Ministry Of Defence

Army Equipment Support Publication

Truck Utility Light (TUL) HS, Truck Utility Medium (TUM) HS and (TUM) Battlefield Ambulance HS, All Variants

Operating Information
2320-D-128-201

6th Edition May 2017
Superseding 5th Edition January 2009

Sponsored for use in the
United Kingdom Ministry of Defence
and Armed Forces by Defence Equipment & Support
Operational Support Vehicles Programme (OSVP)

U05V9

Publication Authority: [redacted]

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AMENDMENT RECORD

Amdt No.	Incorporated By (Signature)	Date
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2	Incorporated	Nov 18
3	Incorporated	Apr 19
4	Incorporated	Aug 19
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PREFACE

Sponsor:	Operational Support Vehicles Programme (OSVP)
Project Number:	-
File Ref:	-
Publication Authority:	DES-LE-OSP-OSVP-CVS

INTRODUCTION

1 Any comments by service users on this publication should be forwarded through the channels prescribed in Army Equipment Support Publication (AESP) 0100-P-011-013. An AESP Form 10 is provided at the end of this publication; it should be photocopied and used for forwarding comments on this AESP. This procedure is only to be used for the purpose of commenting on the content of an individual AESP and must not be used as follows:

1.1 In place of the Equipment Failure Reporting (EFR) procedure outlined in the Land Equipment Unit Maintenance Standards (LEUMS) Edition 4.

1.2 For subjects which are the concern of the GEMS Defence Ideas Scheme. For advice on the GEMS procedure contact your GEMS Local Awards Group (LAG) through your Equipment Support (ES) Chain of Command. Details of the GEMS LAG locations and Points Of Contact (POC) can be obtained through the GEMS website or through:

GEMS Scheme Manager
Level 6, Zone I
MOD Main Building
Whitehall
London

2 AESPs are issued under United Kingdom (UK) Ministry Of Defence (MOD) authority and where AESPs specify action is to be taken, the AESP will of itself be sufficient authority for such action and also for the demanding of the necessary stores, subject to the provisions of Para 3 below.

3 The subject matter of this publication may be affected by Defence Instructions and Notices (DIN), Standard Operating Procedures (SOP) or by local regulations. When any such instruction, Order or Regulation contracts any portion of this publication it is to be taken as the overriding authority.

RELATED AND ASSOCIATED PUBLICATIONS

Related Publications

9 The AESP Octad for the subject equipment consists of the publications shown below. All references are prefixed with the first eight digits of this publication.

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	3	Service Engineered Modification Instructions (RAF only)	*	*	*	*

* Category/sub-category not published

Associated Publications

4 The following associated publications should be read in conjunction with this category:

Reference	Title
A9399005	TUL/TUM Safety Case
AESP 0200-A-062-013	Management and Control of Equipment Support Units, Casting Procedures for all Equipment
AESP 0200-A-307-013	All Arms Equipment Recovery Manual
AESP 2320-D-128-Octad	Truck Utility Light (TUL) HS, Truck Utility Medium (TUM) HS and (TUM) Ambulance HS, All Variants
AP 100B-01	Royal Air Force Engineering Policy and Regulations
AP 830	MOD (Air Force Department and RAF) Supply Regulations
AP 3260 Book 1	Mechanical Transport Maintenance Regulations for the Royal Air Force - Maintenance Repair Policy
AP 3260 Book 3	Mechanical Transport Maintenance Regulations for the Royal Air Force - General Orders and Modifications
DCI JS 105/00	Joint Air Transport Evaluation Unit (JATEU) – Functions and Tasking Procedures
DLF	Defence Logistics Framework - Supply
JSP 375 Vol 2	MOD Health and Safety
JSP 800	Defence Movements and Transport Regulations
LEUMS	Land Equipment User Maintenance Standard

WARNINGS AND CAUTIONS

HAZARDOUS SUBSTANCES

5 Before using any hazardous substance or material, the user must be conversant with the safety precautions and first aid instructions:

5.1 On the label of the container it was supplied in.

5.2 On the material Safety Data Sheet.

5.3 In local Safety Orders and Regulations.

WARNINGS

6 The following WARNINGS are used in this document:

(1) [redacted]

(2) [redacted]

(3) ALWAYS RECTIFY THE CAUSE OF A FAILURE BEFORE RESETTING THE CIRCUIT BREAKER. SEEK QUALIFIED ASSISTANCE IF NECESSARY.

(4) BEFORE CONNECTION ENSURE ANY AUXILIARY EQUIPMENT TO BE SUPPLIED WITH EXPORTED POWER IS OF THE CORRECT VOLTAGE.

(5) BEFORE CONNECTION ENSURE ANY EXTERNAL POWER SUPPLY TO BE CONNECTED IS OF THE CORRECT VOLTAGE.

(6) BRAKING. THE HANDBRAKE ACTS ON THE TRANSMISSION NOT ON THE REAR WHEELS AND MAY NOT HOLD THE VEHICLE WHEN JACKING UNLESS THE FOLLOWING PROCEDURE IS USED. IF ONE FRONT WHEEL AND ONE REAR WHEEL ARE RAISED NO VEHICLE HOLDING OR BRAKING EFFECT IS POSSIBLE. WHEELS SHOULD BE CHOCKED AT ALL TIMES.

(7) CHOCKING. THE HANDBRAKE ACTS ON THE TRANSMISSION, NOT THE REAR WHEELS AND MAY NOT HOLD THE VEHICLE WHEN JACKING UNLESS THE FOLLOWING PROCEDURE IS USED. IF ONE FRONT WHEEL AND ONE REAR WHEEL ARE RAISED NO VEHICLE HOLDING OR BRAKING EFFECT IS POSSIBLE. WHEELS SHOULD BE CHOCKED UNDER ALL CIRCUMSTANCES.

(8) CIRCUIT BREAKERS. CB.3 MUST BE SWITCHED OFF WHEN 12 V SUPPLY SOCKETS ARE NOT IN USE.

(9) CLEANLINESS. AVOID EXCESSIVE CONTACT AND WASH THOROUGHLY AFTER CONTACT.

(continued)

WARNINGS (continued)

(10) COMPRESSED AIR. DO NOT DIRECT AIR STREAM AT PERSONNEL AS THIS CAN CAUSE PERSONAL INJURY.

(11) DANGER TO PERSONNEL. IF THE WEAPON HAS BEEN FIRED CARE SHOULD BE TAKEN AS PARTS OF THE WEAPON MAY BE EXTREMELY HOT AND COULD CAUSE INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.

(12) DANGER TO PERSONNEL. THE SWING ARM SHOULD BE STOWED IN THE NORMAL LOCKED POSITION DURING TRANSIT. FAILURE TO LOCK THE SWING ARM DURING TRANSIT COULD RESULT IN INJURY TO THE OPERATOR AND/OR OTHER PERSONNEL CAUSE BY THE MECHANISM SWINGING FREELY AND WITHOUT CONTROL.

(13) DO NOT OPERATE THE SYSTEM IF THE RECIRCULATION GRILLE IS BLOCKED.

(14) DO NOT OPERATE THE SYSTEM WITH ALL OF THE VENTS CLOSED.

(15) DO NOT USE THE HAND THROTTLE WHILST DRIVING THE VEHICLE.

(16) DO NOT USE THE SEAT IN RAISED POSITION WHEN THE VEHICLE IS MOVING.

(17) DO NOT USE TYRES WITH EXCESSIVELY WORN TREADS. TYRE WEAR SHOULD BE CHECKED AT EVERY MAINTENANCE INSPECTION.

(18) DO NOT VIEW THE FRONT LAMPS DIRECTLY WITH OPTICAL INSTRUMENTS. IT MAY CAUSE EYE DAMAGE. NIGHT VISION DEVICES MAY BE DAMAGED.

(19) DUE CONSIDERATION SHOULD BE GIVEN TO THE HIGHLY FLAMMABLE NATURE OF GASOLINE AND ITS VAPOUR. CARELESSNESS IN ITS USE MAY RESULT IN PAINFUL BURNS.

(20) EXPANSION CAP. DO NOT REMOVE THE EXPANSION CAP WHEN THE ENGINE IS HOT BECAUSE THE COOLING SYSTEM IS PRESSURISED AND PERSONAL SCALDING COULD RESULT.

(21) FAILURE TO ROTATE THE PINTLE INTO THE "LOCKED" POSITION (INTO THE LOWER SPRING CLIP) MAY RESULT IN THE PINTLE VIBRATING LOOSE DURING USE!

(22) FALLING OBJECTS. ALWAYS SUPPORT THE SAND CHANNELS ON THE BRACKETS WHILST RELEASING OR FASTENING THE RATCHETS.

(23) FALLING OBJECTS. THE SPARE WHEEL MUST ALWAYS BE SUPPORTED IN POSITION ON THE WHEEL CARRIER UNTIL THE CLAMP AND BOLTS ARE FITTED.

(24) FALLING OBJECTS. THE SPARE WHEEL MUST ALWAYS BE SUPPORTED IN POSITION ON THE WHEEL CARRIER UNTIL THE WHEEL NUTS ARE FITTED.

(25) FILLER CAP. DO NOT REMOVE THE EXPANSION TANK FILLER CAP WHEN THE ENGINE IS HOT, BECAUSE THE COOLING SYSTEM IS PRESSURISED AND PERSONAL SCALDING COULD RESULT.

(26) FINGER TRAP. THE CPWM ROTATES ABOUT THE SWINGING ARM AND THE SWINGING ARM ROTATES ABOUT THE MOUNTING POST. INJURY WILL RESULT IF FINGERS OR HANDS ARE ALLOWED TO BE TRAPPED BETWEEN THE MOVING PARTS.

(27) [redacted]

(continued)

WARNINGS (continued)

(28) FUSES. THESE FUSES PROTECT THE MAIN HARNESS, IF ANY OF THESE FUSES FAIL REPORT IT IMMEDIATELY. TO CONTINUE WOULD RESULT IN SERIOUS DAMAGE.

(29) [redacted]

(30) HEALTH. PROLONGED AND REPEATED CONTACT WITH USED ENGINE OILS MAY CAUSE SERIOUS SKIN DISORDERS, INCLUDING DERMATITIS AND CANCER.

(31) HEAVY OBJECTS. THE REMOVABLE WINDSCREEN IS HEAVY. USE AN ASSISTANT WHEN REMOVING OR REFITTING THE SCREEN.

(32) HOLDING THE WHEEL. DO NOT HOLD THE STEERING WHEEL WITH THE FINGERS AND THUMBS INSIDE THE WHEEL. A SUDDEN VIOLENT KICK OF THE WHEEL COULD DAMAGE OR EVEN BREAK THE FINGERS. GRIP THE WHEEL ON THE OUTSIDE OF THE RIM WHEN TRAVELLING ACROSS COUNTRY (FIG 20).

(33) IF FOR ANY REASON THE ENGINE IS SWITCHED OFF WHILE THE VEHICLE IS IN MOTION. DO NOT UNDER ANY CIRCUMSTANCES RETURN THE KEY TO THE "STEERING LOCKED" POSITION "O" UNTIL THE VEHICLE IS STATIONARY. TO PREVENT THE STEERING COLUMN LOCK ENGAGING IT IS MOST IMPORTANT THAT BEFORE THE VEHICLE IS MOVED IN ANYWAY, FOR EXAMPLE TOWING, THE KEY MUST BE INSERTED IN THE LOCK AND TURNED TO POSITION "I". IF, DUE TO AN ACCIDENT OR ELECTRICAL FAULT IT IS NOT CONSIDERED SAFE TO TURN THE KEY, THE BATTERIES MUST FIRST BE DISCONNECTED.

(34) IF THE WARNING BUZZER SOUNDS AT THIS STAGE THE BATTERIES HAVE BEEN CONNECTED INCORRECTLY. CHECK BATTERY CONFIGURATION (PARA 11) AND RECTIFY.

(35) INCORRECT USE. THE INCORRECT USE OF THE ROTATING TOWING HOOK COULD RESULT IN DAMAGE TO EQUIPMENT OR SERIOUS PERSONAL INJURY. ENSURE THE ROTATING TOWING HOOK IS USED IN THE CORRECT MANNER.

(36) INJURY TO PERSONNEL. LEAVING THE SLEWING HANDLES IN THE HORIZONTAL POSITION MAY RESULT IN INJURY TO AN OPERATOR SEATED OR WORKING WITHIN THE RING.

(37) INJURY TO PERSONNEL. THE SLEWING RING CAM LOCK LEVER SHOULD BE LEFT IN THE ENGAGED POSITION (HORIZONTAL) WHEN LEFT UNATTENDED. IF LEFT IN THE DISENGAGED POSITION (VERTICAL) IT MAY RESULT IN INJURY TO AN OPERATOR WORKING IN THE REAR OF THE VEHICLE.

(38) INJURY. TAKE CARE NOT TO TRAP FINGERS WHEN CLOSING BONNET WHEN SECURING RADIATOR BLIND.

(39) LIFTING. THE SPARE WHEEL IS HEAVY TO LIFT, TAKE CARE WHEN LIFTING IT ON AND OFF. THIS WILL REQUIRE TWO MEN UNLESS THE SPARE WHEEL LIFTING HARNESS IS USED.

(40) LIQUIDS. MANY LIQUIDS AND SUBSTANCES USED IN MOTOR VEHICLES ARE POISONOUS; THEY MUST NOT BE CONSUMED UNDER ANY CIRCUMSTANCES AND MUST BE KEPT AWAY FROM OPEN WOUNDS. THESE SUBSTANCES INCLUDE BRAKE FLUID, FUEL, WINDSCREEN WASHER ADDITIVES, LUBRICANTS, BATTERY CONTENTS, VARIOUS ADHESIVES, COOLING SYSTEM CORROSION INHIBITOR AND POWER ASSISTED STEERING FLUID.

(continued)

WARNINGS (continued)

(41) MAIN HARNESS FUSE BOX. THIS CONTAINS FUSES THAT PROTECT THE VEHICLE MAIN HARNESSES. SHOULD ANY OF THESE FUSES FAIL THE VEHICLE MUST BE TAKEN TO THE WORKSHOP AND THE FAULT RECTIFIED IMMEDIATELY.

(42) MAINTENANCE. NEGLECT OF THE JACK MAY LEAD TO DIFFICULTY IN A ROAD SIDE EMERGENCY. EXAMINE THE JACK OCCASIONALLY. CLEAN THE THREAD TO PREVENT THE FORMATION OF RUST.

(43) [redacted]

(44) PERSONNEL INJURY HAZARD. THE PROCEDURE OF INVERTING THE WEAPON THROUGH THE SLEWING RING MUST BE CARRIED OUT BY TWO PERSONS. FAILUR TO DO SO MAY RESULT IN INJURY TO PERSONNEL AND/OR DAMAGE TO EQUIPMENT.

(45) PROCEDURE. IT IS IMPORTANT THAT THE JACKING PROCEDURE DESCRIBED IN THIS HANDBOOK IS FOLLOWED. WHEELS SHOULD BE CHOCKED UNDER ALL CIRCUMSTANCES.

(46) PROCEDURE. TO ENSURE SAFETY WHEN USING THE JACK THE FOLLOWING PROCEDURE SHOULD BE FOLLOWED:

(1) DIFF LOCK. ALWAYS ENGAGE DIFFERENTIAL LOCK BEFORE JACKING.

(2) SAFETY. NO PERSON SHOULD REMAIN IN A VEHICLE BEING JACKED.

(3) BRAKING. APPLY THE HANDBRAKE AND ENGAGE FIRST GEAR IN THE MAIN GEARBOX.

(4) GEARS. ENGAGE LOW GEAR IN THE TRANSFER BOX.

(47) SAFETY. WHEN JACKING THE VEHICLE ENSURE THE JACK IS USED ON LEVEL AND FIRM GROUND ONLY.

(48) SEATS AND SAFETY HARNESS. ALL CREW/PASSENGERS MUST OCCUPY THE DESIGNATED SEATS AND WEAR THE SAFETY HARNESS PROVIDED, EVEN FOR THE SHORTEST JOURNEY.

(49) SHARP EDGES. HANDLE THE SAND CHANNELS WITH CARE.

(50) STABILITY. IT IS UNSAFE TO WORK UNDER THE VEHICLE USING ONLY THE JACK TO SUPPORT IT. ALWAYS USE STANDS OR OTHER SUITABLE SUPPORTS TO PROVIDE ADEQUATE SAFETY.

(51) [redacted]

(52) THE BED SHOULD NOT BE USED WHEN THE VEHICLE IS MOVING.

(53) THE CPM MUST NOT BE USED WHEN ON THE MOVE.

(continued)

WARNINGS (continued)

(54) THE PLATFORM EXTENSION (3) IS NOT SELF SUPPORTING AND MUST BE HELD WHEN LIFTING /LOWERING.

(55) THE RADIO OPERATOR'S SEAT IN THE BACK OF A TUL/TUM(HS) FFR VEHICLE IS NOT PERMITTED TO BE USED AS A SEAT FOR THE TRANSPORTATION OF PERSONNEL, UNLESS IN AN EMERGENCY SITUATION, WHERE A LOCAL UNIT COMMANDER CAN MAKE THE DECISION TO PLACE SOMEONE IN THE BACK.

(56) THE RWMIK COMMANDER MUST BE TRAINED IN ACCORDANCE WITH THE RWMIK CRITICAL SAFETY ASPECTS AS DIRECTED IN RWMIK - REVISED CONCEPTS OF USE, REF 088/24/00 DATED 25 AUG 05.

(57) THE RWMIK MUST NOT BE USED TO CARRY ANY PERSONNEL OTHER THAN THE THREE (3) DETAILED WITHIN THIS PUBLICATION.

(58) [redacted]

(59) THE UNDERBONNET FUSE BOX CONTAINS FUSES THAT PROTECT THE VEHICLE MAIN HARNESSES. SHOULD ANY OF THESE FUSES FAIL THE VEHICLE MUST BE TAKEN TO THE WORKSHOP AND THE FAULT RECTIFIED IMMEDIATELY.

(60) THIS TEST MUST BE CARRIED OUT UNDER SAFE ROAD CONDITIONS, I.E. LEVEL DRY ROAD WITH NO FOLLOWING OR ONCOMING TRAFFIC.

(61) TO ALLOW THE BUZZER TO WARN OF INCORRECT CONNECTION IT IS IMPORTANT THAT THE RADIO BATTERIES HAVE BEEN ISOLATED FROM THE AUXILIARY TERMINAL BOX - REFER TO PARA 10.

(62) [redacted]

(63) TOWING. WHEN THE TOWING HOOK IS IN USE, THE JAW MUST ALWAYS BE LOCKED TO PREVENT THE RING OF THE TOWING BAR OR CHAIN FROM JUMPING WHEN TRAVERSING ROUGH TERRAIN OR ENCOUNTERING SUDDEN DIPS IN THE ROAD.

(64) TRAILER. IF THE VEHICLE IS COUPLED TO A TRAILER, DISCONNECT THE TRAILER FROM THE VEHICLE BEFORE COMMENCING JACKING. THIS IS TO PREVENT THE TRAILER PULLING THE VEHICLE OFF THE JACK AND CAUSING PERSONAL INJURY.

(65) TYRES. DO NOT MIX CROSS-PLY AND RADIAL-PLY TYRES ON THIS VEHICLE.

(66) USAGE. CB.3 MUST BE SWITCHED OFF WHEN 12 V SUPPLY SOCKETS ARE NOT IN USE.

(67) VEHICLE PROTECTION. THE MAIN HARNESS FUSEBOX CONTAINS FUSES WHICH PROTECT THE VEHICLE MAIN HARNESSES. SHOULD ANY OF THESE FUSES FAIL THE VEHICLE SHOULD BE TAKEN TO THE WORKSHOP AND THE FAULT RECTIFIED IMMEDIATELY.

(continued)

WARNINGS (continued)

(68) WHEEL. THE SPARE WHEEL IS HEAVY TO LIFT, TAKE CARE WHEN LIFTING IT ON AND OFF. THIS WILL REQUIRE TWO MEN.

(69) [redacted]

(70) WITH THE EXCEPTION OF THE COMMANDER'S IK, ROOF RACKS ARE PROHIBITED FROM BEING FITTED TO TUL/TUM (HS) VEHICLES.

(71) SAFETY HAZARD. RISK OF FIRE. THE USER SHOULD ENSURE THERE ARE NO NAKED FLAMES PRESENT DURING THE PURGING OF THE OXYGEN SYSTEM.

CAUTIONS

7 The following CAUTIONS are used in this document:

(1) 24 VOLT. All the bulbs incorporated in the vehicle are of the heavy duty 24 Volt type and should be changed immediately they have failed. Failure to do so will result in operating in an unreliable condition e.g. warning lights not indicating failure especially with the brakes, vehicle charging and 24 volt charging circuits.

(2) ADJUSTMENT SCREWS. Care must be taken not to disturb the headlight beam adjustment screws

(3) All the bulbs incorporated in the vehicle are of the 24 Volt type and should be changed immediately they have failed. Failure to do so will result in operating in an unreliable condition e.g. warning lights not indicating failure especially with the brakes, vehicle charging and 24 volt charging circuits.

(4) BATTERY CHARGER. Do not use a high-speed battery charger as a starting aid. When using a charger to charge the battery, it must be disconnected from the rest of the vehicle's electrical system.

(5) BATTERY TYPE. If a new battery is fitted to the vehicle, it should be the same type as the original battery. Alternatives may vary in size and terminal positions and this could lead to a possible fire hazard if the terminals or leads come in contact with the battery clamp assembly. When fitting a new battery ensure that the terminals and leads are well clear of the battery clamp assembly.

(6) BATTERY. Do not let the engine run with the battery is disconnected.

(7) BRAKING. Do not rely on the handbrake to hold the vehicle once the transmission brake has been subjected to mud and water; leave the vehicle parked in gear.

(8) BREATHER PIPES. Blocked breather pipes may cause damage to the axles, so ensure that regular servicing is carried out. When the vehicle has undergone rugged and difficult conditions more frequent servicing may be required.

(9) CARE. When topping-up a reservoir, care must be taken to ensure that fluid does not come in contact with any paintwork on the vehicle.

(10) CHANGING GEAR. Changes from 'H' (high) to 'L' (Low) should only be attempted when the vehicle is stationary.

(11) COOLANT. Never run the engine without coolant, not even for a very brief period, otherwise the injectors may be seriously damaged. This is due to the very high rate of heat transfer in the region of the injector nozzles.

(continued)

CAUTIONS (continued)

(12) CORROSION. As a precaution against corrosion, the cooling system should be drained and flushed out as specified.

(13) DO NOT over fill the tank, if a full tank of fuel is required, stop filling immediately the fuel pump trips out, do not carry on and fill to the top of filler neck.

(14) Engagement of the lock with one or more wheels slipping will cause damage to the transmission.

(15) EQUIPMENT DAMAGE. If the .50 HMG is the weapon in use, remove the barrel and place in the spare barrel stowage bracket, prior to inverting the mount. Failure to do so could result in fouling, and/or equipment damage.

(16) EQUIPMENT DAMAGE. The ratchet handle must be folded back against the FIM to prevent the ratchet from coming into contact with the rear ROPS frame, when the weapon mount is being inverted, otherwise damage to the ratchet may result, rendering the FIM unserviceable.

(17) ETHER. The use of ether in any form must not be used to start the engine, as the very high cylinder pressures that are developed under these conditions can lead to serious and expensive mechanical failure.

(18) EXPANSION CAP. Failure to tighten the expansion cap may result in coolant loss with possible damage to the engine through overheating.

(19) FIXING BOLTS. When the front propeller shaft is to be removed check whether the four rear end fixing bolts in the gearbox flange are entered from the gearbox side. In this event they cannot readily be withdrawn. However, since the flange will revolve as soon as the vehicle is towed the four loose bolts must be tightly secured with nuts or suitably wired to prevent damage to the gearbox end casing.

(20) FIXING BOLTS. Where the rear propeller shaft is to be removed ensure that the four fixing bolts are replaced to secure the handbrake drum.

(21) HEATER OPERATION. Before switching on the Eberspacher heater ensure the outside fresh air grille is OPEN.

(22) HEATER STARTING. To prevent the heater from "locking out" do not try to start the heater more than four times (refer to Cat 512, Chap 18-2).

(23) MAINTENANCE. Before use check that the towing pintle is clean, well lubricated and in good condition.

(24) OIL LEVEL. The oil level must never be above the "FULL" mark as engine damage may be caused.

(25) POLARITY. When installing, ensure that the batteries are connected in the correct polarity.

(26) SEALANT. Ensure that the rubber boot is clean and free of old grease to ensure a secure seal when replaced.

(27) SPARE WHEEL. Ensure the spare wheel is removed from its stowed position prior to jacking the vehicle.

(continued)

CAUTIONS (continued)

(28) The Driver must be qualified in accordance with the DRLC GS driver pack and the RWMIK Specific instructions taken from Ref 1 of Annex B to RWMIK - Revised Concepts of Use, Ref 088/24/00 dated 25 Aug 05.

(29) The Gunner must be qualified on the weapons he is using and be trained in accordance with the RWMIK critical safety aspects as directed in Annexes A, B and C to RWMIK - Revised Concepts of Use, Ref 088/24/00 dated 25 Aug 05.

(30) The long arm mirror assembly should always be fitted to the side of the vehicle that has the spare wheel mounted.

(31) The mirrors should also be changed around if necessary. The long arm mirror assembly should always be fitted to the side of the vehicle that has the spare wheel mounted.

(32) The roof rack cover can only be used when there is a load on the roof rack.

(33) The Spare wheel should always be mounted on the side of the vehicle nearest the roadside kerb.

(34) The tyres should not be run in a partially deflated condition, (such as "emergency soft pressure" on soft sand) as internal tyre damage may result.

(35) The vehicle must be stationary when moving the transfer gears from high "H" to low L".

(36) This should only be attempted when the vehicle is stationary.

(37) To carry out the foregoing use suitable lifting gear or sufficient personnel to accomplish the task without risk of injury.

(38) [redacted]

(39) Use of power output socket without the vehicle engine running could result in a discharged battery.

(40) Use of the power output socket without the vehicle engine running could result in a discharged battery.

(41) WELDING. The battery must be disconnected before carrying out any electrical welding on the vehicle.

(42) WHEELBRACE. When using the wheel brace from the vehicle tool kit apply hand pressure only. Do not use foot pressure or extension tubes as this could overstress the wheel studs.

(43) WHEELS. When changing the wheels of the vehicle, ensure that all the precautions as previously stated are carried out

(44) When loading the roof rack the maximum weight allowed is 70kg only.

ABBREVIATIONS AND SYMBOLS

ABBREVIATIONS

8 The following abbreviations are used in this category:

Abbreviation	Definition
A/Amp	Ampere
AC	Alternating Current
AESP	Army Equipment Support Publication
AGL	Automatic Grenade Launcher
Amdt	Amendment
C	Celsius/Centigrade
Cat	Category
Chap	Chapter
Comm's	Communication
CPM	Crew Protection Mount
CPWM	Crew Protection Weapons Mount
DE&S	Defence Equipment and Support
DIN	Defence Instructions and Notices
ECU	Electronic Control Unit
EFR	Equipment Failure Reporting
FFR	Fit For Radio
Fig	Figure
FIM	Folding Interface Mount
GPMG	General Purpose Machine Gun
GS	General Service
HMG	Heavy Machine Gun
HS	High Specification
IK	Installation Kit
in.	Inches
IVSS	Inter Vehicle Starting Socket
kg	Kilogram
km	Kilometres
km/h	Kilometres per Hour

(continued)

ABBREVIATIONS (continued)

Abbreviation	Definition
LAG	Local Awards Group
lb	Pound
LEUMS	Land Equipment Unit Maintenance Standards
LH	Left Hand
LHD	Left Hand Drive
m	Metre
min	Minimum
mm	Millimetre
MOD	Ministry of Defence
mph	Miles per Hour
NATO	North Atlantic Treaty Organisation
Nm	Newton-metre
No.	Number
OSVP	Organisational Support Vehicle Programme
Para	Paragraph
PTO	Power Take Off
RAF	Royal Air Force
RCD	Residual Current Device
RFI	Radio Frequency Interface
RH	Right Hand
RHD	Right Hand Drive
SOP	Standard Operating Procedures
TUL	Truck Utility Light
TUM	Truck Utility Medium
V	Volt
VHF	Very High Frequency
VIN	Vehicle Identification Number
WMIK	Weapons Mounted Installation Kit

SYMBOLS

9 The following symbols are used in this category:

Symbol	Nomenclature
+ve	positive
-ve	Negative
°	Degree (Angle/Temperature)

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CHAPTER 1

GENERAL DESCRIPTION

CONTENTS

INTRODUCTION

1 This Chapter gives a General Description of the Truck Utility Light (TUL) HS, Truck Utility Medium (TUM) HS and (TUM) Ambulance HS variants listed in the following sub-chapters:

1.1 Chapter 1-1 Basic Vehicle.

1.2 Chapter 1-2 Fitted For Radio (FFR).

1.3 Chapter 1-3 Battlefield Ambulance.

1.4 Chapter 1-4 Winterised/Waterproofed.

1.5 Chapter 1-5 Air-drop.

1.6 Chapter 1-6 Helicopter Support Vehicle.

1.7 Chapter 1-7 Commanders IK.

1.8 Chapter 1-8 Weapons Mount Installation Kit (RWMIK).

1.9 Chapter 1-9 Tropical Battlefield Ambulance.

1.10 Chapter 1-10 Winterised/Waterproofed Battlefield Ambulance.

1.11 Chapter 1-11 Waterproofed Weapons Mount Installation Kit (WMIK).

General

2 The information given in this chapter is applicable to both Left Hand Drive (LHD) and Right Hand Drive (RHD) vehicles.

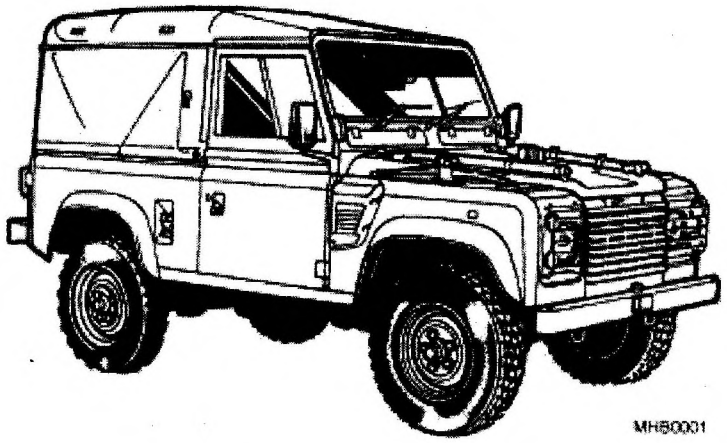

Fig 1 Truck Utility Light (TUL)

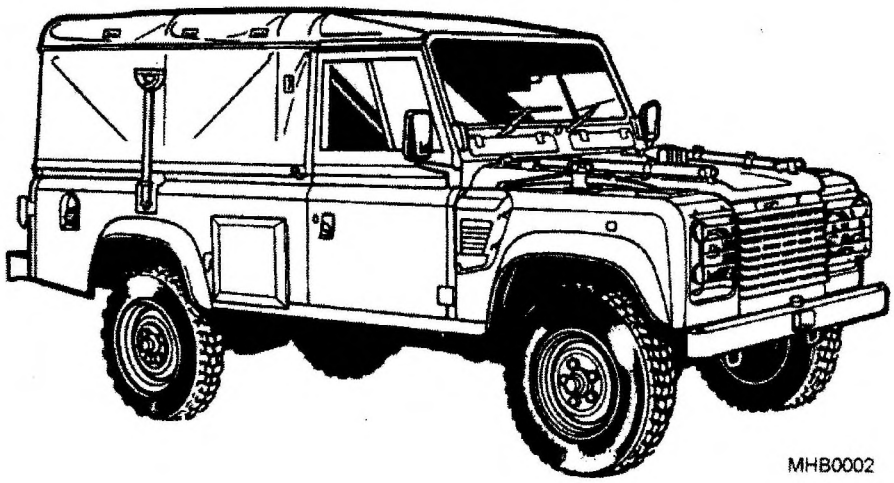

Fig 2 Truck Utility Medium (TUM)

Fig 3 Battlefield Ambulance

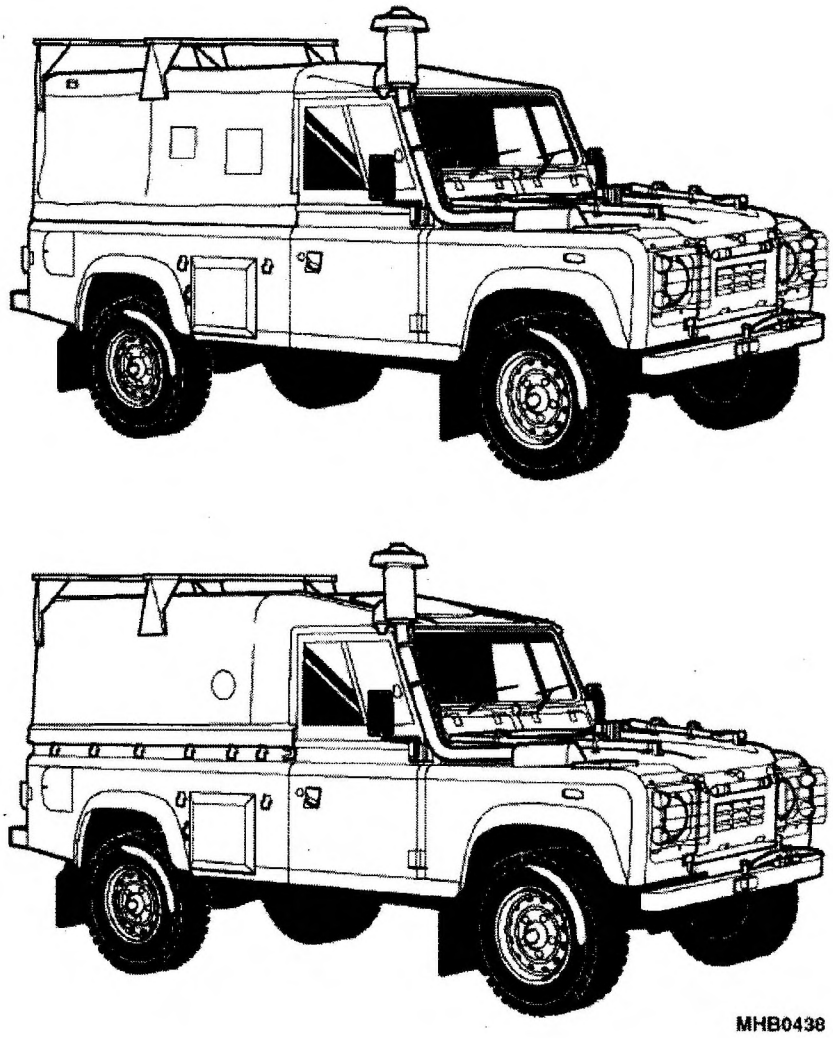

Fig 4 Winterised/Waterproofed

Fig 5 Commander IK

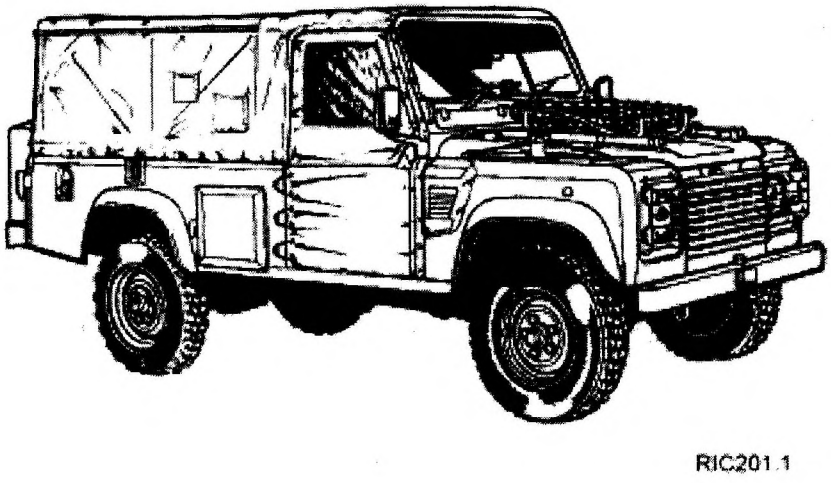

Fig 6 Weapons Mount Installation Kit (WMIK)

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CHAPTER 1-1

BASIC VEHICLE

CONTENTS

(continued)

CONTENTS (continued)

INTRODUCTION

1 This chapter provides a General Description for all items common to the Truck Utility Light (TUL) HS and Truck Utility Medium (TUM) HS vehicles.

The vehicle

2 The vehicle is of the four wheeled type, permanently driving through all four wheels and is available in Right Hand Drive (RHD) or Left Hand Drive (LHD). It is capable of leaving made up road surfaces and travelling on to unmade ground and is capable of towing, when laden, the appropriate trailers without disproportionate loss of performance.

TECHNICAL DATA

3 The technical data for the TUL and TUM vehicles are detailed in Table 1 and Table 2 as follows:

TABLE 1 TECHNICAL DATA (TUL)

Serial (1)	Title (2)	Data (3)
1	Length	3835 mm
2	Width	1910 mm
3	Height (unladen)	2150 mm
4	Track (front and rear)	1521 mm
5	[redacted]	[redacted]
6	[redacted]	[redacted]

TABLE 2 TECHNICAL DATA (TUM)

Serial (1)	Title (2)	Data (3)
1	Length	4550 mm
2	Width	1910 mm
3	Height (unladen)	2200 mm
4	Track (front and rear)	1521 mm
5	[redacted]	[redacted]
6	[redacted]	[redacted]

LABELS

4 Located around the vehicle there are labels of various kinds, some for information purposes, others to guard the user when operating the vehicle.

Nomenclature label

5 The label is located on the side of the heel box, driver's side only (Fig 1).

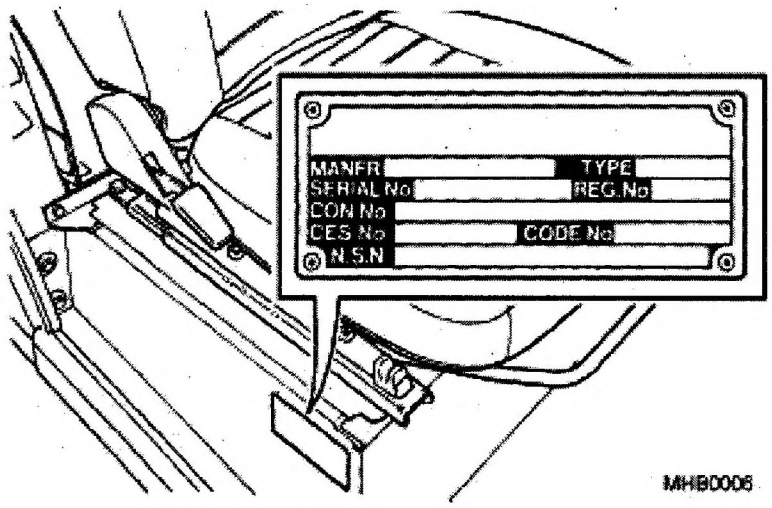


Fig 1 Nomenclature label

Vehicle weight plate

6 [redacted]

[redacted]

Rotating blades warning label

7 The label is located under the bonnet, on top of the radiator cowling (Fig 3).

Brake fluid warning label

8 The label is located under the bonnet (Fig 3), moulded into the brake fluid reservoir.

Radiator filler plug warning label

9 The label is located on the top of the radiator adjacent to the plug (Fig 3).

Anti-freeze label

10 There are two labels, one of which is under the bonnet (Fig 3) affixed to the top of the radiator. and the other can be found, attached to the windscreen (Fig 4)

Engine oil label

11 The engine oil label (Fig 3) is located on top of the radiator and advised that only OX90 grade of oil is put into the engine.

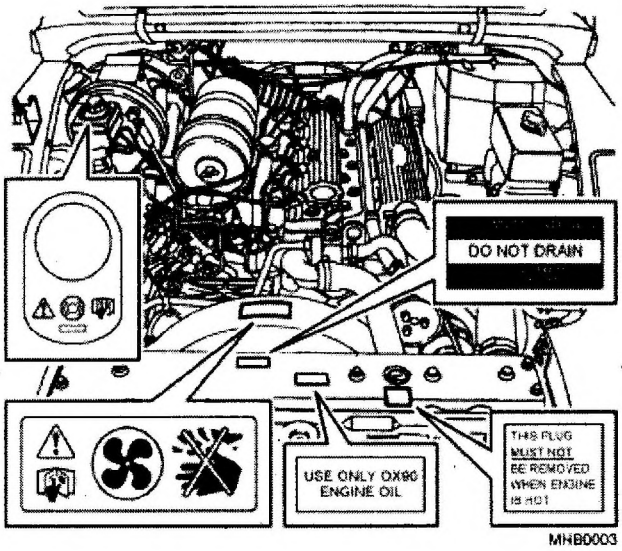


Fig 3 Under bonnet labels

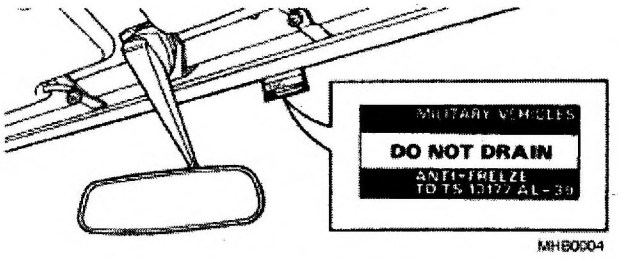


Fig 4 Antifreeze label (windscreen)

Differential lock warning label

12 The label is located to the left of the steering wheel, mounted to the right of the auxiliary instrument panel (Fig 5).

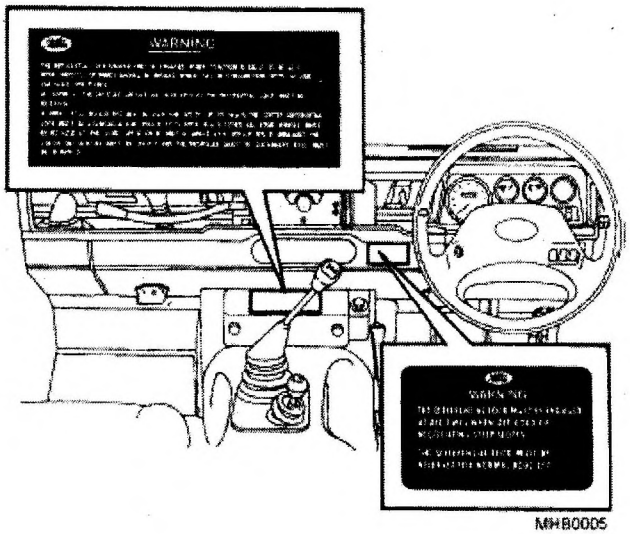


Fig 5 Differential lock warning label

Vehicle identification number plate (VIN)

13 [redacted]

[redacted]

14 [redacted]

[redacted]

1 Type approval
2 VIN (min. seventeen digits)
3 Maximum permitted laden weight
4 Maximum vehicle and trailer weight.
5 Maximum road weight - front axle
6 Maximum road weight - rear axle

Fig 7 VIN plate layout

24 volt warning labels

15 There are 24 Volt (V) labels are located on the vehicle, one located on the rear cross member adjacent to the 12 pin North Atlantic Treaty Organisation (NATO) socket (Fig 8)

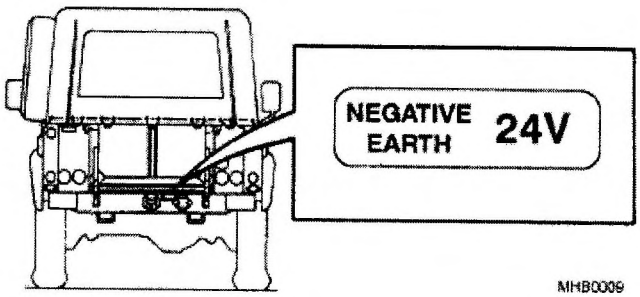


Fig 8 24 Volt label (rear)

15.1 Another 24 V label is located in the cab, adjacent to the Inter Vehicle Starting Socket (IVSS) (Fig 9) and inform the user that the vehicle system is 24 volts only.

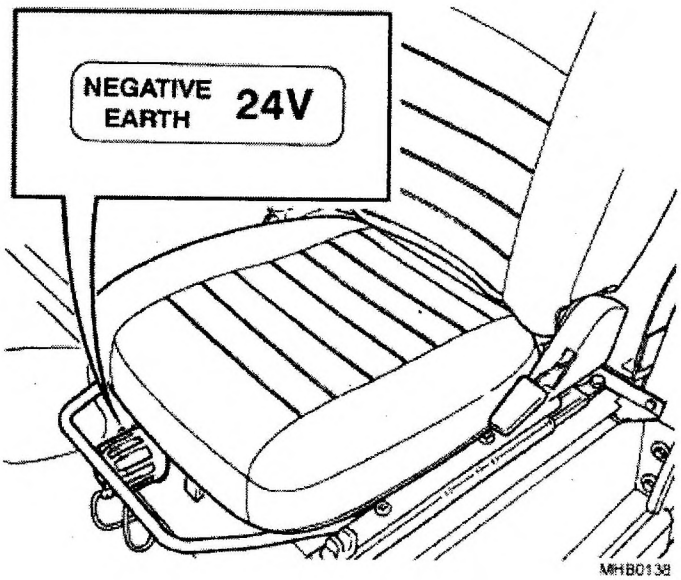


Fig 9 24 Volt label (in cab)

Jerry can labels

16 The labels are located on the inside of the respective compartment doors (Fig 10).

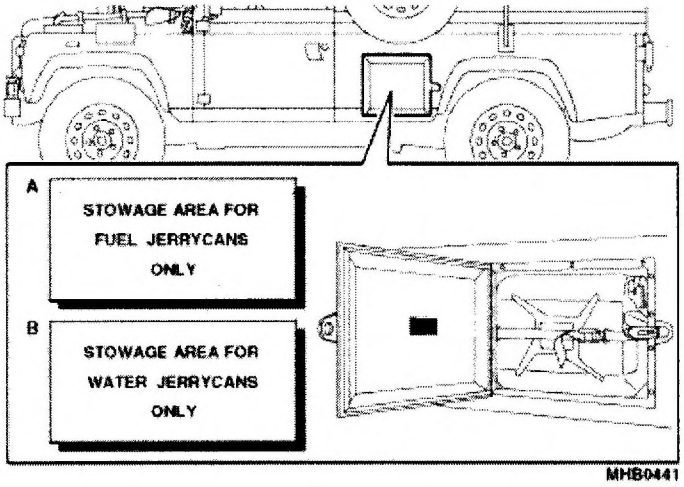


Fig 10 Jerry can labels

Fuel label

17 The label is located below the filler cap.

Spare wheel lifting harness label

18 The spare wheel lifting harness label (Fig 11) is located on the harness and is visible when the spare wheel is in its stowed position.

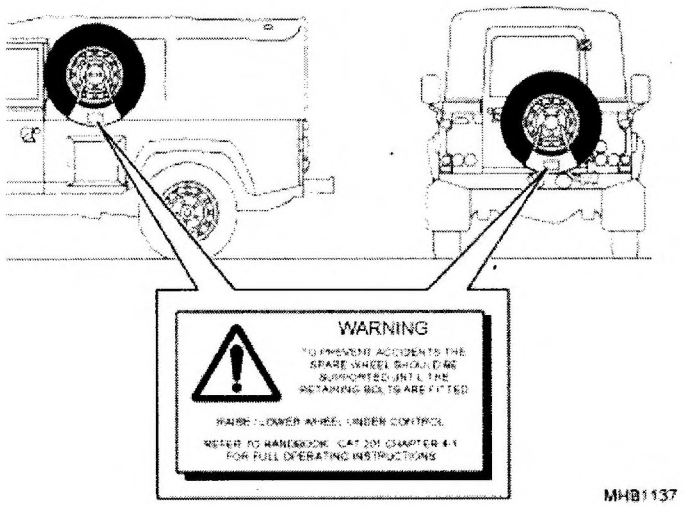


Fig 11 Spare wheel lifting harness label

RUNNING-IN PERIOD

WARNINGS

(1) TYRES. DO NOT MIX CROSS-PLY AND RADIAL-PLY TYRES ON THIS VEHICLE.

(2) FILLER CAP. DO NOT REMOVE THE EXPANSION TANK FILLER CAP WHEN THE ENGINE IS HOT, BECAUSE THE COOLING SYSTEM IS PRESSURISED AND PERSONAL SCALDING COULD RESULT.

(3) LIQUIDS. MANY LIQUIDS AND SUBSTANCES USED IN MOTOR VEHICLES ARE POISONOUS; THEY MUST NOT BE CONSUMED UNDER ANY CIRCUMSTANCES AND MUST BE KEPT AWAY FROM OPEN WOUNDS. THESE SUBSTANCES INCLUDE BRAKE FLUID, FUEL, WINDSCREEN WASHER ADDITIVES, LUBRICANTS, BATTERY CONTENTS, VARIOUS ADHESIVES, COOLING SYSTEM CORROSION INHIBITOR AND POWER ASSISTED STEERING FLUID.

(4) SEATS AND SAFETY HARNESS. ALL CREW/PASSENGERS MUST OCCUPY THE DESIGNATED SEATS AND WEAR THE SAFETY HARNESS PROVIDED, EVEN FOR THE SHORTEST JOURNEY.

19 Progressive running-in of the vehicle is important and has a direct bearing on reliability and smooth running throughout its life. The most important point is not to hold the vehicle on a large throttle opening for any sustained periods.

20 The maximum speed should be limited to 65 to 80 km/h (40 to 50 mph) on a light throttle and this may be progressively increased over the first 2,500 km (1550 miles).

THE ENGINE

21 The engine is a four cylinder, four stroke, compression ignition type with direct injection, turbocharged and intercooled with overhead valves and liquid cooling. The power is transmitted through a single dry plate clutch to a five forward and one reverse speed main gearbox and a two speed transfer gearbox with an integral central differential to both front and rear axles.

22 The vehicle has the combination of a transfer gearbox and main gearbox which provides the driver with 12 gear ratios, ten forward and two reverse.

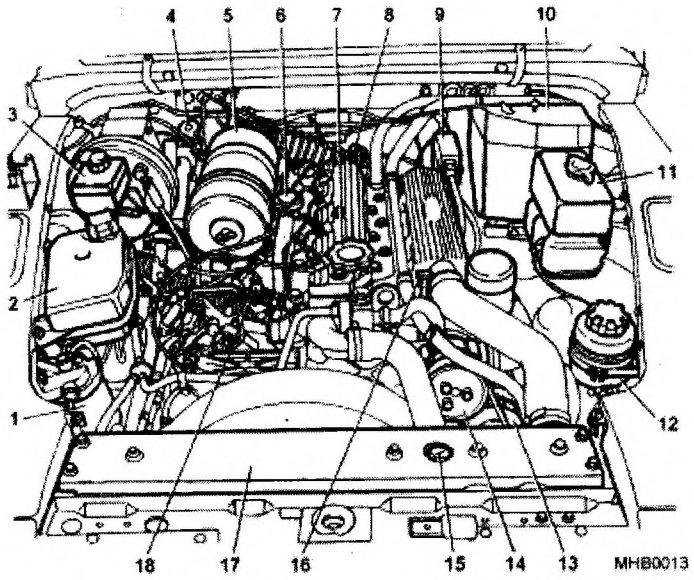
Engine compartment

WARNINGS

(1) FILLER CAP. DO NOT REMOVE THE EXPANSION TANK FILLER CAP WHEN THE ENGINE IS HOT, BECAUSE THE COOLING SYSTEM IS PRESSURISED AND PERSONAL SCALDING COULD RESULT.

(2) LIQUIDS. MANY LIQUIDS AND SUBSTANCES USED IN MOTOR VEHICLES ARE POISONOUS; THEY MUST NOT BE CONSUMED UNDER ANY CIRCUMSTANCES AND MUST BE KEPT AWAY FROM OPEN WOUNDS. THESE SUBSTANCES INCLUDE BRAKE FLUID, FUEL, WINDSCREEN WASHER ADDITIVES, LUBRICANTS, BATTERY CONTENTS, VARIOUS ADHESIVES, COOLING SYSTEM CORROSION INHIBITOR AND POWER ASSISTED STEERING FLUID.

23 The layout of the main components within the Engine compartment are identified in Fig 12.

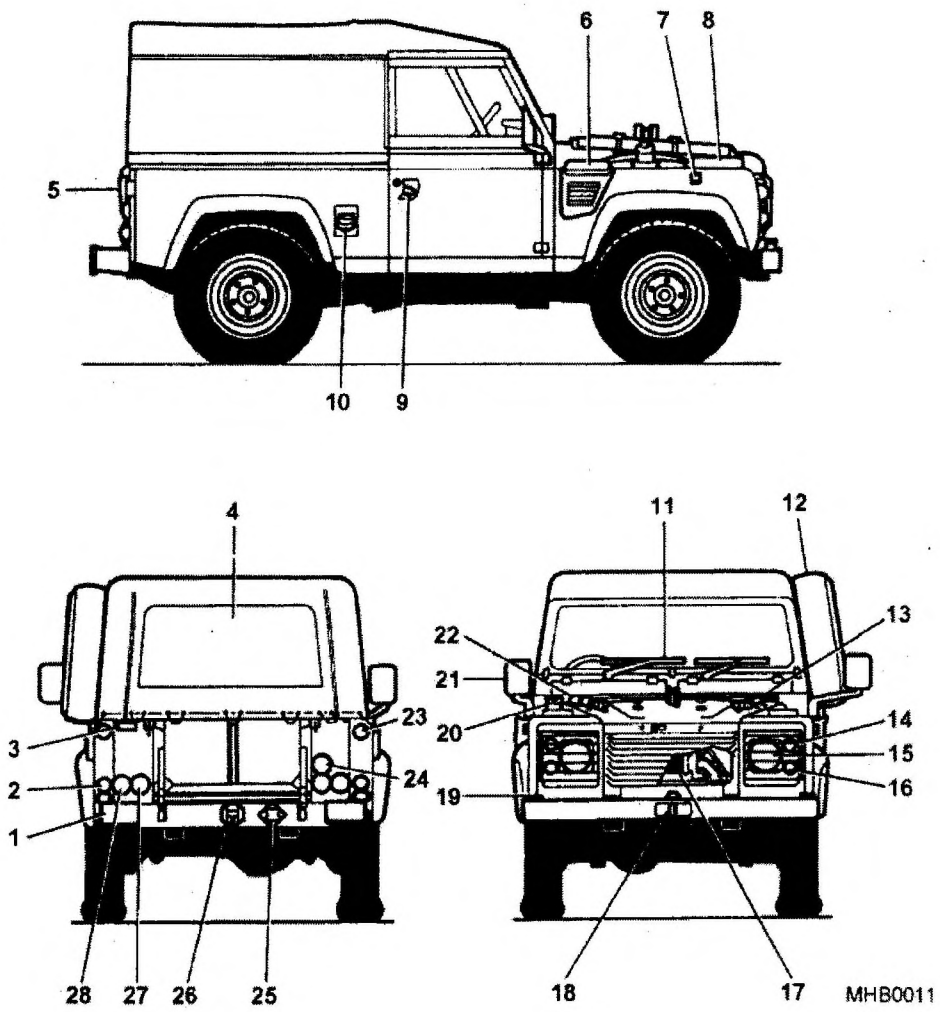


1	Fuel filter	10	Heater matrix
2	Expansion Tank	11	Windscreen washer reservoir
3	Brake fluid reservoir	12	Power steering reservoir
4	Clutch fluid reservoir	13	24 V ducted alternator
5	Air cleaner	14	Water pump
6	Crankcase breather	15	Radiator filler cap
7	Engine oil filler cap	16	Dipstick
8	Breather pipes	17	Radiator
9	Auxiliary fuses	18	Fuel lift pump

Fig 12 Engine compartment

Truck Utility Light (TUL) external layout

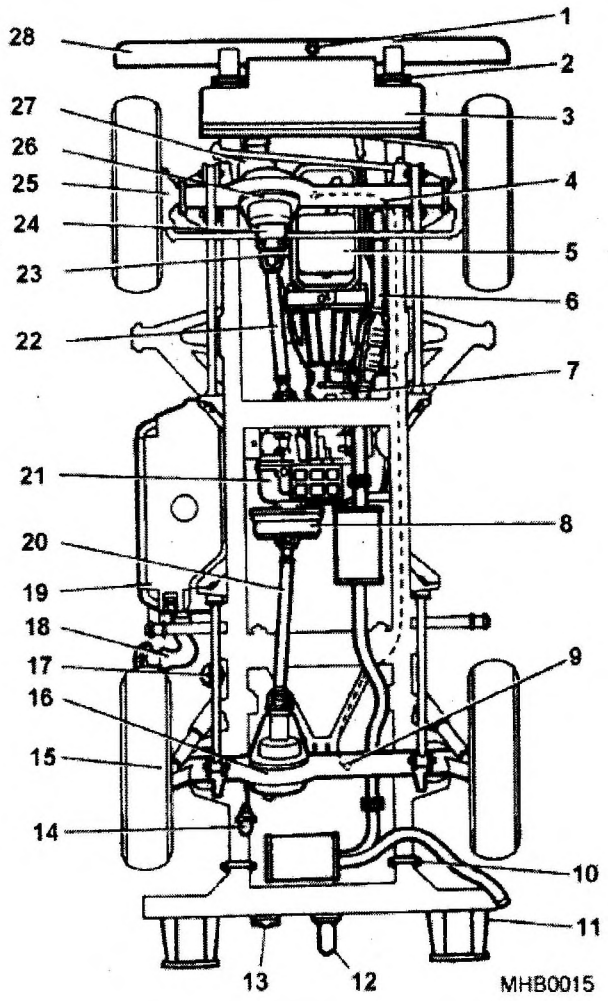
24 The external layout of the TUL is identified in Fig 13.



1	Bumperettes	11	Windscreen wipers	20	Pick head
2	Rear stop lights	12	Spare wheel	21	Door mirrors
3	Rear number plate light	13	Shovel	22	Helve
4	Full length canvas hood	14	Front side lights	23	Rear side light
5	Convoy flag holders	15	Headlights	24	Reversing light
6	Air intake	16	Turn lights	25	12 pin trailer socket
7	Side repeaters	17	Gearbox oil cooler	26	Rotating towing hook
8	Antenna coaxial stowage	18	Front towing pintle	27	Rear fog lights
9	Door handles	19	Convoy flag holders	28	Turn lights
10	Fuel cap				

Fig 13 Truck Utility Light – External layout

25 The layout of the TUL under chassis is identified in Fig 14.

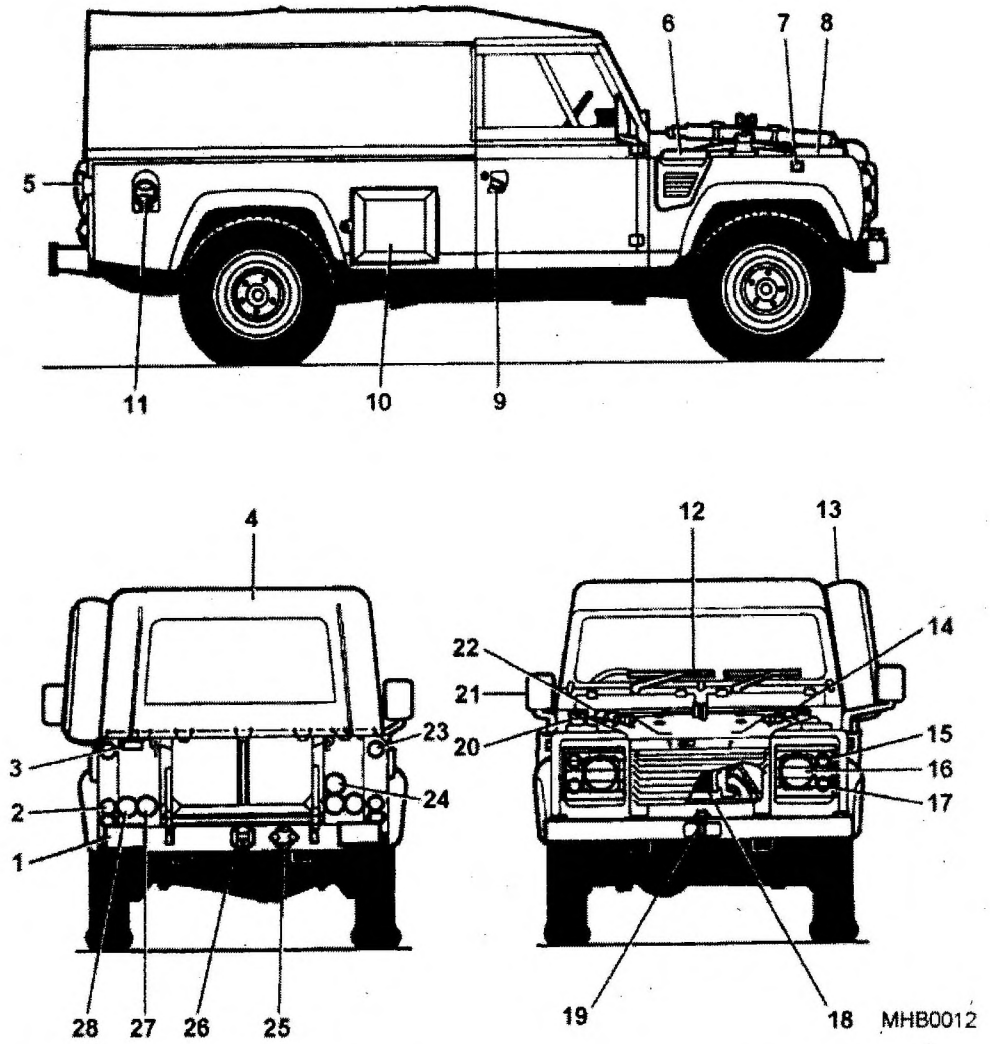


1	Front towing pintle	11	Rear bumperettes c/w anti-jack knife points	20	Rear propeller shaft
2	Front tie down shackles			21	Transfer gearbox
3	Steering protection plate	12	Towing hook	22	Front propeller shaft
4	Front axle breather	13	Trailer socket	23	Engine oil filter
5	Engine sump	14	Convoy light	24	Track rod protection plate
6	Exhaust pipe and catalyst	15	Rear brakes	25	Front brake and swivel pin housing
7	Main gearbox	16	Rear differential axle		
8	Transmission brake drum	17	Fuel sedimenter	26	Front differential axle
9	Rear axle breather	18	Fuel filler pipe	27	Steering box
10	Rear tie down shackles	19	Fuel tank	28	Front bumper

Fig 14 Truck Utility Light (TUL) under chassis

Truck Utility Medium (TUM) external layout

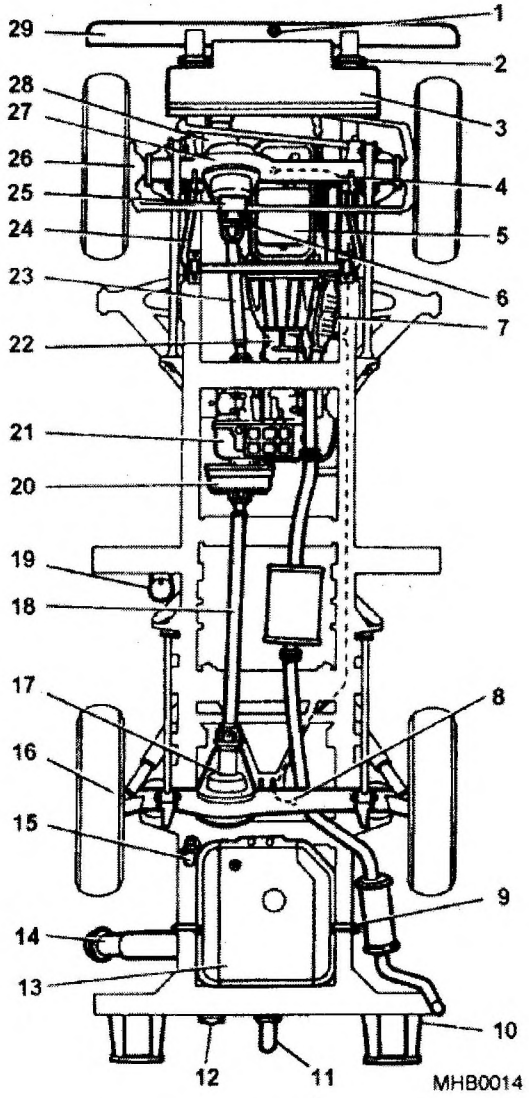
26 The external layout of the TUM is identified in Fig 15.



1	Bumperettes	11	Fuel cap	20	Pick head
2	Rear stop lights	12	Windscreen wipers	21	Door mirrors
3	Rear number plate light	13	Spare wheel	22	Helve
4	Full length canvas hood	14	Shovel	23	Rear side light
5	Convoy flag holders	15	Front side lights	24	Reversing light
6	Air intake	16	Headlights	25	12 pin trailer socket
7	Side repeaters	17	Turn lights	26	Rotating towing hook
8	Antenna coaxial stowage	18	Gearbox oil cooler	27	Rear fog lights
9	Door handles	19	Front towing pintle	28	Turn lights
10	Jerry can stowage				

Fig 15 Truck Utility Medium (TUM) – External layout

27 The layout of the TUM under chassis is identified in Fig 16.



1	Front towing pintle	11	Towing hook	21	Transfer gearbox
2	Front tie down shackles	12	Trailer socket	22	Main gearbox
3	Steering protection plate	13	Fuel tank	23	Front propeller shaft
4	Front axle breather	14	Fuel filler pipe	24	Anti-roll bars
5	Engine sump	15	Convoy light	25	Track rod protection plate
6	Engine oil filter	16	Rear brakes	26	Front brake and swivel pin housing
7	Exhaust pipe and catalyst	17	Rear differential axle		
8	Rear axle breather	18	Rear propeller shaft	27	Front differential axle
9	Rear tie down shackles	19	Fuel sedimenter	28	Steering box
10	Rear bumperettes c/w anti-jack knife points	20	Transmission brake drum	29	Front bumper

Fig 16 Truck Utility Medium (TUM) under chassis

CHASSIS

28 The chassis (Fig 14/Fig 16) is constructed from two welded box section side members with five cross members on the TUL and seven cross members on the TUM vehicles and a detachable gearbox cross member.

Front bumper

29 Attached to the front of the chassis is a full width bumper (Fig 13/Fig 15) complete with convoy flag holder facilities at each end.

Front towing pintle

30 The front towing pintle (Fig 13/Fig 15) is built into the centre of the bumper and accepts a 75 mm tow eye.

Recovery/tie down shackles

31 Four recovery/tie down shackles are fitted to the chassis side members - two at the front and two at the rear for aircraft tie-down, lifting and recovery functions. In addition and attached to the front and rear bumpers are four lifting rings, the rear being incorporated in the bumperettes.

SUSPENSION

32 The suspension is provided by four helical coil springs, one at each wheel station with double acting hydraulic dampers and rubber buffers.

BRAKES

33 The brake circuit is divided to provide braking on all four wheels using ventilated disc brakes on the front and solid disc brakes on the rear wheels, with a servo-assisted hydraulic braking system. A mechanically operated transmission parking brake is provided, utilising the drum brake system, mounted on the rear of the transfer gearbox output shaft.

Brake actuation

34 Brake actuation is by a pendant pedal acting through a vacuum assisted servo unit on a tandem hydraulic master cylinder. A direct drive engine pump supplies vacuum. Rear feed (TUL only) passes through a pressure-reducing valve.

Brake failure warning system

35 A warning light on the binnacle in the cab indicates hydraulic failure.

AXLES

36 The axles on the TUL and TUM (Fig 14/Fig 16) vehicles are of the rigid construction type with a spiral bevel type differential at the front and rear.

Front axle

37 The front axle is made up of a two-piece pressed steel casing with offset banjo and spherical housings for universal joints in half shafts.

Half shafts

38 The half shafts are fully floating incorporating a single constant velocity joint.

Hub drive arrangement

39 The hub drive arrangements are driving flanges splined to the half shafts with taper roller hub bearings.

Hub driving arrangement

40 The hub driving arrangement is via a hub-driving member splined to the half shafts with taper roller hub bearings.

Steering swivels

41 These are taper roller bearings with asbestos resin upper bearings.

Axle breathers

42 The axle breathers (Fig 14/Fig 16) are flexible pipes starting from the axle tubes ending in the engine compartment. There are two breathers, one from each axle.

Rear Axle

43 The rear axle has two variants, one for TUL and one for TUM and are as follows:

43.1 Rear axle (TUL) (Fig 14) is made up of a two-piece pressed steel casing and 6mm (0.25 in) differential bowl.

43.2 Rear axle (TUM) (Fig 16) is made up of a rigid two piece pressed steel casing with a single heavy gauge steel stiffener on the underside and 6mm (0.25 in) differential bowl.

BODY

44 The body is constructed from pressed and folded aluminium alloy panels, spot welded or riveted. The scuttle, door frames and other minor items are made from steel.

Scuttle

45 The scuttle divides the engine bay from the driving/passenger compartment. It is constructed from mild steel with impact surfaces designed for collapsibility and are padded. The ventilators are pivoted adjustable flaps ducted to face level outlets and are fitted with gauze fly screens.

Windscreen

46 The windscreen is made up of a one-piece laminated glass.

Bonnet

47 The bonnet is constructed from aluminium alloy sheet with steel stiffeners. It is fitted with a central retaining device, a safety catch and an external release mechanism.

Spare wheel stowage

48 Spare wheel stowage is located in two possible areas:

48.1 On the opposite side to the driver, and is secured to a mounting bracket, which is bolted to the roll cage.

48.2 On the rear door of the vehicle.

49 The spare wheel is fitted with a lifting harness (Fig 17) to aid in removal and replacement of the spare wheel.

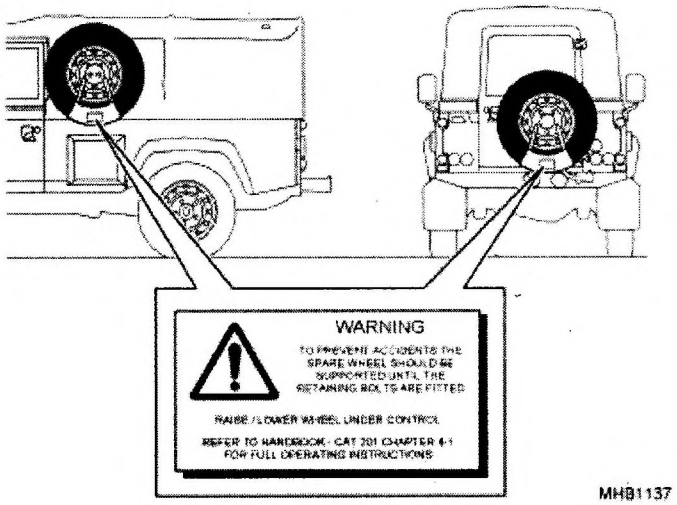


Fig 17 Spare wheel lifting harness

Cab doors

50 The cab doors are constructed from aluminium alloy panels with a one piece steel frame and fittings hung on two hinges. The upper door assembly is removable at waist level.

Door locks

51 The doors are fitted with direct action anti-burst door locks complete with a private lock set and adjustable striker plates.

Door windows

52 The door windows are made up of two-piece sliding section, of toughened glass, and are lockable in the closed position.

Radiator mounting and grille

53 The radiator is rubber mounted to the chassis/body and is protected by a black plastic moulded grille.

Front wings

54 The front wings are made from aluminium alloy sheet with flat tops and steel curved inner wheel valances. Tops are reinforced to permit the fitting of communication antennas.

Bodyside and rear quarters

55 The body side and rear quarters are constructed from aluminium alloy with steel cappings.

Jerry can stowage

56 On TUM vehicles only, jerry can stowage has been built into the bodysides. The stowage is of alloy and steel construction with lockable aluminium alloy doors. The doors have a provision for padlocks.

Bulkhead

57 The bulkhead separates the driver/passenger compartment from the load compartment of the vehicle. It is constructed from aluminium alloy with steel cappings and is permanently secured into position.

Small arms clip

58 Mounted within the cab area are two sets of small arms clips. The clips are positioned for easy access.

Floor

59 The floor is constructed from aluminium alloy sheet panelled, braced underframed and rigidly attached to the chassis frame. Riveted to the floor are two full-length galvanised steel wear strips.

ELECTRICAL SYSTEM

60 The electrical system is charged by the vehicle alternator to 24 volts rectified AC negative earth with voltage compensation and ducted breathing to control water ingress. The charging control and rectifier are integral with the alternator. The system feeds all the vehicles' electrical requirements.

Alternator

61 The alternator is a 24 volt charging system with a 50 Ampere nominal output.

Fuses

62 There are two fuse boxes, a master fuse box, which is located in the engine compartment, and a subsidiary fuse box located in the fascia. There are 3 fuses in the master box and 17 in the subsidiary box which protect the vehicle circuits.

Batteries

63 The vehicle batteries are of the low maintenance type with special airportable filler caps wired in series to supply 24 volts.

Lights

64 The vehicle lights are of the commercial type and are controlled by the main lighting switch which governs whether the vehicle is in normal lighting or blackout.

FUEL SYSTEM

65 The fuel system consists of the fuel tank feeding through a sedimenter to a fuel lift pump and fuel filter located in the engine compartment, then to the engine.

Fuel lift pump

66 The engine mounted mechanical fuel lift pump is a self-priming unit and does not need any attention. The pump draws fuel up to the engine from the tank.

Fuel sedimenter

67 The fuel sedimenter is to allow excess water to be collected and, at periodic intervals, drained away to atmosphere.

Fuel filter

68 The fuel filter (Fig 12 (1)) is a full-flow unit and contains a renewable canister. The filter cleans the fuel and collects any foreign bodies found in the fuel.

ENGINE COOLING SYSTEM

69 The cooling system is located inside the engine compartment and comprises the expansion tank connected to the radiator by way of the engine.

Expansion tank

70 The expansion tank (Fig 12 (2)) is located on the right hand side wing valance and allows the coolant to expand when it gets hot. This prevents the system from being over pressurised.

Radiator

71 The radiator (Fig 12 (17)) is vaned so that air can pass through, allowing the heated fluid that has circulated through the engine to cool down.

[redacted]

72 [redacted]

CHAPTER 1-2

FITTED FOR RADIO

CONTENTS

INTRODUCTION

1 This sub-chapter describes all the items applicable to the Fitted For Radio (FFR) Truck Utility Light (TUL) and Truck Utility Medium (TUM) vehicles which have not been covered in sub-chapter 1 - 1.

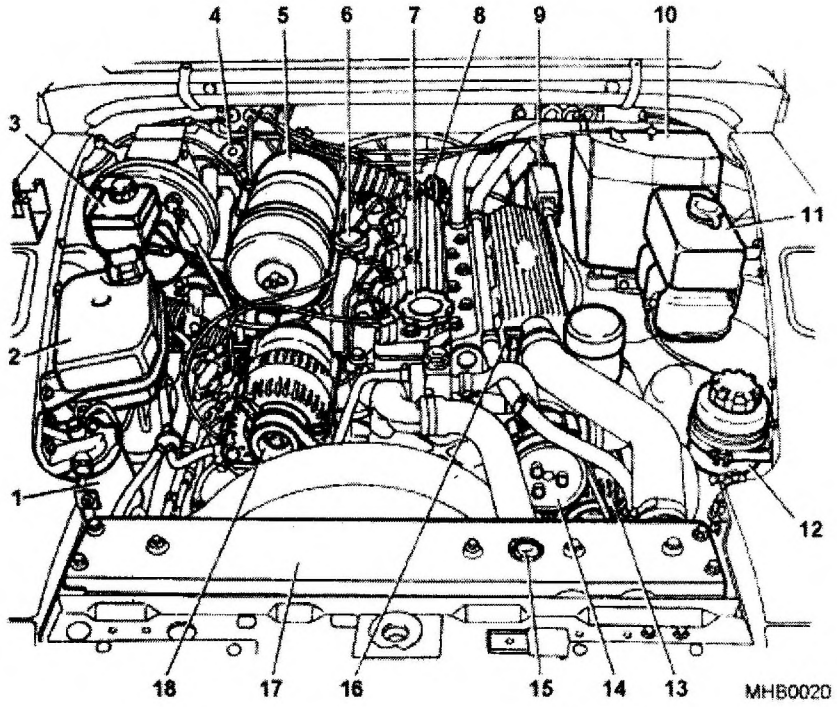
ELECTRICAL SYSTEM

2 A 24 Volt (V) 50 Ampere (A) alternator charges the auxiliary electrical system. The system feeds the vehicles' radio equipment via an in-line fuse to a terminal/shunt box mounted on the rear of the bulkhead.

3 FFR vehicles have an additional charging system to supply radio equipment. The two systems operate independently of each other but can assist one another when required. A control box is required to enable the load sharing facility to take place.

Alternator (FFR)

4 The alternator charging system provides a 24 V, 50 A nominal output.



1	Fuel filter	10	Heater matrix
2	Expansion tank	11	Windscreen washer reservoir
3	Brake fluid reservoir	12	Power steering reservoir
4	Clutch fluid reservoir	13	50 Amp alternator
5	Air cleaner	14	Water pump
6	Crankcase breather	15	Radiator filler cap
7	Engine oil filler cap	16	Dipstick
8	Breather pipes	17	Radiator
9	Auxiliary fuse box	18	50 Amp alternator (FFR)

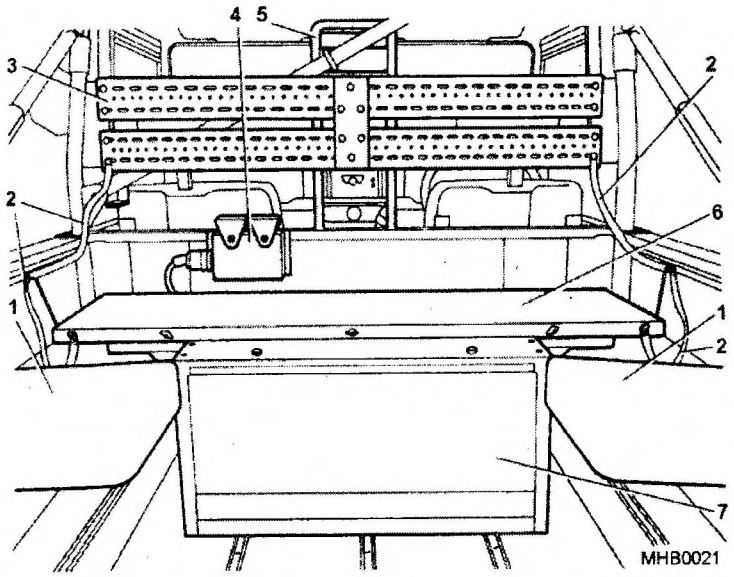
Fig 1 Engine compartment (FFR)

RADIO EQUIPMENT

5 The radio equipment power supply is made up of the following items:

Radio table and battery stowage box

6 A combined radio table (Fig 2 (6)) and battery stowage box (7) capable of accepting five sets of communications equipment mounting bars is fitted transversely across the vehicle behind the bulkhead. The unit has provision for up to four batteries to be stowed to operate the radio sets.



1 Radio seats
2 Earth braids
3 Radio equipment rack
4 Terminal box
5 Small arms clip
6 Radio table
7 Battery stowage box

Fig 2 FFR rear

Radio equipment rack

7 The radio equipment rack (3) is made up of two galvanised slotted angle brackets mounted transversely across the vehicle, including suitable earth braids (2) above the bulkhead.

VHF antenna leads, mountings and storage

8 Two leads are installed from the antenna mountings on each wing to the stowage boxes mounted on the front of the bulkhead, directly behind the front seats.

Antenna mast mountings

9 The two brackets, one on each side of the vehicle, are for the Very High Frequency (VHF) antenna mast mountings. The brackets can be detached to give a minimum width for air transportation.

Battery isolation switch and import/export system

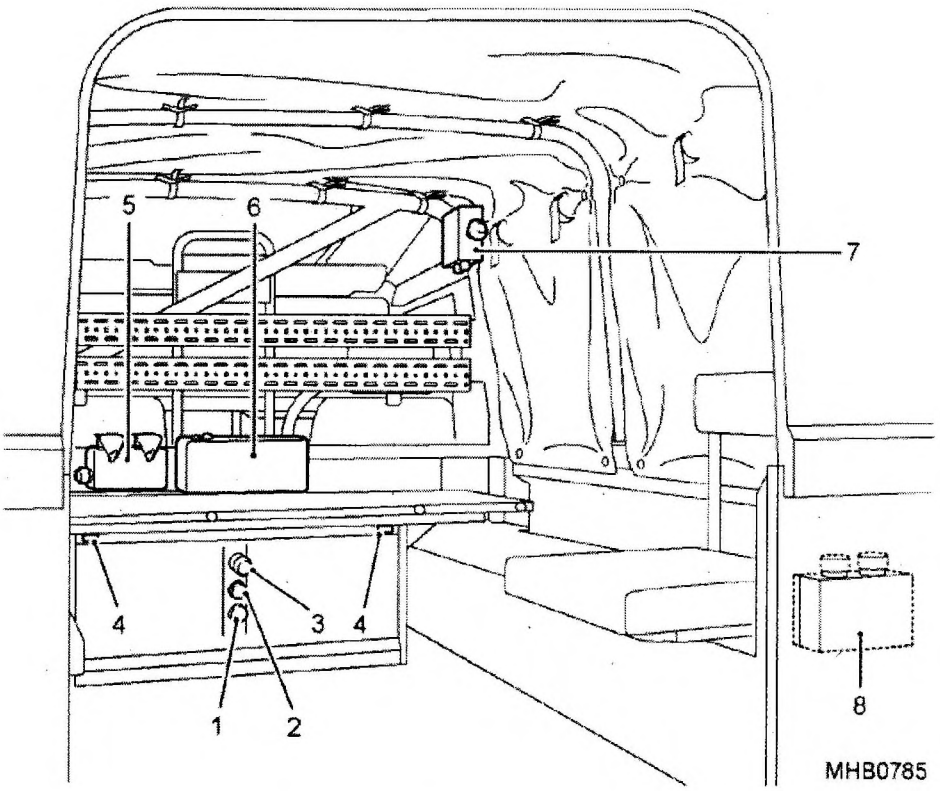
10 The power import/export system provides an interface between the vehicles' charging system, communications batteries and the import/export sockets.

10.1 The system allows the communications batteries to be charged by either the vehicle charging system or an external generator connected via the import socket (Fig 3 (8)). Power can also be exported from the vehicle charging circuit via the export socket (8).

10.2 Both the auxiliary terminals (5) and the power export socket can be disconnected quickly via the isolation switch (7) mounted on the roll cage. In the event that the external generator is disconnected or stops, the system reverts to the vehicle charging system.

10.3 Mounted on the top of the relay box (6) are two circuit breakers for the protection of the auxiliary terminals (100A) and the power export socket (40 A).

10.4 A warning buzzer (2) and test button (1) is provided to prevent the communications batteries from being connected incorrectly after the refitting of the batteries.



1	Test button	5	Auxiliary terminal box
2	Warning buzzer	6	Relay box
3	Positive battery lead stowage post	7	Battery isolation switch
4	Negative battery lead stowage label	8	Power import/export box

Fig 3 FFR rear power layout

CHAPTER 1-3

BATTLEFIELD AMBULANCE

CONTENTS

(continued)

CONTENTS (continued)

Para

Table Page

Fig Page

INTRODUCTION

1 This sub-chapter describes all the items applicable to the Battlefield Ambulance and identifies equipment locations.

PRIMARY ROLE

2 In its primary role the vehicle allows the transportation of four persons on stretchers. The stretchers are strapped to upper and lower stretcher support frames in the ambulance compartment at the rear of the vehicle. Provision is made in the ambulance compartment for the stowage of oxygen, resuscitators and other designated items of medical equipment. A single seat is also provided in the ambulance compartment for use by a medical attendant.

SECONDARY ROLE

3 When required, the upper stretcher support frames can be stowed against the walls of the ambulance compartment. This then allows six seats to be available for use by personnel/patients.

TECHNICAL DATA

4 The technical data for the vehicle is listed in as follows:

TABLE 1 TECHNICAL DATA

Serial (1)	Title (2)	Data (3)
1	Length	5194 mm
2	Width	2160 mm
3	Height (unladen)	2760 mm
4	Track (front and rear)	1521 mm
5	Gross Vehicle Weight	[redacted]
6	Fuel Capacity	[redacted]

LABELS

5 The Battlefield Ambulance has a number of additional labels identifying additional warnings and instructions.

No smoking or naked lights label

6 The no smoking or naked lights label (Fig 1) is located on the bulkhead above the ventilator deflectors. This is to inform users that there are highly inflammable substances within the close confines of the vehicle.

Fig 1 No smoking or naked flames label

Oxygen label

7 The oxygen label (Fig 2) is located on either side of the bulkhead door adjacent to the oxygen outlets. This is to ensure that the oxygen cylinder connectors are not contaminated with oil or grease.

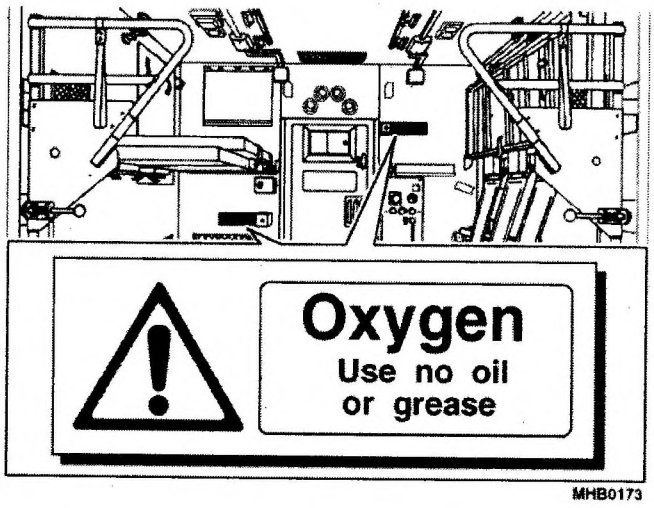


Fig 2 Oxygen no grease label

Upper stretcher mechanism labels

8 There are two upper stretcher mechanism labels - one is a warning and the other a caution as follows:

8.1 Warning label (Fig 3) is fitted to prevent personal injury when deploying the upper stretcher mechanism.

8.2 Caution label (Fig 4) is fitted to prevent fouling of mechanism when raising\lowering the stretcher mechanism.

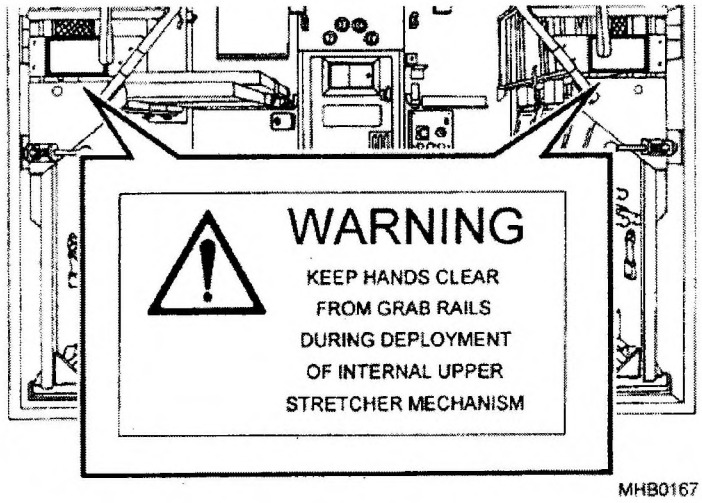


Fig 3 Upper stretcher mechanism warning label

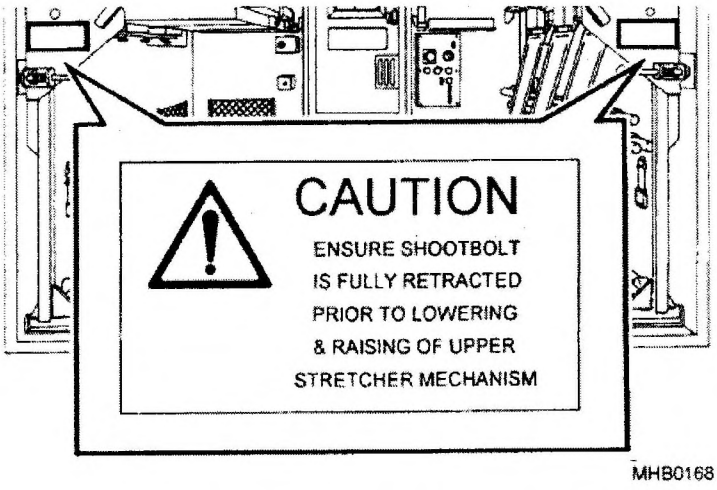


Fig 4 Upper stretcher mechanism caution label

Upper stretcher lock mechanism warning label

9 The upper stretcher lock mechanism warning label (Fig 5) ensures that equipment is released correctly and safely during use.

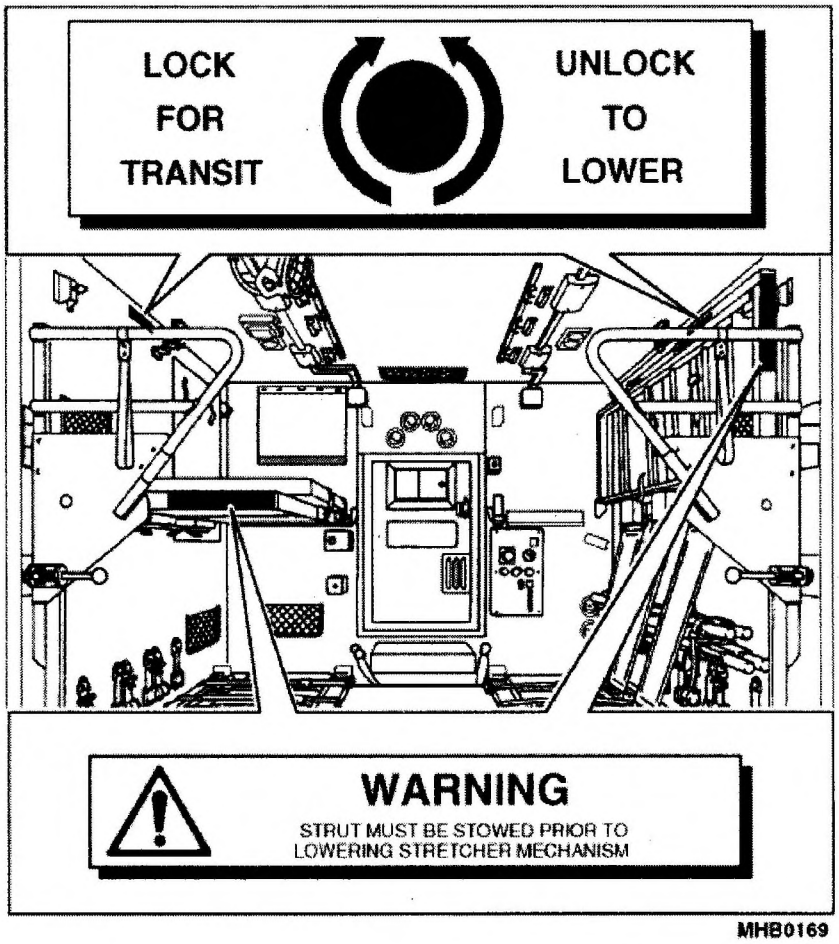


Fig 5 Upper stretcher lock mechanism warning label

Stowing strut warning label

10 The stowing strut warning label is to prevent the strut from being damaged when lowering the upper stretcher mechanism (Fig 5).

Emergency exit warning label

11 The emergency exit label (Fig 6) is fitted to inform passengers of the correct operation in the need of emergency evacuation.

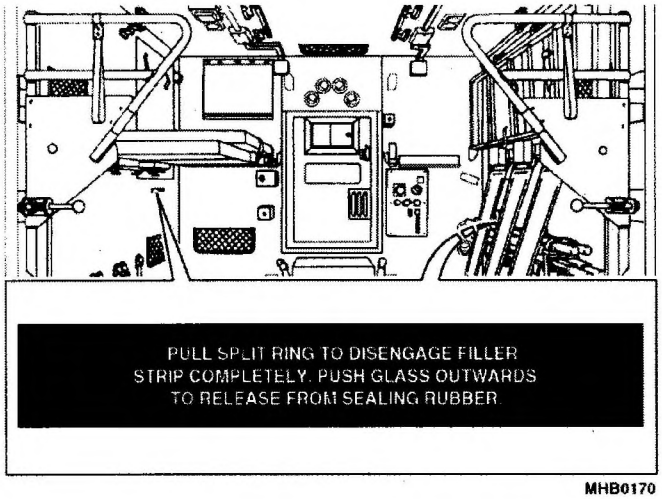


Fig 6 Emergency exit label

Rear step caution label

12 The rear step caution label (Fig 7) is located on the front of the stretcher base to prevent personal injury when lowering step.

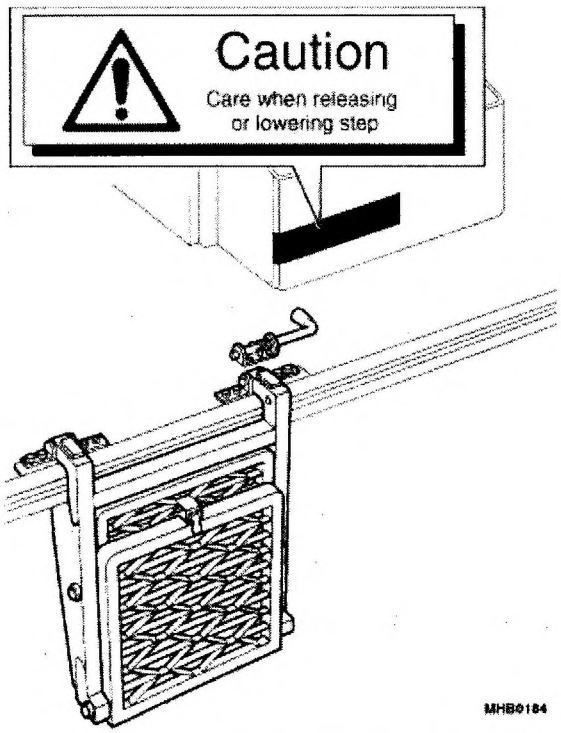


Fig 7 Rear step caution label

Heater start-up warning and caution labels

13 The heater start-up label (Fig 8) is to prevent the heater from being locked out after four attempts (refer to Chap 2-3).

14 There are two heater start-up warning and caution labels situated on the control panel, which gives information about starting and closing down of the heater.

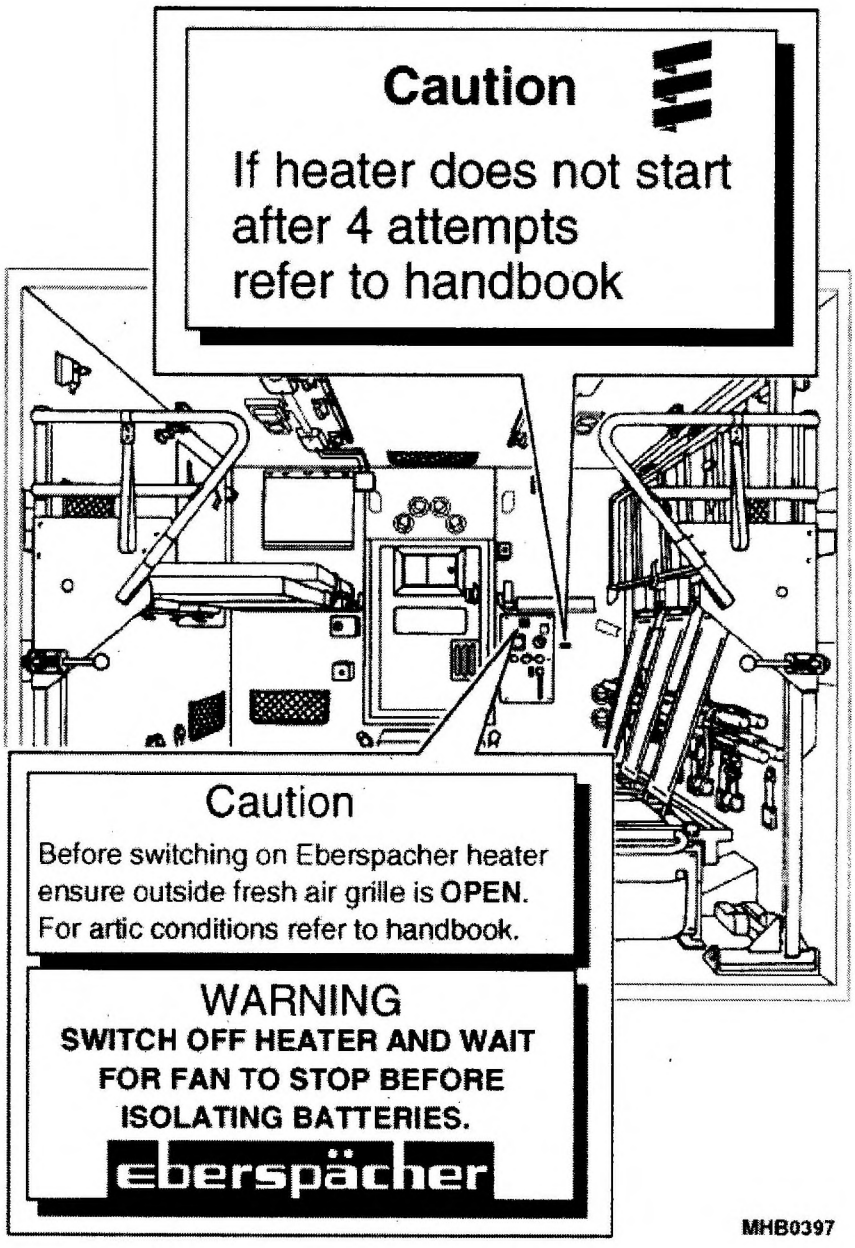


Fig 8 Heater start-up warning and caution labels

Seat lock identification label

15 The seat lock identification label (Fig 9) is located to the left of the heater control panel.

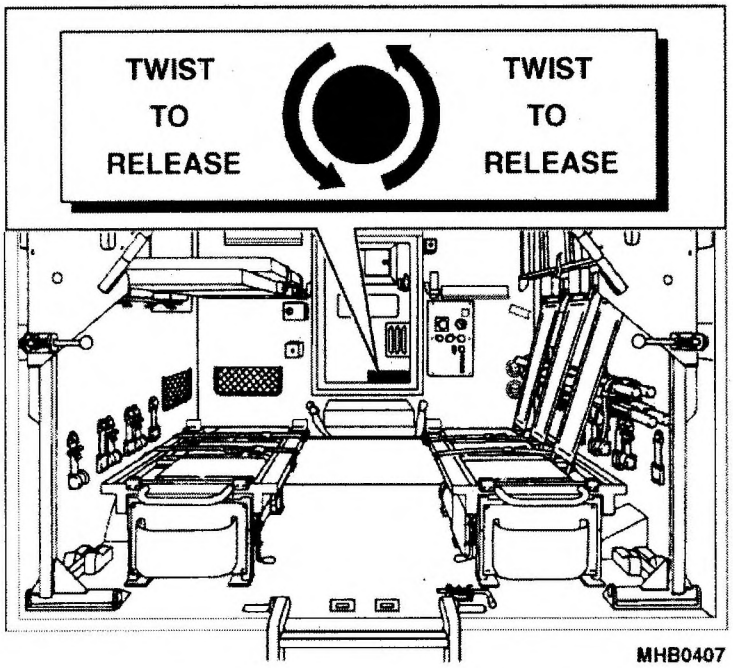


Fig 9 Seat lock identification label

Key to Fig 10

1	Ventilator	13	Spare wheel	26	Head light
2	Side window - rear compartment	14	Rear door handle	27	Pick head
		15	Red cross	28	Helve
3	Blue flashing beacon	16	Step (roof access)	29	Siren
4	Roof ventilation unit	17	Grab handle	30	Rear view mirror
5	Side repeater	18	Windscreen wipers	31	Convoy flag holder - rear
6	Spare wheel secondary stowage	19	Shovel	32	Reflector
		20	Gearbox oil cooler	33	Reversing light
7	Air intake	21	Front towing pintle	34	Rear number plate light
8	Door handle	22	Bonnet release catch	35	Fog light
9	Heater air intake grille	23	Convoy flag holder - front	36	Rear turn light
10	Jerry can stowage	24	Front turn light	37	Stop light
11	Fuel filler cap	25	Side light	38	Tail light
12	Rear window				

EXTERNAL LAYOUT

16 The external layout of the Battlefield Ambulance is identified in Fig 10.

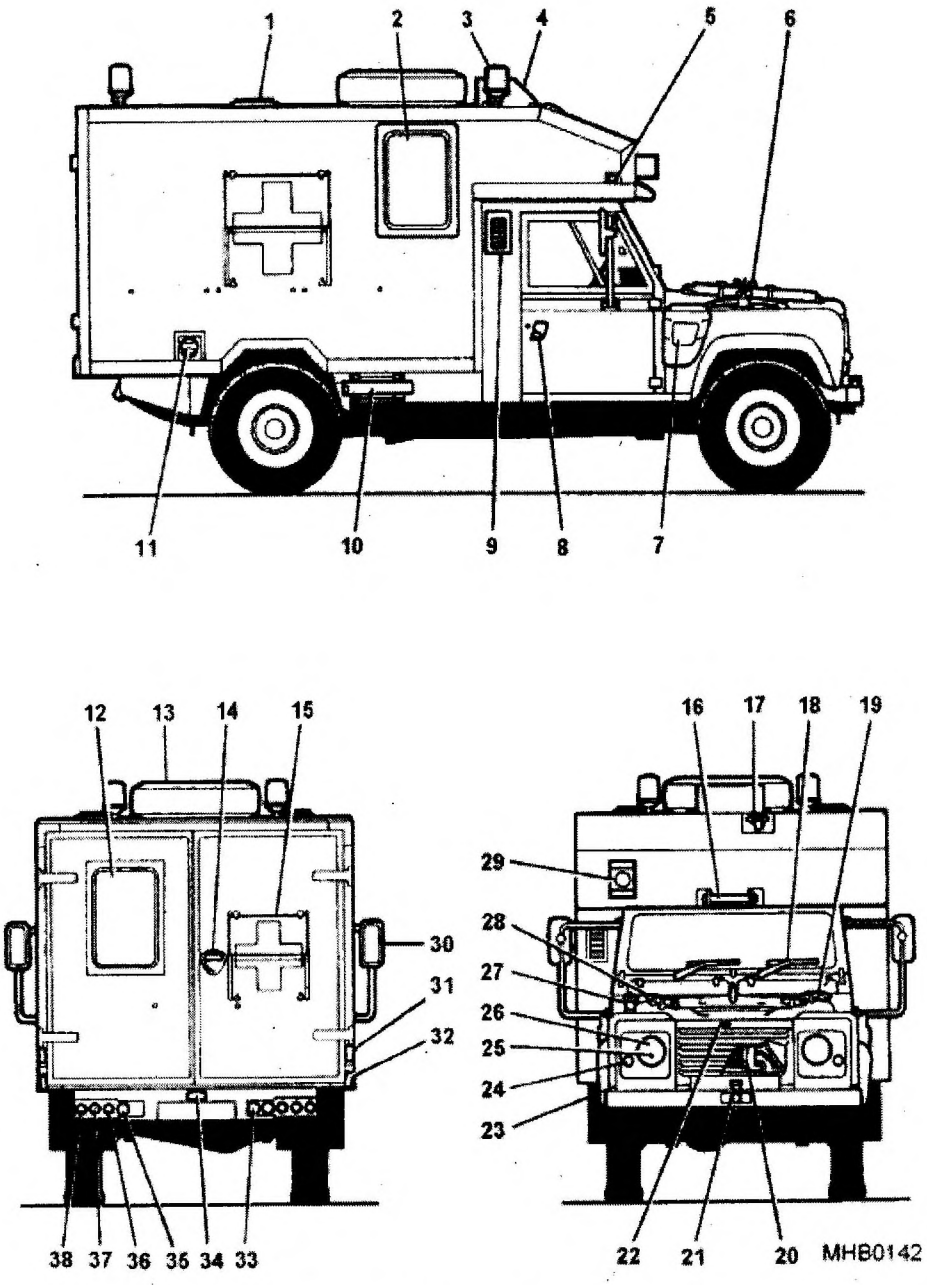
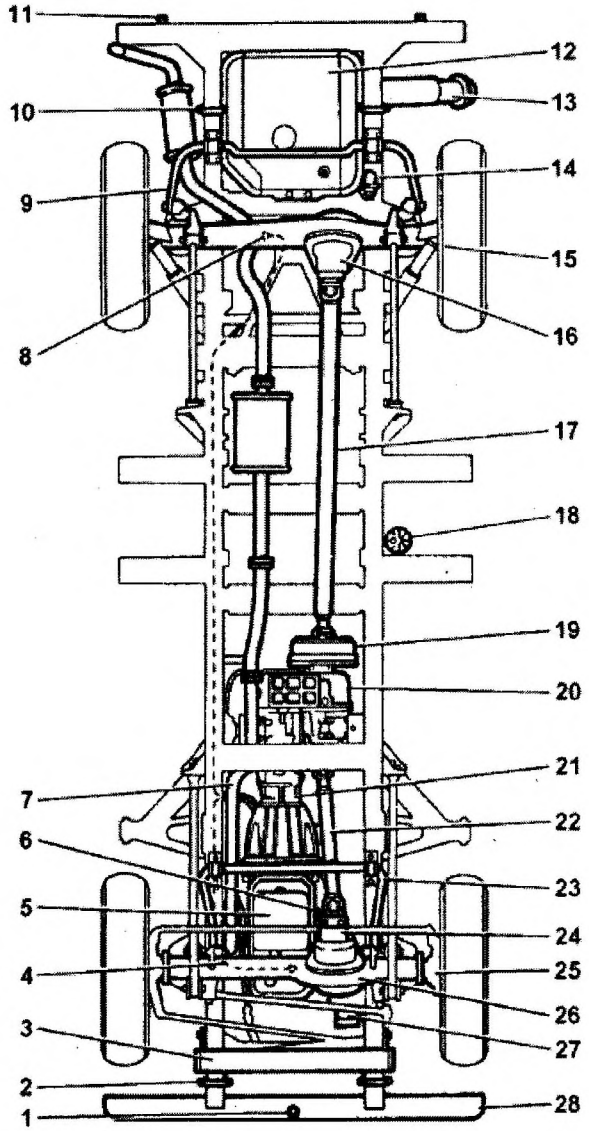


Fig 10 Battlefield Ambulance external layout

CHASSIS

17 The chassis (Fig 11) is made up of two welded box section side members with closed channel section cross members, with a detachable tubular cross-member.



1	Front towing pintle	11	Rear lashing/towing eyes	21	Main gearbox
2	Front tie-down shackles	12	Fuel tank	22	Front propeller shaft
3	Steering protection plate	13	Fuel filler pipe	23	Anti-roll bar
4	Front axle breather	14	Convoy light	24	Steering protection bracket
5	Engine sump	15	Rear brakes	25	Front brake and swivel
6	Engine oil filter	16	Rear differential		pin housing
7	Exhaust pipe	17	Rear propeller shaft	26	Front differential
8	Rear axle breather	18	Fuel sedimenter	27	Steering box
9	Anti-roll bar	19	Transmission brake drum	28	Front bumper
10	Rear tie-down shackles	20	Transfer gearbox		

Fig 11 Battlefield Ambulance under chassis layout

BODY

Cab

18 The cab is constructed from pressed and folded aluminium alloy panels, spot welded or riveted. The scuttle, door frames and other minor items are made from steel.

Red crosses

19 To identify the vehicle as a Battlefield Ambulance, red crosses (Fig 10 (15)) are painted on the sides, rear and top of the vehicle.

19.1 Half of each Red Cross is painted onto a hinged panel which has two positions. In one position the Red Cross is exposed. In the other, the hinged panel is folded over and the Red Cross is obscured. The panel is held in either of the two positions by retaining catches.

Bonnet

20 The bonnet is constructed from aluminium alloy sheet with steel stiffeners and is fitted with a central bonnet release catch (22), including a safety catch. The bonnet has a walk-on facility and also provides a secondary stowage for the spare wheel.

Spare wheel stowage

21 The spare wheel (13) primary stowage is located on the ambulance compartment roof behind the ventilation unit. The wheel is secured to a roof mounted bracket by two bolts and an annular ring. A secondary stowage for the spare wheel is located on the bonnet.

Jerry can stowage

22 Two jerry can stowage compartments (10) are provided, one on either side of the vehicle, attached to the underside of the body forward of the rear wheels. Each stowage comprises a locker with a hinged retaining bar. Jerry cans slide into the lockers and are held in position by the retaining bars which are secured with a latch. The left hand stowage holds a 20 litre water jerry can while the right hand stowage holds a 20 litre fuel jerry can.

BULKHEAD

23 The bulkhead separates the driver/passenger compartment from the ambulance compartment. It is constructed from a three element, aluminium-foam-aluminium panel and incorporates a central walk-through door, which connects the two compartments. A microswitch attached to the doorframe controls operation of ambulance compartment lighting when using the blackout facility.

AMBULANCE COMPARTMENT

24 The ambulance compartment (Fig 12) is mounted on the chassis and comprises of a box structure, which extends over the cab. The structure is formed from extruded aluminium sections, the roof, sides and floor panels, which are riveted together. Each side panel is fitted with a fixed window, which can be jettisoned to allow emergency egress.

25 Internally the compartment provides:

25.1 Stretcher support frames (41 and 48)

25.2 Seats (secondary role)

25.3 Stretchers

25.4 Blankets

25.5 Attendants' seat (36)

25.6 Infusion bottle holder tracks

25.7 Resuscitator sockets

25.8 Stowage compartments (29, 33 and 39)

25.9 Oxygen bottle stowage (34 and 37)

25.10 Small arms stowage (15)

25.11 Rear step (32)

25.12 Heater (25)

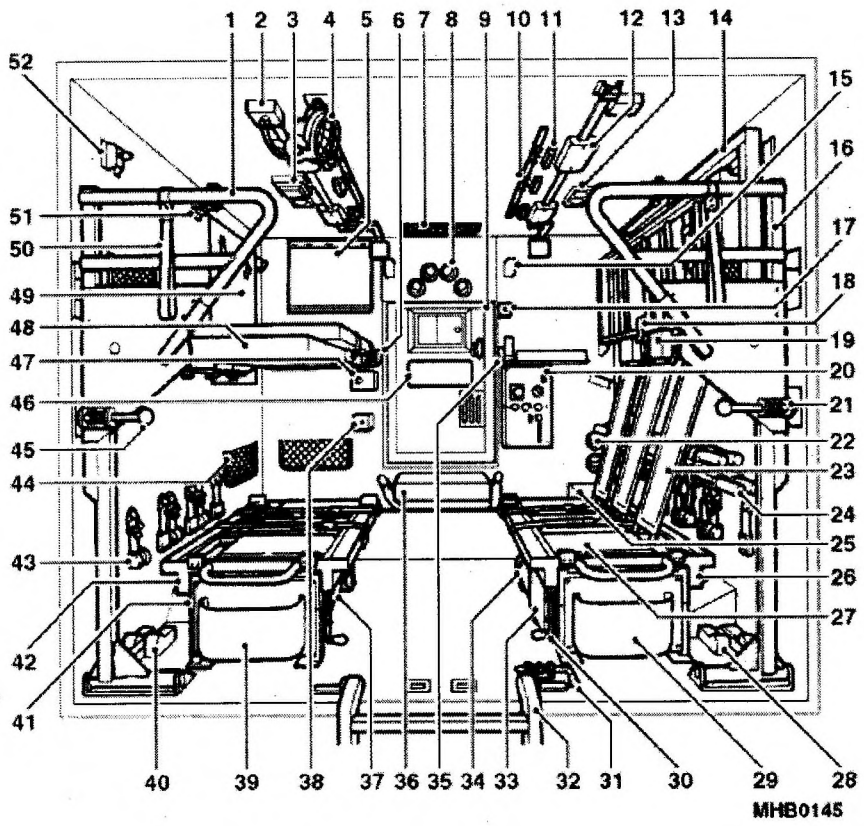
25.13 Lighting (Para 58)

25.14 Distribution/control box (20) (Para 59)

Doors

26 The compartment is closed at the front by a walk through door fitted in the bulkhead and at the rear by hinged double doors.

27 Normal access to the ambulance compartment is at the rear through the hinged double doors. The double doors open outwards and swing round though 270° to the sides of the vehicle. The Right Hand (RH) door is fitted with an internal and external handle, which can be locked with a key. The Left Hand (LH) door is fitted with an internal handle only. A microswitch is attached to the roof and controls the operation of ambulance compartment lighting when the blackout facility is in use (Para 58).



1	Pivoting gate - LH	19	Head rest	38	Oxygen socket
2	Flood light socket	20	Distribution/control box	39	Stowage compartment
3	Moonlight	21	Pivoting gate shoot bolt - RH	40	Pivoting gate gas strut - LH
4	Flood light	22	Directional ventilators	41	Lower stretcher support frame - LH
5	Stowage compartment	23	Back supports		
6	Upper stretcher catch	24	Stretcher stowage	42	Lower stretcher frame - LH
7	Luggage net	25	Heater compartment	43	Inertia reels
8	Ventilator deflectors	26	Lower stretcher frame - RH	44	Stowage nets
9	Walk through door	27	Seat pads	45	Pivoting gate shoot bolt - LH
10	Infusion bottle tracks	28	Pivoting gate gas strut - RH		
11	Grab handles	29	Stowage compartment	46	Attendants headrest
12	Fluorescent light	30	Lower stretcher catch - RH	47	12 V & 24 V resuscitator sockets
13	Vent grille	31	Drop down step catch		
14	Upper stretcher frame - RH	32	Drop down step	48	Upper stretcher support frame
		33	Stowage compartment		
15	Small arms clip	34	Oxygen cylinder	49	Side window blind
16	Pivoting gate - RH	35	Upper stretcher catch	50	Pivoting gate pull down strap
17	Oxygen socket	36	Attendants seat	51	Upper support frame catch
18	Side window blind	37	Oxygen cylinder	52	Buffer

Fig 12 Ambulance compartment layout

Stretcher support frames

28 There are four stretcher support frames, two lower (26 and 42) and two upper (14).

Lower frame

29 Each lower frame is constructed from welded, aluminium extrusions and comprises a fixed inner frame and a sliding outer frame.

30 The fixed frame is bolted to the floor and incorporates runners at the sides. The sliding outer frame is located on top of the fixed inner frame and moves on rollers located within the runners; a catch locks the outer frame in position. A grab handle is provided on the sliding outer frame to enable the frame to be pulled rearwards.

Upper frame

31 The upper frames are also constructed from welded, aluminium extrusions and comprise of fixed and sliding frames.

32 The frames are supported; on a transverse mounting at the bulkhead and at the rear, on a pivoting frame and gate assembly. A gas strut is attached to the pivoting frame, via a link at one end and bolted to the vehicle at the other, providing a smooth, controlled operation when the frames are being used.

33 The frames are locked in the used position by a retaining catch on the bulkhead. When not in use the stretchers can be stowed in the upright position against the side of the body. When the pivoting gate catch is released the assembly can be pulled outwards and downwards to permit stretcher loading/unloading. When the frames are stowed away the seats can be used.

Seats

34 Seat pads are provided at six positions and can be used when the upper stretcher frames are stowed. An inertia reel lap strap is attached to the wall adjacent to the seat. Back support is provided by a flexible material which is attached to the underside of the upper stretcher support frames. When not in use the back supports are stowed under the seat pads.

Stretchers

35 In its primary role the stretchers are located on each of the lower and upper support frames. Each stretcher is retained by the same spring-pin which is used for preventing the frames from sliding apart. When the seats are in use, two stretchers are folded and stowed on either side, behind the back supports, on two sets of support brackets, one on either side.

Blankets

36 Blankets are stowed underneath and in front of the left hand side lower stretcher frame.

Attendants' seat

37 An attendants' seat (36) is located against the bulkhead. The seat lifts up providing access to storage space underneath it. The space is used for the storage of equipment and kit. A two-point lap belt for use by the attendant is fitted to the bulkhead.

Infusion bottle tracks

38 Two infusion bottle tracks are fixed to the roof; each comprising of a rail incorporating three sliding holders to which infusion bottles are attached.

Resuscitator sockets

39 There are four resuscitator socket outlets, two 12 V and two 24 V, in the ambulance compartment; one of each type are located on the auxiliary panel to the left of the walk through door bulkhead and also in the distribution/control box.

Oxygen bottle stowage

40 Oxygen bottle stowage (34 and 37) is located on the floor of the compartment under the stretcher frames. The stowage comprises of two support brackets and straps, which hold and retain a single oxygen cylinder.

Oxygen sockets

41 Oxygen sockets (17 and 38) are located on the bulkhead one on either side of the walk through door. The left hand socket is located at the lower level and the right hand socket at the upper level adjacent to the stretchers. Prior to first daily use of the oxygen sockets the oxygen system must be purged as follows:

WARNING

SAFETY HAZARD. RISK OF FIRE. THE USER SHOULD ENSURE THERE ARE NO NAKED FLAMES PRESENT DURING THE PURGING OF THE OXYGEN SYSTEM.

41.1 Open the rear doors of the vehicle to allow for ventilation of the purged gasses.

41.2 The user must purge the system using 100% flow oxygen for a period of 10 seconds.

Small arms stowage

42 Provision is made for the stowage of SA80 rifles (15) on the left-hand side in front of the bulkhead.

Rear step

43 An aluminium, folding step (32) is mounted at the rear of the vehicle just inside the doorway. When in use the step hinges down to rest against the rear of the vehicle. When not in use the step is folded up to a stowed position; it is held in this position by a spring-loaded pin.

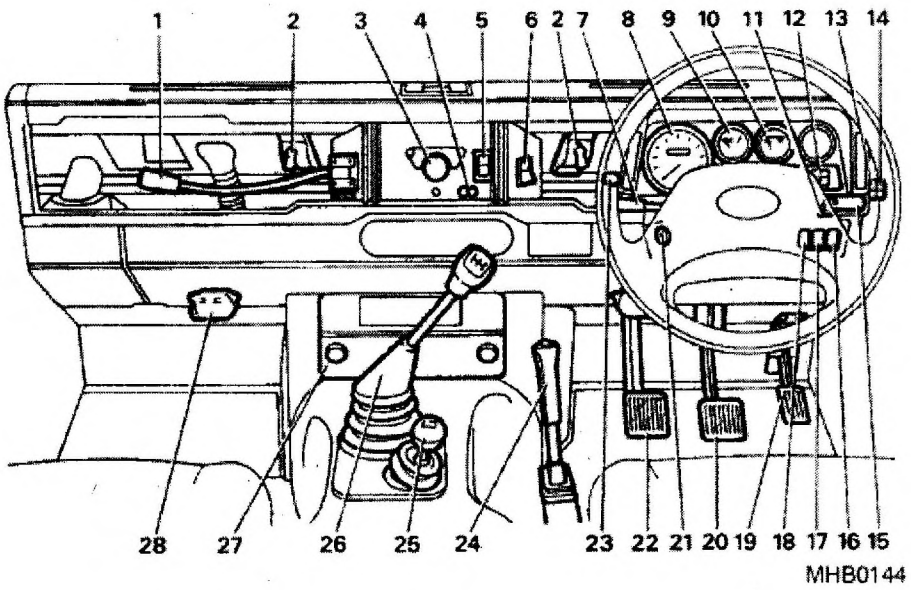
Heater

44 Ambulance compartment heating is provided by an Eberspacher D5L air heater (25) located in a compartment, with a screwed down cover, adjacent to the attendants' seat. The heater is a fuel burning unit and is controlled from a rotary switch located on the Distribution/Control box on the bulkhead.

IN THE CAB

Controls

45 The driver controls and dash layout are shown in Fig 13.



1 Map reading light
2 Ventilator control
3 Main lighting switch
4 Inspection light sockets
5 Blue flashing beacon switch
6 Two-tone horn switch
7 Headlight dip, direction indicators, horn and flasher switch
8 Speedometer
9 Fuel indicator
10 Coolant temperature indicator
11 Interior light switch
12 Warning lights panel
13 Temperature control lever
14 Distribution control
15 Windscreen wash/wipe switch
16 Hazard warning switch
17 Rear fog guard light switch
18 Levelling switch
19 Accelerator pedal
20 Brake pedal
21 Starter switch
22 Clutch pedal
23 Heater fan control
24 Hand brake
25 Transfer gear/differential lock lever
26 Main gear change lever
27 Fuse box
28 Footwell air vent

Fig 13 Vehicle dash layout

Stowage in the cab

46 In the cab provision is made for the stowage of the following items of equipment:

Rifles

47 One rifle, held in clips on the front panel at the back of the left hand seat.

2 Kg fire extinguisher

48 A 2 kg fire extinguisher is stowed and retained by a strap in a bracket located between driver's and passenger's seats.

Convoy flag pole

49 Convoy flag pole is stowed in clips behind the seats.

Breakdown equipment

50 The following items of breakdown equipment are also carried:

50.1 Chocks.

50.2 Jack.

50.3 Jack handle.

50.4 Towrope.

50.5 Inter Vehicle Starting Socket (IVSS) lead.

Personnel equipment

51 A personal equipment stowage area is located at the right hand side of the cab above head height. Equipment is prevented from falling out of this stowage area by means of a canvas cover clipped onto the roof.

ELECTRICAL SYSTEM

52 The electrical system is charged by the vehicle alternator to 24 V rectified Alternating Current (AC) negative earth with voltage compensation and ducted breathing to control water ingress. The charging control and rectifier are integral with the alternator. The system feeds all the vehicle's electrical requirements.

Circuit breakers

53 There are five circuit breakers contained in the Distribution/Control box in the ambulance compartment. These breakers protect the ambulance compartment circuits as follows:

53.1 CB1 – Heater.

53.2 CB2 – Blowers.

53.3 CB3 – 12 V socket.

53.4 CB4 – Lights.

53.5 CB5 – 24 V sockets.

Run engine device

54 A run engine device is mounted on a double relay bracket attached to the dash behind the fascia.

55 The run engine device senses low battery voltage and automatically operates the buzzer and 24 V warning light to advise of the necessity to run the engine. This occurs when the battery voltage drops below 24.4 V, due to extended use with the engine not running. The warning light illuminates and the buzzer sounds intermittently.

56 After the engine has been run, and battery voltage rises above 26 V, the light extinguishes and the buzzer stops. Time for engine run is variable depending on current draw in the Battlefield Ambulance.

Rotating beacons

57 There are two rotating beacons mounted on the roof of the vehicle controlled from a rocker switch on the fascia.

Ambulance compartment lights

58 Lighting is provided in the ambulance compartment as follows:

58.1 Four twin tube fluorescent roof lights units, two on either side of the compartment. Supplied from the rotary lighting switch on the Distribution/Control box.

58.2 . Roof-mounted blackout moonlight, on the left side between the fluorescent lights. Supplied from the rotary lighting switch on the Distribution/Control box.

58.3 An inspection light socket is mounted on the control panel and is powered by a rocker switch adjacent to it.

58.4 A floodlight, mounted on a swivel-bracket on the roof above the doorway at the rear of the compartment. The floodlight electrical plug connects to a roof-mounted socket supplied through the Distribution/Control box. A 10 metre extension lead for the floodlight is stowed underneath the lower stretcher frame - RH.

Distribution/control box

59 The distribution/control box unit is mounted to the right side of the bulkhead adjacent to the attendant's locker. The unit comprises of a welded box assembly with a front panel. The front panel provides mountings for a casualty bag socket, a resuscitator socket, heater control switch, lighting control switch, inspection light switch and inspection light socket.

Heater control switch

60 The heater control switch is an illuminated rotary switch with graduations marked from 0 to 4 set within coloured fields. The graduations and fields indicate the mode of operation - refer to Chapter 2 - 3 for full instructions.

Lighting control switch

61 The Ambulance compartment lighting is controlled by this 4 - position rotary switch. The switch is marked OFF/BLUE/BLACK-OUT/WHITE and supplies the roof-mounted fluorescent lights and the roof - mounted, blackout moonlight.

CHAPTER 1-4

WNITERISED/WATERPROOFED

CONTENTS

INTRODUCTION

1 This sub-chapter describes all the items applicable to the Winterised/Waterproof vehicles and identifies equipment locations.

LABELS

2 There are, around the vehicle, labels over and above that which are mentioned in the previous chapters. These appertain to the Winter/water vehicles.

Damage limitation warning label

3 This damage limitation warning label (Fig 1) advises individuals not to grab hold of items to aid them to climb onto the vehicle due to a risk of incurring damage.

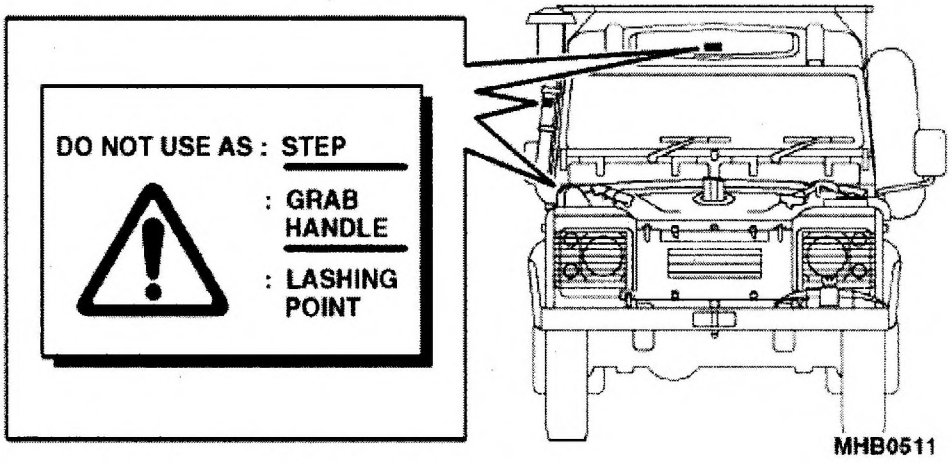
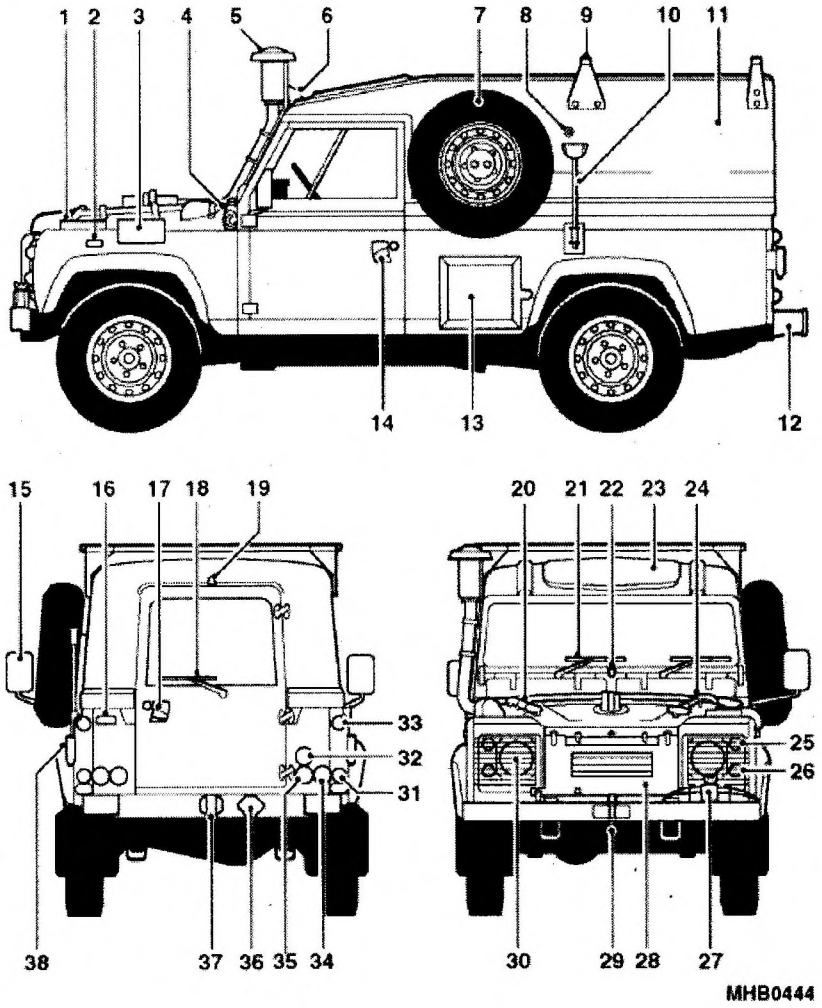


Fig 1 Damage limitation warning label

EXTERNAL LAYOUT

4 The external layout of the Truck Utility Medium (TUM) Winterised/Waterproofed is detailed in Fig 2.

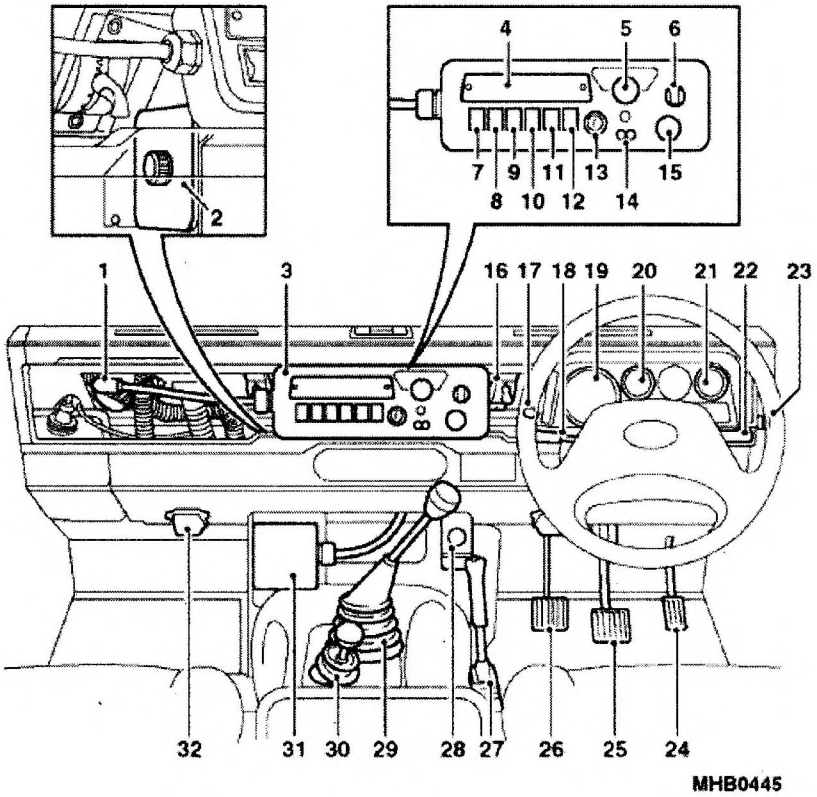


1	Antenna mounting	14	Door handle lock	27	Pick axe head
2	Side repeater	15	Driving mirror	28	Radiator snow blind
3	Raised air intake	16	Number plate light	29	Towing pintle
4	Snow blind	17	Rear door lock	30	Headlight
5	Air cleaner	18	Rear wiper	31	Rear stop light
6	Drain tap	19	Rear wash	32	Reversing light
7	Spare wheel	20	Pick axe handle	33	Rear side light
8	Antenna cable grommet	21	Front screen wiper	34	Rear indicator lights
9	Roof bar (Ski rack)	22	Front screen wash	35	Rear fog guard lights
10	Aerial mounting	23	Escape hatch	36	12 pin socket
11	GRP hardtop	24	Shovel	37	Towing hook
12	Rear bumperettes	25	Front side lights	38	Convoy flag holder
13	Jerry can stowage	26	Indicator light		

Fig 2 Truck Utility Medium (TUM) Winterised/Waterproofed external layout

IN CAB CONTROLS AND DASH LAYOUT

5 The in cab controls and dash layout are detailed in Fig 3.



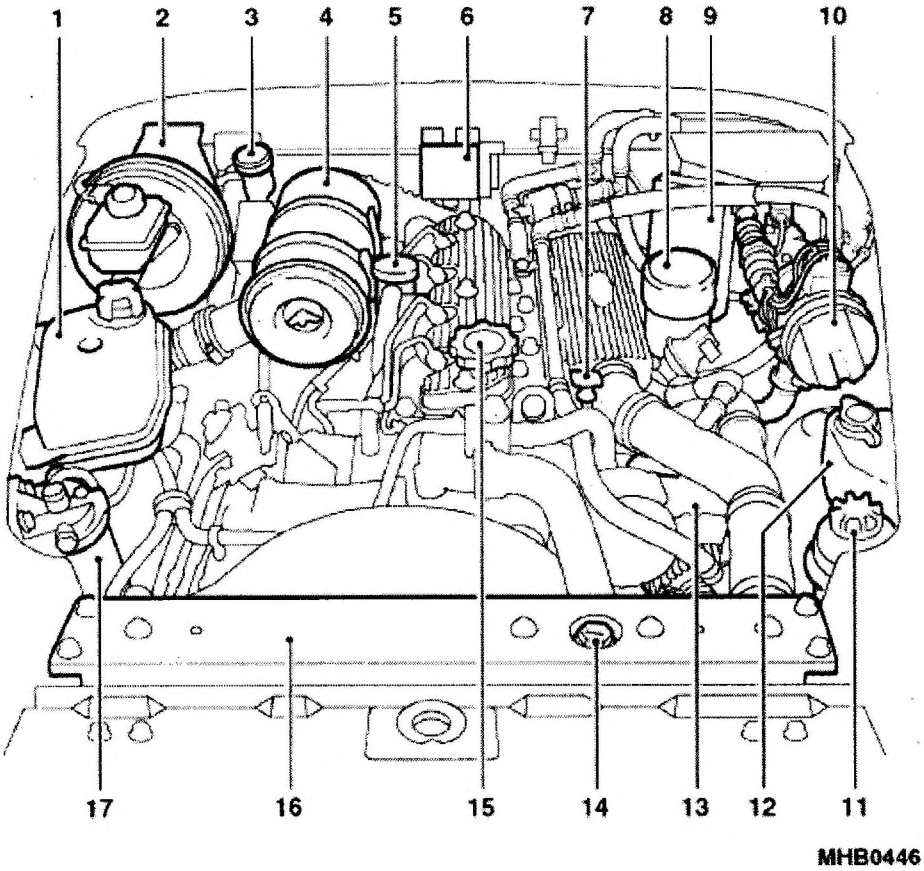
1	Map reading light	12	Hazard warning switch	23	Temp and distribution switch
2	Fuse box cover	13	Ignition switch	24	Accelerator pedal
3	Centre console	14	Inspection sockets	25	Brake pedal
4	Warning light panel	15	Rear wash/wipe switch	26	Clutch pedal
5	Main lighting switch	16	Air vent	27	Handbrake
6	Heater switch (Webasto)	17	Heater blower switch	28	Hand throttle
7	Map reading light switch	18	Horn/dip/indicator switch	29	Main gearbox lever
8	Headlamp levelling	19	Speedometer	30	Transfer/diff lock gearbox
9	Rear heated screen switch	20	Fuel gauge	31	Main fuse box
10	Front heated screen switch	21	Temperature switch	32	Heater footwell vents
11	Rear fog guard switch	22	Wash/wipe switch		

Fig 3 In cab controls and dash layout

ENGINE COMPARTMENT LAYOUT

Winterised/Waterproofed engine compartment (GS)

6 The engine compartment of the Winterised/Waterproofed General Service (GS) variant is detailed in Fig 4.

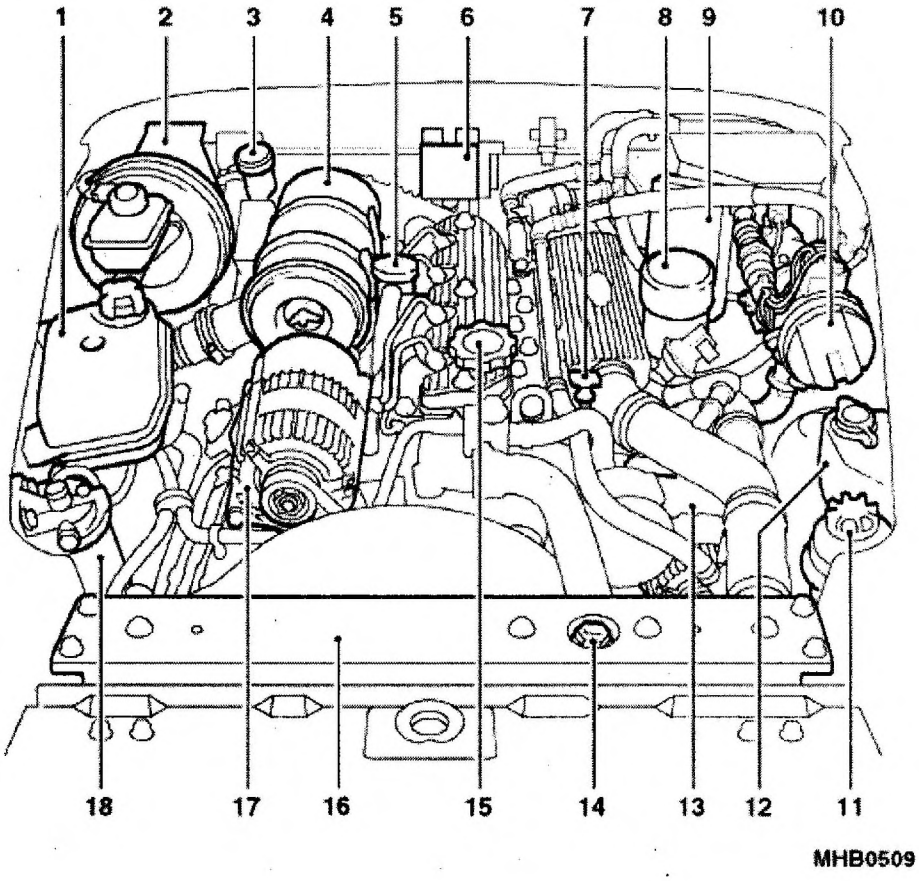


1	Engine coolant reservoir	7	Engine oil dipstick	13	Alternator
2	Brake fluid reservoir	8	Alternator breather	14	Radiator filler
3	Clutch fluid reservoir	9	Webasto heater ECU	15	Engine oil filler
4	Air cleaner	10	Webasto water heater	16	Radiator
5	Cyclone (crank breather)	11	Power steering reservoir	17	Fuel filter
6	RFI filter	12	Windscreen wash reservoir	18	

Fig 4 Winterised/Waterproofed engine compartment (GS)

Winterised/Waterproofed engine compartment (FFR)

7 The engine compartment of the Winterised/Waterproofed Fitted For Radio (FFR) variant is detailed in Fig 5. The main difference from the GS variant id the addition of the alternator – upper (17).



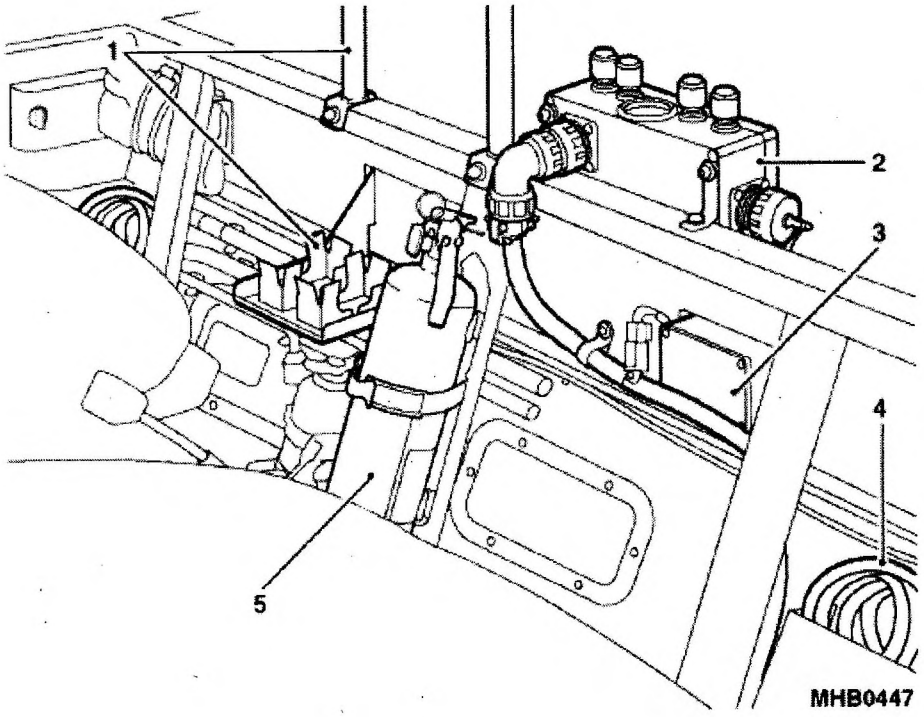
1	Engine coolant reservoir	7	Engine oil dipstick	13	Alternator
2	Brake fluid reservoir	8	Alternator breather	14	Radiator filler
3	Clutch fluid reservoir	9	Webasto heater ECU	15	Engine oil filler
4	Air cleaner	10	Webasto water heater	16	Radiator
5	Cyclone (crank breather)	11	Power steering reservoir	17	Alternator - upper
6	RFI filter	12	Windscreen wash reservoir	18	Fuel filter

Fig 5 Winterised/Waterproofed engine compartment (FFR)

REAR BULKHEAD

8 The rear bulkhead (Fig 6) is located behind the drivers and passengers seat and is used to stow equipment such as the fire extinguisher (5) and to mount pieces of equipment onto such as the Terminal box with Ammeter (2).

9 The coaxial cable (antenna) (4) is the cable installed to provide a connection to the antenna mount located at the front, left corner of the vehicle. A second coaxial cable (antenna) is installed for the right hand side antenna mount.

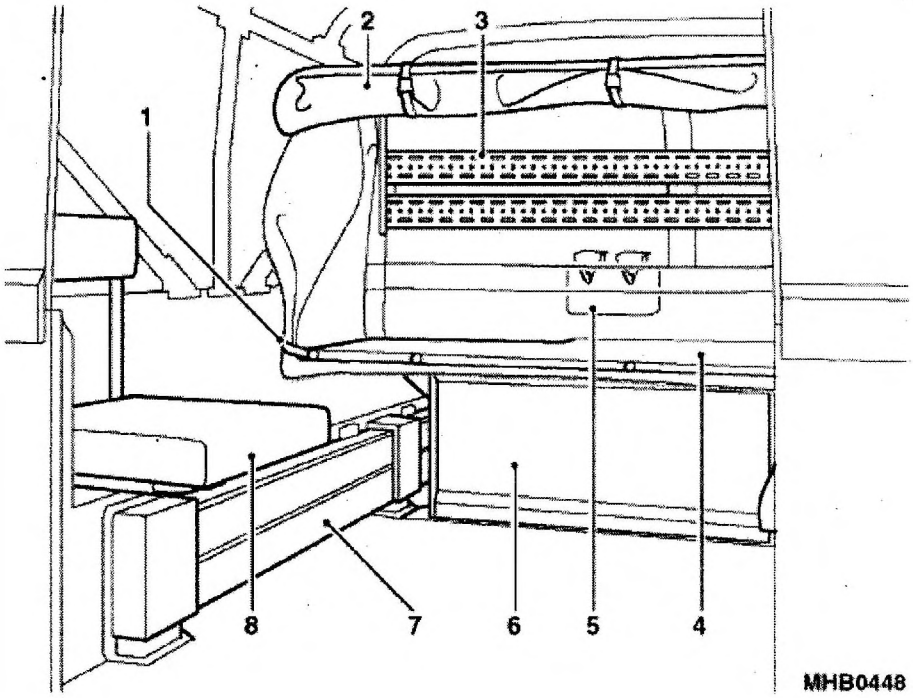


1 Rifle clips
2 Terminal box with Ammeter
3 Radio charging circuit ECU
4 Coaxial cable (antenna)
5 Fire extinguisher

Fig 6 Rear bulkhead

REAR OF THE VEHICLE

10 The layout in the rear of the vehicle (Fig 7) is similar in appearance to the standard FFR variant with the addition of the heater radiators (7) and the radio bad (2).



1	Earth straps	5	Terminal box
2	Radio bag	6	Battery trays
3	Equipment racking	7	Heater radiators
4	Radio table	8	Radio operators seat

Fig 7 Rear of the vehicle

CHAPTER 1-5

AIR DROPABLE

CONTENTS

INTRODUCTION

1 This sub-chapter describes all the items applicable to Truck Utility Light (TUL) HS Air drop vehicles, which are not covered in the previous chapters.

General

2 All information appertaining to the air dropable vehicles can be found in sub-chapter 1-1 Basic vehicle and sub-chapter 1-2 Fitted for Radio (FFR).

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CHAPTER 1-6

HELICOPTER SUPPORT VEHICLE

CONTENTS

INTRODUCTION

1 This sub-chapter describes all the items applicable to the Truck Utility Medium (TUM) HS Helicopter Support Vehicle which are not covered in the previous chapters.

General

2 All information appertaining to the Helicopter support platform vehicles can be found in sub-chapter 1-1 Basic vehicle and sub-chapter 1-2 Fitted For Radio (FFR).

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CHAPTER 1-7

COMMANDERS IK

CONTENTS

INTRODUCTION

1 This sub-chapter describes all the items applicable to the Truck Utility Medium (TUM) HS Commanders IK vehicles, which are not covered in the previous chapters.

LABELS

2 There are, around the vehicle, labels over and above that which are mentioned in the previous chapters. These appertain to the Commanders IK vehicles.

Earth warning label

3 The earth warning label (Fig 1) advises individuals against connecting to an outside power supply without first earthing the vehicle.

Voltage labels

4 The voltage labels (Fig 2) inform the operator of the different power supplies of each bank of sockets. This prevents equipment being plugged into the wrong supply.

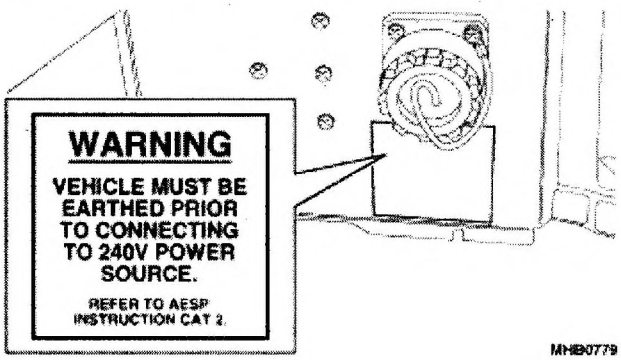


Fig 1 Earth warning label

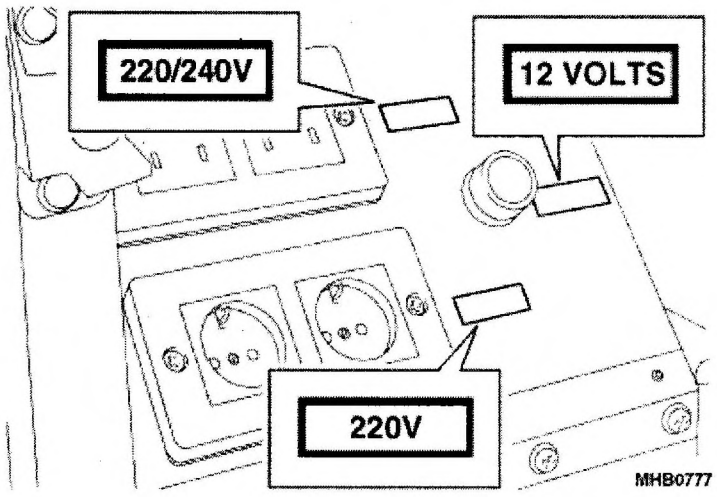
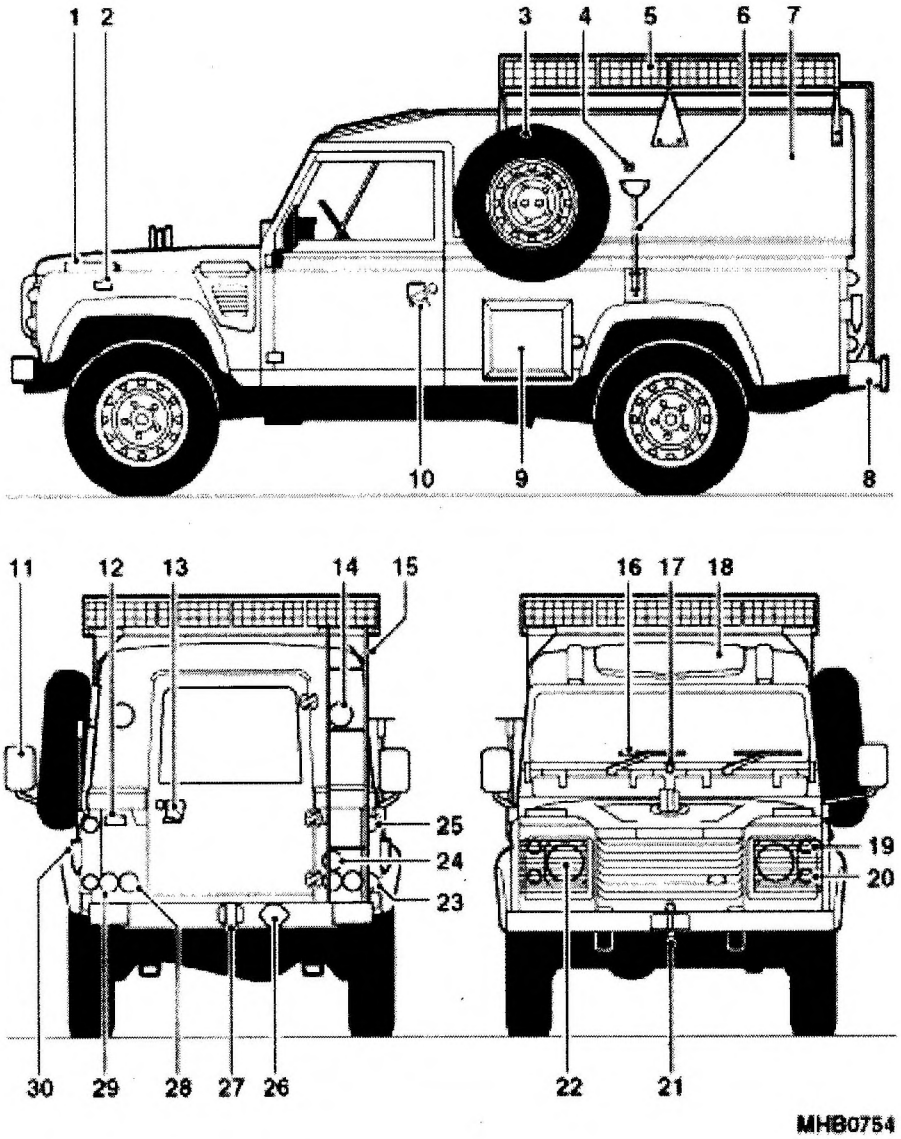


Fig 2 Voltage labels

TRUCK UTILITY MEDIUM (TUM) (COMMANDERS IK) EXTERNAL LAYOUT

5 The external layout of the Commanders IK variant is detailed in Fig 3.



1	Antenna coaxial stowage	11	Wing mirror	21	Front towing pintle
2	Side indicator light	12	Rear number plate light	22	Headlights
3	Spare wheel	13	Rear door handle	23	Rear stop light
4	Aerial outlet	14	Input/output sock	24	Reverse light
5	Roof rack	15	Mounting ladder	25	Rear side light
6	Antenna mounting base	16	Windscreen wiper	26	12 pin trailer socket
7	Hard top	17	Windscreen washer	27	Rotating towing hook
8	Bumperettes	18	Escape hatch	28	Turn light
9	Jerry can holder	19	Front side lights	29	Rear fog light
10	Door handle	20	Turn lights	30	Convoy flag holder

Fig 3 Commanders IK external layout

ROOF RACK

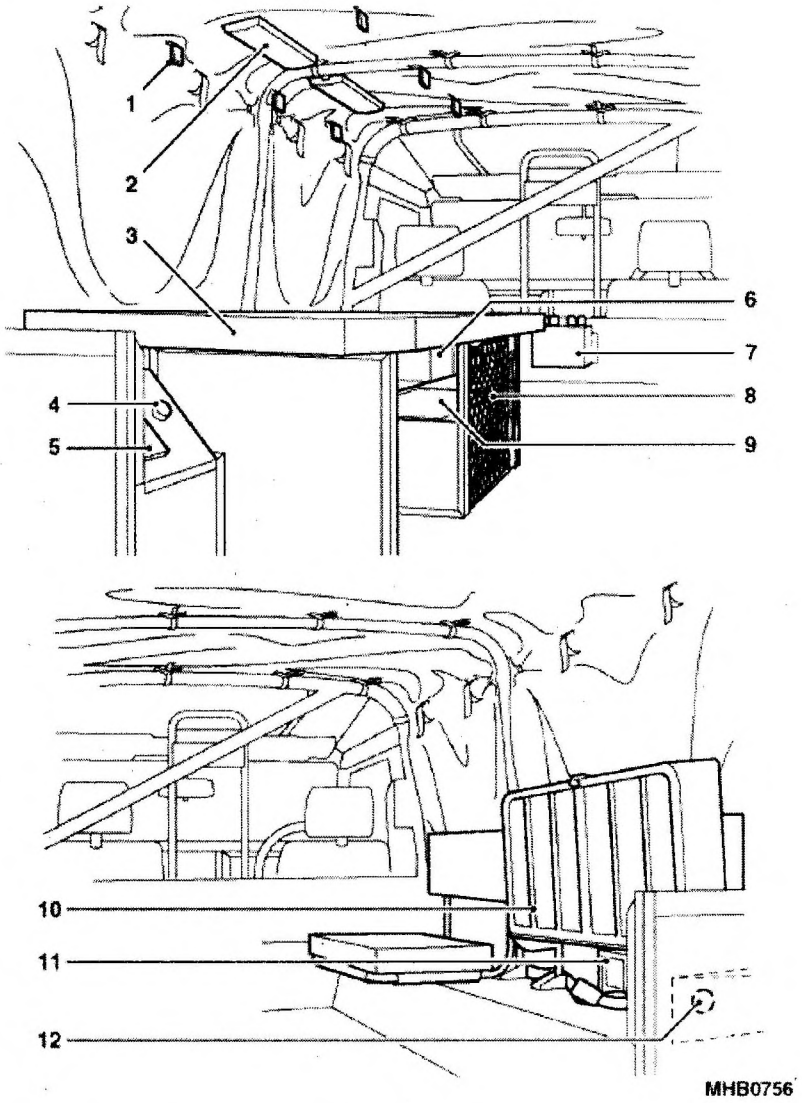
WARNING

WITH THE EXCEPTION OF THE COMMANDERS IK, ROOF RACKS ARE PROHIBITED FROM BEING FITTED TO TUL/TUM (HS) VEHICLES.

6 The Commander IK variant is fitted with a roof rack (Fig 3 (5)). This is the only TUL/TUM variant permitted to have a roof rack fitted.

INTERNAL REAR OF THE COMMANDERS IK

7 The internal rear of the Commanders IK variant is fitted with equipment detailed in Fig 4.



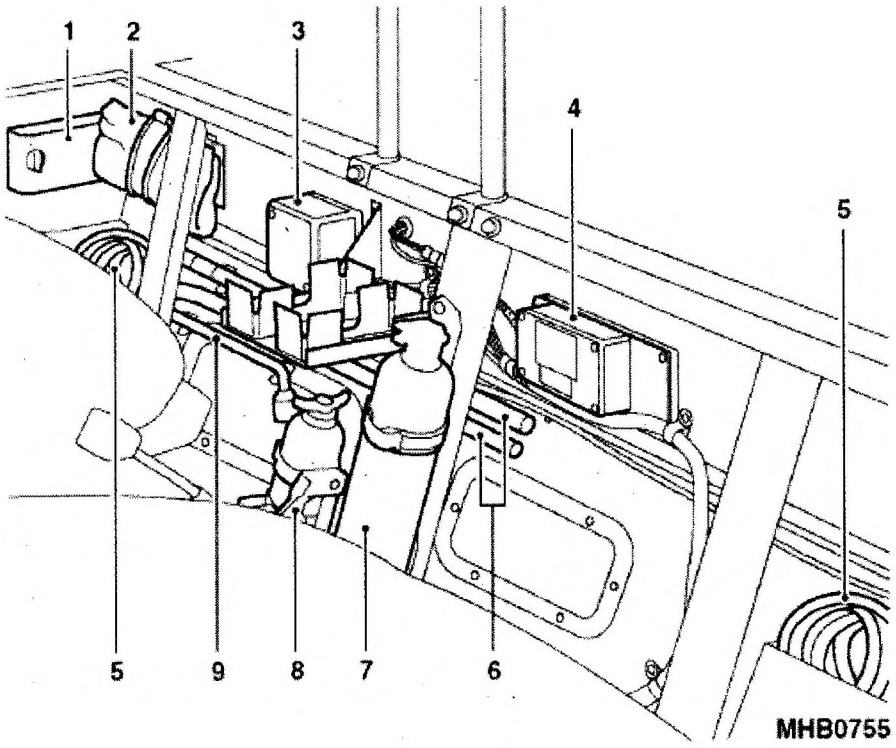
1	Retaining strap buckles	5	Auxiliary sockets	9	Battery box
2	Interior lights	6	Transformer/charger	10	Folding seats
3	Folding mapboard/bed	7	Terminal box	11	Circuit breakers
4	Cigar lighter	8	Stowage nets	12	Input socket

Fig 4 Internal rear of the Commanders IK

REAR BULKHEAD

8 The rear bulkhead (Fig 5) is located behind the drivers and passengers seat and is used to stow equipment such as the fire extinguisher (7) and to mount items of equipment onto such as the fast fuse unit (3).

9 The coaxial cables (antenna) (4) are the cables installed to provide a connection from communication equipment to the antenna mount located at the front, left corner of the vehicle. A second coaxial cable (antenna) is installed for the right hand side antenna mount. When not in use they are stowed in the position shown.



1 Wheel chock
2 Tool kit
3 Fast fuse
4 Radio charging circuit ECU
5 Coaxial cable (Antenna)
6 Jack handles
7 Fire extinguisher
8 Vehicle jack
9 Wheel nut wrench

Fig 5 Rear bulkhead

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CHAPTER 1-8

WEAPONS MOUNT INSTALLATION KIT (RWMIK)

CONTENTS

Para

Fig Page

INTRODUCTION

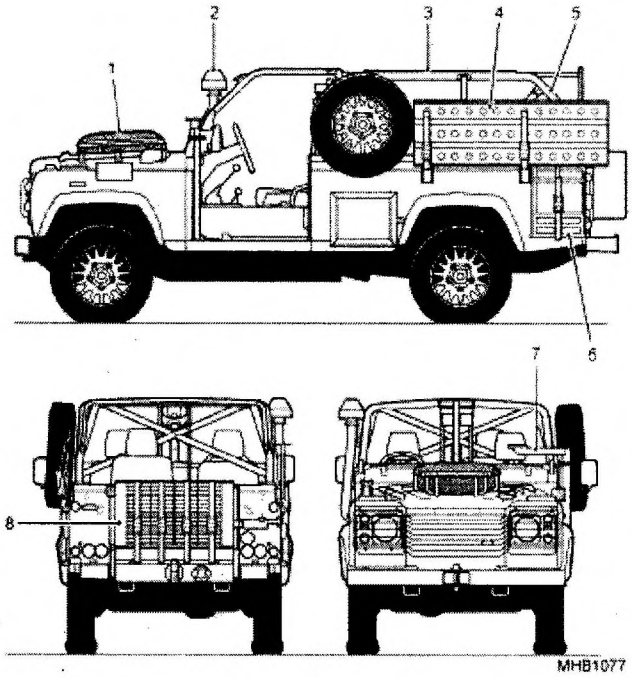
1 This sub-chapter describes all the items applicable to the Truck Utility Medium (TUM) Revised Weapons Mounted Installation Kit vehicles (RWMIK), which are not covered in the previous chapters.

RWMIK overview

2 The RWMIK variant is based on the TUM (HS) base vehicle utilising the General Service (GS) or the Fitted For Radio (FFR) variant. The complete RWMIK variant is fitted with a top hamper and ring mount enabling a 0.5 in. Browning machine gun or a 7:62 mm General Purpose Machine Gun (GPMG) to be fitted. On the front passengers side a 7.62 mm GPMG is fitted on the Crew Protection Mount (CPM).

3 Although a weapons platform, the RWMIK is not designed or endorsed for firing on the move.

4 The Standard seating configuration is for a Driver, Commander and Rear Gunner, no other passengers are permitted. The Rear Gunner is to be seated whilst the vehicle is in motion, along with the Commanders seat set in the lower position. All seats have approved passenger restraint belts that must be worn in all circumstances.



1	Cam net stowage	5	Mounting ring support frame
2	Raised air intake	6	Jerry can stowage
3	Mounting ring	7	CPM post
4	Sand channels	8	Rear door and pannier

Fig 1 Truck Utility Medium RWMIK

CREW PROTECTION MOUNT (CPM)

WARNING

THE CPM MUST NOT BE USED WHEN ON THE MOVE.

5 The Crew Protection Mount (CPM) is mounted on the front of the vehicle and allows the vehicle commander to operate a GPMG only while the vehicle is static.

FOLDING INTERFACE MOUNT (FIM)

6 The Folding Interface Mount (FIM) - Manroy Soft Mount is mounted on top of the roll-bar assembly in the rear of the vehicle. It enables a 6400 mil traverse to engage ground targets from static positions. This mount can be used to operate the following weapons:

6.1 GPMG. The GPMG is mounted on key vehicles to provide an immediate self defence capability.

6.2 0.50 HMG. RWMIK will allow for the operation of the enhanced Heavy Machine Gun (HMG) equipped with the Manroy Soft mount, Quick Change Barrel (QCB), [redacted].

CREW RESPONSIBILITIES

WARNING

THE RWMIK MUST NOT BE USED TO CARRY ANY PERSONNEL OTHER THAN THE THREE (3) DETAILED WITHIN THIS PUBLICATION.

7 Due to the stowage and safety constraints associated with RWMIK, the vehicle Crew is strictly limited to three (3) personnel and will consist of the following:

WARNING

THE RWMIK COMMANDER MUST BE TRAINED IN ACCORDANCE WITH THE RWMIK CRITICAL SAFETY ASPECTS AS DIRECTED IN RWMIK - REVISED CONCEPTS OF USE, REF 088/24/00 DATED 25 AUG 05.

7.1 The vehicle/crew commander has overall responsibility for the RWMIK vehicle and its weapons systems. The commander carries out the following duties:

7.1.1 Navigation.

7.1.2 Performs surveillance

7.1.3 Assists in target acquisition.

7.1.4 Passes and receives information on the radio.

7.1.5 Assesses and anticipates the battle, passing orders to the remainder of the crew.

7.1.6 Once the RWMIK vehicle occupies a fire position, the vehicle commander is responsible for protecting the vehicle by operating the front mounted GPMG.

CAUTION

The Driver must be qualified in accordance with the DRLC GS driver pack and the RWMIK Specific instructions taken from Ref 1 of Annex B to RWMIK - Revised Concepts of Use, Ref 088/24/00 dated 25 Aug 05.

7.2 The driver is responsible for operating the vehicle and for manoeuvring it safely in accordance with direction received from the vehicles commander.

CAUTION

The Gunner must be qualified on the weapons he is using and be trained in accordance with the RWMIK critical safety aspects as directed in Annexes A, B and C to RWMIK - Revised Concepts of Use, Ref 088/24/00 dated 25 Aug 05.

7.3 The Gunner is responsible for operating the rear mounted weapon. The gunner is also responsible for:

7.3.1 Surveillance.

7.3.2 Target acquisition.

7.3.3 Operating and maintaining the weapon.

7.3.4 Engaging targets.

LABELS

8 There is on the dash of the vehicle a label that is over and above those labels that are mentioned in the previous chapters.

Seat warning label

9 The seat warning label (Fig 2) advises individuals not to have the seat in the raised position when the vehicle is moving.

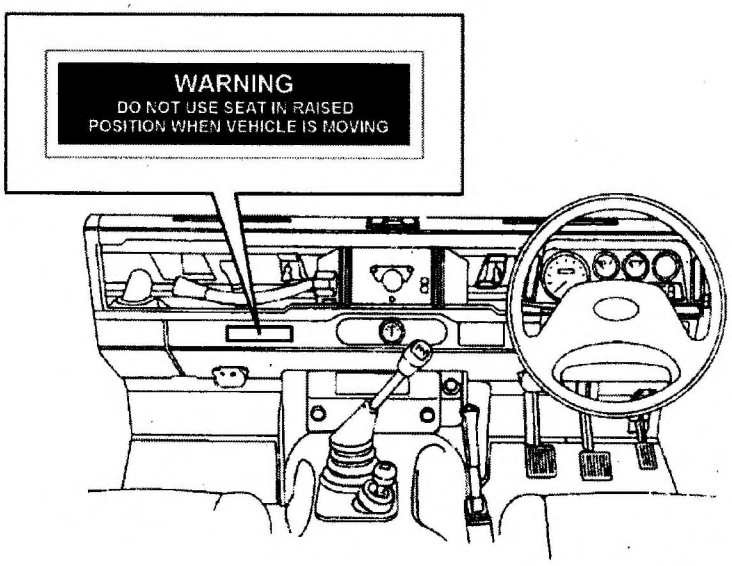


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Fig 2 Seat warning label

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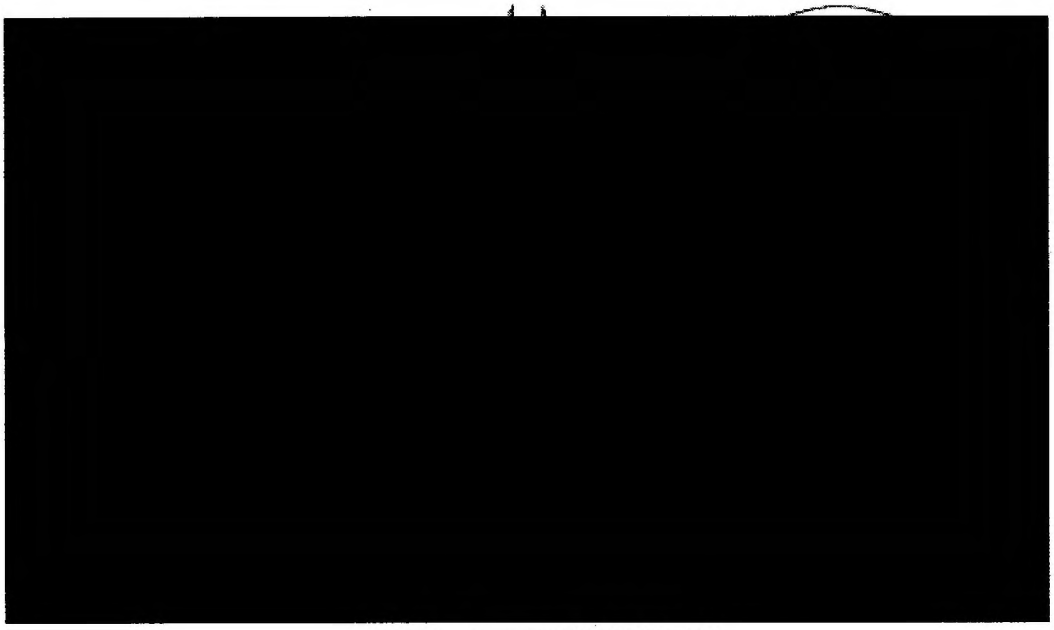

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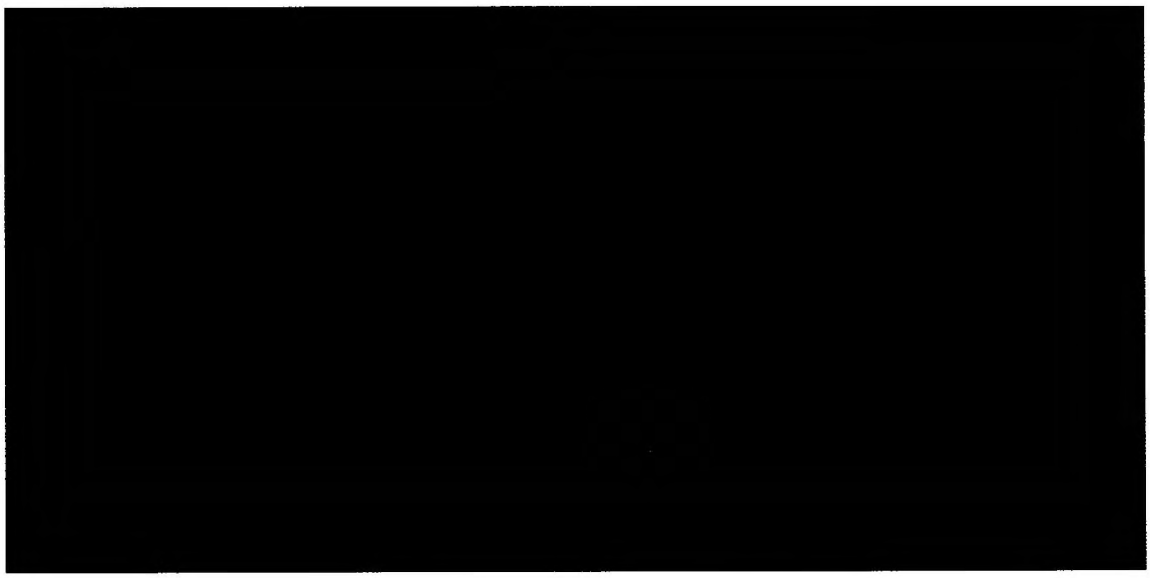

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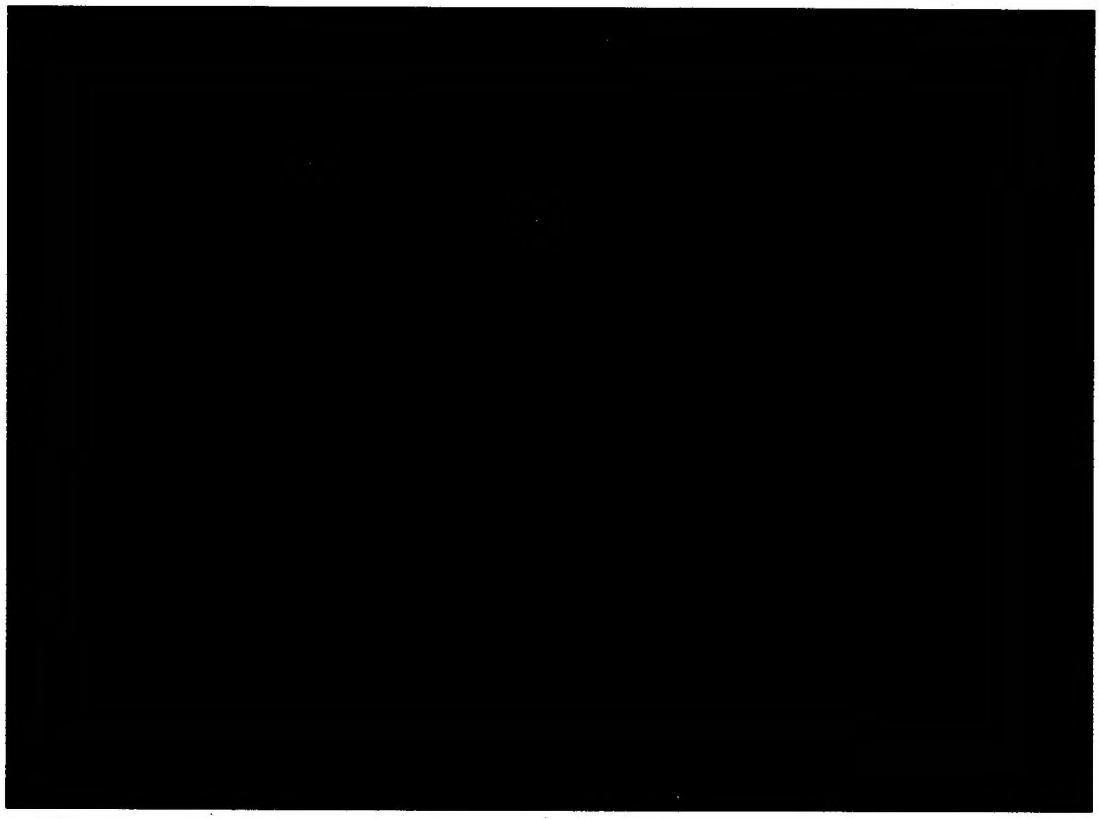
VEHICLE WEIGHT PLATE

13 [redacted]



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14 [redacted]

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14.2 T

14.3

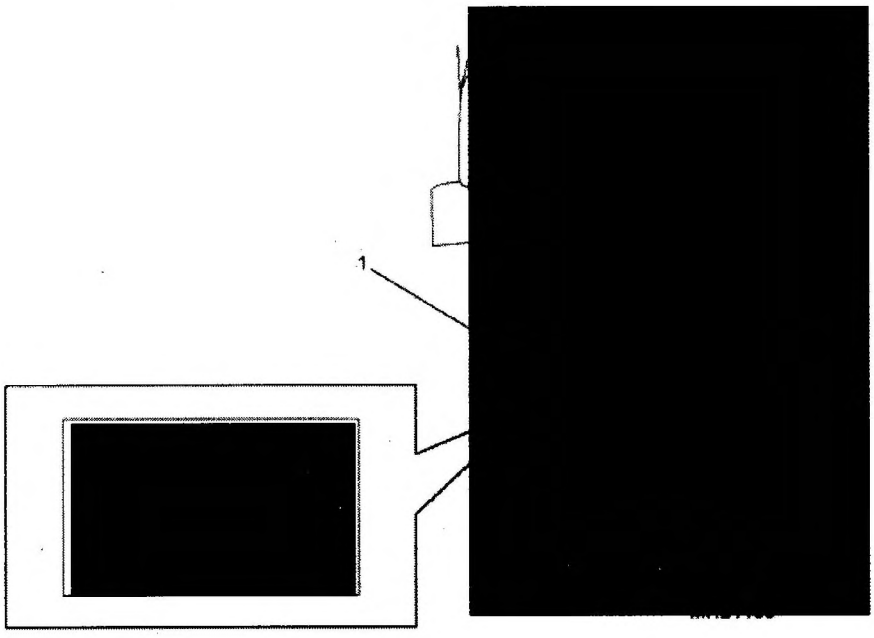

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Fig 6

15

ARMOUR

16

16.1

16.2

16.3

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CHAPTER 1-9

TROPICAL BATTLEFIELD AMBULANCE

CONTENTS

INTRODUCTION

1 This sub-chapter describes all the items applicable to Tropical Battlefield Ambulance which are not covered in the previous chapters.

General

2 All information appertaining to the Tropical Battlefield Ambulance vehicles can be found in sub-chapter 1-3.

AIR CONDITIONING

3 . The air conditioning system provides cold air to both the driver and ambulance compartments via adjustable vents located in the fresh air/recirculation unit above the attendants seat and the evaporator unit in the drivers compartment.

4 The air conditioning is provided by a compressor, driven off the engine and a cooler/evaporator unit located in the drivers compartment. On/Off and fan switch controls for the distribution of the air conditioning are mounted on the distribution/control box in the ambulance compartment.

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CHAPTER 1-10

WINTERISED/WATERPROOFED BATTLEFIELD AMBULANCE

CONTENTS

INTRODUCTION

1 This sub-chapter describes all the items applicable to Winterised/Waterproofed Battlefield Ambulance, which are not covered in the previous chapters.

General

2 All information appertaining to the Winterised/Waterproofed Battlefield Ambulance vehicles can be found in sub-chapter 1-4.

WADING

3 The label (Fig 1) is located on the dash in front of the steering wheel and informs the driver of the maximum depth the vehicle can safely ford.

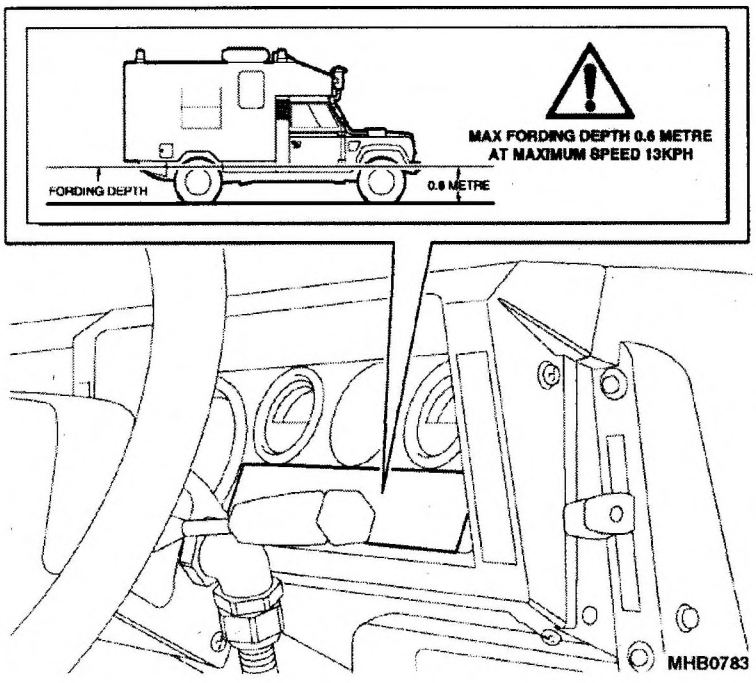

Fig 1 Wading label

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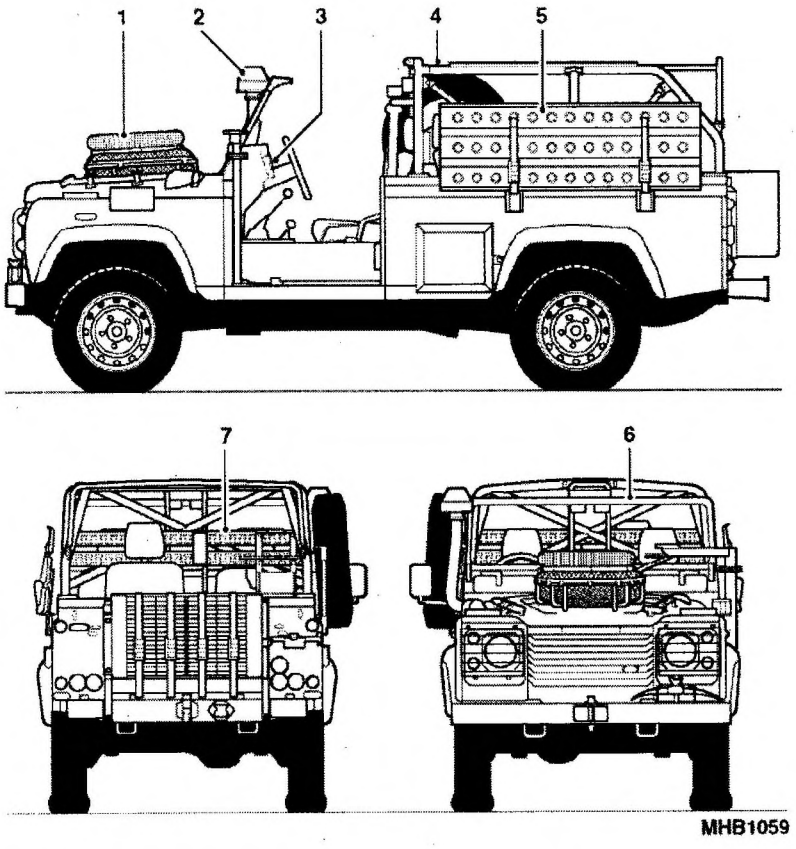
CHAPTER 1-11

WATERPROOFED WEAPONS MOUNT INSTALLATION KIT (WMIK)

CONTENTS

INTRODUCTION

1 This sub-chapter describes all the items applicable to the Waterproofed Truck Utility Medium (TUM) Weapons Mounted Installation Kit vehicles (WMIK), which are not covered in the previous chapters.



1	Raised air intake extension tube	5	Sand Channels
2	Raised air intake	6	Front windscreen
3	GPS Mounting	7	Radio rack and mounting
4	GPMG/HMG Barrel clamps		

Fig 1 Truck Utility Medium WMIK

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CHAPTER 2

CONTROLS AND INSTRUMENTS

CONTENTS

INTRODUCTION

1 This Chapter describes the Controls and Instruments applicable to the Truck Utility Light (TUL) HS, Truck Utility Medium (TUM) HS and (TUM) Battlefield Ambulance HS variants listed in the following sub-chapters:

1.1 Chapter 2-1 Basic vehicle.

1.2 Chapter 2-2 Fitted For Radio (FFR).

1.3 Chapter 2-3 Battlefield Ambulance.

1.4 Chapter 2-4 Winterised/Waterproofed.

1.5 Chapter 2-5 Air drop.

1.6 Chapter 2-6 Helicopter Support Vehicle.

1.7 Chapter 2-7 Commanders IK.

1.8 Chapter 2-8 Weapons Mounted Installation Kit.

1.9 Chapter 2-9 Tropical Battlefield Ambulance.

1.10 Chapter 2-10 Winterised/Waterproofed Battlefield Ambulance.

1.11 Chapter 2-11 Waterproofed Weapons Mounted Installation Kit.

General

2 The information given in this Chapter is applicable to both left hand drive and right hand drive vehicles.

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CHAPTER 2-1

BASIC VEHICLE

CONTENTS

(continued)

CONTENTS (continued)

Para

Fig Page

INTRODUCTION

1 This sub-chapter describes the Controls and Instruments applicable to the Truck Utility Light (TUL) HS and Truck Utility Medium (TUM) HS vehicles.

THE VEHICLE SIDE DOORS

2 There are two side doors fitted to the vehicle. The following operations apply to the vehicle side doors and are similar in many of the operations.

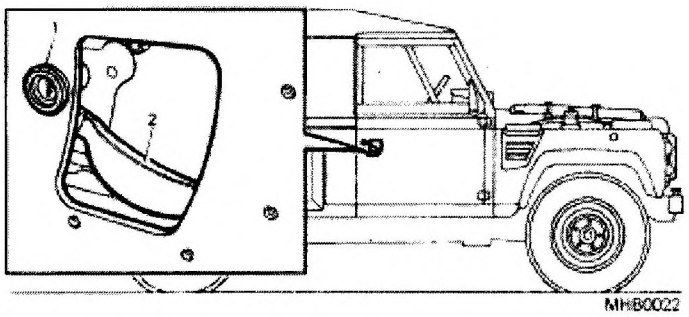
To open and close the doors from the outside

3 To unlock, open, and lock the doors from the outside proceed as follows:

3.1 To unlock the doors Insert the key into the lock (Fig 1 (1)) and turn it towards the rear of the vehicle (a quarter turn), return the key to the vertical position and remove.

3.2 To open the door, lift the handle (2).

3.3 To lock the door, turn the key towards the front of the vehicle (a quarter turn), return key to the vertical position and remove.



1 Lock 2 Handle

Fig 1 External door lock

Open and close the driver's door from the inside

NOTE

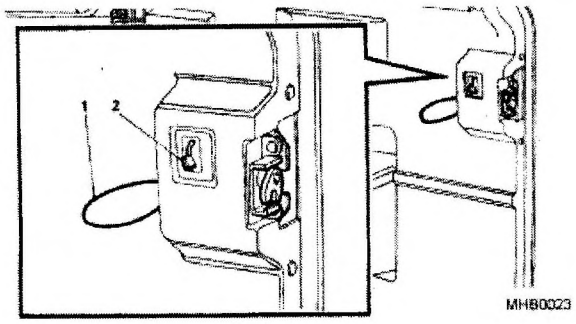
This affects only the driver's door.

4 To unlock the door proceed as follows:

4.1 Move the knob (Fig 2 (2)) on the lock case downwards.

4.2 Open the door using the inside handle (1).

4.3 To lock the door, close the door and move the knob on the lock case upwards.



1 Lock 2 Handle

Fig 2 Internal door lock

Open and close the passengers door from the inside

NOTE

This affects only the passenger's doors.

5 To unlock the door from the inside proceed as follows:

5.1 Move the knob (2) on the lock case downwards.

5.2 Open door using inside handle (1).

5.3 To lock the door move knob on lock case upwards before or after closing door.

TAILGATE

6 The tailgate (Fig 3) is either side or bottom hinged. The tailgate is secured by two latches in both cases. Restraining straps prevent excess travel for bottom hinged tailgates and a retaining door holder limits the travel for side hinged conversions.

Release the tailgate

7 To release the tailgate move the catches in an upward direction until they are able to fall into the horizontal position.

7.1 For bottom hinged tailgates pull the tailgate outwards until the retaining straps prevent any further travel. To close the tailgate, lift the tailgate and push it fully against the latching and secure.

7.2 For side hinged conversions rotate outwards until the retaining door holder prevents further travel. To close rotate tailgate inwards push against the latching and secure.

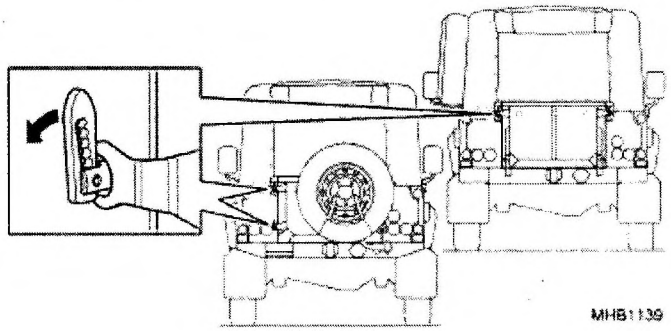


Fig 3 Tailgate locking mechanism

VEHICLE FASCIA

8 The vehicle fascia displays the instruments and controls required by the operator when driving the vehicles.

DRIVER/PASSENGER SEATS

9 The front seats (Fig 4) have an adjustable setting for ease of driving and comfort.

Adjusting the seats

10 For Fore and aft adjustment lift the bar at the front of the seat and slide the seat to the required position. Release the bar and ensure that the seat guide catches have located the seat.

11 For Back angle rest adjustment ease the body from backrest and lift the locking handle.

11.1 Apply body pressure to move the back rest to the required position.

11.2 While remaining in the required position, press the handle down to lock in position.

NOTE

The backrest return is spring assisted.

12 Head restraints are fitted to the adjustable backrests of both the driver and front passenger seats. Each head restraint should be properly adjusted to provide maximum effectiveness in the event of a collision.

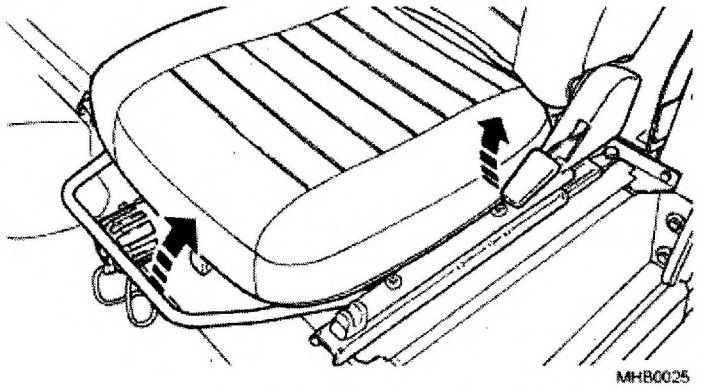


Fig 4 Seat adjustment

SAFETY BELT

13 The safety belt must be fitted to the anchorage points provided. Always use the safety belt provided, even for the shortest journeys. Alterations and additions must not be made to safety belts fitted to the vehicles.

Operating the safety belt

14 When operating the safety belt always ensure that the following points are observed:

14.1 Ensure that the safety belt is lying flat and is not twisted either on the wearer's body or between the wearer and the anchorage point.

14.2 Never attempt to use the safety belt for more than one person.

14.3 To fasten, draw the tongue of the safety belt (Fig 5 (1)) over the shoulder and across the chest, then push it into the engagement/release slot. A positive click indicates that the safety belt is locked.

14.4 To release, press the release button (2) which will disengage the buckle; this allows the safety belt to retract. Position the moveable clip as high as possible so that the tongue is accessible when the safety belt is next required.

Testing the safety belt

WARNING

THIS TEST MUST BE CARRIED OUT UNDER SAFE ROAD CONDITIONS, I.E. LEVEL DRY ROAD WITH NO FOLLOWING OR ONCOMING TRAFFIC.

15 With the safety belts in use, drive the vehicle at 8 km/h (5 mph) and brake sharply. The automatic locking device should operate and lock the safety belt. It is essential that the driver and passenger are sitting in a normal relaxed position. The retarding effect of the braking must not be anticipated.

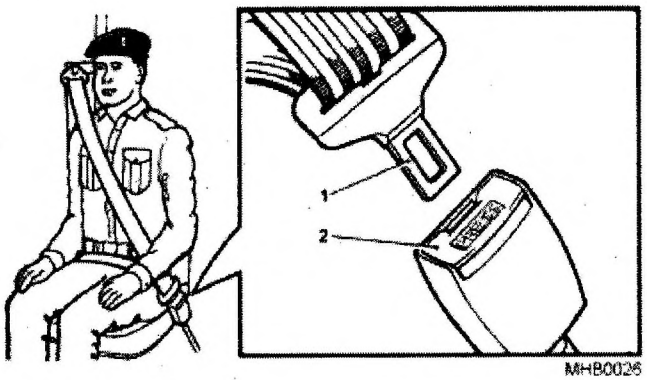
Care of the belts

16 The safety belts are possible life-saving equipment, and should be regarded with the same importance as steering and brake systems. Frequent inspection is advised to ensure continued effectiveness in the event of an accident. Inspect the safety belt and check as follows:

16.1 Inspect the safety belt webbing periodically for signs of abrasion and wear, paying particular attention to the fixing points.

16.2 If worn correctly and stowed on the stowage points provided, deterioration will be kept to a minimum and protection to a maximum.

16.3 Safety belt assemblies must be replaced if the vehicle has been involved in an accident or if upon inspection, there is evidence of cutting or fraying of webbing, incorrect buckle or tongue locking function, and/or any damage to the buckle cabling. If any fault is found report it immediately.



1 Tongue of the belt 2 Release button

Fig 5 Seat belt operation

Safety belt cleaning

17 When cleaning a safety belt, do not attempt the following:

17.1 Do not bleach the belt webbing or re-dye it. If the belts become soiled, sponge with warm water using a non-detergent soap and allow them to dry naturally.

17.2 Do not use caustic soap, chemical cleaners or detergents for cleaning;

17.3 Do not dry with artificial heat or by direct exposure to the sun.

INSTRUMENT PANEL

18 The instrument panel is situated in front of the steering wheel console and consists of the following instruments:

Coolant temperature indicator

19 The coolant temperature gauge (Fig 6) indicates the running temperature of the engine. Under normal running conditions the temperature indicator needle should register in the black band. If the needle moves to the red band during normal running, the vehicle should be stopped and the cause investigated. The design of the indicator ensures that the needle does not fluctuate, but there is a time lag of a few seconds before registering after the engine has been started, or electrical services are switched on.

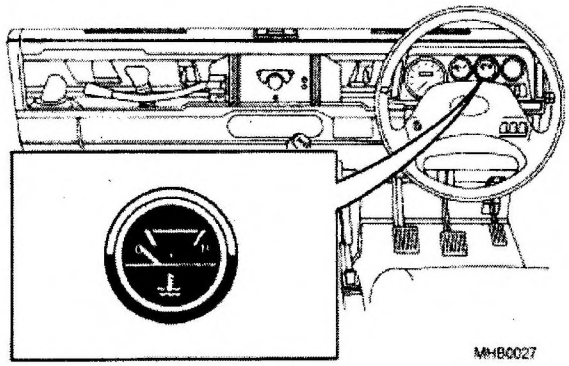


Fig 6 Coolant temperature indicator

Fuel level indicator

20 The fuel level indicator (Fig 7) shows the approximate contents of the tank. The design of the indicator ensures that the needle does not fluctuate, but there is a time lag of a few seconds before registering after the engine has been started, or after the electrical services have been switched on.

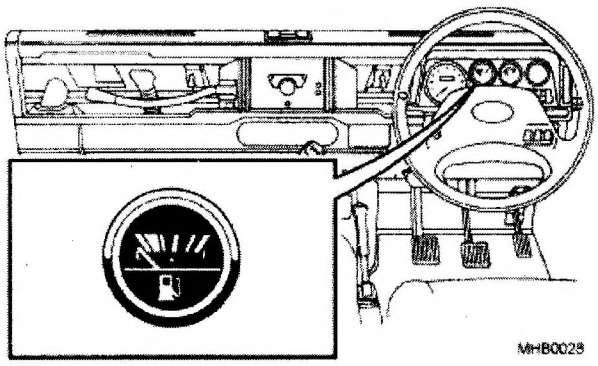
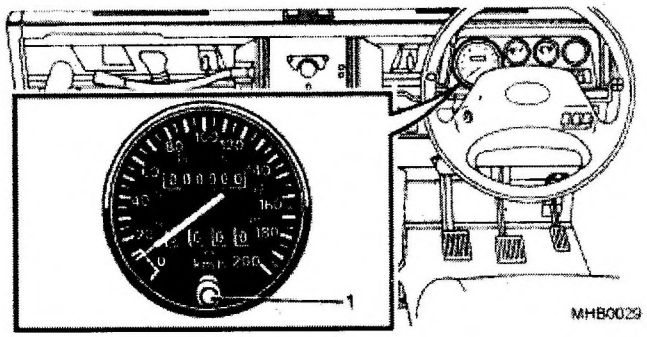


Fig 7 Fuel level indicator

Speedometer

21 The speedometer (Fig 8) indicates the speed of the vehicle in kilometres per hour with a miles per hour subscale. The speedometer incorporates a total distance indicator and a trip distance indicator with a trip reset button (1).

21.1 The speedometer trip setting allows the indicator to be reset to zero by pushing the small black knob on the front of the speedometer.



1 Trip reset button

Fig 8 Speedometer and trip setting