUTS DOWN AUTOMATICALLY. THE OUTPUT POWER LAMP ON REMOTE CONTROL BOX IS FLASHING

Tools:
- Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)
- Embedded diagnostics support kit (57K4116) (vehicles with redesigned turret networks box)
- Digital multimeter (NSN 6625-01-265-6000)
- Universal test lead set (NSN 6625-01-121-0510) (as required) (vehicles with turret networks box)

Supplies:
- Electrical jumper (as required)

Personnel Required:
- Two

Equipment Condition:
- EAPU internal battery charged, if equipped.

NOTE

Read Section I, How To Do Troubleshooting, before doing any work (TM 9-2350-264-20-2).

1

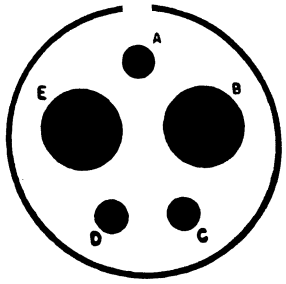
- Set up tank controls for standard initial test conditions (TM 9-2350-264-20-2).
- Make sure EAPU START/ON/STOP switch is set to STOP.
- Disconnect 1W502-P1 from J2 on electromagnetic interference filter box (TM 9-2350-264-20-2).
- Connect jumper between contacts A and D on 1W502-P1.

NOTE

If EAPU is equipped with NATO connector, slave start EAPU.

- Start EAPU from local control panel.
  - Refer to TM 9-2350-264-10.
- Set OUTPUT POWER switch to ON.

Does EAPU start and operate normally?



1W502-P1

YES — NO

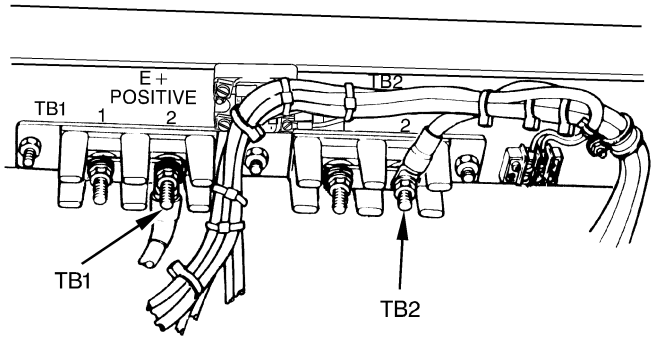
2

- Set OUTPUT POWER switch to OFF.
- Set EAPU START/ON/STOP switch to STOP.
- Disconnect slave cable, if connected.
- Inspect the following harnesses and connectors for signs of damage, arching, burnt or worn insulation, and short circuits to chassis ground:
  - 1W502-P1 to J2 on electromagnetic interference filter box (TM 9-2350-264-20-2)
  - 1W500-P2 to J1 on electromagnetic interference filter box (TM 9-2350-264-20-2)
  - 1W500-P1 to J1 on power interface box (TM 9-2350-264-20-2)
  - 1W501-P6 to J2 on power interface box (TM 9-2350-264-20-2)
  - 1W501-TUSK/P2 to J7 on hull/turret slipring (page 4-154)
  - 1W501-P4 to 1W501-TUSK/J1 (page 4-154)
  - 2W102-P3 to J3 on hull/turret slipring (page 4-154)
  - 2W102-P1 to J4 on hull power distribution unit (TM 9-2350-264-20-2)

Are any harnesses or connectors faulty?

3

- Set OUTPUT POWER switch to OFF.
- Set EAPU START/ON/STOP switch to STOP.
- EAPU is faulty. Notify maintenance supervisor.
  - Refer to TM 9-6115-542-24&P.



NO — YES

4

- Make sure all connectors listed in block 2 are connected.

NOTE

If multimeter shows less than 5 ohms, leave test probes connected for remainder of test, including EAPU-6.

- Test for less than 5 ohms between EAPU TB1 and TB2.

Does multimeter show less than 5 ohms?

5

- Replace harness or assembly found faulty.
  - For branched harness 1W501 (page 5-73).
  - For wiring harness assembly 1W501-TUSK (page 5-21).
  - For wiring harness 2W102 (TM 9-2350-264-20-2).
  - For electromagnetic interference filter box (TM 9-2350-264-20-2).
  - For power interface box (TM 9-2350-264-20-2).
  - For hull power distribution unit (TM 9-2350-264-20-1).
  - For wiring harness 1W500, notify support maintenance.
  - For branched harness 1W502, notify maintenance supervisor.

YES — NO

6

- Do troubleshooting procedure EAPU-6, ELECTRICAL SYSTEM Voltmeter On Vehicle Does Not Indicate Charging When OUTPUT POWER Switch On Remote Control Box Or Local Control Panel Is Set To ON (page 4-132). Start at block 44.

7

- Problem may be intermittent. Operate EAPU and if symptom recurs, repeat this procedure.

SYMPTOM MCD-1

MISSILE COUNTERMEASURE DEVICE (MCD) DOES NOT WORK

Tools:
- Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)
- Embedded diagnostics support kit (57K4116) (vehicles with redesigned turret networks box)
- Digital multimeter (NSN 6625-01-265-6000)
- Universal test lead set (NSN 6625-01-121-0510) (as required) (vehicles with turret networks box)

Supplies:
- Electrical jumper (as required)

NOTE

Read Section I, How To Do Troubleshooting, before doing any work (TM 9-2350-264-20-2).

1

- Set up tank controls for standard initial test conditions (TM 9-2350-264-20-2).
- Set TURRET POWER switch to ON.
- Set NBC MODE BACKUP switch on commander's panel to ON.
- Check if NBC backup system blower is operating.

Did NBC backup system blower come on?

YES — NO

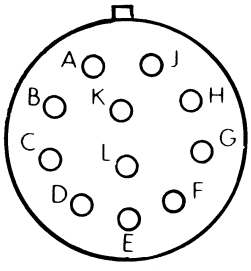
2

- Set NBC MODE BACKUP switch to OFF.
- Set VEHICLE MASTER POWER switch to OFF.
- Be sure MCD CONTROL/UTILITY OUTLET switch on remote control box is set to ON.
- Be sure circuit breaker switch CB2 on power interface box is set to ON.
- Disconnect 1W170-9/P1 from J1 on missile countermeasure device (TM 9-2350-264-20-2).
- Set VEHICLE MASTER POWER switch to ON.
- Test for 18 to 30 V dc between contacts on 1W170-9/P1 listed below:
  - A (-) and F (+)
  - B (-) and G (+)

Does multimeter show 18 to 30 V dc between both pair of contacts?

3

- Set NBC MODE BACKUP switch on tank commander's panel or NBC BACK switch on upgraded tank commander's panel to OFF.
- Set VEHICLE MASTER POWER switch to OFF.
- Refer to Fault Symptom Index (page 4-2) and do procedure for TNB V/TPC-5 or RTNB V/TPC-5 that matches your vehicle hardware configuration.



1W170-9/P1

NO — YES

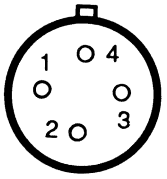
4

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W171-9/P2 from J2 on remote control box (TM 9-2350-264-20-2).
- Set VEHICLE MASTER POWER switch to ON.
- Test for 18 to 30 V dc between contacts on 1W171-9/P2 listed below:
  - 1 (-) and 2 (+)
  - 3 (-) and 4 (+)

Does multimeter show 18 to 30 V dc between both pair of contacts?

5

- Go to block 10 (page 4-145).



1W171-9/P2

YES — NO

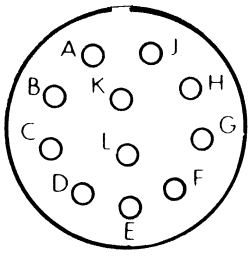
6

- Set VEHICLE MASTER POWER switch to OFF.
- Connect 1W171-9/P2 to J2 on remote control box (TM 9-2350-264-20-2).
- Disconnect 1W170-9/P2 from J3 on remote control box (TM 9-2350-264-20-2).
- Set VEHICLE MASTER POWER switch to ON.
- Test for 18 to 30 V dc between contacts on remote control box J3 listed below:
  - A (-) and F (+)
  - B (-) and G (+)

Does multimeter show 18 to 30 V dc between both pair of contacts?

7

- Go to block 15 (page 4-146).



RCB-J3

NO — YES

8

- Connect 1W170-9/P1 to J1 on missile countermeasure device (TM 9-2350-264-20-2).
- Replace remote control box (TM 9-2350-264-20-2).
- Verify problem is solved.

9

- Wiring harness 1W170-9 is faulty. Notify support maintenance.

From block 5

10

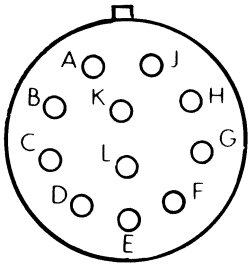
- Set VEHICLE MASTER POWER switch to OFF.
- Connect jumper between contacts H and L on 1W170-9/P1.

NOTE

Leave jumper connected for remainder of test.

- Set VEHICLE MASTER POWER switch to ON.
- Check MCD CONTROL/UTILITY OUTLET indicator on remote control box.

Did indicator light come on?



1W170-9/P1

NO — YES

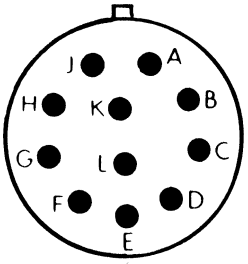
11

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W170-9/P2 from J3 on remote control box (TM 9-2350-264-20-2).
- Test for continuity between contacts H and L on 1W170-9/P2.

Does multimeter show continuity?

12

- Replace missile countermeasure device (TM 9-2350-264-20-2).
- Verify problem is solved.



1W170-9/P2

YES — NO

13

- Connect 1W170-9/P1 to J1 on missile countermeasure device (TM 9-2350-264-20-2).
- Replace remote control box (TM 9-2350-264-20-2).
- Verify problem is solved.

14

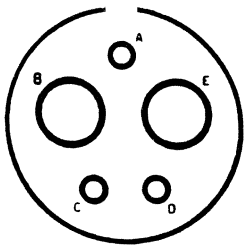
- Wiring harness 1W170-9 is faulty. Notify support maintenance.

From block 7

15

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W501-P6 from J2 on power interface box (TM 9-2350-264-20-2).
- Set VEHICLE MASTER POWER switch to ON.
- Test for 18 to 30 V dc between contacts E (-) and B (+) on 1W501-P6.

Does multimeter show 18 to 30 V dc?



1W501-P6

YES — NO

16

- Set VEHICLE MASTER POWER switch to OFF.
- Disconnect 1W171-9/P1 from J3 on power interface box (TM 9-2350-264-20-2).
- Test for continuity between contacts on 1W171-9/P1 and 1W171-9/P2 listed in table A.

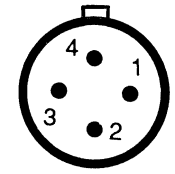
Does multimeter show continuity between all contacts?

17

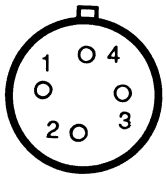
- Connect 1W171-9/P1 to J2 on remote control box (TM 9-2350-264-20-2).
- Replace branched wiring harness 1W501 (page 5-73).
- Verify problem is solved.

TABLE A

1W171-9/P1	1W171-9/P2
1	1
2	2
3	3
4	4



1W171-9/P1



1W171-9/P2

YES — NO

18

- Connect 1W171-9/P2 to J2 on remote control box (TM 9-2350-264-20-2).
- Replace power interface box (TM 9-2350-264-20-2).
- Verify problem is solved.

19

- Connect 1W501-P6 to J2 on power interface box (TM 9-2350-264-20-2).
- Replace branched wiring harness 1W171-9 (TM 9-2350-264-20-2).
- Verify problem is solved.

SECTION IV. SUPPLEMENTARY DATA

This section contains general information and all reference data required by the mechanic to perform tank troubleshooting. Information on the use of equipment called out in the troubleshooting procedures as well as tank diagrams showing the location of components are included as listed below:

ACCESSORIES

The breakout box tool kit, Adapter No. 7, TA1 continuity test probe kit, and test lead set provide access to electrical connector contacts and aid troubleshooting. They are used when measurements are required at tank component connectors, cable harness connectors, or tank component test jacks. Test accessories contain pin/socket adapters, jumpers, and other items required to make test setups. The breakout box, when used with Simplified Test Equipment (STE) adapters and Diagnostic Breakout Assemblies (DBAs) can be connected to any electrical connector on the tank. When the STE test set is not available, the breakout box can only be connected to component test connectors using the cable and adapters in the breakout box tool kit. The following lists the test accessories and shows the breakout box STE configurations and the breakout box tool kit configurations.

1. BREAKOUT BOX TOOL KIT	12311066
2. TA1 CONTINUITY TEST PROBE KIT	NSN 6625-01-102-6878
3. ADAPTER NO. 7	12337167
4. TEST LEAD SET (2 Required)	NSN 6625-01-121-0510

TANK HARNESS INDEX. This table lists all tank harnesses and the page on which a harness locator view appears.

Tank Harness Locations

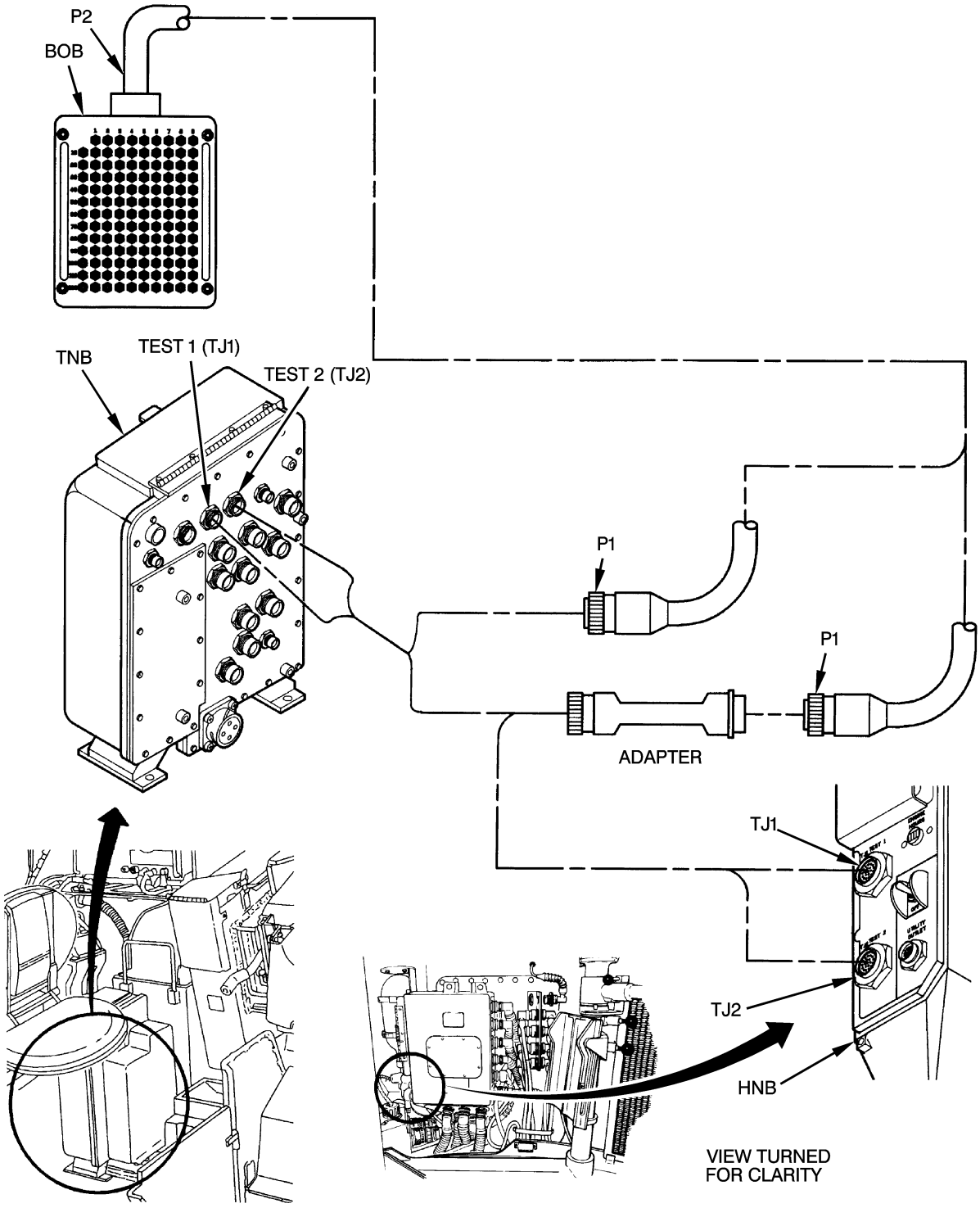
Harness Connector	Connects To	Locator Page
1W100-9/P1 or 1W501-9/P1	1W501-TUSK/J2	4-154
1W100-9/P2 or 1W501-9/P2	H/TSR-J10	4-154
1W100-9/P3 or 1W501-9/P3	H/TSR-J9	4-154
1W100-9/P4 or 1W501-9/P4	1W501-TUSK/J1	4-154
1W100-9/P5 or 1W501-9/P5	TNB-J13	4-153
1W101-9/P1 or 1W118-9/P1	H/TSR-J8	4-154
1W101-9/P2 or 1W118-9/P2	TNB-J11	4-153
1W102-2/P1 or 1W102-9/P1	TNB-J8	4-153
1W104-P1	TNB-J9	4-153
1W105-9/P1 or 1W117-9/P1	TNB-J10	4-153
1W106-P1	TNB-J2	4-153
1W107-9/P1	TNB-J4	4-153
1W200-9/P1	TNB-J5	4-153
1W200-9/P15	TNB-J14	4-153
1W201-9/P1	TNB-J6	4-153
1W202-9/P1	TNB-J7	4-153
1W203-9/P1	TNB-J3	4-153
1W215-EF/P1 (P/N 12473117)	1W222-EF/J2	4-166
1W215-EF/P1 (P/N 12489527)	TNB-UJ1 or RTNB-UJ1	4-166
1W222-EF/P1	TNB-UJ1 or RTNB-UJ1	4-166
1W501-TUSK/P1	PDB-J1	4-155
1W501-TUSK/P2	H/TSR-J7	4-154
1W501-TUSK/P3	H/TSR-J6	4-154
1W810-CSAMM/P1	PDB-UJ7	4-155
1W810-CSAMM/P2	RFS Control Box J1	4-156
1W811-CSAMM/P2	1W810-CSAMM/J1	4-156
1W811-CSAMM/P1	GUN SOL-J1	4-157
1W811-CSAMM/+	Spotlight +	4-157
1W811-CSAMM/-	Spotlight -	4-157
1W815-SPOTLIGHT/P1	TNB-UJ1 or RTNB-UJ1	4-166
1W815-SPOTLIGHT/P1	1W215-EF/J2 (P/N 12489527)	4-166
1W815-SPOTLIGHT/P1	1W222-EF/J2	4-166
1W816-SPOTLIGHT/P1	1W815-SPOTLIGHT/J1	4-165
1W816-SPOTLIGHT/P2	Commander's Spotlight-J1	4-165
2W102-P2	H/TSR-J1	4-154
2W102-P3	H/TSR-J2	4-154
2W109-9/P1 or 2W120-9/P9	H/TSR-J3	4-154
HMD-P1	LTWS DCM-J1	4-158

TANK HARNESS INDEX. (Continued)

Tank Harness Locations (Continued)

Harness Connector	Connects To	Locator Page
LTWS-W1/P1	PDB-UJ6	4-155
LTWS-W1/P2	LTWS VPA-J1	4-159
LTWS-W2/P1	LTWS VPA-J2	4-159
LTWS-W2/P2	LTWS-W4/P1	4-160
LTWS-W3/P1	LTWS VPA-J3	4-159
LTWS-W3/P2	LTWS DCM-J2	4-158
LTWS-W4/P1	LTWS-W2/P2	4-160
LTWS-W4/P2	LTWS TSM-J1	4-160
RTS-W1/P1	PDB-UJ3	4-155
RTS-W1/P2	RTS PFM-J1	4-161
RTS-W2/P1	RTS PFM-J2	4-161
RTS-W2/P2	RTS DCM-J1	4-163
RTS-W3/P1	RTS-W4/P1	4-164
RTS-W3/P2	RTS DCM-J2	4-163
RTS-W4/P2	RTS TSM-J1	4-162
Test Connectors		
HNB TEST 1	N/A	4-151
HNB TEST 2	N/A	4-151
HPDU-TJ1	N/A	4-152
RHNB-TJ1	N/A	4-151
RHNB-TJ2	N/A	4-151
RTNB-TJ1	N/A	4-151
RTNB-TJ2	N/A	4-151
TNB-TJ1	N/A	4-151
TNB-TJ2	N/A	4-151

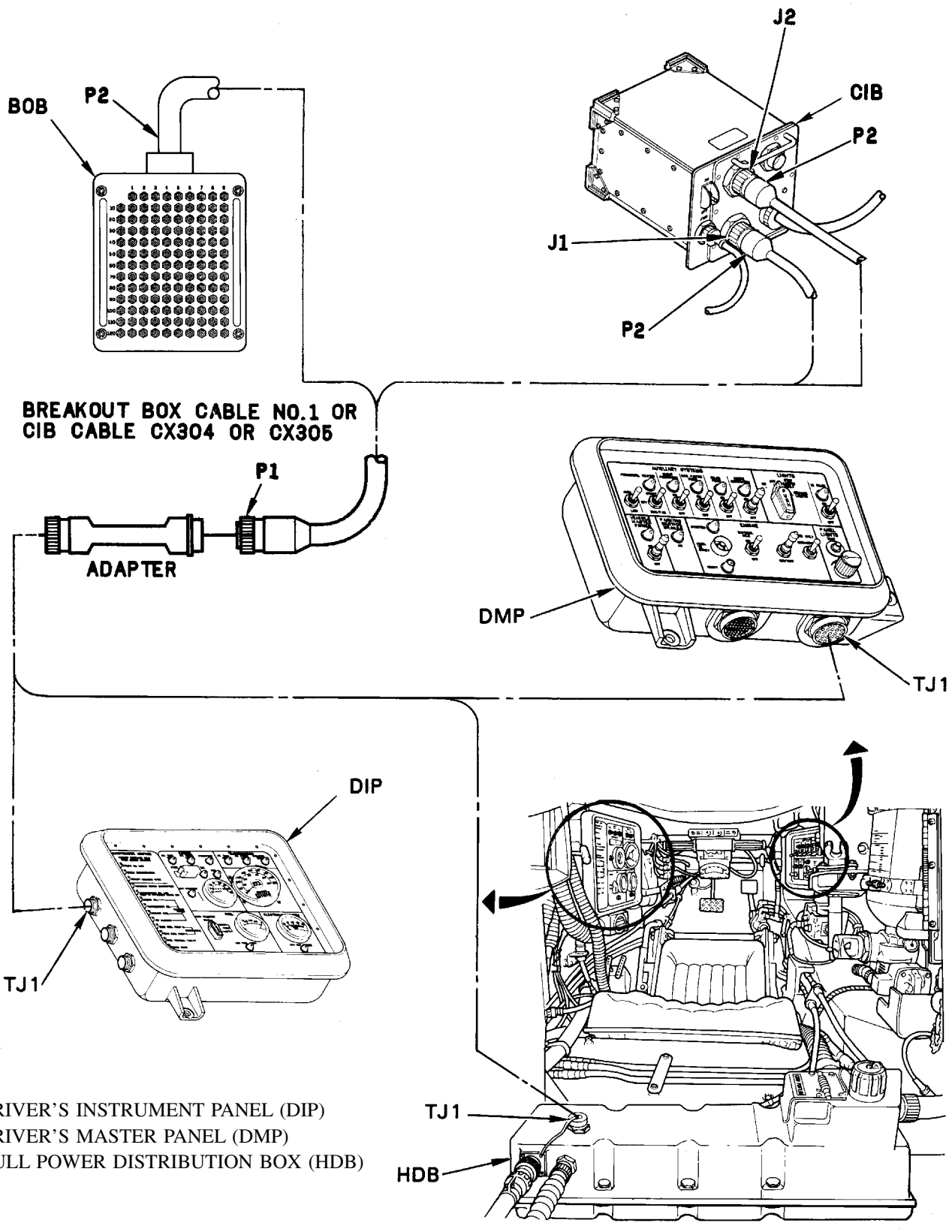
Breakout Box Cable Hookup Between Breakout Box and Test Connector



HULL NETWORKS BOX (HNB)/REDESIGNED HULL NETWORKS BOX (RHNB)*
TURRET NETWORKS BOX (TNB)/REDESIGNED TURRET NETWORKS BOX (RTNB)*

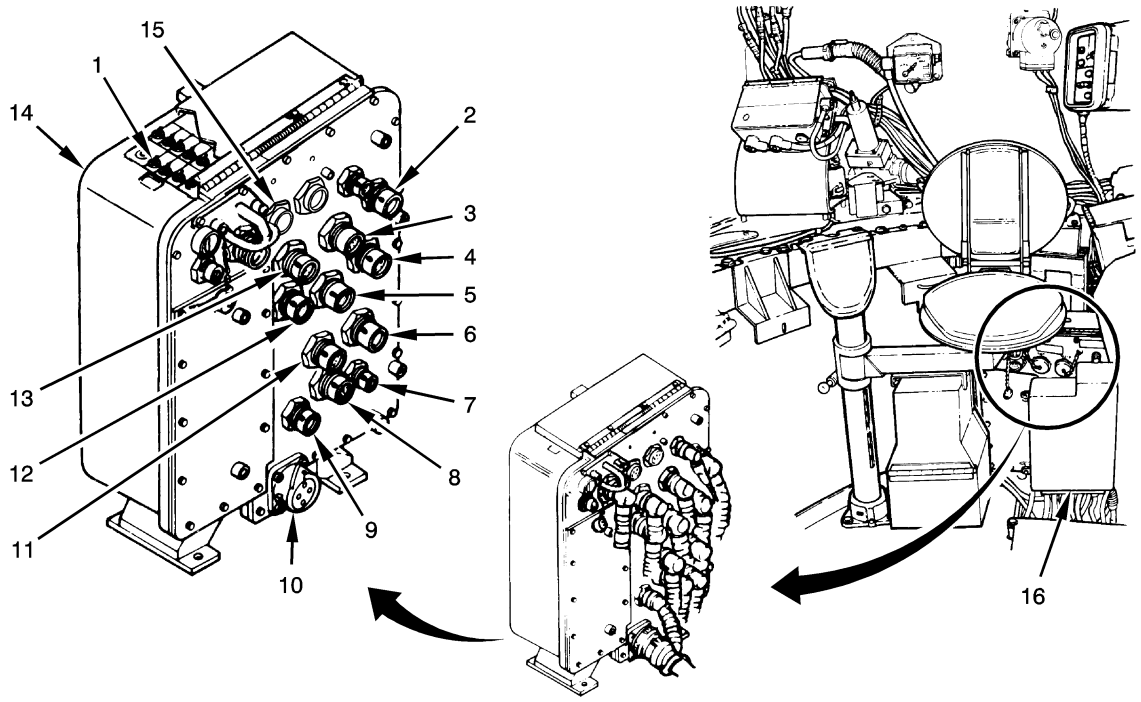
*HNB/TNB shown.

STE Cable or Breakout Box Cable Hookup Between Breakout Box or CIB, and Test Connector



DRIVER'S INSTRUMENT PANEL (DIP)
DRIVER'S MASTER PANEL (DMP)
HULL POWER DISTRIBUTION BOX (HDB)

Component Locator



CIRCUIT BREAKERS 1
TURRET NETWORKS BOX (TNB) 14

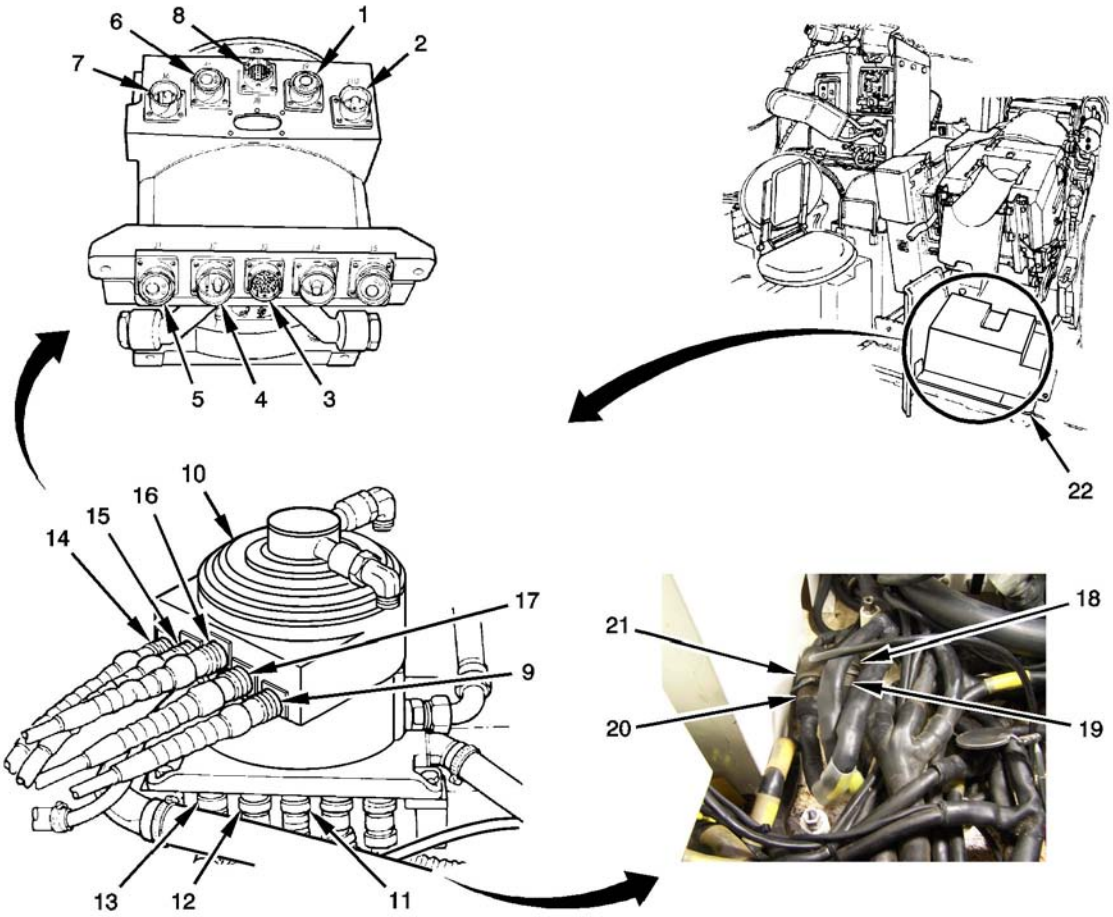
Harness Connector	Connects To	Item
1W100-9/P5 OR		
1W501-P5	TNB-J13	10
1W101-9/P2 OR		
* 1W118-9/P2	TNB-J11	7
1W102-2/P1 OR		
1W102-9/P1	TNB-J8	11
1W104-P1	TNB-J9	6
1W105-9/P1 OR		
1W117-9/P1	TNB-J10	8

Harness Connector	Connects To	Item
1W106-P1	TNB-J2	2
1W107-9/P1	TNB-J4	3
1W200-9/P1	TNB-J5	12
1W200-9/P15	TNB-J14	9
1W201-9/P1	TNB-J6	4
1W202-9/P1	TNB-J7	5
1W203-9/P1	TNB-J3	13
	TEST 1 (TJ1)	15

To gain access to items 1 thru 14, remove guard (16) and install guard when troubleshooting is complete. Refer to TM 9-2350-264-20-2.

* Used on vehicles with Driver's Hatch Interlock (DHI).

Component Locator



HULL/TURRET SLIPRING (H/TSR) 12

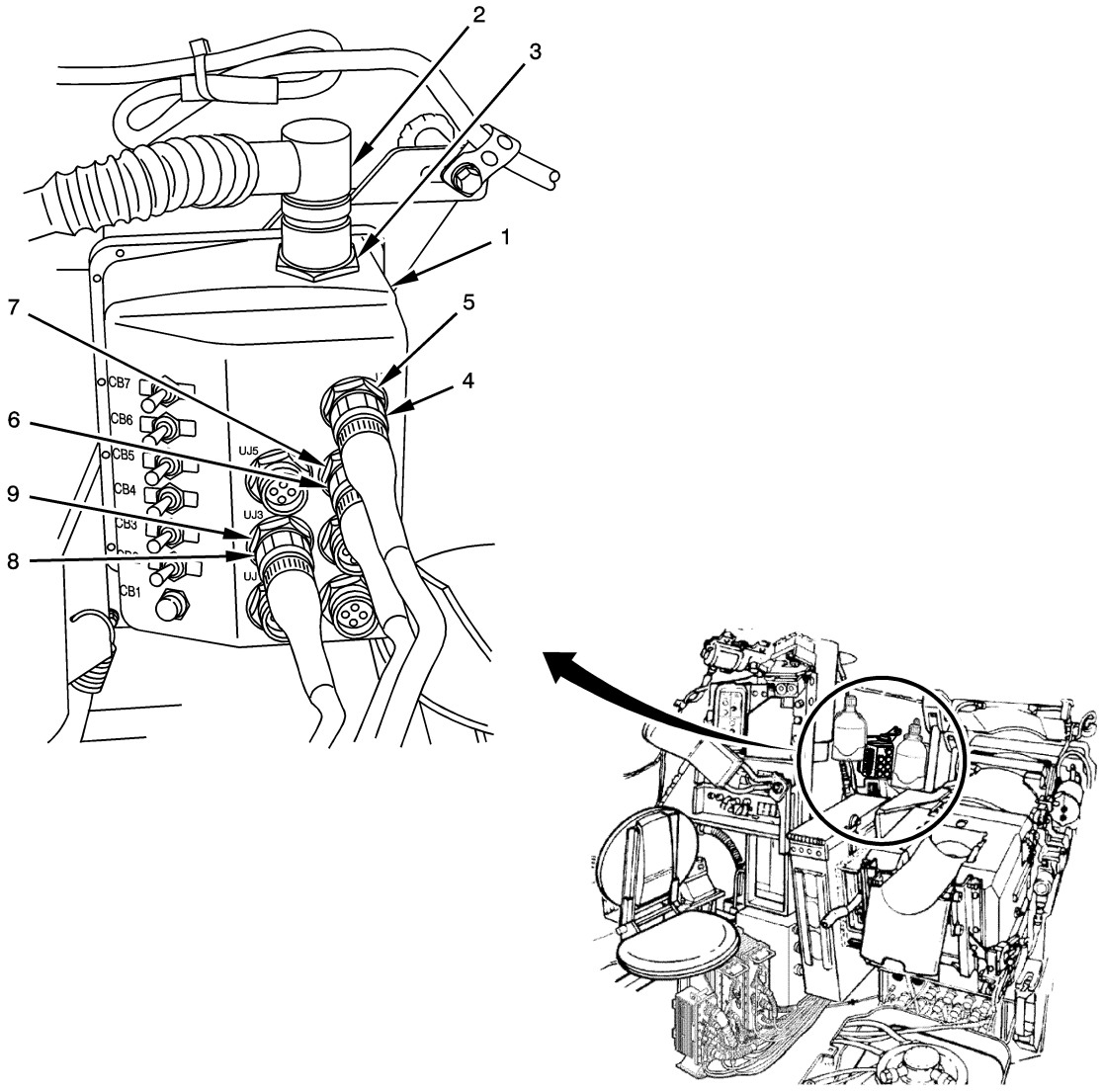
Harness Connector	Item	Connects To	Item	Harness Connector	Item	Connects To	Item
1W100-9/P1 OR				1W101-9/P1 OR			
1W501-P1	21	1W501-TUSK/J2	20	*1W118-9/P1	16	H/TSR-J8	8
1W100-9/P2 OR				2W102-P2	13	H/TSR-J1	5
1W501-P2	9	H/TSR-J10	2	2W102-P3	12	H/TSR-J2	4
1W100-9/P3 OR				2W109-9/P1 OR			
1W501-P3	12	H/TSR-J9	1	*2W120-9/P9	11	H/TSR-J3	3
1W100-9/P4 OR				*2W109-9/P1	28	*2W120-9/J2	29
1W501-P4	18	1W501-TUSK/J1	19	1W501-TUSK/P2	15	H/TSR-J7	6
				1W501-TUSK/P3	14	H/TSR-J6	7

To gain access to items 1, 2, 7 thru 10, and 14 thru 17, remove slipring access cover (1) and install cover when troubleshooting is complete. Refer to TM 9-2350-264-20-2.

To gain access to items 3 thru 5, 11 thru 13, and 18 thru 21 through turret access door, traverse turret until main gun is centered over rear deck, and then lock turret; refer to TM 9-2350-264-10.

* Used on vehicles with Driver's Hatch Interlock (DHI).

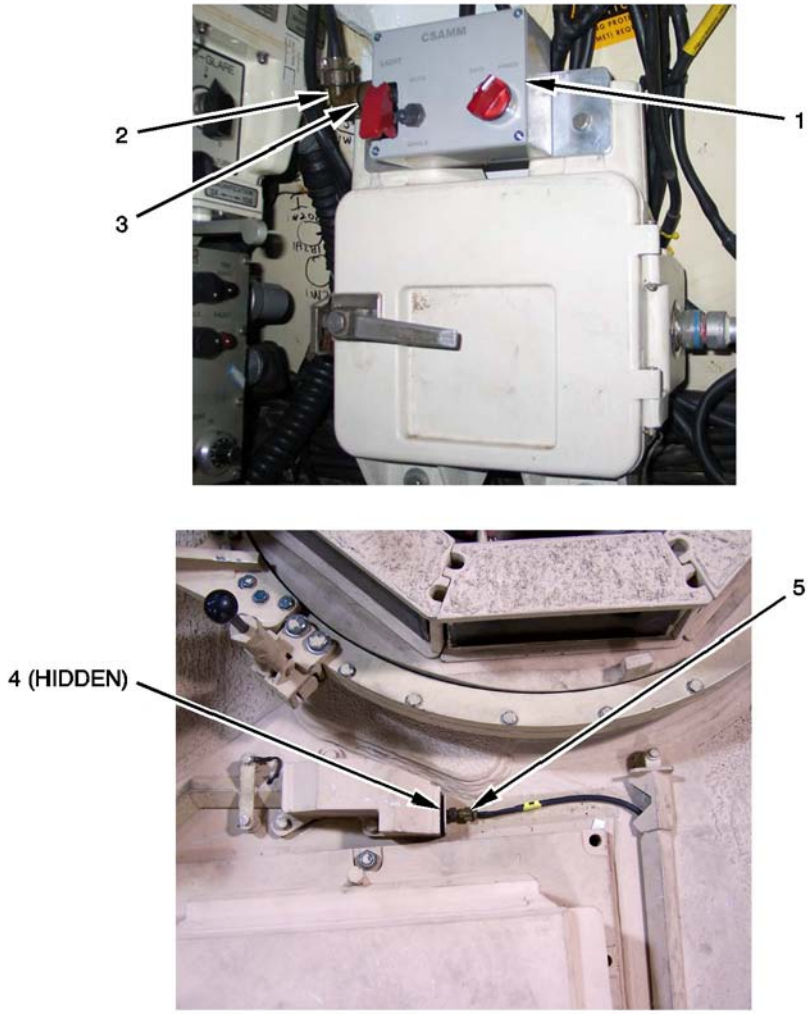
Component Locator



POWER DISTRIBUTION BOX (PDB) 1

Harness Connector	Item	Connects To	Item
1W501-TUSK/P1	2	PDB-J1	3
1W810-CSAMM/P1	4	PDB-UJ7	5
LTWS-W1/P1	6	PDB-UJ6	7
RTS-W1/P1	8	PDB-UJ3	9

Component Locator

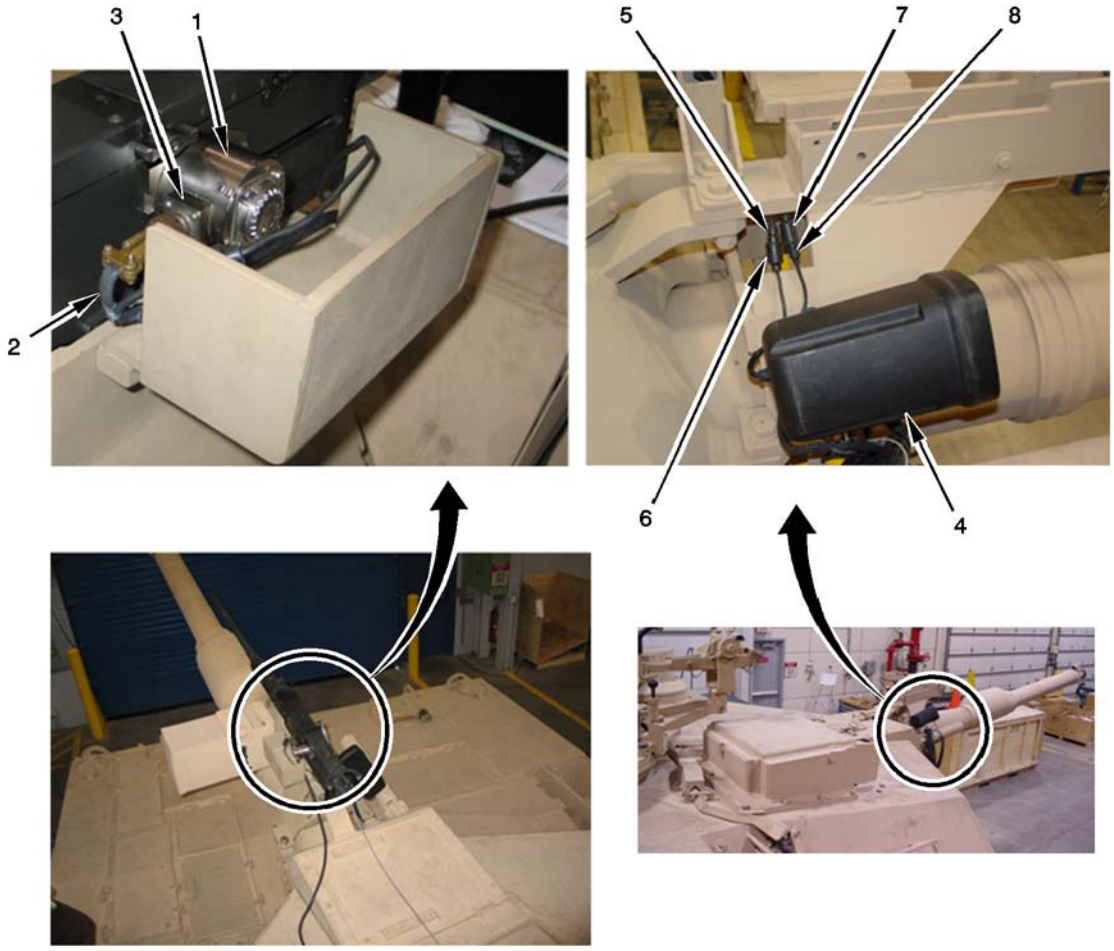


COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM)
RATE OF FIRE SYSTEM (RFS) CONTROL BOX 1

Harness Connector	Item	Connects To	Item
1W810-CSAMM/P2	2	RFS Control Box-J1	3
1W810-CSAMM/J1	4	1W811-CSAMM/P2	5

To gain access to items 4 and 5, remove cable guard bracket (page 5-40, step 1) and install bracket (page 5-41, step 2) when troubleshooting is completed.

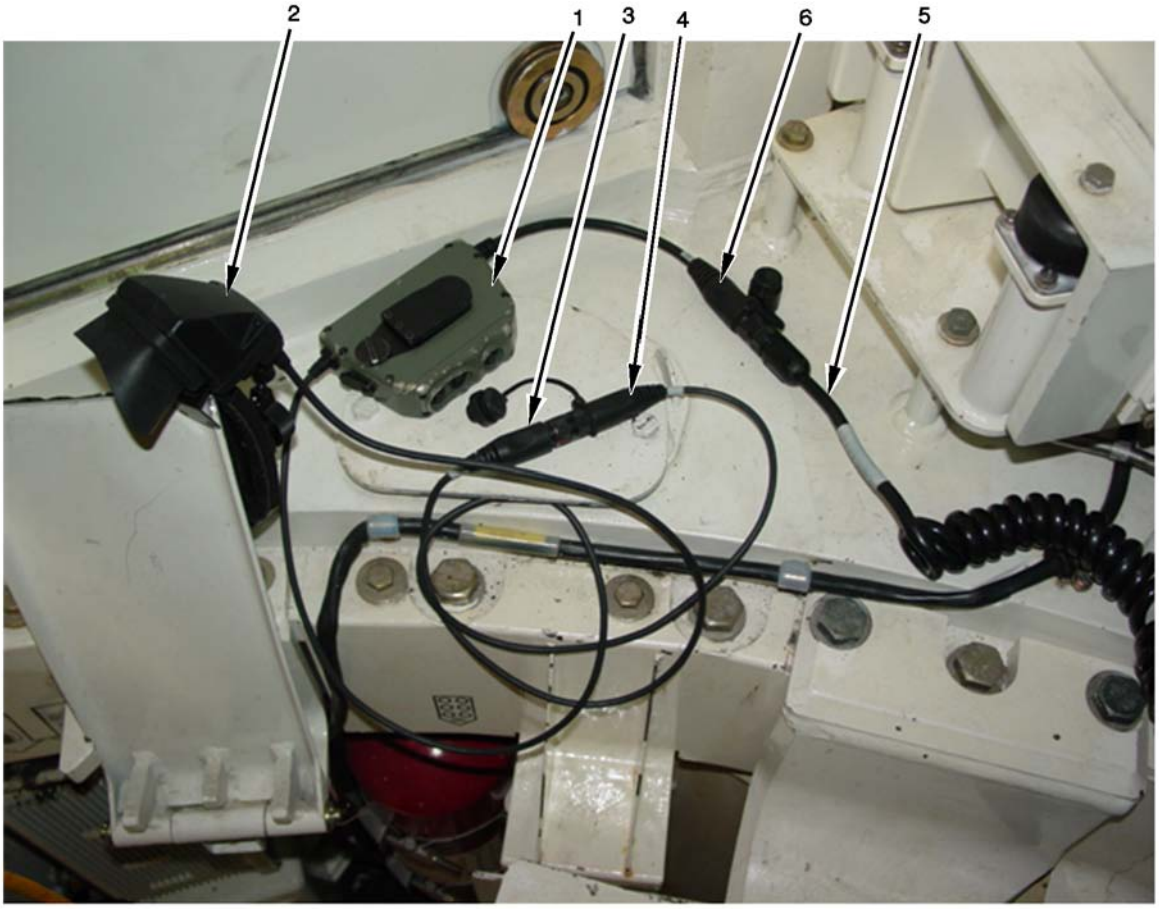
Component Locator



COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) GUN SOLENOID (GUN SOL) 1
COUNTER SNIPER/ANTI-MATERIEL GUN MOUNT (CSAMM) SPOTLIGHT 4

Harness Connector	Item	Connects To	Item
1W810-CSAMM/P1	2	GUN SOL-J1	3
1W810-CSAMM/+	5	Spotlight +	6
1W810-CSAMM/-	7	Spotlight -	8

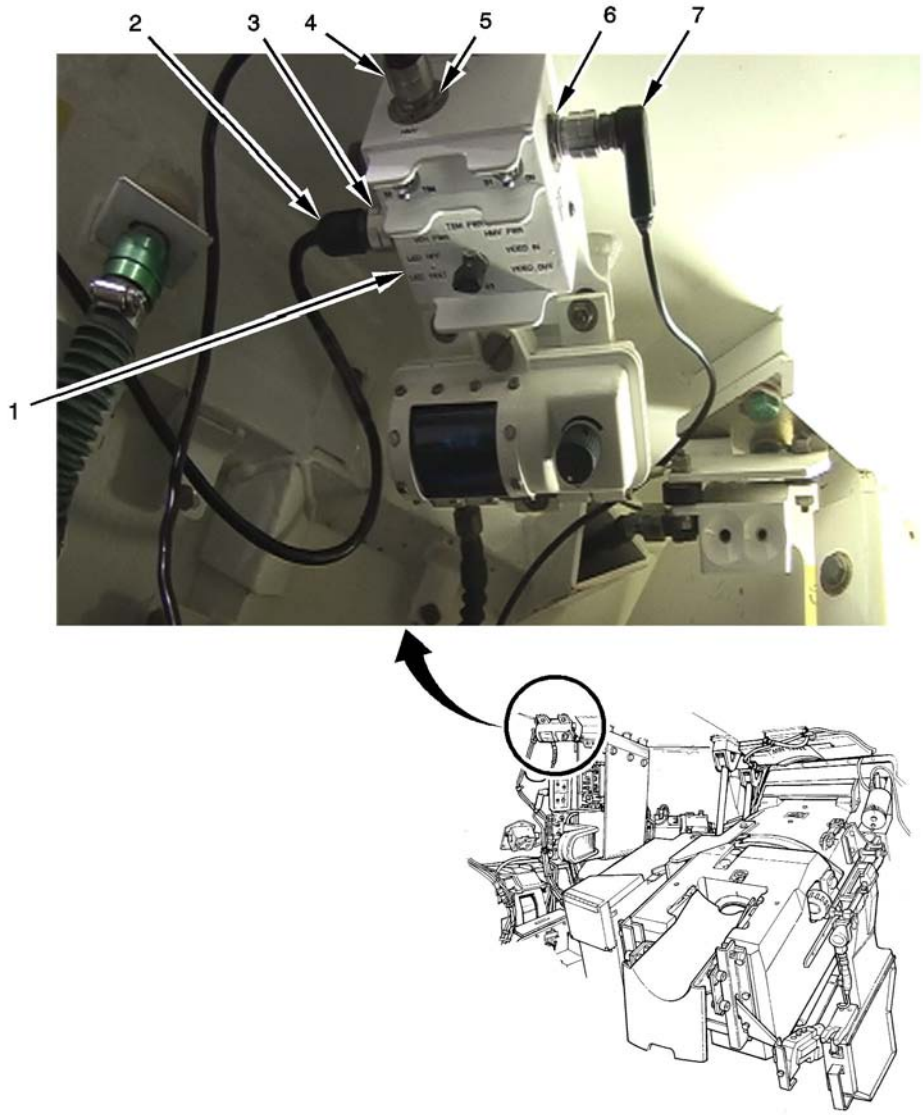
Component Locator



LOADER'S THERMAL WEAPON SIGHT (LTWS)
DISPLAY CONTROL MODULE (DCM) 1
HELMET MOUNTED DISPLAY (HMD) 2

Harness Connector	Item	Connects To	Item
HMD-P1	3	LTWS DCM-J1	4
LTWS-W3/P2	5	LTWS DCM-J2	6

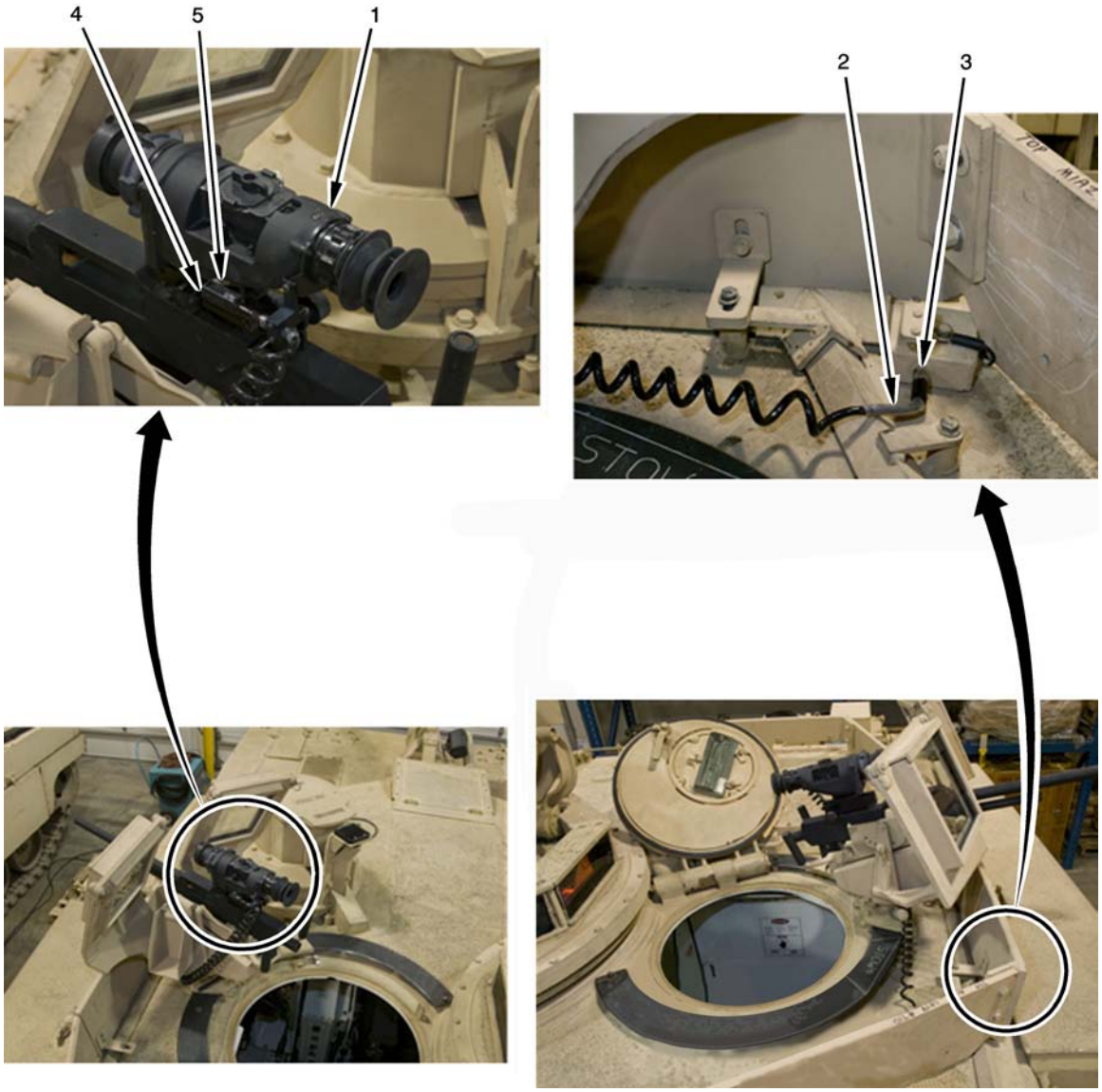
Component Locator



LOADER'S THERMAL WEAPON SIGHT (LTWS)
VEHICLE POWER ADAPTER (VPA) 1

Harness Connector	Item	Connects To	Item
LTWS-W1/P2	7	LTWS VPA-J1	6
LTWS-W2/P1	2	LTWS VPA-J2	3
LTWS-W3/P1	4	LTWS VPA-J3	5

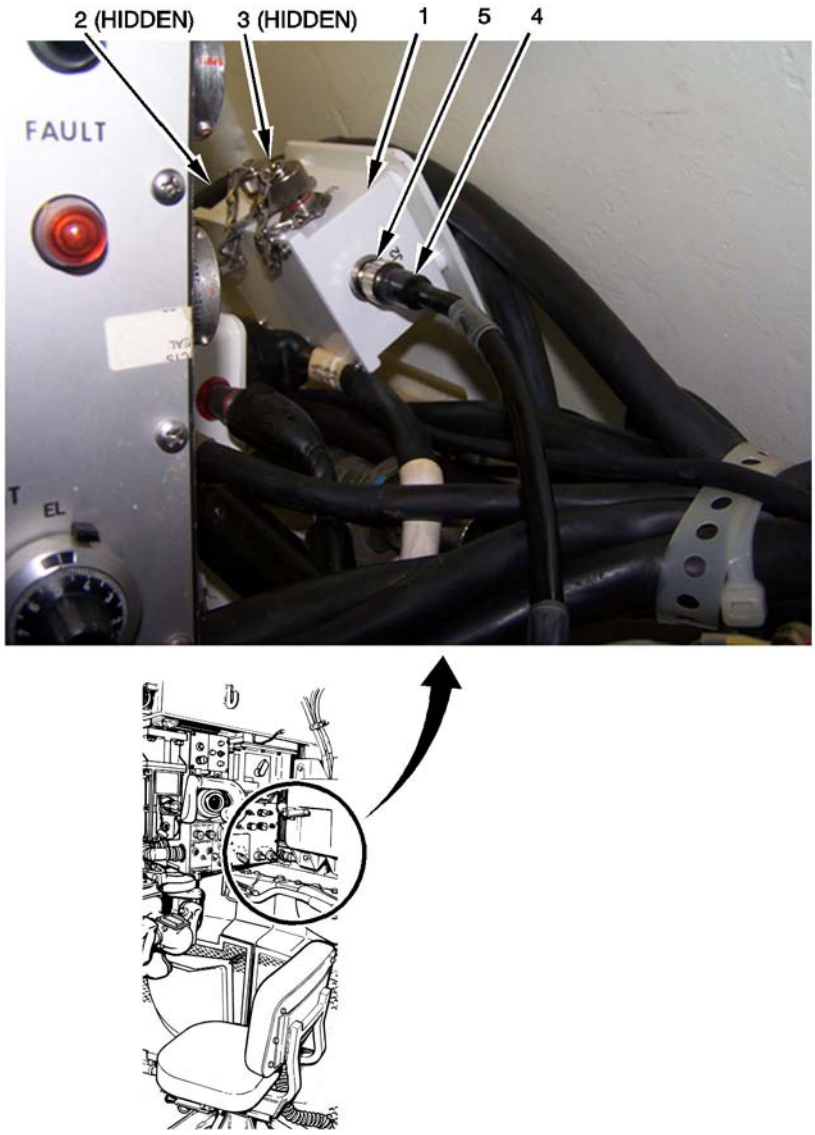
Component Locator



LOADER'S THERMAL WEAPON SIGHT (LTWS)
THERMAL SIGHT MODULE (TSM) 1

Harness Connector	Item	Connects To	Item
LTWS-W4/P1	2	LTWS-W2/P2	3
LTWS-W4/P2	4	LTWS TSM-J1	5

Component Locator

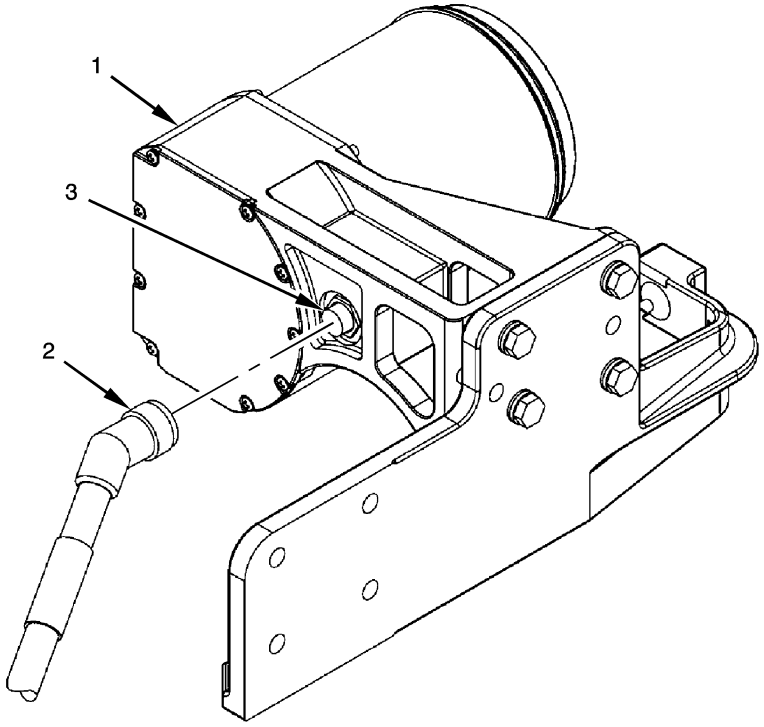


REMOTE THERMAL SIGHT (RTS) POWER FILTER MODULE (PFM) 1

Harness Connector	Item	Connects To	Item
RTS-W1/P2	2	RTS PFM-J1	3
RTS-W2/P1	4	RTS PFM-J2	5

Harnesses have been removed for clarity.

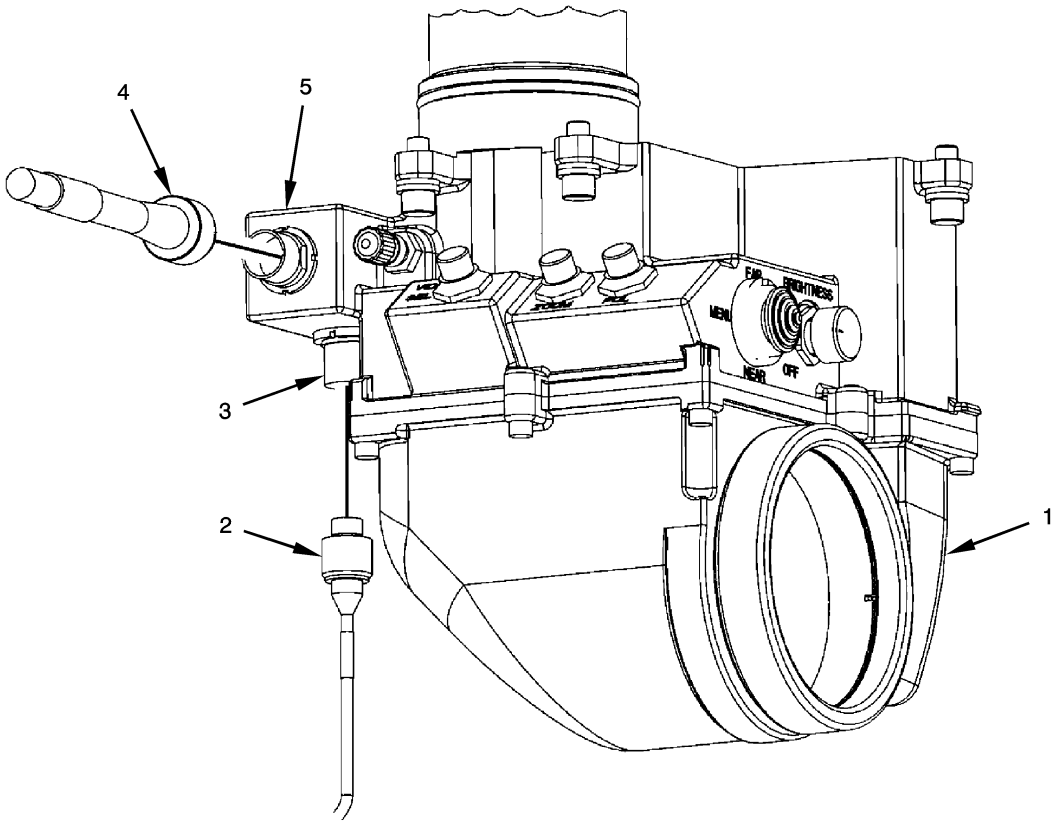
Component Locator



REMOTE THERMAL SIGHT (RTS) THERMAL SIGHT MODULE (TSM) 1

Harness Connector	Item	Connects To	Item
RTS-W3/P2	2	RTS TSM-J1	3

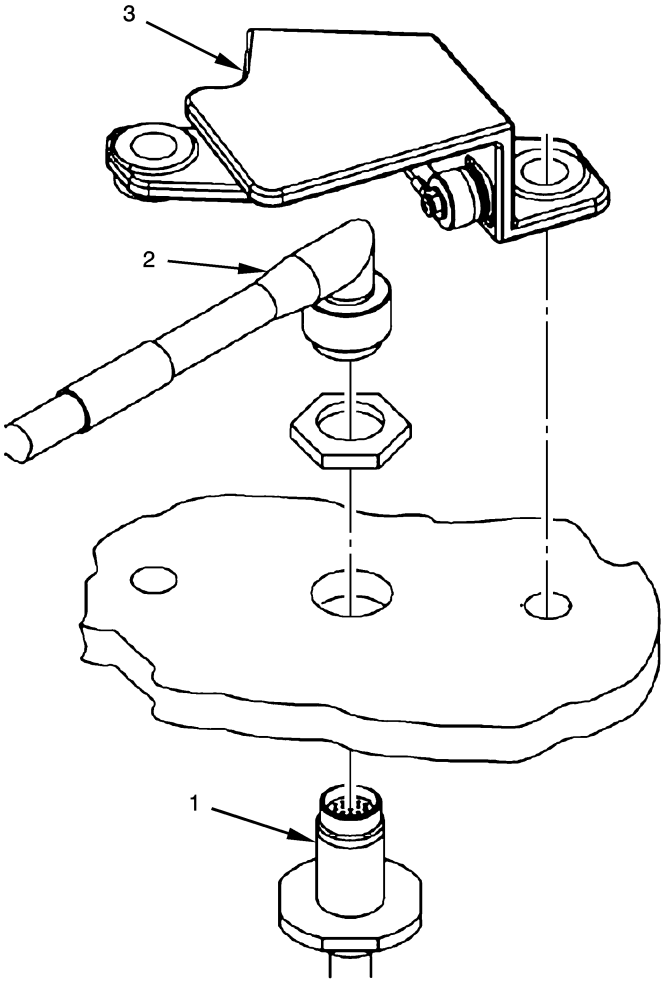
Component Locator



REMOTE THERMAL SIGHT (RTS) DISPLAY CONTROL MODULE (DCM) 1

Harness Connector	Item	Connects To	Item
RTS-W2/P2	2	RTS DCM-J1	3
RTS-W4/P2	4	RTS DCM-J2	5

Component Locator

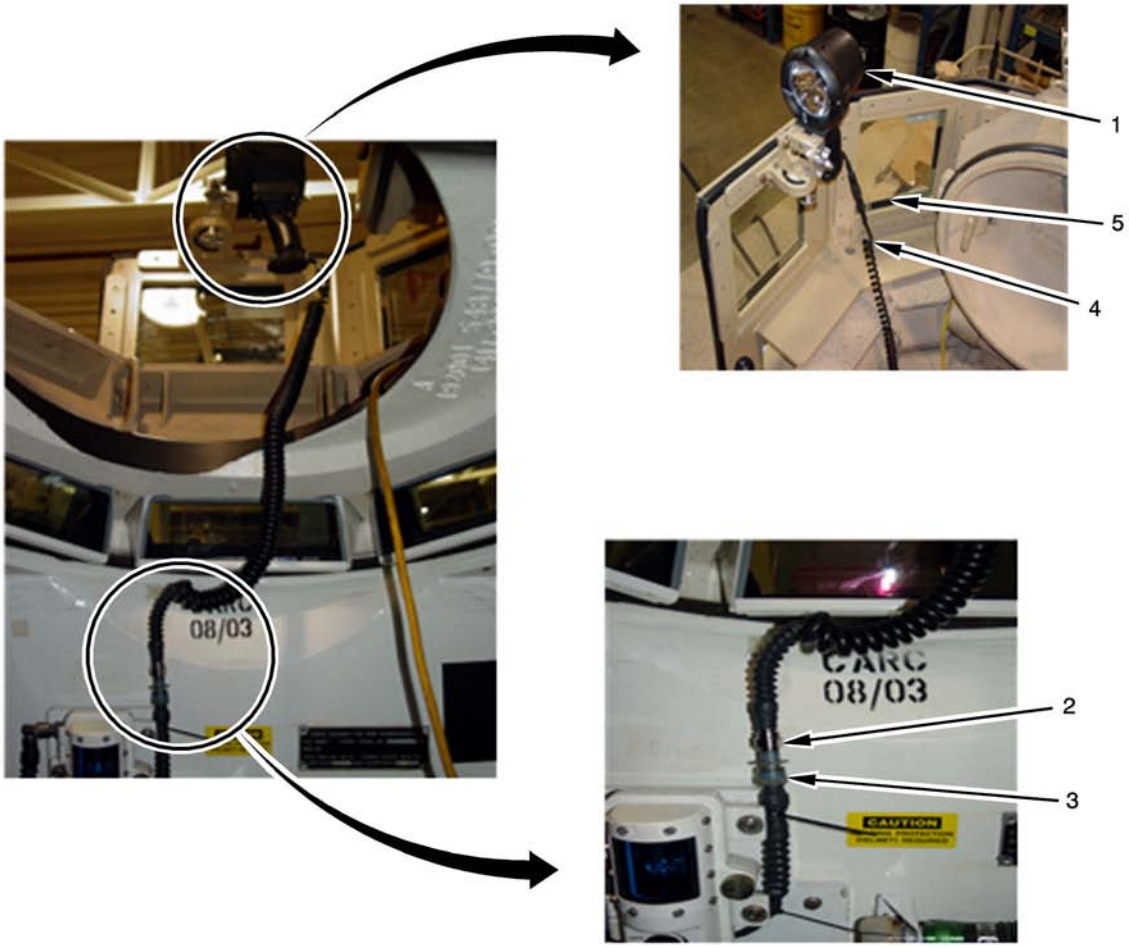


REMOTE THERMAL SIGHT (RTS)

Harness Connector	Item	Connects To	Item
RTS-W4/P1	1	RTS-W3/P1	2

To gain access to items 1 and 2 (located on the turret roof), remove cover (3) and install cover when troubleshooting is completed (page 5-32).

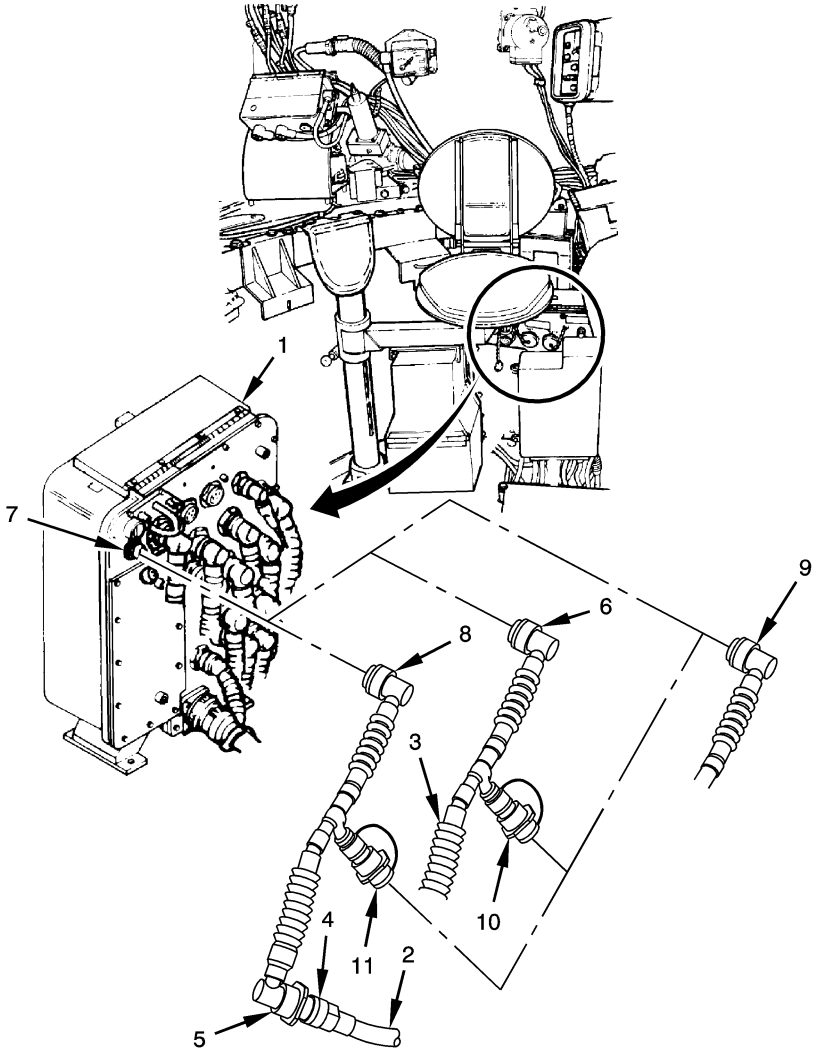
Component Locator



COMMANDER'S SPOTLIGHT 1

Harness Connector	Item	Connects To	Item	Harness Connector	Item	Connects To	Item
1W816-SPOTLIGHT/P1	2	1W815-SPOTLIGHT/J1	3	1W816-SPOTLIGHT/P2	4	Commander's Spotlight-J1	5

Component Locator



TURRET NETWORKS BOX (TNB)/REDESIGNED TURRET NETWORKS BOX (RTNB) 1*
1W215-EF WITHOUT INTEGRATED UTILITY JACK (P/N 12473117) 2**
1W215-EF WITH INTEGRATED UTILITY JACK (P/N 12489527) 3**

Harness Connector	Item	Connects To	Item	Harness Connector	Item	Connects To	Item
1W215-EF/P1[1]	4	1W222-EF/J2	5	1W815-SPOTLIGHT/P1	9	TNB-UJ1 or RTNB-UJ1	7
1W215-EF/P1[2]	6	TNB-UJ1 or RTNB-UJ1	7	1W815-SPOTLIGHT/P1	9	1W215-EF/J2[2]	10
1W222-EF/P1	8	TNB-UJ1 or RTNB-UJ1	7	1W815-SPOTLIGHT/P1	9	1W222-EF/J2[1]	11

* TNB shown.

** Multiple connector configurations are shown. Check the part number of wiring harness 1W215-EF in order to determine which configuration your vehicle uses. The part number is located at the P1 connector.

[1] Vehicles equipped with wiring harness 1W215-EF P/N 12473117.

[2] Vehicles equipped with wiring harness 1W215-EF P/N 12489527.

CHAPTER 5

UNIT MAINTENANCE

CHAPTER INDEX

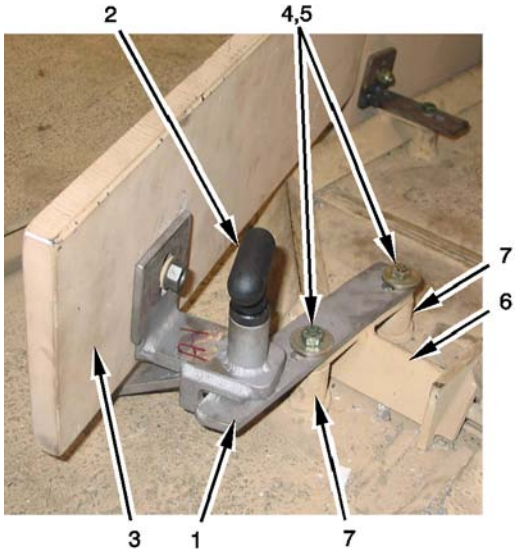
CHAPTER INDEX (Continued)

MOUNTING BRACKET REPLACEMENT (Sheet 1 of 1)

TOOLS: Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)

REMOVAL:

1. REMOVE MOUNTING BRACKET (1).
   a. Pull quick release pin (2) and move guard (3) away from mounting bracket (1).
   b. Remove two screws (4) and washers (5) securing mounting bracket (1) and cable cover (6) to turret standoffs (7).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



INSTALLATION:

INSTALL MOUNTING BRACKET (1).

a. Aline mounting bracket (1) with cable cover (6) and turret standoffs (7).
b. Loosely install two screws (4) and washers (5) into turret standoffs (7).
c. Aline mounting bracket (1) by moving guard (3) toward mounting bracket (1) and inserting quick release pin (2) into mounting bracket (1).
d. Tighten two screws (4) to secure mounting bracket (1) and cable cover (6).

End of Task

3w7083

LEFT FRONT GUARD AND BRACKET REPLACEMENT (Sheet 1 of 2)

TOOLS: Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)

SUPPLIES: Self-locking nut (P/N 12387349-35) (2 required)
Self-locking nut (P/N 12387349-39) (2 required)

EQUIPMENT CONDITION: Right front guard and bracket removed (page 5-9)

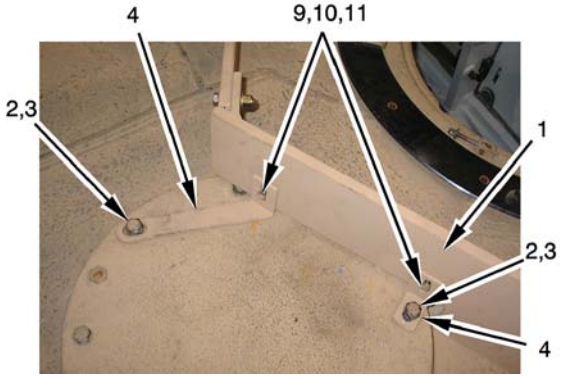
REMOVAL:

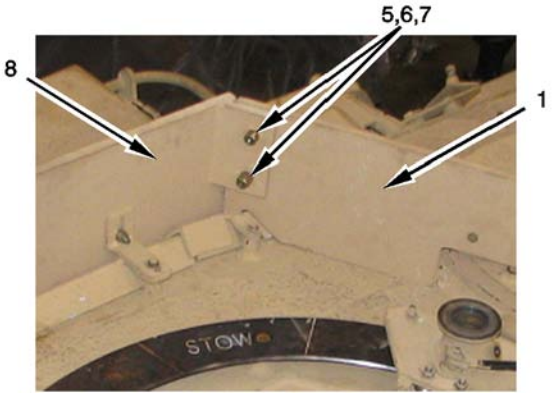
1. REMOVE LEFT FRONT GUARD (1).
   a. Remove two screws (2) and washers (3) securing brackets (4) to top of turret.
   b. Remove two screws (5), two self-locking nuts (6), and four washers (7) securing left front guard (1) to left side guard (8).

NOTE

If only removing left front guard (1) for access, skip next step.

2. REMOVE TWO SCREWS (9), TWO SELF-LOCKING NUTS (10), AND FOUR WASHERS (11) SECURING BRACKETS (4) TO LEFT FRONT GUARD (1).
3. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.





Go on to Sheet 2

3w7085

LEFT FRONT GUARD AND BRACKET REPLACEMENT (Sheet 2 of 2)

INSTALLATION:

NOTE

If brackets (1) were not removed from left front guard (2), go to step 2.

1. LOOSELY INSTALL TWO SCREWS (3), TWO NEW SELF-LOCKING NUTS (4), AND FOUR WASHERS (5) SECURING BRACKETS (1) TO LEFT FRONT GUARD (2).

2. INSTALL LEFT FRONT GUARD (2).

   a. Loosely install two screws (6), two new self-locking nuts (7), and four washers (8) to secure left front guard (2) to left side guard (9).

   b. Loosely install two screws (10) and washers (11) to secure brackets (1) to top of turret.

   c. Tighten two screws (6) and self-locking nuts (7) securing left front guard (2) to left side guard (9).

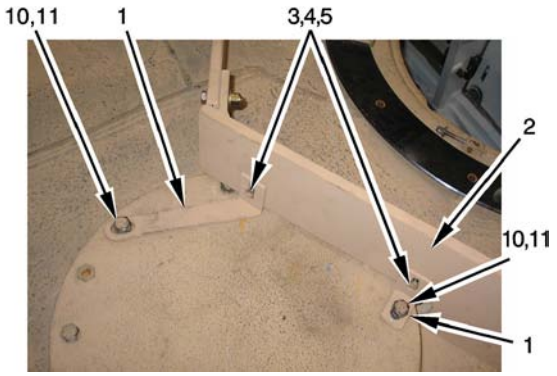
NOTE

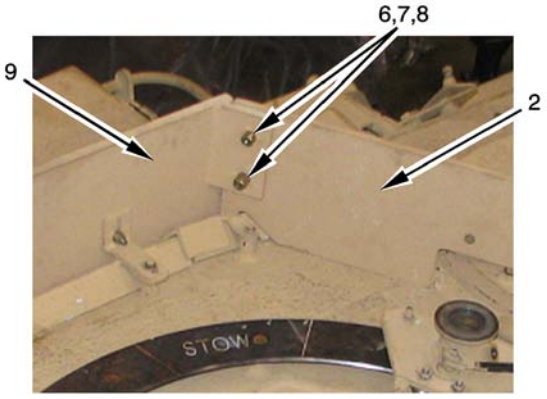
If brackets (1) were not removed from left front guard (2), go to step e.

   d. Tighten two screws (3) and self-locking nuts (4) securing brackets (1) to left front guard (2).

   e. Tighten two screws (10) to secure brackets (1) to top of turret.

3. INSTALL RIGHT FRONT GUARD AND BRACKET (PAGE 5-9).





End of Task

3w7093

LEFT SIDE GUARD OR BRACKETS OR QUICK RELEASE PIN BRACKET REPLACEMENT (Sheet 1 of 3)

TOOLS: Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)

SUPPLIES: Self-locking nut (P/N 12387349-35) (as required)

PERSONNEL: Two

EQUIPMENT CONDITION: Left front guard and bracket removed (page 5-4)

REMOVAL:

WARNING

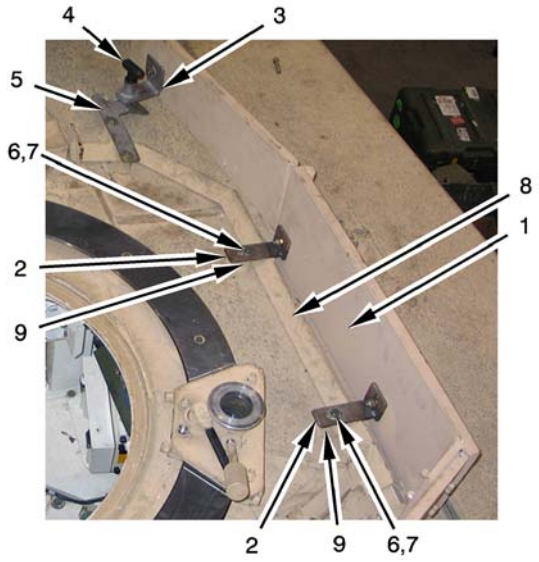
WARNING

Left side guard (1) weighs 83 pounds (38 kg). To avoid injury, two soldiers are needed to remove left side guard (1) from turret.

NOTE

If removing left side guard (1), go to step 1. If removing brackets (2) or quick release pin bracket (3), go to step 2.

1. REMOVE LEFT SIDE GUARD (1).
   a. Pull quick release pin (4) to release rear of left side guard (1) from mounting bracket (5).
   b. With a second person supporting left side guard (1), remove two screws (6) and washers (7) securing brackets (2) and cable cover (8) to turret standoffs (9).
   c. With the help of a second person, fold over left side guard (1) and carefully turn outboard side of left side guard (1) toward the ground and remove left side guard (1) from turret.



Go on to Sheet 2

3w7081

LEFT SIDE GUARD OR BRACKETS OR QUICK RELEASE PIN BRACKET REPLACEMENT (Sheet 2 of 3)

NOTE

If replacing brackets (1) or quick release pin bracket (2), go to next step.

2. REMOVE BRACKETS (1) OR QUICK RELEASE PIN BRACKET (2) FROM LEFT SIDE GUARD (3).

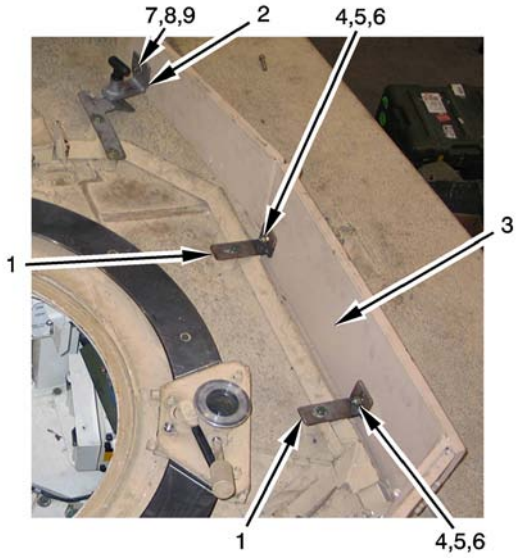
NOTE

If removing brackets (1), do step a. If removing quick release pin bracket (2), do step b.

a. Remove two screws (4), two self-locking nuts (5), and four washers (6) securing brackets (1) to left side guard (3).

b. Remove one screw (7), one self locking nut (8), and two washers (9) securing quick release pin bracket (2) to left side guard (3).

3. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



INSTALLATION:

NOTE

If installing brackets (1) or quick release pin bracket (2), do step 1. If installing left side guard (3), do step 2.

1. INSTALL BRACKETS (1) OR QUICK RELEASE PIN BRACKET (2) ONTO LEFT SIDE GUARD (3).

NOTE

If installing brackets (1), do step a. If installing quick release pin bracket (2), do step b.

a. Loosely install two screws (4), two new self-locking nuts (5), and four washers (6) to secure brackets (1) to left side guard (3).

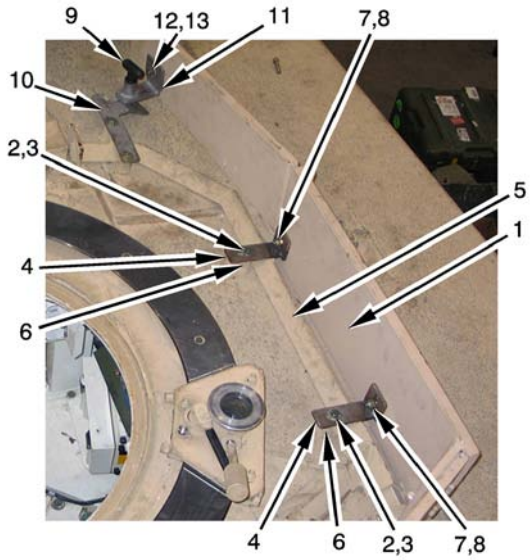
b. Loosely install one screw (7), one new self-locking nut (8), and two washers (9) to secure quick release pin bracket (2) to rear of left side guard (3).

Go on to Sheet 3

3w7094

LEFT SIDE GUARD OR BRACKETS OR QUICK RELEASE PIN BRACKET REPLACEMENT (Sheet 3 of 3)

2. INSTALL LEFT SIDE GUARD (1).
   a. With the help of a second person, carefully position left side guard (1) onto turret and loosely install two screws (2) and washers (3) into brackets (4), cable cover (5), and turret standoffs (6) to hold left side guard (1) in place.
   b. Tighten two screws (2) to secure left side guard (1) and cable cover (5) to turret standoffs (6).
   c. If brackets (4) were removed, tighten two screws (7) and new self-locking nuts (8) to secure brackets (4) to left side guard (1).
   d. Connect quick release pin (9) to secure rear of left side guard (1) to mounting bracket (10) and correctly position quick release pin bracket (11) on left side guard (1).
   e. If quick release pin bracket (11) was removed, tighten screw (12) and new self-locking nut (13) to secure quick release pin bracket (11) to left side guard (1).
3. INSTALL LEFT FRONT GUARD AND BRACKET (PAGE 5-5).



End of Task 3w7095

RIGHT FRONT GUARD REPLACEMENT (Sheet 1 of 1)

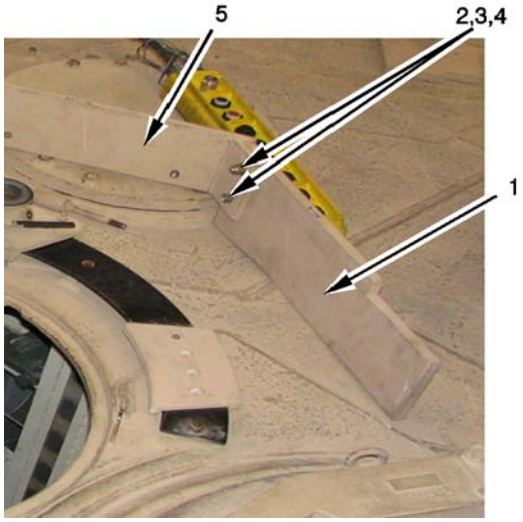
TOOLS: Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)

SUPPLIES: Self-locking nut (P/N 12387349-39) (2 required)

PERSONNEL: Two

REMOVAL:

1. REMOVE RIGHT FRONT GUARD (1).
   a. With a second person holding right front guard (1) in place, remove two screws (2), two self-locking nuts (3), and four washers (4) securing right front guard (1) to left front guard (5).
   b. Carefully remove right front guard (1) from turret.
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



INSTALLATION:

INSTALL RIGHT FRONT GUARD (1).

a. With the assistance of a second person, position right front guard (1) to left front guard (5).
b. With a second person holding right front guard (1) in place, install two screws (2), two new self-locking nuts (3), and four washers (4) to secure right front guard (1) to left front guard (5).

End of Task

3w7087

MECHANICAL GUN STOPS REPLACEMENT (Sheet 1 of 1)

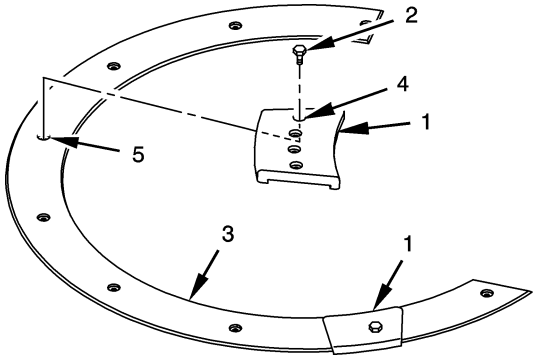
TOOLS: Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)

REMOVAL:

NOTE

Use this task to replace either stop. One is shown.

1. REMOVE MECHANICAL GUN STOP (1).
   a. Remove screw (2) securing mechanical gun stop (1) and track (3) to turret.
   b. Remove mechanical gun stop (1) from track (3).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



INSTALLATION:

INSTALL MECHANICAL GUN STOP (1).

a. Aline hole (4) of mechanical gun stop (1) with hole (5) in track (3).
b. Install screw (2) to secure mechanical gun stop (1) and track (3) to turret.

End of Task 3w7088

SHIELD ASSEMBLY REPLACEMENT (Sheet 1 of 1)

TOOLS: Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)

PERSONNEL: Two

EQUIPMENT CONDITION: Ejection guide, pin assemblies, and machinegun cradle removed (TM 9-2350-24-20-2)

REMOVAL:

WARNING

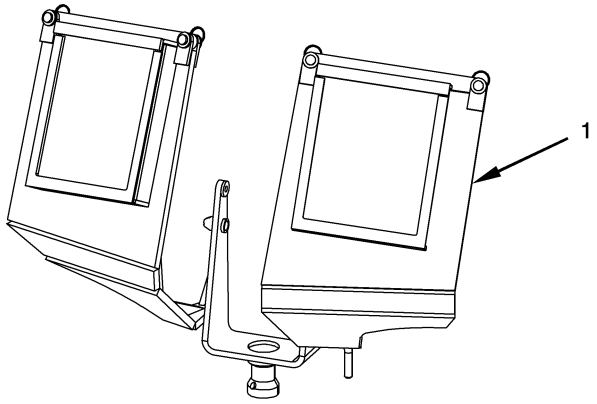
WARNING

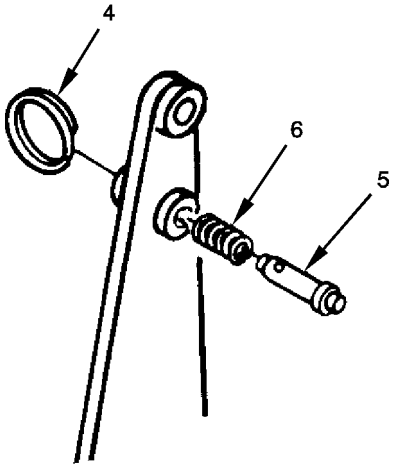
Shield assembly (1) weighs 105 pounds (48 kg). To avoid injury, two soldiers are needed to remove shield assembly (1) from turret.

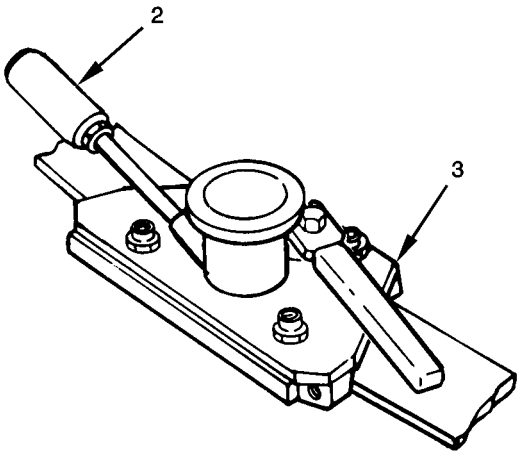
1. REMOVE SHIELD ASSEMBLY (1).
   a. Loosen thumbscrew (2) securing shield assembly (1) on skate (3).
   b. With a second person assisting, lift shield assembly (1) out of skate (3).
   c. Remove pull ring (4) from pin (5). Remove pin (5) and helical spring (6) from shield assembly (1).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.

INSTALLATION:

1. INSTALL SHIELD ASSEMBLY (1).
   a. Insert pin (5) with helical spring (6) into shield assembly (1). Fasten pull ring (4) to pin (5).
   b. With a second person assisting, lower shield assembly (1) into skate (3) and tighten thumbscrew (2).
2. INSTALL EJECTION GUIDE, PIN ASSEMBLIES, AND MACHINEGUN CRADLE (TM 9-2350-264-20-2).







End of Task

3w7079

VEHICLE POWER ADAPTER (VPA) AND DOME LIGHT REPLACEMENT (Sheet 1 of 2)

TOOLS: Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)
Torque screwdriver, 0-25 in-lb (NSN 5120-00-568-4742)

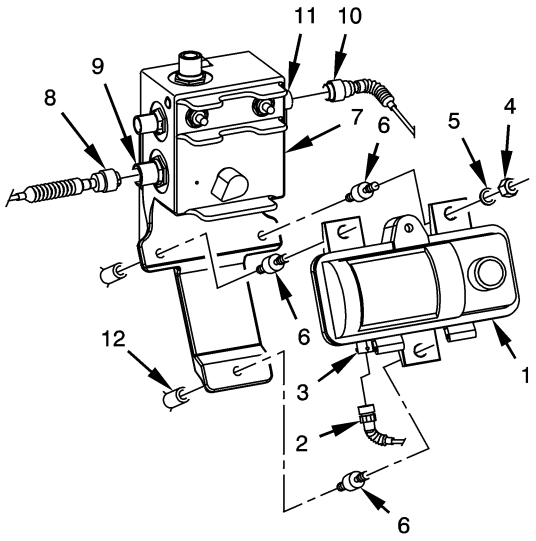
EQUIPMENT CONDITION: Tank power disconnected (TM 9-2350-264-20-1)

REMOVAL:

NOTE

If removing only the loader's dome light, skip step 2.

1. REMOVE LOADER'S DOME LIGHT (1).
   a. Remove electrical connector (2) from dome light receptacle J1 (3).
   b. Remove three nuts (4) and washers (5) from dome light (1) and mounts (6).
   c. Remove dome light (1) from mounts (6).
2. REMOVE VEHICLE POWER ADAPTER (VPA) (7).
   a. Remove W2 cable connector P1 (8) from VPA receptacle J2 (9).
   b. Remove W1 cable connector P2 (10) from VPA receptacle J1 (11).
   c. Install two nuts (4), removed in step 1b, on mount (6). Tighten nuts (4) against each other. Turn bottom nut (4) counterclockwise to remove mount (6) from VPA (7) and standoff (12). Remove two nuts (4) from mount (6).
   d. Repeat step 2c for other two mounts (6).
   e. Remove VPA (7).
3. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



Go on to Sheet 2

3w7108

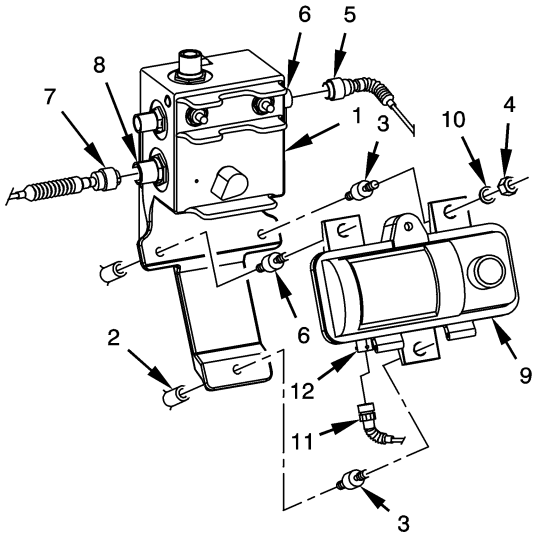
VEHICLE POWER ADAPTER (VPA) AND DOME LIGHT REPLACEMENT (Sheet 2 of 2)

INSTALLATION:

NOTE

If only the loader's dome light was removed, skip step 1.

1. INSTALL VEHICLE POWER ADAPTER (VPA) (1).
   a. Aline VPA (1) to standoffs (2).
   b. Loosely install three mounts (3) to VPA (1) and standoffs (2).
   c. Install two nuts (4) on mount (3). Tighten nuts (4) against each other. Turn top nut (4) clockwise to install mount (3) to VPA (1) and standoff (3). Remove nuts (4) from mount (3).
   d. Repeat step 1c for other two mounts (3).
   e. Install W1 cable connector P2 (5) to VPA receptacle J1 (6).
   f. Install W2 cable connector P1 (7) to VPA receptacle J2 (8).
2. INSTALL LOADER'S DOME LIGHT (9).
   a. Aline dome light (9) to mounts (3).
   b. Install three nuts (4) and washers (10) on dome light (9) and mounts (3).
   c. Torque nuts (4) between 10-12 lb-in (1.2-1.3 N•m).
   d. Install electrical connector (11) to dome light receptacle J1 (12).
3. CONNECT TANK POWER (TM 9-2350-264-20-1).



End of Task

3w7108

W1 POWER CABLE REPLACEMENT (Sheet 1 of 1)

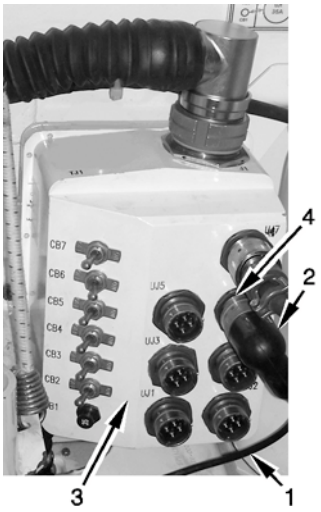
TOOLS: Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)

SUPPLIES: Electrical tiedown strap (NSN 5975-00-451-5001) (as required)

EQUIPMENT CONDITION: Tank power disconnected (TM 9-2350-264-20-1)

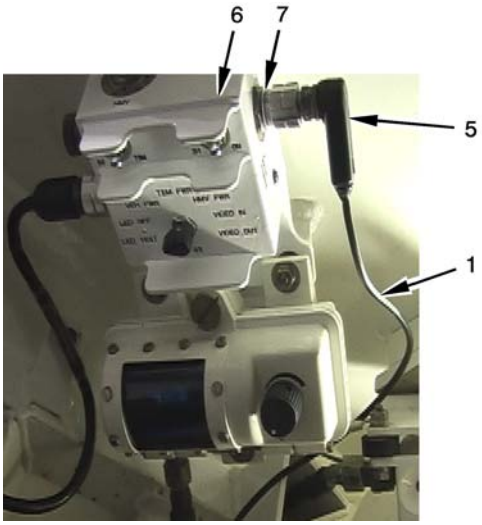
REMOVAL:

1. REMOVE LOADER'S THERMAL WEAPON SIGHT (LTWS) POWER CABLE W1 (1).
   a. Remove LTWS cable W1 connector P1 (2) from power distribution box (3) receptacle UJ6 (4).
   b. Remove LTWS cable W1 connector P2 (5) from vehicle power adapter (6) receptacle J1 (7).
   c. Remove electrical tiedown straps retaining LTWS cable W1 (1).
   d. Remove LTWS power cable W1 (1).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



INSTALLATION:

1. INSTALL LTWS POWER CABLE W1 (1).
   a. Position LTWS power cable W1 (1).
   b. Install LTWS cable W1 connector P2 (5) to vehicle power adapter (6) receptacle J1 (7).
   c. Install LTWS cable W1 connector P1 (2) to power distribution box (3) receptacle UJ6 (4).
   d. Install electrical tiedown straps retaining LTWS cable W1 (1) as required.
2. CONNECT TANK POWER (TM 9-2350-264-20-1).



End of Task 3w7101

W2 CABLE ASSEMBLY REPLACEMENT (Sheet 1 of 2)

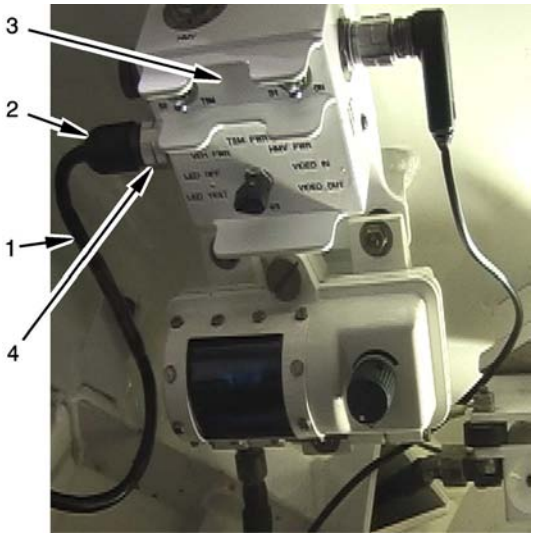
TOOLS: Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)
Industrial goggles (NSN 4240-00-269-7912)
Respirator (NSN 4240-00-022-2524)
Rubber gloves (NSN 8415-00-266-8675)

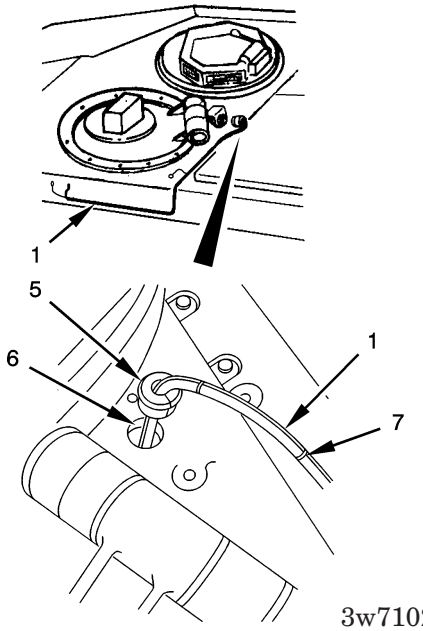
SUPPLIES: Electrical tiedown strap (NSN 5975-00-451-5001) (as required)
Sealing compound kit (NSN 8030-00-753-5005)
Wiping rag (NSN 7920-00-205-1711) (as required)

EQUIPMENT CONDITION: LAGS left front guard and bracket removed (page 5-4)
Mounting bracket removed (page 5-3)
Harness 1W110 small access cover removed (TM 9-2350-264-20-2)
Harness 1W110 right access cover removed (TM 9-2350-264-20-2)
Harness 1W110 long access cover removed (TM 9-2350-264-20-2)
Loader's thermal weapon sight (LTWS) turret harness guards removed (page 5-18)

REMOVAL:

1. REMOVE LOADER'S THERMAL WEAPON SIGHT (LTWS) CABLE ASSEMBLY W2 (1).
   a. Remove LTWS cable W2 connector P1 (2) from vehicle power adapter (3) receptacle J2 (4).
   b. Remove grommet (5) and sealing compound from turret hole (6).
   c. Remove electrical tiedown straps (7) retaining LTWS cable assembly W2 (1).
   d. Remove LTWS cable assembly W2 (1).
2. CLEAN OLD SEALING COMPOUND FROM TURRET HOLE (6) AND GROMMET (5).
3. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.





Go on to Sheet 2

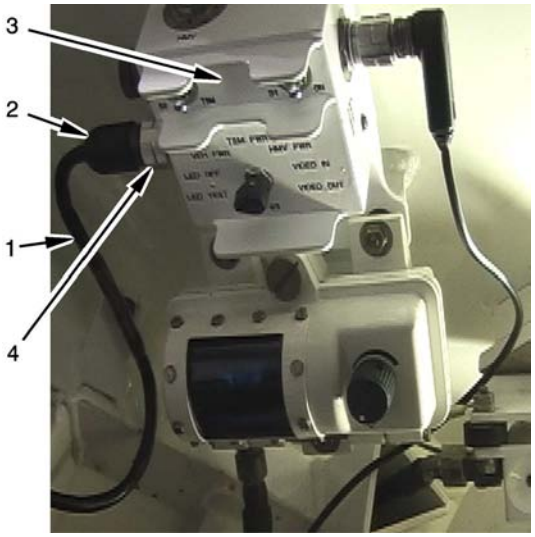
3w7102

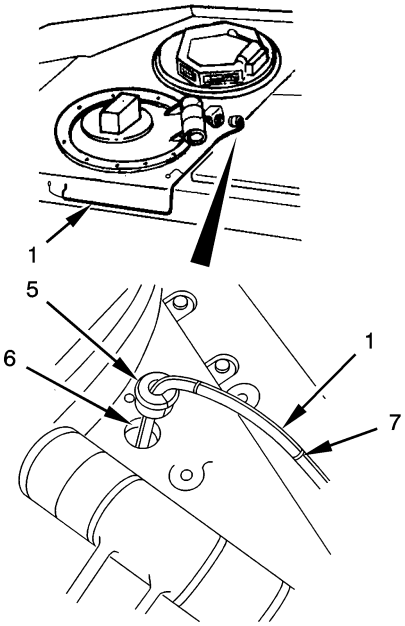
W2 CABLE ASSEMBLY REPLACEMENT (Sheet 2 of 2)

INSTALLATION:

WARNING

1. INSTALL LTWS CABLE ASSEMBLY W2 (1).
   a. Position LTWS cable assembly (1).
   b. Install LTWS cable W2 connector P1 (2) to vehicle power adapter (3) receptacle J2 (4).
   c. Install grommet (5) and sealing compound in turret hole (6).
   d. Install electrical tiedown straps (7) retaining LTWS cable assembly W2 (1) as required.
2. INSTALL LOADER'S THERMAL WEAPON SIGHT (LTWS) TURRET HARNESS GUARDS (PAGE 5-18).
3. INSTALL HARNESS 1W110 LONG ACCESS COVER (TM 9-2350-264-20-2).
4. INSTALL HARNESS 1W110 RIGHT ACCESS COVER (TM 9-2350-264-20-2).
5. INSTALL HARNESS 1W110 SMALL ACCESS COVER (TM 9-2350-264-20-2).
6. INSTALL MOUNTING BRACKET (PAGE 5-3).
7. INSTALL LAGS LEFT FRONT GUARD AND BRACKET (PAGE 5-5).





End of Task

3w7102

GUN CARRIAGE STRAIN RELIEF REPLACEMENT (Sheet 1 of 1)

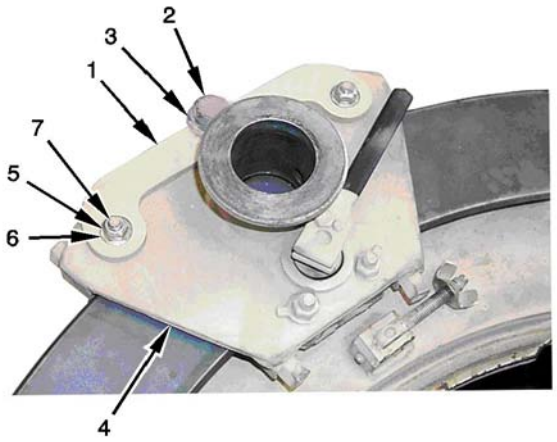
TOOLS: Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)

SUPPLIES: Self-locking nut (P/N 12387349-35) (2 required)

EQUIPMENT CONDITION: Turret locked (TM 9-2350-264-10)
Loader's armor gun shield (LAGS) assembly removed (page 5-11)

REMOVAL:

1. REMOVE GUN CARRIAGE STRAIN RELIEF (1).
   a. Remove bolt (2) and cable clamp (3) from skate assembly (4).
   b. Remove two self-locking nuts (5) and washers (6) from screws (7) and gun carriage strain relief (1).
   c. Remove gun carriage strain relief (1) from skate assembly (4).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



INSTALLATION:

1. INSTALL GUN CARRIAGE STRAIN RELIEF (1).
   a. Position gun carriage strain relief (1) on skate assembly (4).
   b. Install two new self-locking nuts (5) and washers (6) on screws (7).
2. TORQUE SELF-LOCKING NUTS (5) BETWEEN 432-475 LB-IN (49-53 N•m).
3. INSTALL BOLT (2) AND CABLE CLAMP (3) ON SKATE ASSEMBLY (4).
4. INSTALL LOADER'S ARMOR GUN SHIELD (LAGS) ASSEMBLY (PAGE 5-11).
5. UNLOCK TURRET LOCK (TM 9-2350-264-10).

End of Task 3w7107

TURRET HARNESS GUARDS REPLACEMENT (Sheet 1 of 1)

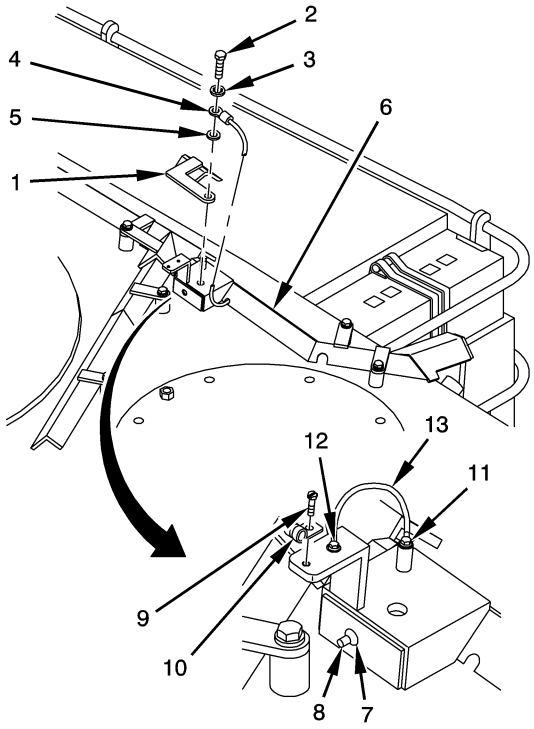
TOOLS: Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)
Electrical connector maintenance kit (P/N 5705498)
Wire brush (NSN 7920-00-291-5815)

SUPPLIES: Lockwasher (P/N MS35333-76)

EQUIPMENT CONDITION: Turret locked (TM 9-2350-264-10)
Cable adapter harness 1W505 cover removed (TM 9-2350-264-20-2)

REMOVAL:

1. REMOVE GUARD (1).
   a. Remove screw (2), lockwasher (3), ground strap (4), and washer (5).
   b. Remove guard (1).
2. REMOVE GUARD (6).
   a. Remove jamnut (7) from connector receptacle (8) using connector maintenance kit.
   b. Remove connector (8) from guard (6).
   c. Remove screw (9) and cable clamp (10) from guard (6).
   d. Remove protective cap (11), screw (12), and lanyard (13) from guard (6).
   e. Remove guard (6).
3. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



INSTALLATION:

1. INSTALL GUARD (6).
   a. Position guard (6).
   b. Install lanyard (13), protective cap (11), and screw (12) to guard (6).
   c. Install cable clamp (10) and screw (9) to guard (6).
   d. Install screw (9) and cable clamp (10).
   e. Install connector (8) to guard (6).
   f. Install jamnut (7) to connector receptacle (8) using connector maintenance kit.
2. INSTALL GUARD (1).
   a. Clean mounting surfaces of guard (6) and ground strap (4) with wire brush.
   b. Install guard (1), washer (5), ground strap (4), new lockwasher (3), and screw (2).
3. INSTALL CABLE ADAPTER HARNESS 1W505 COVER (TM 9-2350-264-20-2).
4. UNLOCK TURRET LOCK (TM 9-2350-264-10).

End of Task 3w7112

POWER DISTRIBUTION BOX (PDB) AND BRACKET REPLACEMENT (Sheet 1 of 2)

TOOLS: Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)
Hand oiler (NSN 4930-00-274-5713)
Industrial goggles (NSN 4240-00-269-7912)
Rubber gloves (NSN 8415-00-266-8675)
Torque wrench, 3/8-inch drive, 40-200 in-lb (NSN 5120-01-374-1930)

SUPPLIES: Lockwasher (P/N 12387272-44) (3 required) (TM 9-2350-264-24P-2)
Lockwasher (P/N MS35338-44)
Lockwasher (P/N MS35338-138) (4 required)
Lubricating oil (NSN 9150-00-231-2361)
Sealing compound (NSN 8030-00-163-5792)
Wiping rag (NSN 7920-00-205-1711)

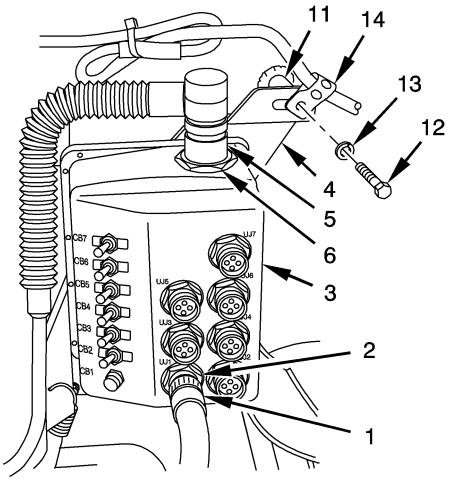
EQUIPMENT CONDITION: Tank power disconnected (TM 9-2350-264-20-1)
Turret locked (TM 9-2350-264-10)
Elevate main gun (TM 9-2350-264-10)

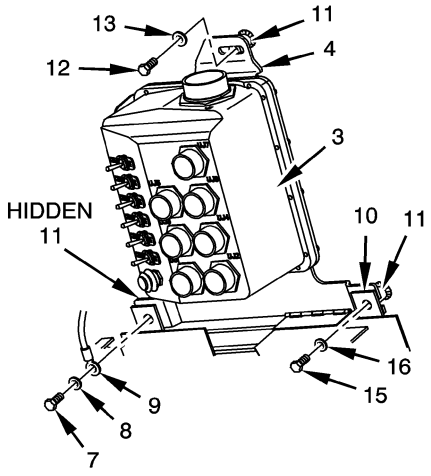
REMOVAL:

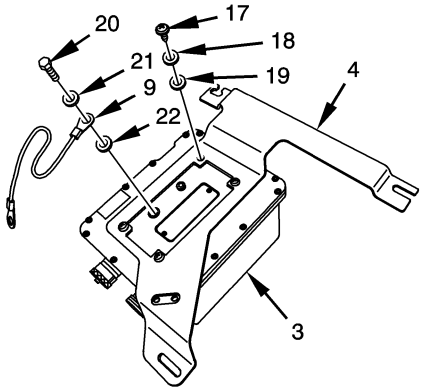
NOTE

Remove any connector(s) (1) that are connected to UJ connector receptacle(s) (2) (one is shown).

1. REMOVE POWER DISTRIBUTION BOX (PDB) (3) AND BRACKET ASSEMBLY (4).
   a. Remove harness connector 1W501-TUSK P1 (5) from PDB (3) connector receptacle 1A100A J1 (6).
   b. Loosen screw (7) and lockwasher (8), securing bracket (4), ground strap (9), and NBC filter bracket (10) to standoff (11).
   c. Remove screw (12) and lockwasher (13) securing clamp (14) and bracket (4) to standoff (11).
   d. Loosen screw (15) and lockwasher (16) securing bracket (4) and NBC filter bracket (10) to standoff (11).
   e. Remove power distribution box (PDB) (3) and bracket assembly (4).
   f. Remove screws (7, 15), lockwashers (8, 16), and ground strap (9).
   g. Remove four screws (17), lockwashers (18), and washers (19) securing bracket (4) to PDB (3).
   h. Remove screw (20), lockwasher (21), and washer (22) securing ground strap (9) to PDB (3).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.







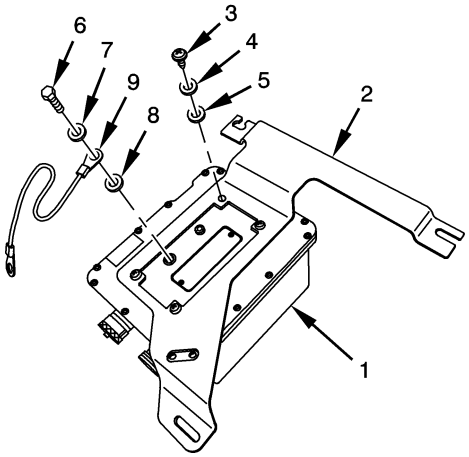
Go on to Sheet 2

3w7114

POWER DISTRIBUTION BOX (PDB) AND BRACKET REPLACEMENT (Sheet 2 of 2)

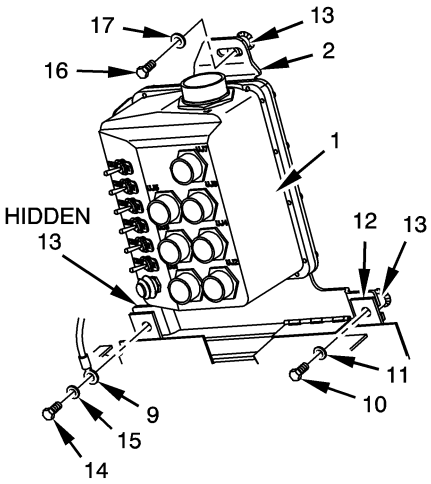
INSTALLATION:

1. INSTALL POWER DISTRIBUTION BOX (PDB) (1) AND BRACKET ASSEMBLY (2).
   a. Position bracket (2) on PDB (1). Install four screws (3), new lockwashers (4), and washers (5) securing bracket (2) to PDB (1).
   b. Install screw (6), new lockwasher (7), and washer (8) securing ground strap lug (9) to PDB (1).
   c. Loosely install screw (10) and new lockwasher (11) securing bracket (2) and NBC filter bracket (12) to standoff (13).
   d. Apply lubricant on screw (14).
   e. Loosely install screw (14) and new lockwasher (15) securing bracket (2), and ground strap lug (9) to standoff (13).
   f. Position PDB (1) and bracket assembly (2) to standoffs (13).
   g. Tighten screw (10) and new lockwasher (11) securing bracket (2) and NBC filter bracket (12) to standoff (13).



WARNING

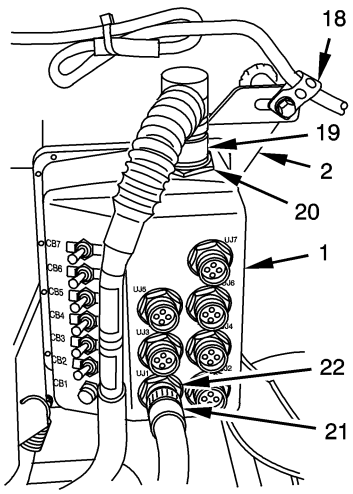
   h. Apply sealing compound on threads of screw (16).
   i. Install screw (16), and new lockwasher (17), securing clamp (18) and bracket (2) to standoff (13).
   j. Tighten screw (14), and new lockwasher (15) securing bracket (2), and ground strap lug (9) to standoff (13).
   k. Torque screw (14), securing ground strap (9) between 120-144 in-lbs (14-16 N•m).
   l. Install harness connector 1W501-TUSK P1 (19) on PDB (1) connector receptacle 1A100A J1 (20).



NOTE

Install any connectors (21) which were removed from UJ connector receptacles (22) (one is shown).

2. UNLOCK TURRET LOCK (TM 9-2350-264-10).
3. CONNECT TANK POWER (TM 9-2350-264-20-1).



End of Task

3w7115

WIRING HARNESS ASSEMBLY 1W501-TUSK REPLACEMENT (Sheet 1 of 2)

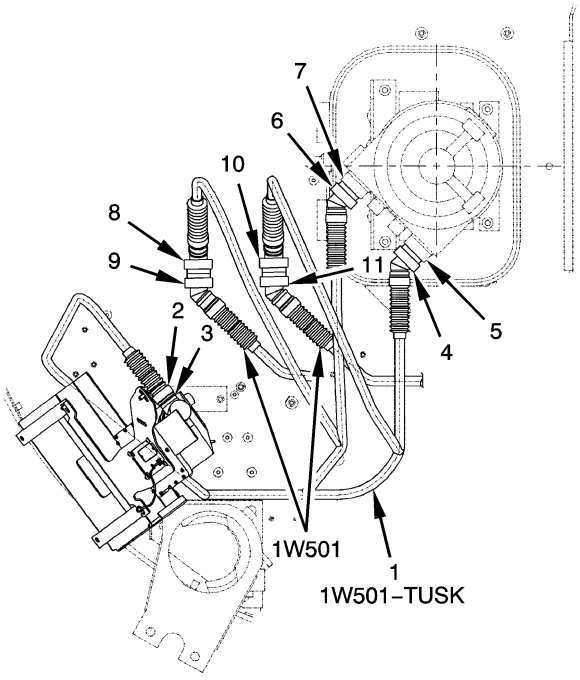
TOOLS: Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)

SUPPLIES: Electrical tiedown strap (P/N MS3367-1-9) (as required)

EQUIPMENT CONDITION: Guards removed (TM 9-2350-264-20-2)
Turret platform and bracket cable channel access covers removed (TM 9-2350-264-20-2)
Night viewer stowage box removed (TM 9-2350-264-20-2)

REMOVAL:

1. REMOVE WIRING HARNESS ASSEMBLY (1).
   a. Remove wiring harness connector 1W501-TUSK P1 (2) from power distribution box connector receptacle 1A100A J1 (3).
   b. Remove wiring harness connector 1W501-TUSK P2 (4) from slipring connector receptacle 2SR101 J7 (5).
   c. Remove wiring harness connector 1W501-TUSK P3 (6) from slipring connector receptacle 2SR101 J6 (7).
   d. Remove wiring harness connector receptacle 1W501-TUSK J2 (8) from wiring harness 1W501 connector P1 (9).
   e. Remove wiring harness connector receptacle 1W501-TUSK J1 (10) from wiring harness connector 1W501 P4 (11).
   f. Remove clamping hardware and tiedown straps, as required.
   g. Remove wiring harness assembly (1) from turret.
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



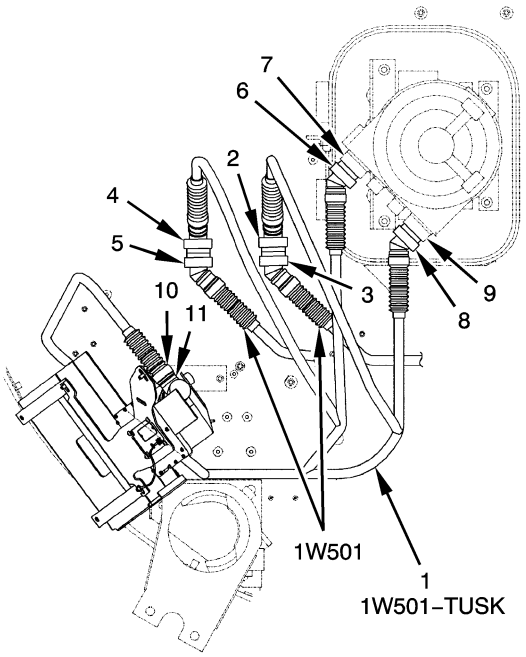
Go on to Sheet 2

3w7123

WIRING HARNESS ASSEMBLY 1W501-TUSK REPLACEMENT (Sheet 2 of 2)

INSTALLATION:

1. INSTALL WIRING HARNESS ASSEMBLY (1).
   a. Position wiring harness assembly 1W501-TUSK (1) in turret.
   b. Install wiring harness connector receptacle 1W501-TUSK J1 (2) on wiring harness connector 1W501 P4 (3).
   c. Install wiring harness connector receptacle 1W501-TUSK J2 (4) on wiring harness 1W501 connector P1 (5).
   d. Install wiring harness connector 1W501-TUSK P3 (6) on slipring connector receptacle 2SR101 J6 (7).
   e. Install wiring harness connector 1W501-TUSK P2 (8) on slipring connector receptacle 2SR101 J7 (9).
   f. Install wiring harness connector 1W501-TUSK P1 (10) on power distribution box connector receptacle 1A100A J1 (11).
   g. Install clamping hardware and new tiedown straps, as required.
2. INSTALL NIGHT VIEWER STOWAGE BOX (TM 9-2350-264-20-2).
3. INSTALL TURRET PLATFORM AND BRACKET CABLE CHANNEL ACCESS COVERS (TM 9-2350-264-20-2).
4. INSTALL GUARDS (TM 9-2350-264-20-2).



End of Task 3w7124

IDENTIFICATION MARKER REPLACEMENT (Sheet 1 of 1)

TOOLS: Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)
Dispenser bottle (NSN 8125-01-294-8999)
Industrial goggles (NSN 4240-00-269-7912)
Respirator (NSN 4240-00-022-2524)
Rubber gloves (NSN 8415-00-266-8675)

SUPPLIES: Detergent (NSN 7930-00-559-9616)
Distilled water (NSN 6810-01-327-6267)
Dry cleaning solvent (NSN 6850-00-285-8011)
Identification marker (P/N 12489775)
Wiping rag (NSN 7920-00-205-1711)

REMOVAL:

WARNING

1. REMOVE MARKER (1).
   a. Remove marker (1) from turret wall (2).
   b. Clean bonding surface area on turret wall (2) with putty knife and dry cleaning solvent.
2. INSPECT BONDING SURFACE AREA FOR DAMAGE. REPAIR ACCORDINGLY.

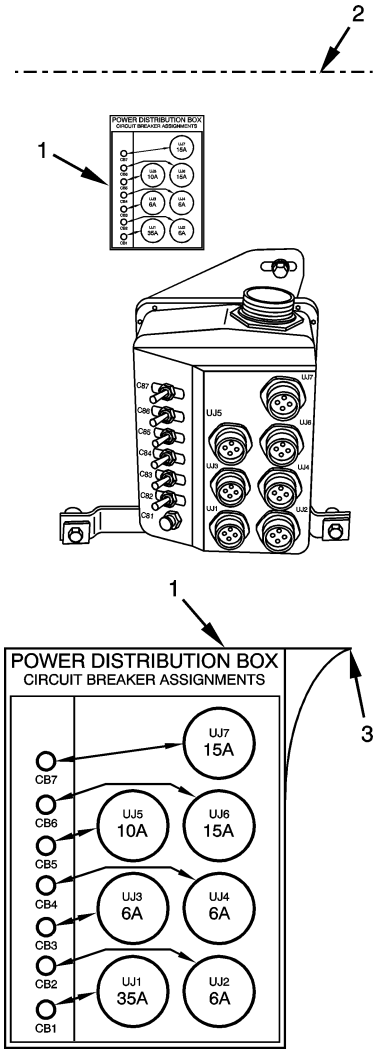
INSTALLATION:

NOTE

Decal (1) is of a permanently adhering type. Once contact is made with mounting surface of turret wall (2), movement of marker (1) is extremely difficult.

INSTALL NEW MARKER (1).

   a. Remove protective backing (3) from new marker (1).
   b. Apply diluted solution of detergent and water on turret wall (2).
   c. Position new marker (1) on turret wall (2).
   d. Rub new marker (1) with rag or putty knife to make a good bond to turret wall (2) and let dry.



End of Task 3w7122

REMOTE THERMAL SIGHT (RTS) UNIT AND EQUILIBRATOR BRACKET REPLACEMENT (Sheet 1 of 1)

TOOLS: Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)
Industrial goggles (NSN 4240-00-269-7912)
Rubber gloves (NSN 8415-00-266-8675)
Torque wrench, 15-75 ft-lb (NSN 5120-01-396-6074)

SUPPLIES: Lockwasher (P/N MS35338-141) (4 required)
Sealing compound (NSN 8030-01-025-1692) (as required)

EQUIPMENT CONDITION: Tank power disconnected (TM 9-2350-264-20-1)

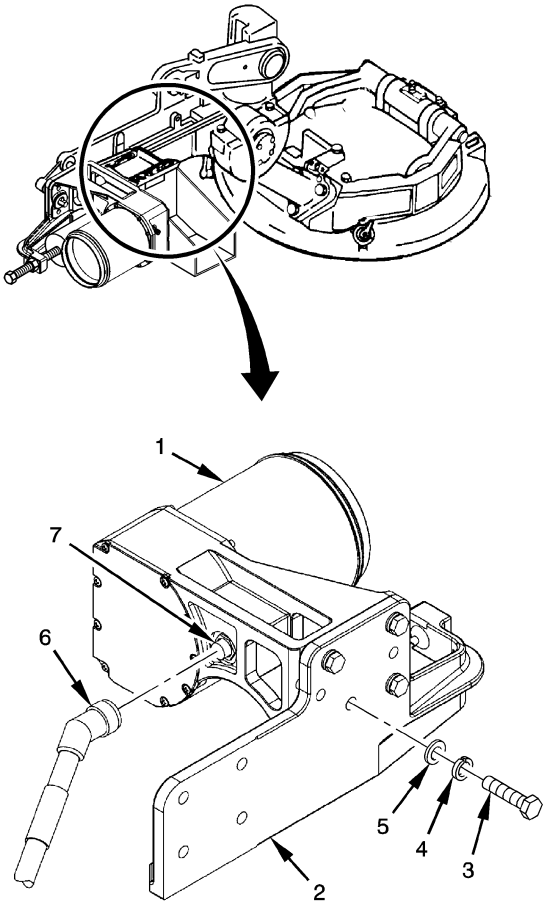
REFERENCES: (TM 9-2350-264-10)

REMOVAL:

1. REMOVE EQUILIBRATOR (TM 9-2350-264-20-2).
2. REMOVE COMMANDER'S AMMUNITION CHUTE (TM 9-2350-264-20-2).
3. REMOVE REMOTE THERMAL SIGHT (RTS) UNIT (1) AND EQUILIBRATOR BRACKET (2).
   a. Remove four screws (3), lockwashers (4), washers (5), and RTS unit (1) from bracket (2).
   b. Remove W4 cable connector P2 (6) from RTS unit connector J1 (7).
4. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.

INSTALLATION:

1. INSTALL RTS UNIT (1) AND EQUILIBRATOR BRACKET (2). TORQUE FOUR SCREWS (3) TO 21-25 LB-FT (29-33 N•m).
   a. Install four screws (3), new lockwashers (4), washers (5), and RTS unit (1) to bracket (2).
   b. Torque four screws (3) to 21-25 lb-ft (29-33 N•m).
   c. Install W4 cable connector P2 (6) to RTS unit connector J1 (7).
2. INSTALL COMMANDER'S AMMUNITION CHUTE (TM 9-2350-264-20-2).
3. INSTALL EQUILIBRATOR (TM 9-2350-264-20-2).
4. CONNECT TANK POWER (TM 9-2350-264-20-1).
5. BORESIGHT COMMANDER'S WEAPON SIGHT TO COMMANDER'S WEAPON—PRIMARY METHOD (TM 9-2350-264-10).



End of Task 2m7359

DISPLAY CONTROL MODULE ASSEMBLY REPLACEMENT (Sheet 1 of 2)

TOOLS: Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)
Industrial goggles (NSN 4240-00-269-7912)
Rubber gloves (NSN 8415-00-266-8675)

SUPPLIES: Pressure sensitive tape (NSN 7510-00-266-6712)
Sealing compound (NSN 8030-01-063-7510)

EQUIPMENT CONDITION: Tank power disconnected (TM 9-2350-264-20-1)
Commander's weapon mount depressed (TM 9-2350-264-10)

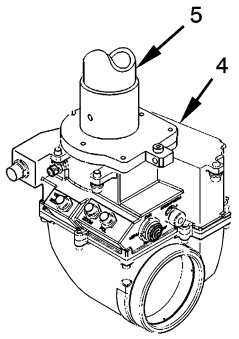
REMOVAL:

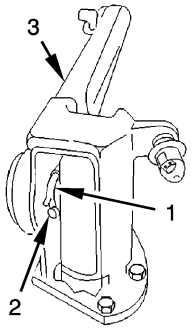
1. LEVEL COMMANDER'S WEAPON WITH MANUAL ELEVATION CONTROL (TM 9-2350-264-10).
2. UNLOCK PERISCOPE LATCH (1).
   a. Loosen screw (2) until latch (1) can be pushed to the up position.
   b. Tape latch (1) to periscope housing (3) in the up position.

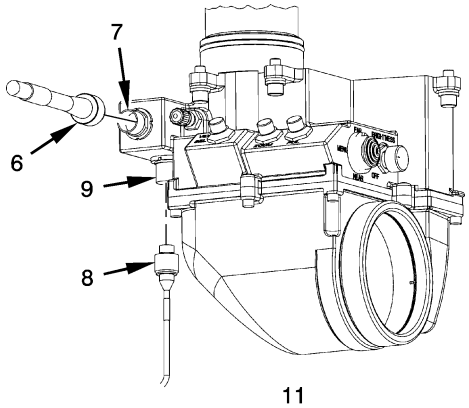
CAUTION

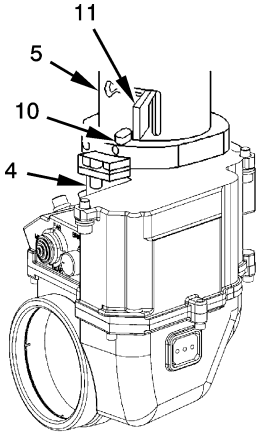
Use care when handling display control module (4). Rough handling may damage inside of display control module (4). Support display control module (4) while removing it from housing (5).

3. REMOVE DISPLAY CONTROL MODULE (4).
   a. Disconnect W3 cable connector P2 (6) from display control module connector J2 (7).
   b. Disconnect W2 cable connector P2 (8) from display control module connector J1 (9).
   c. Press button (10) down and push barrel handle (11) to right.
   d. Pull display control module (4) down and remove from housing (5).
4. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.









Go on to Sheet 2

2m7360

DISPLAY CONTROL MODULE ASSEMBLY REPLACEMENT (Sheet 2 of 2)

INSTALLATION:

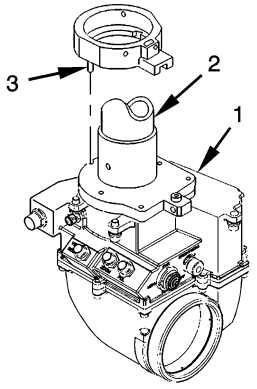
CAUTION

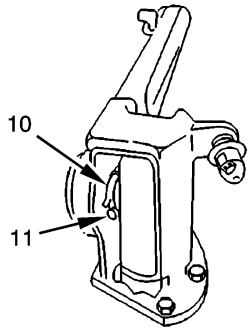
Use care when handling display control module (1). Rough handling may damage inside of display control module (1). Support display control module (1) while installing it in housing (2).

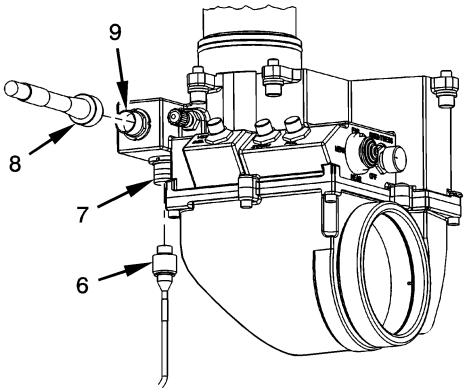
1. INSTALL DISPLAY CONTROL MODULE (1).
   a. Align display control module (1) on pin (3).
   b. Push display control module (1) carefully in housing (2) as far as it will go with side to side motion. Press down on button (4) and push handle (5) to left.
   c. Connect W2 cable connector P2 (6) to display control module connector J1 (7).
   d. Connect W3 cable connector P2 (8) to display control module connector J2 (9).

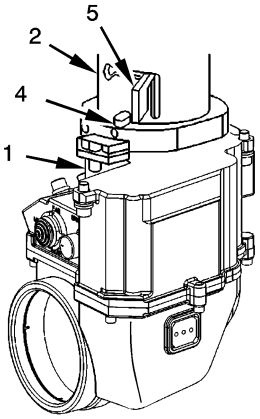
WARNING

   e. Remove tape from latch (10). Coat threads of screw (11) with sealing compound.
   f. Push down and close latch (10).
   g. Tighten screw (11).
2. CONNECT TANK POWER (TM 9-2350-264-20-1).









End of Task

2m7361

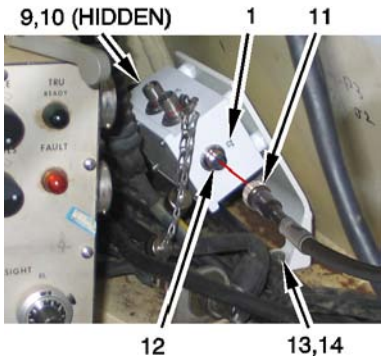
POWER FILTER MODULE AND BRACKET REPLACEMENT (Sheet 1 of 2)

TOOLS: Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)

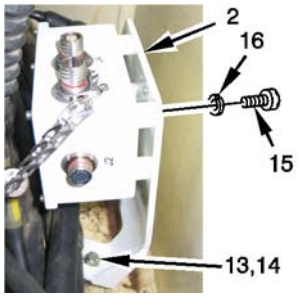
SUPPLIES: Lockwasher (P/N 12387272-43) (4 required)

EQUIPMENT CONDITION: Computer control panel removed (TM 9-2350-264-20-2)
Image control unit (ICU) removed (TM 9-2350-264-20-2)

REMOVAL:

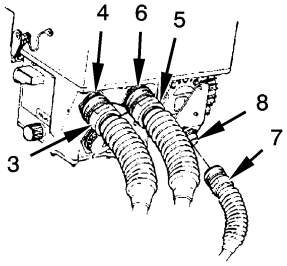


1. REMOVE POWER FILTER MODULE (1) AND BRACKET (2).
   a. Disconnect cable connector 1W210-9/P2 (3) from thermal receiver unit (TRU) receptacle J1 (8).
   b. Disconnect cable connector 1W209-9/P2 (5) from TRU receptacle J2 (6).
   c. Disconnect cable connector 1W210-9/P3 (7) from TRU receptacle J4 (8).
   d. Disconnect W1 cable connector P2 (9) from the power filter module receptacle J1 (10).
   e. Disconnect W2 cable connector P1 (11) from the power filter module receptacle J2 (12).
   f. Loosen two screws (13) and washers (14) from bracket (2).
   g. Slide slots of bracket (2) from under two screws (13) and washers (14).



NOTE

If only removing power filter module (1) for access, skip next step.



2. REMOVE POWER FILTER MODULE (1) FROM BRACKET (2).
   a. Remove four screws (15), and lockwashers (16) from power filter module (1) and bracket (2).
   b. Remove power filter module (1) from bracket (2).
3. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.

Go on to Sheet 2

2m7362

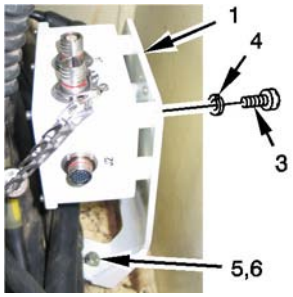
POWER FILTER MODULE AND BRACKET REPLACEMENT (Sheet 2 of 2)

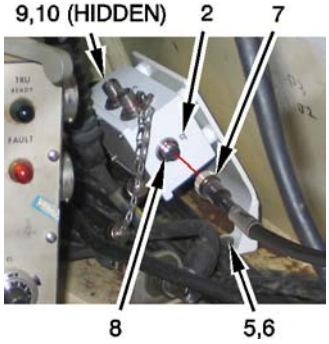
INSTALLATION:

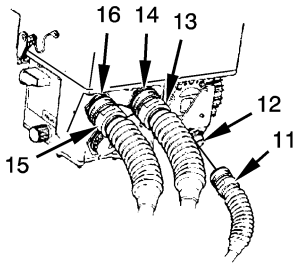
NOTE

If bracket (1) was not removed from power filter module (2), skip next step.

1. INSTALL FOUR SCREWS (3) AND NEW LOCKWASHERS (4) TO SECURE BRACKET (1) TO POWER FILTER MODULE (2).
2. INSTALL POWER FILTER MODULE (2) AND BRACKET (1).
   a. Position slots of bracket (1) under two washers (5) and screws (6).
   b. Tighten two screws (6).
   c. Connect W2 cable connector P1 (7) to the power filter module receptacle J2 (8).
   d. Connect W1 cable connector P2 (9) to the power filter module receptacle J1 (10).
   e. Connect cable connector 1W210-9/P3 (11) to TRU receptacle J4 (12).
   f. Connect cable connector 1W209-9/P2 (13) to TRU receptacle J2 (14).
   g. Connect cable connector 1W210-9/P2 (15) to TRU receptacle J1 (16).
3. INSTALL IMAGE CONTROL UNIT (ICU) (TM 9-2350-264-20-2).
4. INSTALL COMPUTER CONTROL PANEL (TM 9-2350-264-20-2).







End of Task 2m7370

W1 CABLE ASSEMBLY REPLACEMENT (Sheet 1 of 2)

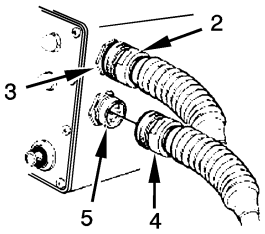
TOOLS: Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)

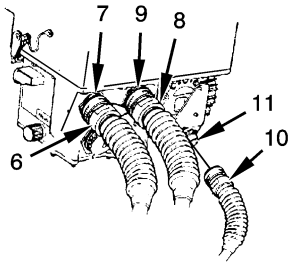
SUPPLIES: Electrical tiedown strap (NSN 5975-00-451-5001) (as required)

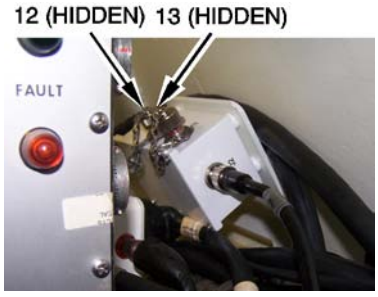
EQUIPMENT CONDITION: Loader's foot guard removed (TM 9-2350-264-20-2)
Computer control panel removed (TM 9-2350-264-20-2)
Turret platform and bracket cable channel access covers removed (TM 9-2350-264-20-2)
Loader's vehicular accessories stowage box removed (TM 9-2350-264-20-2)

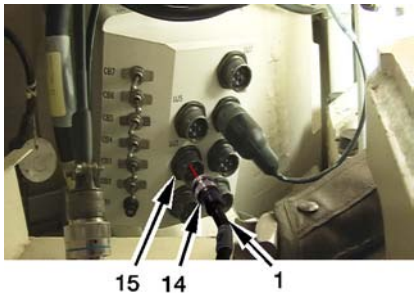
REMOVAL:

1. REMOVE W1 CABLE (1).
   a. Disconnect cable connector 1W208-9/P2 (2) from image control unit (ICU) receptacle J1 (3).
   b. Disconnect cable connector 1W209-9/P3 (4) from ICU receptacle J2 (5).
   c. Disconnect cable connector 1W210-9/P2 (6) from thermal receiver unit (TRU) receptacle J1 (7).
   d. Disconnect cable connector 1W209-9/P2 (8) from TRU receptacle J2 (9).
   e. Disconnect cable connector 1W210-9/P3 (10) from TRU receptacle J4 (11).
   f. Disconnect W1 cable connector P2 (12) from power filter module connector J1 (13).
   g. Disconnect W1 cable connector P1 (14) from power distribution box connector J3 (15).
   h. Remove tiedown straps, as required.
   i. Remove W1 cable (1).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.







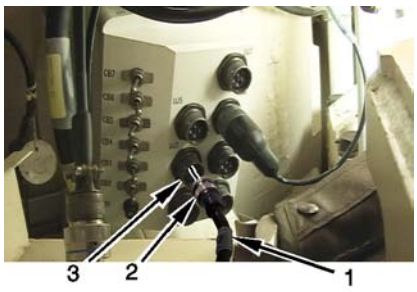


Go on to Sheet 2

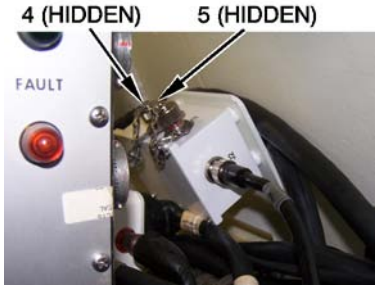
2m7371

W1 CABLE ASSEMBLY REPLACEMENT (Sheet 2 of 2)

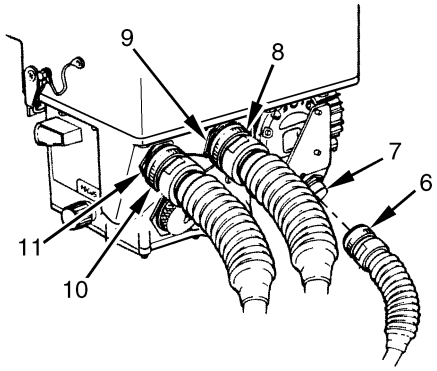
INSTALLATION:

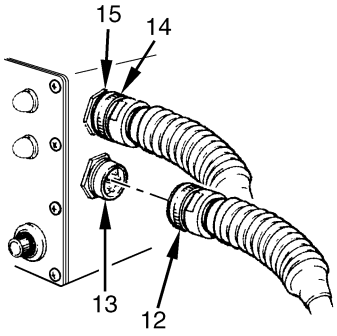


1. INSTALL W1 CABLE (1).
    a. Connect W1 cable connector P1 (2) to the power distribution box connector J3 (3).
    b. Connect W1 cable connector P2 (4) to power filter module connector J1 (5).
    c. Install new tiedown straps, as required.
    d. Connect cable connector 1W210-9/P3 (6) to TRU receptacle J4 (7).
    e. Connect cable connector 1W209-9/P2 (8) to TRU receptacle J2 (9).
    f. Connect cable connector 1W210-9/P2 (10) to TRU receptacle J1 (11).
    g. Connect cable connector 1W209-9/P3 (12) to ICU receptacle J2 (13).
    h. Connect cable connector 1W208-9/P2 (14) to ICU receptacle J1 (15).



2. INSTALL LOADER'S VEHICULAR ACCESSORIES STOWAGE BOX (TM 9-2350-264-20-2).
3. INSTALL TURRET PLATFORM AND BRACKET CABLE CHANNEL ACCESS COVERS (TM 9-2350-264-20-2).
4. INSTALL COMPUTER CONTROL PANEL (TM 9-2350-264-20-2).
5. INSTALL LOADER'S FOOT GUARD (TM 9-2350-264-20-2).





End of Task 2m7372

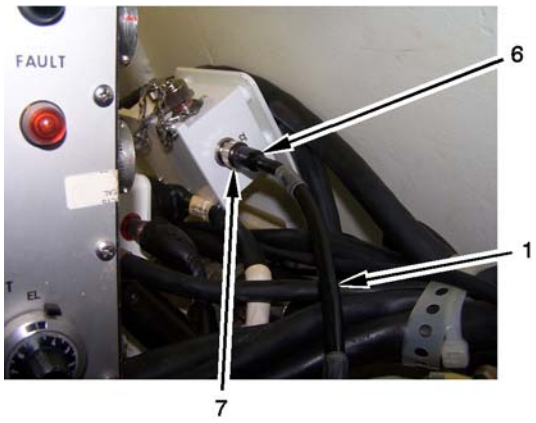
W2 CABLE ASSEMBLY REPLACEMENT (Sheet 1 of 1)

TOOLS: Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)

EQUIPMENT CONDITION: Computer control panel removed (TM 9-2350-264-20-2)

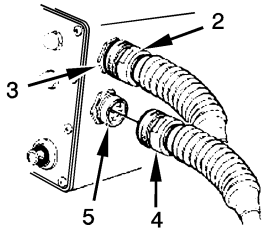
REMOVAL:

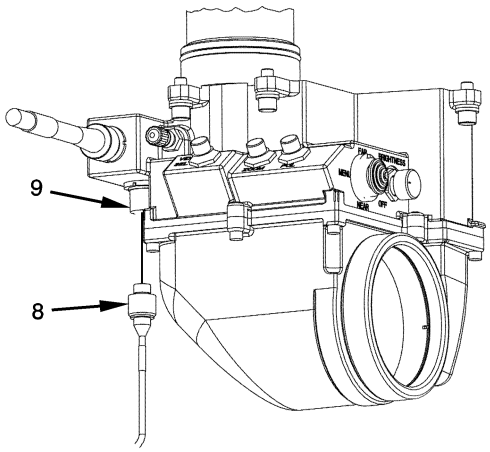
1. REMOVE W2 CABLE (1).
   a. Disconnect cable connector 1W208-9/P2 (2) from image control unit (ICU) receptacle J1 (3).
   b. Disconnect cable connector 1W209-9/P3 (4) from ICU receptacle J2 (5).
   c. Disconnect W2 cable connector P1 (6) from power filter module receptacle J2 (7).
   d. Disconnect W2 cable connector P2 (8) from display control module receptacle J1 (9).
   e. Remove W2 cable (1).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



INSTALLATION:

1. INSTALL W2 CABLE (1).
   a. Position W2 cable (1).
   b. Connect W2 cable connector P2 (8) to display control module receptacle J1 (9).
   c. Connect W2 cable connector P1 (6) to power filter module receptacle J2 (7).
   d. Connect cable connector 1W209-9/P3 (4) to ICU receptacle J2 (5).
   e. Connect cable connector 1W208-9/P2 (2) to ICU receptacle J1 (3).
2. INSTALL COMPUTER CONTROL PANEL (TM 9-2350-264-20-2).





End of Task

2m7358

W3 CABLE ASSEMBLY REPLACEMENT (Sheet 1 of 2)

TOOLS: Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)
Industrial goggles (NSN 4240-00-269-7912)
Respirator (NSN 4240-00-022-2524)
Rubber gloves (NSN 8415-00-266-8675)
Torque wrench, 15-75 ft-lb (NSN 5120-01-396-6074)

SUPPLIES: Electrical tiedown strap (NSN 5975-00-451-5001) (as required)
Sealant adhesive (NSN 8040-00-877-9872) (as required)
Sealing compound (NSN 8030-01-025-1692)
Wiping rag (NSN 7920-00-205-1711)

EQUIPMENT CONDITION: Tank power disconnected (TM 9-2350-264-20-1)
Manual elevation drive assembly removed (TM 9-2350-264-20-2)

REMOVAL:

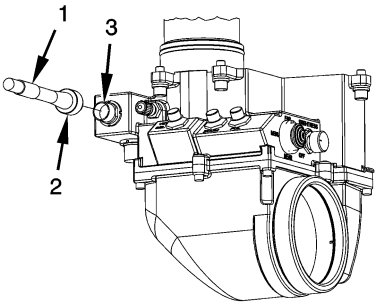
1. REMOVE W3 CABLE (1).
   a. Disconnect W3 cable connector P2 (2) from display control module connector J2 (3).
   b. Remove two screws (4) and washers (5) from cable guard assembly (6).
   c. Remove cable guard assembly (6).
   d. Disconnect W4 cable connector P1 (7) from W3 cable connector P1 (8).
   e. Remove retaining nut (9) from W3 cable connector P1 (8).
   f. Remove tiedown straps (10) from W3 cable (1).

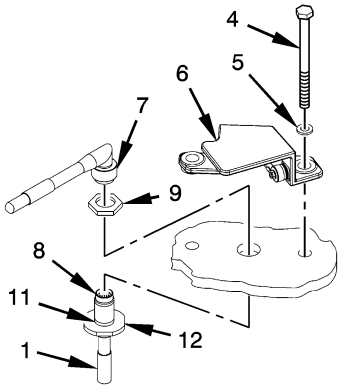
NOTE

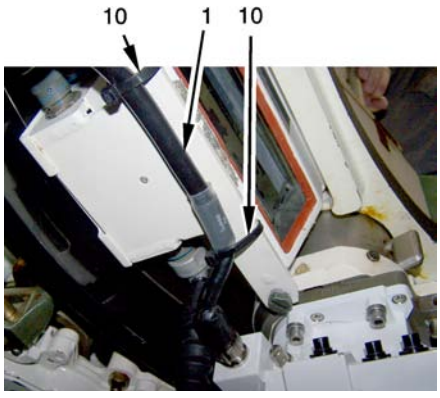
If W3 cable (1) is to be reinstalled, keep O-ring (11) for reuse.

   g. Remove W3 cable (1) and O-ring (11) from flange (12).
   h. Remove sealant from mating surfaces.

2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.







Go on to Sheet 2

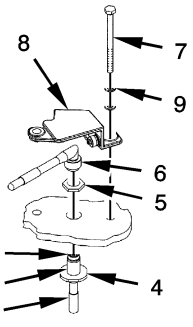
2m7363

W3 CABLE ASSEMBLY REPLACEMENT (Sheet 2 of 2)

INSTALLATION:

1. INSTALL W3 CABLE (1).

   a. Install O-ring (2), supplied with W3 cable (1) on W3 cable connector P1 (3).



WARNING

   b. Apply adhesive sealant to flange (4) on W3 cable connector P1 (3).

   c. Install W3 cable connector P1 (3) and secure with retaining nut (5).

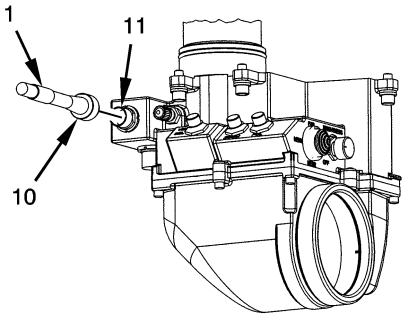
   d. Connect W4 cable connector P1 (6) onto W3 cable connector P1 (3).

   e. Apply sealing compound to threads of two screws (7).

   f. Install cable guard assembly (8) using two screws (7) and washers (9).

   g. Torque screws (7) to 45-55 lb-ft (62-74 N•m).

   h. Connect W3 cable connector P2 (10) to display control module connector J2 (11).



   i. Install new tiedown straps (12) on W3 cable (1), as required.

2. INSTALL MANUAL ELEVATION DRIVE ASSEMBLY (TM 9-2350-264-20-2).

3. CONNECT TANK POWER (TM 9-2350-264-20-1).

End of Task

2m7373

W4 CABLE ASSEMBLY AND CABLE GUARD REPLACEMENT (Sheet 1 of 1)

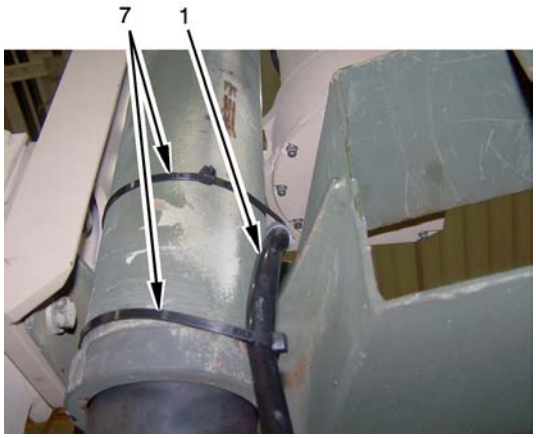
TOOLS: Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)
Industrial goggles (NSN 4240-00-269-7912)
Rubber gloves (NSN 8415-00-266-8675)
Torque wrench, 15-75 ft-lb (NSN 5120-01-396-6074)

SUPPLIES: Electrical tiedown strap (NSN 5975-00-451-5001) (as required)
Sealing compound (NSN 8030-01-025-1692)

EQUIPMENT CONDITION: Remote thermal sight (RTS) unit and equilibrator bracket removed (page 5-21)

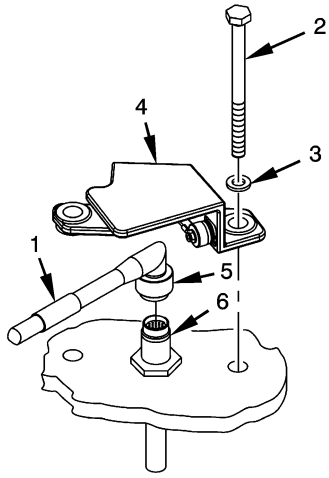
REMOVAL:

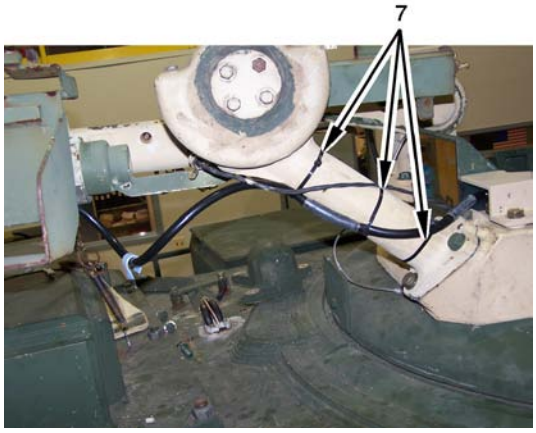
1. REMOVE W4 CABLE (1).
   a. Remove two screws (2), and washers (3) from cable guard assembly (4).
   b. Remove cable guard assembly (4).
   c. Disconnect W4 cable connector P1 (5) from W3 cable connector P1 (6).
   d. Remove tiedown straps (7) from W4 cable (1).
   e. Remove W4 cable (1).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



INSTALLATION:

1. INSTALL W4 CABLE (1).
   a. Position W4 cable (1) to prevent pinching and secure with tiedown straps (7) as required.
   b. Connect W4 cable connector P1 (5) to W3 cable connector P1 (6).
   c. Apply sealing compound to threads of two screws (2).
   d. Install cable guard (4) using two screws (2) and washers (3).
   e. Torque screws (2) to 45-55 lb-ft (62-74 N•m).
   f. Install new tiedown straps (7) to W4 cable (1) as required.
2. INSTALL RTS UNIT AND EQUILIBRATOR BRACKET (PAGE 5-21).





End of Task

2m7364

RATE OF FIRE (RFS) ASSEMBLY REPLACEMENT (Sheet 1 of 1)

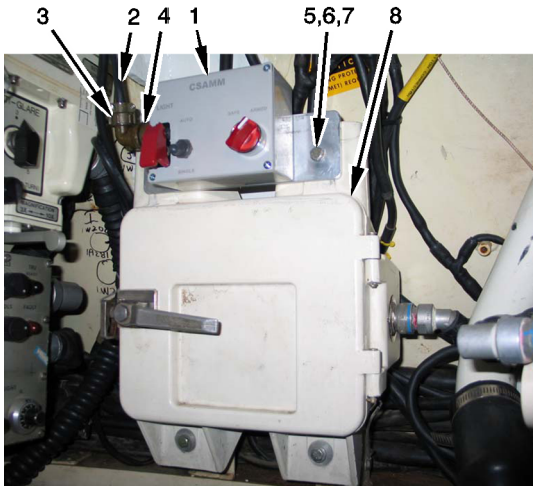
TOOLS: Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)

SUPPLIES: Lockwasher (P/N 12387269-40) (2 required) (TM 9-2350-264-24P-2)

EQUIPMENT CONDITION: Tank power disconnected (TM 9-2350-264-20-1)

REMOVAL:

1. REMOVE RATE OF FIRE (RFS) ASSEMBLY (1).
   a. Disconnect harness 1W810-CSAMM (2) connector P2 (3) from RFS (1) receptacle J1 (4).
   b. Remove two screws (5), lockwashers (6), and flat washers (7) from computer control panel (8).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



INSTALLATION:

1. ALINE RFS (1) WITH HOLES ON COMPUTER CONTROL PANEL (8).
   a. Install two screws (5), new lockwashers (6), and flat washers (7) to computer control panel (8).
   b. Connect harness 1W810-CSAMM (2) connector P2 (3) to RFS (1) receptacle J1 (4).
2. CONNECT TANK POWER (TM 9-2350-264-20-1).

End of Task

3w7136

ELECTRICAL HARNESS 1W810-CSAMM REPLACEMENT (Sheet 1 of 4)

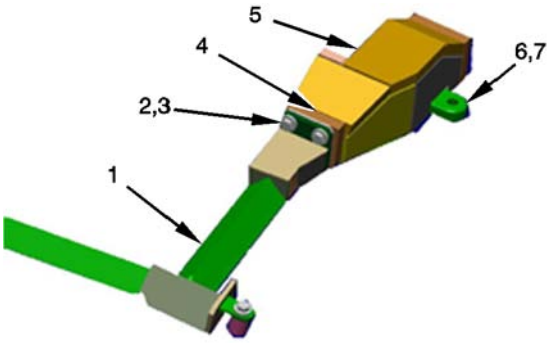
TOOLS: Artillery and turret mechanics tool kit: ordnance (SC 5180-95-A12)
Industrial goggles (NSN 4240-00-269-7912)
Rubber gloves (NSN 8415-00-266-8675)

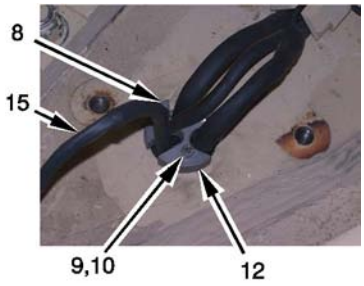
SUPPLIES: Electrical tiedown strap (NSN 5975-00-451-5001) (as required)
Grommet assembly (P/N 12490431)
Lockwasher (P/N MS35338-135) (8 required)
Sealing compound (NSN 8030-00-174-2599)

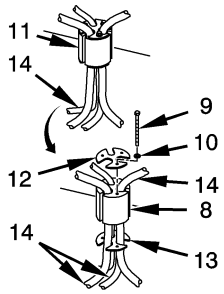
EQUIPMENT CONDITION: Tank power disconnected (TM 9-2350-264-20-1)

REMOVAL:

1. REMOVE CABLE GUARDS (1).
   a. Remove two screws (2) and flat washers (3) securing cable guard bracket (1) to plate (4) and bracket (5).
   b. Remove three screws (6) and flat washers (7) securing bracket (5) to top of turret.
2. REMOVE GROMMET (8).
   a. Loosen three screws (9) and lockwashers (10) from grommet assembly (11). Pull grommet assembly (11) from top of turret.
   b. Remove three screws (9) and lockwashers (10) from upper grommet plate (12) and lower grommet plate (13).
   c. Remove four harnesses (14) from grommet (8).
3. REMOVE HARNESS 1W810-CSAMM (15).







Go on to Sheet 2

3w7128

ELECTRICAL HARNESS 1W810-CSAMM REPLACEMENT (Sheet 2 of 4)

NOTE

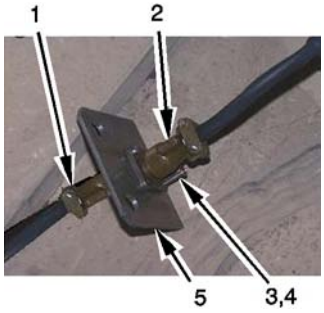
- Depending on configuration, 1W810-CSAMM harness connector P1 may be connected to RTNB-UJ1, TNB-UJ1 or PDB-UJ7.
- Carefully note routing and tiedown location for reinstallation of 1W810-CSAMM harness.

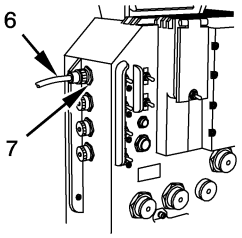
a. Disconnect 1W811 harness receptacle J1 (1) from 1W810-CSAMM harness connector P3 (2).

b. Remove four screws (3) and lockwashers (4) securing 1W810-CSAMM harness connector P3 (2) to plate (5). Pass 1W810-CSAMM harness connector P3 (2) into turret for removal.

c. Disconnect 1W810-CSAMM harness connector P1 (6) from redesigned turret networks box (RTNB) receptacle UJ1 (7).

d. Disconnect 1W810-CSAMM harness connector P2 (8) from rate of fire assembly (RFS) receptacle J1 (9).





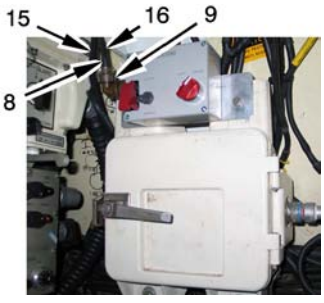
NOTE

Do not remove top plate (10) from gunner's control handle (11) after removing trigger mount assembly (12).

e. Remove four screws (13), lockwashers (14) and trigger mount assembly (12), from top plate (10) of gunner's control handle (11).

f. Remove tiedown straps (15) as required. Remove 1W810-CSAMM harness (16) from tank.

4. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



Go on to Sheet 3

3w7129

ELECTRICAL HARNESS 1W810-CSAMM REPLACEMENT (Sheet 3 of 4)

INSTALLATION:

1. INSTALL 1W810-CSAMM HARNESS (1).

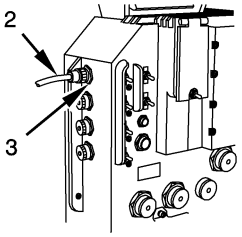
   a. Route and connect 1W810-CSAMM harness connector P1 (2) to RTNB receptacle UJ1 (3). Pull excess cable back to commander's GPS extension tube, loop excess harness as previously installed, and secure with tiedown straps (4) to extension tube.

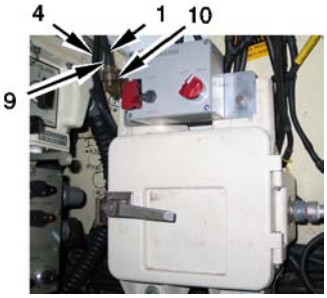
   b. Route trigger mount assembly (5) to gunner's control handle (6). Install four screws (7) and new lockwashers (8). Secure harness with tiedown straps (4), as needed.

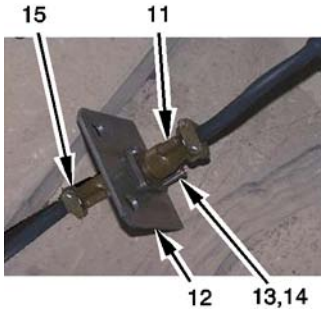
   c. Route 1W810-CSAMM harness connector P2 (9) to RFS receptacle J1 (10) and connect. Secure harness with tiedown straps (4), as required.

   d. Pass 1W810-CSAMM harness connector P3 (11) through turret and secure to plate (12) with four screws (13) and new lockwashers (14).

   e. Connect 1W811 harness receptacle J1 (15) to 1W810-CSAMM harness connector P3 (11) on plate (12).





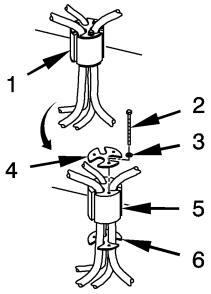


Go on to Sheet 4

3w7130

ELECTRICAL HARNESS 1W810-CSAMM REPLACEMENT (Sheet 4 of 4)

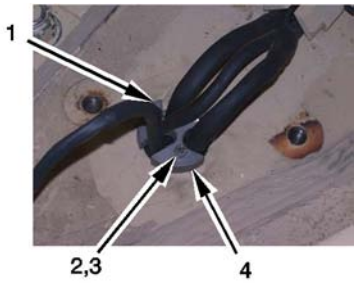
2. INSTALL GROMMET ASSEMBLY (1).



   a. Disassemble new grommet assembly (1). Remove three screws (2) and lockwashers (3) securing upper grommet plate (4), grommet (5), and lower grommet plate (6).

WARNING

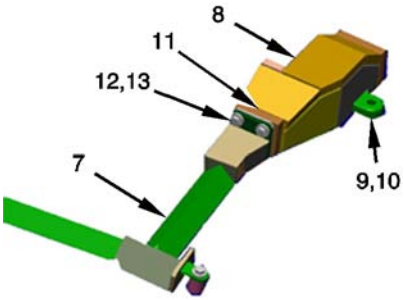
   b. Apply sealing compound to interior surfaces of grommet (5) split holes. Route four cables into appropriate holes in grommet (5).



   c. Loosely install three screws (2) and lockwashers (3) through upper grommet plate (4), grommet (5), and lower grommet plate (6).

   d. Apply sealing compound to exterior rubber surfaces of assembled grommet assembly (1).

   e. Insert assembled grommet assembly (1) into turret roof. Incrementally tighten three screws (2) of grommet assembly (1).



3. INSTALL CABLE GUARDS (7).

   a. Install bracket (8) over cables and grommet assembly (1). Secure with three screws (9) and flat washers (10).

   b. Aline cable guard bracket (7) with plate (11) and bracket (8). Secure with two screws (12) and flat washers (13).

4. CONNECT TANK POWER (TM 9-2350-264-20-1).

End of Task

3w7131

ELECTRICAL HARNESS 1W811-CSAMM AND CABLE GUARDS REPLACEMENT (Sheet 1 of 4)

TOOLS: Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)

SUPPLIES: Electrical tiedown strap (NSN 5975-00-451-5001) (As required)
Lock pin (NSN 5315-01-497-5034)
Lockwasher (P/N MS 35338-50) (2 required)
Self-locking nut (P/N 62CNNE8Z) (2 required)
Tiedown strap (NSN 5975-00-727-5153) (As required)

EQUIPMENT CONDITION: Tank power disconnected (TM 9-2350-264-20-1)

REMOVAL:

1. REMOVE GUARD BRACKETS (1).

   a. Remove two screws (2), flat washers (3), lockwashers (4), and self locking nuts (5) securing cable guard bracket (1) to top of mantlet.

   b. Remove four screws (6) and flat washers (7) securing cable guard bracket (8).

   c. Remove three screws (9) and flat washers (10) securing cable guard bracket (11). Remove lock pin (12) from pin (13) and flat washer (14). Remove cable guard bracket (15).

   d. Remove four screws (16) and flat washers (17) securing cover plate (18) to harness enclosure (19).

   e. Remove tiedown straps (20) from footman loops (21) on inside of harness enclosure (19).

NOTE

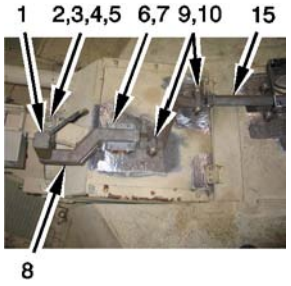
Do not remove harness enclosure (19) unless damage is evident.

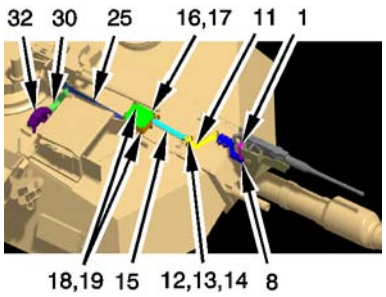
   f. Remove two screws (22), four flat washers (23), and nuts (24) securing cable bracket guard (25) to harness enclosure (19).

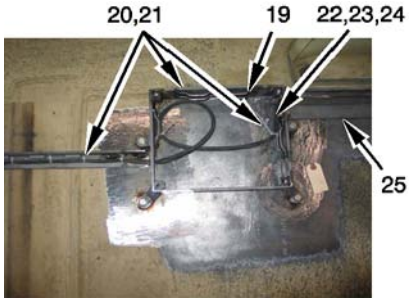
   g. Remove one screw (26) and flat washer (27) securing cable bracket guard (25).

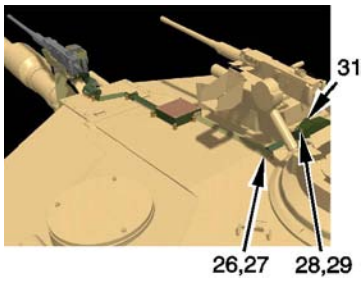
   h. Remove two screws (28) and flat washers (29) securing cable bracket guard (30) to plate (31) and bracket (32).

   i. Remove tiedown straps (20) from footman loops (21) on inside of cable bracket guards.









Go on to Sheet 2

2m7365

ELECTRICAL HARNESS 1W811-CSAMM AND CABLE GUARDS REPLACEMENT (Sheet 2 of 4)

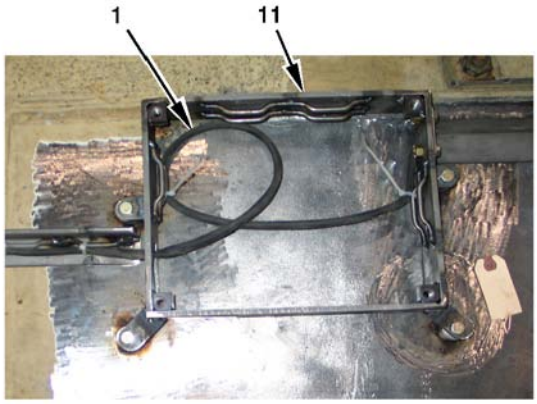
2. REMOVE ELECTRICAL HARNESS 1W811-CSAMM (1).

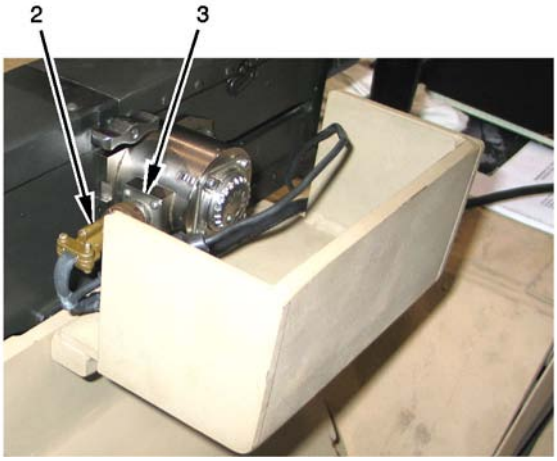
   a. Disconnect harness 1W811-CSAMM connector P1 (2) from G-9 type trigger solenoid receptacle J1 (3). Pull harness 1W811-CSAMM (1) through mantlet cover.

   b. Disconnect harness 1W811-CSAMM receptacle J2 (4) and solenoid harness receptacle J3 (5) connectors from spotlight positive and negative connectors P2 (6) and P3 (7).

   c. Disconnect harness 1W811-CSAMM receptacle J1 (8) from harness 1W810-CSAMM connector P3 (9) receptacle mounted to plate (10). Remove harness 1W811-CSAMM (1).

3. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



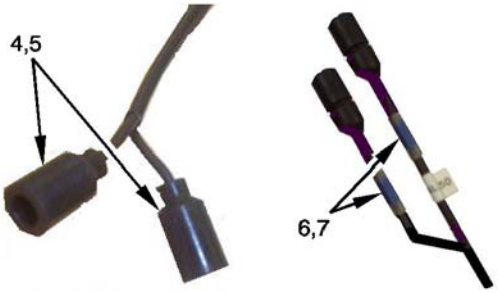


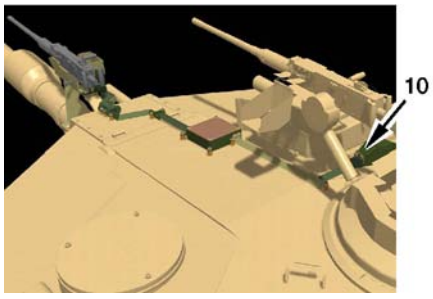
INSTALLATION:

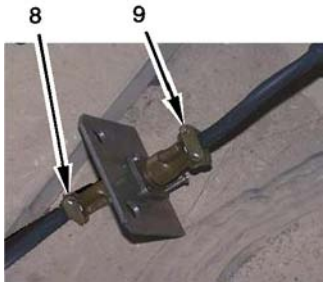
1. INSTALL HARNESS 1W811-CSAMM (1).

   a. Route harness 1W811-CSAMM (1) back through harness enclosure (11). Connect harness 1W811-CSAMM receptacle J1 (8) to 1W810-CSAMM harness connector P3 (9).

   b. Route harness 1W811-CSAMM connector P2 (2) to G-9 solenoid receptacle J1 (3). Route harness 1W811-CSAMM connectors J2 (4) and J3 (5) to spotlight.







Go on to Sheet 3

2m7367

ELECTRICAL HARNESS 1W811-CSAMM AND CABLE GUARDS REPLACEMENT (Sheet 3 of 4)

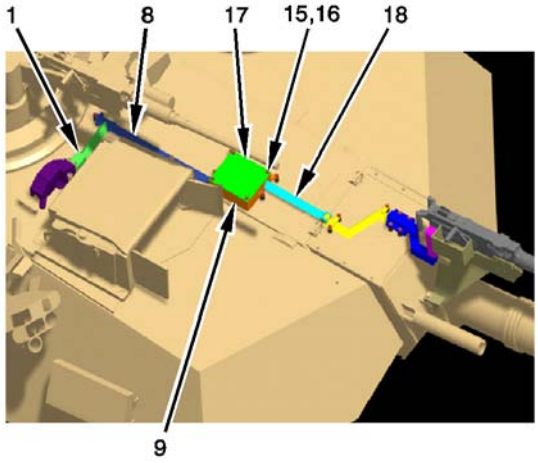
2. INSTALL GUARD BRACKETS (1).

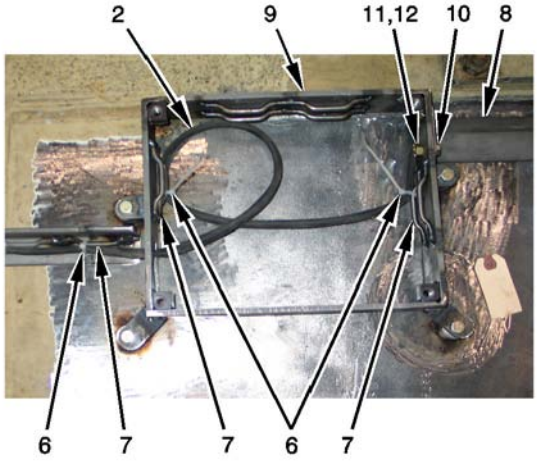
   a. Route harness 1W811-CSAMM (2) under cable guard bracket (1) and plate (3) and secure with two screws (4) and flat washers (5).

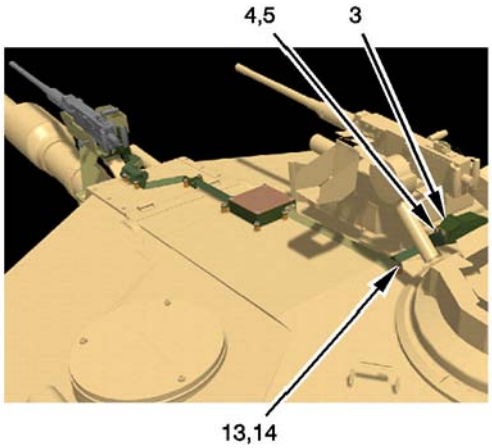
   b. Install tiedown straps (6) to footman loops (7) as needed.

   c. Install cable guard bracket (8) to harness enclosure (9) with two screws (10), four flat washers (11), and two nuts (12). Install screw (13) and flat washer (14). Install four screws (15) and flat washers (16) securing cover plate (17) to harness enclosure (9).

   d. Install cable guard bracket (18) adding tiedown straps (6) as needed.







Go on to Sheet 4

2m7368

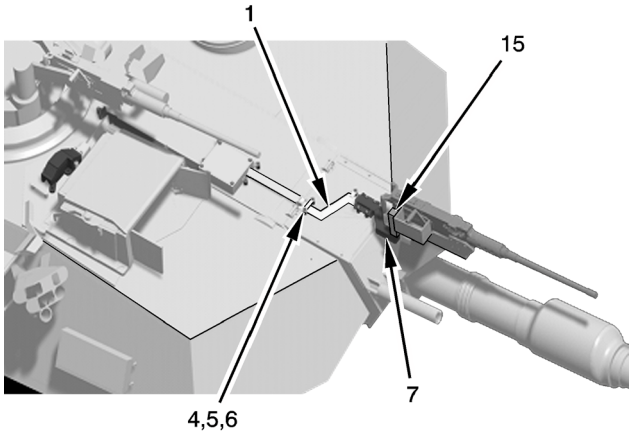
ELECTRICAL HARNESS 1W811-CSAMM AND CABLE GUARDS REPLACEMENT (Sheet 4 of 4)

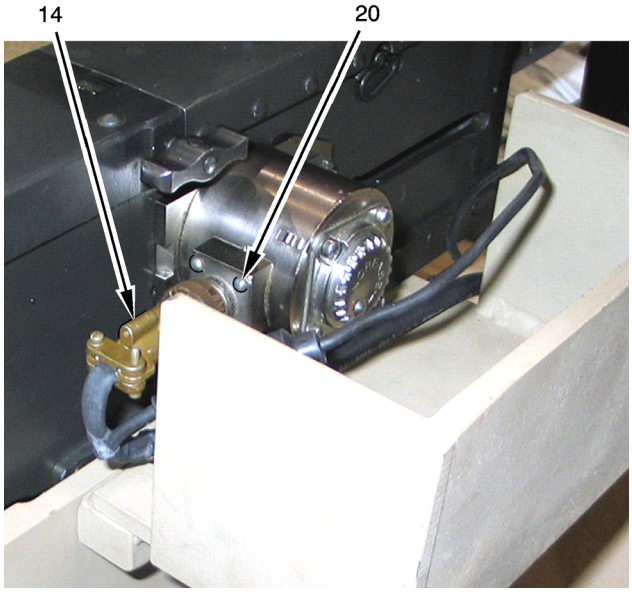
e. Install cable guard bracket (1) with three screws (2) and flat washers (3). Attach cable guard bracket (1) with new lock pin (4), pin (5) and flat washer (6).

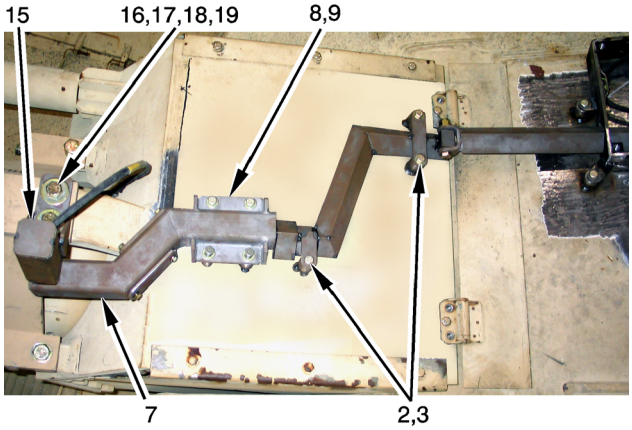
f. Pass harness through cable guard bracket (7) using access plates as needed and secure with four screws (8) and flat washers (9). Route harness 1W811-CSAMM receptacle J2 (10) and harness 1W811-CSAMM receptacle J3 (11) to spotlight cables P2 (12) and P3 (13) and connect.

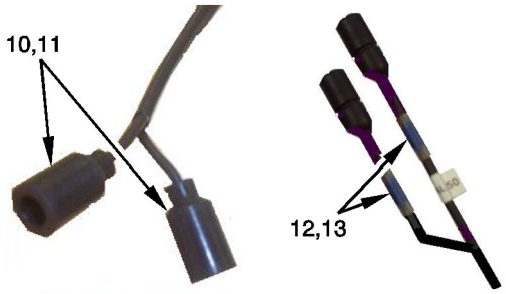
g. Pass harness 1W811-CSAMM connector P1 (14) through cable guard bracket (15) and mount with two screws (16), flat washers (17), new lockwashers (18) and new self -locking nuts (19). Connect harness 1W811-CSAMM connector P1 (14) to solenoid receptacle J1 (20).

3. CONNECT TANK POWER (TM 9-2350-264-20-1).









End of Task

COMMANDER'S BOLT-ON ARMOR KIT INSTALLATION AND REMOVAL (Sheet 1 of 8)

APPLICABILITY: Tanks with Force Protection Kit

TOOLS: General mechanic's automotive tool kit (SC 5180-95-B47) (NSN 5180-01-483-0249)
Adjustable web strap (NSN 5340-01-152-8321)
Deep style socket, 1/2 inch drive, 1-5/16 inch (P/N 00N-52; KTC 50627)
Hoist, 500-pound capacity (TO&E Authorized Recovery Vehicle) (See TB 43-0142)
Torque wrench, 15-75 ft-lb (NSN 5120-01-396-6074)
Torque wrench, 50-250 ft-lb (NSN 5120-01-374-1938)

SUPPLIES: Aircraft grease (NSN 9150-00-944-8953)
When transferring bolt-on armor from one vehicle to another:
Lockwasher (P/N MS35340-45) (as required)
Lockwasher (P/N MS35340-46) (as required)
Lockwasher (P/N MS35340-48) (as required)
Lockwasher (P/N MS35340-52) (as required)
Self-locking nut (P/N MS51943-40) (as required)
Self-locking nut (P/N MS51943-47) (as required)

PERSONNEL: Two

INSTALLATION:

WARNING

WARNING

Outboard and inboard shield weigh over 120 pounds (54 kg). To avoid injury, two soldiers are needed to install and remove outboard shield and inboard shield from tank.

To protect vehicle commander from bullets or shrapnel, the large window must be positioned correctly. The large window (label side with words "STRIKE FACE") must face outward from turret when installed correctly. Failure to do so may result in serious injury. There are three ways to verify correct installation:

- Glass is layered with four panes of glass and one thinner pane of 1/4 inch plastic (spall liner). Be sure thinner 1/4 inch spall liner is on inside. Be sure glass is on the outside facing threat. The layers of glass can be seen by looking at it from the side, with 1/4 inch spall liner on the inside. Adhesive on sides of glass may need to be removed to view layers.
- Plastic spall liner will scratch more easily than glass. Take a sharp piece of metal and try to scribe a very small line on outer edge of inside and outside panes of each large window. Be sure pane that scratches more easily is on inside (towards cupola center) - this is the plastic spall liner.
- Take a coin and tap inside and outside panes. Plastic spall liner will make a softer, more muffled, sound as compared to glass. Be sure that plastic pane is on inside.

CAUTION

To avoid damage to large window, handle with care.

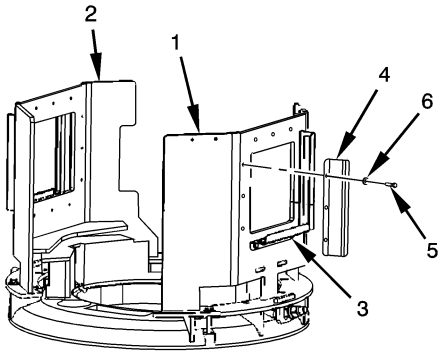
Go on to Sheet 2

COMMANDER'S BOLT-ON ARMOR KIT INSTALLATION AND REMOVAL (Sheet 2 of 8)

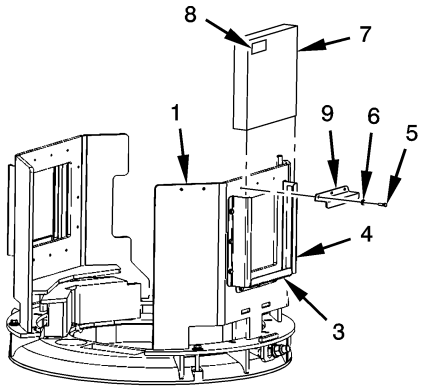
NOTE

- Inspect commander's weapon station for ease of movement. Service bearing if required (TM 9-2350-264-20-2).
- This task addresses M1A1 Bolt-On Armor installation and/or removal for transfer to another Force Protection vehicle.
- Transfer task differs from first time installation in that windows and brackets will not have to be installed/removed. For first time installation begin with step 1, for subsequent installations begin with step 6 and use new lockwashers and locknuts.
- Use steps 1-4 to install large window on commander's inboard shield (1) or outboard shield (2) of tank commander's bolt-on armor. Steps for commander's inboard shield (1) are shown.

1. INSTALL SHORT WINDOW BRACKET (3) AND LONG WINDOW BRACKETS (4).
   a. Position one short window bracket (3) on commander's inboard shield (1).
   b. Lubricate and loosely install three screws (5) and new lockwashers (6) on short window bracket (3).
   c. Position two long window brackets (4) on commander's inboard shield (1).
   d. Lubricate and loosely install six screws (5) and new lockwashers (6) on two long window brackets (4).



2. INSTALL LARGE WINDOW (7).
   a. Carefully place large window (7) in long window brackets (4) and short window bracket (3) with words "STRIKE FACE" on label (8) facing outward from commander's inboard shield (1).
   b. Position short window bracket (9) on commander's inboard shield (1).
   c. Lubricate and install three screws (5) and new lockwashers (6) on short window bracket (9).
3. TORQUE TWELVE SCREWS (5) BETWEEN 19-24 FT-LB (26-32 N·M).
4. REMOVE LABEL (8) FROM LARGE WINDOW (7).

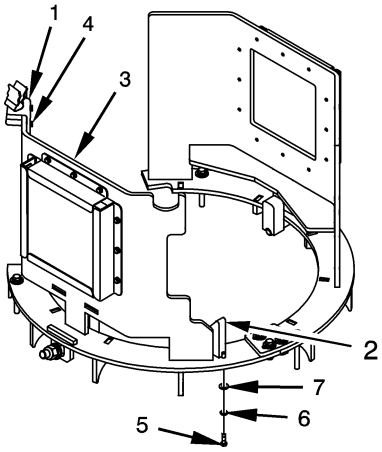


Go on to Sheet 3

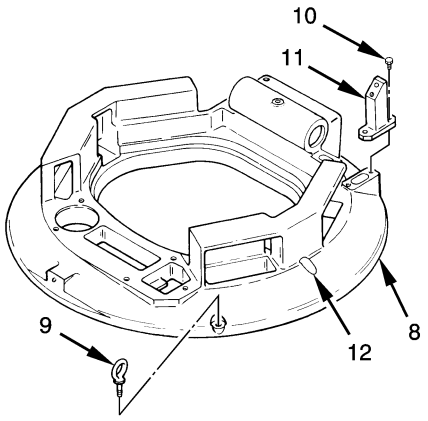
3w7179

COMMANDER'S BOLT-ON ARMOR KIT INSTALLATION AND REMOVAL (Sheet 3 of 8)

5. INSTALL M4 BRACKET (1) AND COMMANDER'S HATCH STOP (2).
   a. Cut and remove rubber trim from M4 bracket mounting area.
   b. Aline bracket (1) on commander's inboard shield (3).
   c. Secure two screws (4) on M4 bracket (1).
   d. Lubricate and install two screws (5), new lockwashers (6), washers (7), and commander's hatch stop (2).



6. PREPARE COMMANDER'S CUPOLA (8) FOR COMMANDER'S BOLT-ON ARMOR.
   a. Remove three eye bolts (9) and retain with tank for future usage.
   b. Remove two screws (10) and door holder (11) and retain with tank for future usage.
   c. Ensure two drain holes (12) are clear and free of debris.



Go on to Sheet 4

3w7180

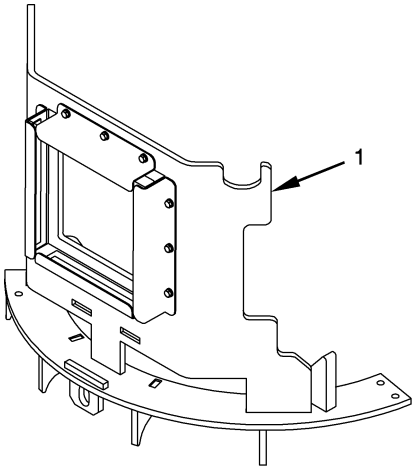
COMMANDER'S BOLT-ON ARMOR KIT INSTALLATION AND REMOVAL (Sheet 4 of 8)

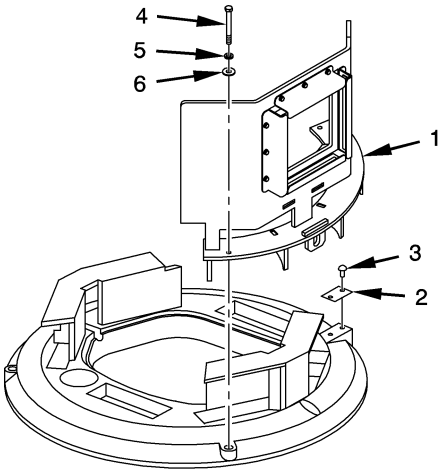
WARNING

WARNING

Inboard shield (1) weighs more than 120 pounds (54 kg). To avoid injury, two soldiers are needed to install inboard shield (1) on tank.

7. INSTALL INBOARD SHIELD (1) AND COVER PLATE (2).
   a. Install two screws (3) and cover plate (2).
   b. Lubricate threads of screws (4).
   c. Place inboard shield (1) on tank and install screw (4), new lockwasher (5), and washer (6). Do not tighten screw (4).





Go on to Sheet 5

3w7181

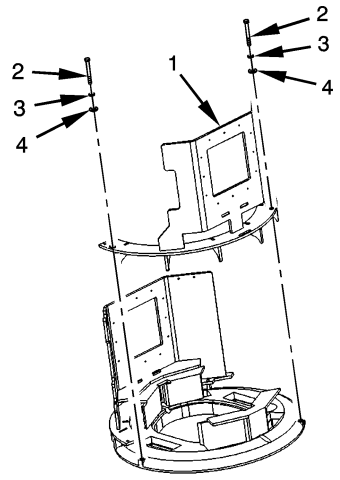
COMMANDER'S BOLT-ON ARMOR KIT INSTALLATION AND REMOVAL (Sheet 5 of 8)

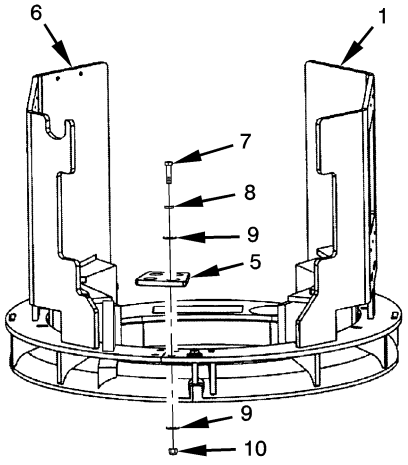
WARNING

WARNING

Outboard shield (1) weighs more than 120 pounds (54 kg). To avoid injury, two soldiers are needed to install outboard shield (1) on tank.

8. INSTALL OUTBOARD SHIELD (1).
   a. Place outboard shield (1) on tank and aline holes.
   b. Lubricate and install two screws (2), new lockwashers (3), and washers (4). Do not tighten screws (2).
9. INSTALL SPLICE PLATE (5) TO INBOARD SHIELD (6) AND OUTBOARD SHIELD (1).
   a. Position splice plate (5).
   b. Lubricate and install four screws (7), new lockwashers (8), eight washers (9) and four new self-locking nuts (10).
10. TORQUE FOUR SELF-LOCKING NUTS (10) TO 95-105 FT-LB (129-142 N·M).





Go on to Sheet 6

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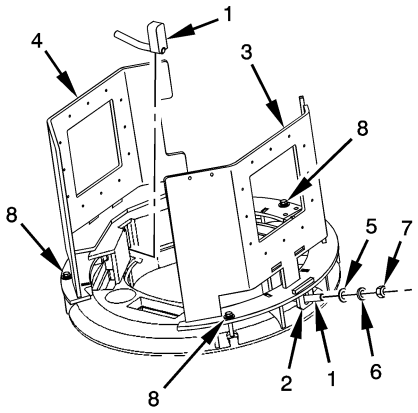
COMMANDER'S BOLT-ON ARMOR KIT INSTALLATION AND REMOVAL (Sheet 6 of 8)

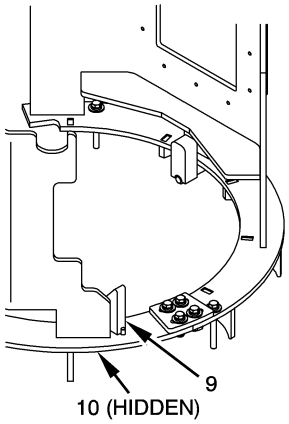
11. INSTALL LAG BOLT WELDMENT (1).
    a. Slide two commander's shield eyes (2) into slots on the inboard shield (3) and outboard shield (4).
    b. Insert two lag bolt weldments (1) from inside turret through drain holes and two commander's shield eyes (2).
    c. Lubricate threads of two lag bolt weldments (1).
    d. Install two washers (5), new lockwashers (6), and new self-locking nuts (7) to lag bolt weldment (1).

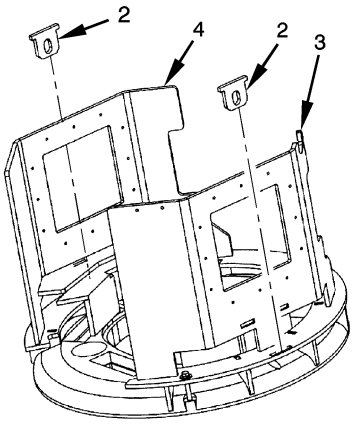


12. TORQUE THREE SCREWS (8) TO 95-105 FT-LB (129-142 N·M).

13. TORQUE TWO SELF-LOCKING NUTS (7) TO 165-175 FT-LB (224-237 N·M).

14. OPEN AND CLOSE HATCH TO CHECK IF COMMANDER'S HATCH STOP (9) IS PROPERLY LOCATED. HATCH SHOULD LOCK ONTO HATCH STOP (9) IN THE OPEN POSITION. ADJUST HATCH STOP (9) IF NECESSARY. TORQUE TWO SCREWS (10) BETWEEN 39-44 FT-LB (53-59 N·M).





Go on to Sheet 7

3w7183

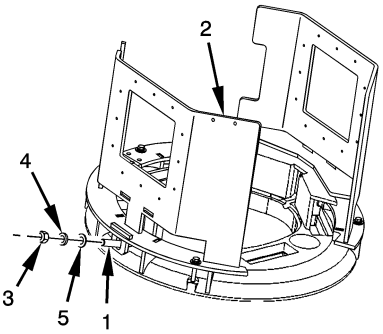
COMMANDER'S BOLT-ON ARMOR KIT INSTALLATION AND REMOVAL (Sheet 7 of 8)

REMOVAL:

NOTE

For transfer to M1A1 Force Protection vehicle, do not remove armored glass and brackets.

1. REMOVE LAG BOLT WELDMENT (1) FROM OUTBOARD SHIELD (2).
   a. Remove nut (3), lockwasher (4), and washer (5).
   b. Remove lag bolt weldment (1).
2. REMOVE COMMANDER'S SHIELD EYE (6) AND SPLICE PLATE (7).
   a. Remove commander's shield eye (6).
   b. Remove four screws (8), lockwashers (9), eight washers (10), and four self-locking nuts (11).
   c. Remove splice plate (7).

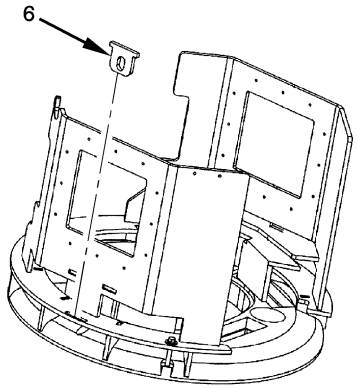


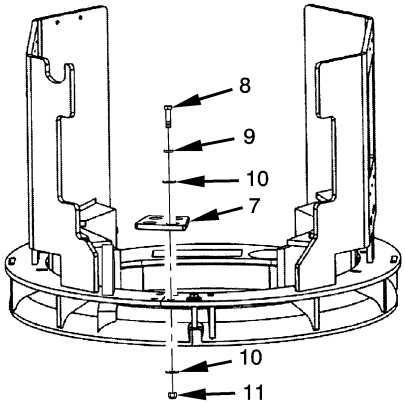
WARNING

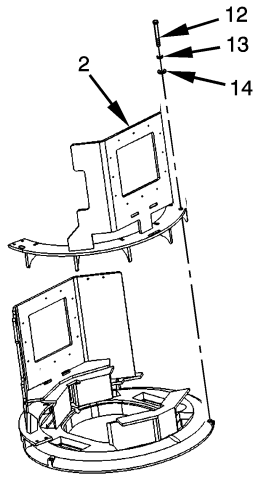
WARNING

Outboard shield (2) weighs more than 120 pounds (54 kg). To avoid injury, two soldiers are needed to remove outboard shield (2) from tank.

3. REMOVE OUTBOARD SHIELD (2).
   a. Remove two screws (12), lockwashers (13), and washers (14).
   b. Remove outboard shield (2) from tank.







Go on to Sheet 8

3w7184

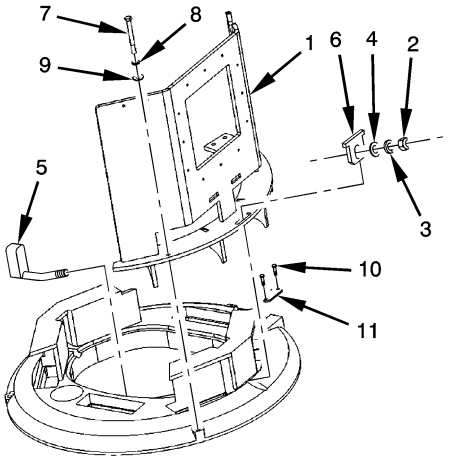
COMMANDER'S BOLT-ON ARMOR KIT INSTALLATION AND REMOVAL (Sheet 8 of 8)

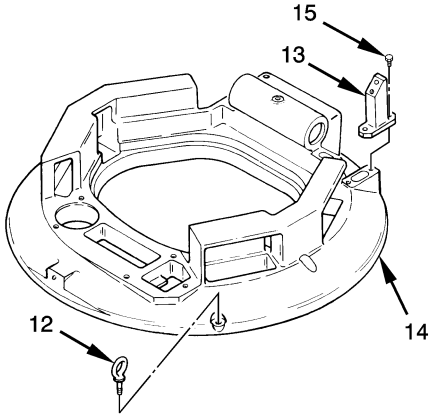
WARNING

WARNING

Inboard shield (1) weighs more than 120 pounds (54 kg). To avoid injury, two soldiers are needed to remove inboard shield (1) from tank.

4. REMOVE INBOARD SHIELD (1).
   a. Remove nut (2), lockwasher (3), and washer (4).
   b. Remove lag bolt weldment (5) and commander's shield eye (6).
   c. Remove screw (7), lockwasher (8), and washer (9).
   d. Remove inboard shield (1) from tank.
   e. Remove two screws (10) and cover plate (11).
5. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.
6. INSTALL THREE EYE BOLTS (12) AND DOOR HOLDER (13) ON COMMANDER'S CUPOLA (14).
   a. Install three eye bolts (12).
   b. Lubricate and install two screws (15) and door holder (13).
7. TORQUE TWO SCREWS (15) TO 30-35 LB-FT (41-47 N·M).





End of Task

3w7186

COMMANDER'S INBOARD AND OUTBOARD SHIELD, LARGE WINDOW AND LONG AND SHORT WINDOW BRACKET ASSEMBLIES REPLACEMENT (Sheet 1 of 2)

APPLICABILITY: Tanks with Force Protection Kit

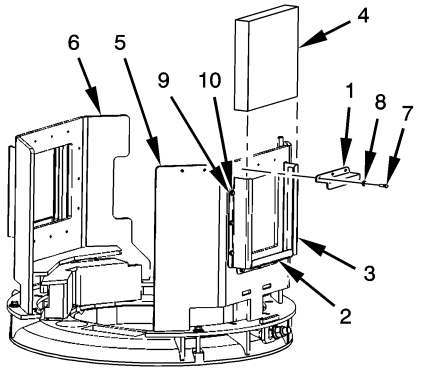
TOOLS: General mechanic's automotive tool kit (SC 5180-95-B47) (NSN 5180-01-483-0249)
Torque wrench, 15-75 lb-ft (NSN 5120-01-396-6074)

SUPPLIES: Aircraft grease (NSN 9150-00-944-8953)
Lockwasher (P/N MS35340-45) (12 required)

REMOVAL:

NOTE

Use this task to replace short window brackets (1, 2) long window bracket (3) or large windows (4) on commander's inboard shield (5) or outboard shield (6). Steps for commander's inboard shield (5) are shown.



1. REMOVE LARGE WINDOW (4).
   a. Remove three screws (7), lockwashers (8), and short window bracket (1).
   b. Remove short window bracket (1) from commander's inboard shield (5).
   c. Loosen nine screws (9) on two long window brackets (3) and short window bracket (2).
   d. Remove large window (4).
   e. Remove nine screws (9) and lockwashers (10), two long window brackets (3), and short window bracket (2).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.

INSTALLATION:

WARNING

To protect vehicle commander from bullets or shrapnel, large windows must be positioned correctly. Large window (label side with words "STRIKE FACE") must face outward from turret when installed correctly. Failure to do so may result in serious injury. There are three ways to verify correct installation.

- Glass is layered with four panes of glass and one thinner pane of 1/4 inch plastic (spall liner). Be sure thinner 1/4 inch spall liner is on inside. Be sure glass is on the outside facing threat. The layers of glass can be seen by looking at it from the side, with 1/4 inch spall liner on the inside. Adhesive on sides of glass may need to be removed to view layers.
- Plastic spall liner will scratch more easily than glass. Take a sharp piece of metal and try to scribe a very small line on outer edge of inside and outside panes of each large window. Be sure pane that scratches more easily is on inside (towards cupola center) - this is the plastic spall liner.

Go on to Sheet 2

3w8006

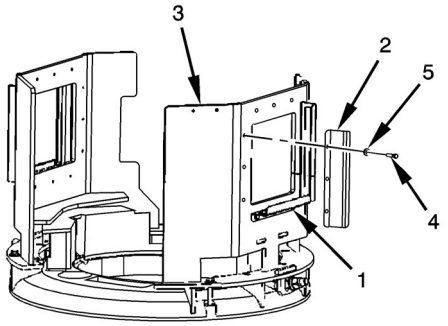
COMMANDER'S INBOARD AND OUTBOARD SHIELD, LARGE WINDOW AND LONG AND SHORT WINDOW BRACKET ASSEMBLIES REPLACEMENT (Sheet 2 of 2)

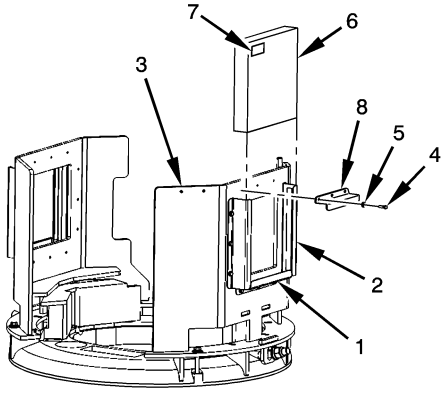
- Take a coin and tap inside and outside panes. Plastic spall liner will make a softer, more muffled, sound as compared to glass. Be sure that plastic pane is on inside.

CAUTION

To avoid damage to large window, handle with care.

1. INSTALL SHORT WINDOW BRACKET (1) AND LONG WINDOW BRACKETS (2).
   a. Position one short window bracket (1) on commander's inboard shield (3).
   b. Lubricate and loosely install three screws (4) and three new lockwashers (5) on short window bracket (1).
   c. Position two long window brackets (2) on commander's inboard shield (3).
   d. Lubricate and loosely install six screws (4) and six new lockwashers (5) on two long window brackets (2).
2. INSTALL LARGE WINDOW (6).
   a. Carefully place large window (6) in long window brackets (2) and short window bracket (1) with words "STRIKE FACE" on label (7) facing outward from commander's inboard shield (3).
   b. Position short window bracket (8) on commander's inboard shield (3).
   c. Lubricate and install three screws (4) and new lockwashers (5) on short window bracket (8).
3. TORQUE TWELVE SCREWS (4) BETWEEN 19-24 FT-LB (26-32 N·M).
4. REMOVE "STRIKE FACE" LABEL (7) FROM LARGE WINDOW.





End of Task 3w8007

COMMANDER'S HATCH STOP REPLACEMENT (Sheet 1 of 1)

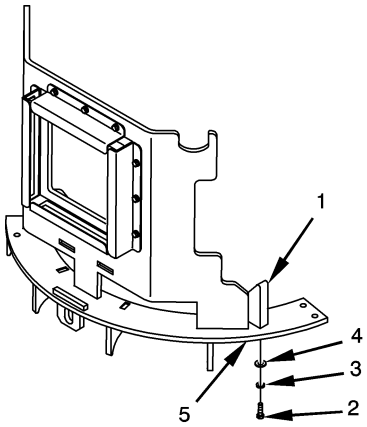
APPLICABILITY: Tanks with Force Protection Kit

TOOLS: General mechanic's automotive tool kit (SC 5180-95-B47) (NSN 5180-01-483-0249)
Torque wrench, 15-75 ft-lb (NSN 5120-01-396-6074)

SUPPLIES: Aircraft grease (NSN 9150-00-944-8953)
Lockwasher (P/N MS35340-46) (2 required)

REMOVAL:

1. REMOVE COMMANDER'S HATCH STOP (1).
   a. Remove two screws (2), lockwashers (3), and flat washers (4) from commander's hatch stop (1).
   b. Remove commander's hatch stop (1) from base support (5).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



INSTALLATION:

1. INSTALL COMMANDER'S HATCH STOP (1).
   a. Install and aline commander's stop (1) with holes in base support (5).
   b. Lubricate and install two screws (2), two new lockwashers (3), and flat washers (4).
   c. Torque screws (2) to 39-44 lb-ft (53-59 N·m).
2. OPEN AND CLOSE HATCH TO CHECK IF COMMANDER'S HATCH STOP (1) IS PROPERLY LOCATED. HATCH SHOULD LOCK ONTO COMMANDER'S HATCH STOP (1) IN THE OPEN POSITION. ADJUST IF NECESSARY.

End of Task 3w8039

LAG BOLT WELDMENT AND COMMANDER'S SHIELD EYE REPLACEMENT (Sheet 1 of 1)

APPLICABILITY: Tanks with Force Protection Kit

TOOLS: General mechanic's automotive tool kit (SC 5180-95-B47) (NSN 5180-01-483-0249)
Deep style socket, 1/2 inch drive, 1-5/16 inch (P/N 00N-52; KTC 50627)
Torque wrench, 50-250 ft-lb (NSN 5120-01-374-1938)

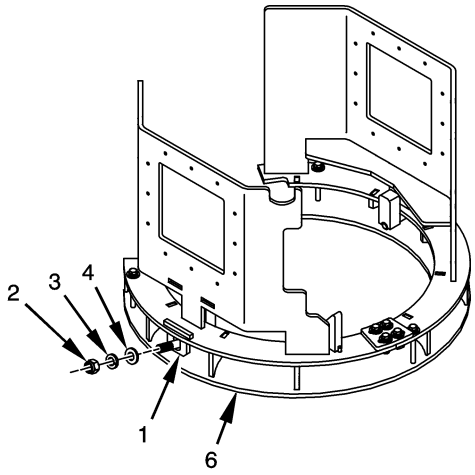
SUPPLIES: Aircraft grease (NSN 9150-00-944-8953)
Lockwasher (P/N MS35340-52) (2 required)
Self-locking nut (P/N MS51943-47) (2 required)

REMOVAL:

NOTE

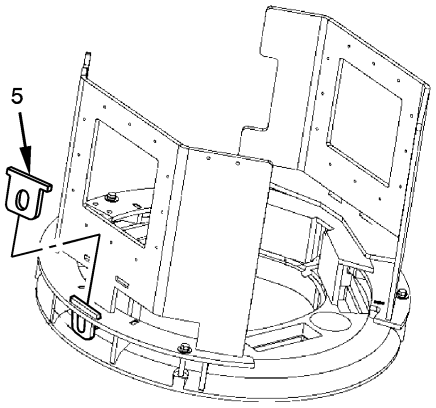
Use this task to replace inboard or outboard lag bolt weldment and commander's shield eye. Inboard lag bolt weldment and commander's shield eye is shown.

1. REMOVE INBOARD LAG BOLT WELDMENT (1).
   a. Remove self-locking nut (2), lockwasher (3), and flat washer (4).
   b. Remove lag bolt weldment (1).
   c. Remove commander's shield eye (5) from base weldment (6).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



INSTALLATION:

1. INSTALL INBOARD LAG BOLT WELDMENT (1).
   a. Install commander's shield eye (5) in base weldment (6).
   b. Install lubricated inboard lag bolt weldment (1) thru commander's shield eye (5).
   c. Install flat washer (4), new lockwasher (3), and new self-locking nut (2).
2. TORQUE NUT (2) TO 165-175 LB-FT (224-237 N·M).



End of Task 3w8037

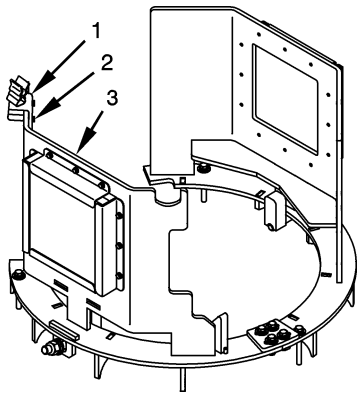
COMMANDER'S M4 BRACKET ASSEMBLY REPLACEMENT (Sheet 1 of 1)

APPLICABILITY: Tanks with Force Protection Kit

TOOLS: General mechanic's automotive tool kit (SC 5180-95-B47) (NSN 5180-01-483-0249)

REMOVAL:

1. REMOVE M4 BRACKET (1).
   a. Loosen two screws (2) on bracket (1).
   b. Remove bracket (1) from commander's inboard shield (3).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



INSTALLATION:

INSTALL M4 BRACKET (1).

a. Aline bracket (1) on commander's inboard shield (3).
b. Secure two screws (2) on M4 bracket (1).

End of Task 3w8040

COMMANDER'S SPOTLIGHT, POWER CABLES, AND PIVOT ASSEMBLY INSTALLATION AND REMOVAL (Sheet 1 of 3)

APPLICABILITY: Tanks with Force Protection Kit

TOOLS: General mechanic's automotive tool kit (SC 5180-95-B47) (NSN 5180-01-483-0249)

SUPPLIES: Aircraft grease (NSN 9150-00-944-8953)
Electrical tiedown strap (NSN 5975-00-451-5001) (as required)
Lockwasher (P/N MS35340-45) (NSN 5310-00-959-4679) (2 required)
Nylon lock nut (P/N 94827A120) (2 required)
Screw (P/N 92620A589) (2 required)

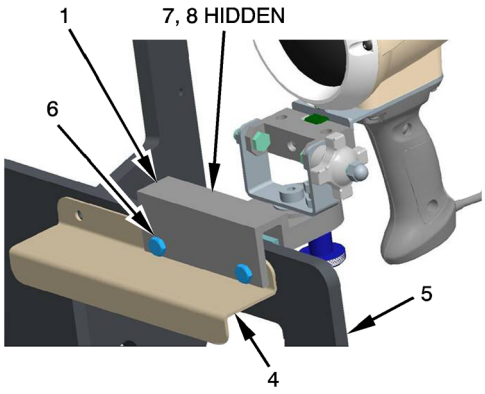
EQUIPMENT CONDITION: Tank power disconnected (TM 9-2350-264-20-1)
Turret platform and bracket cable channel access covers removed (TM 9-2350-264-20-2)

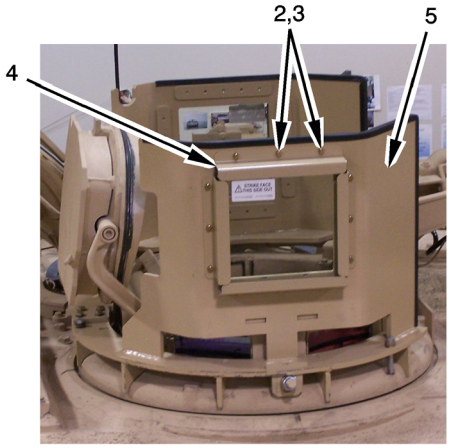
INSTALLATION:

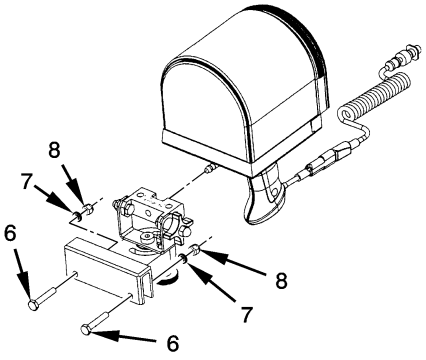
NOTE

Retain two removed screws from window bracket for spotlight removal task.

1. INSTALL PIVOT ASSEMBLY (1).
   a. Remove two screws (2) and lockwashers (3) from the window bracket (4), on the commander's outboard shield (5).
   b. Cut and remove rubber trim from pivot assembly mounting area on outboard shield (5).
   c. Position pivot assembly (1) over commander's outboard shield (5) and window bracket (4).
   d. Lubricate and install two new screws (6) to pivot assembly (1) and commander's outboard shield (5).
   e. Install two washers (7) and new nylon lock nuts (8) to pivot assembly (1).
2. INSERT SPOTLIGHT INTO PIVOT ASSEMBLY (1).







Go on to Sheet 2

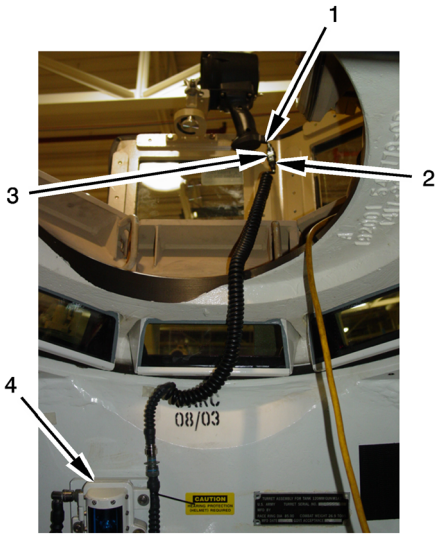
3w8124

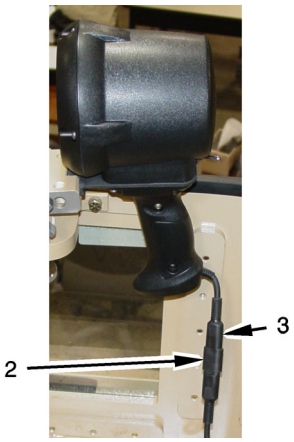
COMMANDER'S SPOTLIGHT, POWER CABLES, AND PIVOT ASSEMBLY INSTALLATION AND REMOVAL (Sheet 2 of 3)

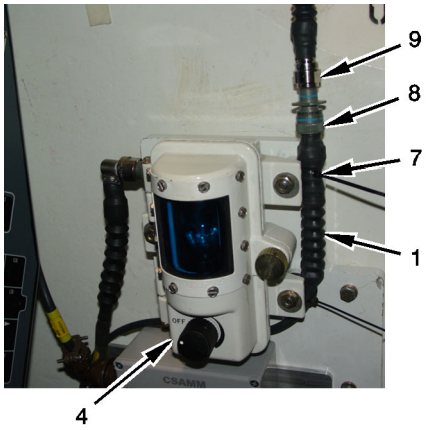
NOTE

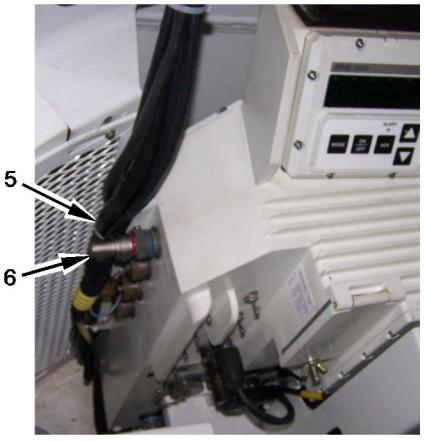
Depending on configuration, 1W815-P1 may be connected to utility jack on RTNB or TNB. Connection to RTNB is shown.

3. ROUTE SPOTLIGHT POWER CABLE (1).
   a. Connect 1W816-P2 two pin connector on the retractile cord (2) to mating connector J1 (3) on spotlight.
   b. Route retractile cord (2) through hatch to commander's domelight (4).
   c. Connect power cable 1W815-P1 (5) to RTNB or TNB UJ1 receptacle (6).
   d. Route power cable 1W815-P1 (5) following wiring harness 1W102-2 down and under main gun using electrical tie straps (7) as needed. On right side of main gun, route power cable 1W108-2 behind gunner's primary sight and commander's control panel to domelight (4). Connect power cable 1W815-J1 (8) to retractile cable 1W816-P1 (9). Take up excess cable slack and tie strap (7) as needed.
   e. Add two tie straps (7) to commander's dome light (4).
4. INSTALL TURRET PLATFORM AND BRACKET CABLE CHANNEL ACCESS COVERS (TM 9-2350-264-20-2).
5. CONNECT TANK POWER (TM 9-2350-264-20-1).









Go on to Sheet 3

3w8021

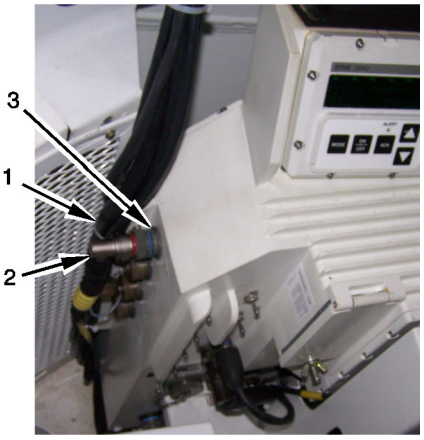
COMMANDER'S SPOTLIGHT, POWER CABLES, AND PIVOT ASSEMBLY INSTALLATION AND REMOVAL (Sheet 3 of 3)

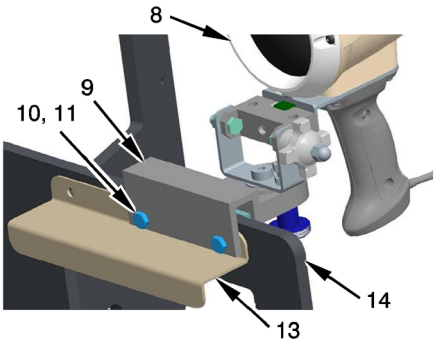
REMOVAL:

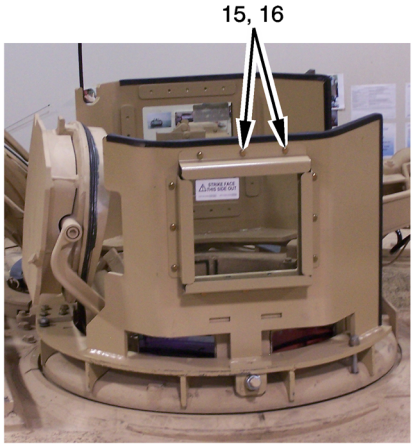
NOTE

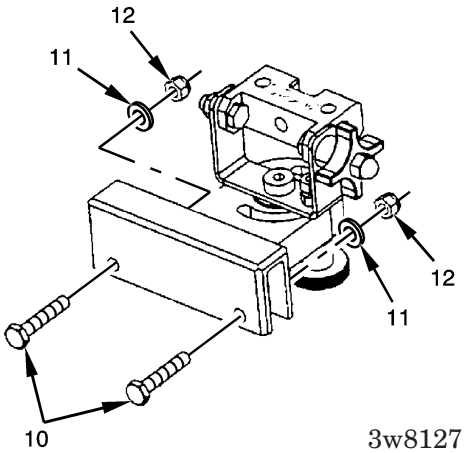
Depending on configuration, 1W815-P1 may be connected to utility jack on RTNB or TNB. Connection to RTNB is shown.

1. REMOVE SPOTLIGHT POWER CABLE (1).
   a. Remove power cable 1W815-P1 (2) from RTNB or TNB UJ1 (3).
   b. Disconnect 1W815-J1 (4) from retractile cable 1W816-P1 (5).
   c. Remove power cable (1) routed under main gun, behind gunner's primary sight and commander's control panel, removing tie straps (6) as needed.
   d. Disconnect 1W816-P2 two pin connector on the retractile cord (7) from mating connector on spotlight (8).
   e. Remove spotlight power cable (1), and retractile cord (7) from vehicle.
2. REMOVE SPOTLIGHT (8) AND PIVOT ASSEMBLY (9).
   a. Remove two screws (10), washers (11), and nylon lock nuts (12) from pivot assembly (9), window bracket (13), and commander's outboard shield (14).
   b. Remove pivot assembly (9) from commander's shield (14).
3. INSTALL TWO LUBRICATED SCREWS (15) RETAINED IN INSTALLATION STEP 1 AND TWO NEW LOCKWASHERS (16) THROUGH WINDOW BRACKET (13) AND SECURE TO COMMANDER'S SHIELD (14).









End of Task

3w8127

LOADER'S BOLT-ON ARMOR KIT INSTALLATION AND REMOVAL (Sheet 1 of 10)

APPLICABILITY: Tanks with Force Protection Kit

TOOLS: General mechanic's automotive tool kit (SC 5180-95-B47) (NSN 5180-01-483-0249)
Adapter, 1/2 inch to 3/8 inch drive (NSN 5120-00-240-8702)
Crow foot attachment, 3/8 inch drive, 9/16 inch (NSN 5120-00-184-8397)
Crow foot attachment, 3/8 inch drive, 3/4 inch (NSN 5120-00-189-7898)
Deep style socket, 1-5/16 inch, 1/2 inch drive (P/N 00N-52; KTC 50627)
Industrial goggles (NSN 4240-00-269-7912)
Rubber gloves (NSN 8415-00-266-8675)
Torque wrench, 15-75 ft-lb (NSN 5120-01-396-6074)
Torque wrench, 0-175 ft-lb (NSN 5120-00-640-6364)
Torque wrench, 0-200 in-lb (NSN 5120-00-853-4538)
Wire brush (NSN 7920-00-291-5815)

SUPPLIES: Acid swabbing brush (NSN 7920-00-514-2417)
Adhesive (NSN 8040-00-833-9563)
Aircraft grease (NSN 9150-00-944-8953)
Sealing compound (NSN 8030-01-158-6070)
Sealing compound (NSN 8030-01-025-1692)
When transferring bolt-on armor from one vehicle to another:
Lockwasher (NSN 5310-00-834-7606) (18 required)
Lockwasher (NSN 5310-00-959-4675) (8 required)
Self-locking nut (P/N MS51943-35) (NSN 5310-00-935-9021) (4 required)

PERSONNEL: Two

INSTALLATION:

WARNING

To protect vehicle loader from bullets or shrapnel, large window must be positioned correctly. Large window (label side with words "STRIKE FACE") must face outward from turret when installed correctly. Failure to do so may result in serious injury or death.

CAUTION

To avoid damage to large window, handle with care.

NOTE

This task addresses M1A1 Bolt-On Armor installation and/or removal for transfer to another Force Protection vehicle. Transfer task differs from first time installation in that the windows and brackets will not have to be installed/removed. For first time installation, begin with step 1, for subsequent installations begin with step 7 and use new lockwashers and lock nuts.

Go on to Sheet 2

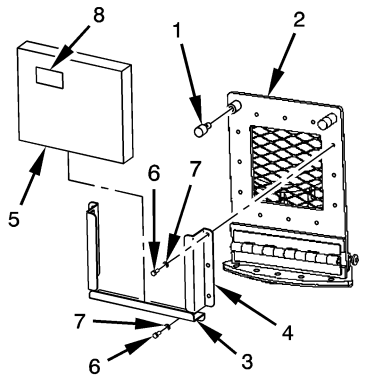
LOADER'S BOLT-ON ARMOR KIT INSTALLATION AND REMOVAL (Sheet 2 of 10)

NOTE

Assure that large window is positioned correctly. "STRIKE FACE" label placed on window from factory should face outward from turret. There are three ways to verify correct installation:

- Glass is layered with four panes of glass and one thinner pane of 1/4 inch plastic (spall liner). Be sure thinner 1/4 inch spall liner is on inside. Be sure glass is on the outside facing threat. The layers of glass can be seen by looking at it from the side, with 1/4 inch spall liner on the inside. Adhesive on sides of glass may need to be removed to view layers.
- Plastic spall liner will scratch more easily than glass. Take a sharp piece of metal and try to scribe a very small line on outer edge of inside and outside panes of each large window. Be sure pane that scratches more easily is on inside (towards cupola center) - this is the plastic spall liner.
- Take a coin and tap inside and outside panes. Plastic spall liner will make a softer, more muffled, sound as compared to glass. Be sure that plastic pane is on inside.

1. INSTALL TWO BUMPERS (1) ON LOADER'S INBOARD SHIELD (2).
2. INSTALL LONG (3) AND SHORT (4) WINDOW BRACKETS AND LARGE WINDOW (5) ON LOADER'S INBOARD SHIELD (2).
   a. Position one long window bracket (3) on loader's inboard shield (2).
   b. Lubricate and loosely install three screws (6) and three new lockwashers (7) on long window bracket (3).
   c. Position two short window brackets (4) on loader's inboard shield (2).
   d. Lubricate and loosely install six screws (6) and six new lockwashers (7) on two short window brackets (4).
   e. Carefully place large window (5) in short window brackets (4) and long window bracket (3) with words "STRIKE FACE" on label (8) facing outward from loader's inboard shield (2).



Go on to Sheet 3

3w8068

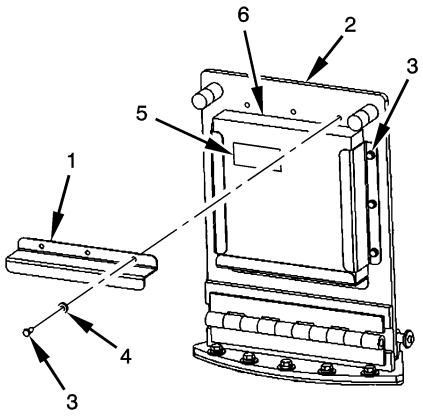
LOADER'S BOLT-ON ARMOR KIT INSTALLATION AND REMOVAL (Sheet 3 of 10)

f. Position long window bracket (1) on loader's inboard shield (2).

g. Lubricate and install three screws (3) and new lockwashers (4) on long window bracket (1).

h. Torque twelve screws (3) between 19-24 ft-lb (26-32 N·m).

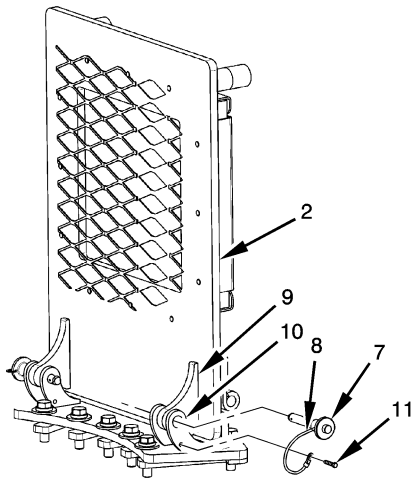
i. Remove "STRIKE FACE" label (5) from large window (6).



3. INSTALL TWO QUICK RELEASE PINS (7) AND LANYARDS (8) TO LOADER'S INBOARD SHIELD (2).

a. Install two quick-release pins (7) thru upright latch (9) and base latch (10) on loader's inboard shield (2).

b. Lubricate and install screws (11) and lanyards (8) on loader's inboard shield (2).



Go on to Sheet 4

3w8069

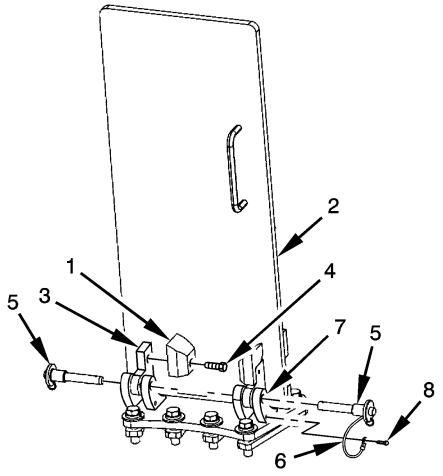
LOADER'S BOLT-ON ARMOR KIT INSTALLATION AND REMOVAL (Sheet 4 of 10)

4. INSTALL TWO DEFLECTORS (1) ON LOADER'S OUTBOARD SHIELD (2) UPRIGHT LATCH (3).

   a. Aline two deflectors (1) to upright latch (3) on loader's outboard shield (2).

   b. Lubricate and install two screws (4) on deflectors (1).

   c. Torque screws (4) to 120-144 in-lb (14-16 N·m).



5. INSTALL TWO QUICK RELEASE PINS (5) AND LANYARDS (6) ON LOADER'S OUTBOARD SHIELD (2).

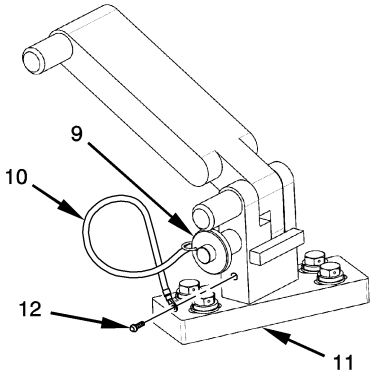
   a. Install two quick-release pins (5) thru upright latch (3) and base latch (7) of loader's outboard shield (2).

   b. Lubricate and install two screws (8) and lanyards (6) on base latch (7) of loader's outboard shield (2).

6. INSTALL QUICK RELEASE PIN (9) AND LANYARD (10) TO LOADER'S HATCH LATCH (11).

   a. Install quick release pin (9) on hatch latch weldment (11).

   b. Lubricate and install screw (12) and lanyard (10) to hatch latch weldment (11).



NOTE

Quantity of shield clamps (13) may vary. Minimum of three shield clamps (13) must be installed. Quantity of five shield clamps (13) is shown.

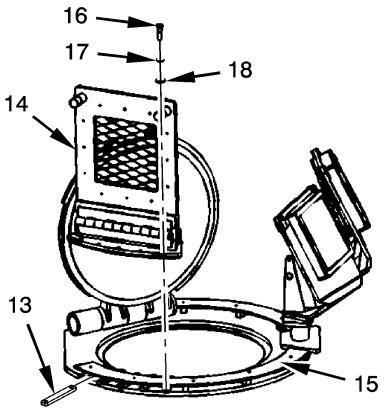
7. INSTALL ASSEMBLED LOADER'S INBOARD SHIELD (14).

   a. Position loader's inboard shield (14) on skate ring (15).

   b. Install shield clamps (13), (minimum of three is required) under skate ring (15).

   c. Lubricate and install screws (16), new lockwashers (17), and washers (18) to loader's inboard shield (14) and shield clamps (13).

   d. Torque screws (16) between 85-95 ft-lb (116-128 N·m).



Go on to Sheet 5

3w8071

LOADER'S BOLT-ON ARMOR KIT INSTALLATION AND REMOVAL (Sheet 5 of 10)

NOTE

Quantity of shield clamps (1) may vary. Minimum of three shield clamps (1) must be installed. Quantity of four shield clamps (1) is shown.

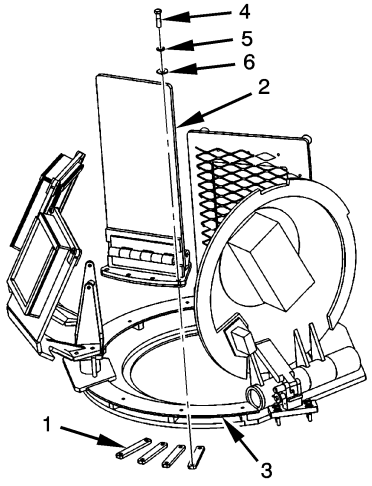
8. INSTALL ASSEMBLED LOADER'S OUTBOARD SHIELD (2).

    a. Position loader's outboard shield (2) on skate ring (3).

    b. Install shield clamps (1) (minimum of three is required) under skate ring (3).

    c. Lubricate and install screws (4), new lockwashers (5), and washers (6) to loader's outboard shield (2) and shield clamps (1).

    d. Torque screws (4) between 85-95 ft-lb (116-128 N·m).



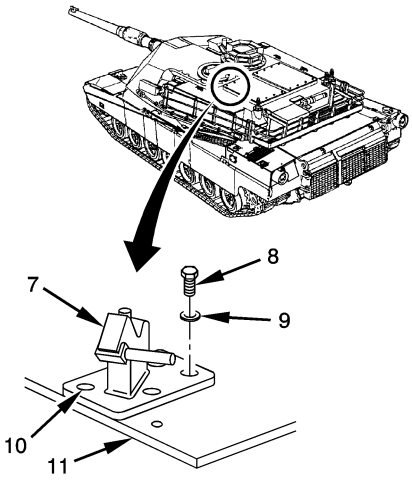
NOTE

If vehicle is equipped with old style ammunition racks, do steps 9, 10, 11, and 12. If vehicle is equipped with new style ammunition racks, do steps 13 and 14.

9. REMOVE AND RETAIN EXISTING LOCK ASSEMBLY (7), SCREWS (8), AND WASHERS (9) FOR REINSTALLATION.

    a. Remove adhesive from around four screws (8) and in holes (10) on lock (7).

    b. Remove screws (8), washers (9), and lock (7) from turret blow-off panel (11).



10. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.

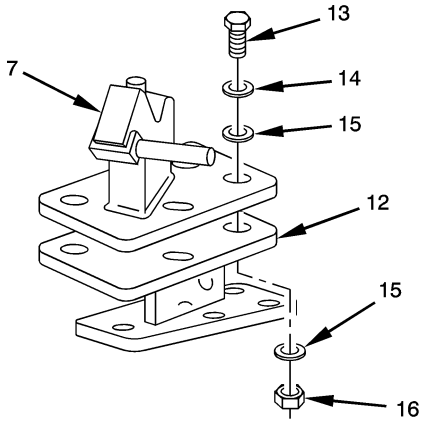
11. INSTALL LOCK ASSEMBLY (7) TO LOADER'S HATCH LATCH SPACER ASSEMBLY (12).

    a. Install and aline lock (7) on spacer (12).

    b. Lubricate and install four screws (13), new lockwashers (14), and washers (15) on lock (7) and top of spacer (12).

    c. Install four washers (15) and new lock nuts (16), on underside of spacer (12).

    d. Torque screws (13) between 36-43 lb-ft (49-58 N·m).



Go on to Sheet 6

3w8074

LOADER'S BOLT-ON ARMOR KIT INSTALLATION AND REMOVAL (Sheet 6 of 10)

12. INSTALL ASSEMBLED LOCK (1) AND HATCH LATCH SPACER (2).

    a. Aline spacer (2) with turret blow-off panel (3).

    b. Apply sealing compound (NSN 8030-01-025-1692) to threads of three short screws (4) removed from lock assembly (1).

    c. Loosely install three short screws (4), new lockwashers (5), and washers (6) in holes (7) on spacer (2).

    d. Apply adhesive on long screw (8) removed from lock assembly, new lockwasher (9), and washer (10). Use acid swabbing brush.

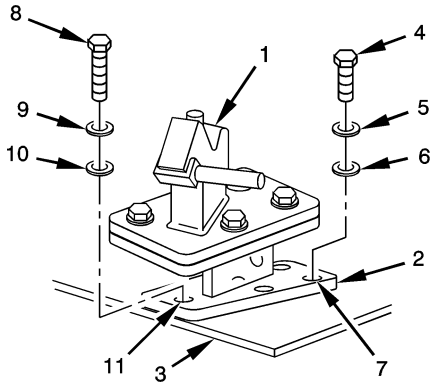
    e. Loosely install long screw (8), new lockwasher (9), and washer (10) in outside hole (11) of spacer (2).

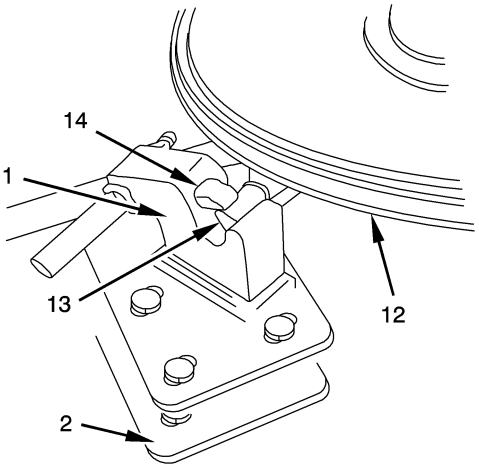
    f. Open loader's hatch (12) and adjust spacer (2) and lock (1) so striker bar (13) seats in lock (1) and lock rod (14) holds striker bar (13) secured in lock (1).

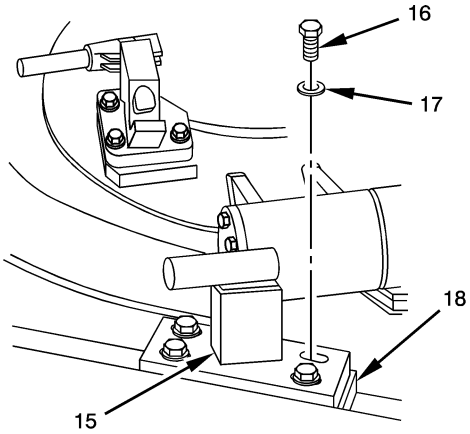
    g. Torque short screws (4) and long screw (8) between 36-43 lb-ft (49-58 N·m).

13. REMOVE MOUNTING BRACKET (15), SCREWS (16), AND WASHERS (17). RETAIN WITH VEHICLE FOR KIT REMOVAL PROCEDURE.

    Remove four screws (16), washers (17), and mounting bracket (15) from mounting pad (18).







Go on to Sheet 7

3w8077

LOADER'S BOLT-ON ARMOR KIT INSTALLATION AND REMOVAL (Sheet 7 of 10)

14. INSTALL HATCH LATCH WELDMENT (1).

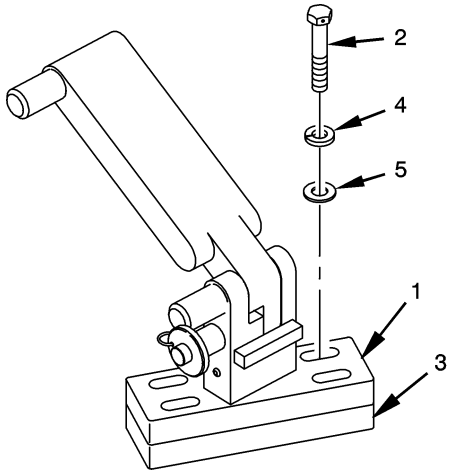
    a. Apply sealing compound (NSN 8030-01-158-6070) to threads of four screws (2). Use acid swabbing brush.

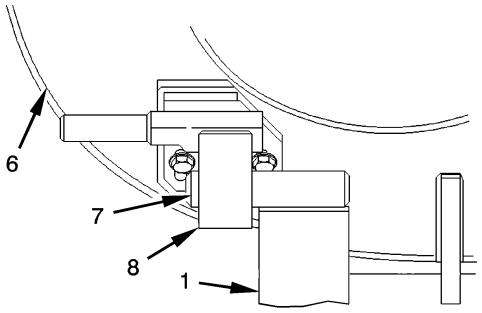
    b. Aline hatch latch weldment (1) with holes in mounting pad (3).

    c. Loosely install four screws (2), new lockwashers (4), and washers (5) in hatch latch weldment (1) and mounting pad (3).

    d. Open loader's hatch (6) and adjust hatch latch weldment (1) so that catch pin (7) on hatch latch weldment (1) is flush with catch (8), and pin (7) is resting securely in catch (8).

    e. Torque screws (2) between 36-43 lb-ft (49-58 N·m).





Go on to Sheet 8

3w8080

LOADER'S BOLT-ON ARMOR KIT INSTALLATION AND REMOVAL (Sheet 8 of 10)

REMOVAL:

NOTE

If vehicle is equipped with new style ammunition rack, do steps 1 and 2. If vehicle is equipped with old style ammunition rack, do steps 3, 4, and 5.

1. REMOVE HATCH LATCH WELDMENT (1).

   Remove four screws (2), lockwashers (3), washers (4), and hatch latch weldment (1) from mounting pad (5).

2. INSTALL RETAINED MOUNTING BRACKET (6), SCREWS (7), AND WASHERS (8).

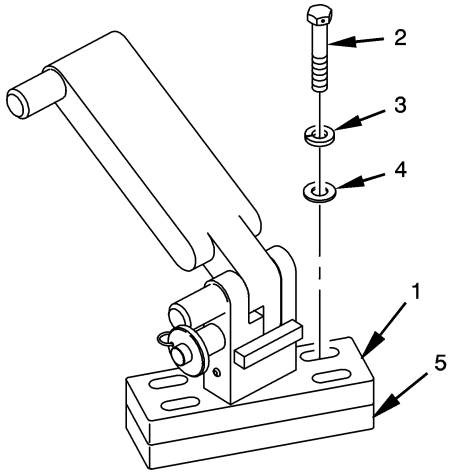
   a. Apply sealing compound (NSN 8030-01-158-6070) to threads of four screws (7). Use acid swabbing brush.

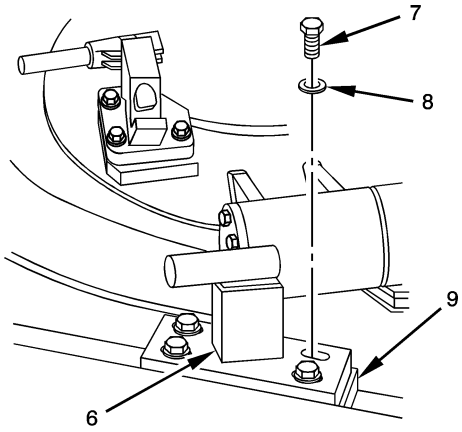
   b. Aline bracket (6) with holes in mounting pad (9).

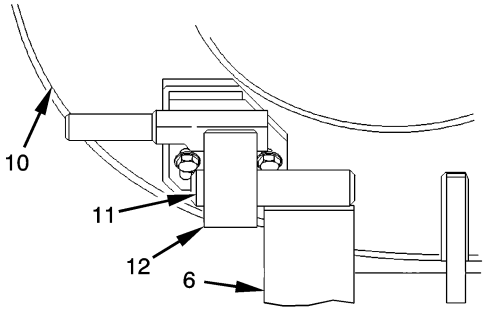
   c. Loosely install four screws (7) and washers (8) in mounting bracket (6) and mounting pad (9).

   d. Open loader's hatch (10) and adjust mounting bracket (6) so that catch pin (11) on mounting bracket (6) is flush with catch (12), and pin (11) is resting securely in catch (12).

   e. Torque screws (7) between 36-43 lb-ft (49-58 N·m).







Go on to Sheet 9

3w8082

LOADER'S BOLT-ON ARMOR KIT INSTALLATION AND REMOVAL (Sheet 9 of 10)

3. REMOVE ASSEMBLED LOCK ASSEMBLY (1) AND HATCH LATCH SPACER (2).

   a. Remove adhesive from around three short screws (3), one long screw (4), and in holes (5) on hatch latch spacer (2).

   b. Remove screws (3,4), lockwashers (6), washers (7), and assembled lock (1) and hatch latch spacer (2) from turret blow-off panel (8). Retain screws (3, 4) and washers (7) for step 5.

4. REMOVE LOCK ASSEMBLY (1) FROM LOADER'S HATCH LATCH SPACER ASSEMBLY (2).

   a. Remove four screws (9), lockwashers (10), washers (11), and locknuts (12) from lock assembly (1) and hatch latch spacer (2).

   b. Remove lock assembly (1) from loader's hatch latch spacer (2).

5. INSTALL LOCK ASSEMBLY (1) TO TURRET BLOW-OFF PANEL (8).

   a. Aline lock assembly (1) with turret blow-off panel (8).

   b. Apply sealing compound (NSN 8030-01-025-1692) to threads of three short screws (3) removed in step 3.

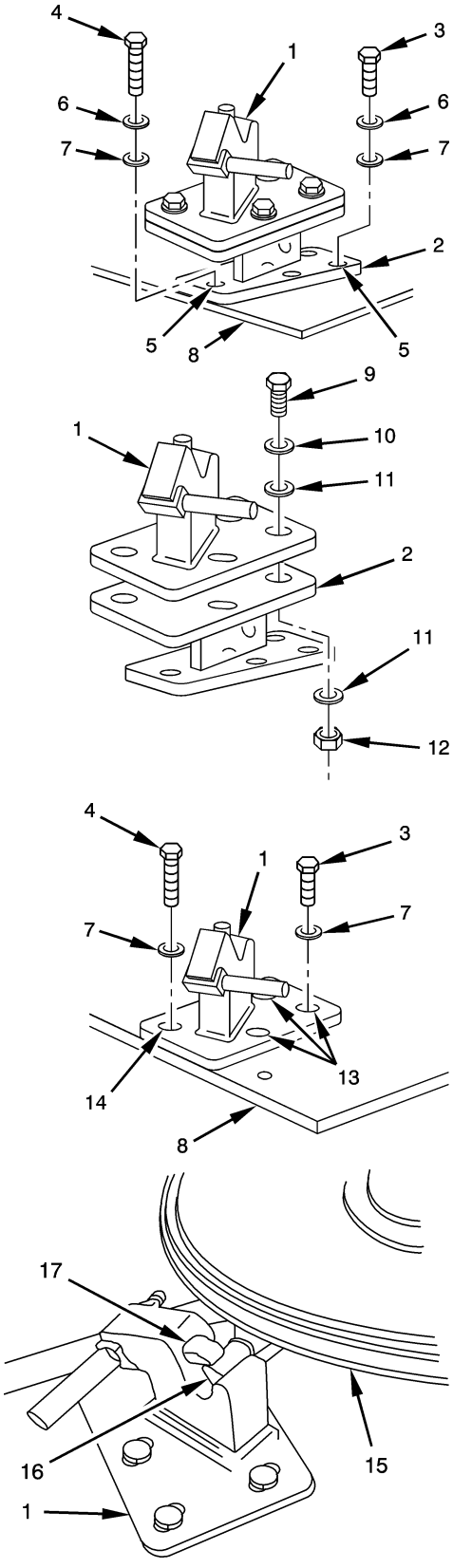
   c. Loosely install three short screws (3) and washers (7) in holes (13) on lock assembly (1).

   d. Apply adhesive on long screw (4) and washer (7) removed in step 3. Use acid swabbing brush.

   e. Loosely install long screw (4) and washer (7) in outside hole (14) of lock assembly (1).

   f. Open loader's hatch (15) and adjust lock assembly (1) so striker bar (16) seats in lock (1) and lock rod (17) holds striker bar (16) secured in lock (1).

   g. Torque short screws (3) and long screw (4) between 36-43 lb-ft (49-58 N·m).



Go on to Sheet 10

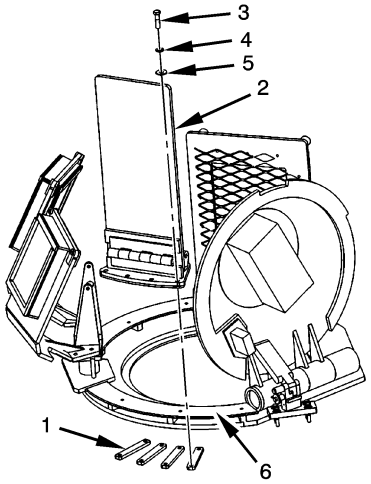
3w8085

LOADER'S BOLT-ON ARMOR KIT INSTALLATION AND REMOVAL (Sheet 10 of 10)

NOTE

Quantity of shield clamps (1) may vary. Quantity of four shield clamps (1) is shown.

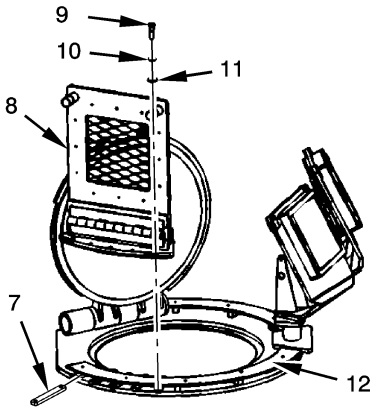
6. REMOVE ASSEMBLED LOADER'S OUTBOARD SHIELD (2).
   a. Remove screws (3), lockwashers (4), and washers (5) from loader's outboard shield assembly (2).
   b. Remove shield clamps (1) from under skate ring (6).
   c. Remove assembled loader's outboard shield (2) from skate ring (6).



NOTE

Quantity of shield clamps (7) may vary. Quantity of five shield clamps (7) is shown.

7. REMOVE ASSEMBLED LOADER'S INBOARD SHIELD (8).
   a. Remove screws (9), lockwashers (10), and washers (11) from loader's inboard shield assembly (8).
   b. Remove shield clamps (7) from under skate ring (12).
   c. Remove assembled loader's inboard shield (8) from skate ring (12).
8. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



End of Task

3w8089

LOADER'S INBOARD SHIELD, LARGE WINDOW AND LONG AND SHORT WINDOW BRACKET ASSEMBLY REPLACEMENT (Sheet 1 of 2)

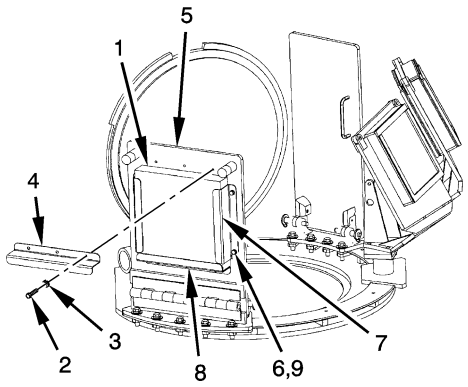
APPLICABILITY: Tanks with Force Protection Kit

TOOLS: General mechanic's automotive tool kit, (SC 5180-95-B47) (NSN 5180-01-483-0249)
Torque wrench, 15-75 ft-lb (NSN 5120-01-396-6074)

SUPPLIES: Aircraft grease (NSN 9150-00-944-8953)
Lockwasher (P/N MS35340-45) (12 required)

REMOVAL:

1. REMOVE LARGE WINDOW (1).
   a. Remove three screws (2), lockwashers (3), and long window bracket (4) from loader's inboard shield (5).
   b. Loosen nine screws (6) on two short window brackets (7) and long window bracket (8).
   c. Remove large window (1).
   d. Remove nine screws (6) and lockwashers (9), two short window brackets (7), and long window bracket (8).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



INSTALLATION:

WARNING

To protect vehicle loader from bullets or shrapnel, large windows must be positioned correctly. Large window (label side with words "STRIKE FACE") must face outward from turret when installed correctly. Failure to do so may result in serious injury. There are three ways to verify correct installation.

- Glass is layered with four panes of glass and one thinner pane of 1/4 inch plastic (spall liner). Be sure thinner 1/4 inch spall liner is on inside. Be sure glass is on the outside facing threat. The layers of glass can be seen by looking at it from the side, with 1/4 inch spall liner on the inside. Adhesive on sides of glass may need to be removed to view layers.
- Plastic spall liner will scratch more easily than glass. Take a sharp piece of metal and try to scribe a very small line on outer edge of inside and outside panes of each large window. Be sure pane that scratches more easily is on inside (towards cupola center) - this is the plastic spall liner.
- Take a coin and tap inside and outside panes. Plastic spall liner will make a softer, more muffled, sound as compared to glass. Be sure that plastic pane is on inside.

CAUTION

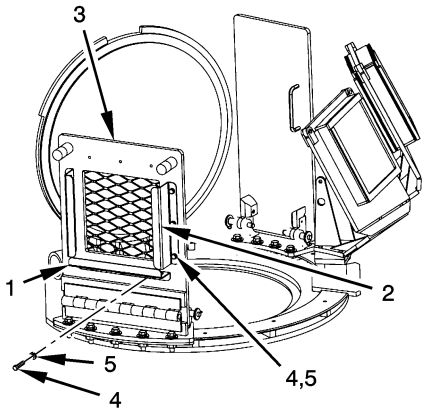
To avoid damage to large window, handle with care.

Go on to Sheet 2

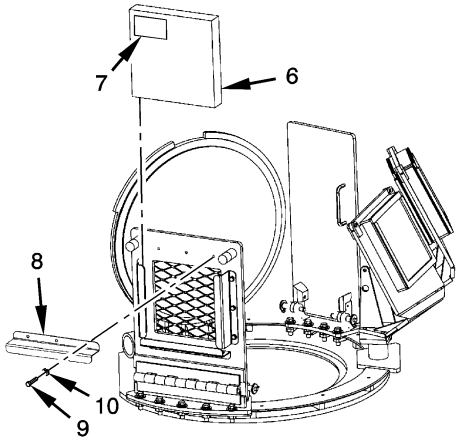
3w8010

LOADER'S INBOARD SHIELD, LARGE WINDOW AND LONG AND SHORT WINDOW BRACKET ASSEMBLY REPLACEMENT (Sheet 2 of 2)

1. INSTALL LONG WINDOW BRACKET (1) AND SHORT WINDOW BRACKETS (2).
   a. Position one long window bracket (1) on loader's inboard shield (3).
   b. Lubricate and loosely install three screws (4) and three new lockwashers (5) on long window bracket (1).
   c. Position two short window brackets (2) on loader's inboard shield (3).
   d. Lubricate and loosely install six screws (4) and six new lockwashers (5) on two short window brackets (2).



2. INSTALL LARGE WINDOW (6).
   a. Carefully place large window (6) in short window brackets (2) and long window bracket (1) with words "STRIKE FACE" on label (7) facing outward from loader's inboard shield (3).
   b. Position long window bracket (8) on loader's inboard shield (3).
   c. Lubricate and install three screws (9) and new lockwashers (10) on long window bracket (8).



3. TORQUE TWELVE SCREWS (4,9) BETWEEN 19-24 FT-LB (26-32 N·M).
4. REMOVE "STRIKE FACE" LABEL (7) FROM LARGE WINDOW (6).

End of Task 3w8011

LOADER'S OUTBOARD SHIELD AND QUICK-RELEASE PIN WITH LANYARD REPLACEMENT (Sheet 1 of 2)

APPLICABILITY: Tanks with Force Protection Kit

TOOLS: General mechanic's automotive tool kit (SC 5180-95-B47) (NSN 5180-01-483-0249)
Torque wrench, 0-175 ft-lb (NSN 5120-00-640-6364)

SUPPLIES: Aircraft grease (NSN 9150-00-944-8953)
Lockwasher (NSN 5310-00-834-7606) (8 required)

PERSONNEL: Two

REMOVAL:

1. REMOVE LOADER'S OUTBOARD SHIELD (1).

NOTE

Three or four shield clamps (2) will be present. A minimum of three shield clamps (2) are required. Four shield clamps (2) are shown.

   a. Remove screws (3), lockwashers (4), and washers (5) from loader's outboard shield (1).

   b. Remove shield clamps (2) from under skate ring (6).

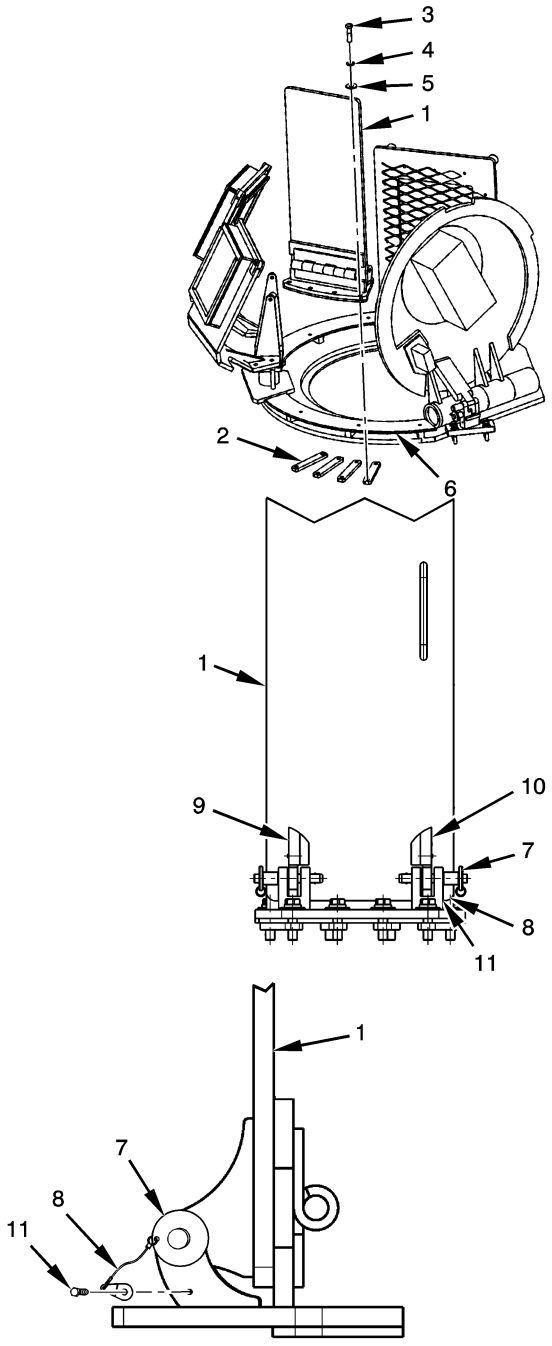
   c. Remove loader's outboard shield (1) from skate ring (6).

2. REMOVE TWO QUICK-RELEASE PINS (7) AND LANYARDS (8).

   a. Remove two quick-release pins (7) from left deflector (9) and right deflector (10) on loader's outboard shield (1).

   b. Remove two socket head cap screws (11) and lanyards (8) from loader's outboard shield (1).

3. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



Go on to Sheet 2

3w8013

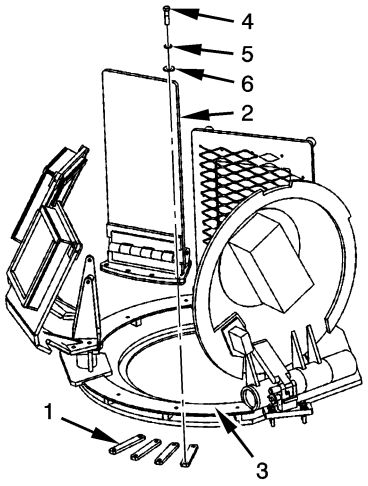
LOADER'S OUTBOARD SHIELD AND QUICK-RELEASE PIN WITH LANYARD REPLACEMENT (Sheet 2 of 2)

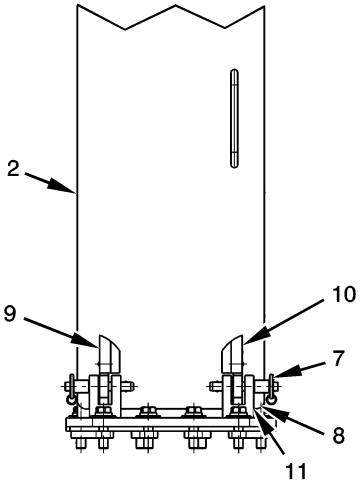
INSTALLATION:

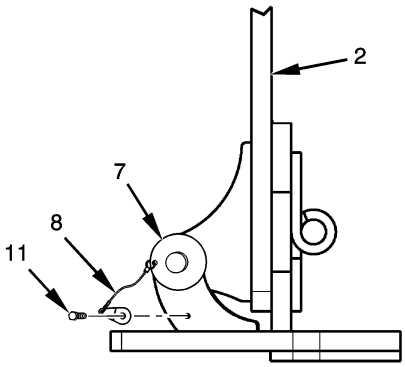
NOTE

Three or four shield clamps (1) will be present. A minimum of three shield clamps (1) are required. Four shield clamps (1) are shown.

1. INSTALL LOADER'S OUTBOARD SHIELD (2).
   a. Position loader's outboard shield (2) on skate ring (3).
   b. Install shield clamps (1) under skate ring (3). A minimum of three shield clamps (1) are required.
   c. Lubricate and install screws (4), new lockwashers (5) and washers (6) to loader's outboard shield (2) and shield clamps (1).
2. TORQUE SCREWS (4) BETWEEN 85-95 FT-LB (116-128 N·M).
3. INSTALL TWO QUICK-RELEASE PINS (7) AND LANYARDS (8).
   a. Install two quick-release pins (7) thru left deflector (9) and right deflector (10) on loader's outboard shield (2).
   b. Install two socket head cap screws (11) and lanyards (8) on left deflector (9) and right deflector (10) on loader's outboard shield (2).







End of Task 3w8016

LOADER'S HATCH LATCH WELDMENT AND QUICK-RELEASE PIN WITH LANYARD REPLACEMENT (Sheet 1 of 1)

APPLICABILITY: TUSK 2 vehicles with new style ammunition racks

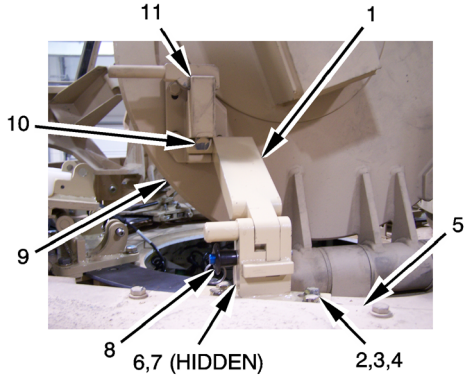
TOOLS: General mechanic's automotive tool kit (SC 5180-95-B47) (NSN 5180-01-483-0249)
Torque wrench, 15-75 ft-lb (NSN 5120-01-396-6074)

SUPPLIES: Acid swabbing brush (NSN 7920-00-514-2417)
Lockwasher (NSN 5310-00-959-4675) (4 required)
Sealing Compound (NSN 8030-01-158-6070)

EQUIPMENT CONDITION: Loader's hatch closed (TM 9-2350-264-10)

REMOVAL:

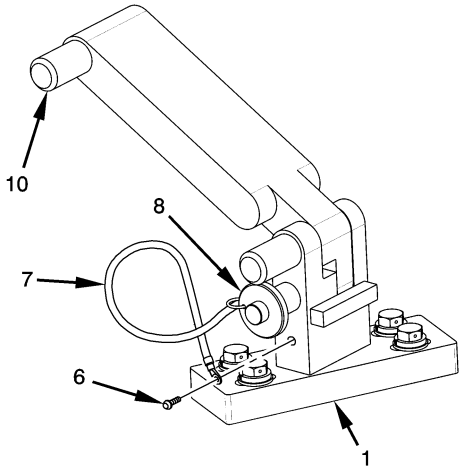
1. REMOVE HATCH LATCH WELDMENT (1).
   a. Remove four screws (2), lockwashers (3), and washers (4) from hatch latch weldment (1) and mounting pad (5).
   b. Remove screw (6) from pin lanyard (7). Remove lanyard (7) and quick release pin (8) from hatch latch weldment (1).
   c. Remove hatch latch weldment (1).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



INSTALLATION:

INSTALL HATCH LATCH WELDMENT (1).

a. Apply sealing compound to threads of four screws (2). Use acid swabbing brush.
b. Aline hatch latch weldment (1) with holes in mounting pad (5).
c. Loosely install four screws (2), new lockwashers (3), and washers (4) in hatch latch weldment (1) and mounting pad (5).
d. Install screw (6) on lanyard (7) and install quick release pin (8) on hatch latch weldment (1).
e. Open loader's hatch (9) and adjust hatch latch weldment (1) so that catch pin (10) on hatch latch weldment (1) is flush with catch (11), and pin (10) is resting securely in catch (11).
f. Torque screws (2) between 36-43 lb-ft (49-58 N·m).



End of Task 3w8017

LOADER'S INBOARD SHIELD WELDMENT, QUICK RELEASE PIN WITH LANYARD AND INBOARD BUMPER REPLACEMENT (Sheet 1 of 2)

APPLICABILITY: Tanks with Force Protection Kit

TOOLS: General mechanic's automotive tool kit (SC 5180-95-B47) (NSN 5180-01-483-0249)
Torque wrench, 0-175 ft-lb (NSN 5120-00-640-6364)

SUPPLIES: Aircraft grease (NSN 9150-00-944-8953)
Lockwasher (NSN 5310-00-834-7606) (10 required)

PERSONNEL: Two

EQUIPMENT CONDITION: Remove loader's inboard shield large window and long and short window bracket assemblies (page 5-44.27)

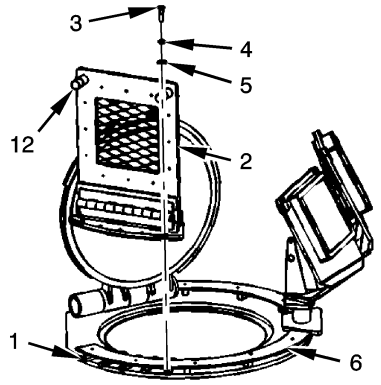
REMOVAL:

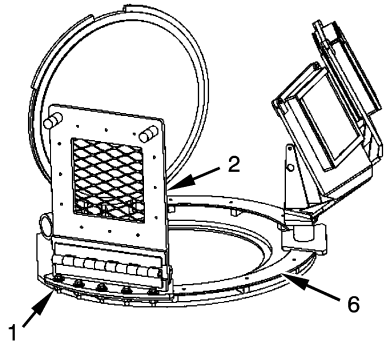
NOTE

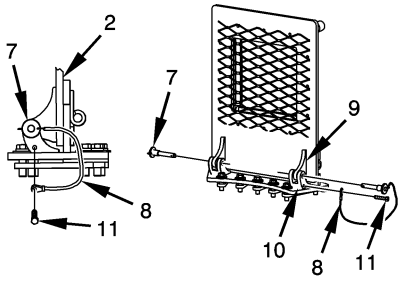
Quantity of shield clamps (1) may vary. A minimum of three shield clamps (1) are required. Quantity of five shield clamps (1) is shown.

1. REMOVE LOADER'S INBOARD SHIELD (2).
   a. Remove screws (3), lockwashers (4), and washers (5) from loader's inboard shield (2).
   b. Remove shield clamps (1) from under skate ring (6).
   c. Remove loader's inboard shield (2) from skate ring (6).
2. REMOVE TWO QUICK-RELEASE PINS (7) AND LANYARDS (8).
   a. Remove two quick-release pins (7) from upright latch (9) and base latch (10) on loader's inboard shield (2).
   b. Remove two screws (11) and lanyards (8) from base latch (10) on loader's inboard shield (2).
3. REMOVE TWO INBOARD BUMPERS (12).

   Remove two bumpers (12) from loader's inboard shield (2).
4. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.







Go on to Sheet 2

3w8028

LOADER'S INBOARD SHIELD WELDMENT, QUICK RELEASE PIN WITH LANYARD AND INBOARD BUMPER REPLACEMENT (Sheet 2 of 2)

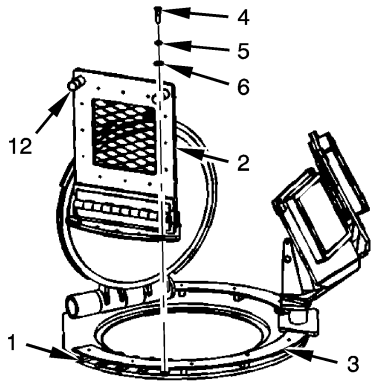
INSTALLATION:

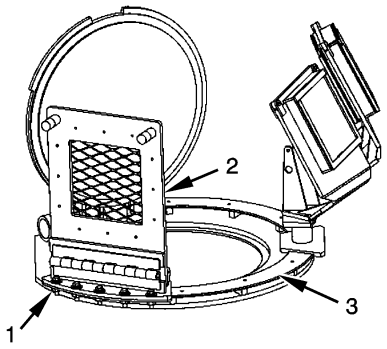
NOTE

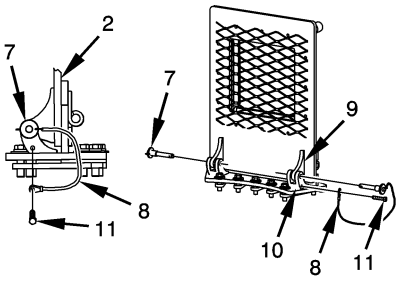
Quantity of shield clamps (1) may vary. A minimum of three shield clamps (1) are required. Quantity of five shield clamps (1) is shown.

1. INSTALL LOADER'S INBOARD SHIELD (2).
   a. Position loader's inboard shield (2) on skate ring (3).
   b. Install shield clamps (1), minimum of three is required, under skate ring (3).
   c. Lubricate and install screws (4), new lockwashers (5) and washers (6) on loader's inboard shield (2).
2. TORQUE SCREWS (4) BETWEEN 85-95 LB-FT (116-128 N·M).
3. INSTALL TWO QUICK-RELEASE PINS (7) AND LANYARDS (8).
   a. Install two quick-release pins (7) thru upright latch (9) and base latch (10) on loader's inboard shield (2).
   b. Lubricate and install two screws (11) and lanyards (8) on loader's inboard shield (2).
4. INSTALL TWO INBOARD BUMPERS (12).

   Install two bumpers (12) on loader's inboard shield (2).
5. INSTALL LOADER'S INBOARD SHIELD LARGE WINDOW AND LONG AND SHORT WINDOW BRACKET ASSEMBLY (PAGE 5-44.27).







End of Task

3w8031

LOADER'S LOCK ASSEMBLY AND HATCH LATCH SPACER ASSEMBLY REPLACEMENT (Sheet 1 of 2)

APPLICABILITY: TUSK 2 vehicles with old style ammunition racks

TOOLS: General mechanic's automotive tool kit (SC 5180-95-B47) (NSN 5180-01-483-0249)
Crow foot attachment, 3/8-inch to 9/16-inch drive (NSN 5120-00-184-8397)
Industrial goggles (NSN 4240-00-269-7912)
Rubber gloves (NSN 8415-00-266-8675)
Torque wrench, 15-75 ft-lb (NSN 5120-01-396-6074)
Wire brush (NSN 7920-00-291-5815)

SUPPLIES: Acid swabbing brush (NSN 7920-00-514-2417)
Adhesive (NSN 8040-00-833-9563)
Aircraft grease (NSN 9150-00-944-8953)
Lockwasher (NSN 5310-00-959-4675) (8 required)
Sealing compound (NSN 8030-01-025-1692)
Self-locking nut (P/N MS51943-35) (NSN 5310-00-935-9021) (4 required)
Solvent cleaning compound (NSN 6850-00-285-8011)
Wiping rag (NSN 7920-00-205-1711)

EQUIPMENT CONDITION: Loader's hatch closed (TM 9-2350-264-10)

REMOVAL:

1. REMOVE LOADER'S LOCK ASSEMBLY (1).

   Remove four screws (2), lockwashers (3), eight washers (4) and four locknuts (5) from lock (1) and spacer (6). Remove lock (1) from spacer (6).

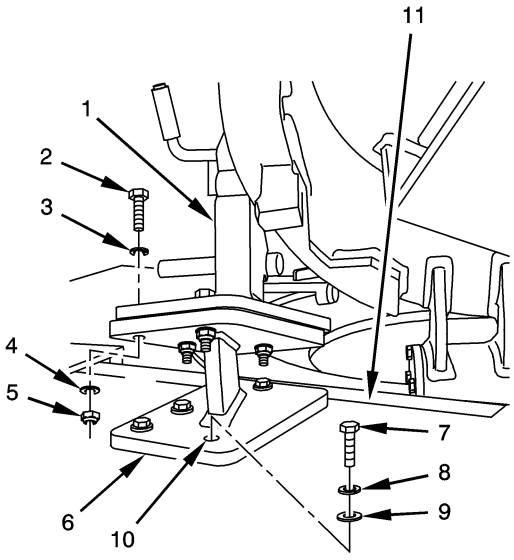
WARNING

2. REMOVE LOADER'S HATCH LATCH SPACER ASSEMBLY (6).

   a. Remove adhesive from around four screws (7), lockwashers (8), washers (9), and holes (10) on spacer (6). Use solvent and rag.

   b. Remove four screws (7), lockwashers (8), washers (9), and spacer (6) from turret blow-off panel (11).

3. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



Go on to Sheet 2

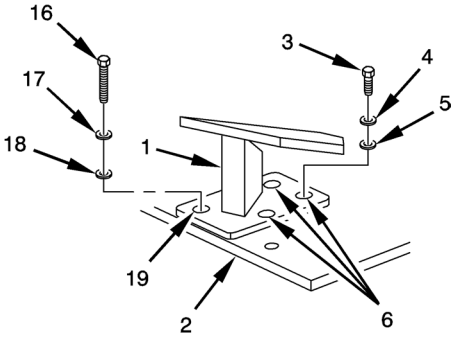
3w8033

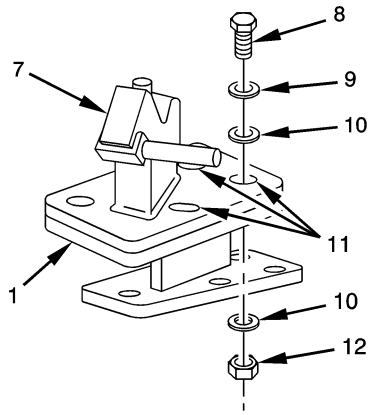
LOADER'S LOCK ASSEMBLY AND HATCH LATCH SPACER ASSEMBLY REPLACEMENT (Sheet 2 of 2)

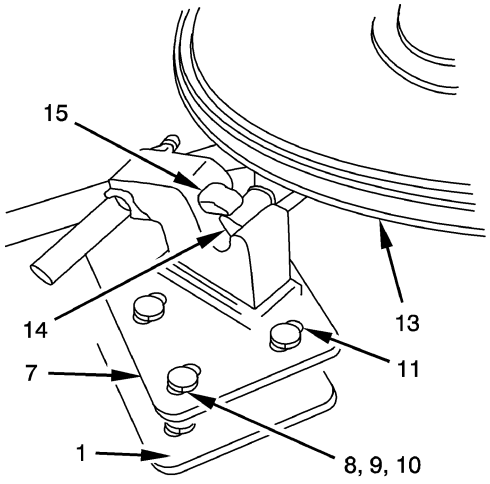
WARNING

INSTALLATION:

1. INSTALL LOADER'S HATCH LATCH SPACER ASSEMBLY (1).
   a. Aline spacer (1) with turret blow-off panel (2).
   b. Apply sealing compound to threads of three short screws (3).
   c. Loosely install three short screws (3), new lockwashers, (4), and washers (5) in holes (6) on spacer (1).
2. INSTALL LOADER'S LOCK ASSEMBLY (7).
   a. Install and aline lock (7) on spacer (1).
   b. Lubricate and install four screws (8), new lockwashers (9), and washers (10) thru holes (11) of lock (7) and top of spacer (1).
   c. Install four washers (10), and new self-locking nuts (12) on underside of spacer (1).
   d. Open loader's hatch (13) and adjust spacer (1) and lock (7) so striker bar (14) seats in lock (7) and lock rod (15) holds striker bar (14) secured in lock (7).
   e. Apply adhesive on long screw (16), new lockwasher (17), and washer (18). Use acid swabbing brush.
   f. Loosely install long screw (16), new lockwasher (17), and washer (18) in outside hole (19) of spacer (1).
3. TORQUE SCREWS (3,8), AND LONG SCREW (16) BETWEEN 36-43 LB-FT (49-58 N·M).
4. APPLY ADHESIVE AROUND HEADS OF SCREWS (3, 16) IN HOLES (6, 19), AND AROUND BASE OF SPACER (1). USE ACID SWABBING BRUSH.







End of Task

3w8034

MOUNTING PLATE REPLACEMENT (Sheet 1 of 1)

APPLICABILITY: Vehicles with ARAT2 armor

TOOLS: General mechanic's automotive tool kit (SC 5180-95-B47)
Torque wrench, 15-75 ft-lb (NSN 5120-01-396-6074)

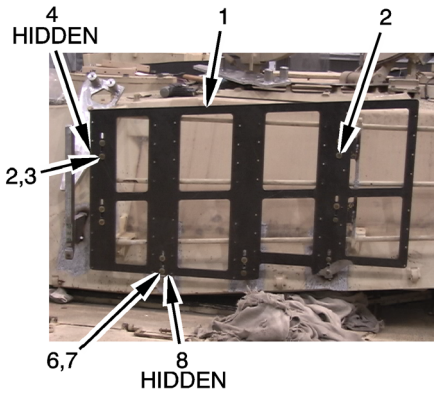
SUPPLIES: Sealing compound (NSN 8030-01-025-1692)

EQUIPMENT CONDITION: XM32 armor tiles removed (3-82.1)

REMOVAL:

NOTE

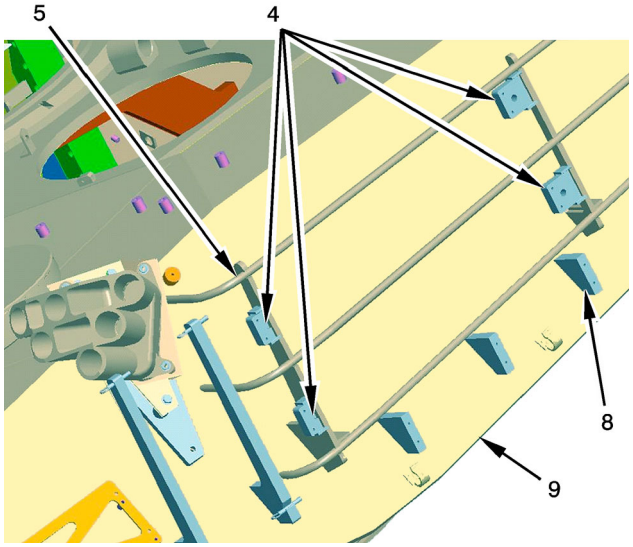
Use this task to replace mounting plate (1) on either side of turret. Left mounting plate (1) is shown.



1. REMOVE MOUNTING PLATE (1).
   a. Remove eight screws (2) and washers (3) from plate (1) and four mounting blocks (4) on turret rack (5).
   b. Remove six screws (6) and washers (7) from mounting plate (1) and three mounting blocks (8) on turret (9). Remove mounting plate (1).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.

INSTALLATION:

1. INSTALL MOUNTING PLATE (1).
   a. Position mounting plate (1) on turret rack (5).
   b. Apply sealing compound to threads of fourteen screws (2, 6).
   c. Loosely install eight screws (2) and washers (3) to mounting plate (1) and four mounting blocks (4) on turret rack (5).
   d. Loosely install six screws (6) and washers (7) to mounting plate (1) and three mounting blocks (8) on turret (9).
2. TORQUE SCREWS (2, 6) BETWEEN 36-43 LB-FT (49-58 N•m).
3. INSTALL XM32 ARMOR TILES (3-82.1).



End of Task 3w7175

LEFT-SIDE MOUNTING PLATE ASSEMBLY AND QUICK-RELEASE PIN WITH LANYARD REPLACEMENT (Sheet 1 of 1)

APPLICABILITY: Vehicles with ARAT2 armor

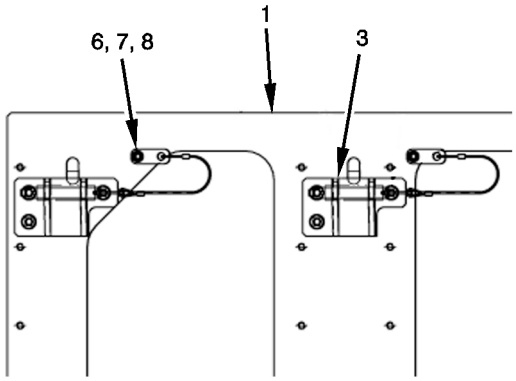
TOOLS: General mechanic's automotive tool kit (SC 5180-95-B47)

SUPPLIES: Lockwasher (NSN 5310-01-379-8318)
Sealing compound (NSN 8030-01-025-1692)

EQUIPMENT CONDITION: XM32 armor tiles removed (3-82.1)

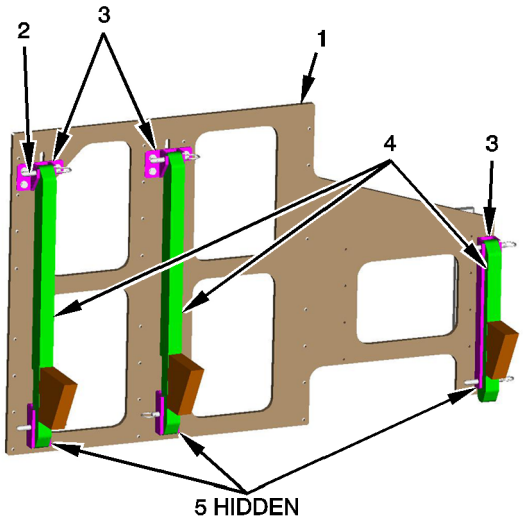
REMOVAL:

1. REMOVE LEFT-SIDE TURRET ARMOR TILE MOUNTING PLATE ASSEMBLY (1).
   a. Remove quick-release pins (2) from upper brackets (3).
   b. Tilt mounting plate (1) away from support brackets (4).
   c. Remove mounting plate (1) from slots (5) on lower ends of support brackets (4).
2. REMOVE QUICK-RELEASE PIN (2) AND LANYARD (6).
   a. Pull quick-release pin (2) from upper brackets (3).
   b. Remove screw (7), lockwasher (8), and lanyard (6) from mounting plate (1).
3. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



INSTALLATION:

1. INSTALL QUICK-RELEASE PIN (2) AND LANYARD (6).
   a. Position lanyard (6) on mounting plate (1).
   b. Apply sealing compound to threads of screw (7).
   c. Install screw (7), new lockwasher (8), and lanyard (6) to mounting plate (1).
2. INSTALL MOUNTING PLATE ASSEMBLY (1).
   a. Install mounting plate (1) in slots (5) on lower ends of support brackets (4).
   b. Tilt mounting plate (1) towards support brackets (4) and upper retaining brackets (3) and install quick-release pins (2).
3. INSTALL XM32 ARMOR TILES (3-82.1).



End of Task

3w7171

ADJUSTMENT BRACKET AND LANYARD REPLACEMENT (Sheet 1 of 1)

APPLICABILITY: Vehicles with ARAT 2 armor

TOOLS: General mechanic's automotive tool kit (SC 5180-95-B47)
Torque wrench, 0-50 ft-lb (NSN 5120-00-242-3264)

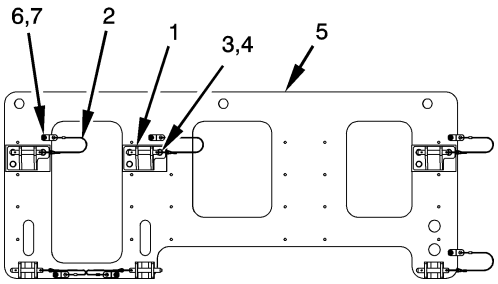
SUPPLIES: Sealing compound (NSN 8030-01-025-1692)

EQUIPMENT CONDITION: Left-side mounting plate assembly and quick-release pin with lanyard removed (page 5-44.37)

REMOVAL:

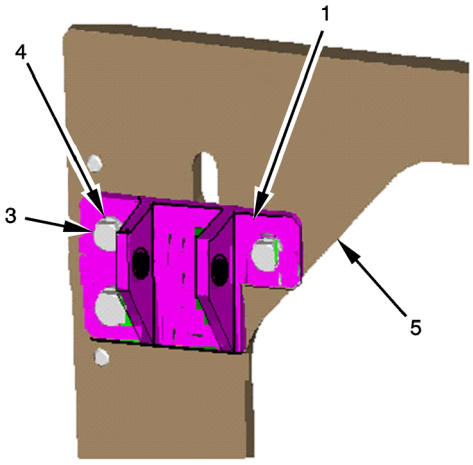
NOTE

Use this task to replace either adjustment bracket (1).



1. REMOVE ADJUSTMENT BRACKET (1) AND LANYARD (2).
   a. Remove three screws (3) and washers (4) from adjustment bracket (1).
   b. Remove adjustment bracket (1) from left-side mounting plate (5).
   c. Remove screw (6), lockwasher (7), and lanyard (2) from mounting plate (1).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.

INSTALLATION:



1. INSTALL ADJUSTMENT BRACKET (1) AND LANYARD (2).
   a. Install adjustment bracket (1) on left-side mounting plate (5).
   b. Apply sealing compound to threads of three screws (3).
   c. Install three screws (3) and washers (4) on adjustment bracket (1).
   d. Install screws (6), new lockwasher (7), and lanyard (2) to mounting plate (1).
2. TORQUE SCREWS (3, 6) BETWEEN 10-12 LB-FT (14-16 N•m).
3. INSTALL LEFT-SIDE MOUNTING PLATE ASSEMBLY AND QUICK-RELEASE PIN WITH LANYARD (PAGE 5-44.37).

End of Task 3w8050

RIGHT FRONT MOUNTING PLATE REPLACEMENT (Sheet 1 of 1)

APPLICABILITY: Vehicles with ARAT2 armor

TOOLS: General mechanic's automotive tool kit (SC 5180-95-B47)
Torque wrench, 15-75 ft-lb (NSN 5120-01-396-6074)

SUPPLIES: Sealing compound (NSN 8030-01-025-1692)

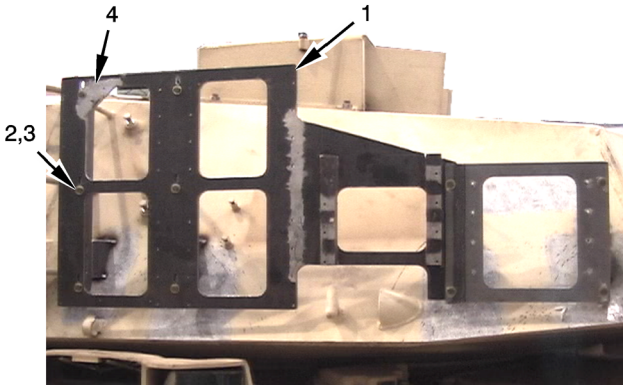
EQUIPMENT CONDITION: Right side extension plate removed (page 5-44.40)

REMOVAL:

1. REMOVE RIGHT FRONT MOUNTING PLATE (1).

   Remove six screws (2) and washers (3) from plate (1) and supports (4). Remove plate (1).

2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



INSTALLATION:

1. INSTALL PLATE (1).
   a. Position plate (1) on supports (4).
   b. Apply sealing compound to threads of six screws (2).
   c. Install six screws (2) and washers (3) to plate (1) and supports (4).
2. TORQUE SCREWS (2) BETWEEN 36-43 LB-FT (49-58 N•m).
3. INSTALL RIGHT SIDE EXTENSION PLATE (PAGE 5-44.40).

End of Task

3w7168

RIGHT SIDE EXTENSION PLATE REPLACEMENT (Sheet 1 of 1)

APPLICABILITY: Vehicles with ARAT2 armor

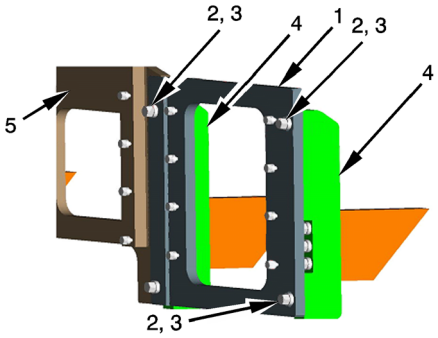
TOOLS: General mechanic's automotive tool kit (SC 5180-95-B47)
Torque wrench, 15-75 ft-lb (NSN 5120-01-396-6074)

SUPPLIES: Sealing compound (NSN 8030-01-025-1692)

EQUIPMENT CONDITION: XM32 armor tiles removed as required for access (3-82.1)

REMOVAL:

1. REMOVE RIGHT SIDE EXTENSION PLATE (1).
   a. Remove four screws (2) and washers (3) from extension plate (1) and supports (4).
   b. Remove extension plate (1).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



INSTALLATION:

NOTE

Right front mounting plate (5) must be installed before extension plate (1).

1. INSTALL EXTENSION PLATE (1).
   a. Position extension plate (1) on edge of right front mounting plate (5) and supports (4).
   b. Apply sealing compound to threads of four screws (2).
   c. Install four screws (2) and washers (3).
2. TORQUE SCREWS (2) BETWEEN 36-43 LB-FT (49-58 N•m).
3. INSTALL XM32 ARMOR TILES (3-82.1).

End of Task 3w7173

SUPPORT REPLACEMENT (Sheet 1 of 1)

APPLICABILITY: Vehicles with ARAT2 armor

TOOLS: General mechanic's automotive tool kit (SC 5180-95-B47)
Torque wrench, 15-75 ft-lb (NSN 5120-01-396-6074)

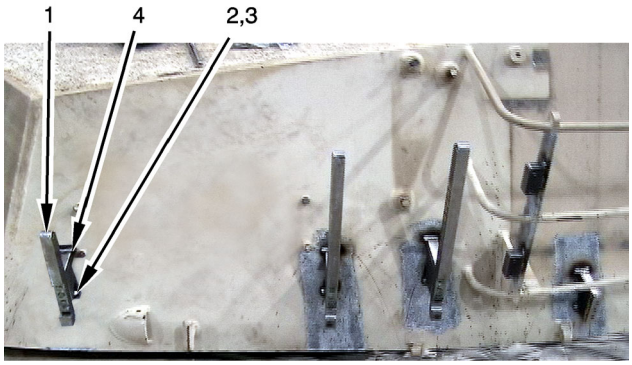
SUPPLIES: Sealing compound (NSN 8030-01-025-1692)

EQUIPMENT CONDITION: When removing right support:
Right-front mounting plate removed (page 5-44.39)
When removing left support:
Left-side turret armor tile mounting plate assembly removed (page 5-44.37)

REMOVAL:

NOTE

Use this task to replace support (1) on either side of turret. Left support (1) is shown.



1. REMOVE SUPPORT (1).
   a. Remove three screws (2) and washers (3) from support (1).
   b. Remove support (1) from weldment block (4).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.

INSTALLATION:

1. INSTALL SUPPORT (1).
   a. Position support (1) on weldment block (4).
   b. Apply sealing compound to threads of three screws (2).
   c. Install three screws (2) and washers (3) to support (1).
2. TORQUE SCREWS (2) BETWEEN 36-43 LB-FT (49-58 N•m).

NOTE

If installing left support, go to step 4.

3. INSTALL RIGHT-FRONT MOUNTING PLATE (PAGE 5-44.39).
4. INSTALL LEFT-SIDE TURRET ARMOR TILE MOUNTING PLATE ASSEMBLY (PAGE 5-44.37).

End of Task 3w7172

SMOKE GRENADE BOX REPLACEMENT (Sheet 1 of 2)

APPLICABILITY: Vehicles with ARAT2 armor

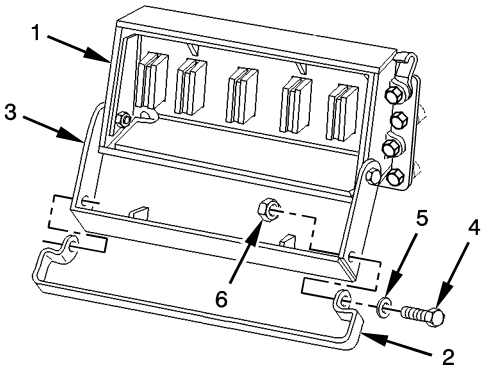
TOOLS: General mechanic's automotive tool kit (SC 5180-95-B47)

REMOVAL:

NOTE

- Use this task to replace either smoke grenade box. Right-hand box (1) is shown.
- To remove box P/N 13-12-176, skip steps 1 and 2.

1. REMOVE LOCK BAR (2).
   a. Lift up bar (2) and open cover assembly (3).
   b. Remove two screws (4), washers (5), and nuts (6) securing bar (2) to cover (3). Remove bar (2) from cover (3).
2. REMOVE COVER (3).
   a. Remove two screws (7) and washers (8) securing cover (3) to box (1).
   b. Remove cover (3) from box (1).

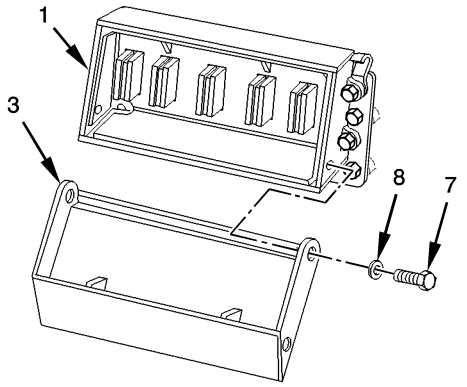


NOTE

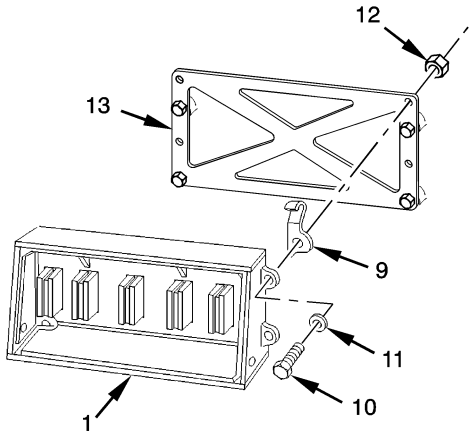
Spring locks (9) are not used with box P/N 13-12-176.

3. REMOVE BOX (1).

   Remove four screws (10), washers (11), nuts (12), two spring locks (9), and box (1) from adapter plate (13).



4. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



Go on to Sheet 2

3w7177

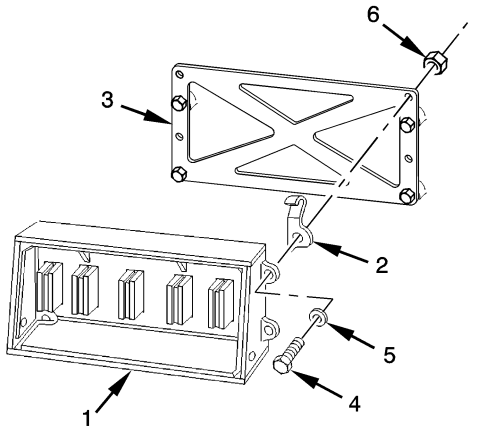
SMOKE GRENADE BOX REPLACEMENT (Sheet 2 of 2)

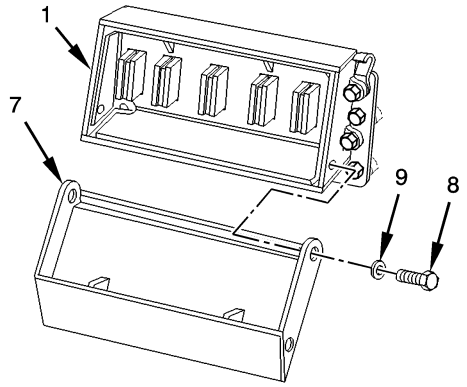
INSTALLATION:

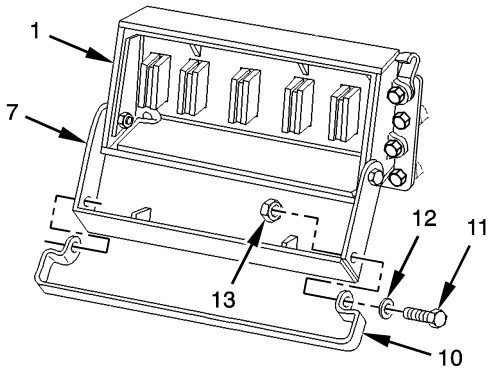
NOTE

- To install box P/N 13-12-176, do step 1 only.
- Locks are not used with box P/N 13-12-176.

1. INSTALL BOX (1).
   a. Aline and hold two locks (2) and box (1) in position on adapter plate (3).
   b. Install four screws (4), washers (5), and nuts (6) to secure box (1) and locks (2) to adapter plate (3).
2. INSTALL COVER (7).
   a. Aline cover (7) on box (1).
   b. Install two screws (8) and washers (9).
3. INSTALL BAR (10).
   a. Aline bar (10) on cover (7).
   b. Install two screws (11), washers (12), and nuts (13).
   c. Close cover (7) and latch bar (10).







End of Task

3w7178

PLATE REPLACEMENT (Sheet 1 of 1)

APPLICABILITY: Vehicles with ARAT2 armor

TOOLS: General mechanic's automotive tool kit (SC 5180-95-B47)
Torque wrench, 15-75 ft-lb (NSN 5120-01-396-6074)

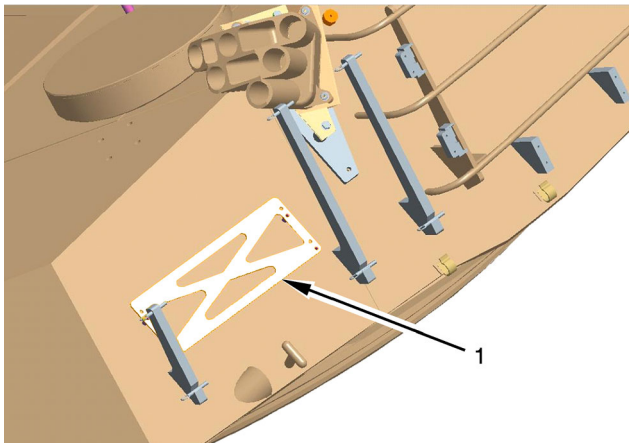
SUPPLIES: Sealing compound (NSN 8030-01-025-1692)

EQUIPMENT CONDITION: Smoke grenade box assembly removed (page 5-44.42)

REMOVAL:

NOTE

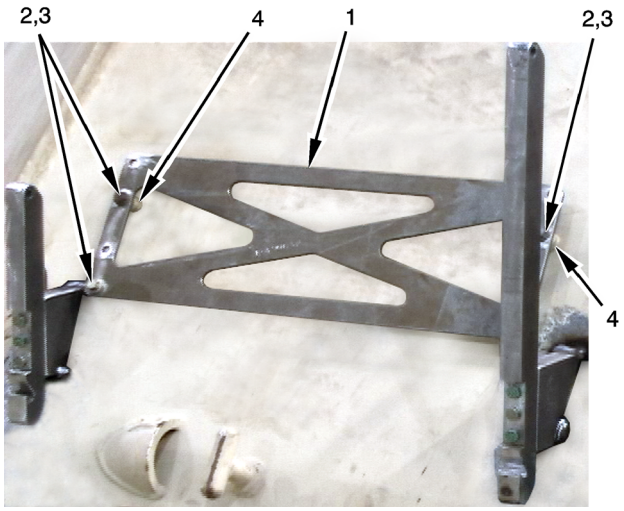
Use this task to replace plate (1) on either side of turret. Left plate (1) is shown.



1. REMOVE PLATE (1).
   a. Remove four screws (2) and washers (3) from plate (1).
   b. Remove plate (1) from mounting bosses (4).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.

INSTALLATION:

1. INSTALL PLATE (1).
   a. Position plate (1) on mounting bosses (4).
   b. Apply sealing compound to threads of four screws (2).
   c. Install four screws (2) and washers (3) to plate (1) and bosses (4).
2. TORQUE SCREWS (2) BETWEEN 36-43 LB-FT (49-58 N•m).
3. INSTALL SMOKE GRENADE BOX ASSEMBLY (PAGE 5-44.43).



End of Task 3w7169

SIX TUBE LAUNCHER REPLACEMENT (Sheet 1 of 2)

APPLICABILITY: Vehicles with ARAT2 armor

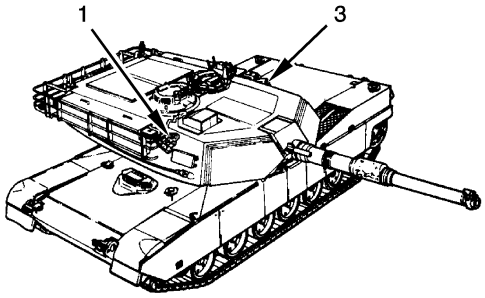
TOOLS: General mechanic's automotive tool kit (SC 5180-95-B47)
Torque wrench, 15-75 ft-lb (NSN 5120-01-396-6074)

SUPPLIES: Sealing compound (NSN 8030-01-025-1692)

EQUIPMENT CONDITION: Tank power disconnected (TM 9-2350-264-20-1)

NOTE

- Tanks with Blue Force Tracking (BFT) do not use right side grenade launcher (1). Connector 1W109 P2 (2) is capped. Only the left side grenade launcher (3) is used with BFT.
- For tanks without BFT, use this task to replace grenade launcher (1, 3) on either side of turret. Right side launcher (1) is shown.

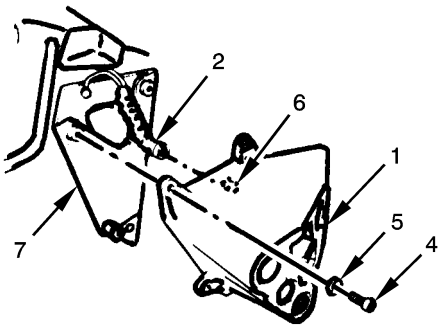


REMOVAL:

WARNING

Make sure that grenade launchers (1, 3) are empty prior to doing any work. Failure to remove grenades could cause injury or death.

1. REMOVE LAUNCHER (1).
   a. Remove three screws (4) and washers (5) from launcher (1).
   b. Tilt launcher (1) forward and remove harness connector 1W109 P2 (2) from launcher receptacle J1 (6).
   c. Remove launcher (1) from launcher bracket (7).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



Go on to Sheet 2

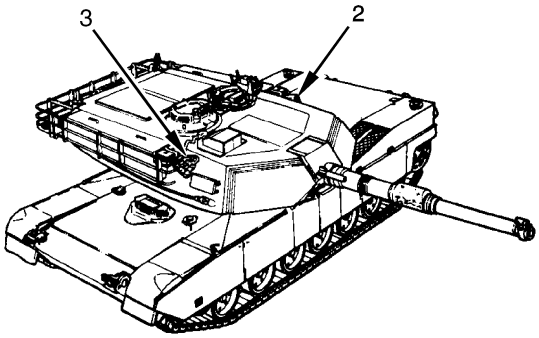
3w7176

SIX TUBE LAUNCHER REPLACEMENT (Sheet 2 of 2)

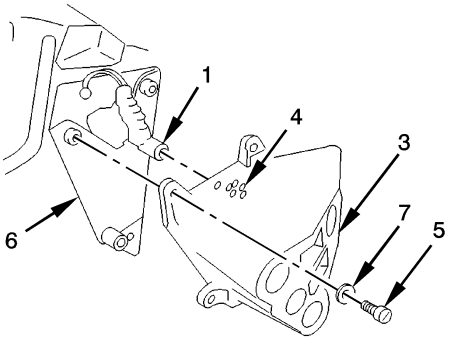
INSTALLATION:

NOTE

On tanks with Blue Force Tracking (BFT), make sure that harness connector 1W109 P2 (1) on right side of tank has protective cap installed. Only the left side launcher (2) is used with BFT.



1. INSTALL LAUNCHER (3).
   a. Install harness connector 1W109 P2 (1) to receptacle connector J1 (4) on launcher (3).
   b. Apply sealing compound to threads of three screws (5).
   c. Position launcher (3) on bracket (6) and install three screws (5) and washers (7).
2. TORQUE SCREWS (5) BETWEEN 50-55 LB-FT (68-74 N•m).
3. CONNECT TANK POWER (TM 9-2350-264-20-1).



End of Task

3w7167

LAUNCHER BRACKET REPLACEMENT (Sheet 1 of 1)

APPLICABILITY: Vehicles with ARAT2 armor

TOOLS: General mechanic's automotive tool kit (SC 5180-95-B47)
Torque wrench, 15-75 ft-lb (NSN 5120-01-396-6074)

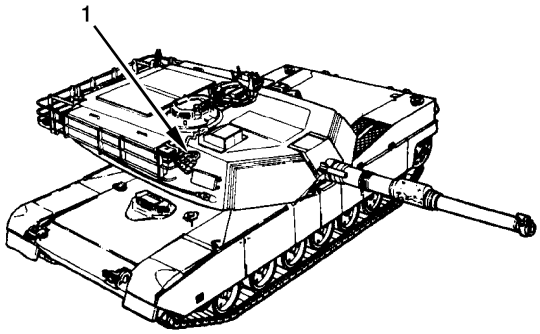
SUPPLIES: Screw (NSN 5305-00-071-2066) (as required)
Sealing compound (NSN 8030-01-025-1692)
Washer (NSN 5130-00-167-0806) (as required)

EQUIPMENT CONDITION: Six tube launcher removed (page 5-44.45)

REMOVAL:

NOTE

Use this task to replace bracket (1) on either side of turret. Right bracket (1) is shown.

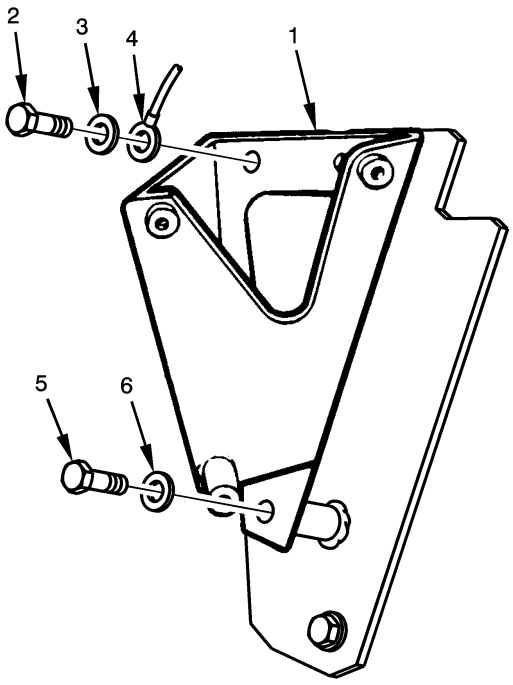


1. REMOVE BRACKET (1).
   a. Remove screw (2), washer (3), and ground strap (4) from bracket (1).
   b. Remove two remaining screws (5), washers (6), and bracket (1).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.

INSTALLATION:

CAUTION

To prevent equipment damage, use new screw (2) and new washer (3) to hold strap (4).



1. INSTALL BRACKET (1).
   a. Apply sealing compound to threads of screw (2). Install screw (2), new washer (3), and strap (4) in bracket (1).
   b. Apply sealing compound to threads of two screws (5). Install two screws (5) and new washers (6) in bracket (1).
2. TORQUE SCREWS (2, 5) BETWEEN 50-55 LB-FT (68-74 N•m).
3. INSTALL SIX TUBE LAUNCHER (PAGE 5-44.45).

End of Task 3w7165

GRENADE LAUNCHER ADAPTER REPLACEMENT (Sheet 1 of 1)

APPLICABILITY: Vehicles with ARAT2 armor

TOOLS: General mechanic's automotive tool kit (SC 5180-95-B47)
Torque wrench, 0-175 ft-lb (NSN 5120-01-396-6074)

SUPPLIES: Sealing compound (NSN 8030-01-025-1692)

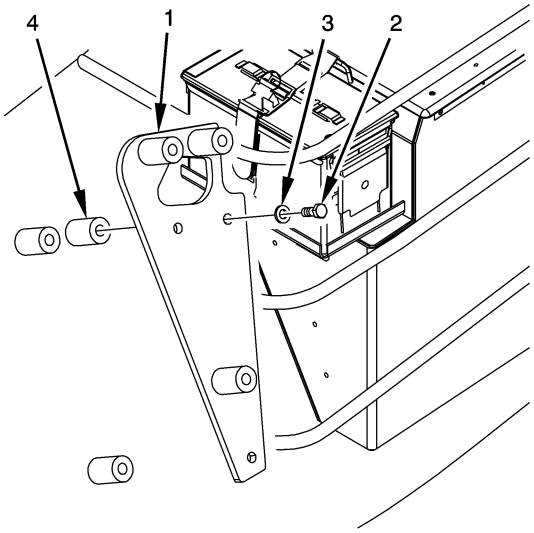
EQUIPMENT CONDITION: Launcher bracket removed (page 5-44.47)

REMOVAL:

NOTE

- Use this task to replace either right or left grenade launcher adapter (1). Left adapter (1) is shown.
- Tanks with Blue Force Tracking (BFT) will not have an adapter (1) installed on the right side of turret. Only the left side grenade launcher is used with BFT.

1. REMOVE GRENADE LAUNCHER ADAPTER (1).
   a. Remove three screws (2) and washers (3) from adapter (1).
   b. Remove adapter (1) from mounting bosses (4).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



INSTALLATION:

1. INSTALL ADAPTER (1).
   a. Apply sealing compound to threads of three screws (2).
   b. Install adapter (1), three screws (2), and washers (3) to mounting bosses (4).
2. TORQUE SCREWS (2) BETWEEN 50-55 LB-FT (68-74 N•m).
3. INSTALL LAUNCHER BRACKET (PAGE 5-44.47).

End of Task 3w7166

XM32 ARMOR TILE MOUNTING BRACKET REPLACEMENT (Sheet 1 of 1)

APPLICABILITY: Vehicles with ARAT2 armor

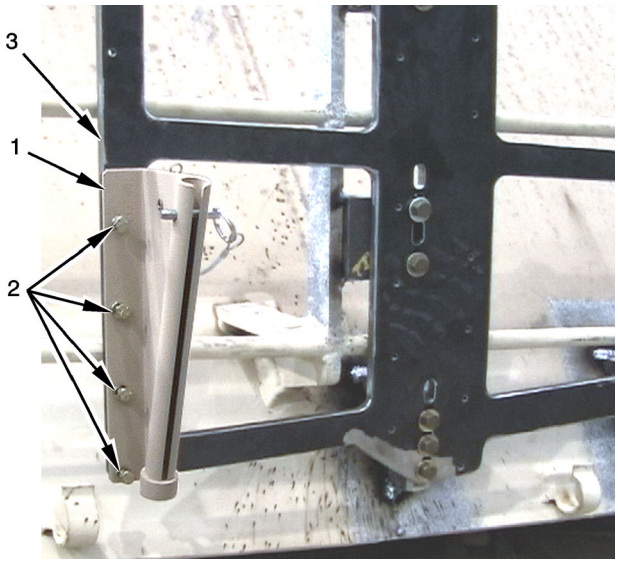
TOOLS: General mechanic's automotive tool kit (SC 5180-95-B47)

EQUIPMENT CONDITION: XM32 armor tiles removed, as required (3-82.1)

REMOVAL:

NOTE

- Mounting brackets (1) are marked TOP LEFT or TOP RIGHT. Brackets (1) must be replaced with the same type removed.
- Use this task to replace either type mounting bracket (1). TOP LEFT bracket (1) is shown.



1. REMOVE BRACKET (1).

   Remove four screws (2) and bracket (1) from mounting plate (3).

2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.

INSTALLATION:

1. INSTALL BRACKET (1).

   Position bracket (1) on mounting plate (3) and install four screws (2).

NOTE

If XM32 armor tiles are difficult to install in step 2, do steps 3, 4 and 5.

2. INSTALL XM32 ARMOR TILES (3-82.1).
3. LOOSEN FOUR SCREWS (2) ON LEFT AND RIGHT BRACKET (1).
4. INSTALL XM32 ARMOR TILES (3-82.1).
5. TIGHTEN FOUR SCREWS (2) ON LEFT AND RIGHT BRACKET (1).

End of Task 3w7174

XM32 ARMOR TILE SKIRT MOUNTING BRACKET REPLACEMENT (Sheet 1 of 2)

APPLICABILITY: Vehicles with ARAT2 armor

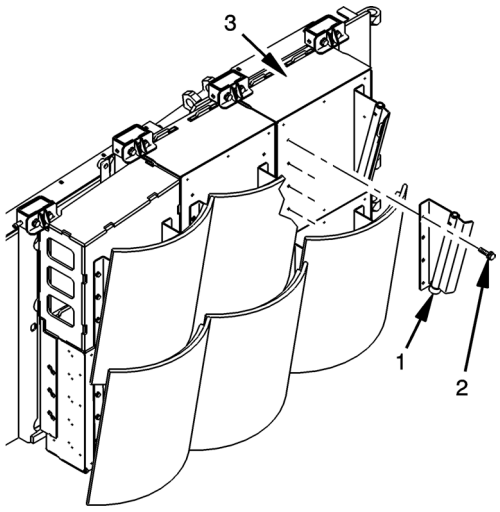
TOOLS: General mechanic's automotive tool kit (SC 5180-95-B47)

EQUIPMENT CONDITION: XM32 armor tiles removed, as required (3-82.1)

REMOVAL:

NOTE

- Depending on location, armor tile mounting brackets (1) are attached with three or four screws (2).
- Mounting brackets (1) are marked TOP LEFT or TOP RIGHT. Brackets (1) must be replaced with the same type removed.
- Use this task to replace either type mounting bracket (1). TOP LEFT bracket (1) with four screws (2) is shown.



1. REMOVE BRACKET (1).

   Remove four screws (2) and bracket (1) from ARAT tile box (3).

2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.

INSTALLATION:

Go on to Sheet 2

3w7195

XM32 ARMOR TILE SKIRT MOUNTING BRACKET REPLACEMENT (Sheet 2 of 2)

NOTE

- Mounting brackets stamped with a "U" must be installed in the front two columns.
- If installing bracket (1) to spacer box (2) on either side of tank, do step 1a.
- If installing bracket (1) to one of the first three tile boxes (3) on skirt number one, on either side of tank, go to step 1b.
- If installing bracket (1) to tile box (4) in any other location, do step 2.

1. INSTALL BRACKET (1).
   a. Aline top hole (5) in bracket (1) with top hole (6) in spacer box (2) and install three screws (7). Go to step 3.
   b. Aline top three holes (8) in bracket (1) with bottom three holes (9) in tile box (3) and install three screws (10).
2. INSTALL BRACKET (1).

   Position bracket (1) on tile box (4) and install four screws (11). Go to step 3.

NOTE

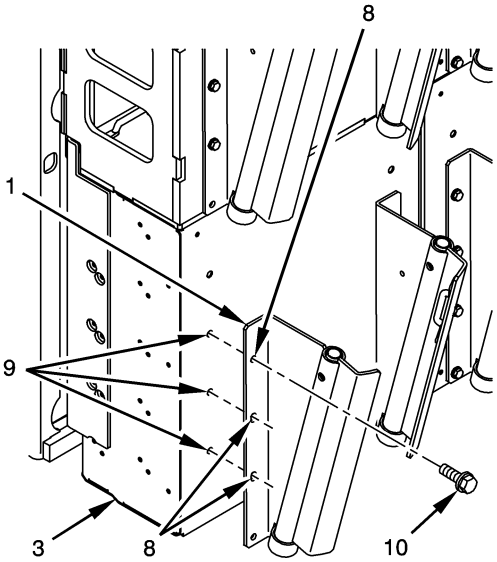
If XM32 armor tiles are difficult to install in step 3, do steps 4, 5 and 6.

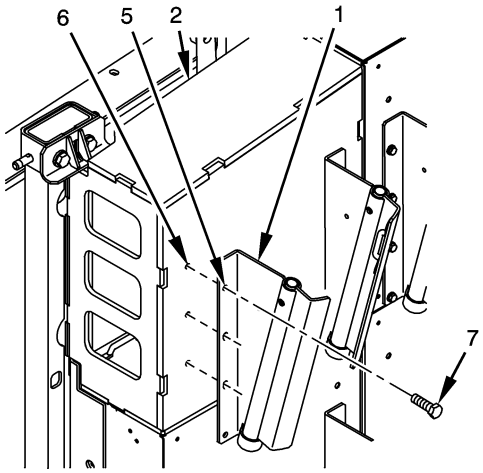
3. INSTALL XM32 ARMOR TILES (3-82.1).

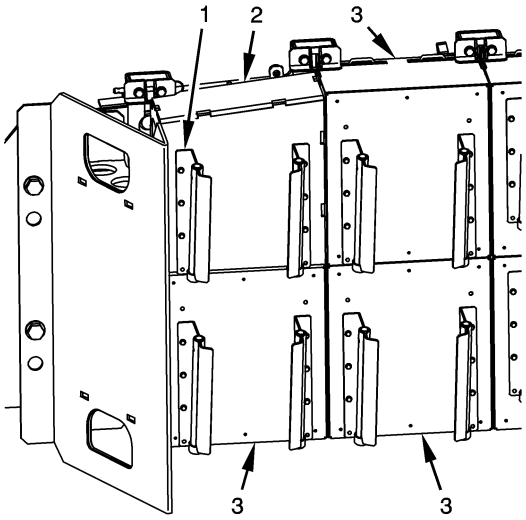
NOTE

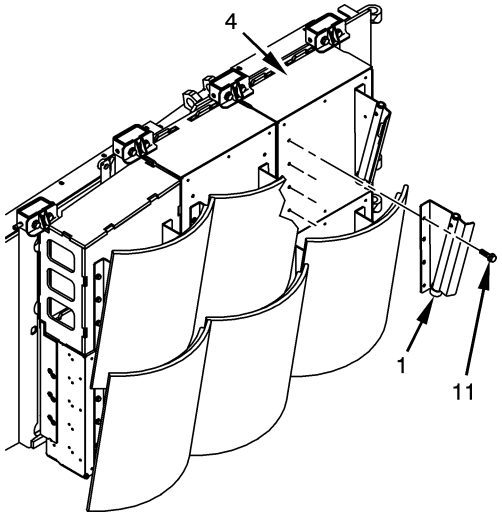
Depending on location, brackets (1) are attached with three screws (7, 10) or four screws (11).

4. LOOSEN SCREWS (7, 10, 11), AS REQUIRED, ON LEFT AND RIGHT BRACKET (1).
5. INSTALL XM32 ARMOR TILES (3-82.1).
6. TIGHTEN SCREWS (7, 10, 11), AS REQUIRED, ON LEFT AND RIGHT BRACKET (1).









End of Task

3w7196

SKIRT BRUSH GUARD REPLACEMENT (Sheet 1 of 2)

APPLICABILITY: Vehicles with ARAT2 armor

TOOLS: General mechanic's automotive tool kit (SC 5180-95-B47)
Torque wrench, 0-175 ft-lb (NSN 5120-00-640-6364)

SUPPLIES: Sealing compound (NSN 8030-01-025-1692)
Self-locking nut (NSN 5310-01-549-9702) (as required)

PERSONNEL: Two

EQUIPMENT CONDITION: XM32 armor tiles removed, as required (3-82.1)
When removing front brush guard:
Left or right side front skirt opened, as required (page 3-86)
When removing rear brush guard:
Left or right side mud guard (number six skirt) opened, as required (page 3-87)

REMOVAL:

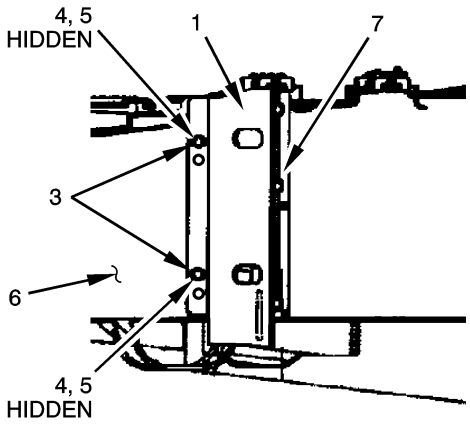
WARNING

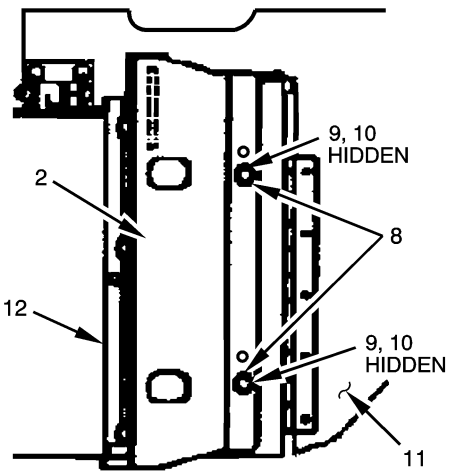
Skirt brush guards (1, 2) weigh 95 pounds (43 kg) each. To avoid injury, two soldiers are needed to lift skirt brush guard (1 or 2).

NOTE

- All skirt brush guards (1, 2) are interchangeable. Use this task to replace front brush guard (1) or rear brush guard (2) on either side of tank. Left-side brush guards (1, 2) are shown.
- Do step 1 to remove front brush guard (1).
- Do step 2 to remove rear brush guard (2).

1. REMOVE FRONT BRUSH GUARD (1).
   a. Remove two screws (3), four washers (4), and two self-locking nuts (5) from front brush guard (1) and front skirt (6).
   b. Carefully lift and remove front brush guard (1) from short box rail (7).
2. REMOVE REAR BRUSH GUARD (2).
   a. Remove two screws (8), four washers (9), and two self-locking nuts (10) from rear brush guard (2) and rear skirt (11).
   b. Carefully lift and remove rear brush guard (2) from mounting bracket (12).





Go on to Sheet 2

3w7193

SKIRT BRUSH GUARD REPLACEMENT (Sheet 2 of 2)

3. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.

INSTALLATION:

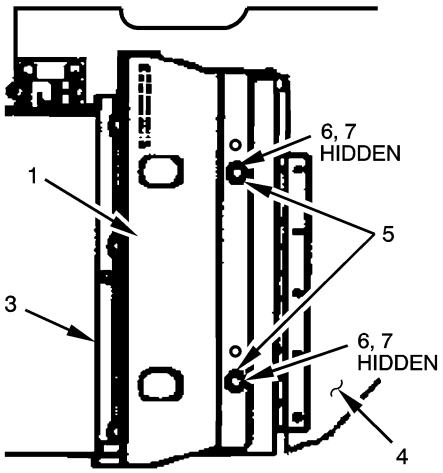
WARNING

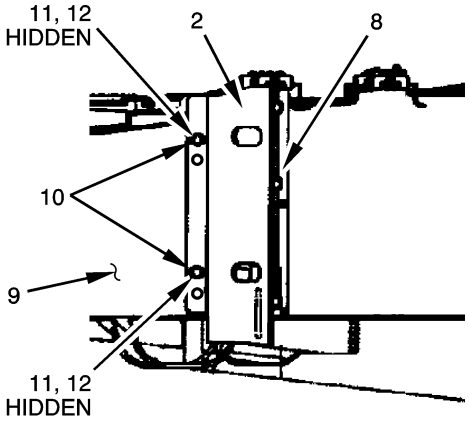
Skirt brush guards (1, 2) weigh 95 pounds (43 kg) each. To avoid injury, two soldiers are needed to lift skirt brush guard (1 or 2).

NOTE

- If installing rear brush guard (1), do steps 1, 2, and 3.
- If installing front brush guard (2), go to step 4.

1. INSTALL REAR BRUSH GUARD (1).
   a. Position rear brush guard (1) on mounting bracket (3) and aline lower holes on brush guard (1) with holes on rear skirt (4).
   b. Apply sealing compound to threads of two screws (5).
   c. Install two screws (5), four washers (6), and two new self-locking nuts (7).
2. TORQUE TWO SELF-LOCKING NUTS (7) BETWEEN 90-110 LB-FT (122-149 N•m).
3. CLOSE LEFT OR RIGHT SIDE MUD GUARD (NUMBER SIX SKIRT) (3-87). GO TO STEP 7.
4. INSTALL FRONT BRUSH GUARD (2).
   a. Position front brush guard (2) on short box rail (8) and aline upper holes on brush guard (2) with holes on front skirt (9).
   b. Apply sealing compound to threads of two screws (10).
   c. Install two screws (10), four washers (11), and two new self-locking nuts (12).
5. TORQUE TWO SELF-LOCKING NUTS (12) BETWEEN 90-110 LB-FT (122-149 N•m).
6. CLOSE LEFT OR RIGHT SIDE FRONT SKIRT (3-86).
7. INSTALL XM32 ARMOR TILES (3-82.1).





End of Task

3w7194

NUMBER 1 AND 2 FENDER SKIRT (ARAT) REPLACEMENT (Sheet 1 of 6)

TOOLS: General mechanic's tool kit: automotive (SC 5180-95-B47)
Hoist, 1000-pound capacity (see TB 43-0142) (TO&E Authorized)
Lifting kit (P/N 12284836) (NSN 4933-01-108-4933)
Shackle (NSN 4030-00-064-6730) (2 required)

PERSONNEL: Two

EQUIPMENT CONDITION: Abrams Reactive Armor Tiles (ARATS) removed (page 3-82)
Brush guard removed (page 3-88)
Latch handle and latch rod removed (page 5-57)
Number 1 left or right fender skirt rubber strip seal and rubber strip removed (TM 9-2350-264-20-1)
Number 2 left or right fender skirt rubber strip removed (TM 9-2350-264-20-1)
Number 1 skirt closed (page 3-86)
Number 2 skirt closed (page 3-87)

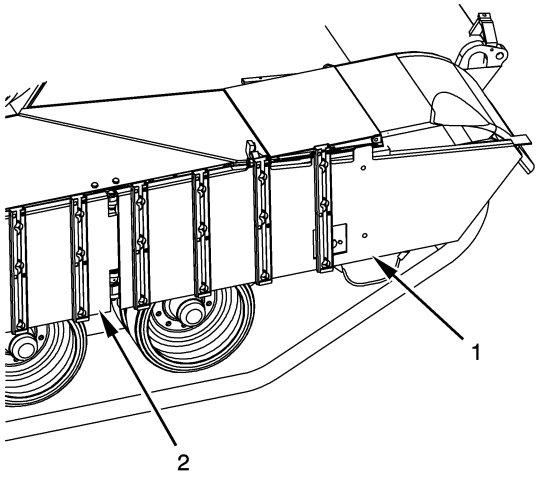
REMOVAL:

WARNING

Do not open two skirts (1, 2) on same hinge line at same time. If both skirts (1, 2) on same hinge line are opened, they can break off hinges and cause serious injury.

NOTE

Use this task to replace either left or right number 1 and number 2 skirts (1, 2). Right side number 1 and number 2 skirts (1, 2) are shown.



Go on to Sheet 2

3w7116

NUMBER 1 AND 2 FENDER SKIRT (ARAT) REPLACEMENT (Sheet 2 of 6)

1. REMOVE NUMBER 2 SKIRT (1).

   a. Attach two shackles (2) to front and rear armor box rail holes (3) in number 2 skirt (1).

   b. Attach two legs of sling (4) to shackles (2) and support number 2 skirt (1) with hoist (5).

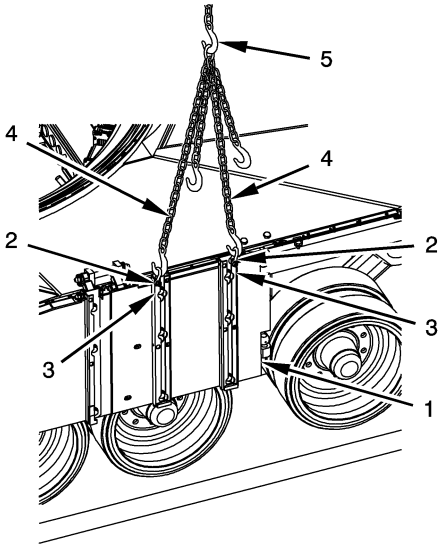
   c. Remove quick release pin (6) from front of pin (7) securing number 2 skirt (1) and 3 skirt (8).

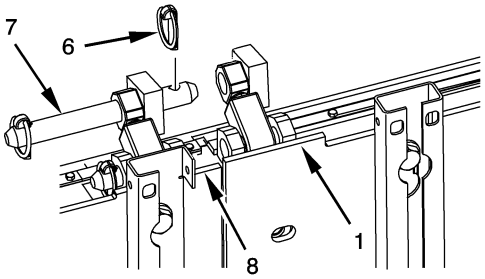
   d. Slide pin (7) rearward enough to release number 2 skirt (1) from hull.

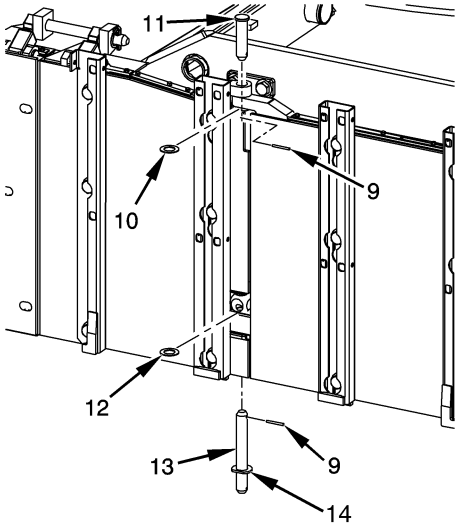
   e. Remove spring pin (9) and washer (10) from bottom of headed pin (11). Remove headed pin (11).

   f. Remove spring pin (9) and spacer (12) from top of headless pin (13). Remove headless pin (13) and spacer (14).

   g. Use hoist (5) to remove number 2 skirt (1) from tank and remove sling (4) and shackles (2) from number 2 skirt (1).







Go on to Sheet 3

3w7118

NUMBER 1 AND 2 FENDER SKIRT (ARAT) REPLACEMENT (Sheet 3 of 6)

2. REMOVE NUMBER 1 SKIRT (1).

   a. Remove quick release pin (2) from pin (3) securing number 1 skirt (1).

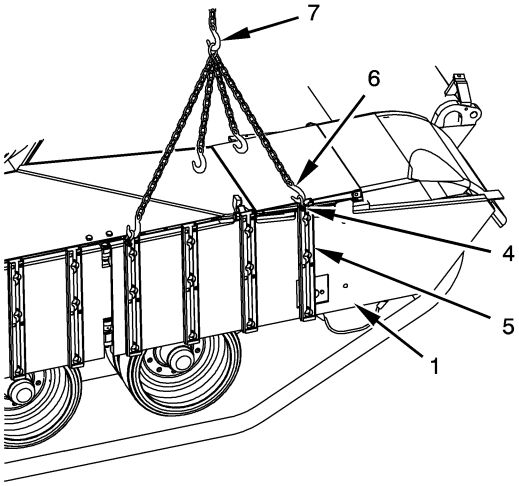
   b. Remove pin (3) securing number 1 skirt (1) to hull. Pull number 1 skirt (1) open.

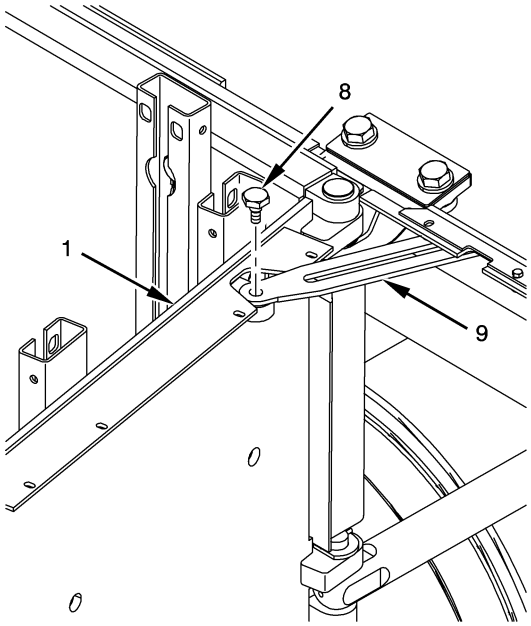
   c. Attach two shackles (4) to front and rear armor box rail holes (5) in number 1 skirt (1).

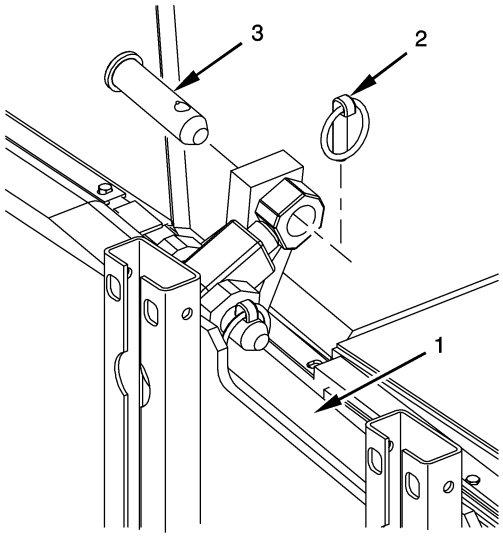
   d. Attach two legs of sling (6) to shackles (4) and support number 1 skirt (1) with hoist (7).

   e. Remove screw (8) securing locking arm (9) to number 1 skirt (1).

   f. Use hoist (7) to remove number 1 skirt (1) from tank. Remove sling (6) and shackles (4) from number 1 skirt (1).







Go on to Sheet 4

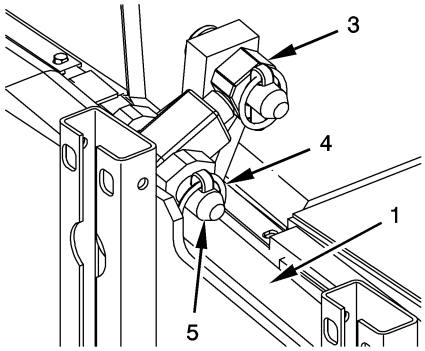
3w7117

NUMBER 1 AND 2 FENDER SKIRT (ARAT) REPLACEMENT (Sheet 4 of 6)

NOTE

If removing number 1 and 2 skirts (1, 2) for access only, go to step 5.

3. REMOVE SKIRT LATCH ASSEMBLIES (3) FROM NUMBER 1 AND 2 SKIRTS (1, 2).
   a. Remove two quick release pins (4) from two headed pins (5) securing skirt latch assemblies (3) to number 1 and 2 skirts (1, 2).
   b. Remove two headed pins (5) securing skirt latch assemblies (3) to number 1 and 2 skirts (1, 2).
4. REMOVE ARAT SKIRT RAILS (FOR SKIRTS NUMBER 1 AND 2 ONLY) (PAGE 3-83).
5. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



INSTALLATION:

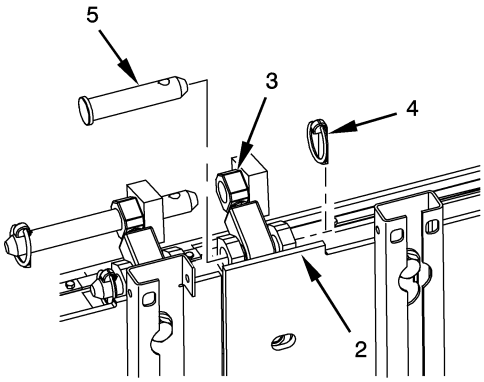
WARNING

Do not open two skirts (1, 2) on same hinge line at same time. If both skirts (1, 2) on same hinge line are opened, they can break off hinges and cause serious injury.

NOTE

If number 1 and 2 skirts (1, 2) were removed for access only, go to step 3.

1. INSTALL SKIRT LATCH ASSEMBLIES (3) ON NUMBER 1 AND 2 SKIRTS (1, 2).
   a. Install two headed pins (5) to secure two skirt latch assemblies (3) to number 1 and 2 skirts (1, 2).
   b. Install two quick release pins (4) into two headed pins (5).
2. INSTALL ARAT SKIRT RAILS (FOR SKIRTS NUMBER 1 AND 2 ONLY) (PAGE 3-83).

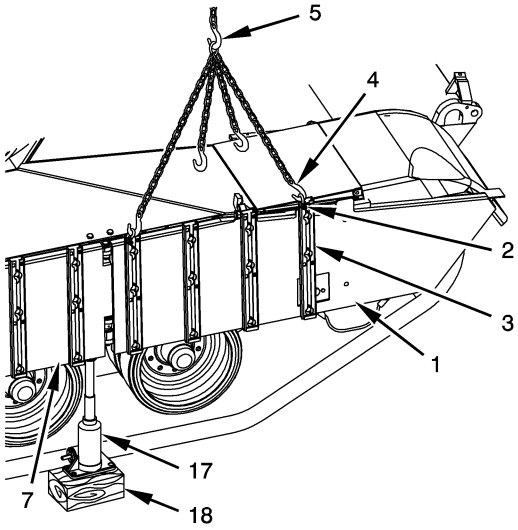


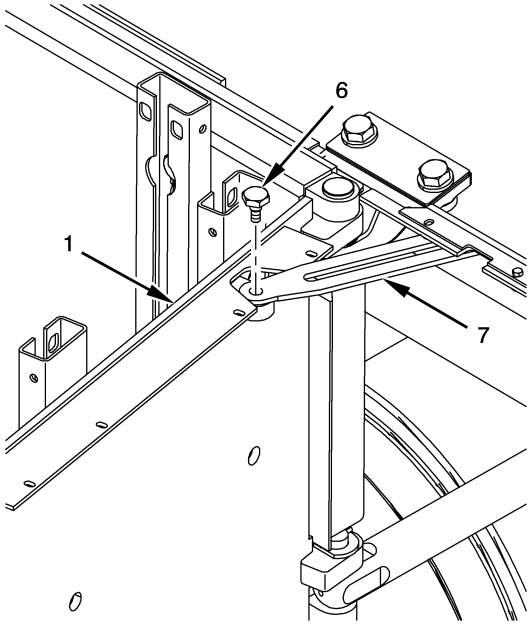
Go on to Sheet 5

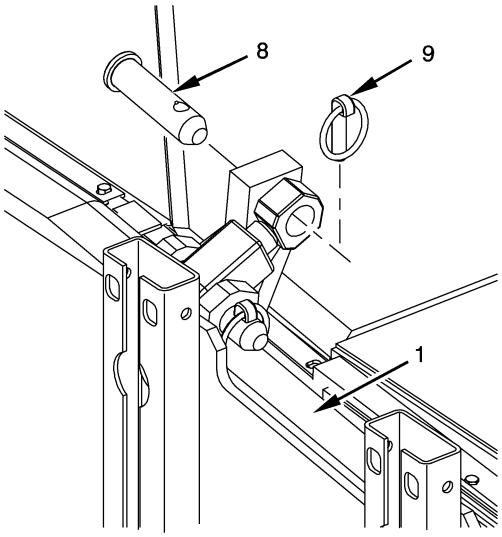
3w7119

NUMBER 1 AND 2 FENDER SKIRT (ARAT) REPLACEMENT (Sheet 5 of 6)

3. INSTALL NUMBER 1 SKIRT (1).
   a. Attach two shackles (2) to front and rear armor box rail holes (3) in number 1 skirt (1).
   b. Attach two legs of sling (4) to shackles (2) and lift number 1 skirt (1) into mounting position with hoist (5).
   c. Install screw (6) to secure locking arm (7) to number 1 skirt (1).
   d. Release hoist tension and remove sling (4) and two shackles (2) from number 1 skirt (1).
   e. Push number 1 skirt (1) closed and install pin (8) to secure number 1 skirt (1) to hull and insert quick release pin (9) into pin (8).





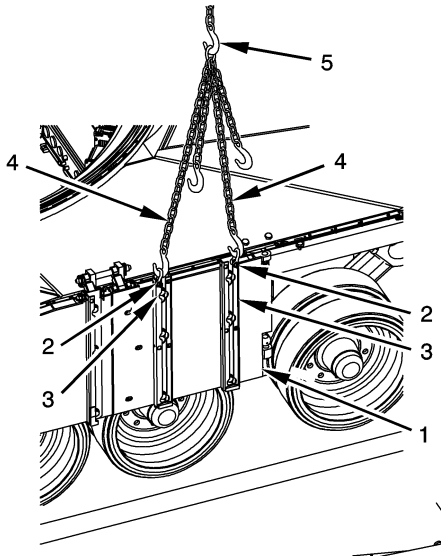


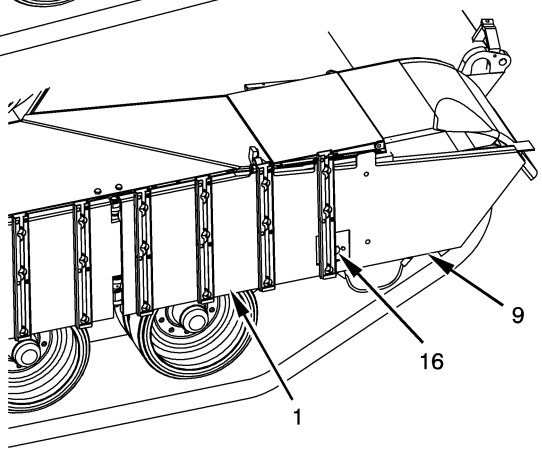
Go on to Sheet 6

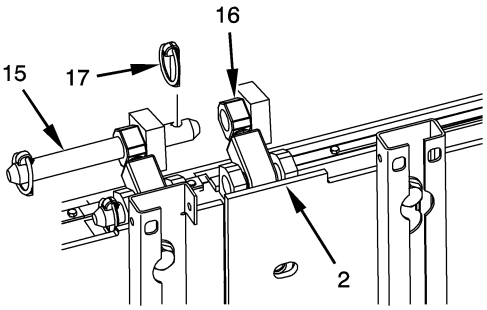
3w7120

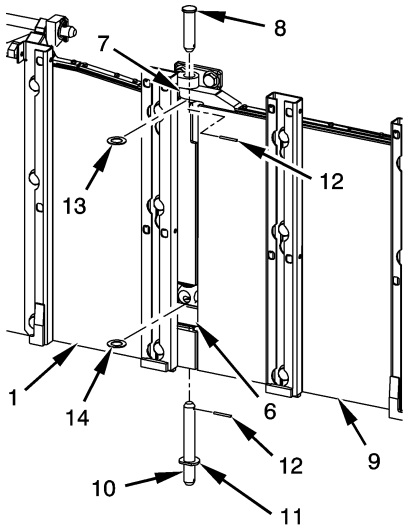
NUMBER 1 AND 2 FENDER SKIRT (ARAT) REPLACEMENT (Sheet 6 of 6)

4. INSTALL NUMBER 2 SKIRT (1).
   a. Attach two shackles (2) to front and rear armor box rail holes (3) in number 2 skirt (1).
   b. Attach two legs of sling (4) to shackles (2) and lift number 2 skirt (1) into mounting position with hoist (5).
   c. Line up front of number 2 skirt (1) with skirt support (6) and skirt hinge (7).
   d. Install headed pin (8) through top of number 2 skirt (1), number 1 skirt (9), and skirt hinge (7).
   e. Install headless pin (10) with spacer (11) through number 1 skirt (9), number 2 skirt (1), and skirt support (6).
   f. Install spring pin (12) and washer (13) onto headed pin (8).
   g. Install spring pin (12) and spacer (14) onto headless pin (10).
   h. Push pin (15) forward through skirt latch assembly (16) to secure number 2 skirt (2) to hull.
   i. Install quick release pin (17) into pin (15).
   j. Release hoist tension and remove sling (4) and two shackles (2) from number 2 skirt (1).
5. IF NECESSARY, OPEN NUMBER 1 SKIRT (9) OR NUMBER 2 SKIRT (2) AS REQUIRED TO ADJUST SKIRT LATCH ASSEMBLIES (16) UP OR DOWN TO LEVEL OUT NUMBER 1 OR 2 SKIRTS (9, 1).
6. INSTALL NUMBER 2 LEFT OR RIGHT FENDER SKIRT RUBBER STRIP (TM 9-2350-264-20-1).
7. INSTALL NUMBER 1 LEFT OR RIGHT FENDER SKIRT RUBBER STRIP SEAL AND RUBBER STRIP (TM 9-2350-264-20-1).
8. INSTALL LATCH HANDLE AND LATCH ROD (PAGE 5-57).
9. INSTALL BRUSH GUARD (PAGE 3-88).
10. INSTALL ABRAMS REACTIVE ARMOR TILES (ARATS) (PAGE 3-82).









End of Task

3w7119

NUMBER 3 AND 4 FENDER SKIRT (ARAT) REPLACEMENT (Sheet 1 of 4)

TOOLS: General mechanic's tool kit: automotive (SC 5180-90-N26)
Hoist, 1000-pound capacity (see TB 43-0142) (TO&E Authorized)
Lifting kit (P/N 12284836) (NSN 4933-01-108-4933)
Shackle (NSN 4030-00-064-6730) (2 required)

PERSONNEL: Three

EQUIPMENT CONDITION: Abrams reactive armor tiles (ARATS) removed (page 3-82)
Number 3 right fender skirt rubber strip removed (TM 9-2350-264-20-1)
Exhaust deflector removed (page 5-59)
Number 4 right fender skirt rubber strip removed (TM 9-2350-264-20-1)
Number 4 left fender skirt rubber strip removed (TM 9-2350-264-20-1)
Close number 3 and 4 skirts (page 3-87)
Open number 5 skirt (page 3-87)

REMOVAL:

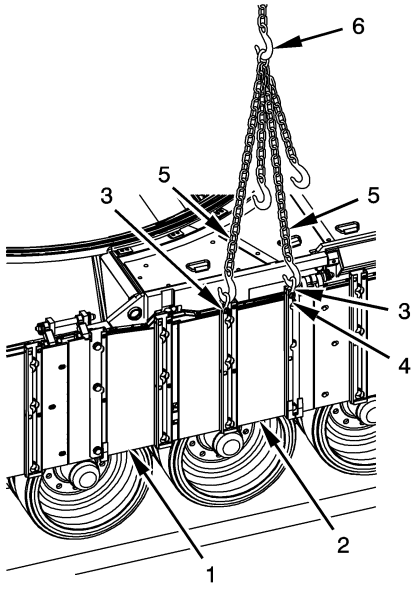
WARNING

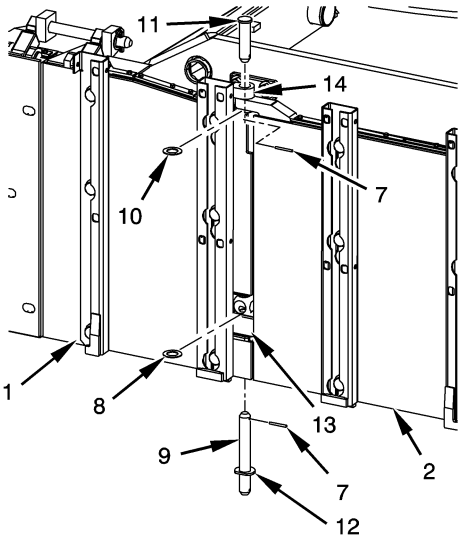
Do not open two skirts (1, 2) on same hinge line at the same time. If both skirts on same hinge line are opened, they can break off hinges and cause serious injury. Hinge lines are between skirts 1 and 2, 3 and 4, and 5 and 6.

NOTE

Use this task to replace either left or right number 3 and number 4 skirts (1, 2). Left side number 3 and number 4 skirts (1, 2) are shown.

1. REMOVE NUMBER 4 SKIRT (2).
   a. Attach two shackles (3) to front and rear armor box rail holes (4) in number 4 skirt (2).
   b. Attach two legs of sling (5) to shackles (3) and support number 4 skirt (2) with hoist (6).
   c. Remove spring pin (7) and washer (8) from top of headless pin (9).
   d. Remove spring pin (7) and spacer (10) from headed pin (11).
   e. Remove headless pin (9) with spacer (12) securing bottom of number 4 skirt (2) and number 3 skirt (1) to skirt support (13).
   f. Remove headed pin (11) securing number 4 skirt (2), number 3 skirt (1) to skirt hinge (14).





Go on to Sheet 2

3w7132

NUMBER 3 AND 4 FENDER SKIRT (ARAT) REPLACEMENT (Sheet 2 of 4)

2. OPEN NUMBER 4 FENDER SKIRT (PAGE 3-87).

3. USE HOIST (1) TO REMOVE NUMBER 4 SKIRT (2) FROM TANK. REMOVE SLING (3) AND SHACKLES (4) FROM NUMBER 4 SKIRT (2).

4. REMOVE NUMBER 3 SKIRT (5).

   a. Attach two shackles (4) to front and rear armor box rail holes (6) in number 3 skirt (5).

   b. Attach two legs of sling (3) to shackles (6) and support number 3 skirt (5) with hoist (1).

   c. Remove quick release pin (7) from rear of pin (8) securing number 2 skirt (9) and number 3 skirt (5) to hull.

   d. Slide pin (8) forward enough to release number 3 skirt (5) from hull.

   e. Use hoist (1) to remove number 3 skirt (5) from tank. Remove sling (3) and shackles (4) from number 3 skirt (5).

NOTE

If removing number 3 skirt and number 4 skirt (2, 5) for access only, go to step 7.

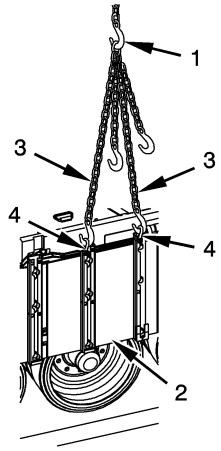
5. REMOVE ARAT SKIRT RAILS (NUMBER 3 AND 4 SKIRTS ONLY) (PAGE 3-83).

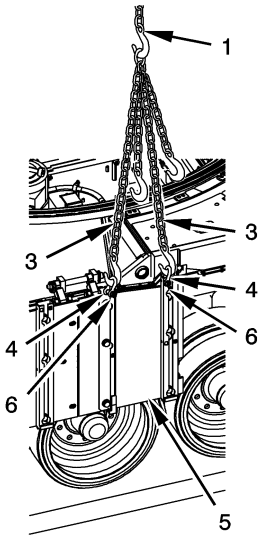
6. REMOVE SKIRT LATCH ASSEMBLY (10) FROM NUMBER 3 SKIRTS (5).

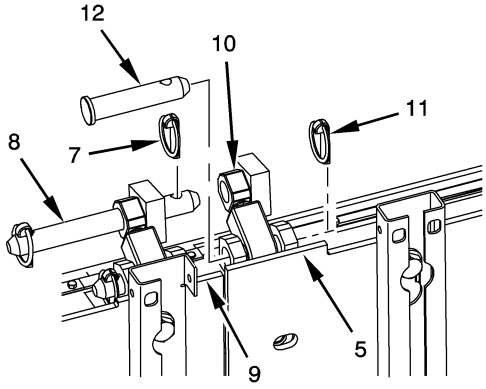
   a. Remove quick release pin (11) from headed pin (12) securing skirt latch assembly (10) to number 3 skirt (5).

   b. Remove headed pin (12) securing skirt latch assembly (10) and remove skirt latch assembly (10) from number 3 skirt (5).

7. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.







Go on to Sheet 3

3w7133

NUMBER 3 AND 4 FENDER SKIRT (ARAT) REPLACEMENT (Sheet 3 of 4)

INSTALLATION:

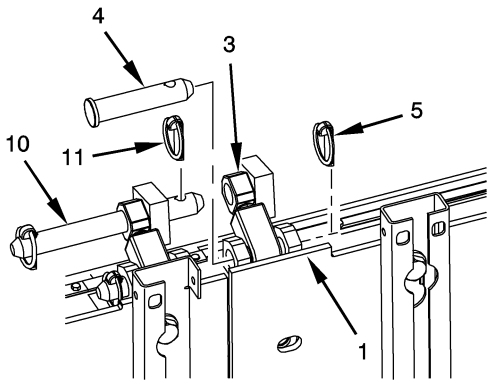
WARNING

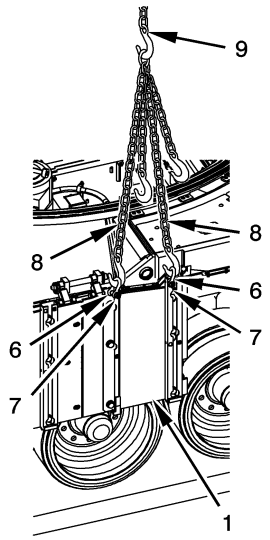
Do not open two skirts (1, 2) on same hinge line at the same time. If both skirts (1, 2) on same hinge line are opened, they can break off hinges and cause serious injury. Hinge lines are between skirts 1 and 2, 3 and 4, and 5 and 6.

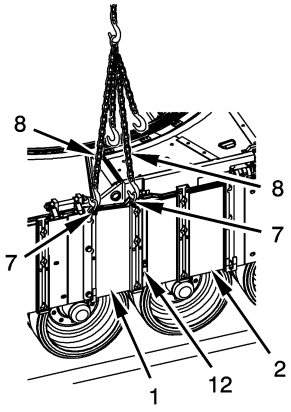
NOTE

If number 3 skirt (1) or number 4 skirt (2) was removed for access only, go to step 3.

1. INSTALL ARAT SKIRT RAILS (NUMBER 3 AND 4 SKIRTS ONLY) (PAGE 3-83).
2. INSTALL SKIRT LATCH ASSEMBLY (3) ON NUMBER 3 SKIRT (1).
   a. Install headed pin (4) to secure skirt latch assembly (3) to number 3 skirt (1).
   b. Install quick release pin (5) into headed pin (4).
3. INSTALL NUMBER 3 SKIRT (1).
   a. Attach two shackles (6) to front and rear skirt rail holes (7) in number 3 skirt (1).
   b. Attach two legs of sling (8) to shackles (6) and lift number 3 skirt (1) into mounting position with hoist (9).
   c. Push pin (10) rearward through skirt latch assembly (3) to secure number 3 skirt (1) to hull.
   d. Install quick release pin (11) into pin (10).
   e. Position rear of number 3 skirt (1) onto skirt support (12) and release hoist tension. Remove sling (8) and two shackles (6) from number 3 skirt (1).





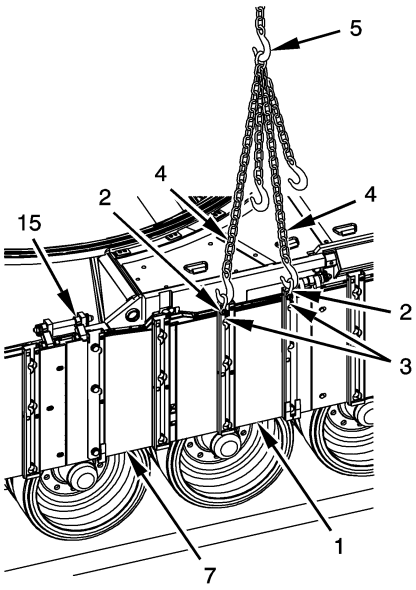


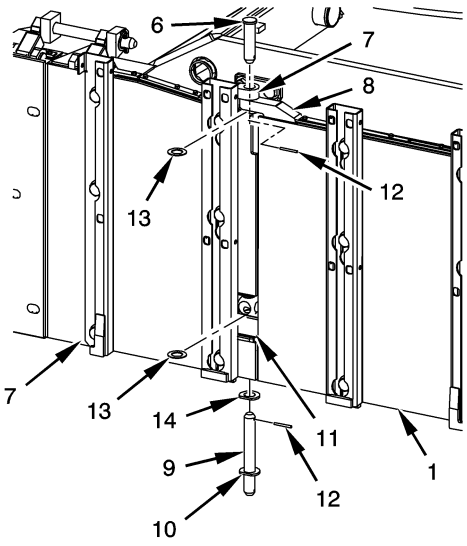
Go on to Sheet 4

3w7134

NUMBER 3 AND 4 FENDER SKIRT (ARAT) REPLACEMENT (Sheet 4 of 4)

4. INSTALL NUMBER 4 SKIRT (1).
   a. Attach two shackles (2) to front and rear armor box rail holes (3) in number 4 skirt (1).
   b. Attach two legs of sling (4) to shackles (2) and lift number 4 skirt (1) into mounting position with hoist (5).
   c. Install headed pin (6) through top of number 3 skirt (7) number 4 skirt (1), and skirt hinge (8).
   d. Install headless pin (9) with spacer (10) through number 3 skirt (7), number 4 skirt (1), and skirt support (11).
   e. Install spring pin (12) and washer (13) onto headed pin (6).
   f. Install spring pin (12) and spacer (14) onto headless pin (9).
5. CLOSE NUMBER 4 FENDER SKIRT (PAGE 3-87).
6. RELEASE HOIST TENSION AND REMOVE SLING (4) AND TWO SHACKLES (2) FROM NUMBER 4 SKIRT (1).
7. IF NECESSARY, CLOSE NUMBER 4 SKIRT (1) AND OPEN NUMBER 3 SKIRT (7) TO ADJUST SKIRT LATCH ASSEMBLY (15) UP OR DOWN TO LEVEL NUMBER 3 SKIRT (7).
8. INSTALL NUMBER 4 RIGHT FENDER SKIRT RUBBER STRIP (TM 9-2350-264-20-1).
9. INSTALL NUMBER 4 LEFT FENDER SKIRT RUBBER STRIP (TM 9-2350-264-20-1).
10. INSTALL NUMBER 3 RIGHT FENDER SKIRT RUBBER STRIP (TM 9-2350-264-20-1).
11. INSTALL EXHAUST DEFLECTOR (PAGE 5-59).
12. INSTALL SKIRT SPLIT RAIL (PAGE 3-84).
13. CLOSE NUMBER 5 SKIRT (PAGE 3-87).
14. INSTALL ABRAMS REACTIVE ARMOR TILES (ARATS) (PAGE 3-82).





End of Task

3w7135

NUMBER 5 AND 6 FENDER SKIRT (ARAT) REPLACEMENT (Sheet 1 of 3)

TOOLS: General mechanic's tool kit: automotive (SC 5180-90-N26)
Hoist, 1000-pound capacity (see TB 43-0142) (TO&E Authorized)
Lifting kit (P/N 12284836) (NSN 4933-01-108-4933)
Shackle (NSN 4030-00-064-6730) (2 required)

PERSONNEL: Three

EQUIPMENT CONDITION: Abrams reactive armor tiles (ARATS) removed (as required) (page 3-82)
Brush guard removed (page 3-88)
Left or right side vehicular splash guard removed (TM 9-2350-264-10)
Number 5 left or right fender skirt rubber strip removed (TM 9-2350-264-20-1)
Number 6 left or right fender skirt rubber strip or top closure plate removed (TM 9-2350-264-20-1)
Number 5 skirt opened and number 6 skirt closed (page 3-87)

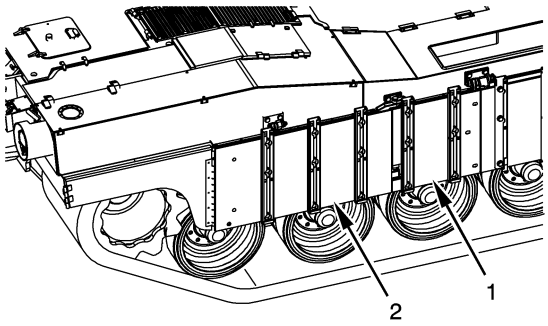
REMOVAL:

WARNING

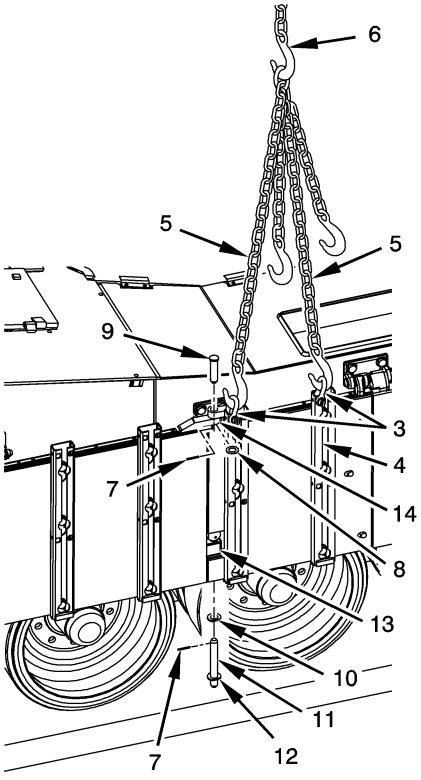
Do not open two skirts (1, 2) on same hinge line at same time. If both skirts (1, 2) on same hinge line are opened, they can break off hinges and cause serious injury.

NOTE

Use this task to replace either left or right number 5 and number 6 skirts (1, 2). Right side number 5 and number 6 skirts (1, 2) are shown.



1. REMOVE NUMBER 5 SKIRT (1).
   a. Attach two shackles (3) to front and rear ARAT skirt rail holes (4) in number 5 skirt (1).
   b. Attach two legs of sling (5) to shackles (3) and support number 5 skirt (1) with hoist (6).
   c. Remove spring pin (7) and washer (8) from headed pin (9).
   d. Remove spring pin (7) and spacer (10) from top of headless pin (11).
   e. Remove headless pin (11) with spacer (12) securing bottom of number 6 skirt (2) and number 5 skirt (1) to skirt support (13).
   f. Remove headed pin (9) securing number 6 skirt (2) and number 5 skirt (1) to skirt hinge (14).
   g. Use hoist (6) to remove number 5 skirt (1) from tank and remove sling (5) and shackles (3) from number 5 skirt (1).



Go on to Sheet 2

3w7142

NUMBER 5 AND 6 FENDER SKIRT (ARAT) REPLACEMENT (Sheet 2 of 3)

2. REMOVE NUMBER 6 SKIRT (1).

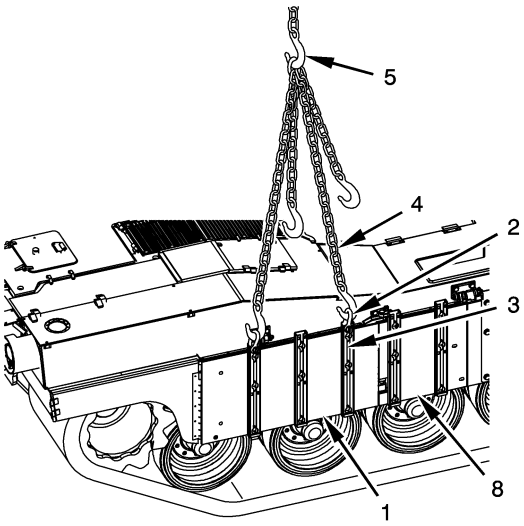
    a. Attach two shackles (2) to front and rear ARAT skirt rail holes (3) in number 6 skirt (1).

    b. Attach two legs of sling (4) to shackles (2) and support number 6 skirt (1) with hoist (5).

    c. Remove quick release pin (6) from pin (7) securing number 6 skirt (1) to hull.

    d. Remove pin (7) from number 6 skirt (1) to release number 6 skirt (1) from hull.

    e. Use hoist (5) to remove number 6 skirt (1) from hull and remove sling (4) and shackles (2) from number 6 skirt (1).



NOTE

If removing skirts (1, 8) for access only, go to step 4.

3. REMOVE ARAT SKIRT RAILS (FOR SKIRTS NUMBER 5 AND 6 ONLY) (PAGE 3-83).

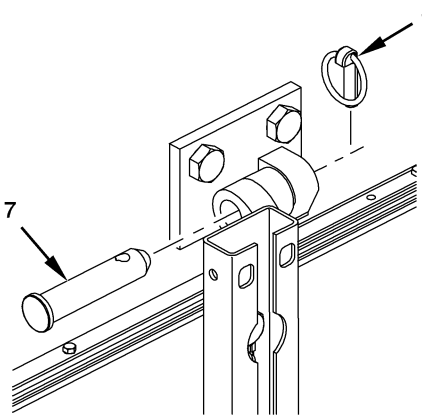
4. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.

INSTALLATION:

NOTE

If skirts number 5 and number 6 (1, 8) were removed for access only, go to step 2.

1. INSTALL ARAT SKIRT RAILS (FOR SKIRTS NUMBER 5 AND 6 ONLY) (PAGE 3-83).



WARNING

Do not open two skirts (1, 8) on same hinge line at same time. If both skirts (1, 8) on same hinge line are opened, they can break off hinges and cause serious injury.

2. INSTALL NUMBER 6 SKIRT (1).

    a. Attach two shackles (2) to front and rear skirt rail holes (3) in number 6 skirt (1).

    b. Attach two legs of sling (4) to shackles (2) and lift number 6 skirt (1) into mounting position with hoist (5).

Go on to Sheet 3

3w7143

NUMBER 5 AND 6 FENDER SKIRT (ARAT) REPLACEMENT (Sheet 3 of 3)

c. Push pin (1) rearward through number 6 skirt (2) to secure number 6 skirt (2) to hull.

d. Install quick release pin (3) into pin (1).

e. Position front of number 6 skirt (2) onto skirt hinge (4) and release hoist tension. Remove sling (5) and two shackles (6) from number 6 skirt (2).

3. INSTALL NUMBER 5 SKIRT (7).

a. Attach two shackles (6) to front and rear skirt rail holes (8) in number 5 skirt (7).

b. Attach two legs of sling (5) to shackles (6) and lift number 5 skirt (7) into mounting position with hoist (9).

c. Install headed pin (10) through top of number 5 skirt (7) number 6 skirt (2), and skirt hinge (11).

d. Install headless pin (12) with spacer (13) through number 5 skirt (7), number 6 skirt (2), and skirt support (14).

e. Install spring pin (15) and washer (16) onto headed pin (10).

f. Install spring pin (15) and spacer (17) onto headless pin (12).

g. Release hoist tension and remove sling (5) and two shackles (6) from number 5 skirt (7).

4. INSTALL NUMBER 6 LEFT OR RIGHT FENDER SKIRT RUBBER STRIP OR TOP CLOSURE PLATE (TM 9-2350-264-20-1).

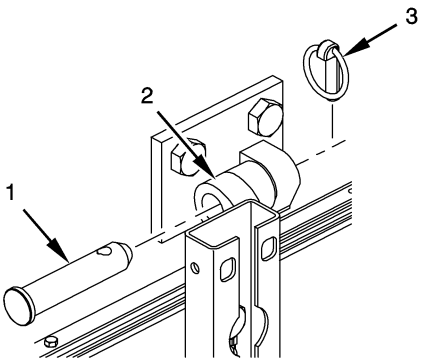
5. INSTALL NUMBER 5 LEFT OR RIGHT FENDER SKIRT RUBBER STRIP (TM 9-2350-264-20-1).

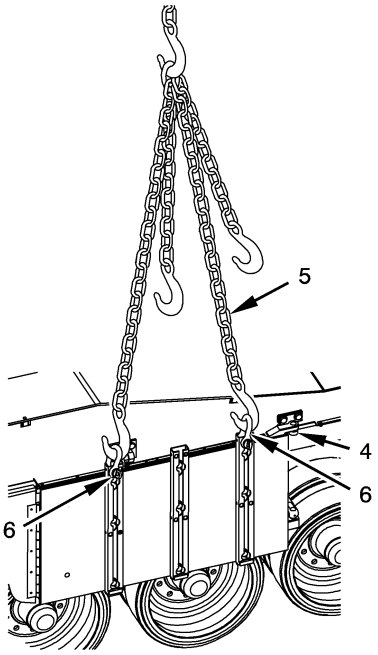
6. INSTALL BRUSH GUARD (PAGE 3-88).

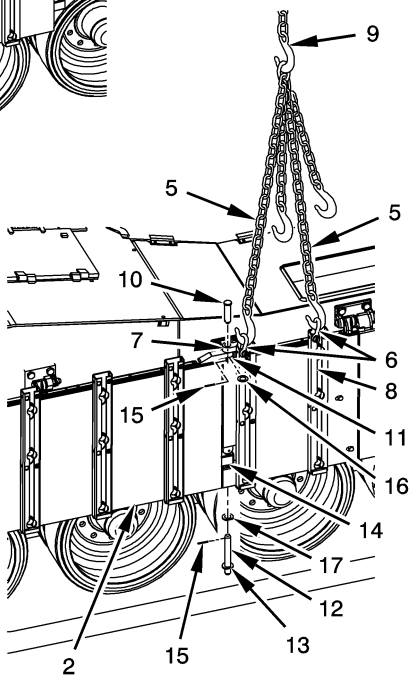
7. INSTALL SKIRT RAIL EXTENSION (PAGE 3-85).

8. INSTALL LEFT OR RIGHT SIDE VEHICULAR SPLASH GUARD (TM 9-2350-264-10).

9. INSTALL ABRAMS REACTIVE ARMOR TILES (ARATS) (PAGE 3-82).







End of Task 3w7144

LATCH HANDLE AND LATCH ROD REPLACEMENT (Sheet 1 of 2)

TOOLS: General mechanic's tool kit: automotive (SC 5180-90-N26)

EQUIPMENT CONDITION: Spacer box and ARAT Tile removed from first column (page 3-82)

REMOVAL:

NOTE

Use this task to replace left or right latch handle (1). Left latch handle (1) is shown.

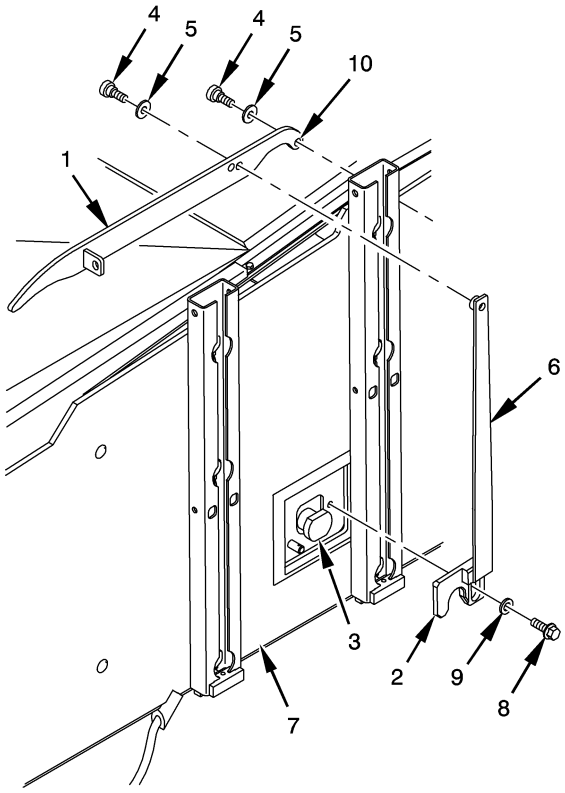
1. REMOVE LATCH HANDLE (1).
   a. Pull latch handle (1) up until latch fork (2) disengages from strut (3).
   b. Remove two shoulder bolts (4) and washers (5) securing latch handle (1) to latch rod (6) and number one skirt (7) and remove latch handle (1).
2. REMOVE LATCH ROD (6).

   Remove shoulder bolt (8) and washer (9) securing latch rod (6) to number 1 skirt (7) and remove latch rod (6).
3. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.

INSTALLATION:

1. INSTALL LATCH ROD (6).

   Position latch rod (6) on number 1 skirt (7) and secure with shoulder bolt (8) and washer (9).
2. INSTALL LATCH HANDLE (1).
   a. Insert shoulder bolt (4) and washer (5) into pivot hole (10) on latch handle (1) and secure latch handle (1) onto number 1 skirt (7).
   b. Temporarily attach latch rod (6) to latch handle (1) using shoulder bolt (4) and washer (5).
   c. Close skirt (7) and pull handle down until latch fork (2) is engaged with strut (3).



Go on to Sheet 2

3w7097

LATCH HANDLE AND LATCH ROD REPLACEMENT (Sheet 2 of 2)

NOTE

Latch handles (1) have two holes (2) available to secure latch handle (1) to latch rod (3). Use the following steps to determine which hole (2) is best to use.

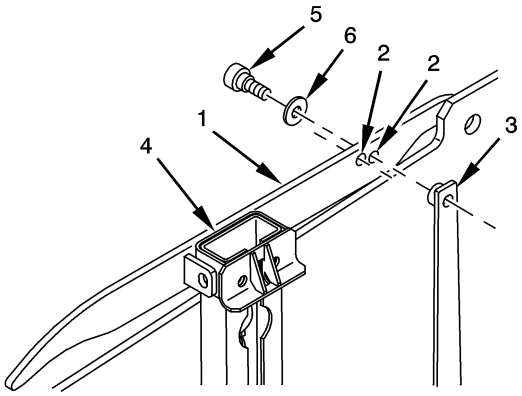
d. Place latch handle (1) down into its resting position and install rail cap assembly (4) to lock latch handle (1) in place.

e. Inspect alignment of hole in latch rod (3) with holes (2) on latch handle (1) for best positioning.

f. Insert shoulder bolt (5) and washer (6) into most appropriate hole (2) in latch handle (1) and secure to latch rod (3).

g. Remove rail cap assembly (4) and operate latch handle (1) and latch rod (3) several times to ensure proper engagement.

3. INSTALL SPACER BOX AND ARAT TILE TO FIRST COLUMN (PAGE 3-82).



End of Task

3w7098

EXHAUST DEFLECTOR REPLACEMENT (Sheet 1 of 1)

TOOLS: General mechanic's tool kit: automotive (SC 5180-90-N26)

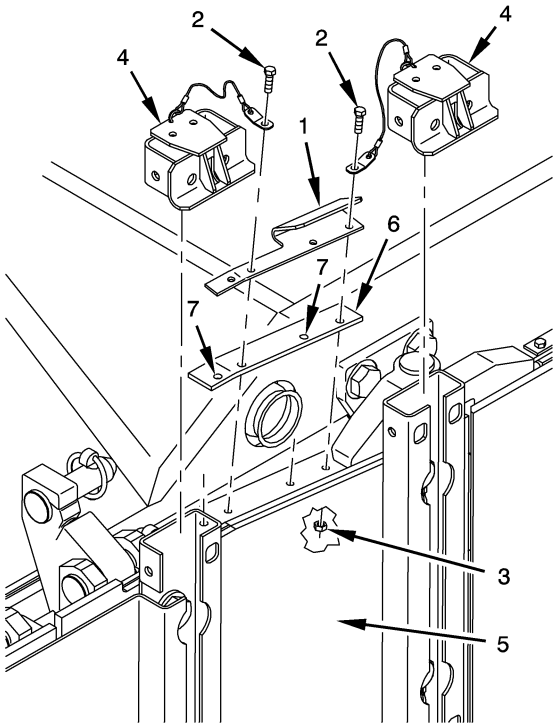
EQUIPMENT CONDITION: Abrams reactive armor tiles (ARATS) removed (as required) (page 3-82)
Open skirts as required (page 3-86) or (page 3-87)

REMOVAL:

1. REMOVE EXHAUST DEFLECTOR (1).
   a. Remove two screws (2) and nuts (3) securing two rail caps (4) to number 3 skirt (5).
   b. Remove two screws (2) and nuts (3) securing exhaust deflector (1), and rubber strip (6) from number 3 skirt (5).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.

INSTALLATION:

1. INSTALL EXHAUST DEFLECTOR (1).
   a. Position rubber strip (6) and exhaust deflector (1) on top of number 3 skirt (5).
   b. Install two screws (2) through holes (7) and install nuts (3).
   c. Position two screws (2) through lanyard end of rail caps (4) and deflector (1). Install nuts (3).
2. CLOSE SKIRTS AS REQUIRED (PAGE 3-86) OR (PAGE 3-87).
3. INSTALL ABRAMS REACTIVE ARMOR TILES (ARATS) (PAGE 3-82).



End of Task 3w7099

HIGHWAY CABLES 2W302 OR 2W303 REPLACEMENT (Sheet 1 of 7)

TOOLS: General mechanic's tool kit: automotive (SC 5180-90-N26)

SUPPLIES: Electrical tiedown strap (P/N MS3367-4-9) (as required)

EQUIPMENT CONDITION: Tank power disconnected (TM 9-2350-264-20-1)
Open engine access door and right side metal grille (TM 9-2350-264-10)
Right taillight plug guard and access covers removed (TM 9-2350-264-20-1)
Brush guard removed (page 5-70)
Turret platform access door open (TM 9-2350-264-10)

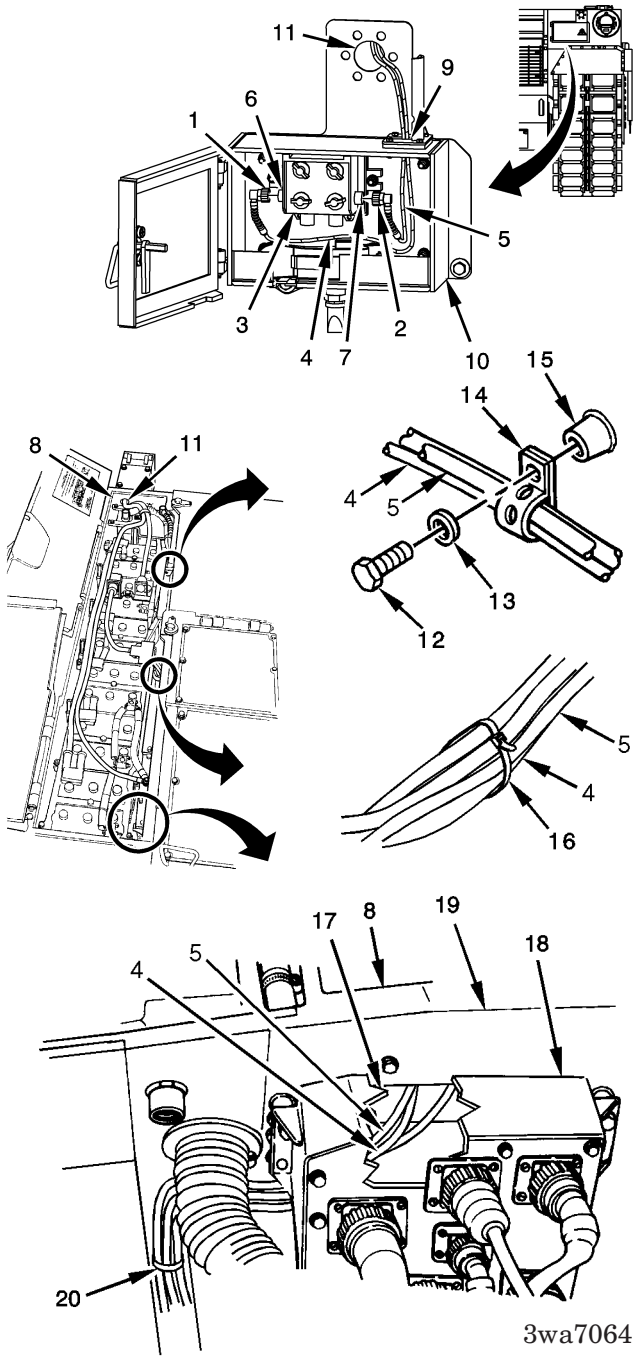
REMOVAL:

1. DISCONNECT CONNECTOR 2W303 P1 (1) OR CONNECTOR 2W302 P2 (2) FROM CREW STATION (3).

NOTE

- If removing cable 2W303 (4), do step a.
- If removing cable 2W302 (5), do step b.
  a. Disconnect connector P1 (1) of cable 2W303 (4) from J1 (6) on crew station (3). Go to step 2.
  b. Disconnect connector P2 (2) of cable 2W302 (5) from J4 (7) on crew station (3).

2. REMOVE CABLE 2W303 (4) OR CABLE 2W302 (5) FROM BATTERY COMPARTMENT (8).
   a. Feed connector (1 or 2) through access hole (9) in phone box (10).
   b. Feed connector (1 or 2) through access hole (11) into battery compartment (8).
   c. Remove two screws (12) and washers (13) from loop clamps (14) and bosses (15). Remove cable (4 or 5) from loop clamps (14).
   d. Remove all electrical tiedown straps (16) from cable (4 or 5) in battery compartment (8).
   e. Feed cable (4 or 5) from battery compartment (8) through access hole (17) behind disconnect panel (18) into engine compartment (19).
   f. Remove all electrical tiedown straps (20) from cable (4 or 5) in engine compartment (19).



Go on to Sheet 2

3wa7064

HIGHWAY CABLES 2W302 OR 2W303 REPLACEMENT (Sheet 2 of 7)

NOTE

Manually traverse turret to position main gun over number 3 left roadwheel, and lock turret (TM 9-2350-264-10).

3. REMOVE EMERGENCY ENGINE SHUTOFF VALVE MANUAL CONTROL HANDLE (TM 9-2350-264-20-3).

4. REMOVE ADAPTER (1).

   a. Remove nut (2) from fuel shutoff control assembly (3) and pull control assembly (3) into engine compartment.

   b. Remove three screws (4) and two clamps (5) from adapter (1).

   c. Remove clamp (5) from cable (6 or 7).

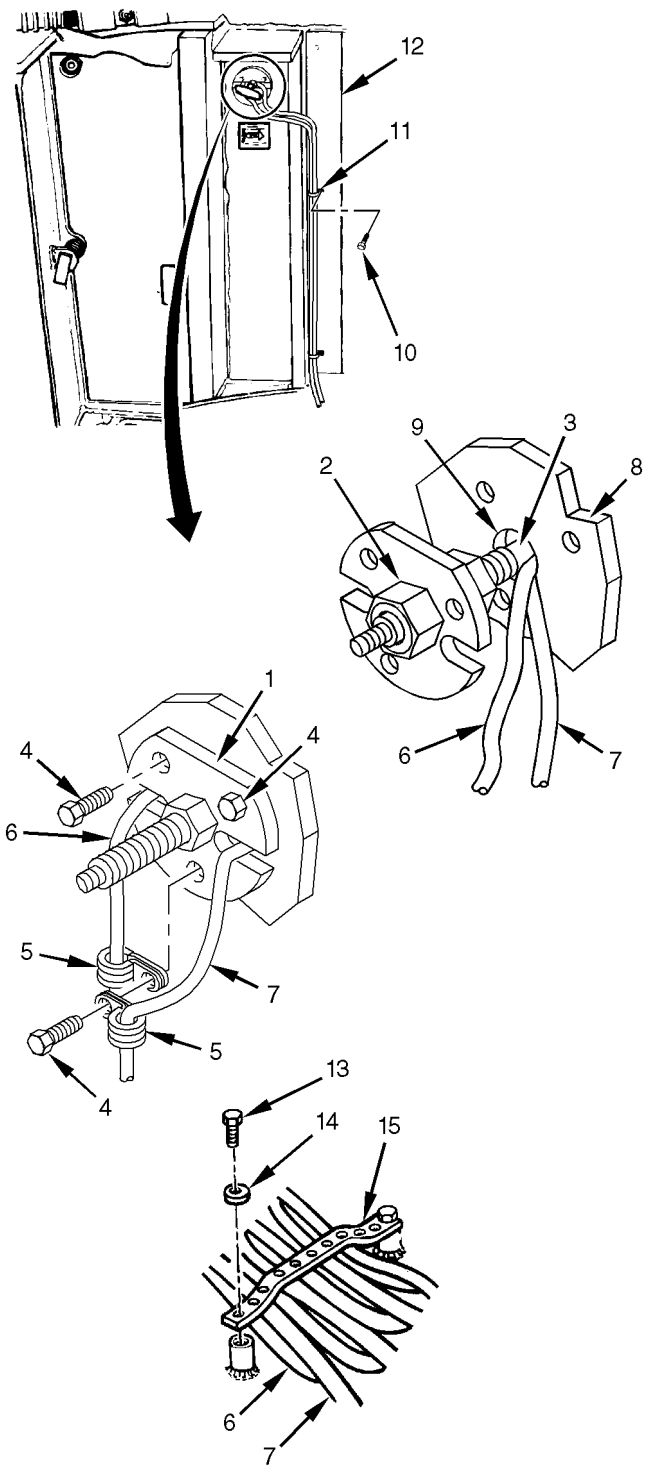
5. PULL CABLE (6 OR 7) INTO CREW COMPARTMENT (8) THROUGH EMERGENCY ENGINE SHUTOFF CONTROL ACCESS HOLE (9).

6. REMOVE TWO SCREWS (10) AND CLAMPS (11) FROM HULL WALL (12). REMOVE CLAMPS (11) FROM CABLE (6 OR 7).

NOTE

Manually traverse turret as needed to gain access to cable (6 or 7) and then lock turret (TM 9-2350-264-10).

7. REMOVE ONE SCREW (13) AND WASHER (14) FROM EACH OF FOUR STRAPS (15) ON TURRET FLOOR. REMOVE CABLE (6 OR 7) FROM UNDER STRAPS (15).

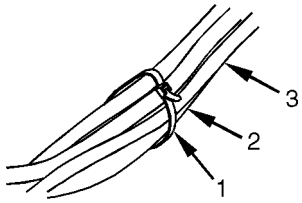


Go on to Sheet 3

3wa7065

HIGHWAY CABLES 2W302 OR 2W303 REPLACEMENT (Sheet 3 of 7)

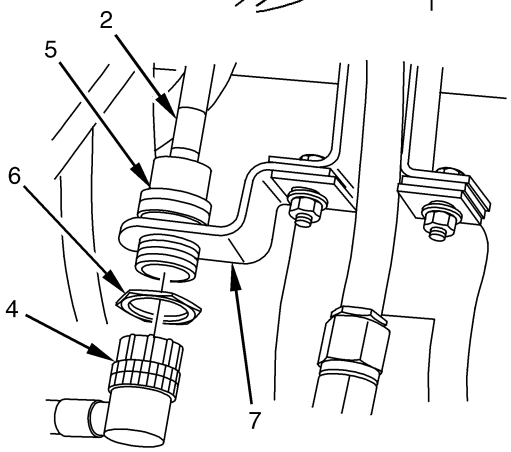
8. REMOVE ALL ELECTRICAL TIEDOWN STRAPS (1) FROM CABLE (2 OR 3) AS REQUIRED.



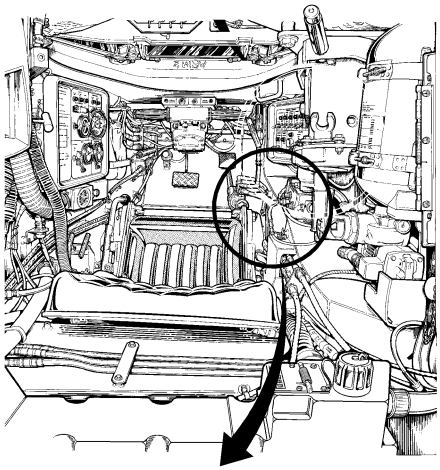
NOTE

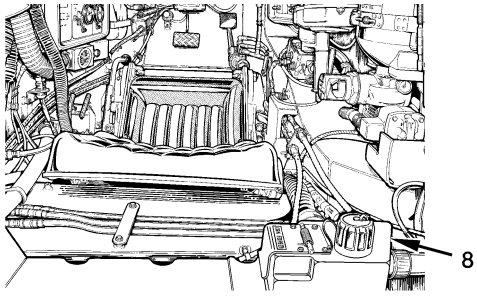
- If removing cable 2W303 (2), do step 9.
- If removing cable 2W302 (3), do step 10.

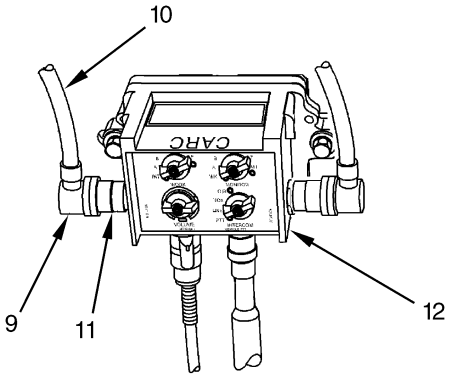
9. DISCONNECT CONNECTOR 2W110-5P2 (4) FROM CONNECTOR 2W303-J1 (5). REMOVE JAMNUT (6) FROM CONNECTOR (5) AND REMOVE FROM BRACKET (7). REMOVE CABLE 2W303 (2) FROM TANK. GO TO STEP 12.



10. FROM DRIVER'S COMPARTMENT PULL CABLE (3) UNDER HULL POWER DISTRIBUTION UNIT (HPDU) (8).
11. DISCONNECT CONNECTOR P1 (9) OF CABLE 2W302 (10) FROM J1 (11) ON DRIVER'S INTERCOM (12). REMOVE CABLE 2W302 (10) FROM TANK.
12. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.







Go on to Sheet 4

3wa7065

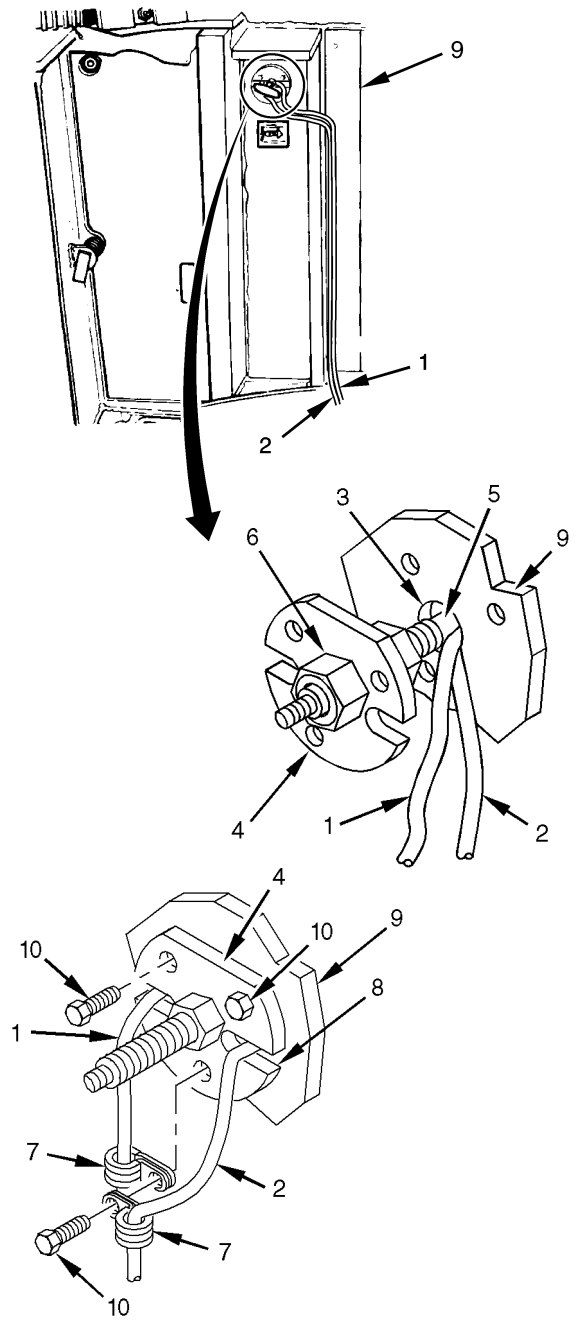
HIGHWAY CABLES 2W302 OR 2W303 REPLACEMENT (Sheet 4 of 7)

INSTALLATION:

NOTE

Manually traverse turret to position main gun over number 3 left roadwheel, and lock turret (TM 9-2350-264-10).

1. FEED CABLE (1 OR 2) INTO ENGINE COMPARTMENT THROUGH EMERGENCY ENGINE SHUTOFF CONTROL ACCESS HOLE (3) .
2. INSTALL ADAPTER (4).
   a. From engine compartment, place emergency engine shutoff control (5) through access hole (3) in bulkhead and turret. Go inside turret.
   b. Install control (5) to adapter (4) with nut (6).
   c. Position clamp (7) to cable (1 or 2) and place cable (1 or 2) in cutout (8) of adapter (4).
   d. Aline adapter (4) to hull wall (9). Install three screws (10) and two clamps (7) to adapter (4).
3. INSTALL EMERGENCY ENGINE SHUTOFF VALVE MANUAL CONTROL HANDLE (TM 9-2350-264-20-3).



Go on to Sheet 5

3wa7067

HIGHWAY CABLES 2W302 OR 2W303 REPLACEMENT (Sheet 5 of 7)

4. FROM ENGINE COMPARTMENT (1) FEED CABLE (2 OR 3) BEHIND DISCONNECT PANEL (4) INTO BATTERY COMPARTMENT (5) THROUGH ACCESS HOLE (6).

5. INSTALL ELECTRICAL TIEDOWN STRAPS (7) TO CABLE (2 OR 3), AS REQUIRED.

6. INSTALL CABLE (2 OR 3) IN BATTERY COMPARTMENT (5).

NOTE

Cable (2 or 3) must extend through access hole (8) between 23 and 25-inches (59-63 cm).

   a. Route cable (2 or 3) along inboard side of battery compartment (5) to rear of battery compartment (5) and through access hole (8).

   b. Position cable (2 or 3) in two loop clamps (9) and install screws (10) and washers (11) to clamps (9) and bosses (12).

   c. Install electrical tiedown straps (13) to cable (2 or 3), as required.

7. CONNECT CABLE (2 OR 3) TO CREW STATION (14) IN PHONE BOX (15).

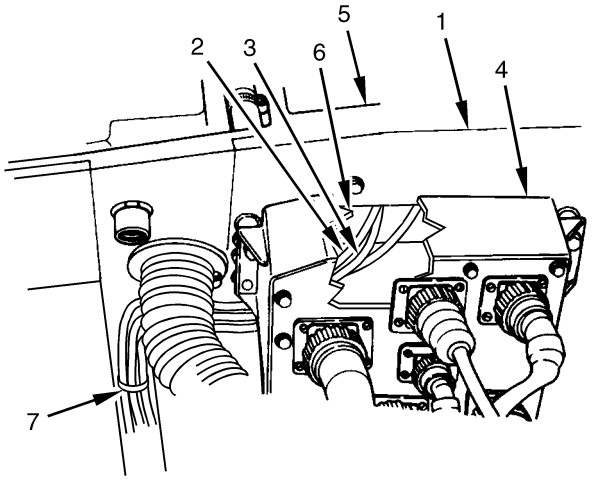
   a. Route cable (2 or 3) from access hole (8) and feed into access hole (16) in phone box (15).

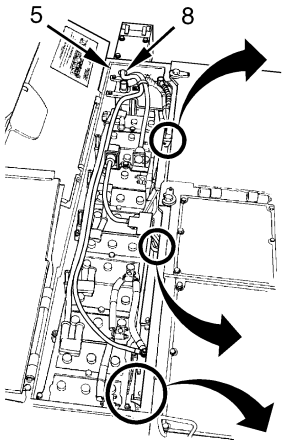
NOTE

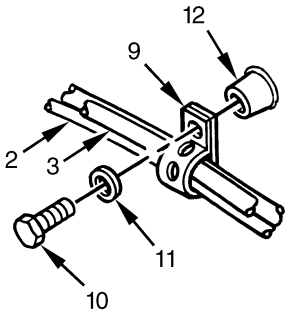
- To connect cable 2W302 (2), do step b.
- To connect cable 2W303 (3), go to step c.

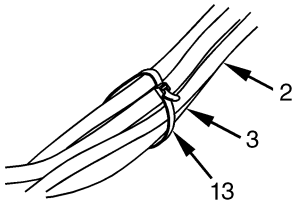
   b. Connect connector P2 (17) of cable 2W302 (2) to J4 (18) on crew station (14). Go to step 8.

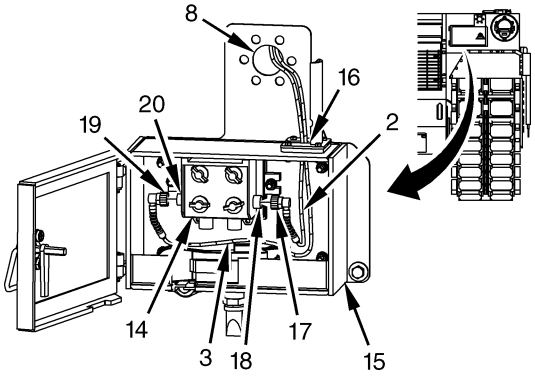
   c. Connect connector P1 (19) of cable 2W303 (3) to J1 (20) on crew station (14).











Go on to Sheet 6

3wa7067

HIGHWAY CABLES 2W302 OR 2W303 REPLACEMENT (Sheet 6 of 7)

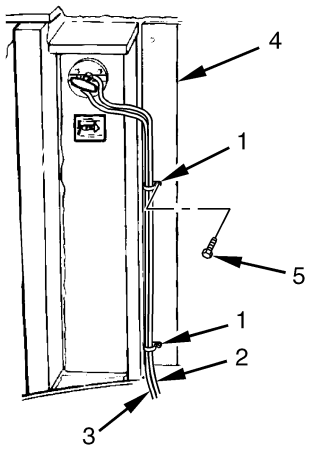
8. PLACE TWO CLAMPS (1) AROUND CABLE (2 OR 3). POSITION CLAMPS (1) TO HULL WALL (4) AND INSTALL TWO SCREWS (5).

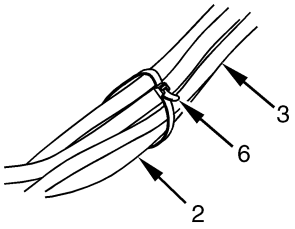
NOTE

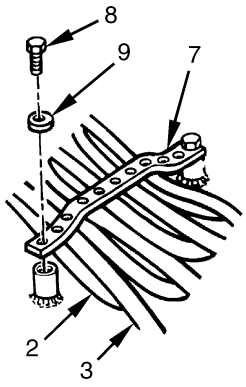
Manually traverse turret as needed to gain access to cable (2 or 3) and then lock turret (TM 9-2350-264-10).

9. INSTALL ELECTRICAL TIEDOWN STRAPS (6) TO CABLE (2 OR 3), AS REQUIRED.

10. POSITION CABLE (2 OR 3) UNDER FOUR STRAPS (7) ON TURRET FLOOR. INSTALL SCREW (8) AND WASHER (9) TO EACH STRAP (7).







Go on to Sheet 7

3wa7067

HIGHWAY CABLES 2W302 OR 2W303 REPLACEMENT (Sheet 7 of 7)

NOTE

- If installing cable 2W303 (1), go to step 11.
- If installing cable 2W302 (2), go to step 12.

11. POSITION CABLE 2W303 (1) IN TANK. PLACE CONNECTOR 2W303-J1 (3) IN BRACKET (4) AND INSTALL JAMNUT (5). CONNECT CONNECTOR 2W110-5P2 (6) TO CONNECTOR 2W303-J1 (3). GO TO STEP 15.

12. FROM CREW COMPARTMENT PULL CABLE 2W302 (2) UNDER HPDU (7).

13. ROUTE CABLE 2W302 (2) ON RIGHT SIDE OF DRIVER'S COMPARTMENT AS SHOWN. INSTALL ELECTRICAL TIEDOWN STRAPS (8) TO CABLE (2), AS REQUIRED.

14. POSITION CABLE 2W302 (2) IN TANK. CONNECT CONNECTOR P1 (9) OF CABLE 2W302 (2) TO J1 (10) ON DRIVER'S INTERCOM (11).

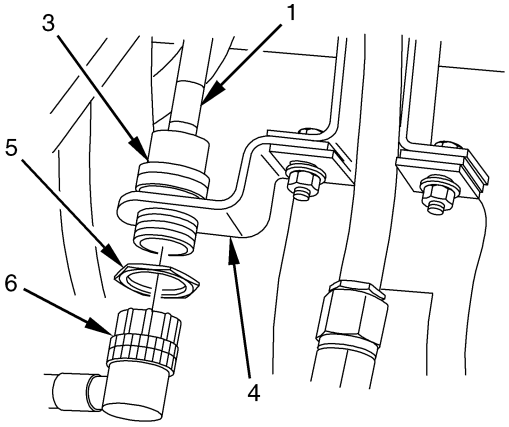
15. INSTALL RIGHT TAILLIGHT PLUG GUARD AND ACCESS COVERS (TM 9-2350-264-20-1).

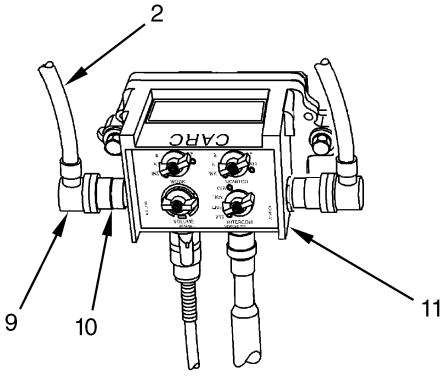
16. CONNECT TANK POWER (TM 9-2350-264-20-1).

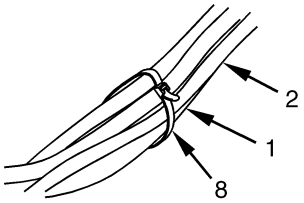
17. CLOSE ENGINE ACCESS DOOR AND RIGHT SIDE METAL GRILLE (TM 9-2350-264-10).

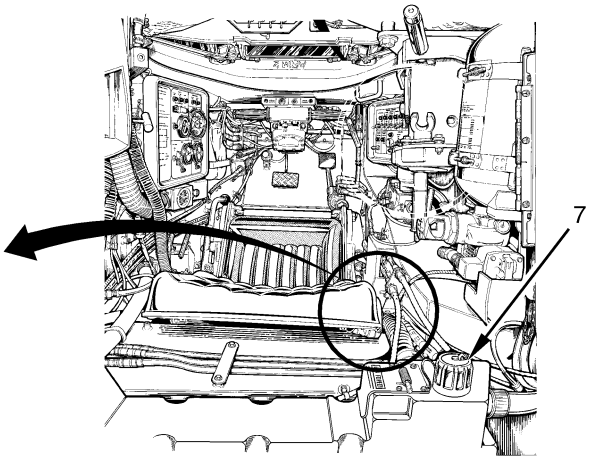
18. INSTALL BRUSH GUARD (PAGE 5-70).

19. TURRET PLATFORM ACCESS DOOR OPEN (TM 9-2350-264-10).









End of Task 3wa7066

PHONE BOX REPLACEMENT (Sheet 1 of 2)

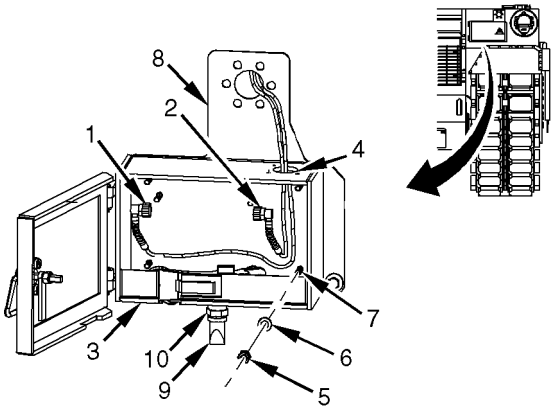
TOOLS: General mechanic's tool kit: automotive (SC 5180-90-N26)

SUPPLIES: Self-locking nut (P/N 12387349-33) (4 required)

EQUIPMENT CONDITION: Tank power disconnected (TM 9-2350-264-20-1)
Right taillight plug guard and access covers removed (TM 9-2350-264-20-1)
Infantry phone and crew station removed (TM 11-5830-263-20&P)
Brush guard removed (page 5-70)

REMOVAL:

1. REMOVE CONNECTOR P1 (1) AND P2 (2) FROM PHONE BOX (3) THROUGH ACCESS HOLE (4).
2. REMOVE PHONE BOX (3).
   a. Remove four self-locking nuts (5) and washers (6) from studs (7).
   b. Remove phone box (3) from mounting plate (8).
3. REMOVE DRAIN VALVE (9) FROM FITTING (10).
4. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



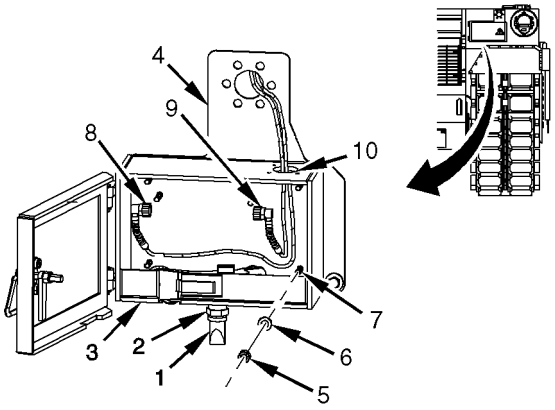
Go on to Sheet 2

3w7069

PHONE BOX REPLACEMENT (Sheet 2 of 2)

INSTALLATION:

1. INSTALL DRAIN VALVE (1) TO FITTING (2) ON PHONE BOX (3).
2. INSTALL PHONE BOX (3).
   a. Position phone box (3) to mounting plate (4).
   b. Install four new nuts (5) and washers (6) to studs (7).
3. POSITION CONNECTOR P1 (8) AND P2 (9) INTO PHONE BOX (3) THROUGH ACCESS HOLE (10).
4. INSTALL INFANTRY PHONE AND CREW STATION (TM 11-5830-263-20&P).
5. INSTALL RIGHT TAILLIGHT PLUG GUARD AND ACCESS COVERS (TM 9-2350-264-20-1).
6. INSTALL BRUSH GUARD (PAGE 5-70).
7. CONNECT TANK POWER (TM 9-2350-264-20-1).



End of Task 3w7070

PHONE BOX LATCH REPLACEMENT (Sheet 1 of 1)

TOOLS: General mechanic's tool kit: automotive (SC 5180-90-N26)

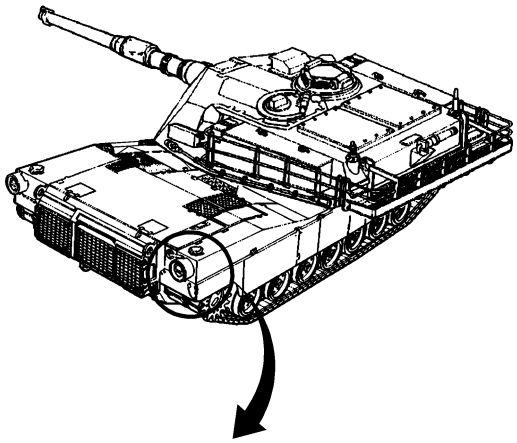
EQUIPMENT CONDITION: Phone box door opened (1-32)

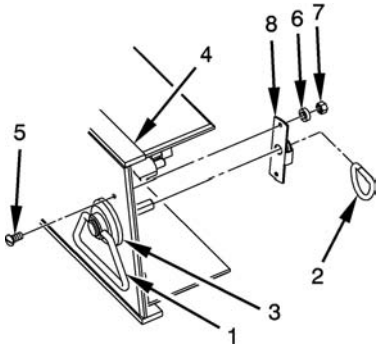
REMOVAL:

1. REMOVE LATCH (1).
   a. Remove spring (2) from latch (1).
   b. Remove latch (1) and washer (3) from door (4).
   c. Remove two screws (5), washers (6), nuts (7), and bracket (8) from door (4).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.

INSTALLATION:

1. INSTALL LATCH (1).
   a. Position bracket (8) to door (4) and install two screws (5), washers (6), and nuts (7).
   b. Place latch (1) and washer (3) through door (4) and hook spring (2) to latch (1) as shown.
2. CLOSE PHONE BOX DOOR (1-32).





End of Task

3w7071

BRUSH GUARD REPLACEMENT (Sheet 1 of 1)

TOOLS: General mechanic's tool kit: automotive (SC 5180-90-N26)
Industrial goggles (NSN 4240-00-269-7912)
Rubber gloves (NSN 8415-00-266-8675)

SUPPLIES: Self-locking nut (P/N MS21044C3) (4 required)
Gasket (P/N 12489641)
Wiping rag (NSN 7920-00-205-1711)
Sealing compound (NSN 8030-01-025-1692)

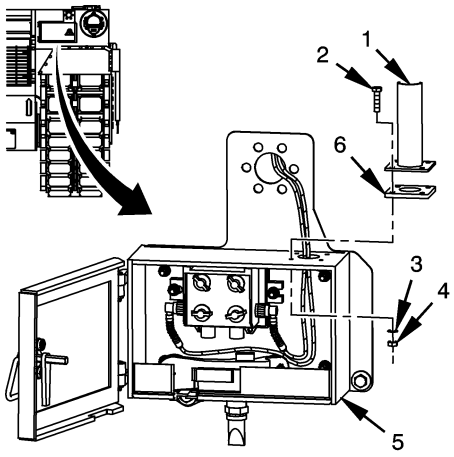
EQUIPMENT CONDITION: Right Taillight plug guard and access covers removed (TM 9-2350-264-20-1)
Phone box door opened (1-32)

REMOVAL:

1. REMOVE BRUSH GUARD (1).
   a. Remove four screws (2), washers (3), and self-locking nuts (4) from guard (1) and phone box (5).
   b. Remove guard (1) and gasket (6) from phone box (5).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.

INSTALLATION:

1. INSTALL BRUSH GUARD (1).
   a. Clean old sealing compound from mating surface of guard (1) and phone box (5).
   b. Apply sealing compound to mating surface of brush guard (1) and phone box (5).
   c. Position new gasket (6) and guard (1) to phone box (5) and install four screws (2), washers (3), and new nuts (4).
2. INSTALL RIGHT TAILLIGHT PLUG GUARD AND ACCESS COVERS (TM 9-2350-264-20-1).
3. CLOSE PHONE BOX DOOR (1-32).



End of Task 3w7075

PHONE BOX ASSEMBLY SEALS REPLACEMENT (Sheet 1 of 1)

TOOLS: General mechanic's tool kit: automotive (SC 5180-90-N26)
Air filtering respirator (NSN 4240-00-022-2524)
Industrial goggles (NSN 4240-00-269-7912)
Rubber gloves (NSN 8415-00-266-8675)

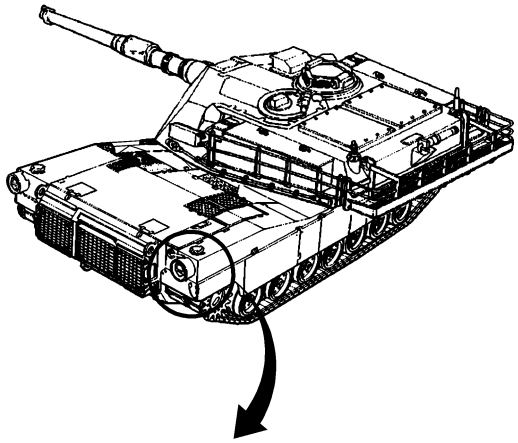
SUPPLIES: Acid swabbing brush (NSN 7920-00-514-2417)
Adhesive (NSN 8040-00-664-4318)
Dry cleaning solvent (NSN 6850-00-285-8011)
Wiping rag (NSN 7920-00-205-1711)

EQUIPMENT CONDITION: Phone box door opened (1-32)

REMOVAL:

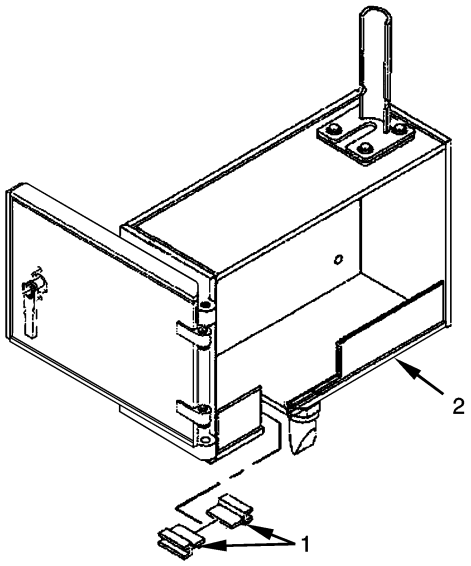
WARNING

1. REMOVE SEALS (1) FROM PHONE BOX ASSEMBLY (2).
   a. Remove as much of old seals (1) from bottom of phone box assembly (2) as possible.
   b. Remove remaining seal material and adhesive from phone box assembly (2) with solvent and rags.
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



INSTALLATION:

WARNING



1. INSTALL SEALS (1) ONTO PHONE BOX ASSEMBLY (2).
   a. Apply adhesive to grooves on seals (1) using brush.
   b. Carefully seat grooves on seals (1) onto phone box assembly (2).
2. CLOSE PHONE BOX DOOR (1-32).

End of Task 3w7071

ENHANCED NIGHT VIEWER STOWAGE BOX REPLACEMENT (Sheet 1 of 1)

TOOLS: Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)

REMOVAL:

1. REMOVE BOX (1).
   a. Remove two screws (2) and washers (3) from box (1) and standoffs (4).
   b. Release two latches (5) and open door (6).
   c. From inside box (1), remove other screw (2), washer (3), and box (1) from standoffs (4).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.

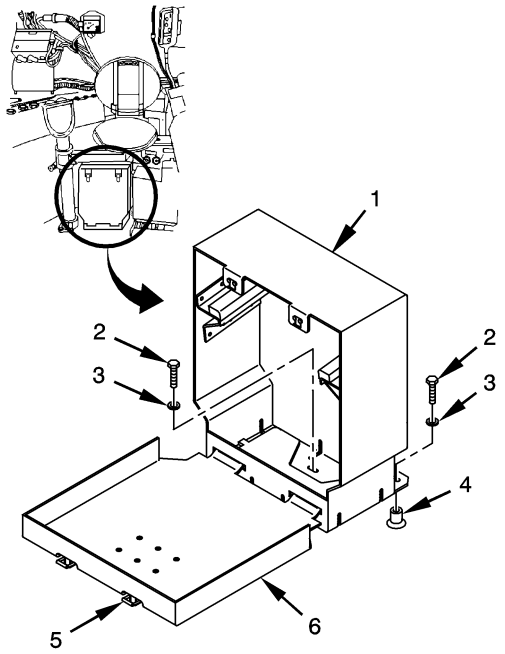
INSTALLATION:

INSTALL BOX (1).

a. Position box (1) on three standoffs (4). Install one screw (2) and washer (3).

b. Close door (6) on box (1). Attach two latches (5).

c. Install other two screws (2) and washers (3) to box (1) and standoffs (4).



End of Task 2bn564

BRANCHED HARNESS 1W501 REPLACEMENT (Sheet 1 of 2)

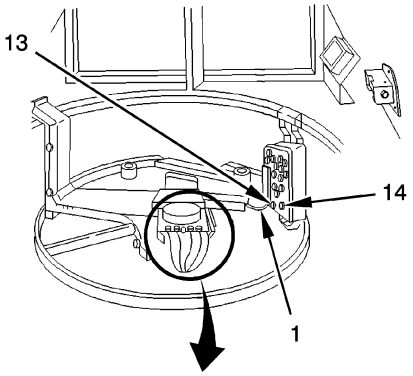
TOOLS: Artillery and turret mechanic's tool kit: ordnance (SC 5180-95-A12)

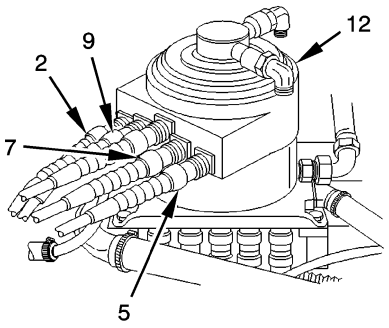
SUPPLIES: Electrical tiedown straps (P/N MS3367-1-9) (as required)

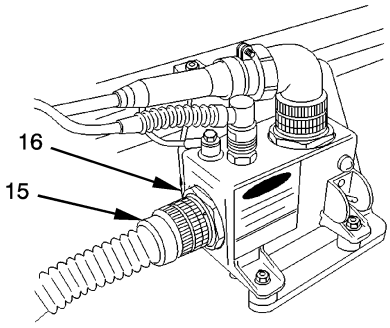
EQUIPMENT CONDITION: Guards removed (TM 9-2350-264-20-2)
Turret platform and bracket cable channel access covers removed (TM 9-2350-264-20-2)
Night viewer stowage box removed (TM 9-2350-264-20-2)

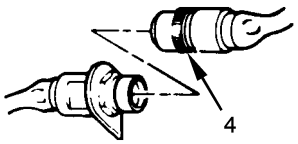
REMOVAL:

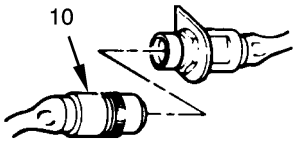
1. REMOVE HARNESS (1).
   a. Remove connector 1W501 P1 (2) from connector J6 (3) or connector 1W501-TUSK J2 (4), P2 (5) from J10 (6), P3 (7) from J9 (8), and P4 (9) from 1W501-TUSK J1 (10) or J7 (11) on hull/turret slipring (12).
   b. Remove connector 1W501 P5 (13) from turret networks box connector J13 (14).
   c. Remove connector 1W501 P6 (15) from power interface box J2 (16).
   d. Remove electrical tiedown straps, as required. Remove harness (1).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.

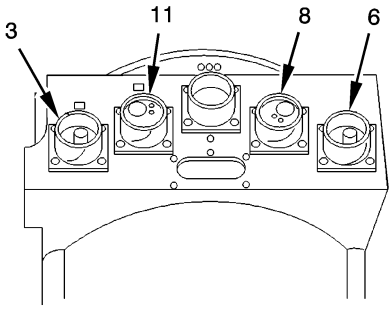












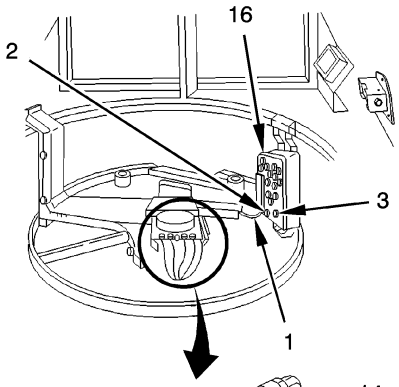
Go on to Sheet 2

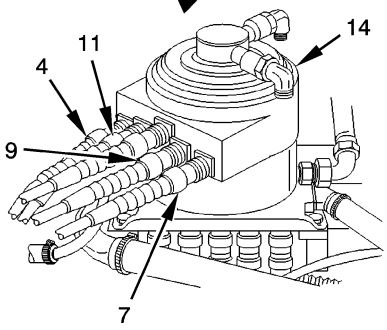
3m6535

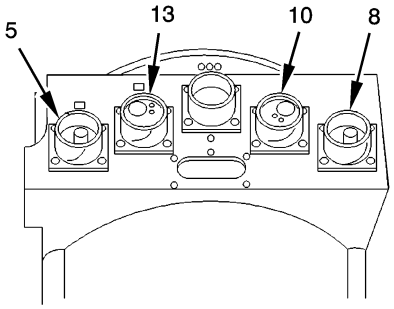
BRANCHED HARNESS 1W501 REPLACEMENT (Sheet 2 of 2)

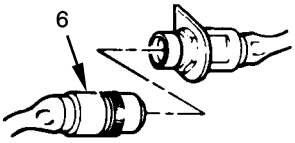
INSTALLATION:

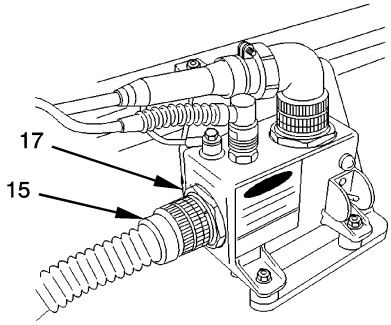
1. INSTALL HARNESS (1).
   a. Install connector 1W501 P5 (2) on connector J13 (3).
   b. Install connector 1W501 P1 (4) on connector J6 (5) or 1W501-TUSK J2 (6), P2 (7) on J10 (8), P3 (9) on J9 (10), and P4 (11) on 1W501-TUSK J1 (12) or J7 (13) on slipring (14).
   c. Install connector 1W501 P6 (15) by routing up left side of TNB (16) to power interface box J2 (17).
   d. Install new straps, as required.
2. INSTALL NIGHT VIEWER STOWAGE BOX (TM 9-2350-264-20-2).
3. INSTALL TURRET PLATFORM AND BRACKET CABLE CHANNEL ACCESS COVERS (TM 9-2350-264-20-2).
4. INSTALL GUARDS (TM 9-2350-264-20-2).

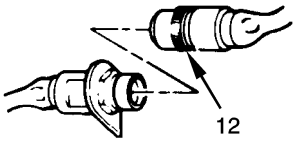












End of Task 3m6536

FRONT LEFT RETRACTOR ASSEMBLY AND SAFETY KNIFE BRACKET REPLACEMENT (Sheet 1 of 2)

TOOLS: General mechanic's tool kit: automotive (SC 5180-90-N26)
Adapter, 3/8-inch to 1/2-inch (5120-00-240-8703)
Crowfoot attachment, 3/8-inch drive, 9/16-inch (5120-00-184-8397)
Machinist's scribe (5120-00-221-7063)
Socket wrench attachment, 3/8-drive, 5/16-inch (5120-00-683-8602)
Torque wrench, 3/8-inch drive, 40-200 in-lb (5120-01-374-1930)
Torque wrench, 0-50 ft-lb (5120-00-242-3264)

SUPPLIES: Sealing compound (8030-00-081-2330)
Self-locking nut (5310-01-378-7587) (4 required)

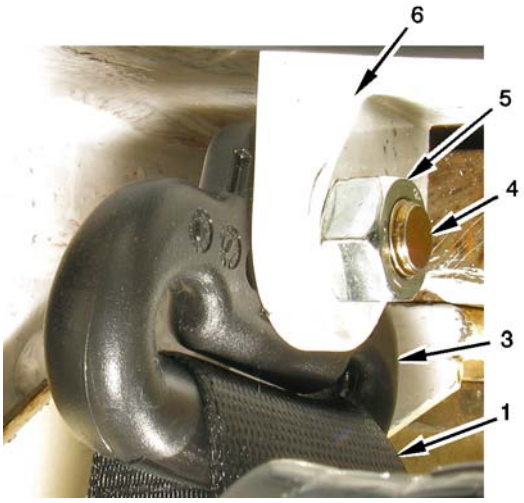
EQUIPMENT CONDITION: Driver's harness system seat assembly removed (page 3-92)

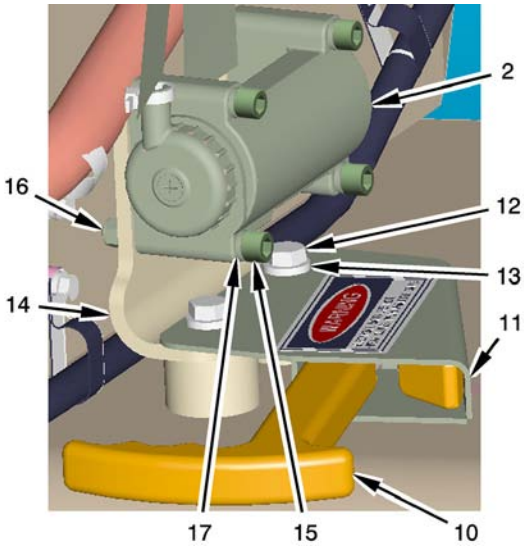
REMOVAL:

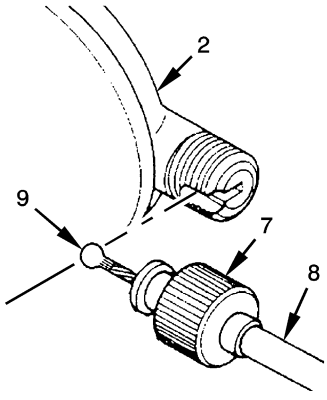
CAUTION

Retractor belts (1) may spool rapidly into retractor (2). When removing D-ring (3), hold belt (1) and slowly allow belt (1) to spool into retractor (2). Failure to do so may result in equipment damage.

1. REMOVE SCREW (4), NUT (5), AND D-RING (3) FROM BRACKET (6).
2. LOOSEN NUT (7) ON CABLE ASSEMBLY (8) AND REMOVE CABLE BALL FITTING (9) FROM RETRACTOR (2).
3. PULL SAFETY KNIFE (10) FROM SAFETY KNIFE BRACKET (11).
4. REMOVE TWO SCREWS (12) AND TWO WASHERS (13) FROM RETRACTOR BRACKET (14) AND SAFETY KNIFE BRACKET (11). REMOVE RETRACTOR (2) AND RETRACTOR BRACKET (14) FROM VEHICLE.
5. REMOVE FOUR SCREWS (15), SELF-LOCKING NUTS (16), AND WASHERS (17) FROM RETRACTOR (2).
6. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



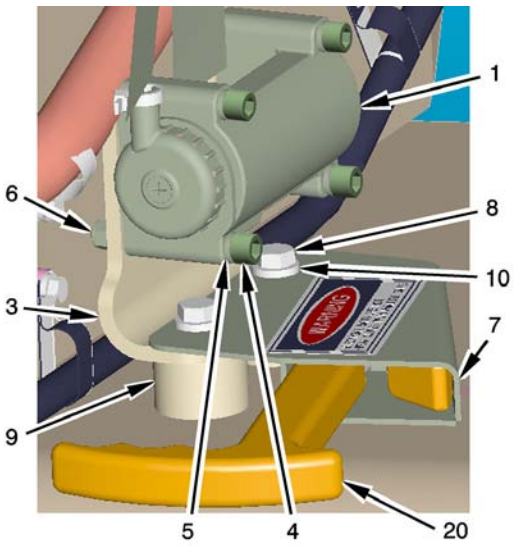




Go on to Sheet 2

3w7145

FRONT LEFT RETRACTOR ASSEMBLY AND SAFETY KNIFE BRACKET REPLACEMENT (Sheet 2 of 2)



INSTALLATION:

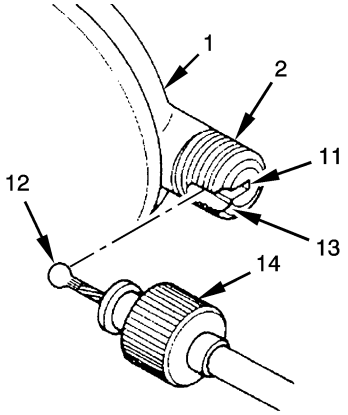
NOTE

Retractor (1) must be installed with cable connection (2) towards rear of vehicle.

1. INSTALL RETRACTOR (1) ON RETRACTOR BRACKET (3). TORQUE SCREWS (4) BETWEEN 70-75 LB-IN (8.0-8.4 N•m).
   a. Position retractor (1) on retractor bracket (3) and install four screws (4), washers (5), and new self-locking nuts (6).
   b. Torque screws (4) between 70-75 lb-in (8.0-8.4 N•m).
2. INSTALL RETRACTOR BRACKET (3) AND SAFETY KNIFE BRACKET (7). TORQUE SCREWS (8) BETWEEN 27-31 LB-FT (37-42 N•m).
   a. Apply sealing compound to threads of two screws (8).
   b. Position retractor bracket (3) and safety knife bracket (7) over standoffs (9) and install screws (8) and washers (10).
   c. Torque screws (8) between 27-31 lb-ft (37-42 N•m).

NOTE

If cable plunger (11) slides into retractor (1), use machinist's scribe to pull plunger (11) back into position.

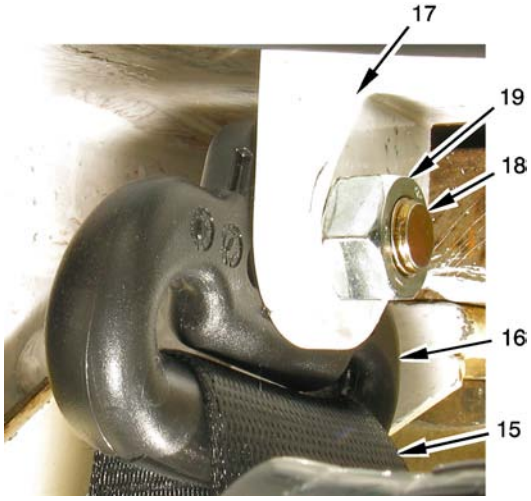


3. SLIDE BALL FITTING (12) INTO SLOT (13) IN PLUNGER (11) AND TIGHTEN NUT (14) ONTO RETRACTOR (1).

NOTE

Make sure belt (15) is not twisted when installing D-Ring (16).

4. INSTALL D-RING (16) TO BRACKET (17). TORQUE SCREW (18) BETWEEN 27-31 LB-FT (37-42 N•m).
   a. Apply sealing compound to threads of screw (18).
   b. Position D-Ring (16) on outboard side of bracket (17) and install screw (18) and nut (19) to D-ring (16) and bracket (17).
   c. Torque screw (18) between 27-31 lb-ft (37-42 N•m).
5. STORE SAFETY KNIFE (20) IN SAFETY KNIFE BRACKET (7).
6. INSTALL DRIVER'S HARNESS SYSTEM SEAT ASSEMBLY (PAGE 3-92).



End of Task

3w7146

FRONT RIGHT RETRACTOR ASSEMBLY REPLACEMENT (Sheet 1 of 2)

TOOLS: General mechanic's tool kit: automotive (SC 5180-90-N26)
Adapter 3/8-inch to 1/2-inch (5120-00-240-8703)
Machinist's scribe (5120-00-221-7063)
Socket wrench attachment, 3/8-drive, 5/16-inch (5120-00-683-8602)
Wrench, torque, 3/8-inch drive, 40-200 in-lb (5120-01-374-1930)
Wrench, torque, 0-50 ft-lb (5120-00-242-3264)

SUPPLIES: Self-locking nut P/N MS51922-2 (5310-01-378-7587) (4 required)
Sealing compound (8030-00-081-2330)

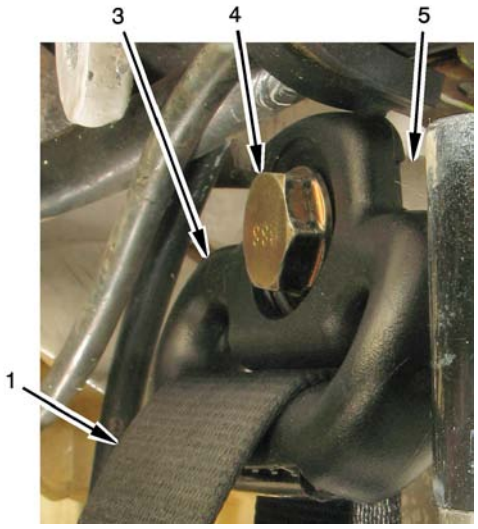
EQUIPMENT CONDITION: Driver's harness system seat assembly removed (page 3-92)

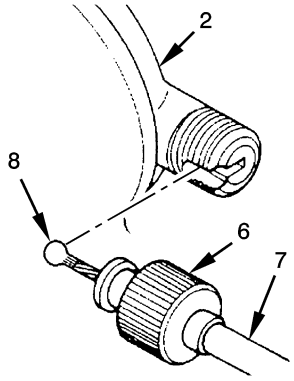
REMOVAL:

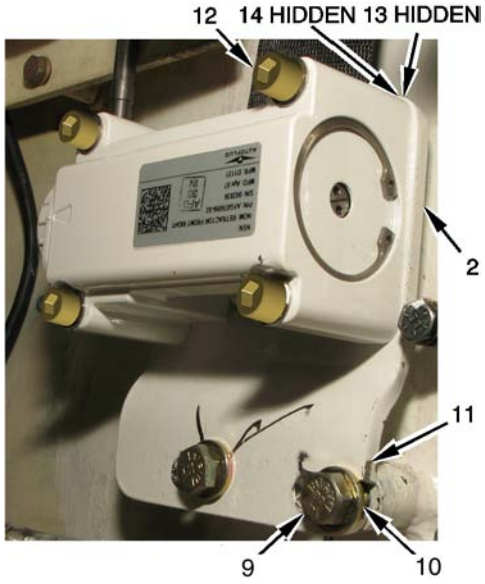
CAUTION

Retractor belts (1) may spool rapidly into retractor (2). When removing D-ring (3), hold belt (1) and slowly allow belt (1) to spool into retractor (2). Failure to do so may result in equipment damage.

1. REMOVE SCREW (4) AND D-RING (3) FROM STANDOFF (5).
2. LOOSEN NUT (6) ON CABLE ASSEMBLY (7) AND REMOVE CABLE BALL FITTING (8) FROM RETRACTOR (2).
3. REMOVE TWO SCREWS (9) AND WASHERS (10) FROM RETRACTOR BRACKET (11). REMOVE RETRACTOR (2) AND BRACKET (11) FROM VEHICLE.
4. REMOVE FOUR SCREWS (12), SELF-LOCKING NUTS (13), WASHERS (14), AND RETRACTOR (2) FROM RETRACTOR BRACKET (11).
5. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.







Go on to Sheet 2

3w7147

FRONT RIGHT RETRACTOR ASSEMBLY REPLACEMENT (Sheet 2 of 2)

INSTALLATION:

NOTE

Retractor (1) must be installed with cable connection (2) towards rear of vehicle.

1. INSTALL RETRACTOR (1) ON RETRACTOR BRACKET (3). TORQUE SCREWS (4) BETWEEN 70-75 LB-IN (8.0-8.4 N•m).
   a. Position retractor (1) on retractor bracket (3) and install four screws (4), new self-locking nuts (5), and washers (6).
   b. Torque screws (4) between 70-75 lb-in (8.0-8.4 N•m).

NOTE

Retractor bracket (3) is slotted. Make sure there is no interference with brake lines when installing bracket (3).

2. INSTALL RETRACTOR BRACKET (3). TORQUE SCREWS (7) BETWEEN 27-31 LB-FT (37-42 N•m).
   a. Apply sealing compound to threads of two screws (7).
   b. Position retractor bracket (3) over standoffs (8) and install two screws (7) and washers (9).
   c. Torque screws (7) between 27-31 lb-ft (37-42 N•m).

NOTE

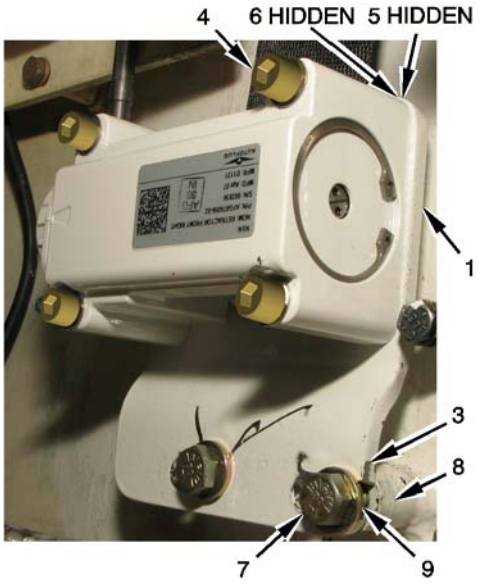
If cable plunger (10) slides into retractor (1), use machinist's scribe to pull plunger (10) back into position.

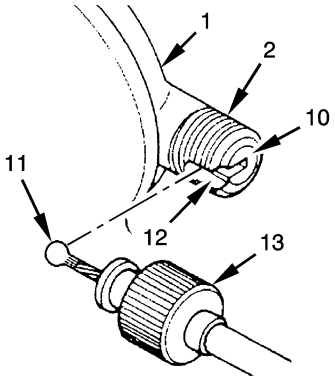
3. SLIDE BALL FITTING (11) INTO SLOT (12) ON RETRACTOR (1) AND TIGHTEN NUT (13) ONTO RETRACTOR (1).

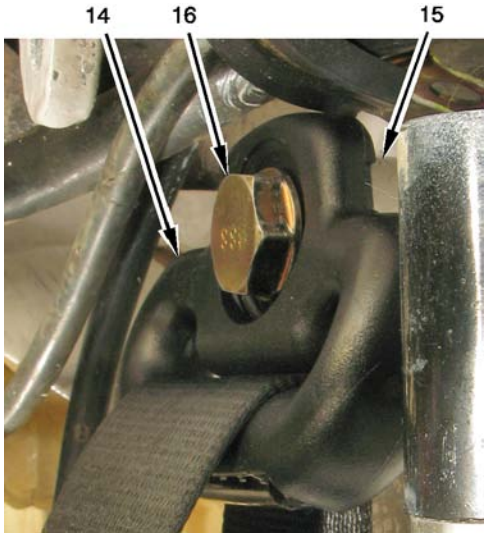
NOTE

Make sure belt is not twisted when installing D-Ring (14).

4. INSTALL D-RING (14) TO STANDOFF (15). TORQUE SCREW (16) BETWEEN 27-31 LB-FT (37-42 N•m).
   a. Apply sealing compound to threads of screw (16).
   b. Position D-Ring (14) over standoff (15) and install screw (16) to D-ring (14) and standoff.
   c. Torque screw (16) between 27-31 lb-ft (37-42 N•m).
5. INSTALL DRIVER'S HARNESS SYSTEM SEAT ASSEMBLY (PAGE 3-92).







End of Task

3w7148

LOWER RIGHT RETRACTOR ASSEMBLY REPLACEMENT (Sheet 1 of 2)

TOOLS: General mechanic's tool kit: automotive (SC 5180-90-N26)
Adapter, 3/8-inch to 1/2-inch (5120-00-240-8703)
Machinist's scribe (5120-00-221-7063)
Socket wrench attachment, 3/8-drive, 5/16-inch (5120-00-683-602)
Wrench, torque, 3/8-inch drive, 40-200 in-lb (5120-01-374-1930)
Wrench, torque, 0-50 ft-lb (5120-00-242-3264)

SUPPLIES: Sealing compound (8030-00-081-2330)
Self-locking nut (5310-01-378-7587) (4 required)

EQUIPMENT CONDITION: Driver's harness system seat assembly removed (page 3-92)

REMOVAL:

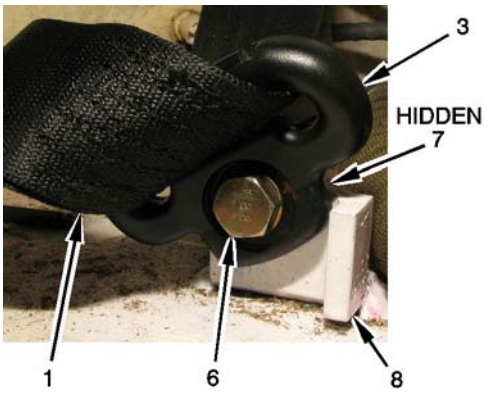
CAUTION

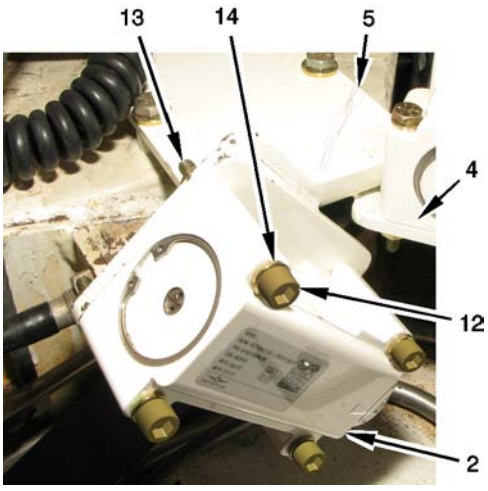
Retractor belts (1) may spool rapidly into retractor (2). When removing D-ring (3), hold belt (1) and slowly allow belt (1) to spool into retractor (2). Failure to do so may result in equipment damage.

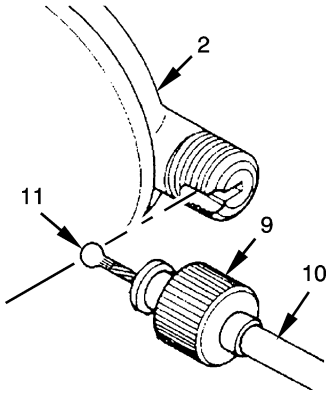
NOTE

Lower right retractor (2) and center retractor (4) are located on the same mounting bracket (5). Use this task to replace the lower right retractor (2) only.

1. REMOVE SCREW (6), NUT (7), AND D-RING (3) FROM MOUNTING BRACKET (8).
2. LOOSEN NUT (9) ON CABLE ASSEMBLY (10) AND REMOVE CABLE BALL FITTING (11) FROM RETRACTOR (2).
3. REMOVE FOUR SCREWS (12), SELF-LOCKING NUTS (13), WASHERS (14), AND RETRACTOR (2) FROM MOUNTING BRACKET (5).
4. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.







Go on to Sheet 2

3w7149

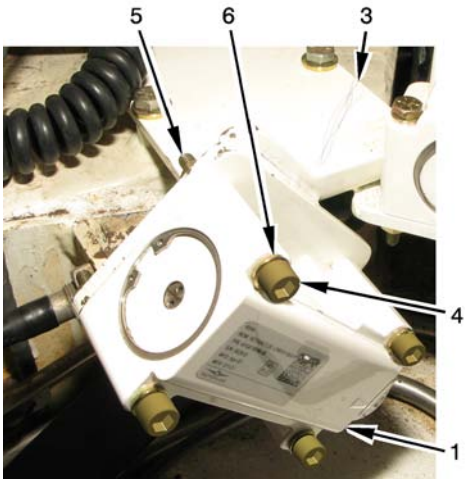
LOWER RIGHT RETRACTOR ASSEMBLY REPLACEMENT (Sheet 2 of 2)

INSTALLATION:

NOTE

Retractor (1) must be installed with cable connection (2) towards rear of vehicle.

1. INSTALL RETRACTOR (1) ON MOUNTING BRACKET (3). TORQUE SCREWS (4) BETWEEN 70-75 LB-IN (8.0-8.4 N•m).
   a. Position retractor (1) on mounting bracket (3) and install four screws (4), new self-locking nuts (5), and washers (6).
   b. Torque screws (4) between 70-75 lb-in (8.0-8.4 N•m).



NOTE

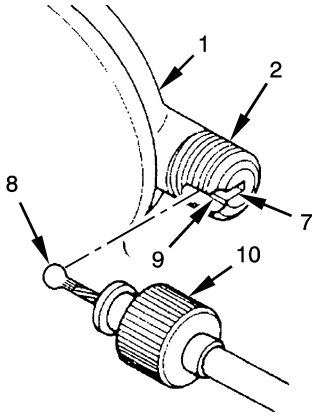
If cable plunger (7) slides into retractor (1), use machinist's scribe to pull plunger (7) back into position.

2. SLIDE BALL FITTING (8) INTO SLOT (9) ON RETRACTOR (1) AND TIGHTEN NUT (10) ONTO RETRACTOR (1).

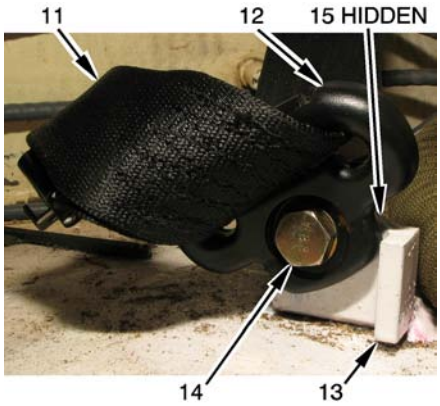
NOTE

Make sure belt (11) is not twisted when installing D-Ring (12).

3. INSTALL D-RING (12) TO MOUNTING BRACKET (13). TORQUE SCREW (14) BETWEEN 27-31 LB-FT (37-42 N•m).
   a. Apply sealing compound to threads of screw (14).
   b. Position D-Ring (12) over mounting bracket (13) and install screw (14) and nut (15).
   c. Torque screw (14) between 27-31 lb-ft (37-42 N•m).



4. INSTALL DRIVER'S HARNESS SYSTEM SEAT ASSEMBLY (PAGE 3-92).



End of Task

3w7150

CENTER RETRACTOR ASSEMBLY REPLACEMENT (Sheet 1 of 2)

TOOLS: General mechanic's tool kit: automotive (SC 5180-90-N26)
Adapter 3/8-inch to 1/2-inch (5120-00-240-8703)
Machinist's scribe (5120-00-221-7063)
Socket wrench attachment, 3/8-drive, 5/16-inch (5120-00-683-8602)
Wrench, torque, 3/8-inch drive, 40-200 in-lb (5120-01-374-1930)
Wrench, torque, 0-50 ft-lb (5120-00-242-3264)

SUPPLIES: Self-locking nut P/N MS51922-2 (5310-01-378-7587) (4 required)
Sealing compound (8030-00-081-2330)

EQUIPMENT CONDITION: Driver's harness system seat assembly removed (page 3-92)

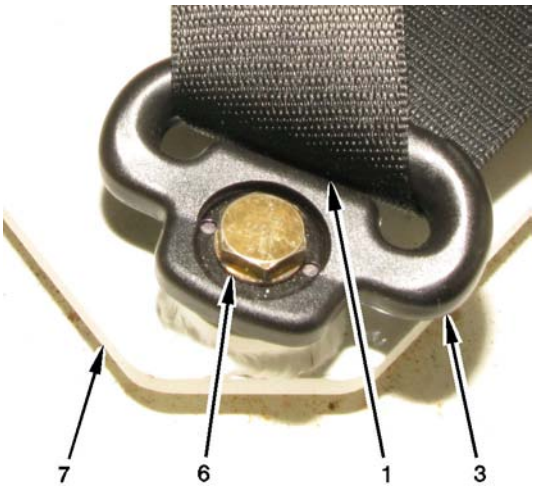
REMOVAL:

CAUTION

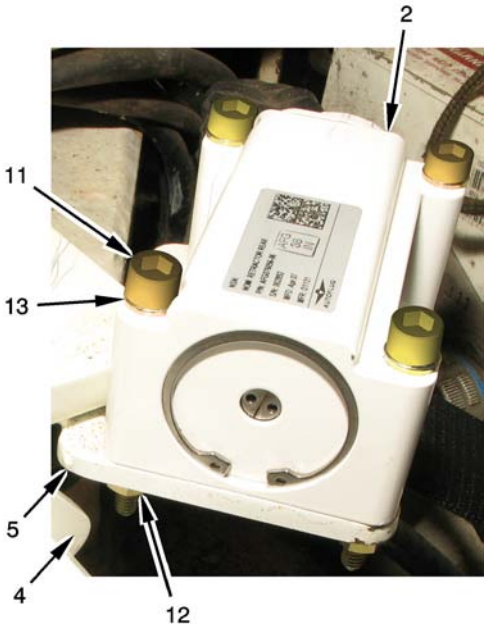
Retractor belts (1) may spool rapidly into retractor (2). When removing D-ring (3), hold belt (1) and slowly allow belt (1) to spool into retractor (2). Failure to do so may result in equipment damage.

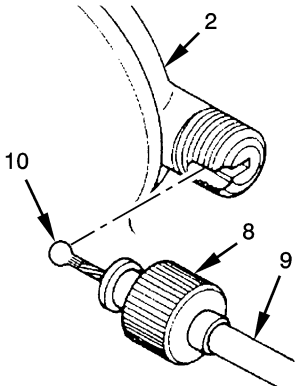
NOTE

Lower right retractor (4) and center retractor (2) are located on the same mounting bracket (5). Use this task to replace the center retractor (2) only.



1. REMOVE SCREW (6) AND D-RING (3) FROM MOUNTING PLATE (7) LOCATED DIRECTLY BEHIND DRIVER'S SEAT.
2. LOOSEN NUT (8) ON CABLE ASSEMBLY (9) AND REMOVE CABLE BALL FITTING (10) FROM RETRACTOR (2).
3. REMOVE FOUR SCREWS (11), SELF-LOCKING NUTS (12), WASHERS (13), AND RETRACTOR (2) FROM MOUNTING BRACKET (5).
4. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.





Go on to Sheet 2

3w7151

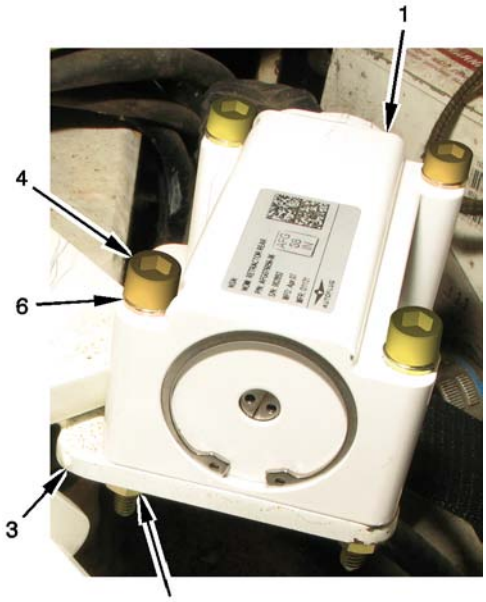
CENTER RETRACTOR ASSEMBLY REPLACEMENT (Sheet 2 of 2)

INSTALLATION:

NOTE

Retractor (1) must be installed with cable connection (2) towards rear of vehicle.

1. INSTALL RETRACTOR (1) ON MOUNTING BRACKET (3). TORQUE SCREWS (4) BETWEEN 70-75 LB-IN (8.0-8.4 N•m).
   a. Position retractor (1) on mounting bracket (3) and install four screws (4), new self-locking nuts (5), and washers (6).
   b. Torque screws (4) between 70-75 lb-in (8.0-8.4 N•m).



NOTE

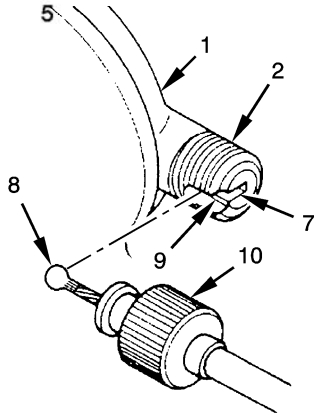
If cable plunger (7) slides into retractor (1), use machinist's scribe to pull plunger (7) back into position.

2. SLIDE BALL FITTING (8) INTO SLOT (9) ON RETRACTOR (1) AND TIGHTEN NUT (10) ONTO RETRACTOR (1).

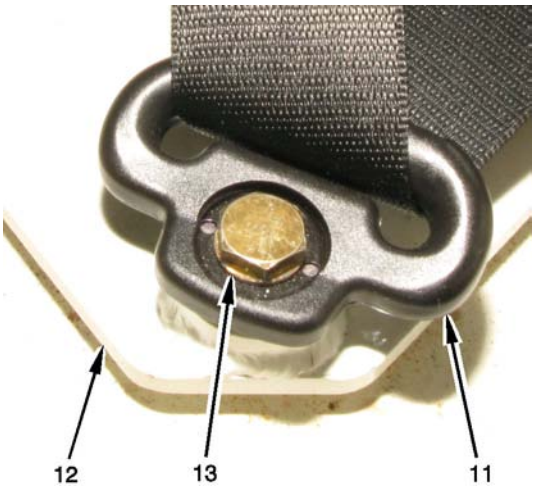
NOTE

Make sure belt is not twisted when installing D-Ring (11).

3. INSTALL D-RING (11) TO MOUNTING PLATE (12). TORQUE SCREW (13) BETWEEN 27-31 LB-FT (37-42 N•m).
   a. Apply sealing compound to threads of screw (13).
   b. Position D-Ring (11) over mounting plate (12) and install screw (13).
   c. Torque screw (13) between 27-31 lb-ft (37-42 N•m).



4. INSTALL DRIVER'S HARNESS SYSTEM SEAT ASSEMBLY (PAGE 3-92).



End of Task

3w7152

LOWER RIGHT AND CENTER RETRACTOR ASSEMBLY MOUNTING BRACKET REPLACEMENT (Sheet 1 of 1)

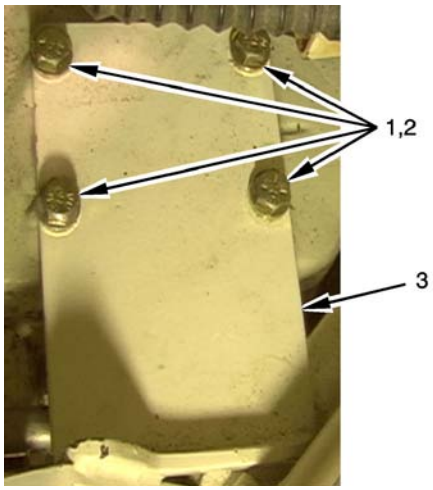
TOOLS: General mechanic's tool kit: automotive (SC 5180-90-N26)
Adapter, 3/8-inch to 1/2-inch (5120-00-240-8703)
Wrench, torque, 0-50 ft-lb (5120-00-242-3264)

SUPPLIES: Sealing compound (8030-00-081-2330)

EQUIPMENT CONDITION: Center Retractor Assembly Removed (page 5-81)
Lower Right Retractor Assembly Removed (page 5-79)

REMOVAL:

1. REMOVE FOUR SCREWS (1), WASHERS (2), AND MOUNTING BRACKET (3).
2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



INSTALLATION:

1. INSTALL MOUNTING BRACKET (3). TORQUE SCREWS (1) BETWEEN 27-31 LB-FT (37-42 N•m).
   a. Apply sealing compound to threads of four screws (1).
   b. Position mounting bracket (3) and install four screws (1) and washers (2).
   c. Torque screws (1) between 27-31 lb-ft (37-42 N•m).
2. INSTALL CENTER RETRACTOR ASSEMBLY (PAGE 5-82).
3. INSTALL LOWER RIGHT RETRACTOR ASSEMBLY (PAGE 5-80).

End of Task 3w715

D-RING MOUNTING PLATE REPLACEMENT (Sheet 1 of 1)

TOOLS: General mechanic's tool kit: automotive (SC 5180-90-N26)
Adapter 3/8-inch to 1/2-inch (5120-00-240-8703)
Wrench, torque, 0-50 ft-lb (5120-00-242-3264)

SUPPLIES: Sealing compound (8030-00-081-2330)

EQUIPMENT CONDITION: Driver's harness system seat assembly removed (page 3-92)

REMOVAL:

CAUTION

Retractor belts (1) may spool rapidly into retractor (2). When removing D-ring (3), hold belt (1) and slowly allow belt (1) to spool into retractor (2). Failure to do so may result in equipment damage.

1. REMOVE SCREW (4) AND D-RING (3) FROM MOUNTING PLATE (5).
2. REMOVE FOUR SCREWS (6), WASHERS (7), AND MOUNTING PLATE (5) FROM VEHICLE FLOOR.
3. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.

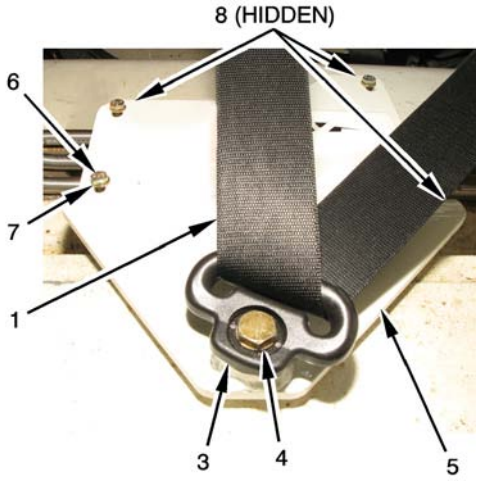
INSTALLATION:

1. INSTALL MOUNTING PLATE (5). TORQUE SCREWS (6) BETWEEN 27-31 LB-FT (37-42 N•m).
   a. Apply sealing compound to threads of four screws (6).
   b. Position mounting plate (5) over standoffs (8) and install four screws (6) and washers (7).
   c. Torque screws (6) between 27-31 lb-ft (37-42 N•m).

NOTE

Make sure belt (1) is not twisted when installing D-Ring (3).

2. INSTALL D-RING (3) TO MOUNTING PLATE (5). TORQUE SCREW (4) BETWEEN 27-31 LB-FT (37-42 N•m).
   a. Apply sealing compound to threads of screw (4).
   b. Position D-Ring (3) on mounting plate (5) and install screw (4).
   c. Torque screw (4) between 27-31 lb-ft (37-42 N•m).
3. INSTALL DRIVER'S HARNESS SYSTEM SEAT ASSEMBLY (PAGE 3-92).



End of Task 3w715

LOWER LEFT RETRACTOR ASSEMBLY REPLACEMENT (Sheet 1 of 2)

TOOLS: General mechanic's tool kit: automotive (SC 5180-90-N26)
Adapter, 3/8-inch to 1/2-inch (5120-00-240-8703)
Machinist's scribe (5120-00-221-7063)
Socket wrench attachment, 3/8-drive, 5/16-inch (5120-00-683-8602)
Wrench, torque, 3/8-inch drive, 40-200 in-lb (5120-01-374-1930)
Wrench, torque, 0-50 ft-lb (5120-00-242-3264)

SUPPLIES: Sealing compound (8030-00-081-2330)
Self-locking nut (5310-01-378-7587) (4 required)

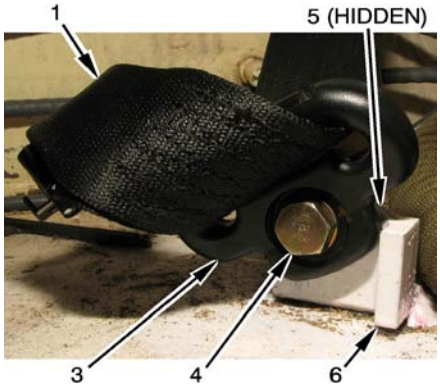
EQUIPMENT CONDITION: Driver's harness system seat assembly removed (page 3-92)

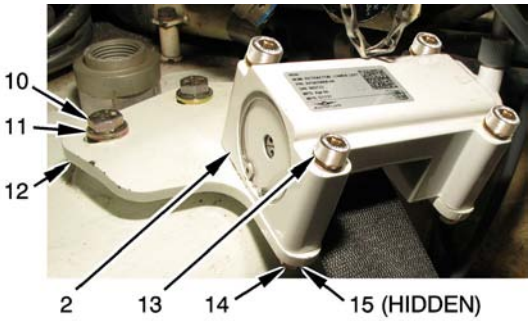
REMOVAL:

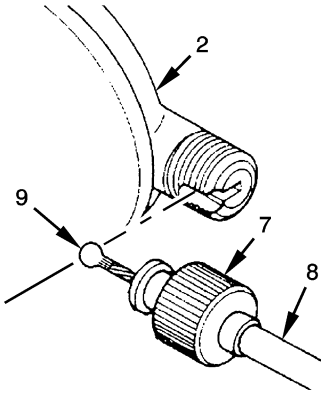
CAUTION

Retractor belts (1) may spool rapidly into retractor (2). When removing D-ring (3), hold belt (1) and slowly allow belt (1) to spool into retractor (2). Failure to do so may result in equipment damage.

1. REMOVE SCREW (4), NUT (5), AND D-RING (3) FROM BRACKET (6).
2. LOOSEN NUT (7) ON CABLE ASSEMBLY (8) AND REMOVE CABLE BALL FITTING (9) FROM RETRACTOR (2).
3. REMOVE TWO SCREWS (10) AND WASHERS (11) FROM RETRACTOR BRACKET (12).
4. REMOVE FOUR SCREWS (13), SELF-LOCKING NUTS (14), WASHERS (15), AND RETRACTOR (2) FROM RETRACTOR BRACKET (12).
5. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.







Go on to Sheet 2

3w7157

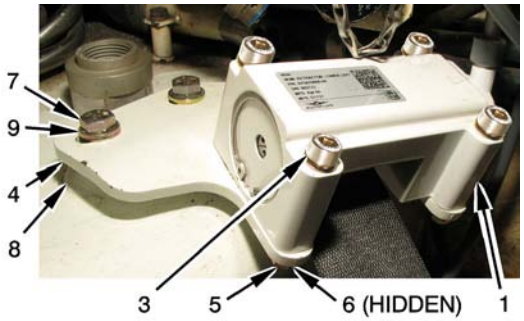
LOWER LEFT RETRACTOR ASSEMBLY REPLACEMENT (Sheet 2 of 2)

INSTALLATION:

NOTE

Retractor (1) must be installed with cable connection (2) towards rear of vehicle.

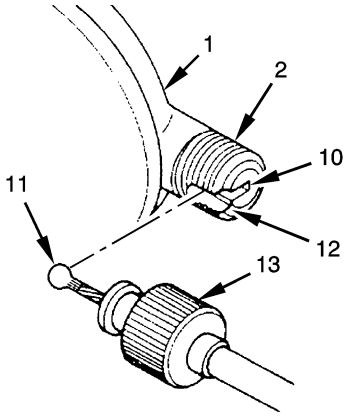
1. INSTALL RETRACTOR (1). TORQUE SCREWS (3) BETWEEN 70-75 LB-IN (8.0-8.4 N•m).
   a. Position retractor (1) on retractor bracket (4) and install four screws (3), new self-locking nuts (5), and washers (6).
   b. Torque screws (3) between 70-75 lb-in (8.0-8.4 N•m).
2. INSTALL RETRACTOR BRACKET (4). TORQUE SCREWS (7) BETWEEN 27-31 LB-FT (37-42 N•m).
   a. Apply sealing compound to threads of two screws (7).
   b. Position bracket (4) over standoffs (8) and install two screws (7) and washers (9).
   c. Torque screws (7) between 27-31 lb-ft (37-42 N•m).



NOTE

If cable plunger (10) slides into retractor (1), use machinist's scribe to pull plunger (10) back into position.

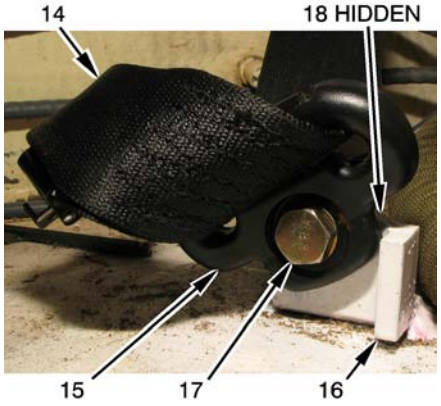
3. SLIDE BALL FITTING (11) INTO SLOT (12) ON RETRACTOR (1) AND TIGHTEN NUT (13) ONTO RETRACTOR (1).



NOTE

Make sure belt (14) is not twisted when installing D-Ring (15).

4. INSTALL D-RING (15) TO BRACKET (16). TORQUE SCREW (17) BETWEEN 27-31 LB-FT (37-42 N•m).
   a. Apply sealing compound to threads of screw (17).
   b. Position D-Ring (15) over bracket (16) and install screw (17) and nut (18).
   c. Torque screw (17) between 27-31 lb-ft (37-42 N•m).
5. INSTALL DRIVER'S HARNESS SYSTEM SEAT ASSEMBLY (PAGE 3-92).



End of Task

3w7158

UPPER RETRACTORS AND BRACKET ASSEMBLY REPLACEMENT (Sheet 1 of 3)

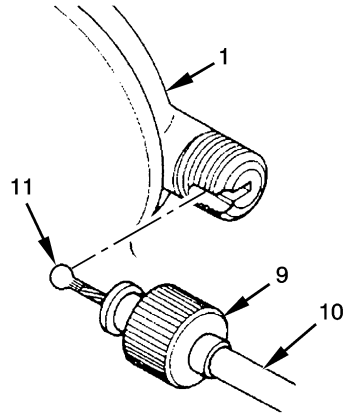
TOOLS: General mechanic's tool kit: automotive (SC 5180-90-N26)
Adapter 3/8-inch to 1/2-inch (5120-00-240-8703)
Machinist's scribe (5120-00-221-7063)
Socket wrench attachment, 3/8-drive, 5/16-inch (5120-00-683-602)
Wrench, torque, 3/8-inch drive, 40-200 in-lb (5120-01-374-1930)
Wrench, torque, 0-50 ft-lb (5120-00-242-3264)

SUPPLIES: Sealing compound (8030-00-081-2330)
Self-locking nut P/N MS51922-2 (5310-01-378-7587) (8 required)

EQUIPMENT CONDITION: Driver's harness system seat assembly removed (page 3-92)

NOTE

Use this task to replace left or right upper retractor (1).

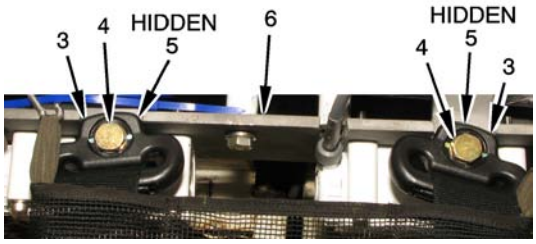


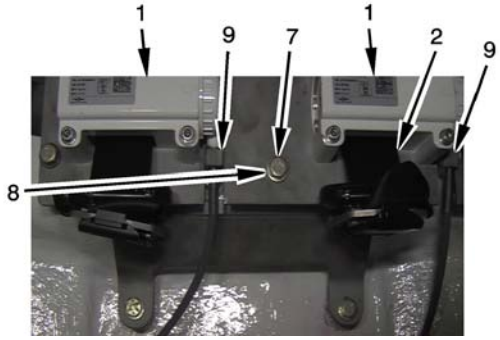
REMOVAL:

CAUTION

Retractor belts (2) may spool rapidly into retractor (1). When removing D-ring (3), hold belt (2) and slowly allow belt (2) to spool into retractor (1). Failure to do so may result in equipment damage.

1. REMOVE TWO SCREWS (4), NUTS (5), AND D-RINGS (3) FROM BRACKET ASSEMBLY (6).
2. REMOVE FIVE SCREWS (7) AND WASHERS (8) FROM BRACKET ASSEMBLY (6).
3. LOOSEN NUTS (9) ON CABLE ASSEMBLIES (10) AND REMOVE CABLE BALL FITTINGS (11) FROM RETRACTORS (1).





Go on to Sheet 2

3w7159

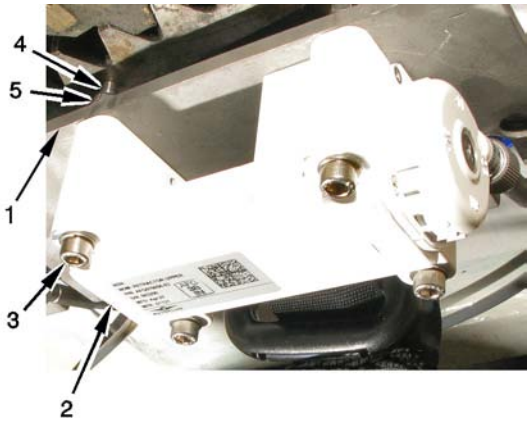
UPPER RETRACTORS AND BRACKET ASSEMBLY REPLACEMENT (Sheet 2 of 3)

NOTE

Due to limited access, remove bracket assembly (1) from vehicle prior to removing retractor (2).

4. REMOVE FOUR SCREWS (3), SELF-LOCKING NUTS (4), AND WASHERS (5) FROM RETRACTOR (2).

5. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



INSTALLATION:

NOTE

Retractor (2) must be installed in the same position it was prior to removal. Bracket assembly (1) is slotted for cable connections. Position retractor (2) for proper cable connection.

1. INSTALL RETRACTORS (2) ON BRACKET ASSEMBLY (1). TORQUE SCREWS (3) BETWEEN 70-75 LB-IN (8.0-8.4 N•m).

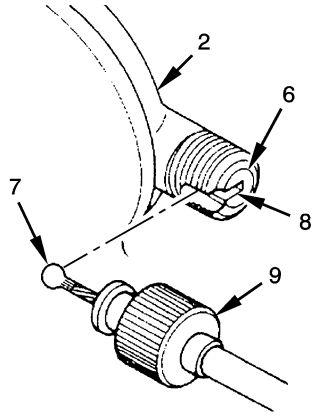
   a. Position retractor (2) on bracket assembly (1) and install four screws (3), new self-locking nuts (4), and washers (5).

   b. Torque screws (3) between 70-75 lb-in (8.0-8.4 N•m).

NOTE

If any plunger (6) slides into retractor (2), use machinist's scribe to pull plunger (6) back into position.

2. SLIDE BALL FITTINGS (7) INTO SLOTS (8) IN PLUNGERS (6) AND TIGHTEN NUTS (9) ONTO RETRACTORS (2).



Go on to Sheet 3

3w7159

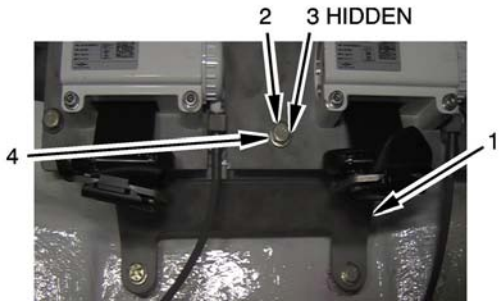
UPPER RETRACTORS AND BRACKET ASSEMBLY REPLACEMENT (Sheet 3 of 3)

3. INSTALL BRACKET ASSEMBLY (1). TORQUE SCREWS (2) BETWEEN 36-43 LB-FT (49-58 N•m).

   a. Apply sealing compound to threads of five screws (2).

   b. Position bracket assembly (1) over standoffs (3) and install five screws (2) and washers (4).

   c. Torque screws (2) between 36-43 lb-ft (49-58 N•m).



NOTE

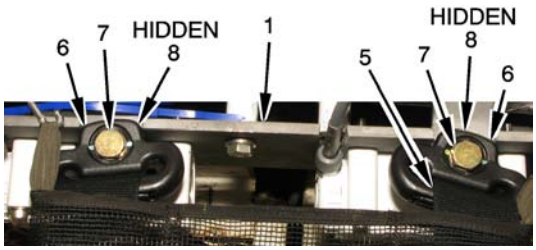
Make sure belt (5) is not twisted when installing D-Rings (6).

4. INSTALL D-RINGS (6) TO BRACKET ASSEMBLY (1). TORQUE SCREWS (7) BETWEEN 27-31 LB-FT (37-42 N•m).

   a. Apply sealing compound to threads of two screws (7).

   b. Position D-Rings (6) over bracket assembly (1) and install two screws (7) and nuts (8).

   c. Torque screws (7) between 27-31 lb-ft (37-42 N•m).



5. INSTALL DRIVER'S HARNESS SYSTEM SEAT ASSEMBLY (PAGE 3-92).

End of Task

3w7160

CONTROL BOX AND BRACKET ASSEMBLY REPLACEMENT (Sheet 1 of 3)

TOOLS: General mechanic's tool kit: automotive (SC 5180-90-N26)
Adapter 3/8-inch to 1/2-inch (5120-00-240-8703)
Wrench, torque, 0-50 ft-lb (5120-00-242-3264)

SUPPLIES: Sealing compound (8030-00-081-2330)
Shipping tag (8135-00-292-2342) (as required)
Writing pencil (7510-00-189-7881)

EQUIPMENT CONDITION: Driver's harness system seat assembly removed (page 3-92)
Vehicular heater and diffuser assembly removed for access (TM 9-2350-264-20-1)

REMOVAL:

CAUTION

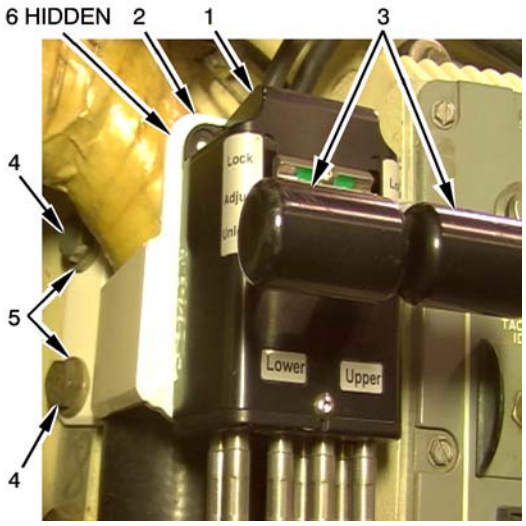
Do not use excessive force when removing control box (1). Damage to cover may result.

1. REMOVE CONTROL BOX (1) AND CONROL BOX MOUNTING BRACKET (2).

   a. Move control levers (3) to the LOCK position.

   b. Remove two screws (4), washers (5), and control box mounting bracket (2).

   c. Remove four screws (6) and control box (1) from control box mounting bracket (2).

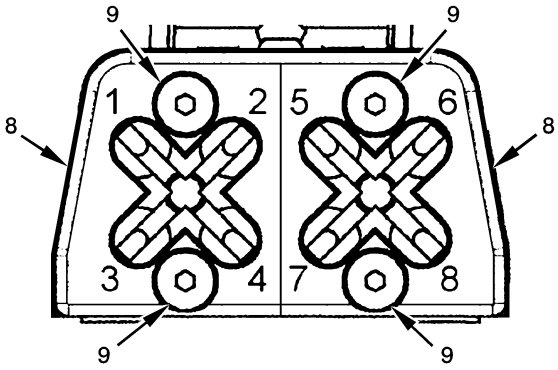


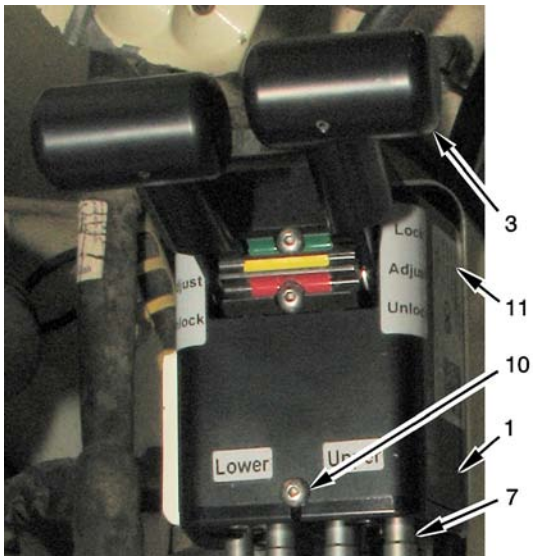
NOTE

If replacing faulty cable (7) only, remove bottom plates (8) connected to faulty cable (7).

   d. Remove four screws (9) from bottom plates (8) and control box (1).

   e. Remove screw (10) from front cover (11) and control box (1). Remove front cover (11) from control box (1).





Go on to Sheet 2

3w7161

CONTROL BOX AND BRACKET ASSEMBLY REPLACEMENT (Sheet 2 of 3)

NOTE

Tag cables (1) with location number. Refer to Cable Locator Table for location numbers.

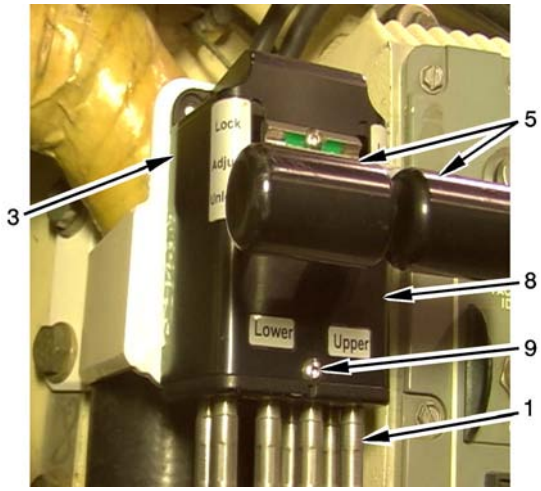
f. Loosen two nuts (2) inside control box (3) until cables (1) can be separated from retaining discs (4).

NOTE

If replacing cable (1), only remove cable being replaced.

g. Pull seven cables (1) from control box (3).

2. INSPECT PARTS FOR DAMAGE. REPLACE AS REQUIRED.



INSTALLATION:

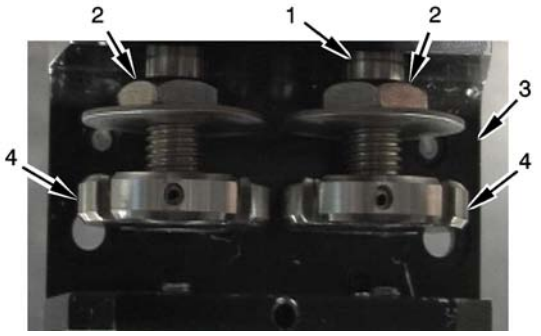
1. INSTALL CABLES (1) INTO CONTROL BOX (3).

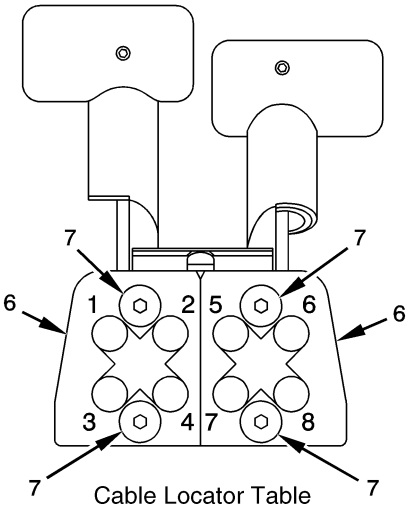
a. Move control levers (5) to the LOCK position.

b. Feed seven cables (1) through bottom plates (6) and through the bottom of control box (3) and into assigned slots on retaining discs (4). Tighten two nuts (2).

c. Position bottom plates (6) over bottom of control box (3) and install four screws (7).

d. Press front cover (8) onto control box (3) and install screw (9).





Cable Locator Table

Retractor Cable	Cable Connection Slot
Front Left	Slot #5
Front Right	Slot #6
Upper Right	Slot #7
Upper Left	Slot #8
Lower Left	Slot #2
Lower Right	Slot #3
Center	Slot #4

Go on to Sheet 3

3w7161

CONTROL BOX AND BRACKET ASSEMBLY REPLACEMENT (Sheet 3 of 3)

2. INSTALL CONTROL BOX (1) TO CONTROL BOX MOUNTING BRACKET (2).

   Position control box (1) over control box mounting bracket (2) and install four screws (3).

3. INSTALL CONTROL BOX MOUNTING BRACKET (2). TORQUE SCREWS (4) BETWEEN 27-31 LB-FT (37-42 NM).

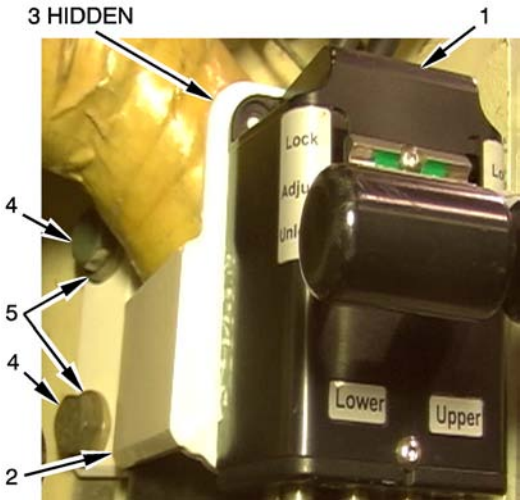
   a. Apply sealing compound to threads of two screws (4).

   b. Position control box mounting bracket (2) and install two screws (4) and washers (5)

   c. Torque screws (4) between 27-31 lb-ft (37-42 Nm).

4. INSTALL VEHICULAR HEATER AND DIFFUSER ASSEMBLY (TM 9-2350-264-20-1).

5. INSTALL DRIVER'S HARNESS SYSTEM SEAT ASSEMBLY (PAGE 3-92).



End of Task 3w7162

CABLE ASSEMBLY REPLACEMENT (Sheet 1 of 1)

TOOLS: General mechanic's tool kit: automotive (SC 5180-90-N26)
Machinist's scribe (5120-00-221-7063)

SUPPLIES: Tiedown strap (5975-00-727-5153) (as required)

REMOVAL:

NOTE

- Use this task to remove or replace any cable assembly (1).
- Remove only the bottom plate (2) of the control box (3) that is connected to the cable (1) being replaced. Refer to the Cable Locator Table.

1. REMOVE THE CONTROL BOX (3) AND BRACKET ASSEMBLY (PAGE 5-90).

NOTE

When removing or replacing cable assembly (1), note cable assembly (1) routing and tiedown strap locations.

2. REMOVE TIEDOWN STRAPS FROM CABLE ASSEMBLY (1).
3. LOOSEN NUT (4) ON CABLE ASSEMBLY (1) AND REMOVE CABLE BALL FITTING (5) FROM RETRACTOR (6).

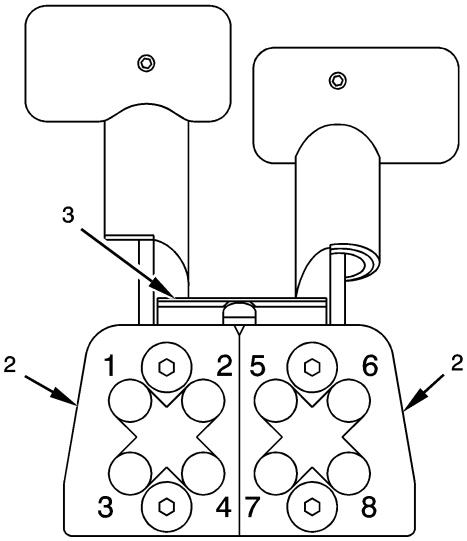
INSTALLATION:

1. ROUTE NEW CABLE ASSEMBLY (1) AND INSTALL NEW TIEDOWN STRAPS, AS REQUIRED.
2. INSTALL CONTROL BOX (3) AND BRACKET ASSEMBLY (PAGE 5-91).

NOTE

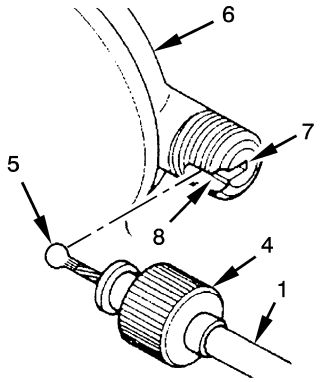
If cable plunger (7) slides into retractor housing (6), use machinist's scribe to pull plunger (7) back into position.

3. SLIDE BALL FITTING (5) INTO SLOT (8) IN PLUNGER (7) AND TIGHTEN NUT (4) ONTO RETRACTOR (6).



Cable Locator Table

Retractor Cable	Cable Connection Slot
Front Left	Slot #5
Front Right	Slot #6
Upper Right	Slot #7
Upper Left	Slot #8
Lower Left	Slot #2
Lower Right	Slot #3
Center	Slot #4



End of Task 3w7163

CHAPTER 6

UNIT,

DIRECT SUPPORT, AND

GENERAL SUPPORT MAINTENANCE

REPAIR PARTS AND SPECIAL TOOLS LIST

SECTION I. INTRODUCTION

1. Scope.

This RPSTL lists and authorizes spares and repair parts; special tools; special test, measurement, and diagnostic equipment (TMDE); and other special support equipment required for performance of unit, direct support, and general support maintenance of the M1A1 combat tank TUSK kits. It authorizes the requisitioning, issue, and disposition of spares, repair parts, and special tools as indicated by the Source, Maintenance, and Recoverability (SMR) codes.

2. General.

In addition to Section I, Introduction, this Repair Parts and Special Tools List is divided into the following sections:

a. Section II. Repair Parts List. A list of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. The list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number sequence.

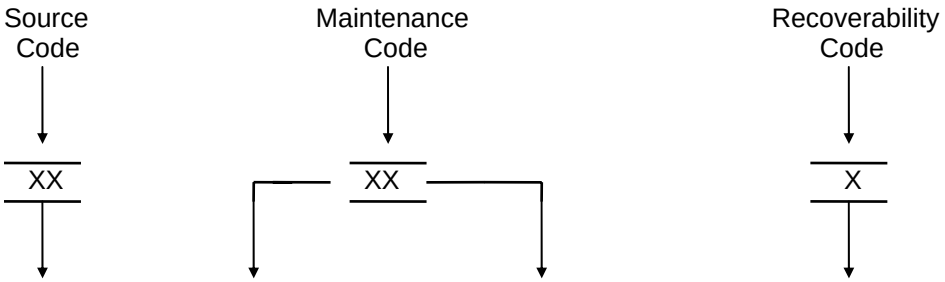
b. Section III. Special Tools List. Not Applicable.

c. Section IV. Cross-reference Indexes. A list, in National Item Identification Number (NIIN) sequence, of all National stock numbered items appearing in the listing, followed by a list in alphanumeric sequence of all part numbers appearing in the listings. National stock numbers and part numbers are cross-referenced to each illustration figure and item number appearance.

3. Explanation of Columns (Sections II and III).

a. ITEM NO. (Column (1)). Indicates the number used to identify items called out in the illustration.

b. SMR CODE (Column (2)). The Source, Maintenance, and Recoverability (SMR) code is a 5-position code containing supply/requisitioning information, maintenance level authorization criteria, and disposition instruction, as shown in the following breakout:



* Complete Repair: Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the “Repair” function in a use / user environment in order to restore serviceability to a failed item.

(1) Source Code. The source code tells you how to get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follow:

Code	Explanation
PA PB PC** PD PE PF PG	Stocked items; use the applicable NSN to request / requisition items with these source codes. They are authorized to the level indicated by the code entered in the 3rd position of the SMR code. ** NOTE: Items coded PC are subject to deterioration.
KD KF KB	Items with these codes are not to be requested / requisitioned individually. They are part of a kit which is authorized to the maintenance level indicated in the 3rd position of the SMR code. The complete kit must be requisitioned and applied.
MO - (Made at Org Level) MF - (Made at DS Level) MH - (Made at GS Level) MD - (Made at Depot Level)	Items with these codes are not to be requested / requisitioned individually. They must be made from bulk material which is identified by the part number in the DESCRIPTION AND USABLE ON CODES (UOC) column and listed in the Bulk Material group of the repair parts list in this RPSTL. If the item is authorized to you by the 3rd position code of the SMR code, but the source code indicates it is made at a higher level, order the item from the higher level of maintenance.

Code	Explanation
AO - (Assembled by Org Level) AF - (Assembled by DS Level) AH - (Assembled by GS Level) AD - (Assembled by Depot Level)	Items with these codes are not to be requested / requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicated by the source code. If the 3rd position code of the SMR code authorizes you to replace the item, but the source code indicates the item is assembled at a higher level, order the item from the higher level of maintenance.

XA - Do not requisition an "XA" -coded item. Order its next higher assembly. (Also, refer to the NOTE below.)

XB - If an "XB" item is not available from salvage, order it using the CAGEC and part number given.

XC - Installation drawing, diagram, instruction sheet, field service drawing, that is identified by manufacturers' part number.

XD - Item is not stocked. Order an "XD" -coded item through normal supply channels using the CAGEC and part number given, if no NSN is available.

NOTE: Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the above source codes, except for those source coded "XA".

(2) Maintenance Code. Maintenance codes tell you the level(s) of maintenance authorized to USE and REPAIR support items. The maintenance codes are entered in the third and fourth positions of the SMR code as follows:

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

Code	Application / Explanation
C	Crew or operator maintenance done within unit maintenance.
O	Unit level can remove, replace, and use the item.
F	Direct support level can remove, replace, and use the item.
H	General support level can remove, replace, and use the item.
D	Depot level can remove, replace, and use the item.

(b) The maintenance code entered in the fourth position tells whether or not the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (i.e., perform all authorized repair functions). (NOTE: Some limited repair may be done on the item at a lower level of maintenance, if authorized by the Maintenance Allocation Chart (MAC) and SMR codes.) This position will contain one of the following maintenance codes.

Code	Application / Explanation
O	Unit is the lowest level that can do complete repair of the item.
F	Direct support is the lowest level that can do complete repair of the item.
H	General support is the lowest level that can do complete repair of the item.
L	Specialized repair activity (return to the manufacturer) is the lowest level that can do complete repair of the item.
D	Depot is the lowest level that can do complete repair of the item.
Z	Nonreparable. No repair is authorized.
B	No repair is authorized. (No parts or special tools are authorized for the maintenance of a "B" coded item.) However, the item may be reconditioned by adjusting, lubricating, etc., at the user level.

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

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

c. NSN (Column (3)). The National Stock Number (NSN) for the item is listed in this column.

d. CAGEC (Column (4)). The Commercial and Government Entity Code (CAGEC) is a 5-digit alphanumeric code which is used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

e. PART NUMBER (Column (5)). Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirement to identify an item or range of items.

NOTE: When you use an NSN to requisition an item, the item you receive may have a different part number from the part ordered.

f. DESCRIPTION AND USABLE ON CODES (UOC) (Column (6)). This column includes the following information:

(1) The Federal item name and, when required, a minimum description to identify the item.

(2) The Controlled Item Inventory Code (CIIC) of the item is indicated by the parenthetical entry as follows: CIIC(C) - Confidential, CIIC(H) - Secret: Restricted Data, CIIC(S) - Secret, CIIC(T) - Top Secret.

(3) Items that are included in kits and sets are listed below the name of the kit or set.

(4) Spare / repair parts that make up an assembled item are listed immediately following the assembly line item entry.

(5) NSN (or part number if no NSN is assigned) for bulk materials is referenced in this column in the line item entry for the item to be manufactured / fabricated.

(6) When the item is not used with all serial numbers of the same model, the effective serial numbers are shown on the last line(s) of the description (before UOC).

(7) The usable on code, when applicable (see paragraph 5, Special Information).

(8) In the Special Tools List section, the basis of issue (BOI) appears as the last line(s) in the entry for each special tool, special TMDE, and other special support equipment. When density of equipment supported exceeds density indicated in the basis of issue, the total authorization is increased proportionately.

(9) The statement “END OF FIGURE” appears just below the last item description in Column 6 for a given figure in both Section II and Section III.

g. QTY (Column (7)). The QTY (quantity per figure column) indicates the quantity of the item used in the breakout shown on the illustration figure, which is prepared for a functional group, subfunctional group, or an assembly. A “V” appearing in this column in lieu of a quantity indicates that the quantity is variable and the quantity may vary from application to application.

4. Explanation of Columns (Section IV).

a. NATIONAL STOCK NUMBER (NSN) INDEX.

(1) STOCK NUMBER column. This column lists the NSN by National Item Identification Number (NIIN) sequence. The NIIN consists of the last nine digits of the NSN, i.e.:

NSN 5305-01-674-1467 NIIN 5305-01-674-1467

When using this column to locate an item, ignore the first 4 digits of the NSN. However, the complete NSN should be used when ordering items by stock number.

(2) FIG. Column. This column lists the number of the figure where the item is identified / located. The figures are in numerical order in Section II and Section III.

(3) ITEM column . The item number identifies the item associated with the figure listed in the adjacent FIG. column. This item is also identified by the NSN listed on the same line.

b. PART NUMBER INDEX. Part numbers in this index are listed by part number in ascending alphanumeric sequence (i.e., vertical arrangement of letter and number combination which places the first letter or digit of each group in order A through Z, followed by the numbers 0 through 9 and each following letter or digit in like order).

(1) CAGEC column. The Commercial and Government Entity Code (CAGEC) is a 5-digit alphanumeric code used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

(2) PART NUMBER column. Indicates the primary number used by the manufacturer (individual, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements to identify an item or range of items.

(3) STOCK NUMBER column. This column lists the NSN for the associated part number and manufacturer identified in the PART NUMBER and CAGEC columns to the left.

(4) FIG. column. This column lists the number of the figure where the item is identified / located in Section II and III.

(5) ITEM column. The item number is that number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

5. Special Information.

a. USABLE ON CODES. Not Applicable.

b. FABRICATION INSTRUCTIONS. Not Applicable.

c. ASSEMBLY INSTRUCTIONS. Not Applicable.

d. KITS. Not Applicable.

e. INDEX NUMBERS. Not Applicable.

f. ASSOCIATED PUBLICATIONS. Not Applicable.

g. ILLUSTRATIONS - LISTING. Not Applicable.

h. ITEMS IN PARENTHESES. Item numbers appearing in parentheses, i.e., (8), signify components that are supplied only as part of the item having the same number or indicate continuation of an item.

i. FIGURE ASSEMBLY PART NUMBER. Not Applicable.

j. CHANGE PAGE INFORMATION. An asterisk in the left hand margin (before the item number) indicates a change has occurred in at least one of the columns for that item. Items that affect the index will appear in the supplemental index provided with the change.

k. REFERENCE DESIGNATORS. Items which have reference designators will have them listed in the Description Column following the item description / nomenclature. When more than one item is used at a particular location, the quantity will be shown in parentheses following the reference designator.

EXAMPLE: 2G1-17 (QTY 2)

l. USMC CONFIGURATION. Not Applicable.

6. How to Locate Repair Parts.

a. When National Stock Number or Part Number is Not Known.

(1) First. Using the table of contents, determine the assembly group or subassembly group to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and listings are divided into the same groups.

(2) Second. Find the figure covering the assembly group or subassembly group to which the item belongs.

(3) Third. Identify the item on the figure and note the item number.

(4) Fourth. Look in the repair parts list for the figure and item numbers. The NSNs and part numbers are on the same line as the associated items numbers.

b. When National Stock Number or Part Number is Known.

(1) First. Using the National Stock Number or the Part Number index, find the pertinent National Stock Number or Part Number. The NSN index is in National Item Identification Number (NIIN) sequence (see 4.a. (1)). The part numbers in the Part Number index are listed in ascending alphanumeric sequence (see 4.b.). Both indexes cross-reference you to the illustration figure and item number of the item you are looking for.

(2) Second. Turn to the figure and item number, verify that the item is the one you are looking for, then locate the item number in the repair parts list for the figure.

7. Abbreviations. Not applicable.

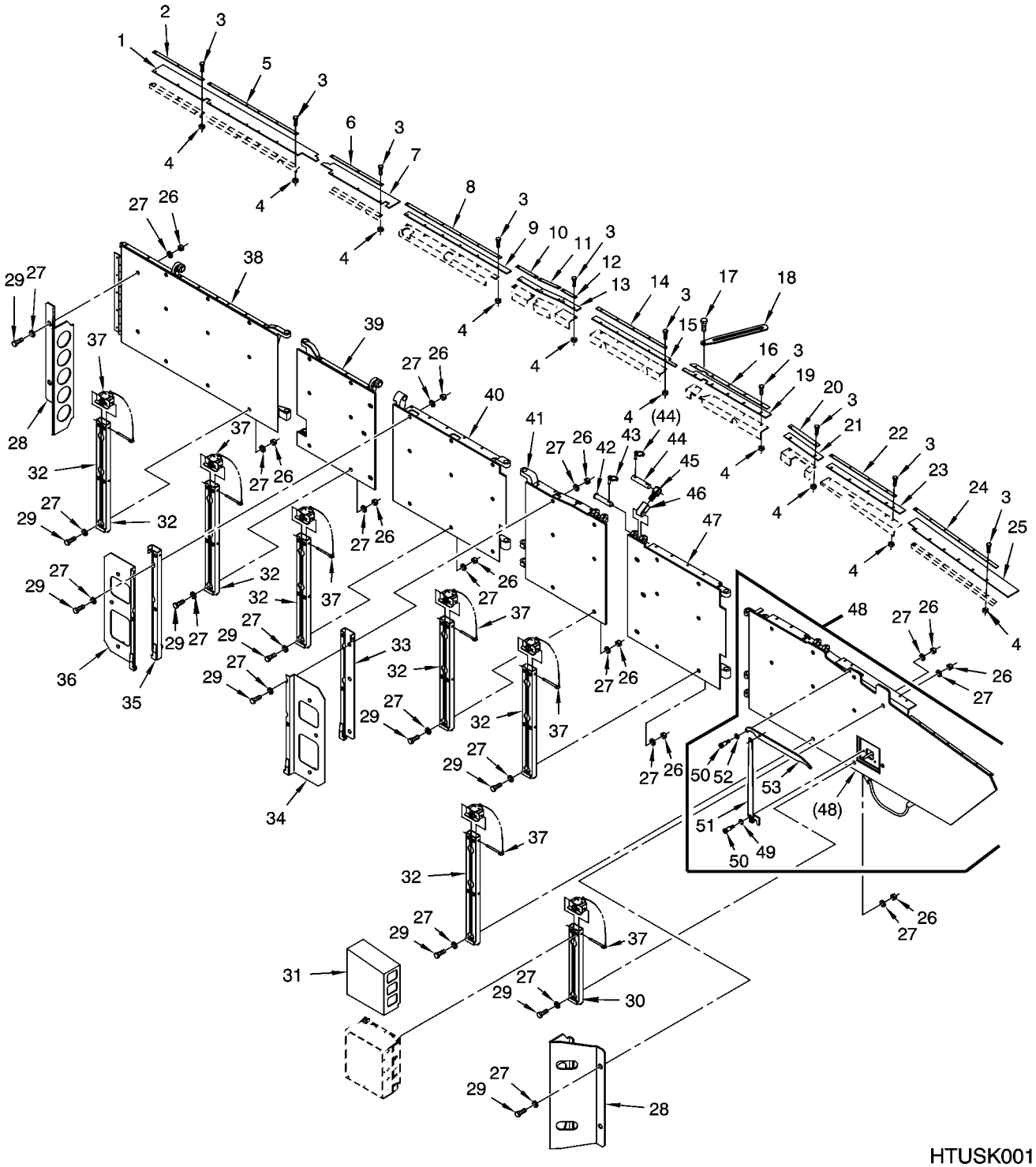


FIGURE 6F01. RIGHT HULL ABRAMS REACTIVE ARMOR TILES (ARAT), SKIRTS 1 THROUGH 6 AND RELATED PARTS

SECTION II. REPAIR PARTS LIST

	(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES(UOC)	(7) QTY
						GROUP 3307: SPECIAL PURPOSE KITS	
						FIG. 6F01 RIGHT HULL ABRAMS REACTIVE ARMOR TILES (ARAT), SKIRTS 1 THROUGH 6 AND RELATED PARTS	
		PDFFF	2510-01-546-1761	19207	57K4685	REACTIVE ARMOR TILE	
	1	PAFZZ	5340-01-550-5711	19207	12489873	.PLATE,MOUNTING	1
	2	PAFZZ	5340-01-547-4513	19207	12489870	.PLATE,MOUNTING	1
	3	PAFZZ	5305-00-071-2505	80204	B1821BH025C088N	.SCREW,CAP,HEXAGON H	47
	4	PAFZZ	5310-01-378-7761	19207	12387305-3	.NUT,PLAIN,HEXAGON	47
	5	PAFZZ	5340-01-550-5705	19207	12489872	.PLATE,MOUNTING	1
	6	PAFZZ	2590-01-102-4525	19207	12288362-2	.STRIP,RETAINING	1
	7	PCFZZ	5330-01-199-2403	19207	12287083	.RUBBER STRIP	1
	8	PAFZZ	5340-01-554-6694	19207	12489473	.BRACKET,MOUNTING	1
	9	PAFZZ	5330-01-551-1798	19207	12490040	.SEAL,PLAIN ENCASED	1
	10	PAFZZ	5340-01-547-4592	19207	12489893	.PLATE,MOUNTING	1
	11	PAFZZ	2590-01-150-1021	19207	12288307-6	.BRACKET,VEHICULAR C	1
	12	PAFZZ	2590-01-150-1020	19207	12288307-5	.BRACKET,VEHICULAR C	1
	13	PAFZZ	9320-01-548-4046	19207	12489892	.RUBBER STRIP	1
	14	PAFZZ	5340-01-547-5048	19207	12489516	.PLATE,MOUNTING	1
	15	PAFZZ	9320-01-548-4044	19207	12489891	.RUBBER STRIP	1
	16	PAFZZ	5340-01-548-1516	19207	12489477	.PLATE,MOUNTING	1
	17	PAFZZ	5305-01-071-9075	19207	12287164	.SCREW,SHOULDER	1
	18	PAFZZ	2530-01-547-9006	19207	12489800	.ARM ASSEMBLY,PIVOT,	1
	19	PAFZZ	5340-01-548-1513	19207	12489505	.PLATE,MOUNTING	1
	20	PAFZZ	5340-01-547-7253	19207	12489482	.PLATE,MOUNTING	1
	21	PAFZZ	5340-01-551-5315	19207	12489506	.PLATE,MOUNTING	1
	22	PAFZZ	5340-01-142-8241	19207	12311982	.PLATE,MENDING	1
	23	PAFZZ	5340-01-548-1180	19207	12489488	.PLATE,MOUNTING	1
	24	PAFZZ	5340-01-548-1515	19207	12489515	.PLATE,MOUNTING	1
	25	PAFZZ	5340-01-547-4323	19207	12489485	.PLATE,MOUNTING	1
*	26	PAFZZ	5310-01-549-9702	07070	90636A077	.NUT,SELF-LOCKING,HE	61
	27	PAFZZ	5310-01-382-9030	19207	12387327-8	.WASHER,FLAT	116
	28	PAFZZ	2540-01-560-0768	19207	12490191	.GUARD,BRUSH,VEHICUL	2
	29	PAFZZ	5305-00-836-8346	80204	B1821BH075C175N	.SCREW,CAP,HEXAGON H	55
	30	PAFZZ	5340-01-560-2927	19207	12490181	.BRACKET,MOUNTING	1
	31	PAFZZ	2590-01-560-0806	19207	12490190	.BRACKET,VEHICULAR C	1
	32	PAFZZ	5340-01-548-4395	19207	13009234	.BRACKET,MOUNTING	14
	33	PAFZZ	2590-01-550-7046	19207	12489788	.BRACKET,VEHICULAR C	1
	34	PAFZZ	5340-01-548-1538	19207	12489789	.BRACKET,MOUNTING	1
	35	PAFZZ	5340-01-547-9756	19207	12489790	.SLIDE,DRAWER,EXTENS	1
	36	PAFZZ	5340-01-548-1651	19207	12489791	.BRACKET,MOUNTING	1
	37	PAFZZ	5340-01-551-1791	19207	12490043	.RAIL CAP ASSEMBLY	17
	38	PAFZZ	2530-01-547-6511	19207	12489750	.DEFLECTOR,DIRT AND	1
	39	PAFZZ	2530-01-547-6515	19207	12489749	.DEFLECTOR,DIRT AND	1
	40	PAFZZ	2530-01-547-6519	19207	12489748	.DEFLECTOR,DIRT AND	1
	41	PAFZZ	2530-01-547-8984	19207	12489747	.DEFLECTOR,DIRT AND	1
	42	PAFZZ	5315-01-139-9785	19207	12287034-10	.PIN,STRAIGHT,HEADED	3
	43	PAFZZ	5315-01-136-7646	19207	12311431	.PIN,QUICK RELEASE	3
*	44	PAFZZ	5315-01-564-8474	19207	12490424	.PIN,STRAIGHT,HEADLE	1
	45	PAFZZ	2590-01-548-1167	19207	12489938	.BRACKET,VEHICULAR C	3
	46	PAFZZ	5340-01-548-1173	19207	12489937	.CLEVIS,ROD END	3
	47	PAFZZ	2530-01-547-6779	19207	12489746	.DEFLECTOR,DIRT AND	1
	48	PAFFF	2510-01-555-8928	19207	12490180	.FENDER,VEHICULAR	1
	49	PAFZZ	5310-01-465-3355	19207	12387279-20	..WASHER,FLAT	1
	50	PAFZZ		07BY4	91264A619	..SCREW,SHOULDER,1/4H	3
	51	PAFZZ	3040-01-559-8854	19207	12490291	..CONNECTING LINK,RIG	1
	52	PAFZZ	5310-01-380-1657	19207	12387279-18	..WASHER,FLAT	2
	53	PAFZZ	5340-01-560-3918	19207	12490286	..HANDLE,MANUAL CONTR	1

END OF FIGURE

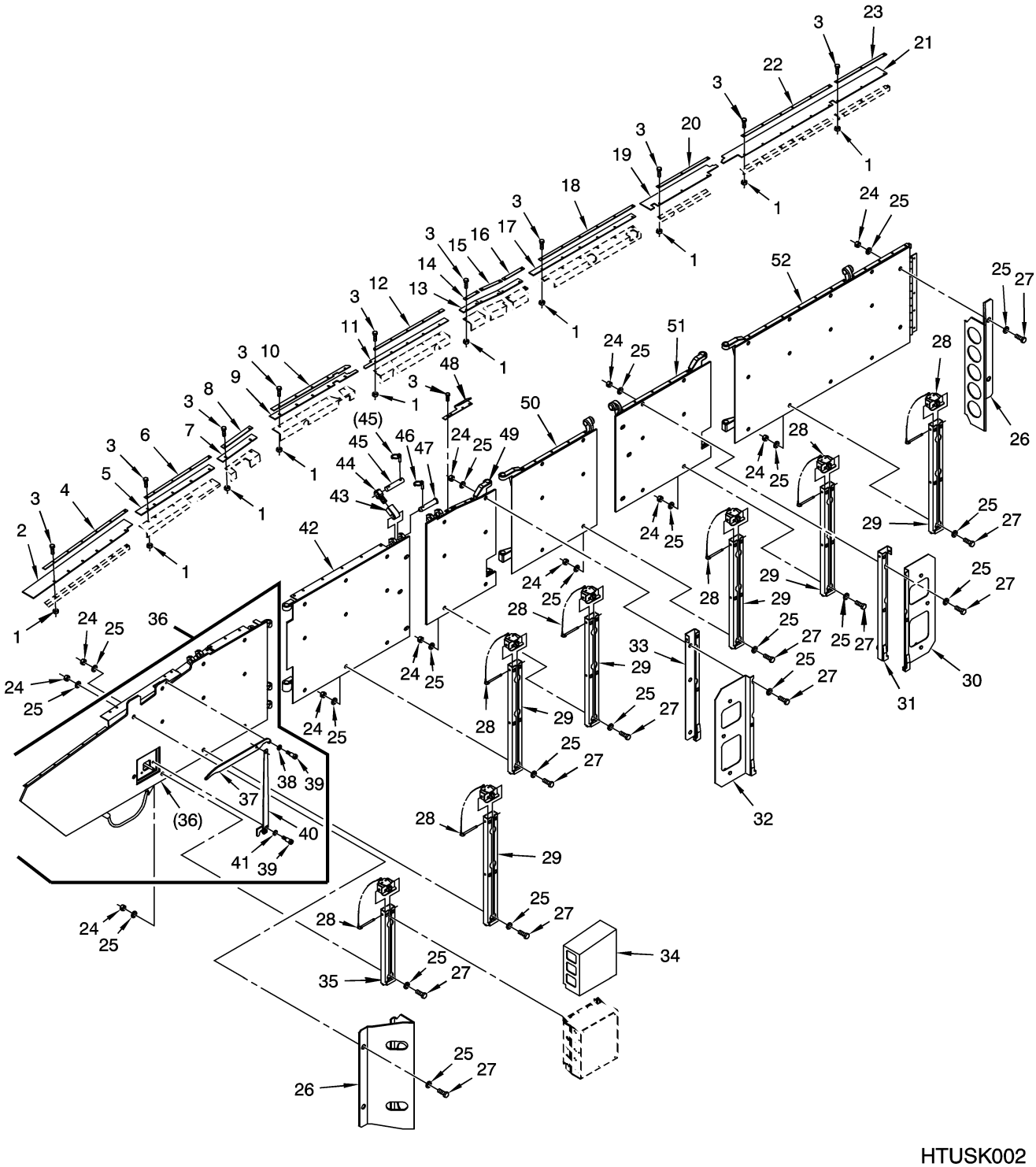


FIGURE 6F02. LEFT HULL ABRAMS REACTIVE ARMOR TILES (ARAT), SKIRTS 1 THROUGH 6 AND RELATED PARTS

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES(UOC)	(7) QTY
					GROUP 3307: SPECIAL PURPOSE KITS	
					FIG. 6F02 LEFT HULL ABRAMS REACTIVE ARMOR TILES (ARAT), SKIRTS 1 THROUGH 6 AND RELATED PARTS	
	PDFFF	2510-01-546-1761	19207	57K4685	REACTIVE ARMOR TILE	
1	PAFZZ	5310-01-378-7761	19207	12387305-3	.NUT,PLAIN,HEXAGON	48
2	PAFZZ	5340-01-547-9469	19207	12489484	.PLATE,MOUNTING	1
3	PAFZZ	5305-00-071-2505	80204	B1821BH025C088N	.SCREW,CAP,HEXAGON H	48
4	PAFZZ	5340-01-548-1168	19207	12489486	.PLATE,MOUNTING	1
5	PAFZZ	5340-01-547-7245	19207	12489489	.PLATE,MOUNTING	1
6	PAFZZ	5340-01-142-8241	19207	12311982	.PLATE,MENDING	1
7	PAFZZ	5340-01-547-9511	19207	12489487	.PLATE,MOUNTING	1
8	PAFZZ	5340-01-547-5038	19207	12489476	.PLATE,MOUNTING	1
9	PAFZZ	9320-01-548-4042	19207	12489483	.RUBBER STRIP	1
10	PAFZZ	5340-01-548-1530	19207	12489478	.PLATE,MOUNTING	1
11	PAFZZ	9320-01-548-4043	19207	12489888	.RUBBER STRIP	1
12	PAFZZ	5340-01-548-1157	19207	12489509	.PLATE,MOUNTING	1
13	PAFZZ	9320-01-548-4045	19207	12489889	.RUBBER STRIP	1
14	PAFZZ	2590-01-150-1020	19207	12288307-5	.BRACKET,VEHICULAR C	1
15	PAFZZ	2590-01-150-1021	19207	12288307-6	.BRACKET,VEHICULAR C	1
16	PAFZZ	5340-01-547-4592	19207	12489893	.PLATE,MOUNTING	1
17	PAFZZ	5340-01-548-1528	19207	12489875	.PLATE,MOUNTING	1
18	PAFZZ	5340-01-548-1522	19207	12489876	.PLATE,MOUNTING	1
19	PAFZZ	5330-01-198-8883	19207	12287080	.RUBBER STRIP	1
20	PAFZZ	2590-01-102-4521	19207	12288373-2	.MOLDING,METAL	1
21	PAFZZ	5340-01-548-1534	19207	12489874	.PLATE,MOUNTING	1
22	PAFZZ	5340-01-547-7159	19207	12489871	.PLATE,MOUNTING	1
23	PAFZZ		19207	12489869	.RETAINER	1
* 24	PAFZZ	5310-01-549-9702	07070	90636A077	.NUT,SELF-LOCKING,HE	61
25	PAFZZ	5310-01-382-9030	19207	12387327-8	.WASHER,FLAT	116
26	PAFZZ	2540-01-560-0768	19207	12490191	.GUARD,BRUSH,VEHICUL	2
27	PAFZZ	5305-00-836-8346	80204	B1821BH075C175N	.SCREW,CAP,HEXAGON H	55
28	PAFZZ	5340-01-551-1791	19207	12490043	.RAIL CAP ASSEMBLY	17
29	PAFZZ	5340-01-548-4395	19207	13009234	.BRACKET,MOUNTING	14
30	PAFZZ	5340-01-548-1651	19207	12489791	.BRACKET,MOUNTING	1
31	PAFZZ	5340-01-547-9756	19207	12489790	.SLIDE,DRAWER,EXTENS	1
32	PAFZZ	5340-01-548-1538	19207	12489789	.BRACKET,MOUNTING	1
33	PAFZZ	2590-01-550-7046	19207	12489788	.BRACKET,VEHICULAR C	1
34	PAFZZ	2590-01-560-1979	19207	12490189	.BRACKET,VEHICULAR C	1
35	PAFZZ	5340-01-560-2927	19207	12490181	.BRACKET,MOUNTING	1
36	PAFFF	2510-01-555-8929	19207	12490179	.FENDER,VEHICULAR	1
37	PAFZZ	5340-01-560-3721	19207	12490285	..HANDLE,MANUAL CONTR	1
38	PAFZZ	5310-01-380-1657	19207	12387279-18	..WASHER,FLAT	2
39	PAFZZ		07BY4	91264A619	..SCREW,SHOULDER,1/4H	3
40	PAFZZ	3040-01-559-8854	19207	12490291	..CONNECTING LINK,RIG	1
41	PAFZZ	5310-01-465-3355	19207	12387279-20	..WASHER,FLAT	1
42	PAFZZ	2530-01-547-6796	19207	12489740	.DEFLECTOR,DIRT AND	1
43	PAFZZ	5340-01-548-1173	19207	12489937	.CLEVIS,ROD END	3
44	PAFZZ	2590-01-548-1167	19207	12489938	.BRACKET,VEHICULAR C	3
* 45	PAFZZ	5315-01-564-8474	19207	12490424	.PIN,STRAIGHT,HEADLE	1
46	PAFZZ	5315-01-136-7646	19207	12311431	.PIN,QUICK RELEASE	3
47	PAFZZ	5315-01-139-9785	19207	12287034-10	.PIN,STRAIGHT,HEADED	3
48	PAFZZ	5340-01-551-0881	19207	12489944	.PLATE,MOUNTING	1
49	PAFZZ	2530-01-547-6373	19207	12489741	.DEFLECTOR,DIRT AND	1
50	PAFZZ	2530-01-547-6812	19207	12489742	.DEFLECTOR,DIRT AND	1
51	PAFZZ	2530-01-547-6973	19207	12489743	.DEFLECTOR,DIRT AND	1
52	PAFZZ	2530-01-547-6380	19207	12489744	.DEFLECTOR,DIRT AND	1

END OF FIGURE

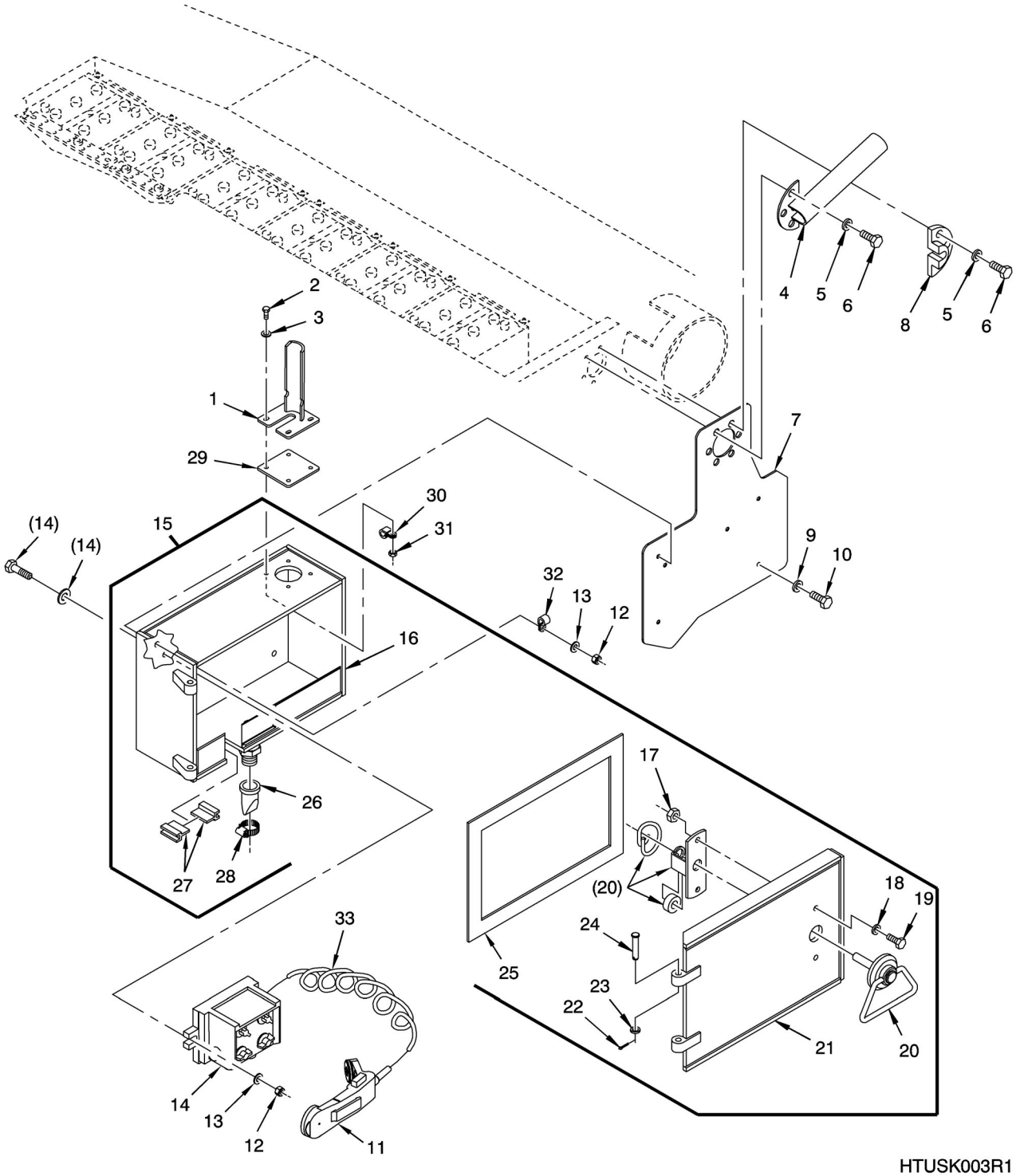
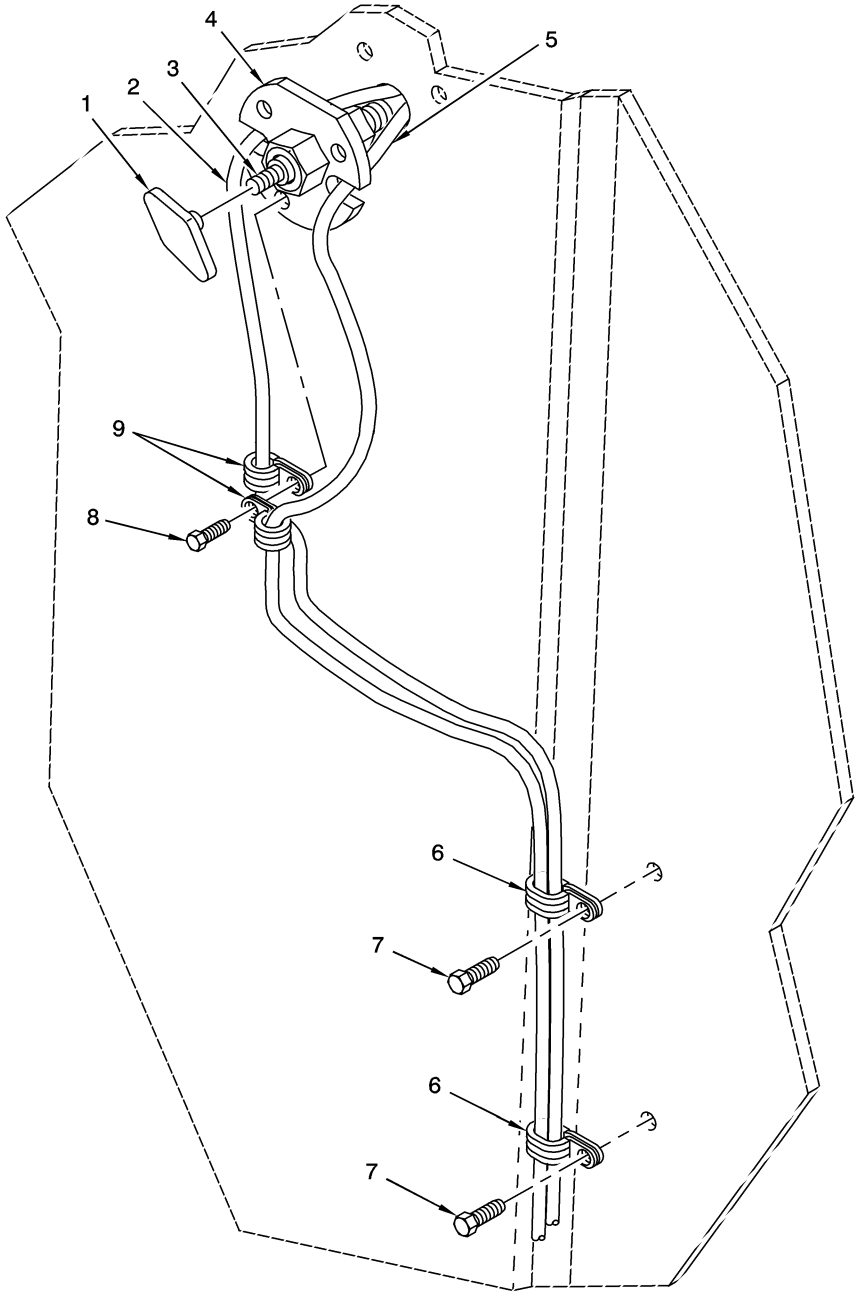


FIGURE 6F03. TANK INFANTRY PHONE ASSEMBLY COMPONENTS

	(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES(UOC)	(7) QTY
						GROUP 3307: SPECIAL PURPOSE KITS	
						FIG. 6F03 TANK INFANTRY PHONE ASSEMBLY COMPONENTS	
		PDFFF	5805-01-545-3117	19207	57K4672	PHONE INFANTRY TANK.	
	1	PAFZZ	2540-01-550-7033	19207	12490135	.GUARD,BRUSH,VEHICUL.	1
	2	PAFZZ	5305-01-392-5073	96906	MS51849-68C	.SCREW,MACHINE	4
	3	PAFZZ	5310-00-763-3413	80205	MS15795-847	.WASHER,FLAT.	4
	4	PAFZZ	2540-01-550-7022	19207	12489786	.GUARD,BRUSH,VEHICUL.	1
	5	PAFZZ	5310-01-378-7789	19207	12387272-46	.WASHER,LOCK	6
	6	PAFZZ	5305-00-068-0510	80204	B1821BH038C100N	.SCREW,CAP,HEXAGON H	6
*	7	PAFZZ	5340-01-565-9214	19207	12490534	.PLATE,MOUNTING	1
	8	PAFZZ	5365-01-551-5251	19207	12489793	.SEGMENT,RING SPACER	3
	9	PAFZZ	5310-01-436-4437	80204	B1822BH100R	.WASHER,FLAT.	2
	10	PAFZZ	5305-00-225-3843	80204	B1821BH025C100N	.SCREW,CAP,HEXAGON H	2
	11	PAFZZ	5965-00-043-3463	80063	SM-D-889337	.HANDSET	1
	12	PAFZZ	5310-01-545-3173	19207	12387349-33	.NUT,SELF-LOCKING,HE	6
	13	PAFZZ	5310-01-382-9984	19207	12387327-2	.WASHER,FLAT.	6
	14	PAFZZ	5830-01-382-3218	80063	A3205746	.CONTROL,INTERCOMMUN	1
	15	PAFFF	5965-01-551-4516	19207	12490065	.BOX,HANDSET STORAGE	1
	16	XAFZZ		19207	12490067	..BOX	1
	17	PAFZZ	5310-00-208-9255	80205	MS21044C3	..NUT,SELF-LOCKING,HE	2
	18	PAFZZ	5310-00-194-0631	06848	133501	..WASHER,FLAT	2
	19	PAFZZ	5305-01-383-6136	96906	MS51849-65C	..SCREW,MACHINE	2
	20	PAFZZ	5340-01-555-0740	94222	57-40-707-80	..RECEPTACLE,FRICTION.	1
	21	PAFZZ	5340-01-551-1777	19207	12490068	..COVER,ACCESS.	1
	22	PAFZZ	5315-01-545-2936	19207	12387310-281	..PIN,COTTER	2
	23	PAFZZ	5310-01-384-4683	19207	12387327-27	..WASHER,FLAT	2
	24	PAFZZ	5315-00-080-1934	19207	12387350-4C45	..PIN,STRAIGHT,HEADED	2
	25	PAFZZ	5330-01-551-1657	19207	12490065-1	..GASKET.	1
*	26	PAFZZ	4820-01-565-9199	19207	12490448	..VALVE,PLUG.	1
	27	PAFZZ	5330-01-551-1676	19207	12490066	..SEAL,NONMETALLIC ST	2
*	28	PAFZZ	4730-01-561-0256	0KVE6	5011T241	..CLAMP,HOSE	1
	29	PAFZZ	5330-01-545-4500	19207	12489641	.GASKET	1
*	30	PAFZZ	5340-00-057-3037	80205	MS21333-111	.CLAMP,LOOP.	6
	31	PAFZZ	5310-00-208-9255	80205	MS21044C3	.NUT,SELF-LOCKING,HE	4
	32	PAFZZ	5340-00-984-8540	80205	MS21333-102	.CLAMP,LOOP.	1
	33	PAFZZ	5995-01-386-5153	80063	A3211149-2	.CABLE ASSEMBLY,SPEC.	1

END OF FIGURE



HTUSK004

FIGURE 6F04. EMERGENCY ENGINE SHUTOFF VALVE CONTROL HANDLE AND RELATED PARTS

	(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES(UOC)	(7) QTY
						GROUP 3307: SPECIAL PURPOSE KITS	
						FIG.6F04 EMERGENCY ENGINE SHUTOFF VALVE CONTROL HANDLE AND RELATED PARTS	
*		PDFFF	5805-01-545-3117	19207	57K4672	PHONE INFANTRY TANK	
*	1	PAFZZ	5340-01-083-5690	19207	12284166	HANDLE,MANUAL CONTR (NOT PART OF KIT)	1
*	2	PAFZZ	5995-01-518-5931	80063	A3206018-29	.CABLE ASSEMBLY,SPEC	1
*	3	PAFZZ	2590-01-083-5538	19207	12284182-1	CONTROL ASSEMBLY,PU (NOT PART OF KIT)	1
*	4	PAFZZ	2590-01-545-4451	19207	12489628	.BRACKET,VEHICULAR C	1
*	5	PAFZZ	5995-01-536-7733	80063	A3206249-25	.CABLE ASSEMBLY,SPEC	1
*	6	PAFZZ	5340-00-809-1494	80205	MS21333-105	.CLAMP,LOOP	2
*	7	PAFZZ	5305-00-071-2507	80204	B1821BH025C044N	SCREW,CAP,HEXAGON H (NOT PART OF KIT)	2
*	8	PAFZZ	5305-00-068-7837	80204	B1821BH025C063N	SCREW,CAP,HEXAGON H (NOT PART OF KIT)	3
*	9	PAFZZ	5340-00-809-1492	80205	MS21333-100	.CLAMP,LOOP	2

END OF FIGURE

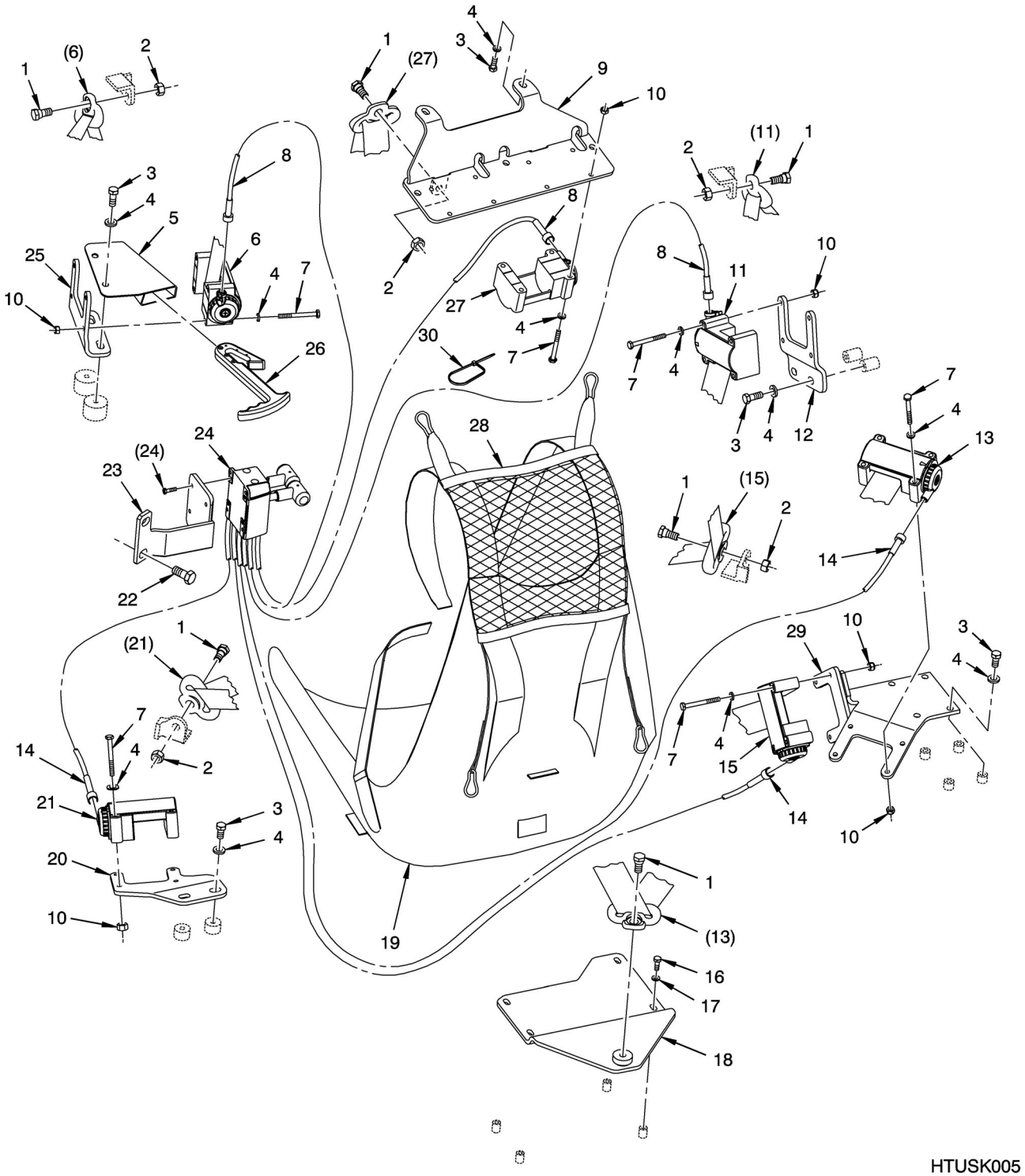


FIGURE 6F05. DRIVER'S HARNESS SYSTEM, BRACKETS, RETRACTORS, KNIFE, AND RELATED PARTS

	(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES(UOC)	(7) QTY
						GROUP 3307: SPECIAL PURPOSE KITS	
						FIG. 6F05 DRIVER'S HARNESS SYSTEM, BRACKETS, RETRACTORS, KNIFE, AND RELATED PARTS	
*		PDFFF	2540-01-560-3233	19207	57K4989	KIT,AUTOFLUG DRIVER	
	1	PAFZZ		D1131	069279-05/01	.BOLT,SHOULDER 7/16	7
*	2	PAFZZ	5310-01-562-3909	19207	12387151-4	.NUT,PLAIN,HEXAGON	6
	3	PAFZZ	5305-00-068-0510	80204	B1821BH038C100N	.SCREW,CAP,HEXAGON H	13
	4	PAFZZ	5310-01-383-0032	19207	12387327-16	.WASHER,FLAT	15
*	5	PAFZZ	5340-01-563-6544	19207	12490555	.BRACKET,MOUNTING	1
*	6	PAFFF	2540-12-376-9601	D1131	AFG076056-01	.BELT,VEHICULAR SAFE	1
	7	PAFZZ	5305-00-071-2513	80204	B1821BH025C250N	.SCREW,CAP,HEXAGON H	28
*	8	PAFZZ	2590-12-375-2445	D1131	AFG075489-17	.CONTROL ASSEMBLY,PU	4
*	9	PAFZZ	5340-01-562-4091	19207	12490561	.BRACKET,MOUNTING	1
	10	PAFZZ	5310-01-378-7587	19207	12387349-31	.NUT,SELF-LOCKING,HE	28
*	11	PAFFF	2540-12-376-9603	D1131	AFG076056-02	.BELT,VEHICULAR SAFE	1
*	12	PAFZZ	5340-01-562-3946	19207	12490541	.BRACKET,MOUNTING	1
*	13	PAFFF	2540-12-376-9606	D1131	AFG076056-05	.BELT,VEHICULAR SAFE	1
*	14	PAFZZ	2590-12-375-4302	D1131	AFG075489-16	.CONTROL ASSEMBLY,PU	3
*	15	PAFFF	2540-12-376-9608	D1131	AFG076056-06	.BELT,VEHICULAR SAFE	1
	16	PAFZZ	5305-00-068-0508	80204	B1821BH025C075N	.SCREW,CAP,HEXAGON H	4
	17	PAFZZ	5310-01-379-9943	19207	12387327-34	.WASHER,FLAT	4
*	18	PAFZZ	5340-01-563-5645	19207	12490546	.BRACKET,MOUNTING	1
*	19	PAFZZ	2540-12-375-6223	D1131	AFG073366-07	.SEAT,VEHICULAR	1
*	20	PAFZZ	5340-01-562-5791	19207	12490240	.BRACKET,ANGLE	1
*	21	PAFFF	2540-12-376-9605	D1131	AFG076056-04	.BELT,VEHICULAR SAFE	1
	22	PAFZZ	5305-00-732-0511	80204	B1821BH050C113N	.SCREW,CAP,HEXAGON H	2
*	23	PAFZZ	5340-01-562-4098	19207	12490214	.BRACKET,ANGLE	1
*	24	PAFZZ	3040-12-375-6634	D1131	AFG074013-05	.LEVER ASSEMBLY,MANU	1
*	25	PAFZZ	5340-01-562-5805	19207	12490211	.BRACKET,ANGLE	1
	26	PAFZZ	5110-00-524-6924	0ZYK8	97006	.KNIFE,RESCUE	2
*	27	PAFFF	2540-12-375-2093	D1131	AFG076056-03	.BELT,VEHICULAR SAFE	2
*	28	PAFZZ	2540-12-375-2510	D1131	AFG073376-07	.PROTECTIVE COVERING	1
*	29	PAFZZ	5340-01-562-5543	19207	12490540	.BRACKET,MOUNTING	1
	30	PAFZZ	5975-00-984-6582	96906	MS3367-1-0	.STRAP,TIEDOWN,ELECT	4

END OF FIGURE

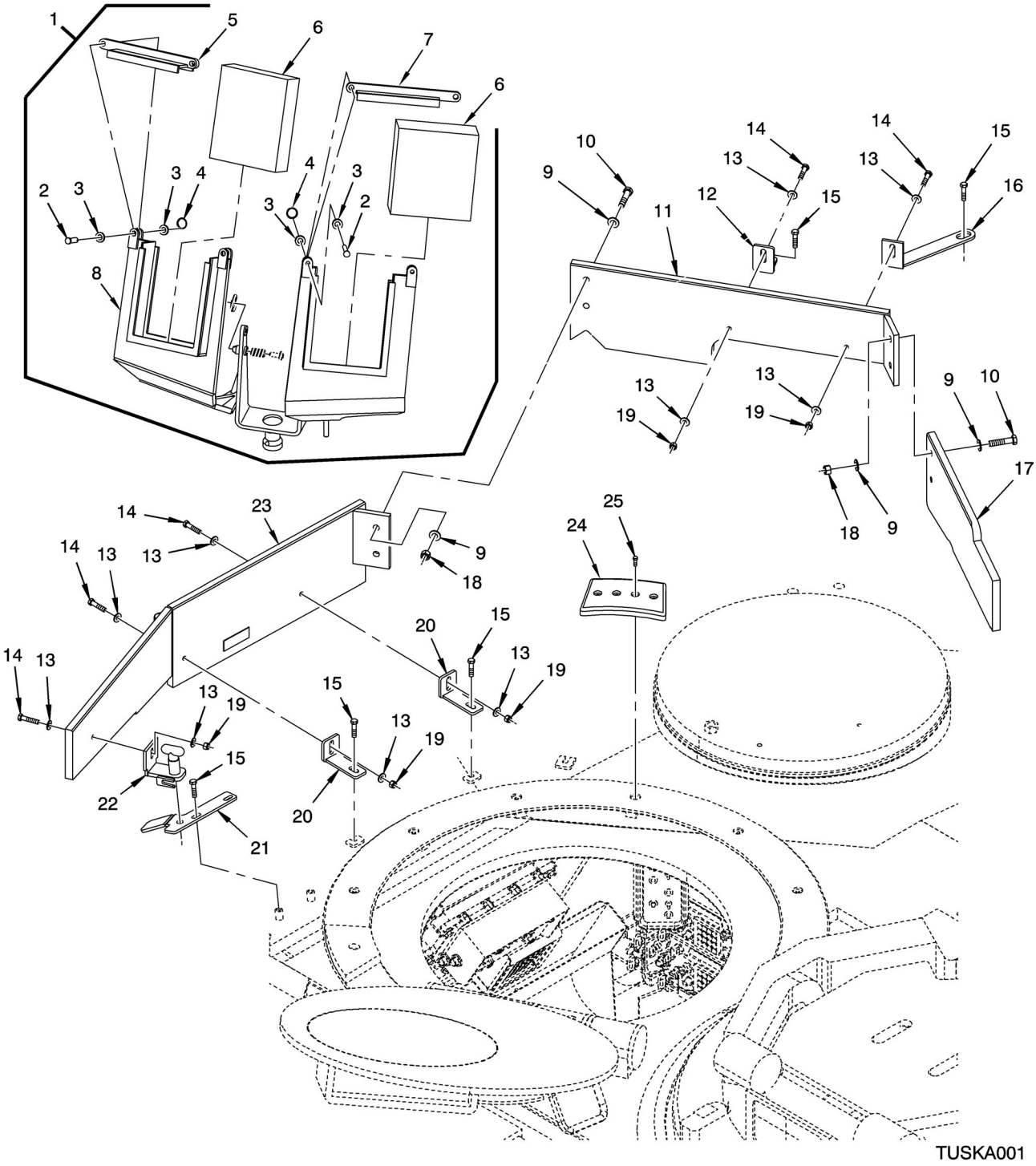


FIGURE 6F06. LOADER'S ARMOR GUN SHIELD KIT

	(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES(UOC)	(7) QTY
						GROUP 3307: SPECIAL PURPOSE KITS	
						FIG.6F06 LOADER'S ARMOR GUN SHIELD KIT	
*		PDFFF	2350-01-544-9827	19207	57K4686	KIT,LOADERS ARMOR G	
*	1	PAFFF	1015-01-545-2948	19207	12489700	.SHIELD ASSEMBLY,PRO	1
*	2	PAFZZ	5315-01-546-3139	07BY4	94380A640	..PIN,GROOVED,HEADED	4
*	3	PAFZZ	5310-01-379-9572	19207	12387327-5	..WASHER,FLAT	8
*	4	PAFZZ	5325-01-545-8682	07BY4	95390A319	..RING,RETAINING	4
*	5	PAFZZ	5340-01-547-6321	19207	12489725	..PLATE,RETAINING,WIN RIGHT	1
*	6	PAFZZ	9340-01-546-2066	19207	12489705	..GLASS	2
*	7	PAFZZ	5340-01-547-6305	19207	12489717	..PLATE,RETAINING,WIN LEFT	1
*	8	PAFZZ	2350-01-546-8797	19207	12489701	..SHIELD,FORK	1
*	9	PAFZZ	5310-01-380-1657	19207	12387279-18	.WASHER,FLAT	8
*	10	PAFZZ	5305-00-071-2072	80204	B1821BH050C225N	.SCREW,CAP,HEXAGON H	4
*	11	PAFZZ	9515-01-548-1445	19207	12489693	.ARMOR PLATE	1
*	12	PAFZZ	5340-01-545-8910	19207	12489695	.BRACKET,MOUNTING	1
*	13	PAFZZ	5310-01-511-3327	19207	12387279-13	.WASHER,FLAT	10
*	14	PAFZZ	5305-00-725-2317	80204	B1821BH038C150N	.SCREW,CAP,HEXAGON H	5
*	15	PAFZZ	5305-00-821-3869	80204	B1821BH038C175N	.SCREW,CAP,HEXAGON H	6
*	16	PAFZZ	5340-01-546-0265	19207	12489692	.BRACKET,MOUNTING	1
*	17	PAFZZ	9515-01-548-1446	19207	12489697	.ARMOR PLATE	1
*	18	PAFZZ	5310-01-384-4270	19207	12387349-39	.NUT,SELF-LOCKING,HE	4
*	19	PAFZZ	5310-01-378-8721	19207	12387349-35	.NUT,SELF-LOCKING,HE	5
*	20	PAFZZ	5340-01-545-8703	19207	12489755	.BRACKET,MOUNTING	2
*	21	PAFZZ	5340-01-546-0248	19207	12489728	.BRACKET,MOUNTING	1
*	22	PAFZZ	5340-01-545-8837	19207	12489713	.BRACKET,MOUNTING	1
*	23	PAFZZ	9515-01-548-1442	19207	12489709	.ARMOR PLATE	1
*	24	PAFZZ	5340-01-546-2086	19207	12489715	.STOP,MECHANICAL	1
*	25	PAFZZ	5305-00-068-0508	80204	B1821BH025C075N	.SCREW,CAP,HEXAGON H	1

END OF FIGURE

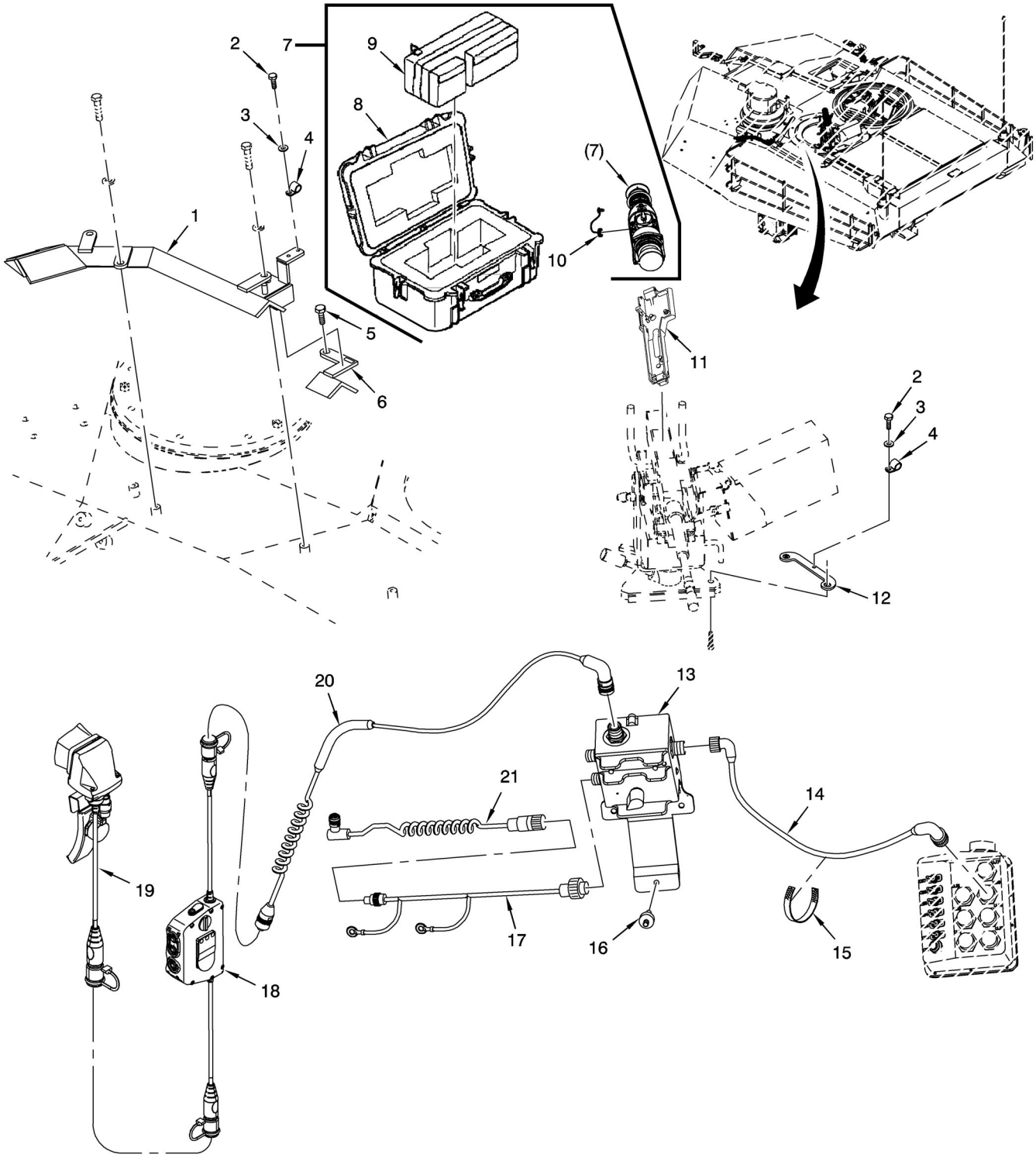


FIGURE 6F07. LOADER'S THERMAL WEAPON SIGHT KIT

	(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES(UOC)	(7) QTY
						GROUP 3307: SPECIAL PURPOSE KITS	
						FIG. 6F07 LOADER'S THERMAL WEAPON SIGHT KIT	
		PDFFF	2350-01-544-9824	19207	57K4689	KIT,LOADERS THERMAL	
	1	PAFZZ	9515-01-548-1444	19207	12489808	.ARMOR PLATE	1
	2	PAFZZ	5305-01-506-9145	19207	12387351-26	.SCREW,CAP,SOCKET HE	3
	3	PAFZZ	5310-01-380-1584	19207	12387279-8	.WASHER,FLAT	3
*	4	PAFZZ	5935-01-564-0993	06383	TWR-C0	.CLAMP,CABLE,ELECTRI	2
	5	PAFZZ	5305-00-725-2317	80204	B1821BH038C150N	.SCREW,CAP,HEXAGON H	1
	6	PAFZZ	5340-01-545-8807	19207	12489824	.BRACKET,MOUNTING	1
	7	PAFKK	2350-01-548-1443	19207	12489902	.THERMAL SENSOR ASSE	1
	8	PAFZZ	1240-01-504-2237	96214	3252603-1	..CASE,OPTICAL INSTRU	1
	9	PAFZZ	1240-01-490-0746	96214	3252602-1	..CASE,OPTICAL INSTRU	1
*	10	PAFZZ	5340-01-567-5358	06234	667-218-Z1-T606-4	.CAP,PROTECTIVE,DUST	1
	11	PAFZZ	1005-01-432-9538	19200	12977102	.COVER,FEED MECHANIS	1
*	12	PAFZZ	2350-01-562-7389	19207	12489918	.RELIEF,GUN CARRIAGE	1
*	13	PAFZZ	6130-01-562-7412	19207	12489901	.ADAPTER,POWER SUPPL	1
*	14	PAFZZ	6150-01-565-4460	19207	12489904	.WIRING HARNESS W1	1
*	15	PAFZZ	5340-01-562-7203	39428	6605K51	.STRAP,WEBBING	6
	16	PCFZZ	5342-01-205-0451	19207	12344202	.MOUNT,DOME LAMP	3
*	17	PAFZZ	6150-01-562-7413	19207	12489905	.WIRING HARNESS W2	1
*	18	PAFKK	2350-01-563-4020	19207	12490308	.MODULE,DISPLAY CONT	1
*	19	PAFKK	5855-01-563-6724	19207	12490307	.DISPLAY UNIT,HEAD-U	1
*	20	PAFZZ	6150-01-562-7386	19207	12489906	.WIRING HARNESS W3	1
*	21	PAFZZ	6150-01-562-7387	19207	12489907	.WIRING HARNESS W4	1

END OF FIGURE

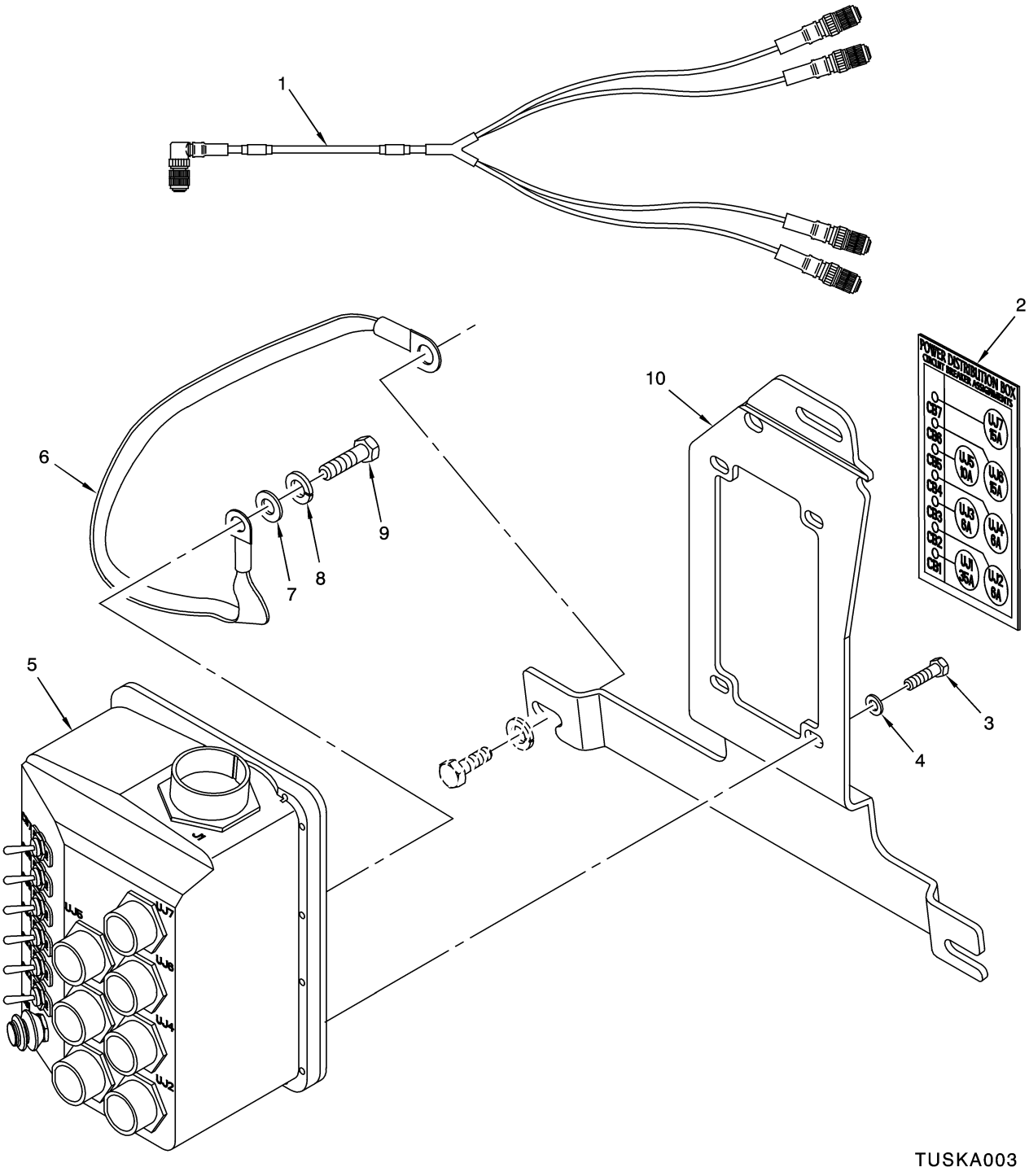


FIGURE 6F08. POWER DISTRIBUTION BOX KIT

	(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES(UOC)	(7) QTY
						GROUP 3307: SPECIAL PURPOSE KITS	
						FIG. 6F08 POWER DISTRIBUTION BOX KIT	
		PDFFF	2350-01-544-1699	19207	57K4698	KIT,POWER DISTRIBUT	
	1	PAFZZ	6150-01-546-2032	19207	12489757	.WIRING HARNESS,BRAN 1W501-TUSK	1
	2	PAFZZ	7690-01-545-8536	19207	12489775	.MARKER,IDENTIFICATI	1
	3	PAFZZ	5305-00-050-9229	96906	MS51957-63	.SCREW,MACHINE	4
	4	PAFZZ	5310-00-933-8120	80205	MS35338-138	.WASHER,LOCK	4
	5	PAFKK	6110-01-546-2029	19207	12473759	.DISTRIBUTION BOX	1
*	6	PAFZZ	6150-00-329-4497	81349	M83413-A010CC	.LEAD,ELECTRICAL	1
	7	PAFZZ	5310-01-352-2752	80205	NAS1149C0332R	.WASHER,FLAT	1
	8	PAFZZ	5310-00-582-5965	80205	MS35338-44	.WASHER,LOCK	1
	9	PAFZZ	5305-00-071-2508	80204	B1821BH025C038N	.SCREW,CAP,HEXAGON H	1
	10	PAFZZ	5340-01-545-8696	19207	12473768	.BRACKET,MOUNTING	1

END OF FIGURE

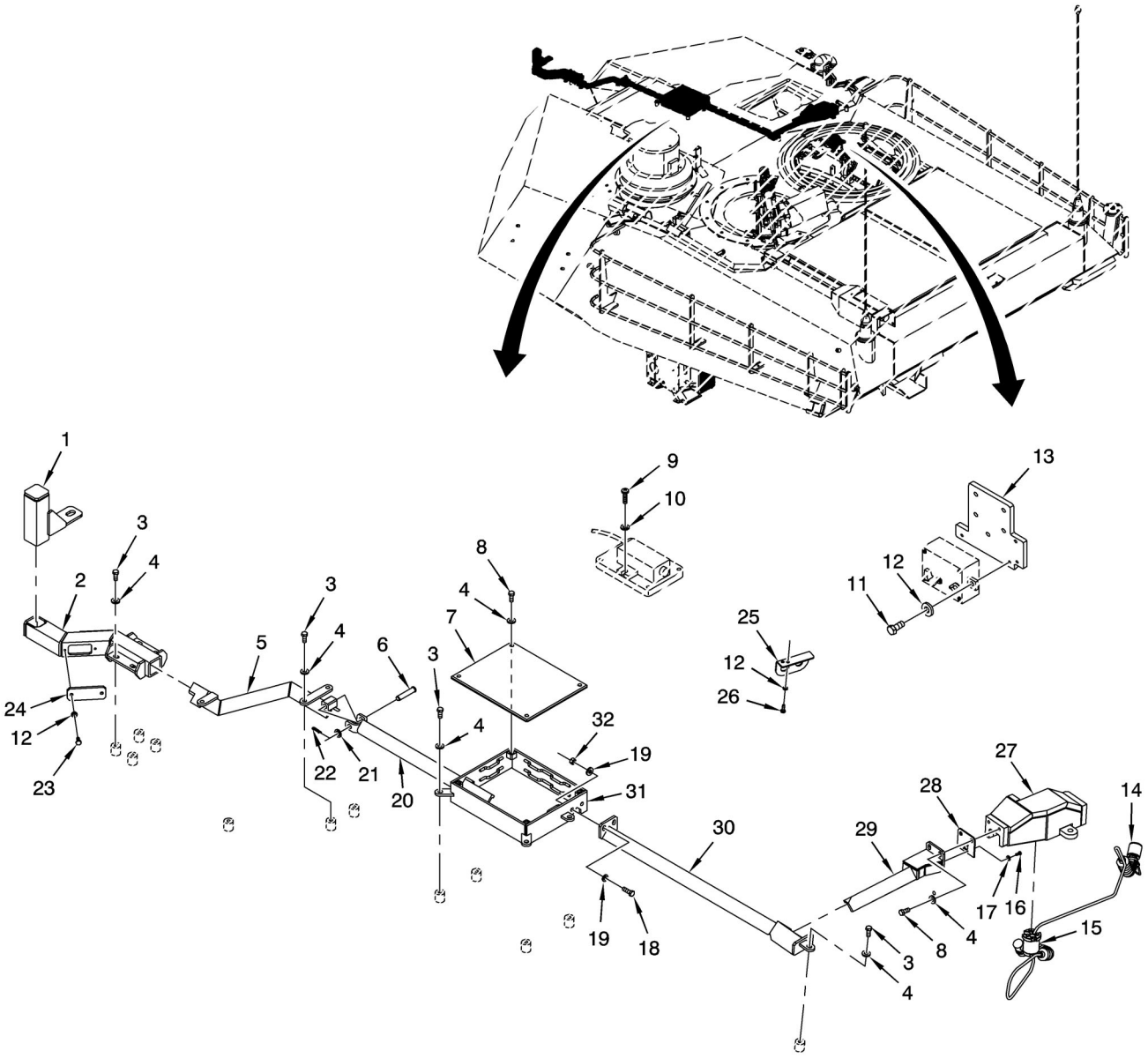


FIGURE 6F09. COUNTERSNIPER / ANTI-MATERIEL GUN MOUNT KIT
(FIGURE 1 OF 2)

	(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES(UOC)	(7) QTY
						GROUP 3307: SPECIAL PURPOSE KITS	
						FIG.6F09 COUNTERSNIPER / ANTI-MATERIEL GUN MOUNT KIT (FIGURE 1 OF 2)	
*		PDFFF	2350-01-553-6542	19207	57K5025	KIT,COUNTER-SNIPER	
*	1	PAFZZ	5340-01-553-6545	19207	12490457	.BRACKET,MOUNTING	1
*	2	PAFZZ	5340-01-553-6546	19207	12490420	.BRACKET,MOUNTING	1
*	3	PAFZZ	5305-01-140-9118	80204	B1821BH038C088N	.SCREW,CAP,HEXAGON H	12
*	4	PAFZZ	5310-01-381-9948	19207	12387327-22	.WASHER,FLAT	18
*	5	PAFZZ	5340-01-553-6541	19207	12490411	.BRACKET,MOUNTING	1
*	6	PAFZZ	5315-01-349-9951	96906	MS20392-7R71	.PIN,STRAIGHT,HEADED	1
*	7	PAFZZ	5340-01-553-6555	19207	12490445	.COVER,ACCESS	1
*	8	PAFZZ	5305-00-068-0510	80204	B1821BH038C100N	.SCREW,CAP,HEXAGON H	6
*	9	PAFZZ	5305-00-054-6656	96906	MS51957-32	.SCREW,MACHINE	4
*	10	PAFZZ	5310-00-883-9385	80205	MS35338-155	.WASHER,LOCK	4
*	11	PAFZZ	5305-00-068-0508	80204	B1821BH025C075N	.SCREW,CAP,HEXAGON H	3
*	12	PAFZZ	5310-01-379-0804	19207	12387327-1	.WASHER,FLAT	9
*	13	PAFZZ	5340-01-553-6548	19207	12490421	.PLATE,MOUNTING	1
*	14	PAFFF	6150-01-511-9535	19207	12473115	.CABLE ASSEMBLY,SPEC (FOR COMPONENT PARTS SEE GROUP 3307: 1W109-EF SPECIAL PURPOSE CABLE ASSEMBLY)	1
*	15	PAFZZ	5325-01-553-6553	19207	12490431	.GROMMET ASSEMBLY	1
*	16	PAFZZ	5305-00-054-5648	96906	MS51957-14	.SCREW,MACHINE	4
*	17	PAFZZ	5310-00-933-8118	80205	MS35338-135	.WASHER,LOCK	4
*	18	PAFZZ	5305-00-543-2419	80204	B1821BH038C113N	.SCREW,CAP,HEXAGON H	2
*	19	PAFZZ	5310-01-373-2547	19207	12387327-3	.WASHER,FLAT	4
*	20	PAFZZ	5340-01-553-6552	19207	12490436	.BRACKET,MOUNTING	1
*	21	PAFZZ	5310-01-460-0155	19207	12387327-43	.WASHER,FLAT	1
*	22	PAFZZ	5315-01-497-5034	58536	A-A-55487-11	.PIN,LOCK	1
*	23	PAFZZ	5305-00-068-7837	80204	B1821BH025C063N	.SCREW,CAP,HEXAGON H	4
*	24	PAFZZ	5340-01-553-6543	19207	12490449	.PLATE,MOUNTING	2
*	25	PAFZZ	5340-01-540-8817	19207	12473135	.BRACKET,ANGLE	1
*	26	PAFZZ	5305-00-068-0509	80204	B1821BH025C125N	.SCREW,CAP,HEXAGON H	2
*	27	PAFZZ	5975-01-555-3333	19207	12490418	.PROTECTOR,ELECTRICA	1
*	28	PAFZZ	5340-01-553-6547	19207	12490458	.PLATE,MOUNTING	1
*	29	PAFZZ	5340-01-553-6554	19207	12490437	.BRACKET,MOUNTING	1
*	30	PAFZZ	5340-01-553-6544	19207	12490419	.BRACKET,MOUNTING	1
*	31	PAFZZ	5340-01-553-6550	19207	12490427	.BRACKET,MOUNTING	1
*	32	PAFZZ	5310-01-378-8180	19207	12387305-9	.NUT,PLAIN,HEXAGON	2

END OF FIGURE

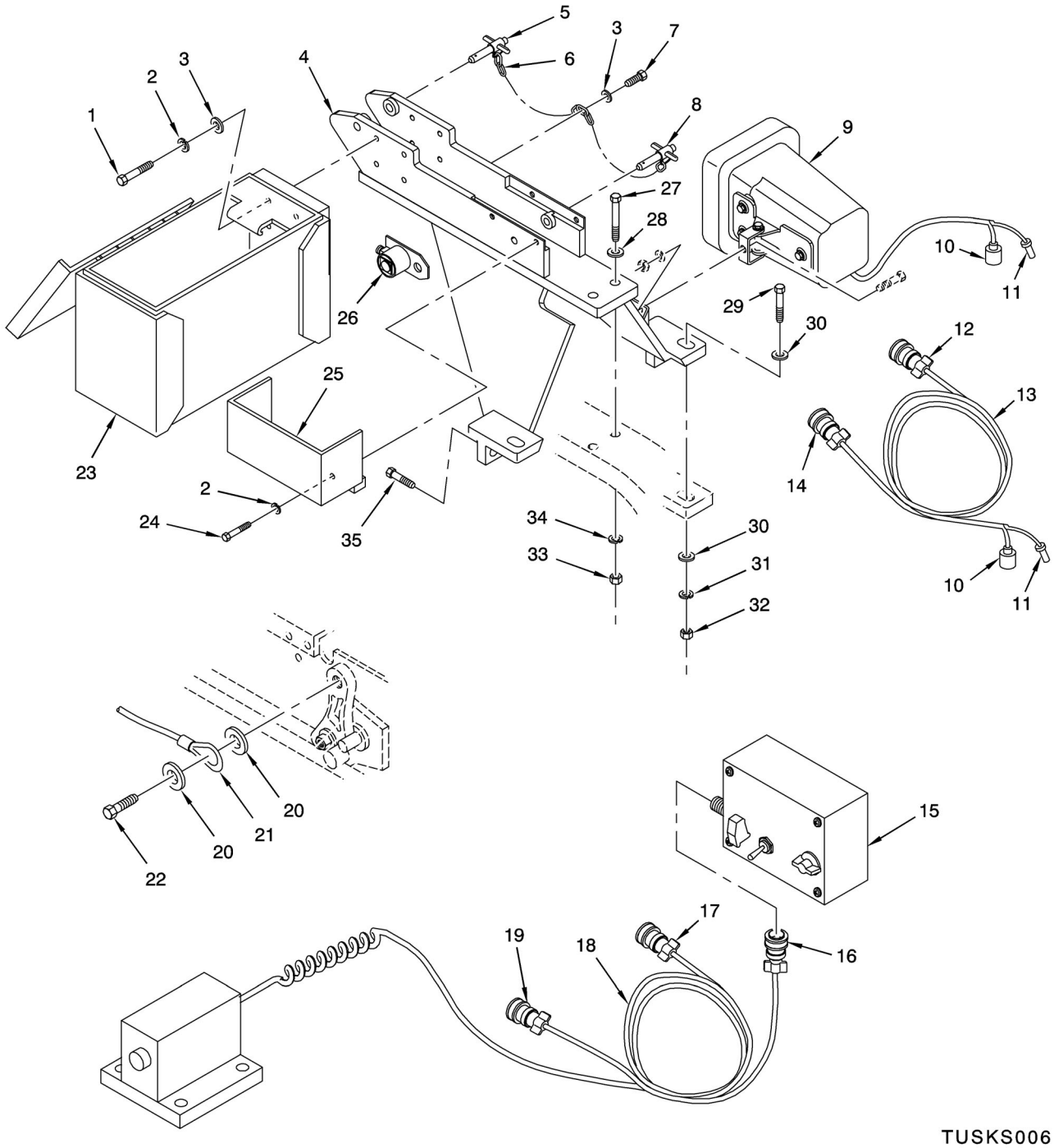


FIGURE 6F10. COUNTERSNIPER / ANTI-MATERIEL GUN MOUNT KIT
(FIGURE 2 OF 2)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES(UOC)	(7) QTY
					GROUP 3307: SPECIAL PURPOSE KITS	
					FIG. 6F10 COUNTERSNIPER / ANTI-MATERIEL GUN MOUNT KIT (FIGURE 2 OF 2)	
	PAFFF	2350-01-557-4005	1WCH9	CSAM07T	COUNTER SNIPER ANTI	
1	PAFZZ	5305-00-543-2866	80204	B1821BH038C250N	.SCREW,CAP,HEXAGON H	4
2	PAFZZ	5310-00-637-9541	81718	H2525M	.WASHER,LOCK	6
3	PAFZZ	5310-00-087-7493	96906	MS27183-13	.WASHER,FLAT	5
4	PAFZZ	1005-01-557-4007	1WCH9	02002	.CRADLE,MACHINE GUN	1
5	PAFZZ	5315-00-707-0292	19207	7070292	.PIN,QUICK RELEASE	1
6	PAFZZ	4010-01-557-6911	1WCH9	AS13588	.CHAIN ASSEMBLY,SING	1
7	PAFZZ	5305-00-068-0510	80204	B1821BH038C100N	.SCREW,CAP,HEXAGON H	1
8	PAFZZ	5315-00-707-0291	19207	7070291	.PIN,QUICK RELEASE	1
9	PAFZZ	6220-01-556-1623	1WCH9	XV-A1PWS	.SPOTLIGHT	1
10	PAFZZ	5935-00-462-6603	96906	MS27142-2	.CONNECTOR,PLUG,ELEC	2
11	PAFZZ	5935-00-167-7775	96906	MS27144-1	.CONNECTOR,PLUG,ELEC	2
12	PAFZZ	5935-00-231-3180	96906	MS3106F10SL3S	.CONNECTOR,PLUG,ELEC	1
13	PAFZZ	6150-01-556-9022	1WCH9	02024X	.WIRING HARNESS 1W811-CSAMM	1
14	PAFZZ	5935-00-509-6194	96906	MS3456W10SL-4S	.CONNECTOR,PLUG,ELEC	1
15	PAFZZ	1005-01-556-1624	1WCH9	02034	.CONTROL BOX,ELECTRI	1
16	PAFZZ	5935-00-177-2119	96906	MS3101F10SL-3P	.CONNECTOR,PLUG,ELEC	1
17	PAFZZ	5935-00-815-3203	96906	MS3108E14S6P	.CONNECTOR,PLUG,ELEC	1
18	PAFZZ	6150-01-556-1619	1WCH9	02024I	.WIRING HARNESS 1W810-CSAMM	1
19	PAFZZ	5935-01-460-5905	81349	M83723/78W1404Y	.CONNECTOR,PLUG,ELEC	1
20	PAFZZ	5310-00-614-3506	80205	MS15795-817	.WASHER,FLAT	2
21	PAFZZ	4010-01-556-1618	1WCH9	02029	.WIRE ROPE ASSEMBLY,	1
* 22	PAFZZ		1WCH9	43F100HCS8Z	.BOLT,PATCH,LOCK	1
23	PAFZZ	2541-01-556-1620	1WCH9	02027	.BOX,AMMUNITION STOW	1
24	PAFZZ	5305-00-725-2317	80204	B1821BH038C150N	.SCREW,CAP,HEXAGON H	2
25	PAFZZ	5340-01-556-1621	1WCH9	02025	.COVER,PROTECTIVE,DU	1
26	PAFZZ	5945-01-556-1622	81983	L-7246	.SOLENOID,ELECTRICAL	1
27	PAFZZ	5305-00-724-7228	80204	B1821BH063C300N	.SCREW,CAP,HEXAGON H	2
28	PAFZZ	5310-00-614-3505	80205	MS15795-820	.WASHER,FLAT	2
29	PAFZZ	5305-00-947-4356	80204	B1821BH075C350N	.SCREW,CAP,HEXAGON H	2
30	PAFZZ	5310-01-202-2703	80205	MS21299-12	.WASHER,FLAT	4
31	PAFZZ	5310-00-011-6124	28158	AE17339	.WASHER,LOCK	2
32	PAFZZ	5310-01-557-6912	1WCH9	75CNNE8Z	.NUT,SELF-LOCKING,CA	2
33	PAFZZ	5310-01-558-8772	1WCH9	62CNNE8Z	.NUT,SELF-LOCKING,CA	2
34	PAFZZ	5310-00-011-6123	80205	MS35338-69	.WASHER,LOCK	2
35	PAFZZ	5305-01-255-7403	80204	B1821BH056C300N	.SCREW,CAP,HEXAGON H	2

END OF FIGURE

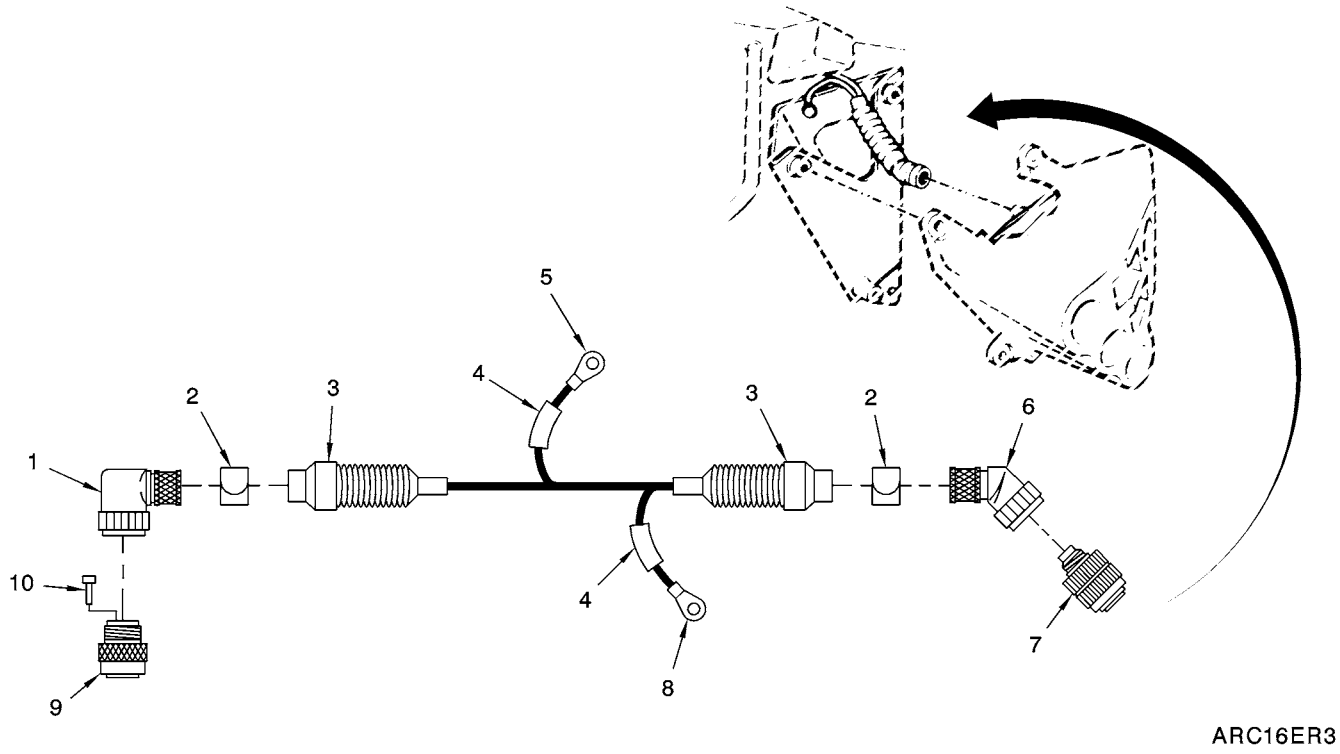


FIGURE 6F11. 1W109-EF SPECIAL PURPOSE CABLE ASSEMBLY COMPONENTS (P/N 12473115)

	(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES(UOC)	(7) QTY
						GROUP 3307: SPECIAL PURPOSE KITS	
						FIG. 6F11 1W109-EF SPECIAL PURPOSE CABLE ASSEMBLY COMPONENTS (P/N 12473115)	
	1	PAFZZ	5935-01-351-2333	19207	12387120-4	ADAPTER,CONNECTOR	1
	2	PAFZZ	5360-01-346-1218	19207	12347630-3	SPRING,HELICAL,COMP	2
*	3	PCFZZ	5340-01-084-0008	19207	12273242-310	BOOT,DUST AND MOIST	2
	4	MFFZZ		06090	NTFR-1/4-0	INSULATION,SLEEVING (USE NSN 1015012050371)	V
	5	PAFZZ	5940-00-113-9820	81343	MS20659-128	TERMINAL,LUG	1
	6	PAFZZ	5935-01-351-2334	19207	12387121-4	ADAPTER,CONNECTOR	1
	7	PAFZZ	5935-01-168-5885	96906	MS3459W14S-7S	CONNECTOR,PLUG,ELEC	1
	8	PAFZZ	5940-00-113-9821	96906	MS20659-166	TERMINAL,LUG	1
	9	PAFZZ	5935-01-108-4486	96906	MS3476W14-5P	CONNECTOR,PLUG,ELEC	1
	10	PAFZZ	5935-00-235-8970	96906	MS27488-16-1	PLUG,END SEAL,ELECT	1

END OF FIGURE

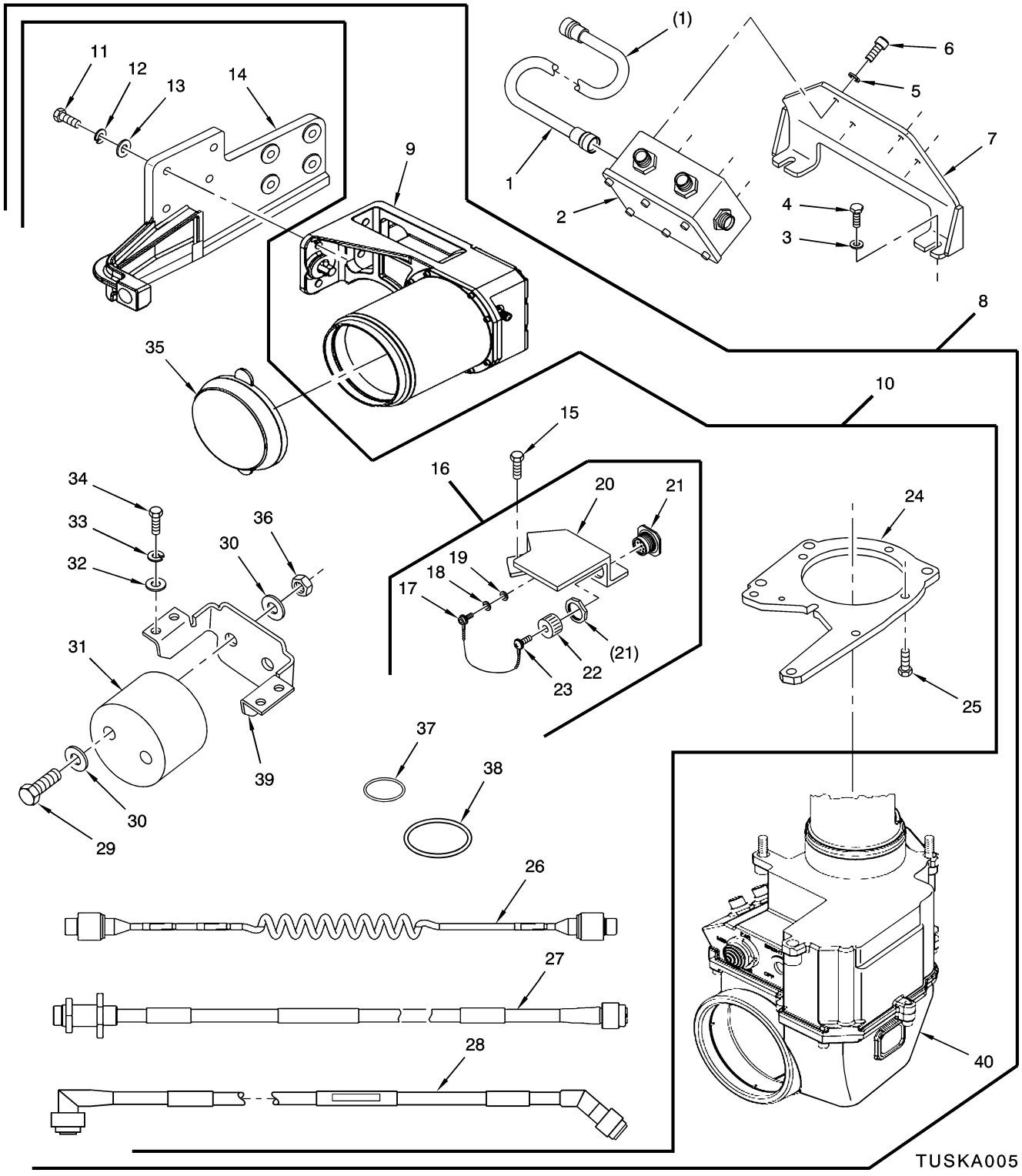


FIGURE 6F12. 50 CAL THERMAL SIGHT / DAY TV SYSTEM KIT

	(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES(UOC)	(7) QTY
						GROUP 3307: SPECIAL PURPOSE KITS	
						FIG. 6F12 50 CAL THERMAL SIGHT / DAY TV SYSTEM KIT	
		PDFFF	2350-01-554-8549	19207	57K4993	KIT,REMOTE THERMAL	
*	1	PAFZZ	6150-01-553-6539	19207	12490129	.WIRING HARNESS	1
*	2	PAFKK	2350-01-553-6537	19207	12490128	.MODULE,POWER FILTER	1
	3	PAFZZ	5310-01-379-0804	19207	12387327-1	.WASHER,FLAT	2
	4	PAFZZ	5305-00-068-0508	80204	B1821BH025C075N	.SCREW,CAP,HEXAGON H	2
	5	PAFZZ	5310-01-380-1671	19207	12387272-43	.WASHER,LOCK	4
	6	PAFZZ	5305-01-473-2327	19207	12387351-27	.SCREW,CAP,SOCKET HE	4
*	7	PAFZZ	5340-01-553-6540	19207	12490086	.BRACKET,MOUNTING	1
	8	AFFFF		96214	4991014-3	.50 CAL THERMAL TV	1
	9	PAFKK	5855-01-555-9351	96214	4991018-1	..SIGHT,THERMAL	1
	10	PDFFF	2350-01-557-1426	96214	4991015-3	..KIT,50 CAL THERMAL	1
	11	PAFZZ	5305-00-576-5417	80205	MS35307-360	...SCREW,CAP,HEXAGON H	4
	12	PAFZZ	5310-00-984-7042	80205	MS35338-141	...WASHER,LOCK	4
	13	PAFZZ	5310-00-167-0804	80205	NAS1149C0663R	...WASHER,FLAT	4
	14	PAFZZ	3040-01-557-4009	96214	4991020-1	...BRACKET,EYE,ROTATIN	1
	15	PAFZZ	5305-00-701-7630	80205	MS35307-429	...SCREW,CAP,HEXAGON H	2
	16	PAFFF	5935-01-555-9356	96214	4991070-1	...COVER AND GUARD,ELE	1
	17	PAFZZ	5305-00-057-4593	80205	MS16996-9	....SCREW,CAP,SOCKET HE	1
	18	PAFZZ	5310-00-933-8120	80205	MS35338-138	....WASHER,LOCK	1
	19	PAFZZ	5310-00-989-0640	80205	NAS620C10	....WASHER,FLAT	1
	20	XAFZZ		96214	4991043-1	....GUARD,CABLE,CONNECT	1
	21	PAFZZ	5935-01-555-9355	96214	4991071-1	....CONNECTOR,PLUG,ELEC	1
	22	PAFZZ	5935-01-555-9353	06324	667-218-M-F906-6	....COVER,ELECTRICAL CO	1
	23	PAFZZ	5305-01-132-5611	80205	NAS1352N04-6	....SCREW,CAP,SOCKET HE	2
	24	PAFZZ	5340-01-555-9352	96214	4991039-1	...PLATE,MOUNTING	1
	25	PAFZZ	5305-00-764-0068	80205	MS51959-45	...SCREW,MACHINE	5
	26	PAFZZ	6150-01-556-9024	96214	4987321-2	...CABLE ASSEMBLY,SPEC W2	1
	27	PAFZZ	6150-01-555-9349	96214	4987322-1	...CABLE ASSEMBLY,SPEC W3	1
	28	PAFZZ	6150-01-555-9354	96214	4987323-1	...CABLE ASSEMBLY,SPEC W4	1
	29	PAFZZ	5305-00-054-6674	96906	MS51957-49	...SCREW,MACHINE	2
	30	PAFZZ	5310-00-069-5291	80205	NAS620C8	...WASHER,FLAT	4
	31	PAFZZ	6850-01-266-9756	19200	9377106	...DESICCANT,ACTIVATED	1
	32	PAFZZ	5310-00-057-0573	80205	NAS620C4	...WASHER,FLAT	4
	33	PAFZZ	5310-00-933-8118	80205	MS35338-135	...WASHER,LOCK	4
	34	PAFZZ	5305-00-054-5648	96906	MS51957-14	...SCREW,MACHINE	4
	35	PAFZZ	6650-01-555-9348	96214	4987314-1	...CAP,LENS	1
	36	PAFZZ	5310-00-845-5030	80205	NAS1291C08M	...NUT,SELF-LOCKING,EX	2
	37	PCFZZ	5331-00-252-6049	81343	MS29513-137	...O-RING	1
	38	PCFZZ	5331-00-527-8555	81343	MS29513-141	...O-RING	1
	39	PAFZZ	5340-01-555-9350	96214	4991062-1	...BRACKET,MOUNTING	1
	40	PAFKK	2350-01-557-4008	96214	4991016-1	..DISPLAY CONTROL MOD	1

END OF FIGURE

SECTION III. SPECIAL TOOLS LIST

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES(UOC)	(7) QTY
					GROUP 9999	
					FIG. BULK -BULK MATERIAL	
* 1	PAFZZ	1015-01-205-0371	06090	NTFR-1/4-0	INSULATION,SLEEVING ,.250 ID,.035 WALL THICKNESS	V
					END OF FIGURE	

SECTION IV. CROSS-REFERENCE INDEXES

CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5310-00-011-6123	6F10	34	5340-00-809-1492	6F04	9
5310-00-011-6124	6F10	31	5340-00-809-1494	6F04	6
5965-00-043-3463	6F03	11	5935-00-815-3203	6F10	17
5305-00-050-9229	6F08	3	5305-00-821-3869	6F06	15
5305-00-054-5648	6F09	16	5305-00-836-8346	6F01	29
	6F12	34		6F02	27
5305-00-054-6656	6F09	9	5310-00-845-5030	6F12	36
5305-00-054-6674	6F12	29	5310-00-883-9385	6F09	10
5310-00-057-0573	6F12	32	5310-00-933-8118	6F09	17
5340-00-057-3037	6F03	30		6F12	33
5305-00-057-4593	6F12	17	5310-00-933-8120	6F08	4
5305-00-068-0508	6F05	16		6F12	18
	6F06	25	5305-00-947-4356	6F10	29
	6F09	11	5975-00-984-6582	6F05	30
	6F12	4	5310-00-984-7042	6F12	12
5305-00-068-0509	6F09	26	5340-00-984-8540	6F03	32
5305-00-068-0510	6F03	6	5310-00-989-0640	6F12	19
	6F05	3	5305-01-071-9075	6F01	17
	6F09	8	2590-01-083-5538	6F04	3
	6F10	7	5340-01-083-5690	6F04	1
5305-00-068-7837	6F04	8	5340-01-084-0008	6F11	3
	6F09	23	2590-01-102-4521	6F02	20
5310-00-069-5291	6F12	30	2590-01-102-4525	6F01	6
5305-00-071-2072	6F06	10	5935-01-108-4486	6F11	9
5305-00-071-2505	6F01	3	5305-01-132-5611	6F12	23
	6F02	3	5315-01-136-7646	6F01	43
5305-00-071-2507	6F04	7		6F02	46
5305-00-071-2508	6F08	9	5315-01-139-9785	6F01	42
5305-00-071-2513	6F05	7		6F02	47
5315-00-080-1934	6F03	24	5305-01-140-9118	6F09	3
5310-00-087-7493	6F10	3	5340-01-142-8241	6F01	22
5940-00-113-9820	6F11	5		6F02	6
5940-00-113-9821	6F11	8	2590-01-150-1020	6F01	12
5310-00-167-0804	6F12	13		6F02	14
5935-00-167-7775	6F10	11	2590-01-150-1021	6F01	11
5935-00-177-2119	6F10	16		6F02	15
5310-00-194-0631	6F03	18	5935-01-168-5885	6F11	7
5310-00-208-9255	6F03	17	5330-01-198-8883	6F02	19
	6F03	31	5330-01-199-2403	6F01	7
5305-00-225-3843	6F03	10	5310-01-202-2703	6F10	30
5935-00-231-3180	6F10	12	1015-01-205-0371	BULK	1
5935-00-235-8970	6F11	10	5342-01-205-0451	6F07	16
5331-00-252-6049	6F12	37	5305-01-255-7403	6F10	35
6150-00-329-4497	6F08	6	6850-01-266-9756	6F12	31
5935-00-462-6603	6F10	10	5360-01-346-1218	6F11	2
5935-00-509-6194	6F10	14	5315-01-349-9951	6F09	6
5110-00-524-6924	6F05	26	5935-01-351-2333	6F11	1
5331-00-527-8555	6F12	38	5935-01-351-2334	6F11	6
5305-00-543-2419	6F09	18	5310-01-352-2752	6F08	7
5305-00-543-2866	6F10	1	5310-01-373-2547	6F09	19
5305-00-576-5417	6F12	11	5310-01-378-7587	6F05	10
5310-00-582-5965	6F08	8	5310-01-378-7761	6F01	4
5310-00-614-3505	6F10	28		6F02	1
5310-00-614-3506	6F10	20	5310-01-378-7789	6F03	5
5310-00-637-9541	6F10	2	5310-01-378-8180	6F09	32
5305-00-701-7630	6F12	15	5310-01-378-8721	6F06	19
5315-00-707-0291	6F10	8	5310-01-379-0804	6F09	12
5315-00-707-0292	6F10	5		6F12	3
5305-00-724-7228	6F10	27	5310-01-379-9572	6F06	3
5305-00-725-2317	6F06	14	5310-01-379-9943	6F05	17
	6F07	5	5310-01-380-1584	6F07	3
	6F10	24	5310-01-380-1657	6F01	52
5305-00-732-0511	6F05	22		6F02	38
5310-00-763-3413	6F03	3		6F06	9
5305-00-764-0068	6F12	25	5310-01-380-1671	6F12	5

CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5310-01-381-9948	6F09	4	2530-01-547-6515	6F01	39
5830-01-382-3218	6F03	14	2530-01-547-6519	6F01	40
5310-01-382-9030	6F01	27	2530-01-547-6779	6F01	47
	6F02	25	2530-01-547-6796	6F02	42
5310-01-382-9984	6F03	13	2530-01-547-6812	6F02	50
5310-01-383-0032	6F05	4	2530-01-547-6973	6F02	51
5305-01-383-6136	6F03	19	5340-01-547-7159	6F02	22
5310-01-384-4270	6F06	18	5340-01-547-7245	6F02	5
5310-01-384-4683	6F03	23	5340-01-547-7253	6F01	20
5995-01-386-5153	6F03	33	2530-01-547-8984	6F01	41
5305-01-392-5073	6F03	2	2530-01-547-9006	6F01	18
1005-01-432-9538	6F07	11	5340-01-547-9469	6F02	2
5310-01-436-4437	6F03	9	5340-01-547-9511	6F02	7
5310-01-460-0155	6F09	21	5340-01-547-9756	6F01	35
5935-01-460-5905	6F10	19		6F02	31
5310-01-465-3355	6F01	49	5340-01-548-1157	6F02	12
	6F02	41	2590-01-548-1167	6F01	45
5305-01-473-2327	6F12	6		6F02	44
1240-01-490-0746	6F07	9	5340-01-548-1168	6F02	4
5315-01-497-5034	6F09	22	5340-01-548-1173	6F01	46
1240-01-504-2237	6F07	8		6F02	43
5305-01-506-9145	6F07	2	5340-01-548-1180	6F01	23
5310-01-511-3327	6F06	13	9515-01-548-1442	6F06	23
6150-01-511-9535	6F09	14	2350-01-548-1443	6F07	7
5995-01-518-5931	6F04	2	9515-01-548-1444	6F07	1
5995-01-536-7733	6F04	5	9515-01-548-1445	6F06	11
5340-01-540-8817	6F09	25	9515-01-548-1446	6F06	17
2350-01-544-1699	6F08		5340-01-548-1513	6F01	19
2350-01-544-9824	6F07		5340-01-548-1515	6F01	24
2350-01-544-9827	6F06		5340-01-548-1516	6F01	16
5315-01-545-2936	6F03	22	5340-01-548-1522	6F02	18
1015-01-545-2948	6F06	1	5340-01-548-1528	6F02	17
5805-01-545-3117	6F03		5340-01-548-1530	6F02	10
	6F04		5340-01-548-1534	6F02	21
5310-01-545-3173	6F03	12	5340-01-548-1538	6F01	34
2590-01-545-4451	6F04	4		6F02	32
5330-01-545-4500	6F03	29	5340-01-548-1651	6F01	36
7690-01-545-8536	6F08	2		6F02	30
5325-01-545-8682	6F06	4	9320-01-548-4042	6F02	9
5340-01-545-8696	6F08	10	9320-01-548-4043	6F02	11
5340-01-545-8703	6F06	20	9320-01-548-4044	6F01	15
5340-01-545-8807	6F07	6	9320-01-548-4045	6F02	13
5340-01-545-8837	6F06	22	9320-01-548-4046	6F01	13
5340-01-545-8910	6F06	12	5340-01-548-4395	6F01	32
5340-01-546-0248	6F06	21		6F02	29
5340-01-546-0265	6F06	16	5310-01-549-9702	6F01	26
2510-01-546-1761	6F01			6F02	24
	6F02		5340-01-550-5705	6F01	5
6110-01-546-2029	6F08	5	5340-01-550-5711	6F01	1
6150-01-546-2032	6F08	1	2540-01-550-7022	6F03	4
9340-01-546-2066	6F06	6	2540-01-550-7033	6F03	1
5340-01-546-2086	6F06	24	2590-01-550-7046	6F01	33
5315-01-546-3139	6F06	2		6F02	33
2350-01-546-8797	6F06	8	5340-01-551-0881	6F02	48
5340-01-547-4323	6F01	25	5330-01-551-1657	6F03	25
5340-01-547-4513	6F01	2	5330-01-551-1676	6F03	27
5340-01-547-4592	6F01	10	5340-01-551-1777	6F03	21
	6F02	16	5340-01-551-1791	6F01	37
5340-01-547-5038	6F02	8		6F02	28
5340-01-547-5048	6F01	14	5330-01-551-1798	6F01	9
5340-01-547-6305	6F06	7	5965-01-551-4516	6F03	15
5340-01-547-6321	6F06	5	5365-01-551-5251	6F03	8
2530-01-547-6373	6F02	49	5340-01-551-5315	6F01	21
2530-01-547-6380	6F02	52	2350-01-553-6537	6F12	2
2530-01-547-6511	6F01	38	6150-01-553-6539	6F12	1

CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM
5340-01-553-6540	6F12	7
5340-01-553-6541	6F09	5
2350-01-553-6542	6F09	
5340-01-553-6543	6F09	24
5340-01-553-6544	6F09	30
5340-01-553-6545	6F09	1
5340-01-553-6546	6F09	2
5340-01-553-6547	6F09	28
5340-01-553-6548	6F09	13
5340-01-553-6550	6F09	31
5340-01-553-6552	6F09	20
5325-01-553-6553	6F09	15
5340-01-553-6554	6F09	29
5340-01-553-6555	6F09	7
5340-01-554-6694	6F01	8
2350-01-554-8549	6F12	
5340-01-555-0740	6F03	20
5975-01-555-3333	6F09	27
2510-01-555-8928	6F01	48
2510-01-555-8929	6F02	36
6650-01-555-9348	6F12	35
6150-01-555-9349	6F12	27
5340-01-555-9350	6F12	39
5855-01-555-9351	6F12	9
5340-01-555-9352	6F12	24
5935-01-555-9353	6F12	22
6150-01-555-9354	6F12	28
5935-01-555-9355	6F12	21
5935-01-555-9356	6F12	16
4010-01-556-1618	6F10	21
6150-01-556-1619	6F10	18
2541-01-556-1620	6F10	23
5340-01-556-1621	6F10	25
5945-01-556-1622	6F10	26
6220-01-556-1623	6F10	9
1005-01-556-1624	6F10	15
6150-01-556-9022	6F10	13
6150-01-556-9024	6F12	26
2350-01-557-1426	6F12	10
2350-01-557-4005	6F10	
1005-01-557-4007	6F10	4
2350-01-557-4008	6F12	40
3040-01-557-4009	6F12	14
4010-01-557-6911	6F10	6
5310-01-557-6912	6F10	32
5310-01-558-8772	6F10	33
3040-01-559-8854	6F01	51
	6F02	40
2540-01-560-0768	6F01	28
	6F02	26
2590-01-560-0806	6F01	31
2590-01-560-1979	6F02	34
5340-01-560-2927	6F01	30
	6F02	35
2540-01-560-3233	6F05	
5340-01-560-3721	6F02	37
5340-01-560-3918	6F01	53
4730-01-561-0256	6F03	28
5310-01-562-3909	6F05	2
5340-01-562-3946	6F05	12
5340-01-562-4091	6F05	9
5340-01-562-4098	6F05	23
5340-01-562-5543	6F05	29
5340-01-562-5791	6F05	20
5340-01-562-5805	6F05	25
5340-01-562-7203	6F07	15
6150-01-562-7386	6F07	20
6150-01-562-7387	6F07	21
2350-01-562-7389	6F07	12
6130-01-562-7412	6F07	13
6150-01-562-7413	6F07	17
2350-01-563-4020	6F07	18
5340-01-563-5645	6F05	18
5340-01-563-6544	6F05	5
5855-01-563-6724	6F07	19
5935-01-564-0993	6F07	4
5315-01-564-8474	6F01	44
	6F02	45
6150-01-565-4460	6F07	14
4820-01-565-9199	6F03	26
5340-01-565-9214	6F03	7
5340-01-567-5358	6F07	10
2540-12-375-2093	6F05	27
2590-12-375-2445	6F05	8
2540-12-375-2510	6F05	28
2590-12-375-4302	6F05	14
2540-12-375-6223	6F05	19
3040-12-375-6634	6F05	24
2540-12-376-9601	6F05	6
2540-12-376-9603	6F05	11
2540-12-376-9605	6F05	21
2540-12-376-9606	6F05	13
2540-12-376-9608	6F05	15

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PART NUMBER INDEX

CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
58536	A-A-55487-11	5315-01-497-5034	6F09	22
28158	AE17339	5310-00-011-6124	6F10	31
D1131	AFG073366-07	2540-12-375-6223	6F05	19
D1131	AFG073376-07	2540-12-375-2510	6F05	28
D1131	AFG074013-05	3040-12-375-6634	6F05	24
D1131	AFG075489-16	2590-12-375-4302	6F05	14
D1131	AFG075489-17	2590-12-375-2445	6F05	8
D1131	AFG076056-01	2540-12-376-9601	6F05	6
D1131	AFG076056-02	2540-12-376-9603	6F05	11
D1131	AFG076056-03	2540-12-375-2093	6F05	27
D1131	AFG076056-04	2540-12-376-9605	6F05	21
D1131	AFG076056-05	2540-12-376-9606	6F05	13
D1131	AFG076056-06	2540-12-376-9608	6F05	15
1WCH9	AS13588	4010-01-557-6911	6F10	6
80063	A3205746	5830-01-382-3218	6F03	14
80063	A3206018-29	5995-01-518-5931	6F04	2
80063	A3206249-25	5995-01-536-7733	6F04	5
80063	A3211149-2	5995-01-386-5153	6F03	33
80204	B1821BH025C038N	5305-00-071-2508	6F08	9
80204	B1821BH025C044N	5305-00-071-2507	6F04	7
80204	B1821BH025C063N	5305-00-068-7837	6F04	8
			6F09	23
80204	B1821BH025C075N	5305-00-068-0508	6F05	16
			6F06	25
			6F09	11
			6F12	4
80204	B1821BH025C088N	5305-00-071-2505	6F01	3
			6F02	3
80204	B1821BH025C100N	5305-00-225-3843	6F03	10
80204	B1821BH025C125N	5305-00-068-0509	6F09	26
80204	B1821BH025C250N	5305-00-071-2513	6F05	7
80204	B1821BH038C088N	5305-01-140-9118	6F09	3
80204	B1821BH038C100N	5305-00-068-0510	6F03	6
			6F05	3
			6F09	8
			6F10	7
80204	B1821BH038C113N	5305-00-543-2419	6F09	18
80204	B1821BH038C150N	5305-00-725-2317	6F06	14
			6F07	5
			6F10	24
80204	B1821BH038C175N	5305-00-821-3869	6F06	15
80204	B1821BH038C250N	5305-00-543-2866	6F10	1
80204	B1821BH050C113N	5305-00-732-0511	6F05	22
80204	B1821BH050C225N	5305-00-071-2072	6F06	10

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
80204	B1821BH056C300N	5305-01-255-7403	6F10	35
80204	B1821BH063C300N	5305-00-724-7228	6F10	27
80204	B1821BH075C175N	5305-00-836-8346	6F01	29
			6F02	27
80204	B1821BH075C350N	5305-00-947-4356	6F10	29
80204	B1822BH100R	5310-01-436-4437	6F03	9
1WCH9	CSAM07T	2350-01-557-4005	6F10	
81718	H2525M	5310-00-637-9541	6F10	2
81983	L-7246	5945-01-556-1622	6F10	26
80205	MS15795-817	5310-00-614-3506	6F10	20
80205	MS15795-820	5310-00-614-3505	6F10	28
80205	MS15795-847	5310-00-763-3413	6F03	3
80205	MS16996-9	5305-00-057-4593	6F12	17
96906	MS20392-7R71	5315-01-349-9951	6F09	6
81343	MS20659-128	5940-00-113-9820	6F11	5
96906	MS20659-166	5940-00-113-9821	6F11	8
80205	MS21044C3	5310-00-208-9255	6F03	17
			6F03	31
80205	MS21299-12	5310-01-202-2703	6F10	30
80205	MS21333-100	5340-00-809-1492	6F04	9
80205	MS21333-102	5340-00-984-8540	6F03	32
80205	MS21333-105	5340-00-809-1494	6F04	6
80205	MS21333-111	5340-00-057-3037	6F03	30
96906	MS27142-2	5935-00-462-6603	6F10	10
96906	MS27144-1	5935-00-167-7775	6F10	11
96906	MS27183-13	5310-00-087-7493	6F10	3
96906	MS27488-16-1	5935-00-235-8970	6F11	10
81343	MS29513-137	5331-00-252-6049	6F12	37
81343	MS29513-141	5331-00-527-8555	6F12	38
96906	MS3101F10SL-3P	5935-00-177-2119	6F10	16
96906	MS3106F10SL3S	5935-00-231-3180	6F10	12
96906	MS3108E14S6P	5935-00-815-3203	6F10	17
96906	MS3367-1-0	5975-00-984-6582	6F05	30
96906	MS3456W10SL-4S	5935-00-509-6194	6F10	14
96906	MS3459W14S-7S	5935-01-168-5885	6F11	7
96906	MS3476W14-5P	5935-01-108-4486	6F11	9
80205	MS35307-360	5305-00-576-5417	6F12	11
80205	MS35307-429	5305-00-701-7630	6F12	15
80205	MS35338-135	5310-00-933-8118	6F09	17
			6F12	33
80205	MS35338-138	5310-00-933-8120	6F08	4
			6F12	18
80205	MS35338-141	5310-00-984-7042	6F12	12
80205	MS35338-155	5310-00-883-9385	6F09	10

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
80205	MS35338-44	5310-00-582-5965	6F08	8
80205	MS35338-69	5310-00-011-6123	6F10	34
96906	MS51849-65C	5305-01-383-6136	6F03	19
96906	MS51849-68C	5305-01-392-5073	6F03	2
96906	MS51957-14	5305-00-054-5648	6F09	16
			6F12	34
96906	MS51957-32	5305-00-054-6656	6F09	9
96906	MS51957-49	5305-00-054-6674	6F12	29
96906	MS51957-63	5305-00-050-9229	6F08	3
80205	MS51959-45	5305-00-764-0068	6F12	25
81349	M83413-A010CC	6150-00-329-4497	6F08	6
81349	M83723/78W1404Y	5935-01-460-5905	6F10	19
80205	NAS1149C0332R	5310-01-352-2752	6F08	7
80205	NAS1149C0663R	5310-00-167-0804	6F12	13
80205	NAS1291C08M	5310-00-845-5030	6F12	36
80205	NAS1352N04-6	5305-01-132-5611	6F12	23
80205	NAS620C10	5310-00-989-0640	6F12	19
80205	NAS620C4	5310-00-057-0573	6F12	32
80205	NAS620C8	5310-00-069-5291	6F12	30
06090	NTFR-1/4-0	1015-01-205-0371	BULK	1
			6F11	4
80063	SM-D-889337	5965-00-043-3463	6F03	11
06383	TWR-C0	5935-01-564-0993	6F07	4
1WCH9	XV-A1PWS	6220-01-556-1623	6F10	9
1WCH9	02002	1005-01-557-4007	6F10	4
1WCH9	02024I	6150-01-556-1619	6F10	18
1WCH9	02024X	6150-01-556-9022	6F10	13
1WCH9	02025	5340-01-556-1621	6F10	25
1WCH9	02027	2541-01-556-1620	6F10	23
1WCH9	02029	4010-01-556-1618	6F10	21
1WCH9	02034	1005-01-556-1624	6F10	15
D1131	069279-05/01		6F05	1
19207	12273242-310	5340-01-084-0008	6F11	3
19207	12284166	5340-01-083-5690	6F04	1
19207	12284182-1	2590-01-083-5538	6F04	3
19207	12287034-10	5315-01-139-9785	6F01	42
			6F02	47
19207	12287080	5330-01-198-8883	6F02	19
19207	12287083	5330-01-199-2403	6F01	7
19207	12287164	5305-01-071-9075	6F01	17
19207	12288307-5	2590-01-150-1020	6F01	12
			6F02	14
19207	12288307-6	2590-01-150-1021	6F01	11
			6F02	15

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
19207	12288362-2	2590-01-102-4525	6F01	6
19207	12288373-2	2590-01-102-4521	6F02	20
19207	12311431	5315-01-136-7646	6F01	43
			6F02	46
19207	12311982	5340-01-142-8241	6F01	22
			6F02	6
19207	12344202	5342-01-205-0451	6F07	16
19207	12347630-3	5360-01-346-1218	6F11	2
19207	12387120-4	5935-01-351-2333	6F11	1
19207	12387121-4	5935-01-351-2334	6F11	6
19207	12387151-4	5310-01-562-3909	6F05	2
19207	12387272-43	5310-01-380-1671	6F12	5
19207	12387272-46	5310-01-378-7789	6F03	5
19207	12387279-13	5310-01-511-3327	6F06	13
19207	12387279-18	5310-01-380-1657	6F01	52
			6F02	38
			6F06	9
19207	12387279-20	5310-01-465-3355	6F01	49
			6F02	41
19207	12387279-8	5310-01-380-1584	6F07	3
19207	12387305-3	5310-01-378-7761	6F01	4
			6F02	1
19207	12387305-9	5310-01-378-8180	6F09	32
19207	12387310-281	5315-01-545-2936	6F03	22
19207	12387327-1	5310-01-379-0804	6F09	12
			6F12	3
19207	12387327-16	5310-01-383-0032	6F05	4
19207	12387327-2	5310-01-382-9984	6F03	13
19207	12387327-22	5310-01-381-9948	6F09	4
19207	12387327-27	5310-01-384-4683	6F03	23
19207	12387327-3	5310-01-373-2547	6F09	19
19207	12387327-34	5310-01-379-9943	6F05	17
19207	12387327-43	5310-01-460-0155	6F09	21
19207	12387327-5	5310-01-379-9572	6F06	3
19207	12387327-8	5310-01-382-9030	6F01	27
			6F02	25
19207	12387349-31	5310-01-378-7587	6F05	10
19207	12387349-33	5310-01-545-3173	6F03	12
19207	12387349-35	5310-01-378-8721	6F06	19
19207	12387349-39	5310-01-384-4270	6F06	18
19207	12387350-4C45	5315-00-080-1934	6F03	24
19207	12387351-26	5305-01-506-9145	6F07	2
19207	12387351-27	5305-01-473-2327	6F12	6
19207	12473115	6150-01-511-9535	6F09	14

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
19207	12473135	5340-01-540-8817	6F09	25
19207	12473759	6110-01-546-2029	6F08	5
19207	12473768	5340-01-545-8696	6F08	10
19207	12489473	5340-01-554-6694	6F01	8
19207	12489476	5340-01-547-5038	6F02	8
19207	12489477	5340-01-548-1516	6F01	16
19207	12489478	5340-01-548-1530	6F02	10
19207	12489482	5340-01-547-7253	6F01	20
19207	12489483	9320-01-548-4042	6F02	9
19207	12489484	5340-01-547-9469	6F02	2
19207	12489485	5340-01-547-4323	6F01	25
19207	12489486	5340-01-548-1168	6F02	4
19207	12489487	5340-01-547-9511	6F02	7
19207	12489488	5340-01-548-1180	6F01	23
19207	12489489	5340-01-547-7245	6F02	5
19207	12489505	5340-01-548-1513	6F01	19
19207	12489506	5340-01-551-5315	6F01	21
19207	12489509	5340-01-548-1157	6F02	12
19207	12489515	5340-01-548-1515	6F01	24
19207	12489516	5340-01-547-5048	6F01	14
19207	12489628	2590-01-545-4451	6F04	4
19207	12489641	5330-01-545-4500	6F03	29
19207	12489692	5340-01-546-0265	6F06	16
19207	12489693	9515-01-548-1445	6F06	11
19207	12489695	5340-01-545-8910	6F06	12
19207	12489697	9515-01-548-1446	6F06	17
19207	12489700	1015-01-545-2948	6F06	1
19207	12489701	2350-01-546-8797	6F06	8
19207	12489705	9340-01-546-2066	6F06	6
19207	12489709	9515-01-548-1442	6F06	23
19207	12489713	5340-01-545-8837	6F06	22
19207	12489715	5340-01-546-2086	6F06	24
19207	12489717	5340-01-547-6305	6F06	7
19207	12489725	5340-01-547-6321	6F06	5
19207	12489728	5340-01-546-0248	6F06	21
19207	12489740	2530-01-547-6796	6F02	42
19207	12489741	2530-01-547-6373	6F02	49
19207	12489742	2530-01-547-6812	6F02	50
19207	12489743	2530-01-547-6973	6F02	51
19207	12489744	2530-01-547-6380	6F02	52
19207	12489746	2530-01-547-6779	6F01	47
19207	12489747	2530-01-547-8984	6F01	41
19207	12489748	2530-01-547-6519	6F01	40
19207	12489749	2530-01-547-6515	6F01	39

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
19207	12489750	2530-01-547-6511	6F01	38
19207	12489755	5340-01-545-8703	6F06	20
19207	12489757	6150-01-546-2032	6F08	1
19207	12489775	7690-01-545-8536	6F08	2
19207	12489786	2540-01-550-7022	6F03	4
19207	12489788	2590-01-550-7046	6F01	33
			6F02	33
19207	12489789	5340-01-548-1538	6F01	34
			6F02	32
19207	12489790	5340-01-547-9756	6F01	35
			6F02	31
19207	12489791	5340-01-548-1651	6F01	36
			6F02	30
19207	12489793	5365-01-551-5251	6F03	8
19207	12489800	2530-01-547-9006	6F01	18
19207	12489808	9515-01-548-1444	6F07	1
19207	12489824	5340-01-545-8807	6F07	6
19207	12489869		6F02	23
19207	12489870	5340-01-547-4513	6F01	2
19207	12489871	5340-01-547-7159	6F02	22
19207	12489872	5340-01-550-5705	6F01	5
19207	12489873	5340-01-550-5711	6F01	1
19207	12489874	5340-01-548-1534	6F02	21
19207	12489875	5340-01-548-1528	6F02	17
19207	12489876	5340-01-548-1522	6F02	18
19207	12489888	9320-01-548-4043	6F02	11
19207	12489889	9320-01-548-4045	6F02	13
19207	12489891	9320-01-548-4044	6F01	15
19207	12489892	9320-01-548-4046	6F01	13
19207	12489893	5340-01-547-4592	6F01	10
			6F02	16
19207	12489901	6130-01-562-7412	6F07	13
19207	12489902	2350-01-548-1443	6F07	7
19207	12489904	6150-01-565-4460	6F07	14
19207	12489905	6150-01-562-7413	6F07	17
19207	12489906	6150-01-562-7386	6F07	20
19207	12489907	6150-01-562-7387	6F07	21
19207	12489918	2350-01-562-7389	6F07	12
19207	12489937	5340-01-548-1173	6F01	46
			6F02	43
19207	12489938	2590-01-548-1167	6F01	45
			6F02	44
19207	12489944	5340-01-551-0881	6F02	48
19207	12490040	5330-01-551-1798	6F01	9

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
19207	12490043	5340-01-551-1791	6F01	37
			6F02	28
19207	12490065	5965-01-551-4516	6F03	15
19207	12490065-1	5330-01-551-1657	6F03	25
19207	12490066	5330-01-551-1676	6F03	27
19207	12490067		6F03	16
19207	12490068	5340-01-551-1777	6F03	21
19207	12490086	5340-01-553-6540	6F12	7
19207	12490128	2350-01-553-6537	6F12	2
19207	12490129	6150-01-553-6539	6F12	1
19207	12490135	2540-01-550-7033	6F03	1
19207	12490179	2510-01-555-8929	6F02	36
19207	12490180	2510-01-555-8928	6F01	48
19207	12490181	5340-01-560-2927	6F01	30
			6F02	35
19207	12490189	2590-01-560-1979	6F02	34
19207	12490190	2590-01-560-0806	6F01	31
19207	12490191	2540-01-560-0768	6F01	28
			6F02	26
19207	12490211	5340-01-562-5805	6F05	25
19207	12490214	5340-01-562-4098	6F05	23
19207	12490240	5340-01-562-5791	6F05	20
19207	12490285	5340-01-560-3721	6F02	37
19207	12490286	5340-01-560-3918	6F01	53
19207	12490291	3040-01-559-8854	6F01	51
			6F02	40
19207	12490307	5855-01-563-6724	6F07	19
19207	12490308	2350-01-563-4020	6F07	18
19207	12490411	5340-01-553-6541	6F09	5
19207	12490418	5975-01-555-3333	6F09	27
19207	12490419	5340-01-553-6544	6F09	30
19207	12490420	5340-01-553-6546	6F09	2
19207	12490421	5340-01-553-6548	6F09	13
19207	12490424	5315-01-564-8474	6F01	44
			6F02	45
19207	12490427	5340-01-553-6550	6F09	31
19207	12490431	5325-01-553-6553	6F09	15
19207	12490436	5340-01-553-6552	6F09	20
19207	12490437	5340-01-553-6554	6F09	29
19207	12490445	5340-01-553-6555	6F09	7
19207	12490448	4820-01-565-9199	6F03	26
19207	12490449	5340-01-553-6543	6F09	24
19207	12490457	5340-01-553-6545	6F09	1
19207	12490458	5340-01-553-6547	6F09	28

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
19207	12490534	5340-01-565-9214	6F03	7
19207	12490540	5340-01-562-5543	6F05	29
19207	12490541	5340-01-562-3946	6F05	12
19207	12490546	5340-01-563-5645	6F05	18
19207	12490555	5340-01-563-6544	6F05	5
19207	12490561	5340-01-562-4091	6F05	9
19200	12977102	1005-01-432-9538	6F07	11
19207	13009234	5340-01-548-4395	6F01	32
			6F02	29
06848	133501	5310-00-194-0631	6F03	18
96214	3252602-1	1240-01-490-0746	6F07	9
96214	3252603-1	1240-01-504-2237	6F07	8
1WCH9	43F100HCS8Z		6F10	22
96214	4987314-1	6650-01-555-9348	6F12	35
96214	4987321-2	6150-01-556-9024	6F12	26
96214	4987322-1	6150-01-555-9349	6F12	27
96214	4987323-1	6150-01-555-9354	6F12	28
96214	4991014-3		6F12	8
96214	4991015-3	2350-01-557-1426	6F12	10
96214	4991016-1	2350-01-557-4008	6F12	40
96214	4991018-1	5855-01-555-9351	6F12	9
96214	4991020-1	3040-01-557-4009	6F12	14
96214	4991039-1	5340-01-555-9352	6F12	24
96214	4991043-1		6F12	20
96214	4991062-1	5340-01-555-9350	6F12	39
96214	4991070-1	5935-01-555-9356	6F12	16
96214	4991071-1	5935-01-555-9355	6F12	21
0KVE6	5011T241	4730-01-561-0256	6F03	28
94222	57-40-707-80	5340-01-555-0740	6F03	20
19207	57K4672	5805-01-545-3117	6F03	
			6F04	
19207	57K4685	2510-01-546-1761	6F01	
			6F02	
19207	57K4686	2350-01-544-9827	6F06	
19207	57K4689	2350-01-544-9824	6F07	
19207	57K4698	2350-01-544-1699	6F08	
19207	57K4989	2540-01-560-3233	6F05	
19207	57K4993	2350-01-554-8549	6F12	
19207	57K5025	2350-01-553-6542	6F09	
1WCH9	62CNNE8Z	5310-01-558-8772	6F10	33
39428	6605K51	5340-01-562-7203	6F07	15
06324	667-218-M-F906-6	5935-01-555-9353	6F12	22
06234	667-218-Z1-T606-4	5340-01-567-5358	6F07	10

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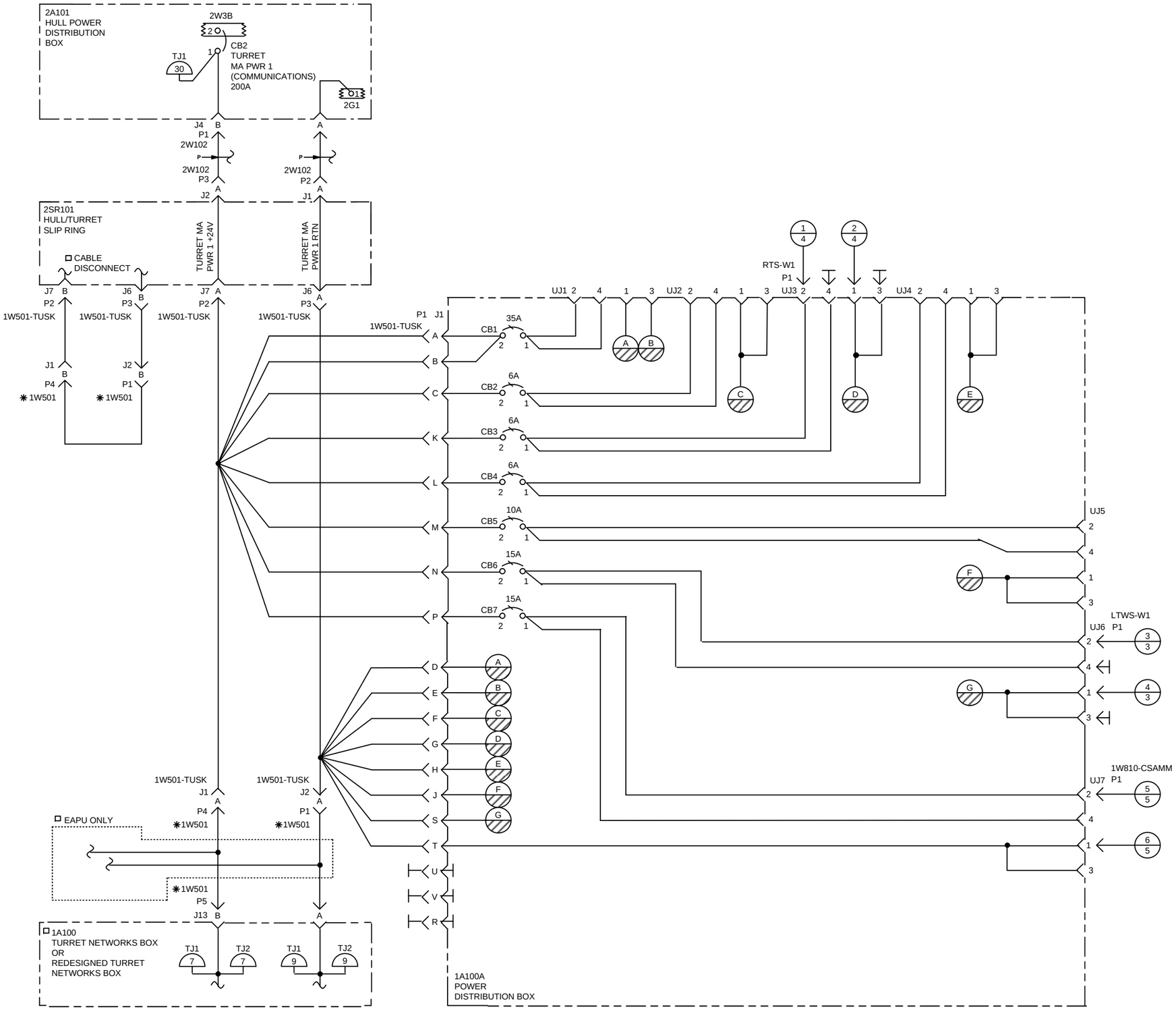
CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
19207	7070291	5315-00-707-0291	6F10	8
19207	7070292	5315-00-707-0292	6F10	5
1WCH9	75CNNE8Z	5310-01-557-6912	6F10	32
07070	90636A077	5310-01-549-9702	6F01	26
			6F02	24
07BY4	91264A619		6F01	50
			6F02	39
19200	9377106	6850-01-266-9756	6F12	31
07BY4	94380A640	5315-01-546-3139	6F06	2
07BY4	95390A319	5325-01-545-8682	6F06	4
0ZYK8	97006	5110-00-524-6924	6F05	26



✳ 1W100-9, WITHOUT EAPU

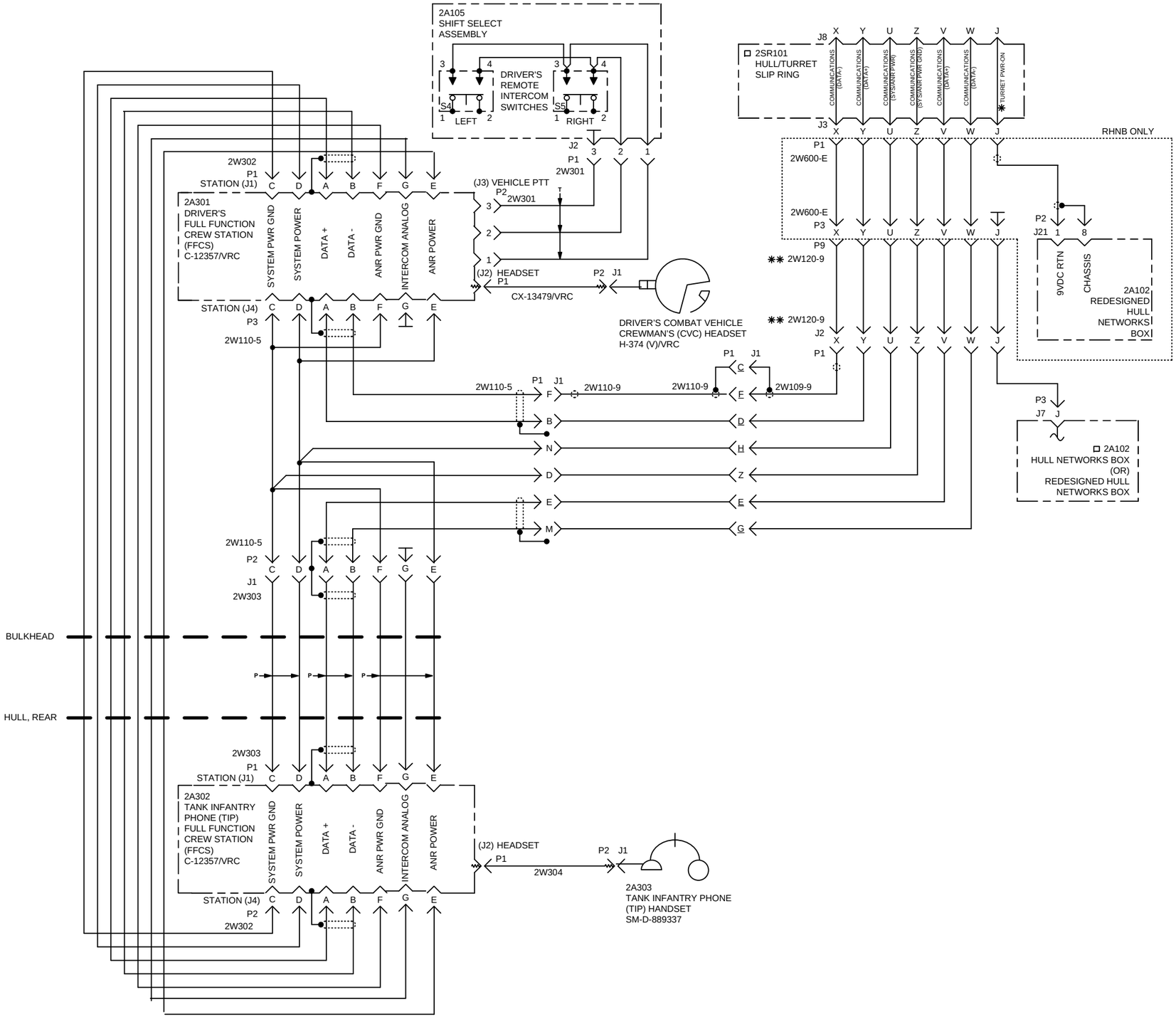
□ REFER TO ELEMENTARY WIRING DIAGRAM FO-1 TM 9-2350-264-24-1 AND TM 9-2350-264-24-2

(FOR REFERENCE ONLY)
NOTE
DRAWINGS ARE FUNCTIONAL SYSTEM SCHEMATICS AND ARE NOT TO BE USED AS POINT TO POINT WIRING DIAGRAMS. ALL CIRCUITRY RELATING TO ANY COMPONENT MAY NOT BE SHOWN ON ONE SHEET.

CABLE DISCONNECT
UTILITY OUTLET(S)
POWER DISTRIBUTION BOX (PDB)

FO-1 TUSK Elementary Wiring Diagram (Sheet 1 of 5)

Change 1 FP-1/(FP-2 blank)



✳ RHNB/UTCP SLIP RING
FUNCTION: 9VDC RTN

✳✳ ON NON-DRIVER'S HATCH INTERLOCK VEHICLES, 2W109-9/P1 CONNECTS DIRECTLY TO HULL/TURRET SLIP RING J3.

□ REFER TO ELEMENTARY WIRING DIAGRAM FO-1 TM 9-2350-264-24-1 AND TM 9-2350-264-24-2

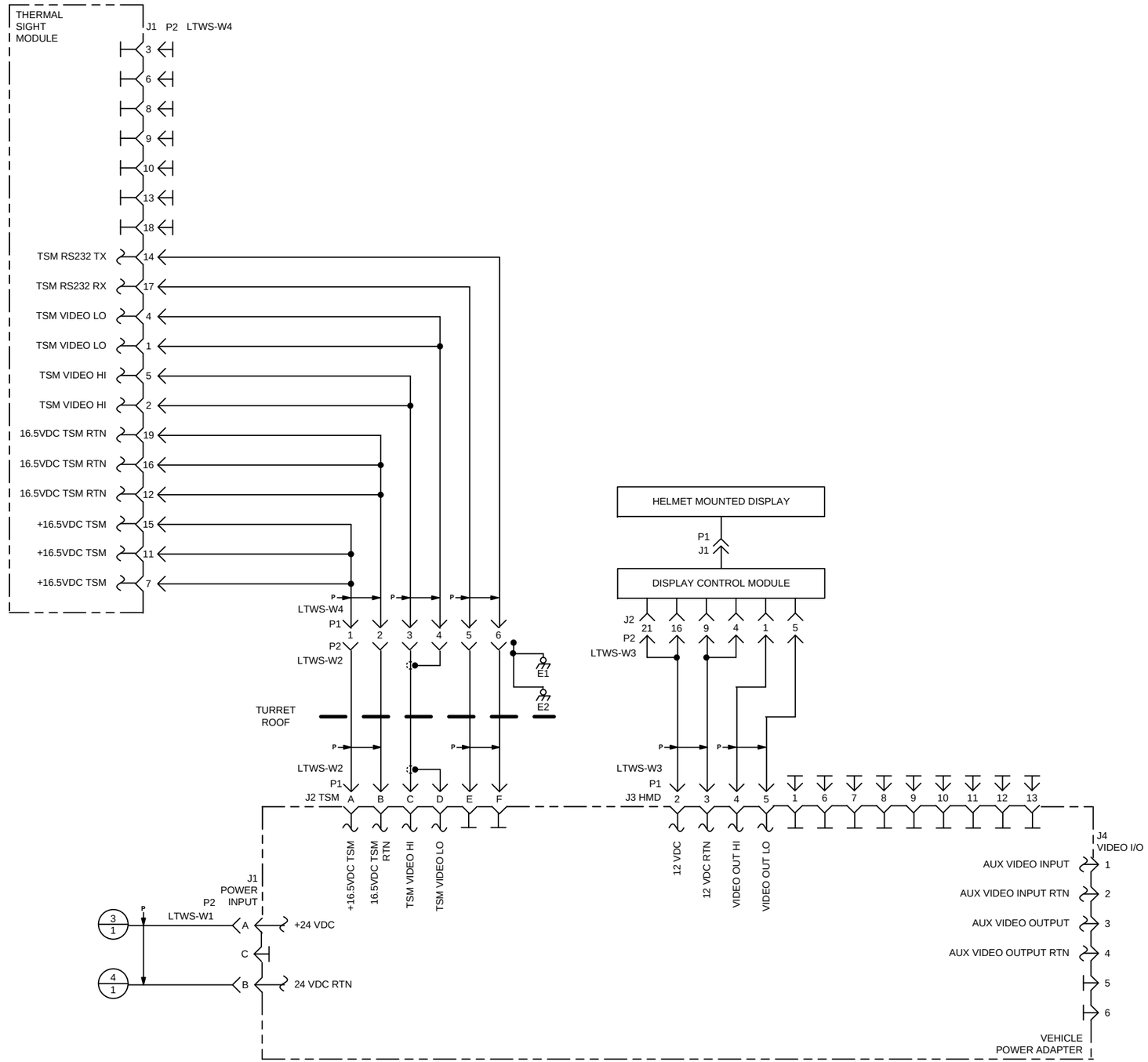
(FOR REFERENCE ONLY)

NOTE

DRAWINGS ARE FUNCTIONAL SYSTEM SCHEMATICS AND ARE NOT TO BE USED AS POINT TO POINT WIRING DIAGRAMS. ALL CIRCUITRY RELATING TO ANY COMPONENT MAY NOT BE SHOWN ON ONE SHEET.

COMMUNICATIONS
TANK INFANTRY PHONE (TIP)

FO-1 TUSK Elementary Wiring Diagram (Sheet 2 of 5)



(FOR REFERENCE ONLY)

NOTE

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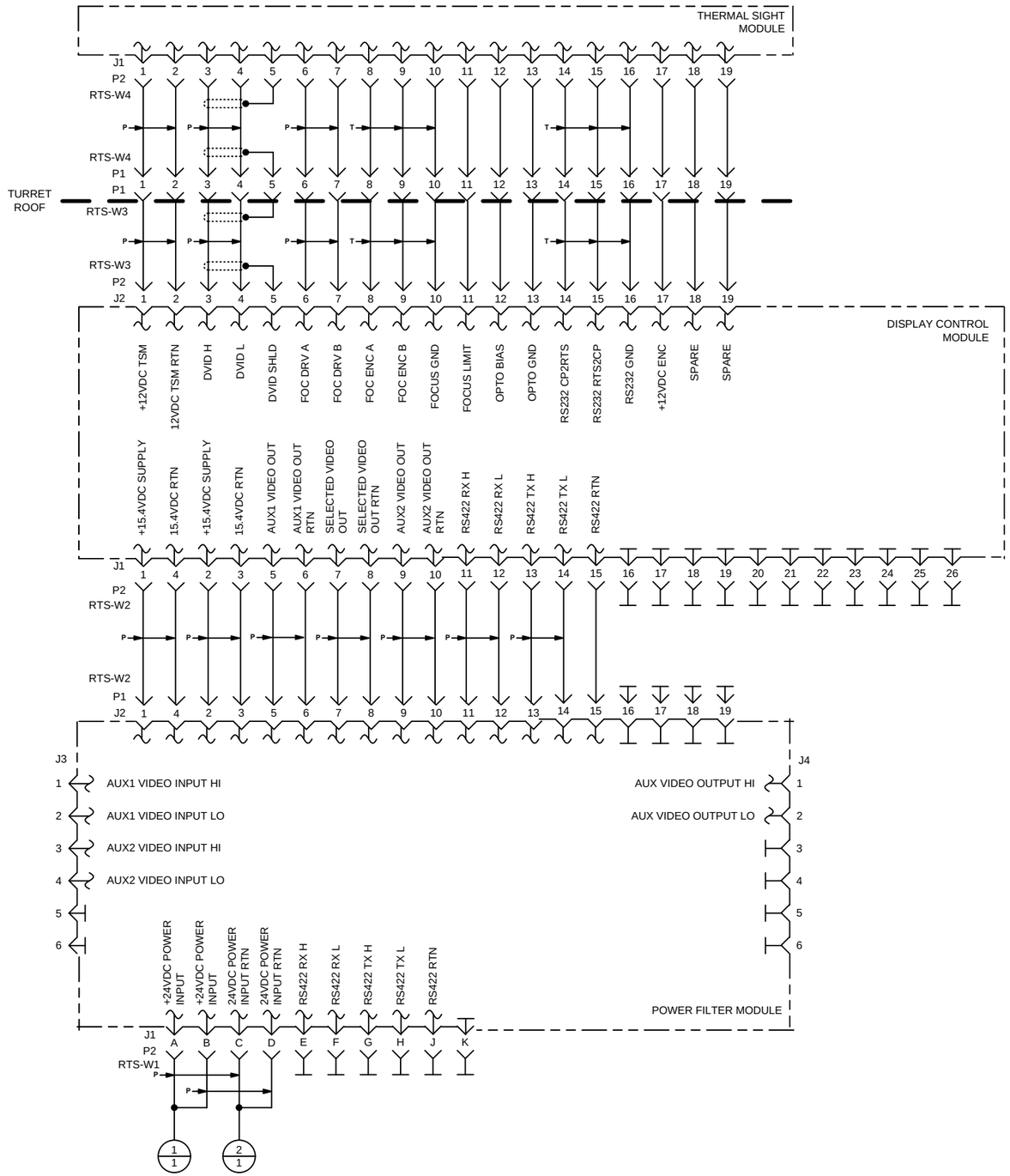
LOADER'S THERMAL WEAPON SIGHT (LTWS)

VEHICLE POWER ADAPTER

FO-1 TUSK Elementary Wiring Diagram (Sheet 3 of 5)

Change 1 FP-5/(FP-6 blank)



(FOR REFERENCE ONLY)

NOTE

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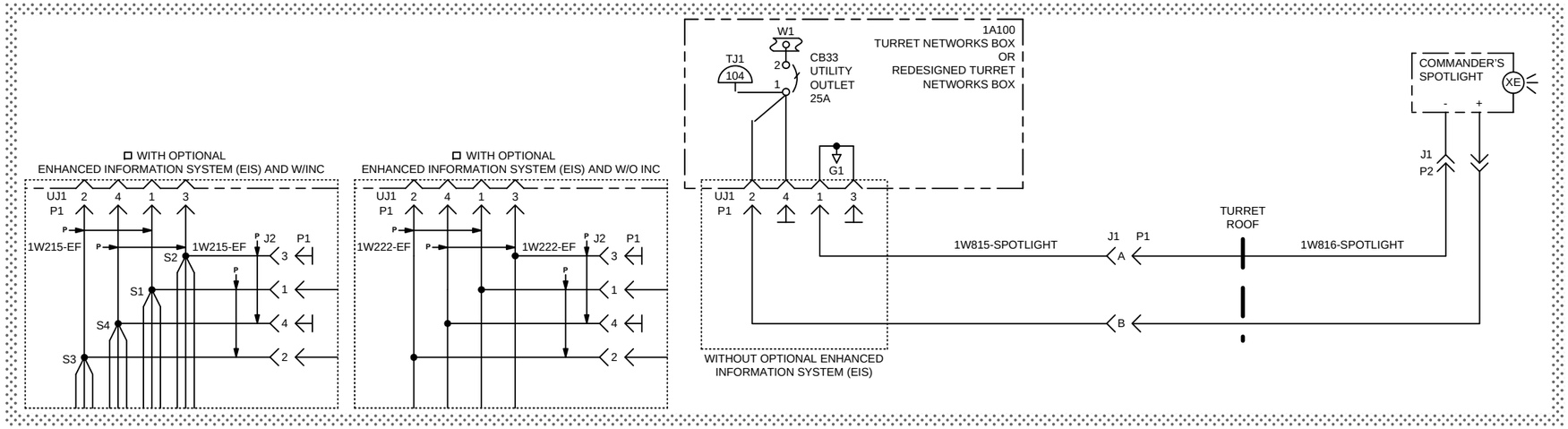
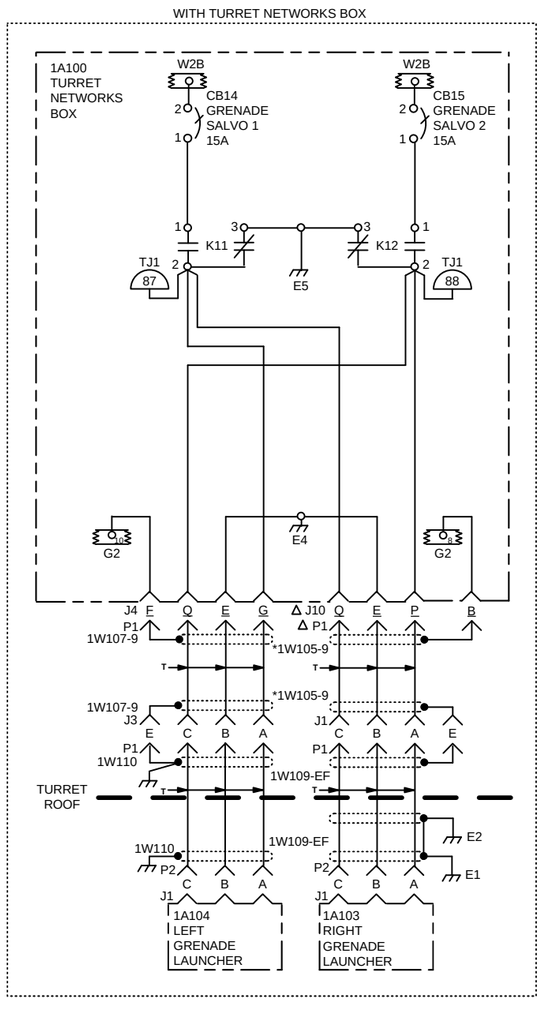
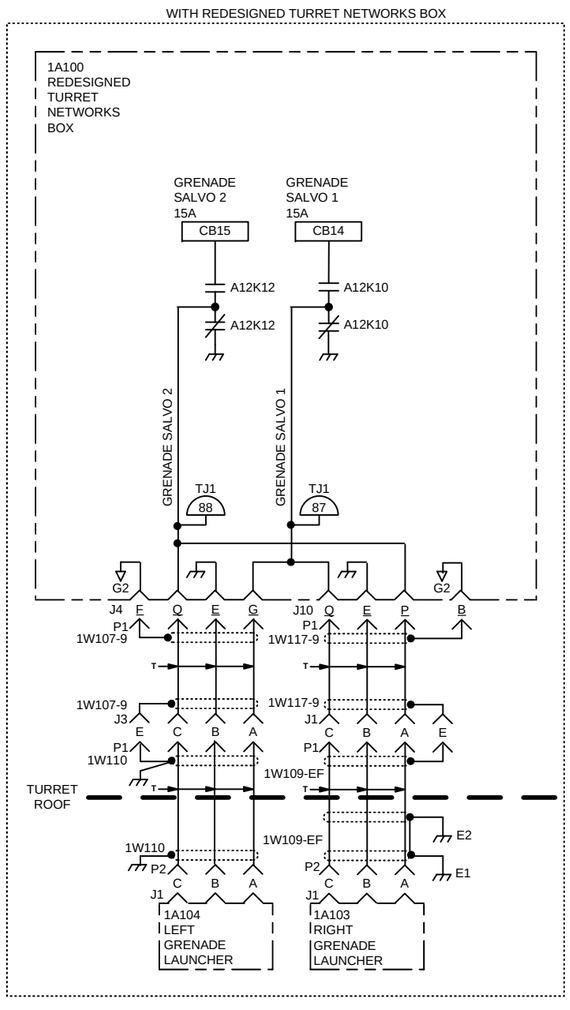
REMOTE THERMAL SIGHT (RTS)

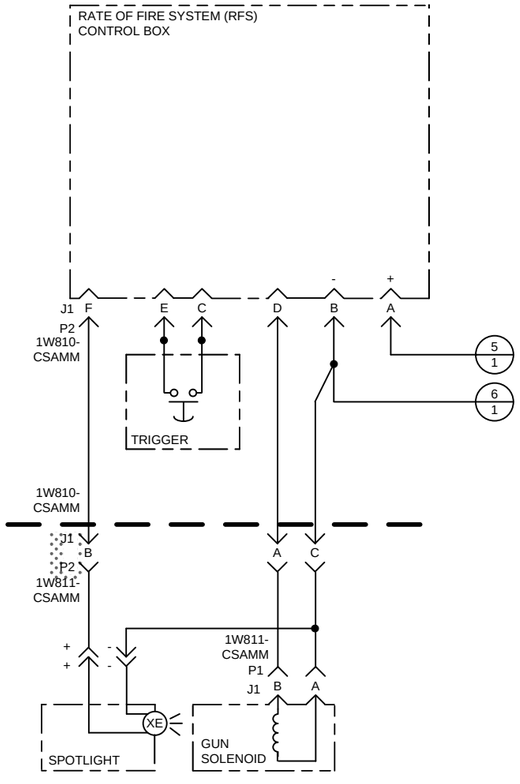
FO-1 TUSK Elementary Wiring Diagram (Sheet 4 of 5)

Change 1 FP-7/(FP-8 blank)









*1W117-9 FOR PLRS/EPLRS

Δ IF EQUIPPED WITH DCA, 1W132-E CONNECTS BETWEEN TNB J10 AND 1W105-9 P1 OR 1W117-9 P1. SEE TM 9-2350-264-24-2.

□ REFER TO ELEMENTARY WIRING DIAGRAM FO-1 TM 9-2350-264-24-2

(FOR REFERENCE ONLY)
NOTE
DRAWINGS ARE FUNCTIONAL SYSTEM SCHEMATICS AND ARE NOT TO BE USED AS POINT TO POINT WIRING DIAGRAMS. ALL CIRCUITRY RELATING TO ANY COMPONENT MAY NOT BE SHOWN ON ONE SHEET.

COMMANDER'S SPOTLIGHT COUNTER SNIPER/ANTI-MATERIEL MOUNT (CSAMM)

FO-1 TUSK Elementary Wiring Diagram (Sheet 5 of 5)

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is ODISC4.	Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE Date you filled out this form.
TO: *(Forward to proponent of publication or form) (Include ZIP Code)* U.S. Army TACOM Life Cycle Management Command, ATTN: AMSTA-LCL-MPP/TECH PUBS, 1 Rock Island Arsenal, Rock Island, IL 61299-7630	FROM: *(Activity and location) (Include ZIP Code)* Your mailing address	

PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TB 9-2350-264-12&P-1	31 August 2007	M1A1 TUSK OPERATOR, UNIT MAINTENANCE AND TROUBLESHOOTING, RPSTL

ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON (Provide exact wording of recommended changes, if possible).
						

**Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
Your Name		Your Signature

DA FORM 2028, FEB 74 REPLACES DA FORM 2028, 1 DEC 68, WHICH WILL BE USED. USAPPC V3.00

TO: (Forward direct to addressee listed in publication)	FROM: (Activity and location) (Include ZIP Code)	DATE
U.S. Army TACOM Life Cycle Management Command, ATTN: AMSTA-LCL-MPP/TECH PUBS, 1 Rock Island Arsenal, Rock Island, IL 61299-7630	Your address	Date you filled out this form

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER	DATE	TITLE
TB 9-2350-264-12&P-1	31 August 2007	M1A1 TUSK TB

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

SAMPLE

PART III – REMARKS **(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)**

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
Your name		Your signature

USAPPC V3.00

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is ODISC4.	Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE
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ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON (Provide exact wording of recommended changes, if possible).

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USAPPC V3.00

By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.
General, United States Army
Chief of Staff

Official:

JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army
0723308

Distribution:

To be distributed in accordance with the initial distribution number (IDN) 344885 requirements for TB 9-2350-264-12&P-1.

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

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

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

CUBIC MEASURE

1 Cu Centimeter = 1000 Cu Millimeters = 0.06 Cu Inches
1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

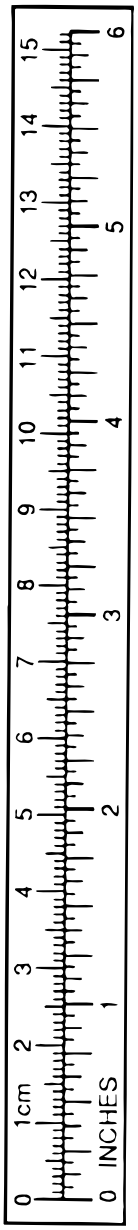
TEMPERATURE

5/9 (ºF - 32) = ºC
212º Fahrenheit is equivalent to 100º Celsius
90º Fahrenheit is equivalent to 32.2º Celsius
32º Fahrenheit is equivalent to 0º Celsius
9/5 Cº + 32) = Fº

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621



PIN: 084241-000