

TRUCK, SURVEILLANCE, LIGHTWEIGHT, W/WINCH, W/SIDE STOWAGE, W/REAR SEAT, MC2 – LAND ROVER 110 4X4

LIGHT GRADE REPAIR

This instruction is authorised for use by command of the Chief of Army. It provides direction, mandatory controls and procedures for the operation, maintenance and support of equipment. Personnel are to carry out any action required by this instruction in accordance with EMEI General A 001.

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GENERAL

Introduction

1. This EMEI details all specific Light Grade Repair procedures for the Truck, Surveillance, Lightweight, W/Winch, W/Side Stowage, W/Rear Seat, MC2 – Land Rover 110 4 × 4. For all other repairs refer to the relevant EMEI for the base variant vehicle.
2. Discard all used gaskets, seals, cotter pins, tab washers, lock pins, key washers and lock washers.
3. Use only those fuels and lubricants specified in the Servicing Instruction, EMEI Vehicle G 109, the User Handbook and this EMEI when replenishing fuel or lubricants.
4. Any fastenings or fittings being tightened to prescribed torques are to have dry, clean threads unless otherwise specified. When specified, thread sealants are to be applied to dry, clean, oil free threads.

Associated Publications

5. Reference may be necessary to the latest issue of the following documents:
 - a. Block Scale 2406/31 – Special Tools for RAEME- B Vehicles – Truck, Utility and Truck, Light, MC2 (Land Rover Model 110);
 - b. Complete Equipment Schedules (CES):
 - (1) SCES TBA; and
 - (2) Maintenance Kit SCES 12142;
 - c. [Defence Road Transport Instructions \(DRTI\)](#);
 - d. [Defence Safety Manual \(SAFETYMAN\)](#);
 - e. [EMEI Vehicle A 291-5](#) – General Service B Vehicle Tyre Guide – Operating Instructions;
 - f. [EMEI Vehicle A 548-1](#) – Vehicle Seat Belts – Inspection for Usability;
 - g. [EMEI Vehicle G 090](#) – Truck, Surveillance, Lightweight, W/Winch, W/Side Stowage, W/Rear Seat, MC2, Land Rover 110 4x4 – Data Summary;
 - h. [EMEI Vehicle G 092](#) – Truck, Surveillance, Lightweight, W/Winch, W/Side Stowage, W/Rear Seat, MC2, Land Rover 110 4x4 – Technical Description;
 - i. [EMEI Vehicle G 098-1](#) – Truck, Surveillance, Lightweight, W/Winch, W/Side Stowage, W/Rear Seat, MC2, Land Rover 110 4x4 – Inspection for Useability;
 - j. [EMEI Vehicle G 103](#) – Truck, Utility, Lightweight, MC2, Land Rover 110 and Truck, Utility, Lightweight, W/Winch, MC2, Land Rover 110 – Light Grade Repair;
 - k. [EMEI Vehicle G 104-1](#) – Truck, Utility, Lightweight, MC2, Land Rover 110 and Truck, Utility, Lightweight, W/Winch, MC2, Land Rover 110 – Medium Grade Repair;
 - l. [EMEI Vehicle G 104-2](#) Truck, Utility, Lightweight, MC2, Land Rover 110 and Truck, Utility, Lightweight, W/Winch, MC2, Land Rover 110 – Heavy Grade Repair;
 - m. [EMEI Vehicle G 109](#) – Truck, Utility, Lightweight, MC2, Land Rover 110 4X4, All Types – Servicing Instruction;
 - n. [EMEI Workshop D 701](#) – Repair Policy for Equipment Painted in Polyurethane Paint;
 - o. [EMEI Workshop E 404](#) – Hazardous Substances – Chemical (HAZCHEM);
 - p. [EMEI Workshop E 410](#) – Occupational Health and Safety – Asbestos – General Instruction;
 - q. GM 120 – Record Book for Service Equipment – Army;
 - r. Material Safety Data Sheets (MSDS);
 - s. Repair Parts Scale (RPS) 02188;
 - t. RPS 02290; and

- u. Current version of the Technical Regulation of Army Materiel Manual (TRAMM) (available from DTR-A website <http://intranet.defence.gov.au/armyweb/Sites/DTRA>).

Safety Precautions

WARNING

Precautions should be taken prior to carrying out repairs which include painting, sanding, scraping or welding. Refer to EMEI Workshop D 701 – Repair Policy for Equipment Painted in Polyurethane Paint.

- 6. This vehicle is painted in polyurethane paint.

WARNING

All industrial safety, work practices and equipment operating and maintenance instructions pertaining to this EMEI are to be adhered to.

- 7. Protect the vehicle from dust and inclement weather when performing any of the tasks contained in this EMEI. If practical, perform these tasks in a sheltered or enclosed area.

CAUTION

Do not use adhesive tape to seal fuel or oil openings. The adhesive on most tapes is soluble in fuel or oil and can cause contamination. Remove temporary covers before assembling.

- 8. Prevent dirt and foreign objects from entering any component. Place clean temporary covers on all exposed openings. All open hoses, tubes and lines are to be protected with plastic or metal caps or plugs.

CAUTION

Isolate the vehicle batteries to prevent short circuits and overheating of electrical equipment before removing any electrical system components.

- 9. When disconnecting electrical connectors, hoses and fittings, remove clamps as required, to gain slack and avoid damage to connectors and fittings.

WARNING

The handling, storage, use and disposal of chemical substances, fuels and lubricants are to be in accordance with Safetyman, MSDS and EMEI Workshop E 404 – Chemical (HAZCHEM).

- 10. Discard all contaminated fuel and lubricants drained from the vehicle in accordance with current instructions.

Authorised Personnel

- 11. Repairs are to be carried out by the following technical tradespersons:
 - a. Vehicle Mechanic ECN 229-2;
 - b. Technician Electrical ECN 418-2;
 - c. Metalsmith ECN 235-2; or
 - d. civil equivalents qualified in accordance with the requirements of the TRAMM.

Maintenance Supply Item (MSI) Identification

12. Table 1 lists the location of identification numbers on the MSI.

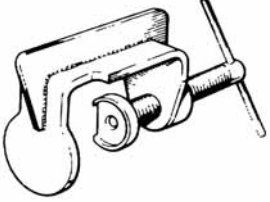
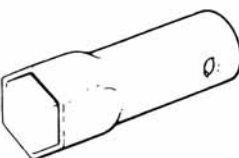
Table 1 Location of Identification Numbers

Serial	Identification Number	Location
1	Chassis number	Right-hand side of the chassis, forward of the spring mounting turret
2	Chassis nameplate	Left-hand seat box, in the cab
3	Engine number	Left-hand side of the engine block
4	Injection pump identification	Side of the pump
5	Transmission and transfer case	Rear of the transfer case
6	Torque limiter	On the rear end of the drive plate
7	Front axle number	Adjacent to the axle breather
8	Rear axle number	Adjacent to the axle breather
9	Rollover protection	Front, lower centre of the front bar

Special Tools and Gauges

13. Table 2 lists the special tools, gauges and apparatus, required as indicated, to perform the Light Grade Repair tasks.

Table 2 Special Tools

Item	Part No	NSN	Item Name	Use	Illustration
1	LRT-70-500	5120-99-820-6918	Tool. Disc brake piston	Para 19, Para 21	
2	EYA3953	5120-66-158-0612	Wrench, socket, hub nut tool, 52X50 AF/Metric hex	Para 23	

ENGINE

Air Compressor

14. **Removal.** Remove the air compressor (Figure 1) as follows:
- a. Disconnect both batteries on the passenger side of the vehicle.
 - b. Loosen the hose clamps and remove the air hoses from the compressor inlet and outlet ports. Seal the air lines and ports.
 - c. Disconnect the two wires from the pressure switch on the compressor.
 - d. Disconnect the power supply to the compressor at the T plug.
 - e. Loosen the two cap-screws used to clamp the compressor mount and remove compressor.

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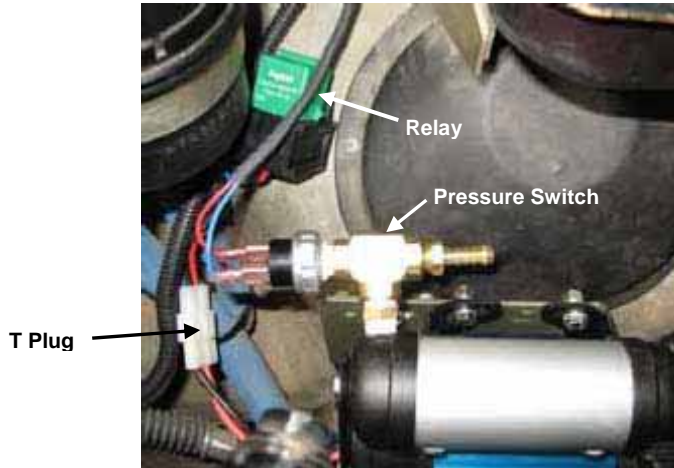


Figure 1 Compressor Wiring

- 15. Installation.** Install the air compressor as follows:
- a. Position the compressor clamp onto the mounting bracket and tighten the two cap-screws.
 - b. Reconnect the power supply to the compressor at the T plug.

NOTE

The pressure switch wiring can be connected either way as they are not polarity conscious.

- c. Connect the two wires to the pressure switch on the compressor.
 - d. Replace the inlet and outlet air hoses and tighten the hose clamps.
 - e. Reconnect both batteries on the passenger side of the vehicle.
- 16. System Test.** Test the compressor system as follows:
- a. Turn on the compressor switch. The compressor should turn off within 10 seconds when it reaches the pressure switch limits.
 - b. Ensure that there are no leaks in the system.
 - c. Turn off the compressor switch.
- 17. Fault Finding.** Table 3 is a fault finding table for the air compressor.

Table 3 Air Compressor Fault Finding

Serial	Symptom	Probable Cause	Action
1	Compressor will not run	Blown fuse Burnt out relay Faulty compressor Wiring fault Main switch faulty System pressurised (pressure switch activated) Faulty pressure switch	Replace fuse Replace relay Replace compressor Repair wiring Replace switch Relieve air pressure from system Change pressure switch
2	Slow delivery	Clogged engine air cleaner Air hose damaged	Clean engine air cleaner Replace air hose
3	Mounting bracket loose	Mounting cap screws loose Mounting bracket cracked/broken	Tighten cap screws Replace compressor/bracket

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BRAKE SYSTEM

WARNING

Under no circumstances is compressed air to be used to remove dust from the brake drums or discs.

New brake parts provided by Land Rover do not contain asbestos. Older parts still fitted to vehicles may contain asbestos. If any doubt exists as to whether parts contain asbestos or not, the procedures described in EMEI Workshop E 410 shall be complied with.

Prevent the vehicle from rolling by chocking the front wheels and engaging the transmission differential lock prior to raising the rear of the vehicle. Always use suitable axle stands.

Rear Brake Caliper and Pads

18. **Removal.** Remove the rear brake pads and caliper (Figure 2) as follows:

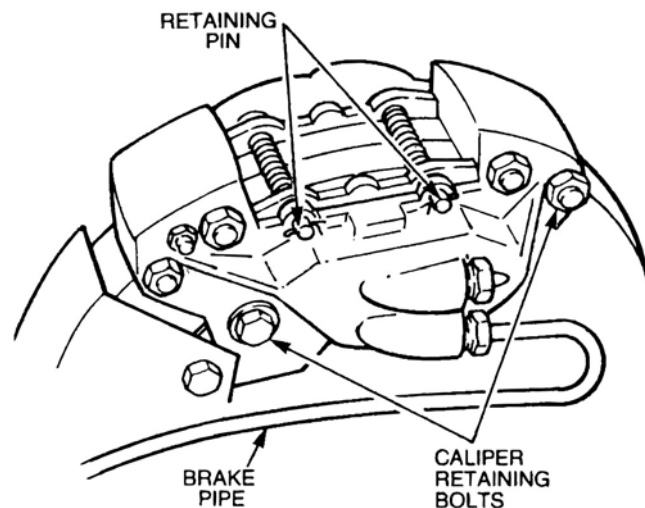


Figure 2 Rear Brake Removal

- a. Clean the area around the rear axle hub and caliper and allow it to dry.
- b. Chock the front wheels.
- c. Loosen the rear wheel nuts no more than one turn.
- d. Using a suitable hydraulic jack, raise the rear of the vehicle and position suitable stands beneath the rear axle.
- e. Lower the vehicle onto the stands.
- f. Remove the rear wheel nuts and the wheels.
- g. Remove the disc pad retaining pins and springs from the caliper.
- h. Remove the pads.
- i. Disconnect the brake pipe from the caliper.

NOTE

Plug the pipe and port to prevent the loss of fluid and/or ingress of dirt.

- j. Remove the two bolts securing the brake caliper to the axle housing.
- k. Remove the caliper from the disc.

19. **Disassembly.** Disassemble the brake caliper as follows:



Do not separate the two halves of the caliper. The piston seals can be replaced without splitting the caliper.

- a. Thoroughly clean the caliper and allow it to dry.
- b. Install special tool LRT-70-500 (Table 2, Item 1) to retain both pistons in the mounting flange half of the caliper (Figure 3).

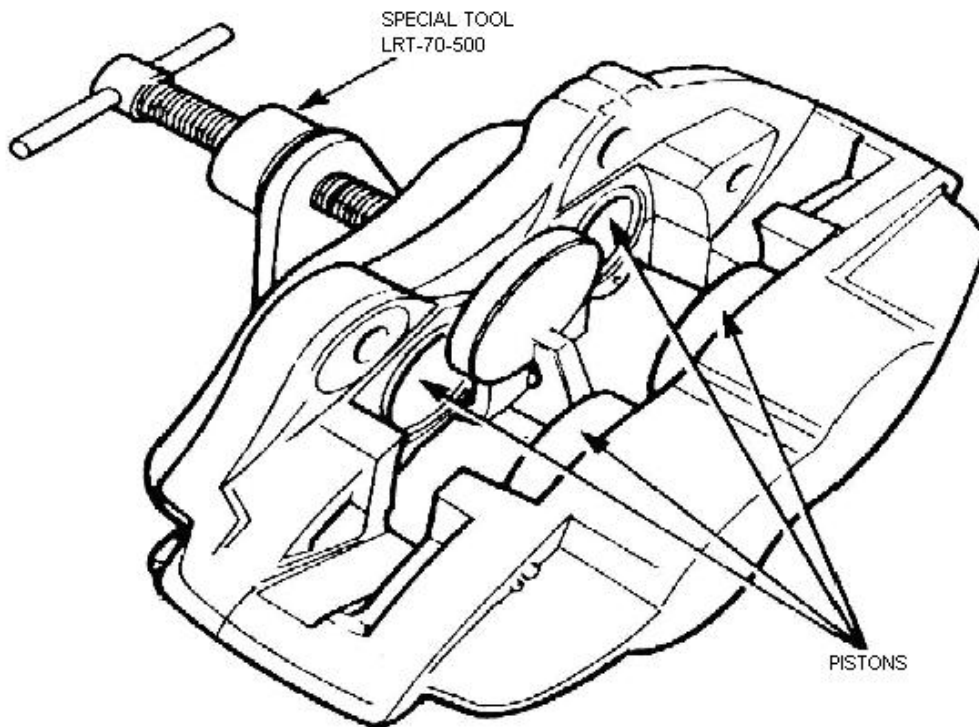


Figure 3 Piston Removal Rim Half

WARNING

Keep fingers clear when expelling the pistons from the caliper.

- c. Gradually apply air pressure to the fluid inlet port to expel the rim half pistons.
 - d. Mark the pistons internally to identify them with their respective bores.
 - e. Remove the wiper seal retainer by inserting a screwdriver between the retainer and the seal.
 - f. Prise the retainer carefully from the mouth of the bore.
 - g. Taking care not to damage the seal grooves, remove the wiper seal and fluid seal.
 - h. Repeat sub Paras c to g, to remove the pistons from the mounting half of the caliper.
20. **Cleaning and Inspection.** Clean and inspect the brake caliper as follows:
- a. Thoroughly clean the caliper (Figure 4), bores, pistons and in particular the seal grooves and allow them to dry.
 - b. Check the pistons and caliper bores for corrosion and scoring, replacing parts as necessary.

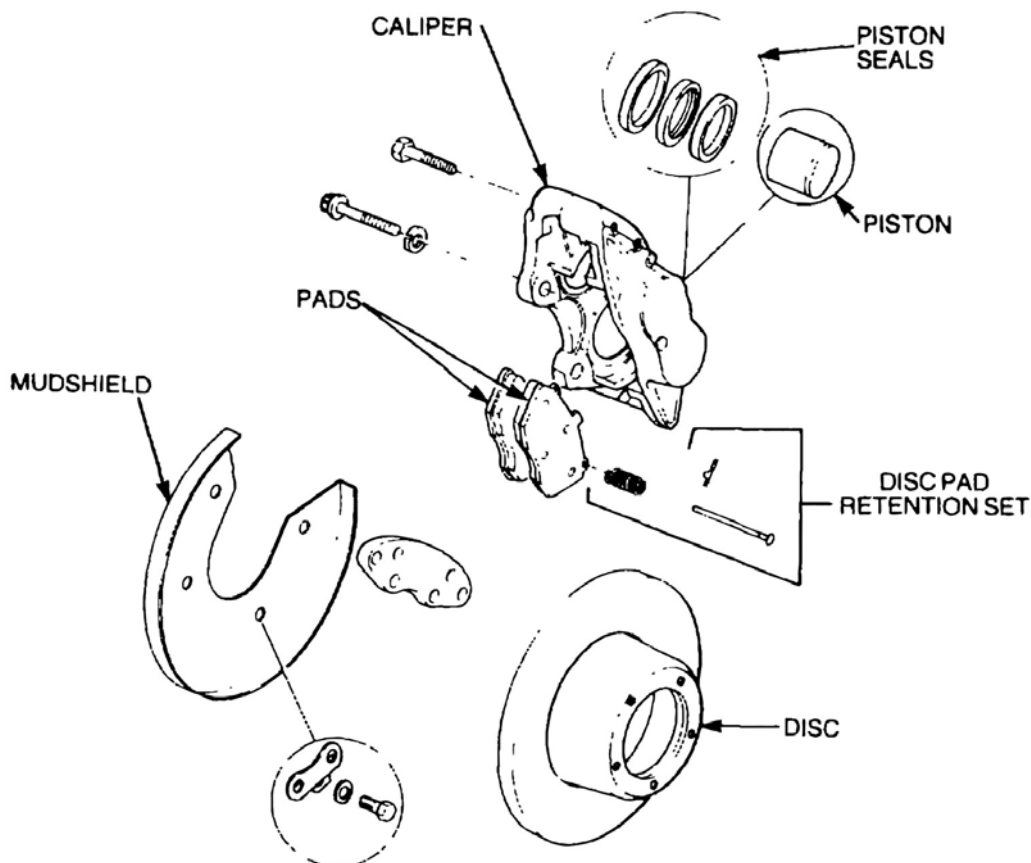


Figure 4 Brake Caliper – Exploded View

21. **Reassembly.** Reassemble the brake caliper as follows:

NOTE

The fluid seal and the groove are not the same in section so that when the seal is seated it feels proud to the touch at the edge furthest away from the mouth of the bore.

- a. Smear the new fluid seal with Dow Corning 44 Silicone grease, or equivalent.
- b. Insert the seal into the groove using the fingers only and ensure that the seal is properly seated.

NOTE

Do not lift the piston during installation and leave approximately 8 mm projecting from the bore.

- c. Slacken the bleed screw on the rim half, one complete turn.
- d. Smear the appropriate piston with Dow Corning 44 Silicone grease, or equivalent.
- e. Insert the piston squarely into the bore by hand only.
- f. Smear the new wiper seal with Dow Corning 44 Silicone grease, or equivalent.
- g. Fit the new wiper seal into a new seal retainer.
- h. Slide the assembly, seal side first, over the protruding piston and into the bore recess.
- i. Remove the piston clamp, using special tool LRT-7-500 (Table 2, Item 1), from the mounting half of the caliper and use the clamp to press home the seal retainer and pistons.
- j. Tighten the bleed screw.
- k. Repeat sub Paras a to j to install the two remaining pistons in the mounting half of the caliper.

- 22. Installation.** Install the rear brake pads and caliper (Figure 2) as follows:
- a. Install the disc pads into the caliper.
 - b. Fit the two retaining springs and pins.
 - c. Ensure the brake disc is free from oil and grease, then install the caliper.
 - d. Apply Loctite 271, or equivalent, to the bolt threads.
 - e. Install the bolts and tighten them to between 120 N.m to 150 N.m.
 - f. Fit the brake hose on the retaining bracket and tighten the locknut.
 - g. Bleed the brake system (Para 25).
 - h. Fit the rear wheels and tighten the wheel nuts.
 - i. Raise the vehicle clear of the vehicle stands and remove the vehicle stands.
 - j. Lower the vehicle to the ground.
 - k. Remove the front wheel chocks.

Rear Brake Disc

- 23. Removal.** Remove the rear brake disc as follows:
- a. Remove the rear brake caliper and pads as detailed in Para 18.
 - b. Pry the hub cap from the hub.
 - c. Remove the circlip from the drive shaft.
 - d. Remove the five bolts securing the driving flange to the hub.
 - e. Remove the driving flange.
 - f. Discard the gasket and the spring washers.
 - g. Remove all trace of gasket material.
 - h. Remove the hub locknut, using special tool EYA3953 (Table 2, Item 2).
 - i. Remove the lock washer, the adjusting nut and the keyed washer.
 - j. Remove the hub and disc assembly.
 - k. Match mark the disc to the hub (if reusing the original disc).
 - l. Remove the five bolts and separate the hub from the disc.
- 24. Installation.** Install the rear brake disc as follows:
- a. Fit the disc on the hub (align the match marks if using the original disc).
 - b. Smear Loctite 275, or equivalent, on the bolt threads and install the bolts with new spring washers.
 - c. Tighten the bolts to 50 N.m.
 - d. Fit the hub on the stub axle.
 - e. Install the keyed washer and adjusting nut.
 - f. Spin the hub to settle the bearings.
 - g. Tighten the nut (Figure 5) by hand until there is no end float.

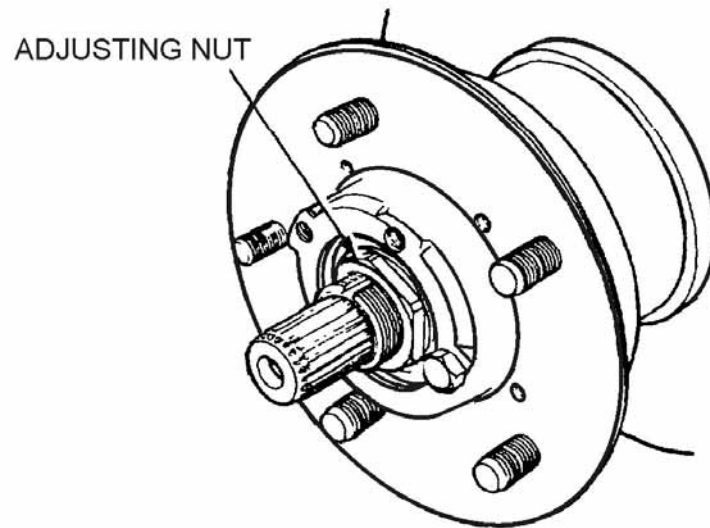


Figure 5 Hub Bearing Adjustment

- h.** Back-off the hub nut a one-quarter turn and then tighten to 10 N.m.
- i.** Fit a new lock washer.
- j.** Install the locknut, tighten it to 50 N.m and tab over the lock washer.
- k.** Install the driving flange and a new gasket ensuring the splines are aligned with those on the drive shaft.
- l.** Fit each bolt with a new spring washer then apply Loctite 271, or equivalent, to the bolt threads.
- m.** Install the bolts and tighten them to between 60 N.m and 70 N.m.
- n.** Install the drive shaft shim and secure it with the circlip.
- o.** Install the hub cap securely.
- p.** Install the rear brake caliper and pads as detailed in Para 22.

Bleeding the Brake System

25. Procedure. Bleed the rear brake system as follows:

NOTE

To bleed a replacement master cylinder or a completely drained system, slacken a bleed screw, attach a length of rubber hose to the bleed screw in both the front and rear circuits and allow to drain into a suitable container. Top up the fluid reservoir to the maximum mark and allow the fluid to prime both circuits by gravity for approximately five minutes. Close off the bleed screws, and then start the bleeding procedure at the front wheel nearest the master cylinder. Ensure that the brake fluid level is continuously monitored during brake bleeding procedure.

- a.** Attach a length of rubber tube to the caliper bleed screw and immerse the other end in a glass jar containing a quantity of clean, fresh hydraulic fluid.
- b.** Check that the reservoir is full.
- c.** Unscrew the bleed screw approximately half a turn.
- d.** Depress the brake pedal fully, pause, then allow the pedal to return rapidly; pause, then repeat the procedure until all air is expelled from the tube.

NOTE

Continually check the fluid level in the reservoir and ensure it remains full. Top up as necessary.

- e. Close the bleed screw immediately after the last stroke.
- f. Remove the tube and jar.
- g. Repeat the process for each wheel.

POWER STEERING

Power Steering Fluid Reservoir

WARNING

Ensure that the power steering fluid has cooled sufficiently to prevent personal injury from burns prior to commencing repairs on the power steering system.

26. **Removal.** Remove the power steering fluid reservoir as follows:
- a. Remove the fluid reservoir filler cap.
 - b. Disconnect the return hose from the steering box.
 - c. Drain the fluid from the reservoir into a suitable container.

CAUTION

Do not reuse the fluid drained from the reservoir.

- d. Reconnect the power steering return hose to the steering box.
- e. Slacken the clamps securing the supply and return hoses to the fluid reservoir.
- f. Disconnect the hoses from the fluid reservoir (Figure 6).
- g. Plug the hoses to prevent ingress of dirt.
- h. Slacken the nut and bolt on the reservoir clamp sufficiently to allow the reservoir to be lifted up and out of the clamp.

NOTE

The reservoir filter is designed to function effectively for the life of the vehicle therefore replacement of the filter is not necessary.

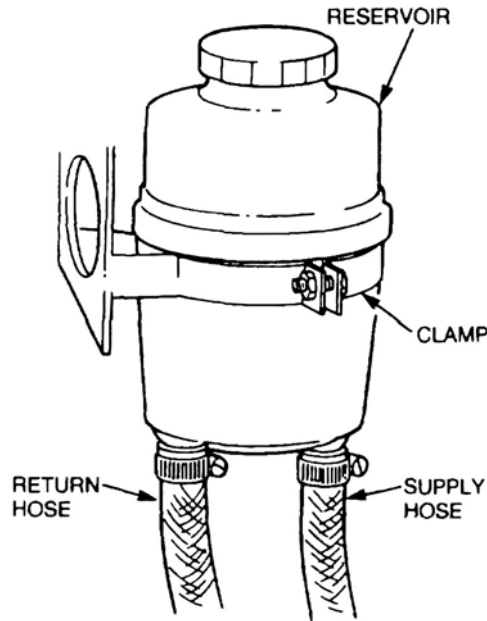
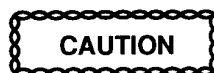


Figure 6 Power Steering Reservoir Removal

27. **Installation.** Install the power steering fluid reservoir as follows:
- Install the reservoir in the clamp and tighten it securely with the nut, washer and bolt.
 - Remove the hose plugs.
 - Connect the supply and return hoses to the fluid reservoir.
 - Tighten the hose clamps securely.
 - Fill the reservoir with the recommended fluid to the correct level.
 - Bleed the power steering system (Para 28).
 - Install the reservoir cap.

Bleeding the Power Steering System

28. Bleed the power steering system using the following procedure:



During the bleeding procedure ensure that the reservoir is always full. Do not increase engine speed. Do not move the steering wheel.

- Fill the steering fluid reservoir with the recommended fluid to the correct level.
- Start and run the engine until the operating temperature is reached.
- Run the engine at idle speed (580 rpm).
- Slacken the bleed screw in the steering box (Figure 7) until fluid is observed at the bleed screw.
- Tighten the bleed screw.

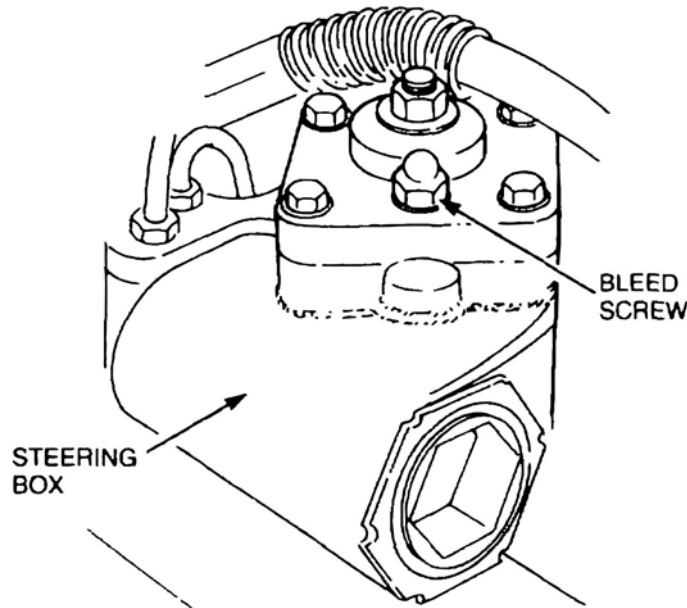


Figure 7 Power Steering Bleed Screw Location

- f. Check the reservoir dipstick for the correct fluid level.
- g. Top up if necessary.
- h. Check all hose connections.

CAUTION

To avoid causing the oil to overheat and possible damage to the oil seals, do not maintain this pressure for longer than thirty seconds in any one minute.

- i. Check the steering pump and the steering box for fluid leaks by holding the steering hard on full lock in both directions as this causes high pressure in the system.

NOTE

The steering operation should be smooth from lock to lock, any heavy or light spots when changing direction in a stationary vehicle is unacceptable and requires inspection of the steering system.

- j. Switch off the engine.

Power Steering Pump

29. **Removal.** Remove the power steering pump as follows:

WARNING

Ensure that the power steering fluid has cooled sufficiently to prevent personal injury from burns prior to commencing repairs on the power steering system.

- a. Remove the power steering pump reservoir cap.
- b. Disconnect the low pressure hose from the power steering pump.
- c. Drain the fluid into a container.
- d. Disconnect the high pressure hose from the power steering pump.
- e. Plug both the high and low pressure hoses and the pump connections.

- f. Remove the three bolts securing the power steering pump to the timing gear housing.
- g. Remove the pump (Figure 8).
- h. Discard the O ring seal and plug all apertures on the power steering pump.

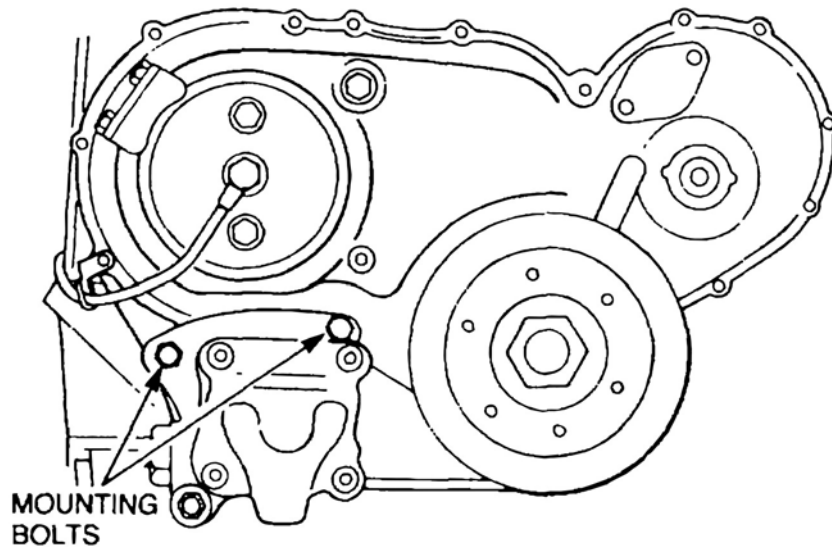


Figure 8 Power Steering Pump Removal

- 30. **Installation.** Install the power steering pump as follows:
 - a. Remove all trace of gasket from the pump and mating surface.
 - b. Using a new O ring and gasket, install the power steering pump to the timing gear housing.
 - c. Tighten the mounting bolts to 64 N.m.
 - d. Remove the plugs from the power steering pump connections and the high and low pressure hoses.
 - e. Connect the high and low pressure hoses to the power steering pump and tighten them securely.
 - f. Fill the power steering fluid reservoir with a recommended fluid to the correct level.
 - g. Install the reservoir filler cap.
 - h. Bleed the power steering (Para 28).

ELECTRICAL

Fuse Box

- 31. The fuse box in this variant has been relocated to a higher position in the dash area to reduce water ingress during fording operations.

Driving Lights

- 32. **Removal.** Remove the driving lights as follows:
 - a. Remove the screw securing the driving light earth wire to the brush guard.
 - b. Disconnect the power supply wire at the connector.
 - c. Remove the nut and washer securing the driving light to the mounting bracket.
 - d. Lift the light from the mounting bracket.
- 33. **Installation.** Install the driving lights as follows:
 - a. Insert the driving light mounting bolt through the hole in the mounting bracket.
 - b. Install the nut and washer, but do not tighten them.

- c. Connect the earth wire to the brush guard and tighten the screw securely.
 - d. Connect the power supply wire at the connector.
 - e. Turn the driving lights on.
 - f. Align the driving lights (Para 34).
 - g. Tighten the mounting nut securely.
 - h. Check the alignment of the driving lights again.
34. **Driving Lights Alignment.** Align the driving lights as follows:
- a. With the vehicle headlamps switched on high beam, position the vehicle as far as possible away from a blank wall so that the headlamps can be seen shining onto the wall.
 - b. Loosen off the driving light mounting nuts.
 - c. Switch on the driving lights.
 - d. Align the driving lights so that they are in line with and equal distance from the headlamp beam projected onto the wall.
 - e. Tighten up the driving light mounting nuts.

Wiring Diagram

35. A vehicle wiring diagram is located in EMEI Vehicle G 092 – Technical Description.

BODY

Brushguard

36. **Removal.** Remove the brushguard as follows:
- a. Remove the driving lights (Para 32) and wiring from the brushguard assembly.
 - b. Remove the driving lights wiring harness from the brushguard.
 - c. Remove the left and right side guards.
 - d. Remove the winch mounting and roller assembly as follows:

NOTE

Draining of the winch oil is required as the front attachment bolts for the winch mounting and roller assembly protrude into the oil reservoir of the winch housing.

- (1) Remove the winch assembly oil drain plug (Figure 9) and drain the oil from the winch assembly housing. The location of oil drain plug is under the left side of the winch assembly.



Figure 9 Winch Assembly Drain Plug

- (2) Remove the hardware attaching the winch mounting and roller assembly (Figure 10) to the winch assembly.

NOTE

Complete disassembly of the unit is not required. Only remove Items 4, 5, 6, 9, 10 and 11.

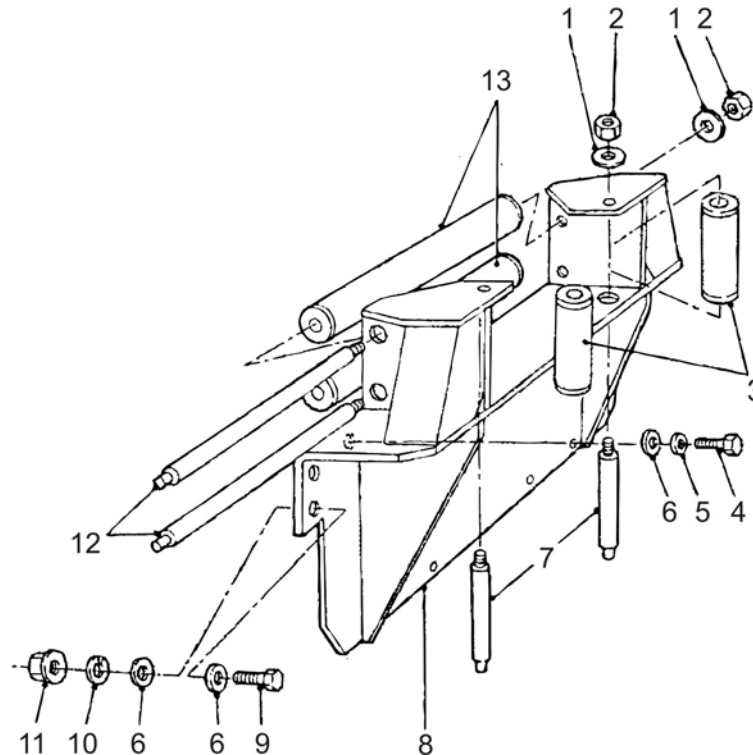


Figure 10 Winch Mounting and Roller Assembly – Exploded View

- (3) Remove the winch mounting and roller assembly from the winch assembly.
(4) Remove the upper roller shaft (Item 12) and the upper roller (Item 13) from the assembly.

NOTE

Complete disassembly is not required. Remove only items 1, 2, 12 and 13.

- (5) Remove the winch rope hook from the winch mounting and roller assembly.
(6) Remove the winch mounting and roller assembly.
- e. Remove the brushguard mounting hardware and remove the brushguard.
f. Loosen off the winch mounting hardware but do not remove it. This is to allow for correct alignment between the winch assembly and the winch mounting and roller assembly upon reassembly.

37. Installation. Install the brushguard as follows:

NOTE

Ensure that all winch mounting bolts are coated with thread sealant prior to reassembly.

- a. Position the brushguard on the vehicle and secure it to the chassis.
b. Install the mounting bolts that attach the winch mounting and roller assembly to the winch.
c. Tighten all eight mounting bolts to 77 N.m.
d. Tighten the winch mounting hardware to 77 N.m.

- e. Fill the winch oil reservoir with approx 1.6 L of NATO O-226 (OEP-220).
- f. Insert the winch rope hook through the winch mounting and roller assembly.
- g. Assemble the upper roller shaft and upper roller to the winch mounting and roller assembly. Tighten them to 55 N.m.
- h. Fit the left and right side guards and tighten all mounting bolts to 22 N.m.
- i. Prepare and paint all unpainted hardware in the appropriate camouflage colours.
- j. Fit the driving lights (Para 33) and wiring to the brushguard assembly. Secure the wiring with cable ties.

Cargo Restraint System Components

38. There are a large number of retainer straps and strips used throughout the vehicle. These are mostly attached by rivets securing the footman loop which when replacing the strap would require the rivet to be drilled out and replaced. In some cases the strap (Figure 11) may be able to be attached as follows:



Figure 11 Cargo Retainer Strap

- a. Feed the strap (loop end) down through the footman loop.
- b. Taking the other end of the strap, feed it through the loop end as shown in Figure 12.



Figure 12 Securing Cargo Strap

- c. Pull the strap so as to tighten it to the footman loop.

Under Tray Stowage

39. The under tray stowage system operates with the use of the spare wheel carrier on other variants. Removal and installation of this assembly is as for the replacement of the spare wheel carrier detailed in EMEI Vehicle G 103.

Basket Assembly Side Stowage

40. **Removal.** Remove the basket assemblies as follows:
- a. Remove the two lower mounting bolts complete with washers.

NOTE

The lower mounting plates are attached by rivets to the side of the vehicle.

- b. Supporting the basket assembly, remove the two upper retaining bolts and remove the basket along with the two upper mounting plates.
41. **Installation.** Install the basket assembly as follows:
- a. Secure the basket assembly to the vehicle ensuring that the upper mounting plates are placed between the basket assembly and the coaming rail. Tighten the bolts to 44 N.m.
 - b. Replace the two lower mounting bolts and tighten them to 44 N.m.

Camouflage Net Stowage Frame

42. **Removal.** Remove the camouflage net stowage frame as follows:
- a. Remove the bolts and washers securing the camouflage net stowage frame to the top of the rollover bars.
 - b. Lift the frame and the four mounts from the rollover bars.
43. **Installation.** Install the camouflage net stowage frame as follows:
- a. Position the camouflage net stowage frame on top of the canopy and on the rollover bars.
 - b. Position the mounts below the bolt holes in the frame.
 - c. Align the bolt holes in the stowage frame with the bolt holes in the mounts, the canopy and the rollover bars.
 - d. Install the bolts and washers and tighten them securely.

Rollover Protection (ROP) Upper Assembly

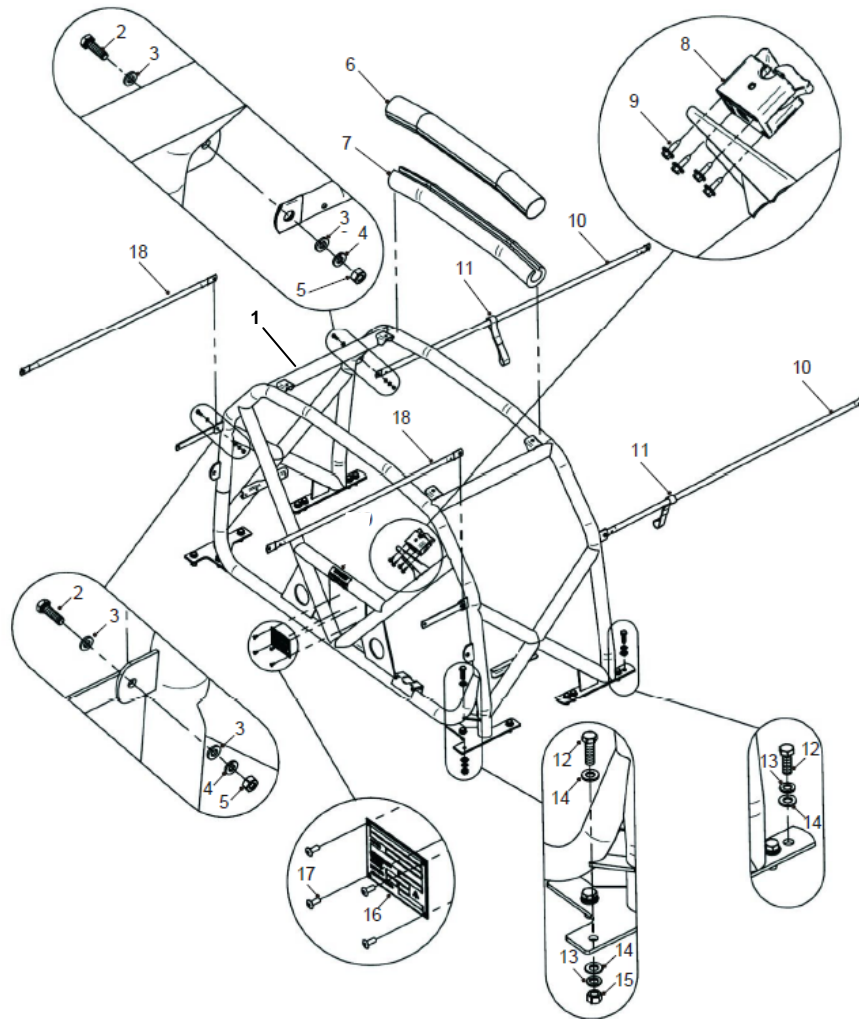
WARNING

The rollover protection assembly is to be replaced if the vehicle has been involved in a roll over accident.

The rollover protection assembly is to be replaced if distortion has occurred to the rollover structure or capping rail.

The rollover protection assembly is to be replaced if any welds are cracked or have failed.

44. **Removal.** Remove the rollover protection (ROP) upper assembly (Figure 13) as follows:



1	ROP Frame	7	Padding	13	Washer
2	Bolt	8	Weapon clip	14	Washer
3	Washer	9	Screw	15	Nut
4	Washer	10	Hoodstick	16	Plate
5	Nut	11	Strap	17	Rivet
6	Cover	12	Bolt	18	Tie bar

Figure 13 ROP Frame

- a. Remove the net stowage rack (Para 42).
- b. Remove the canvas.
- c. Remove the padding (Item 7) and cover (Item 6) from the ROP frame (Item 1).
- d. Remove the weapon storage clip bracket (Item 8) from the frame (if required).
- e. Remove both the front connecting tie bars (Item 18) from the ROP frame.
- f. Remove the tube hoodstick (Item 10) complete with the tool box strap (Item 11) from each side of the vehicle ROP frame.
- g. Remove the rear bow of the ROP from the vehicle.
- h. Remove the bolts and washers (Items 12 to 15), and using appropriate material handling equipment (MHE) remove the ROP frame from the vehicle.

45. Installation. Install the ROP upper assembly (Figure 13) as follows:

- a. Using appropriate MHE, position the ROP frame (Item 1) onto the cargo tray coaming rail. Replace the mounting bolts and washers (Items 12 to 15) and tighten hardware to 77 N.m.
- b. Install the rear bow of the ROP onto the vehicle.

- c. Fit the tube hoodstick (Item 10) complete with the tool box strap (Item 11) to each side of the vehicle ROP frame.
- d. Secure the front connecting tie bars (Item 18) to each side of the ROP frame with nuts and bolts.
- e. Fit the weapon stowage clip bracket (Item 8) to the frame.
- f. Fit the padding (Item 7) and cover (Item 6) from the ROP frame.
- g. Fit the vehicle canvas.
- h. Fit the net stowage rack.

Spare Wheel Carrier

46. Removal. Remove the spare wheel carrier as follows:

- a. Remove the vehicle registration plate.
- b. Remove the rear harness shield from the underside of the vehicle.
- c. Remove the cable ties securing the registration plate light harness extension to the main electrical harness.
- d. Detach the female bullet connectors joining the harness extension to the main electrical harness.
- e. Retract the harness extension so that it is no longer routed through the rear chassis cross member and is free to be removed with the spare wheel carrier.
- f. Remove the mounting point hi-lift jack, left-hand from the rear chassis cross member.
- g. Remove the hardware that attaches the spare wheel carrier assembly to the rear chassis mounting plate.

NOTE

Ensure that any spacer washers removed from any mounting points are replaced on installation to ensure correct alignment of the spare wheel carrier assembly.

- h. Remove the hardware that attaches the spare wheel carrier assembly to the blackout lamp protector along with any spacer washers that may have been fitted.
- i. Remove the hardware that attaches the spare wheel carrier assembly to the rear cargo body panel and remove the spare wheel carrier assembly along with the reinforcement plate from the interior of the rear cargo body panel.

47. Installation. Install the spare wheel carrier as follows:

- a. Locate the spare wheel carrier onto the rear cargo body panel and, ensuring the reinforcement plate is mounted in the interior of the rear cargo body panel, secure it with the mounting hardware. Tighten it to 22 N.m.
- b. Fit the hardware that attaches the spare wheel carrier assembly to the blackout lamp protector along with any spacer washers that may have been removed. Tighten it to 22 N.m.
- c. Fit the hardware that attaches the spare wheel carrier assembly to the rear chassis mounting plate. Tighten it to 22 N.m.
- d. Fit the mounting point hi-lift jack, left-hand to the rear chassis cross member. Tighten it to 22 N.m.
- e. Route the harness extension through the rear chassis cross member and secure it to the existing electrical harness with cable ties.
- f. Continue to route the harness extension through the rear chassis cross member and out the opposite hole in the cross member. Secure it to the existing electrical harness with cable ties.
- g. Join the female bullet connectors linking the harness extension to the main electrical harness.
- h. Fit the rear harness shield from the underside of the vehicle.
- i. Fit the vehicle registration plate.

Rear Passenger Seat

- 48. Removal.** Remove the rear passenger seat as follows:
- Remove the four M10 seat retaining bolts, washers and nuts from the seat support rail (front), nearest the ammunition rack.
 - Remove the four M8 seat retaining bolts, washers and nuts from the seat support rail (rear).
 - Remove the seat from the vehicle.
- 49. Installation.** Install the rear passenger seat as follows:
- Position the seat in the vehicle and align the mounting bolts holes to the seat support rails.
 - Place a flat washer on each of the four M10 mounting bolts and feed them through the mounting holes of the seat and the seat support rail nearest the ammunition rack.
 - Fit another flat washer, lock washer and nut to each bolt and tighten each to 63 N.m.
 - Fit the four M8 seat retaining bolts of the seat support rail in a similar manner and tighten each to 32 N.m.

Seat Belts

- 50.** For inspection and repair of seat belts refer to EMEI Vehicle A 548-1 – Vehicle Seat Belts – Inspection for Usability.

Seat Support Rails

- 51. Removal.** To remove the seat support rails proceed as follows:
- Remove all eight retaining bolts, washers and nuts securing both seat support rails to the seat support rail brackets.
 - Remove the seat complete with support rails.
 - Remove the seat support rails from the seat assembly (Para 48).
- 52. Installation.** To install the seat support rail proceed as follows:
- Position the seat support rails onto the seat support rail brackets. Ensure the seat support rail nearest the ammunition rack supports the M10 seat mounting bolts.
 - Place a flat washer onto a retaining bolt and feed the bolt up from the bottom through the seat rail support bracket and seat support rail. Place another flat washer, lock washer and nut onto the retaining bolt and finger tighten it.
 - Fit the remaining retaining bolts, washers and nuts in a similar manner.
 - Install the rear passenger seat as detailed in Para 49.
 - Tighten the seat support rail retaining bolts onto the seat support rail brackets to 32 N.m.

Ammunition Stowage Rack

- 53. Removal.** To remove the ammunition stowage rack proceed as follows:
- Remove all four nuts, washers and bolts that secure the rack to the mounting plates in each corner of the rack.
 - Slide the rack completely to one side of the vehicle so that two of the mounting plates are as far inside the rack as possible. The rack will now be free from the other two mounting plates.

NOTE

Removal of the rack is possible without the need to remove the rack mounting plates.

- Gently lifting the rack slightly, slide it back in the opposite direction ensuring that the rack clears the mounting plates.

- d. Once the mounting plates that were fully internal to the rack are clear, lift the rack clear of the vehicle.
- e. Remove any of the rack mounting plates as required.

54. Installation. To install the ammunition stowage rack proceed as follows:

- a. Replace any of the rack mounting plates as required.
- b. Position the rack into the vehicle so that two of the mounting plates can be inserted into the mounting rack.
- c. Slide the rack fully to one side of the vehicle until the rack mounting plates are fully inserted into the rack.
- d. Lower the rack slightly to align it with the two remaining plates. At the same time gently slide the rack back toward the centre of the vehicle ensuring that all mounting plates are situated internal to the rack.
- e. Once the rack is located centrally on the cargo tray, replace the four securing bolts, washers and nuts and tighten them securely.

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END

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