Warning lights panel

22 The warning lights panel (Fig 9) incorporates all the warning symbols.

22.1 The red oil pressure warning light (2) will illuminate when the ignition is switched on, also when there is abnormality in the oil pressure.

22.1.1 The oil warning light should be checked when starting the vehicle from cold as they should light up immediately the ignition is switched on and extinguish when the engine is running. The warning lights may flicker when the engine is running at idling speed but provided they fade out as the engine speed increases, the charging rate and oil pressure are satisfactory. If the oil pressure warning light comes on during normal running, the vehicle should be stopped immediately and the cause investigated.

22.2 The red ignition warning light (3) will illuminate when the ignition is switched on.

22.2.1 The ignition warning light should be checked when starting the vehicle from cold as they should light up immediately the ignition is switched on and extinguish when the engine is running. The ignition warning light is connected in series with the alternator field circuit. Bulb failure would prevent the alternator charging properly; therefore the bulb should be checked before suspecting an alternator fault. A failed bulb should be changed with the minimum of delay otherwise the vehicle battery will become discharged.

22.3 The red brake circuit check warning light (4) will illuminate if there is a fluid leakage, when the ignition is on or the engine is running, from either the front or rear braking system. If leakage occurs the light will illuminate when the brakes are applied. The brake circuit warning light will operate momentarily when the starter is actuated. This will confirm that the warning circuit is functioning correctly. If the light comes on during normal running or braking, the vehicle should be stopped immediately and the cause investigated.

22.4 The green turn light arrows (5) flash in conjunction with the turn lights, when operated by the stalk on the steering column. If the turn lights do not operate as described, there may be a bulb failure in the warning light panel or in one of the turn lights.

22.5 The blue main beam warning light (6) illuminates when the headlight main beams are operating. The purpose is to remind the operator to dip the headlights when entering brightly lit areas, or when approaching other traffic. The light will also illuminate when the headlight flasher switch is operated.

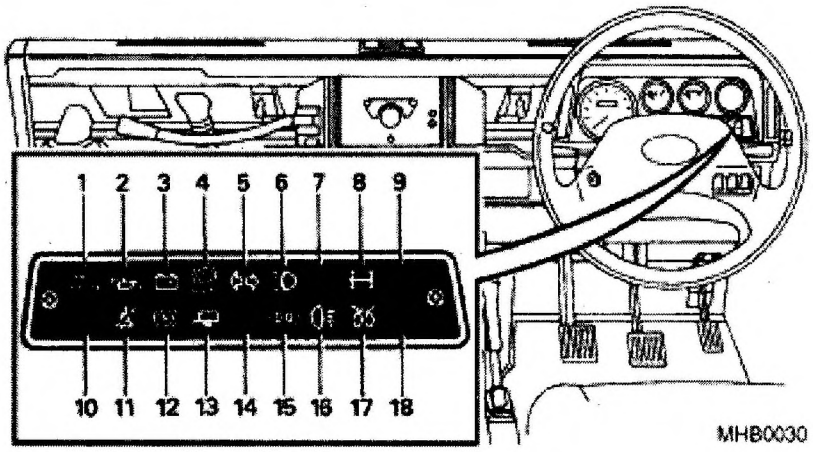
22.6 The amber differential lock warning light (8) will illuminate when the gearbox differential lock control knob is engaged. The differential lock should be engaged if traction to one or more wheels is likely to be lost. A return to the disengaged position should be made as soon as conditions permit.

22.7 The green trailer warning light (13) illuminates when a trailer is connected to the vehicle via the twelve pin socket. It will flash in conjunction with the vehicle's turn lights, thus ensuring that the trailer turn lights are functioning correctly. In the event of a turn light bulb failure on the trailer, the warning light will flash once only and then remain extinguished. Where a trailer is not used or connected, the trailer warning light momentarily flashes every time the turn light switch is operated.

22.8 The green side lights warning light (15) will illuminate when the side lights are switched on.

22.9 The amber rear fog guard warning light (16) will illuminate when the rear fog guard switch is switched on.

22.10 The amber diesel-cold start warning light (17) will illuminate when the engine starter key is turned to the heater plugs "on" position and will go off as soon as the correct starting temperature has been reached.



1	Park brake (not used)	10	Spare
2	Oil pressure	11	Safety belt (not used)
3	Ignition	12	Park brake (not used)
4	Brake circuit	13	Trailer
5	Turn lights	14	Spare
6	Main beam	15	Side lights
7	Low fuel (not used)	16	Rear fog
8	Differential lock	17	Cold start
9	Heater rear screen (not used)	18	Battery charging (24 V) (not used)

Fig 9 Warning lights panel

HAZARD WARNING SWITCH

23 The hazard warning switch (Fig 10 (1)) is located below and to the right of the instrument panel.

Operating the switch

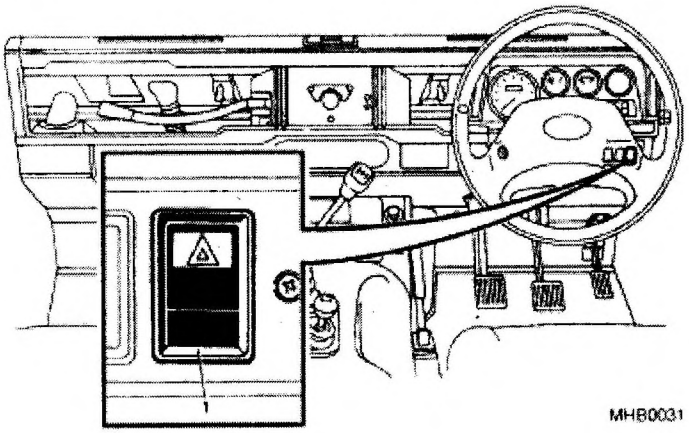
24 The switch has a two way rocker action which operates as follows:

24.1 Press the lower end of the switch in to turn the hazard warning lights on.

24.2 Press the upper end of the switch in, to turn the hazard lights off.

24.3 With the switch in the on position, all four turn lights operate simultaneously. The red warning light (with the triangular symbol) within the switch will flash in conjunction with the exterior turn lights; if connected, the trailer lights will also flash. The trailer light (Fig 9 (13)) will also flash even when there is no trailer attached.

24.4 Use the hazard warning system to warn following or oncoming traffic of any hazard, that is, breakdown on fast roads, or an accident to the vehicle or other vehicles.



1 Hazard warning switch

Fig 10 Hazard warning switch

Rear fog guard lights switch

25 The rear fog guard lights (Fig 11) are operated by a two-position, on/off rocker switch (1). It is located on the right-hand side of the instrument panel, next to the hazard warning light switch.

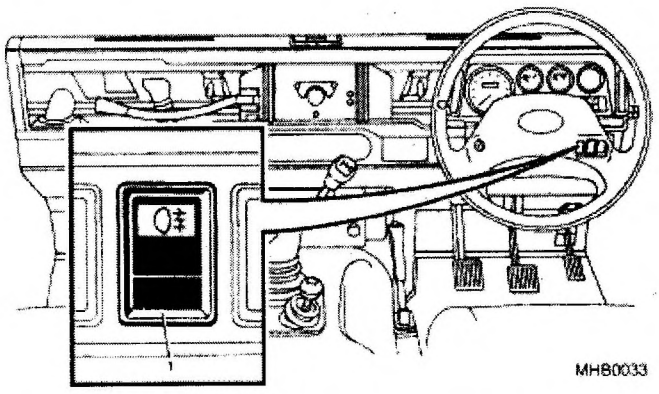


Fig 11 Rear fog guard light switch

STEERING WHEEL CONSOLE

26 The steering wheel console comprises the following switches and controls:

The windscreen wash/wipe switch

27 The windscreen wash/wipe switch is located on the right hand side of the console and is only operative when the ignition is switched on. The switch has five positions as follows:

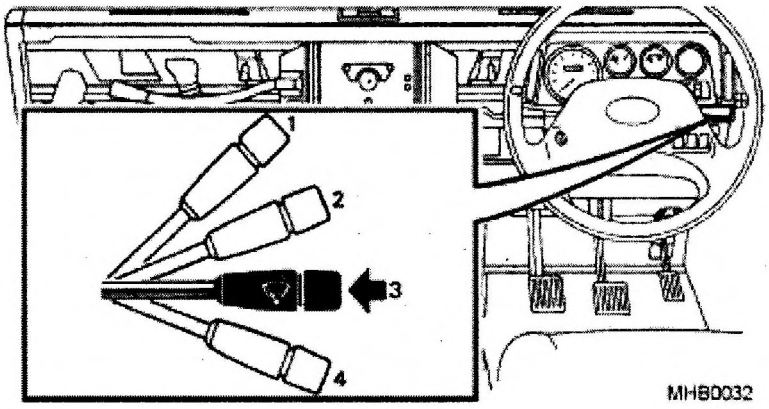
27.1 With switch in the upper position; (Fig 12 (1)) fast speed wiper.

27.2 With switch in the second position; (2) slow speed wiper.

27.3 With switch in the third position; (3) wipers off.

27.4 With switch in the lowest position; (4) "flick-wipe" position where the wipers will operate at slow speed until the switch is released.

28 When the switch, located on the end of the switch, is pressed in to the screen wash position, water is ejected onto the screen. To stop this water, release the switch. This operation can be done with the wiper switch on or off.



1 Upper position
2 Second position
3 Third position
4 Lowest position

Fig 12 Windscreen wash/wipe switch

Headlight dipper, turn lights, horn and headlight flasher switch

29 The headlight dipper, turn lights, horn and headlight flasher switch (Fig 13) is located on the left hand side of the console.

30 The switch has six positions described as follows:

30.1 The switch in the central position (3) is dipped headlights.

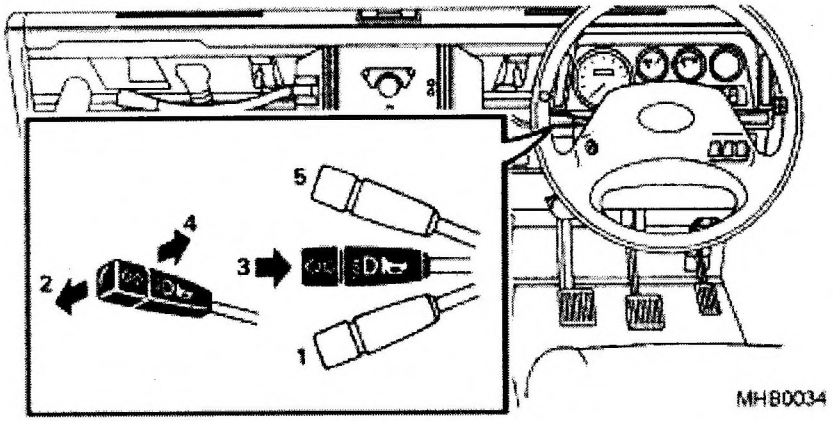
30.2 The switch pushed away from the driver (2) is main beam.

30.2.1 The switch pulled towards the driver (4) is the headlight flash. The headlights can be flashed at any time, irrespective of other switch positions except when in blackout mode.

30.3 Press the switch inwards (3) to operate the horn.

30.4 The switch in the upper position (5) operates the right-hand turn light.

30.5 The switch in the lower position (1) operates the left-hand turn switch.



1 Lower position
2 Away from driver
3 Press inward
4 Toward the driver
5 Upper position

Fig 13 Headlight dipper, turn lights, horn and headlight flasher switch

Steering lock and starter switch

WARNING

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.

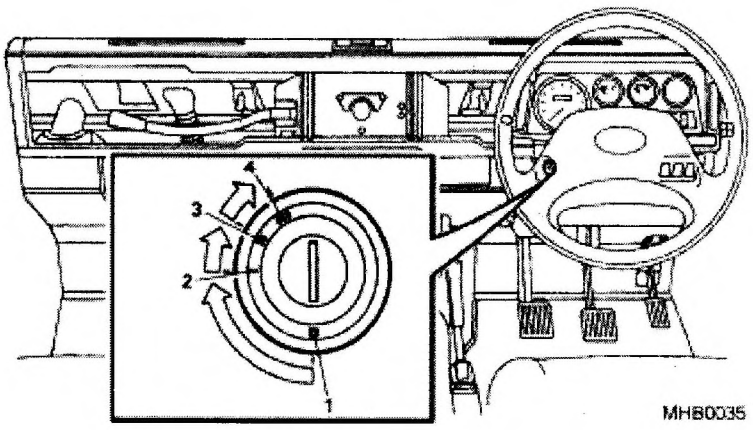
31 The steering lock and starter switch are an integral part of the combined four position key operated switch, which operates the ignition switch. It is located to the left-hand side of the console and below the headlight dipper switch and operates as follows:

31.1 The key in position "O" (Fig 14 (1)) all electrical circuits (except Interior, Headlight flash and Hazard lights switched off, steering lock engaged.

31.2 The key in position "I" (2) the steering lock is disengaged. If the steering lock has been engaged, slight movement of the steering wheel will assist in its disengagement. To engage the steering lock, turn the key fully back, "O" and withdraw it from the lock

31.3 Continue to turn the key to position "II" (3) the heater plugs are on and the amber warning light will illuminate.

31.4 Turn the key further against spring pressure to position "III" (4) to operate the starter motor. When the engine has started release the key and it will automatically return to the third position, "II", the key in this position is the "run" mode.



1	Position "O"	3	Position "II"
2	Position "I"	4	Position "III"

Fig 14 Steering lock and starter switch

Steering wheel

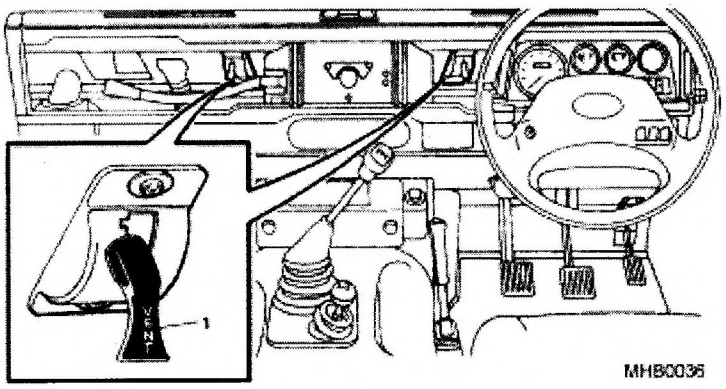
32 The steering wheel is connected to the front wheels by a series of columns and rods via a steering box. To change from hard right to hard left requires the steering wheel to be turned four times.

DASH VENTILATORS

33 The two dash ventilators are mounted in the scuttle and are open to the atmosphere.

33.1 The dash ventilators may be opened separately by pushing the lever (Fig 15 (1)) downwards until the desired position is obtained.

33.2 Use of the ventilators will be found advantageous when traversing on dusty roads, as dust sucked into the vehicle from the rear is greatly reduced.



1 Lever

Fig 15 Dash ventilators

MAIN LIGHT SWITCHES

34 There are two types of main light switches that may be fitted to the vehicle. Either a six way main lighting switch or a seven way main lighting switch dependant on vehicle variant.

Six way main lighting switch

35 The six way main lighting switch (Fig 16 (1)) is situated in the centre of the fascia and has six positions. Fitted over the top of the switch is an indicator panel plate (2) which shows the individual positions as follows:

35.1 OFF - All lights are off.

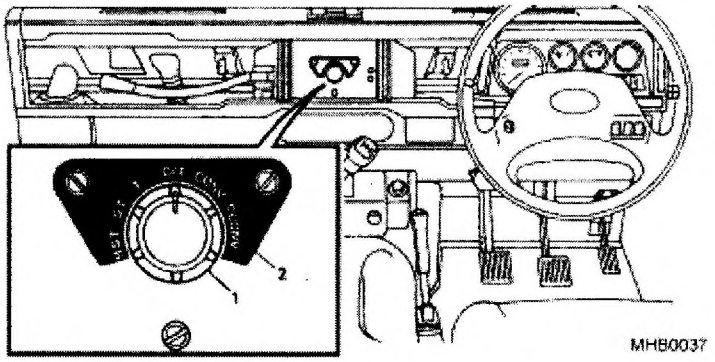
35.2 CONV - Convoy light only.

35.3 SCONV - Convoy and side lights.

35.4 T - Tail and rear number plate lights.

35.5 ST - Side, tail and rear number plate lights.

35.6 HST - Head, side, tail and rear number plate lights.



1 Six way main lighting switch 2 Indicator panel plate

Fig 16 Six way main lighting switch

Seven way main lighting switch

36 The Seven way main lighting switch is situated in the centre of the fascia and has seven positions. For normal working operate the switch in positions "Tag", "1" and "2". To operate the switch in the blackout positions "0", "S1", "S2" and "S3", push the bar (Fig 17 (1)) to the left and push the knob (2) inwards and turn. To release the switch from the blackout position, push the knob inwards.

36.1 Position "Tag" - Direction indicators, hazard warning, headlamp flash, horn normal, stop lamp, reverse lamp, warning lights, map lamp.

36.2 Position "1" - As position Tag plus instruments, side lamps and tail lamps, number. plate lamp.

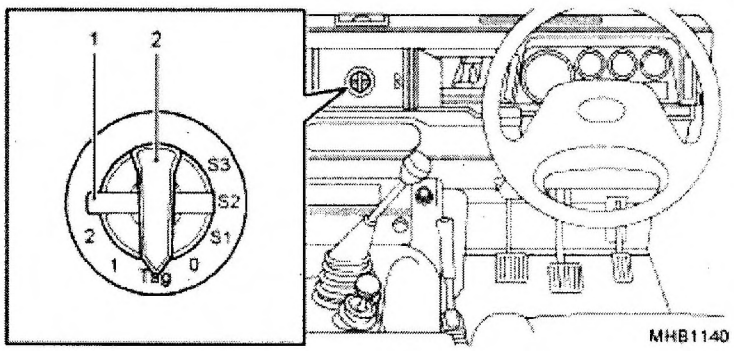
36.3 Position "2" - As position "1" plus headlamps, headlamp dipped facilities and rear fog lamp.

36.4 Position "0" - All lights off.

36.5 Position "S1" - Blackout stop lamp and convoy light.

36.6 Position "S2" - Blackout rear tail lamps only.

36.7 Position "S3" - Blackout stop lamp, blackout tail lamps, blackout head lamps.

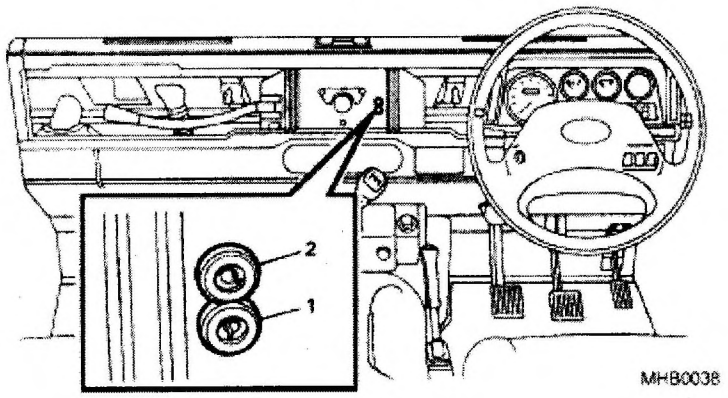


1 bar 2 Knob

Fig 17 Seven way main lighting switch

INSPECTION SOCKETS

37 The inspection sockets are located to the right of the main lighting switch and are for the purpose of providing power for an inspection lamp. The red socket (Fig 18 (2)) is live and the black socket (1) is to earth.



1 Red socket 2 Black socket

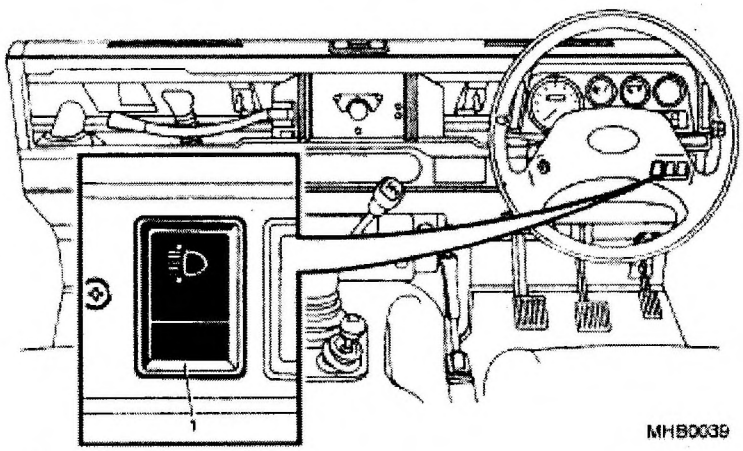
Fig 18 Inspection sockets

HEADLAMP LEVELLING

38 The headlamp levelling switch (Fig 19) is located to the left of the fog guard lights switch. The levelling switch (1) is a two-position rocker switch for laden and un-laden operations of the vehicle.

38.1 Press the upper end of the switch in for an un-laden vehicle.

38.2 Press the lower end of the switch in when the vehicle is fully loaded.



1 Headlamp levelling switch

Fig 19 Headlamp levelling switch

MAP READING LIGHT

39 The map reading light (Fig 20) is located on the dash in front of the passenger seat.

39.1 The light comprises a bulb mounted on the end of a flexible stalk. A rocker switch located below the base of the flexible stalk operates the light.

39.2 The facility is used to see documents whilst driving at night.

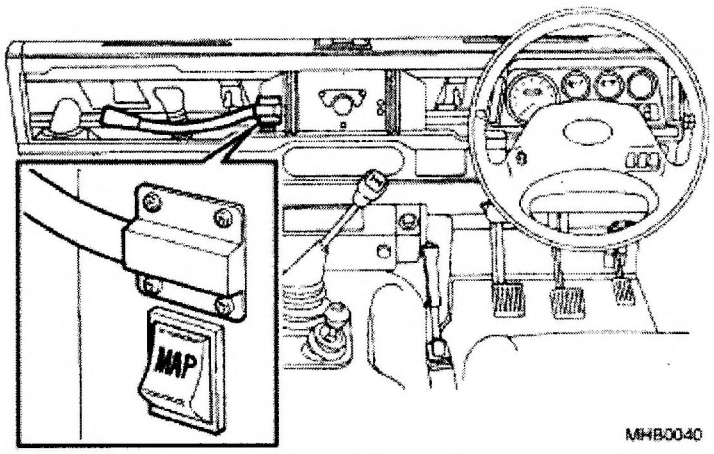


Fig 20 Map reading light

FRESH AIR/HEATING CONTROLS

40 The fresh air/heating controls are located on either side of the instrument panel, the distribution (Fig 21 (3)) and temperature control levers (2) being on the right and the blower motor lever (1) on the left, for the right hand drive vehicles.

The heater controls

41 The heating system delivers fresh air to the windscreen for demisting and to the driving cab interior in variable temperature proportions, between cold and hot according to the control settings. Warm/hot air will be available when the engine reaches normal working temperature.

NOTE

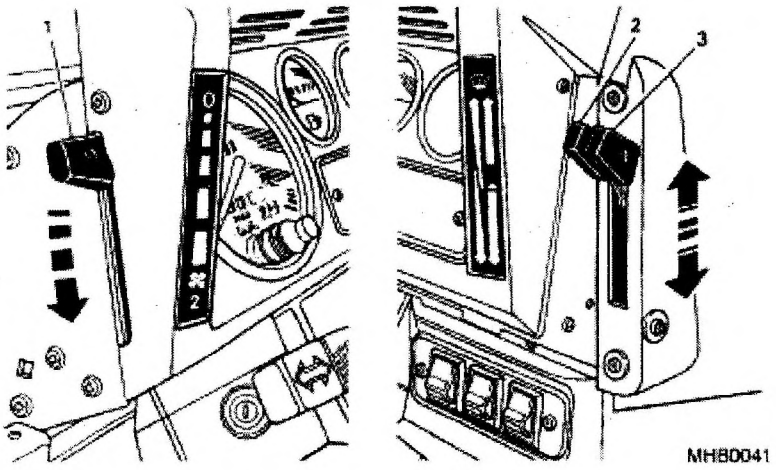
On left hand drive vehicles the distribution and temperature control levers are on the left side and the blower motor lever is on the right side.

41.1 The air distribution control lever (3) controls the direction of air flow and has three positions as follows:

41.1.1 With the lever fully up, all the air is directed through the windscreen demister vents.

41.1.2 With the lever mid-way, air is directed to the foot level vents and to the windscreen demister vents.

41.1.3 With the lever fully down, air is directed to the foot level vents, although a certain amount will continue to pass through the windscreen demister vents.



1 Blower motor lever
2 Temperature control lever
3 Air distribution control lever

Fig 21 Fresh air/heating controls

41.2 Temperature control lever (2) controls the temperature of the air from the heater unit and has three positions as follows:

41.2.1 To increase the temperature, move the lever in the direction of the red arrow.

41.2.2 To decrease the temperature, move the lever in the direction of the blue arrow.

41.2.3 The action between the maximum temperature and the minimum temperature is progressive.

41.3 Blower motor lever (1) will only activate the motor with the starter key turned to the first position or with the engine running. The blower motor lever has four positions as follows:

41.3.1 With the lever fully up the heating and ventilation system is inoperative.

41.3.2 Move the lever in a downward motion until a positive click is felt, this is the "ram" position. In this position the air is forced into the vehicle by its forward movement, and then routed and heated as determined by the position of the distribution and temperature controls. When the vehicle is stationary, the system is inoperative.

41.3.3 Move the lever to the second position and this will give a slow blower motor speed.

41.3.4 Move the lever down to the last position and this will give a fast blower motor speed to boost the airflow into the vehicle. Air is routed and heated as determined by the position of the distribution and temperature controls.

PEDALS

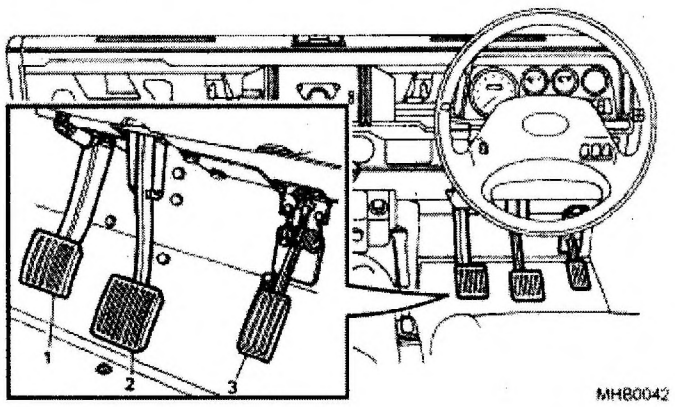
42 The brake (Fig 22 (2)), clutch (1) and accelerator (3) pedals are located in the well of the driver's compartment, below the steering wheel console.

42.1 The pedals are of the pendant type with the brake and the clutch operated hydraulically.

42.2 The brakes are servo assisted for ease of operation.

42.3 The accelerator pedal has a mechanical linkage operating a control cable.

42.4 To operate, depress the appropriate pedal.



1 Clutch pedal 3 Accelerator
2 Brake pedal

Fig 22 Pedal layout

Foot brake pedal

43 To check the foot brake for correct operation proceed as follows:

43.1 Check that the brake pedal travel is not excessive and maintains a satisfactory pressure under normal working load.

43.2 If the brakes feel spongy this may be caused by air in the hydraulic system. It must be removed by bleeding the system at each wheel cylinder. Report to Vehicle Mechanics as soon as possible.

BONNET RELEASE

44 The bonnet release lever (Fig 23) is located on the front of the vehicle under the front lip of the bonnet. This opens the bonnet as follows:

44.1 Pull the lever, this disengages the locking plate and allows the bonnet to spring open to the limits of the safety catch.

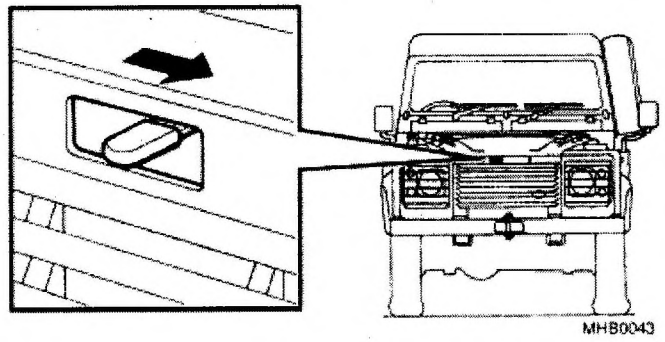


Fig 23 Bonnet release lever

44.2 To open, insert the hand under the bonnet and locate the bonnet safety catch (Fig 24) on the left hand side of the vehicle, press upwards, this releases the safety catch and lifts the bonnet clear.

44.3 To close, lower the bonnet into position and apply pressure downwards until the locking mechanism locates in its housing. The bonnet release lever automatically resets itself.

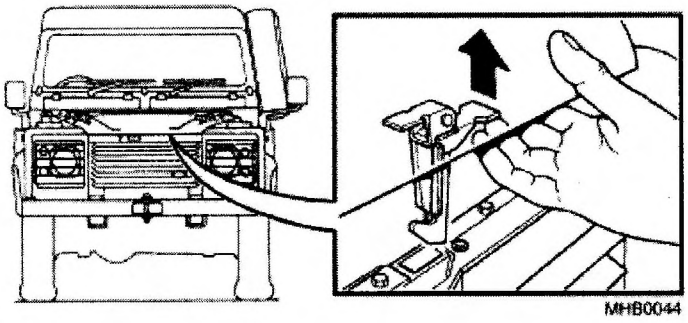


Fig 24 Bonnet safety catch

INTER VEHICLE STARTING SOCKET

45 The inter vehicle starting socket (Fig 25) is located on the left hand heelboard under the passenger seat and is used for starting a vehicle, with discharged batteries, from another vehicle.

Operation of the socket

46 To use this facility proceed as follows:

46.1 First unscrew the cover from the socket. Connect the cable via the pins, to both the vehicles.

46.2 Start the engine of the vehicle which will supply the current. Turn the ignition key of the disabled vehicle and feed from the other vehicle will start the engine.

46.3 Disconnect as soon as possible.

46.4 When the inter vehicle starting socket is not in use the cover must be screwed on tight.

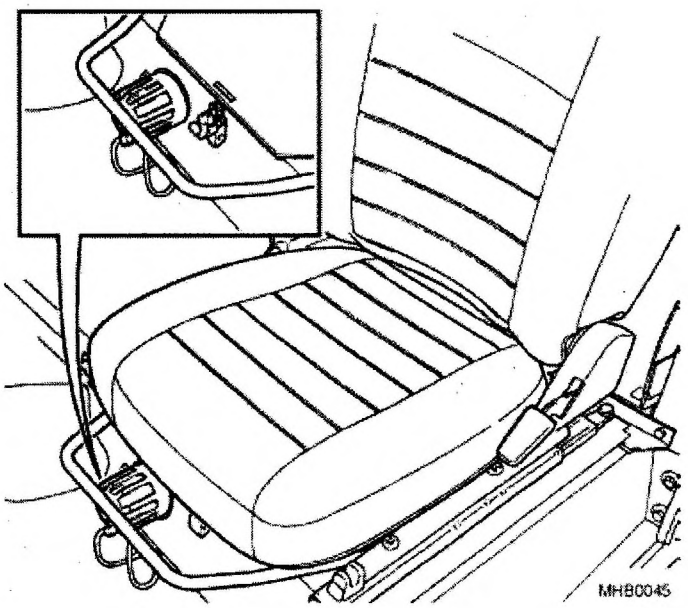


Fig 25 Inter vehicle starting socket

VEHICLE BATTERY ISOLATOR SWITCH

47 The vehicle battery isolator switch (Fig 26) is located on the left hand heelboard under the passenger seat and is used to isolate the vehicle batteries. Turn the knob anti-clockwise to isolate the vehicle batteries.

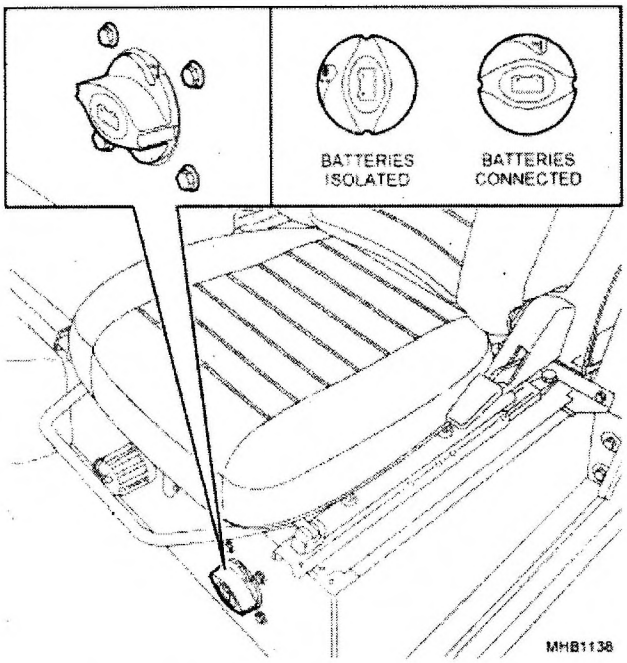


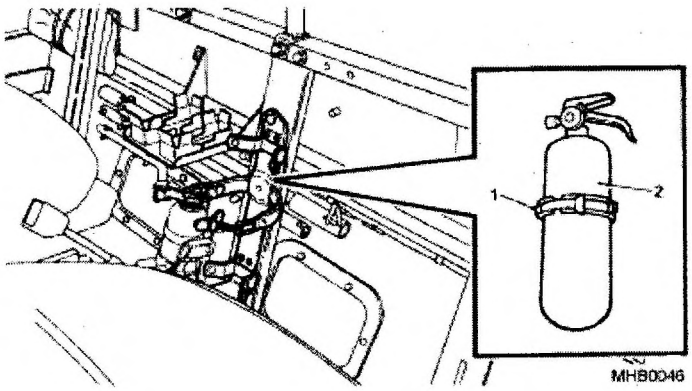
Fig 26 Vehicle battery isolator switch

FIRE EXTINGUISHER BRACKET

48 The fire extinguisher bracket is situated between the driver and passenger seats on the rear body bulkhead. All personnel should be familiar with the mechanism for releasing the extinguisher.

Operation of the extinguisher bracket

49 To release the extinguisher from the bracket pull the strap (Fig 27 (1)), which releases the retaining bracket. The fire extinguisher (2) may now be removed.



1 Strap 2 Fire extinguisher

Fig 27 Fire extinguisher bracket

TRANSMISSION HANDBRAKE

50 The handbrake lever (Fig 28) is mounted on the heel board and connects to a drum type transmission brake located on the rear output shaft of the transfer gearbox.

51 To release, pull the lever slightly back, depress the button at the top of the brake handle and push the handle down. The brake is applied by pulling the lever back fully. To check the handbrake operation is satisfactory, engage 1st gear, and ensure that the brake holds the vehicle properly.

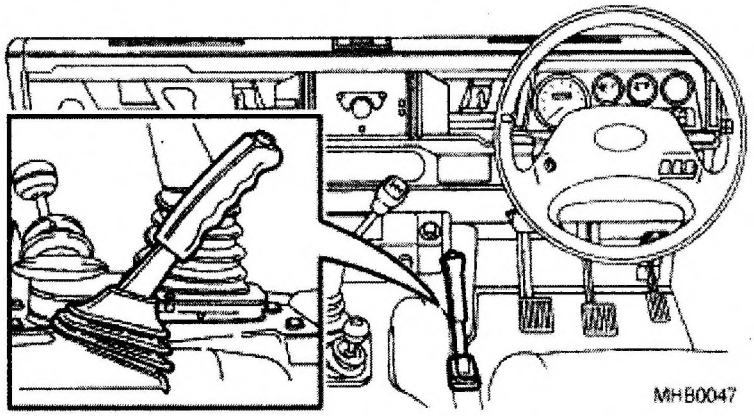


Fig 28 Transmission handbrake lever

TRANSFER GEAR/DIFFERENTIAL LOCK LEVER

CAUTIONS

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

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

52 The transfer gear/differential lock lever (Fig 29) is located on the gear box tunnel adjacent to the handbrake lever. The lever controls the selection of the high and low gear ratios and the engagement of the differential lock. The transfer gear/differential lock lever has the six following gear positions:

Fully rearwards right

53 The transfer gearbox is in high ratio with the differential unlocked. This position is used for normal road work.

Fully rearwards left

54 The transfer gearbox is in high ratio with the differential locked. The differential lock warning light should be illuminated.

Centre left

55 The transfer gearbox is in neutral "N" with the differential locked. The differential lock warning light should be illuminated.

Centre right

56 The transfer gearbox is in neutral "N" with the differential unlocked. In this position drive cannot be transmitted to the road wheels regardless of the position of the main gear selector. Use this position for winching or Power Take-Off (PTO).

Fully forward right.

57 The transfer gearbox is in low ratio with differential unlocked.

Fully forward left.

58 The transfer gearbox is in low ratio with the differential locked. The differential lock warning light should be illuminated.

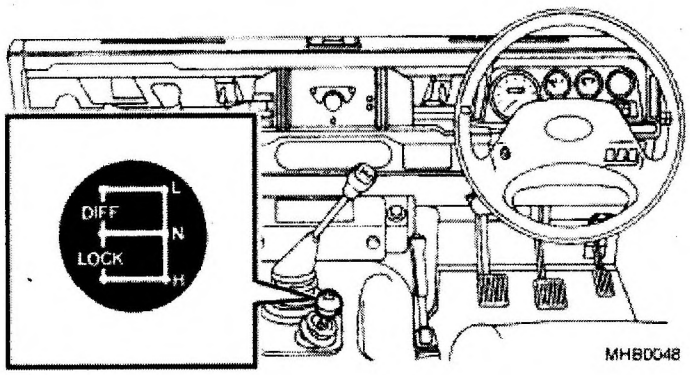


Fig 29 Transfer gear/differential lock lever

MAIN GEAR CHANGE LEVER

59 The main gear change lever (Fig 30) is located on the gearbox tunnel adjacent to the transfer gear/differential lock lever. The gear positions are indicated on the lever knob.

60 In the neutral position, spring pressure holds the lever opposite the third and fourth speed gear positions so that slight pressure is required on the lever when selecting the first or second gears.

60.1 To engage fifth, move the lever to the right as far as possible and forwards to engage the gear. To engage reverse, move the lever to the right as far as possible and backwards to engage the gear.

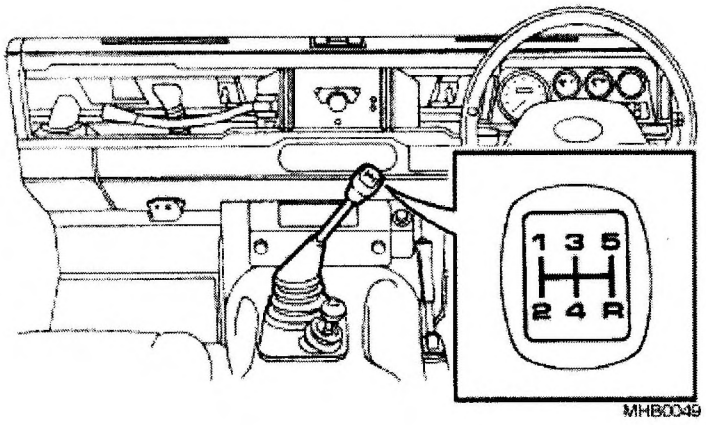


Fig 30 Main gear change lever

FUSE BOXES

WARNING

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.

61 There are two fuse boxes, the main fuse box and the under-bonnet fuse box.

Main fuse box

62 The main fuse box (Fig 31) is located inside the vehicle below the fascia, directly in front of the main gear change lever. It contains twenty fuses of the following values: 3; 5; 7.5; 10; 15 and 20 Amperes (A).

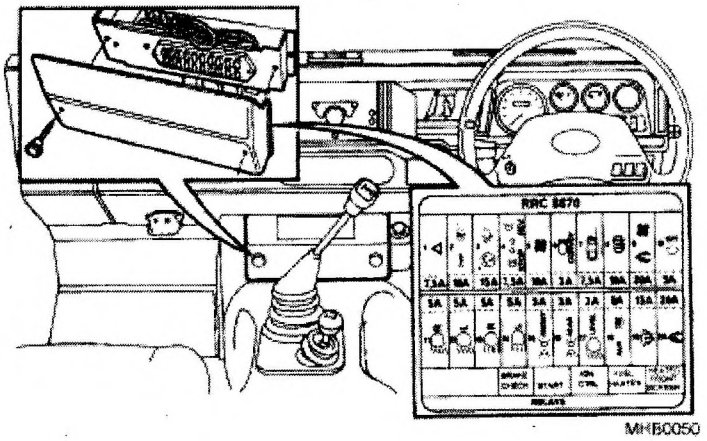


Fig 31 Main fuse box location

Under-bonnet fuse box

63 The under-bonnet fuse box (Fig 32) located under the bonnet contains 3 fuses of the following values: 20 A, 30 A and 40 A.

64 Only spade type fuses of the correct rating should be used as replacements. The location and the items protected by the fuses are shown in the chart attached to the inside of the fuse box cover.

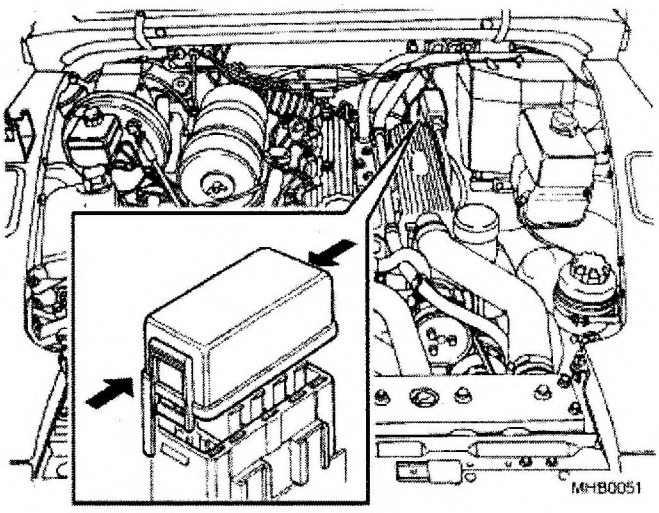


Fig 32 Under-bonnet fuse box location

STOWAGE COMPARTMENTS

65 The stowage compartment for the TUL is located within the battery compartment underneath the left hand seat and for the TUM it is located underneath the right hand seat.

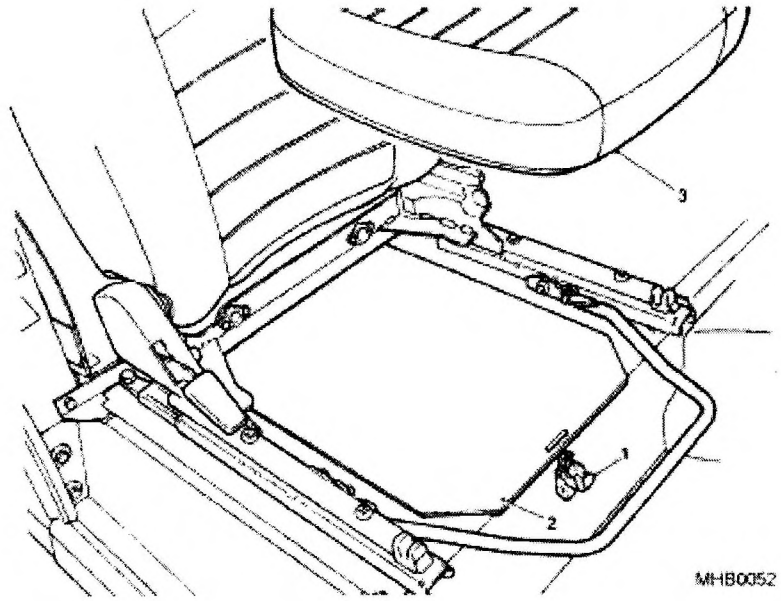
66 To obtain access to either compartment proceed as follows:

66.1 Lift off the seat cushion (Fig 33 (3)).

66.2 Undo the cover centre catch (1) and the cover plate (2) from the seat base.

66.3 The stowage compartment is now accessible. Slide the cover plate back into place and secure using the over centre catch.

66.4 Replace the seat cushion.



1 Cover centre catch
2 Cover plate
3 Seat cushion

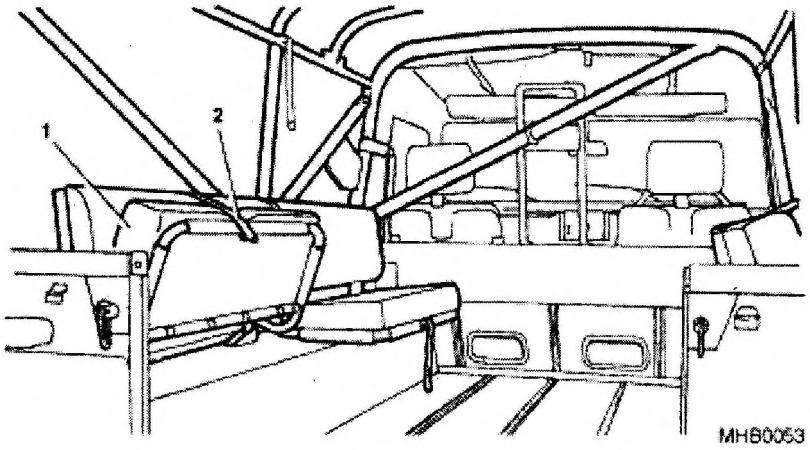
Fig 33 Removing the seat base cover

BENCH SEATS

67 There are two (2 seater) bench type seats located in the rear of the TUL vehicles and there are four (2 seater) bench type seats located in the rear of the TUM vehicles.

68 The seat cushions (Fig 34 (1)) can be stowed in an upright position by means of a strap with a metal hook (2) which fastens to the side of the seat.

69 To use the seat, release the retaining hook and move the cushion into the horizontal position.

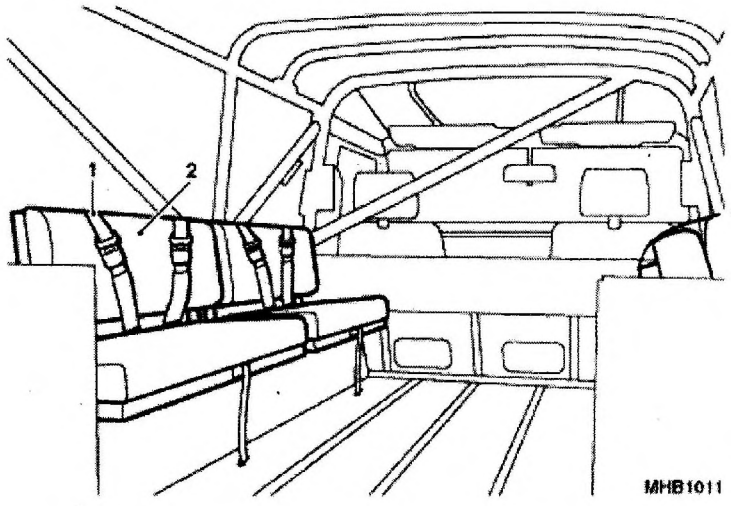


1 Seat cushion 2 Metal hook

Fig 34 Bench seats

BENCH SAFETY BELT STOWAGE

70 To prevent the safety belts (Fig 35 (1)) from being caught under the frame of the seat when the seat cushion is dropped onto the wheel box, it is recommended that the safety belts be stowed as shown, with the buckles engaged over the back of the seat (2).



1 Safety belt 2 Seat

Fig 35 Bench safety belt stowage

WINDOWS

71 Both parts of the door window are released by operating the window lock control (Fig 36) as follows:

71.1 To release the window move the window lock lever downwards towards the floor of the vehicle. Move the front part of the window back, this will then allow the rear part of the window to move forward.

71.2 To lock the windows, close each part of the window and move the lock lever towards the front of the vehicle.

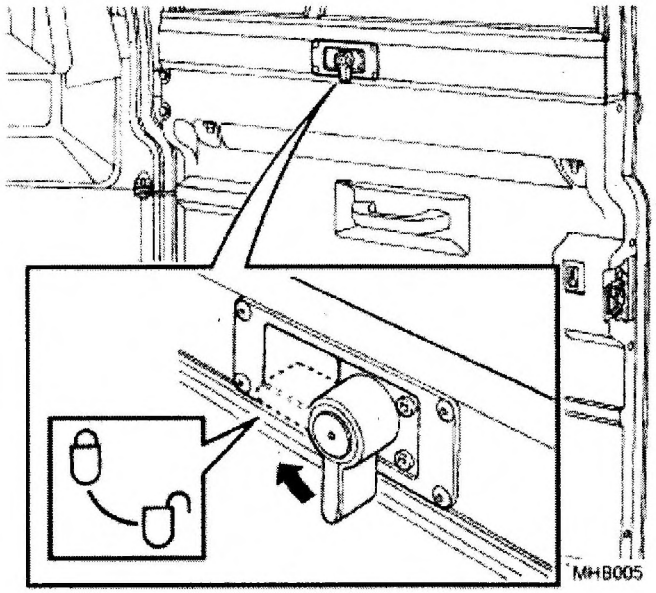


Fig 36 Operating the windows

VEHICLE TOOL KIT

72 The vehicle tool kit (Fig 37) is located on the bulkhead behind the driver and passenger seats. Access is gained by moving the seat forward (Para 10 and 11).

73 The tool roll (2) consists of the following:

73.1 14 x 15 mm Offset ring spanner - 1 off

73.2 17 x 19 mm Spanner - 1 off

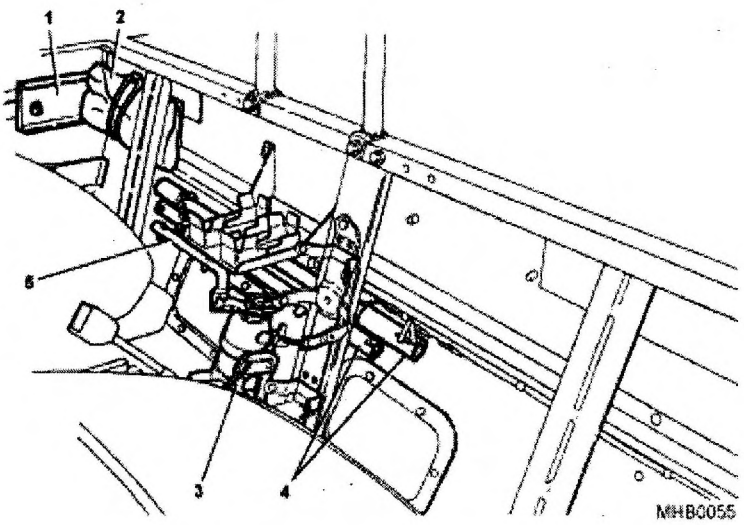
73.3 17 mm Combination spanner - 1 off

73.4 10 x 13 mm Spanner - 2 off

73.5 Multi-purpose screw driver - 1 off

73.6 6 mm Allen key - 1 off

73.7 Wading plug - 1 off



1 Wheel chock
2 Tool roll
3 Jack
4 Jack handles
5 Wheel nut wrench

Fig 37 Vehicle tool kit

[redacted]

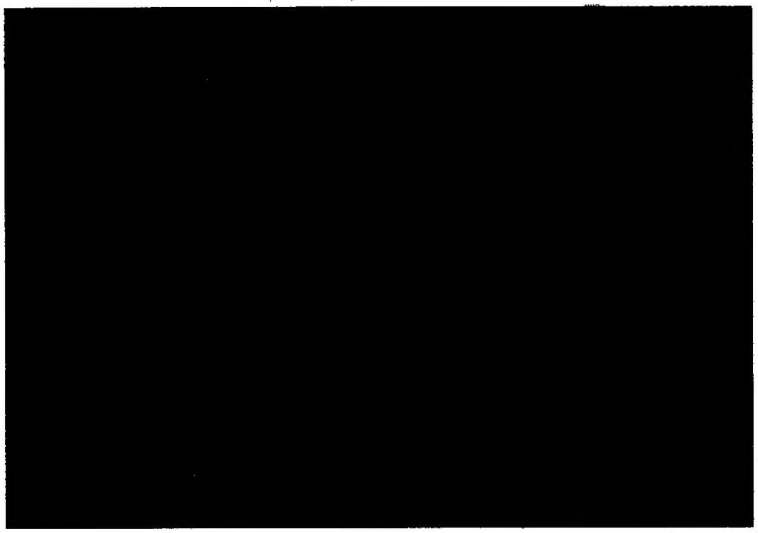
[redacted]

[redacted]

[redacted]

74 [redacted]

[redacted]



1 [redacted] 3 [redacted]

2 [redacted]

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CHAPTER 2-2

FITTED FOR RADIO (FFR)

CONTENTS

INTRODUCTION

1 This sub-chapter describes all the Controls and Instruments applicable to the Fitted For Radio (FFR) Truck Utility Light (TUL) and Truck Utility Medium (TUM) vehicles that have not been covered by Sub-Chapter 2-1.

AMMETER

2 The ammeter (Fig 1) is located in the centre of the ancillary panel, below the main lighting switch panel. The gauge is graduated and indicates the charge and discharge rate of the radio system batteries.

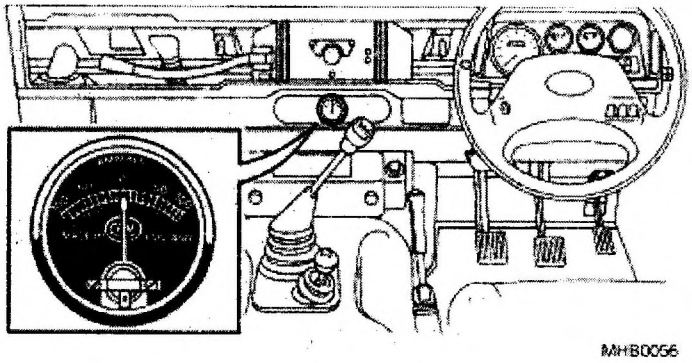


Fig 1 Ammeter location

ENGINE HAND THROTTLE

WARNING

DO NOT USE THE HAND THROTTLE WHILST DRIVING THE VEHICLE.

3 The engine hand throttle (Fig 2) is located adjacent to the steering wheel next to the fuse box. The purpose of the throttle is to over-ride the accelerator pedal linkage when the vehicle is stationary.

4 To set the throttle, pull out to the required speed and twist to lock into place.

5 Before normal road driving is contemplated, check and ensure that the hand throttle is pushed fully down to the closed position.

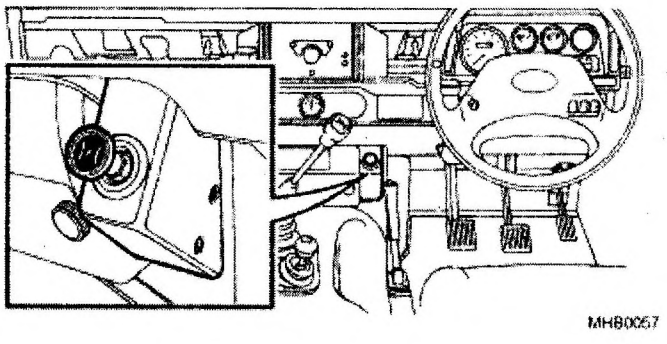


Fig 2 Engine hand throttle

AUXILIARY TERMINALS

6 The terminal box (Fig 3) is attached to the panel behind the left hand seat.

7 Auxiliary terminals are provided for operating the 24 Volt (V) equipment while the engine is running. The socket on the left hand side is an alternative to the terminals for carrying a charge to the radio from the batteries stored under the table.

8 The auxiliary terminals are also used for charging additional radio batteries which are housed in the battery stowage box.

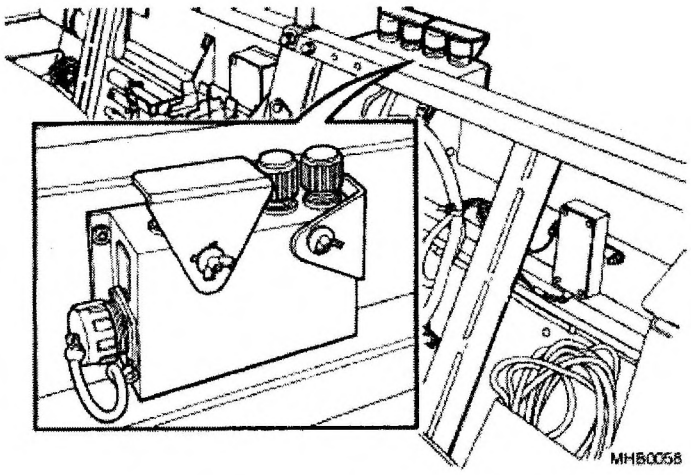


Fig 3 Auxiliary terminals

FAST FUSE

9 The fast fuse (Fig 4) is located to the bulkhead behind the front seats. The fuse protects the generator circuit using an 80 Ampere (A) replaceable link. A spare link is also contained within the box.

10 To replace the fuse link (refer to Cat 201, Chapter 4-2).

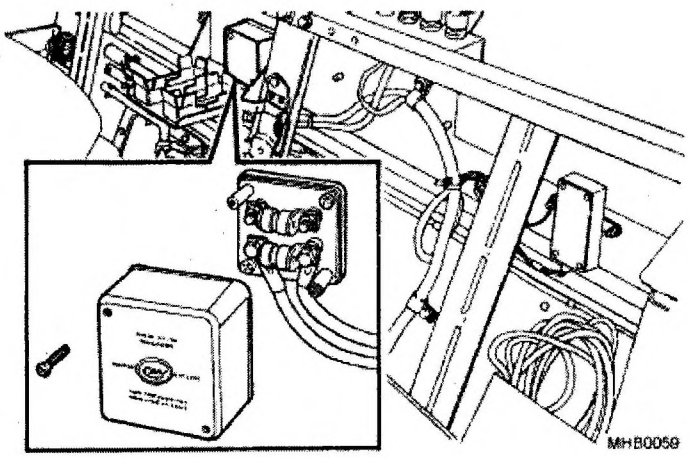
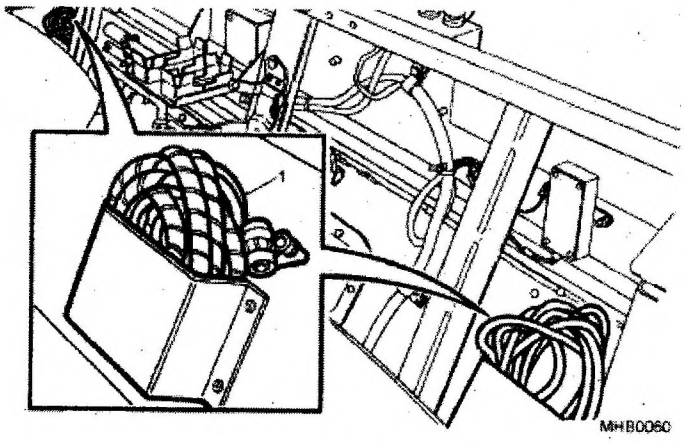


Fig 4 Fast fuse location

RADIO ANTENNA CABLE STOWAGE

11 The two radio antenna cable stowage boxes (Fig 5) are located on the bulkhead, behind the seats. They provide a safe and compact stowage for the antenna cables (1) when they are not in use.



1 Antenna cable

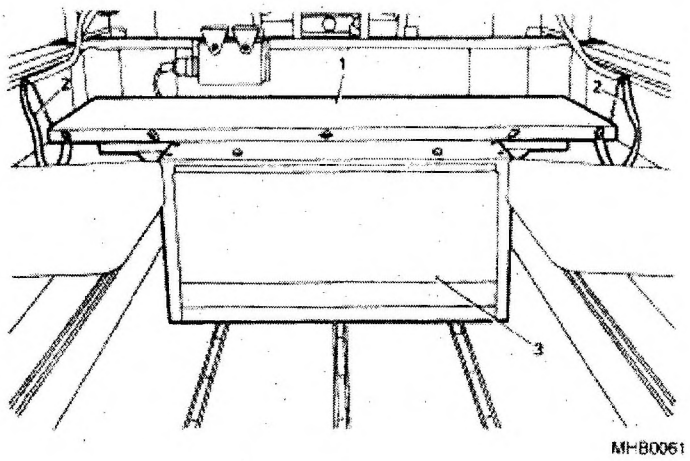
Fig 5 Radio antenna coaxial stowage boxes

RADIO TABLE

12 The radio table (Fig 6 (1)) is located immediately in front of the vehicle bulkhead and supports one or two radio sets. It is supported by and bolted to the radio battery stowage. The table top is earthed by copper braids, (2) bolted to the sides of the vehicle.

Radio battery stowage box

13 The battery stowage box (3) is located directly underneath the radio table and contains two battery trays. The trays have the capability of holding two 12 V, 100 A radio batteries each.



1 Radio table
2 Copper braid
3 Battery stowage box

Fig 6 Radio table and battery stowage

RADIO OPERATORS SEATS

WARNING

THE RADIO OPERATORS 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.

14 The two radio operator's seats are located into cleats attached to the vehicle. These are situated adjacent to the radio table, therefore giving easy access to the radio (when fitted).

Relocate the seat

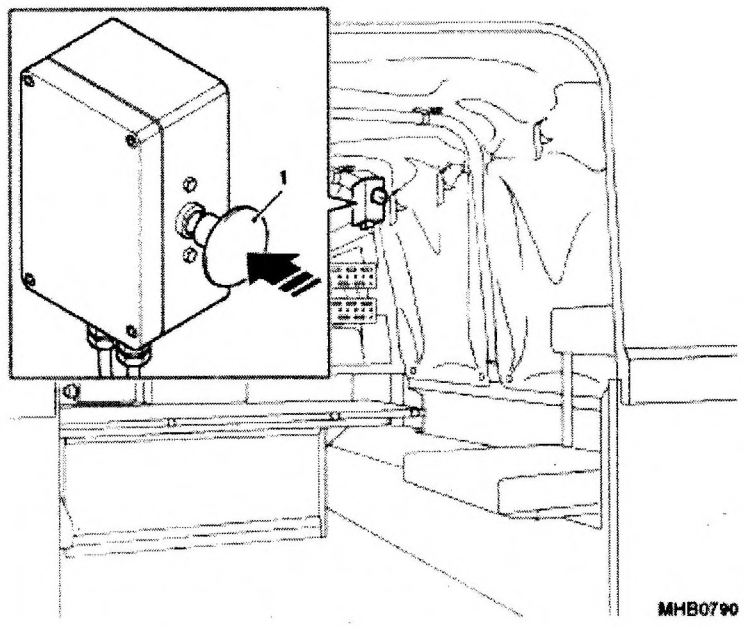
15 To relocate one of the operators seats remove the seat from the retaining cleats mounted on the side of the vehicle and re-position in any of the five positions on the side of the vehicle.

RADIO BATTERY ISOLATION SWITCH AND POWER IMPORT/EXPORT SYSTEM

16 The radio battery isolation switch and power import/export system comprises of the following components:

Radio battery isolation switch

17 The radio battery isolation switch (Fig 7 (1)) is mounted on the roll cage for easy access. Power to both the auxiliary screw terminals and the power export socket can be disconnected quickly in the event of an emergency or for maintenance.



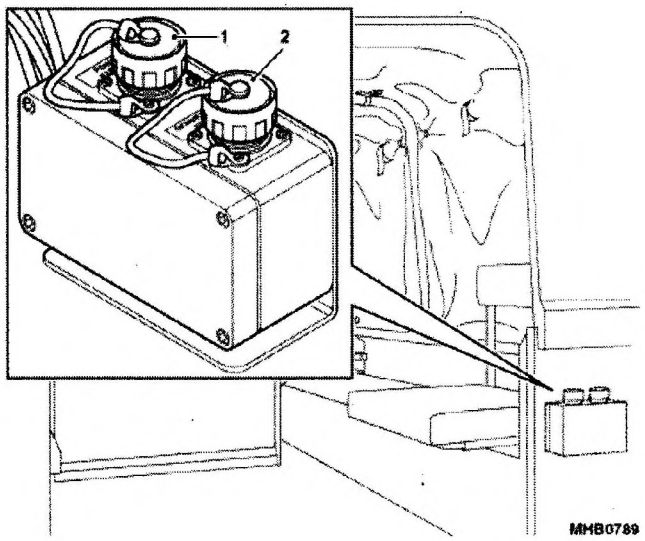
1 Radio battery isolation switch

Fig 7 Radio battery isolation switch

Power import/export system

Power import/export socket

18 The power import/export socket (Fig 8) is located inside the rear of the vehicle to the right of the tailgate opening. The power import/export socket allows electrical power to be imported via the power import socket (2) from an external generator or exported from the vehicle charging circuit via the power export socket (1).

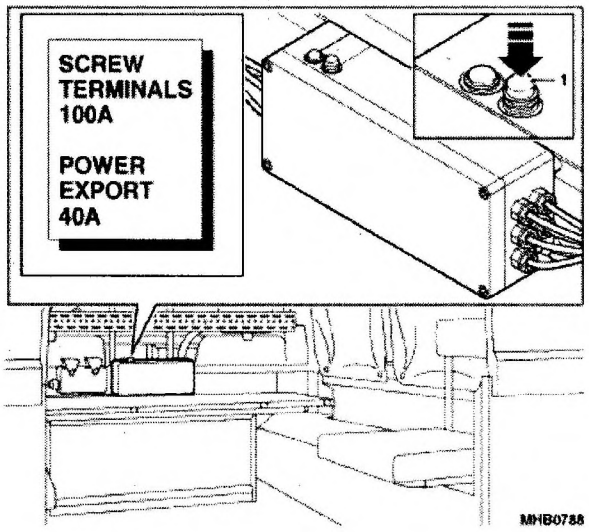


1 Power export socket 2 Power import socket

Fig 8 Power import/export socket

Relay box and circuit breakers

19 The relay box (Fig 9) is mounted on the rear bulkhead next to the auxiliary terminal box. The relay box controls the power import/export system and contains two circuit breakers (1) to protect the auxiliary screw terminals (100 A) and the power export socket (40 A).



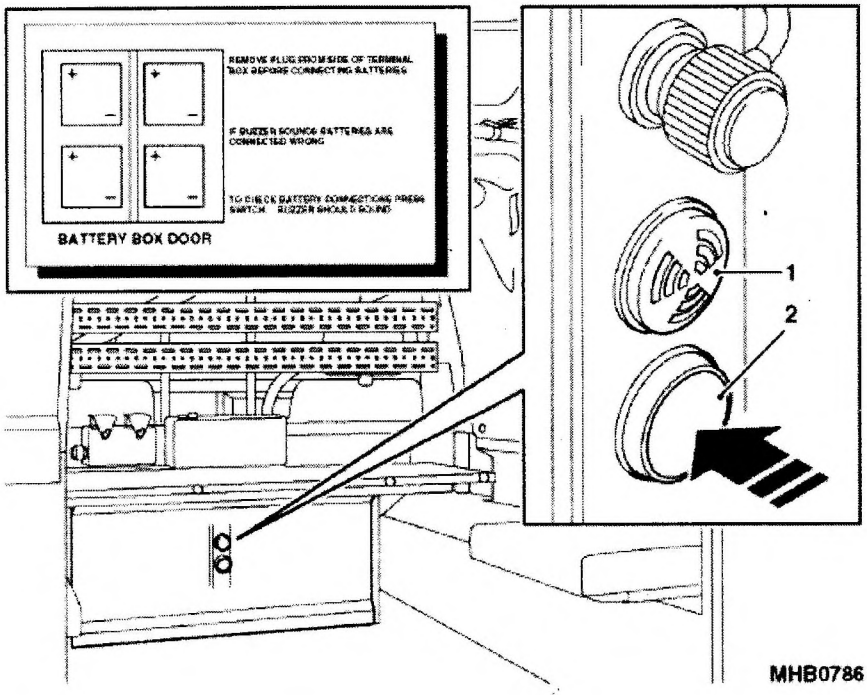
1 Circuit breaker

Fig 9 Relay box and circuit breakers

Warning buzzer

20 The warning buzzer (Fig 10 (1)) and test button (2) are located inside the radio battery box.

20.1 The warning buzzer and test button are provided for testing the radio battery circuit after the batteries have been removed and replaced, to prevent the possibility of incorrect re-connection.



1 Warning buzzer 2 Test button

Fig 10 Warning buzzer and test button

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CHAPTER 2-3

BATTLEFIELD AMBULANCE

CONTENTS

(continued)

CONTENTS (continued)

INTRODUCTION

1 This Sub-Chapter describes all the items applicable to the (TUM) Battlefield Ambulance HS.

OPERATING WALK-THROUGH DOOR

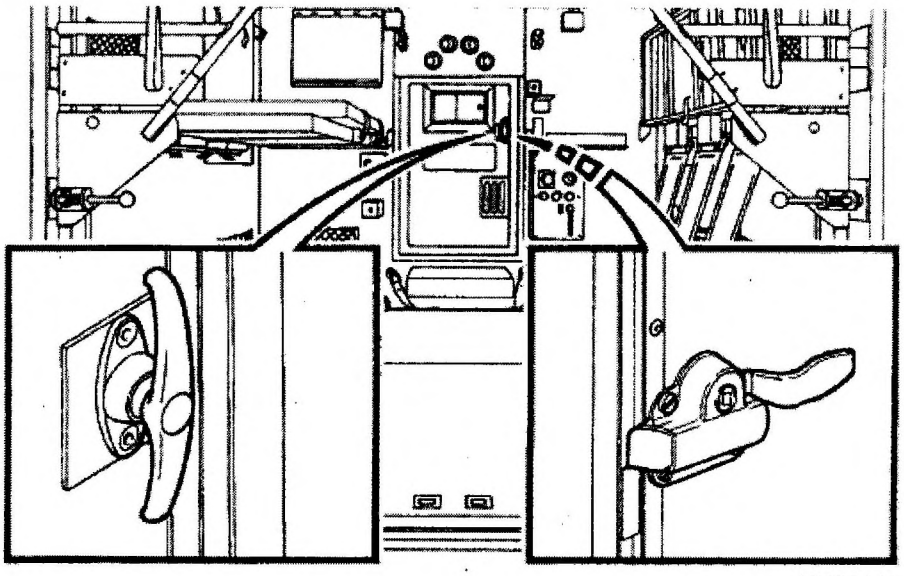
2 To open and close the walk-through door (Fig 1) in the bulkhead proceed as follows:

2.1 To open the door from the cab, lift the door handle, against spring pressure, and push the door open. Release the handle.

2.2 To close the door from inside the cab, pull the door until closed and release the handle.

2.3 To opening the door from inside the ambulance compartment turn the tee-handle clockwise, against spring pressure, and pull the door open. Release the handle.

2.4 To close the door from inside the ambulance compartment, push the door closed and release the handle.



MHB0146

Fig 1 Walk-through door operation

OPERATING REAR DOORS

3 The rear doors (Fig 2) can be opened and closed from outside the vehicle or from the inside ambulance compartment as follows:

Operate the rear doors from outside

4 To open and close the doors from the outside proceed as follows:

4.1 To open, insert key into the lock of right-hand door handle. Turn the key anticlockwise, then remove key from the lock.

4.2 Open right-hand door by turning door handle fully clockwise and then pull door open. Swing the door round to the side of the vehicle.

4.3 Open left-hand door by locating the handle on the inside of the door, pull the door handle fully down and then push door open. Swing the door round to the side of the vehicle.

4.4 Close left-hand door by swinging the door round to the closed position. Inside the vehicle, raise the door handle fully.

4.4.1 Check that the latches engage correctly at the top and bottom of the door.

4.5 Close right-hand door by swinging the door round to the closed position. Turn the door handle fully anti-clockwise.

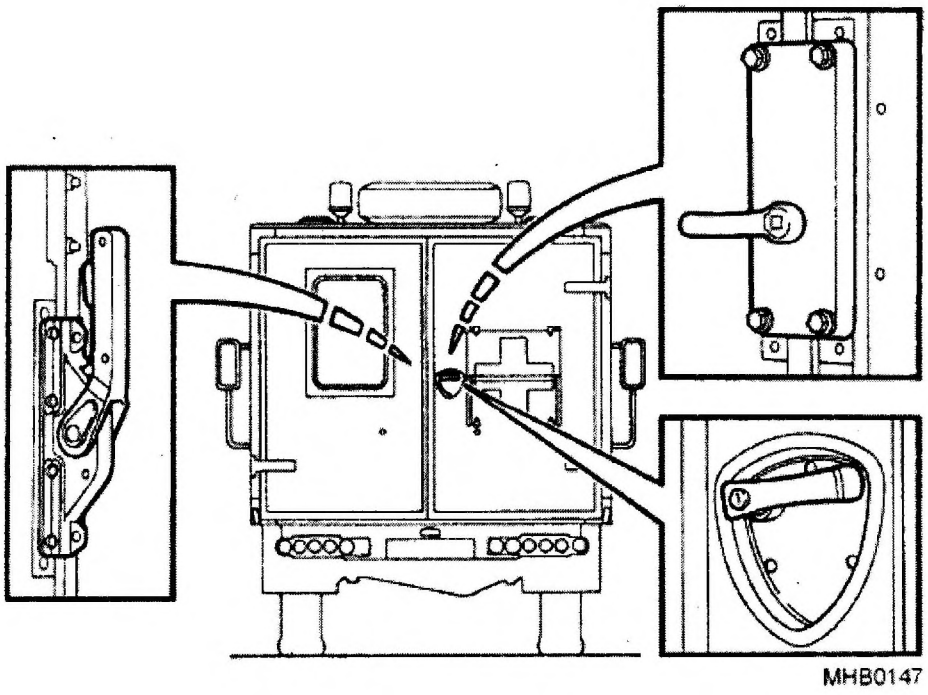


Fig 2 Operate the rear doors

Operate the rear doors from inside

5 To open and close the doors from the inside proceed as follows:

5.1 Open right-hand door by turning the door handle fully anti-clockwise and then push the door open. Swing the door round to the side of the vehicle.

5.2 Open left-hand door by pulling the door handle fully down and the push the door open. Swing the door round to the side of the vehicle.

5.3 Close left-hand door by swinging the door round to the closed position. Inside the vehicle, raise the door handle fully.

5.3.1 Check that the latches engage correctly at the top and bottom of the door.

5.4 Close right hand door by swinging the door round to the closed position. Turn the door handle fully clockwise.

5.4.1 Check that the latches engage correctly at the top and bottom of the door.

VEHICLE FASCIA

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

BLUE FLASHING BEACON SWITCH

7 The blue flashing beacon switch (Fig 3) is a two position, rocker type switch located to the right of the main lighting switch. When the lower half of the switch is pressed in, the lights in the roof-mounted beacons will operate.

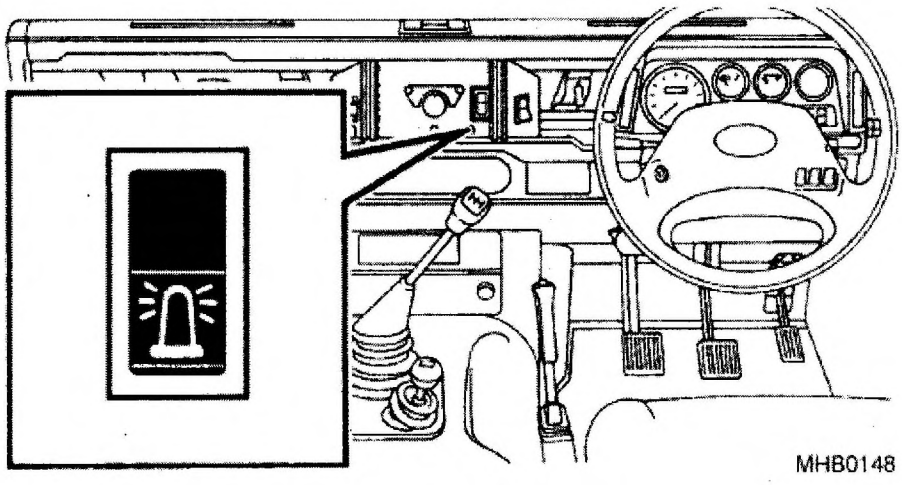


Fig 3 Blue flashing beacon switch

SIREN SWITCH

8 The siren switch is a two position, rocker type switch (Fig 4) located to the right of the blue flashing beacon switch. When the lower half of the switch is pressed in, the siren located on the front of the vehicle cab will operate via the horn column stalk.

Siren operation

9 After the siren has been switched on at the dash (Para 8), there are 3 warning sounds that can be used, these are as follows:

9.1 Yelp – Push the stalk in once to gain this sound.

9.2 Wail – Push the stalk in again to gain this sound.

9.3 Two tone – Push the stalk in yet again to gain this sound.

9.4 When the stalk is pushed in two times in quick succession the siren will stop.

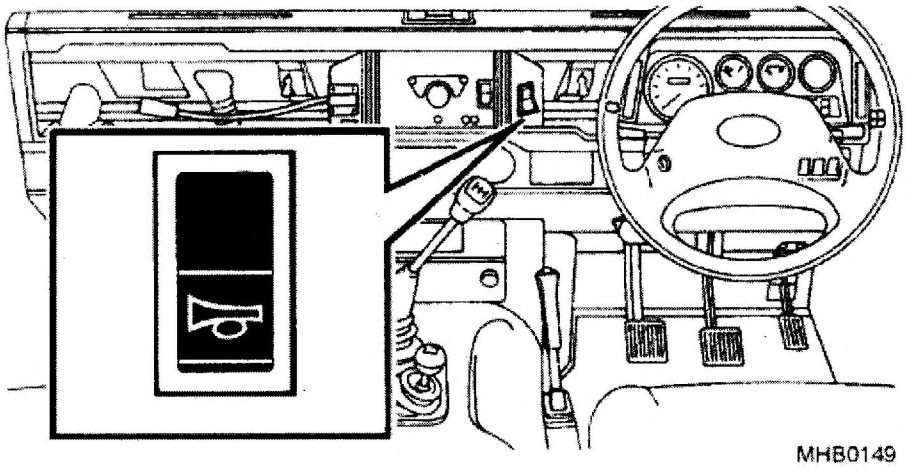
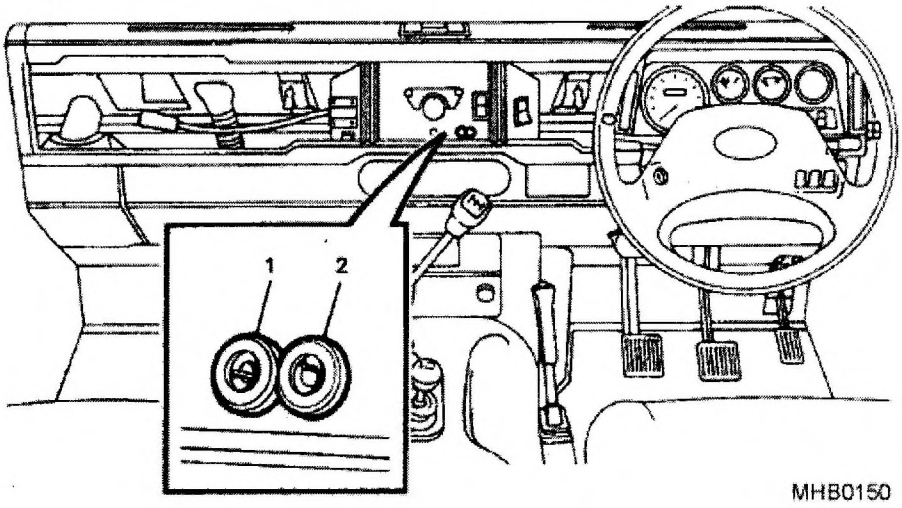


Fig 4 Siren switch

INSPECTION SOCKETS

10 The inspection sockets are located to the right of the main lighting switch and provide electrical supply for an inspection lamp. The red socket (Fig 5 (2)) is live and the black socket (1) is to earth.



1 Red socket 2 Black socket

Fig 5 Inspection sockets

INTERIOR CAB LIGHT SWITCH

11 The interior cab light switch (Fig 6) is a two position rocker switch located to the left of the hazard warning switch. Press the lower end of the switch in to turn the light ON. Press the upper end of the switch in to turn the light OFF.

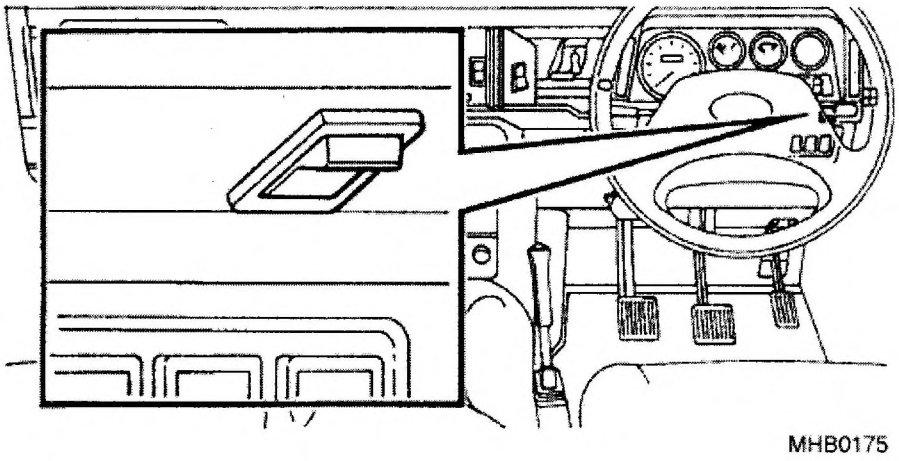


Fig 6 Interior cab light switch

FIRE EXTINGUISHER BRACKET

12 The fire extinguisher bracket (Fig 7) is situated between driver and passenger above the gearbox access cover. All personnel should be familiar with the mechanism for releasing the extinguisher.

Releasing the fire extinguisher

13 To release the fire extinguisher from the bracket proceed as follows:

13.1 Pull the strap (1) which releases the retaining bracket.

13.2 The extinguisher (2) may now be removed from the stowage.

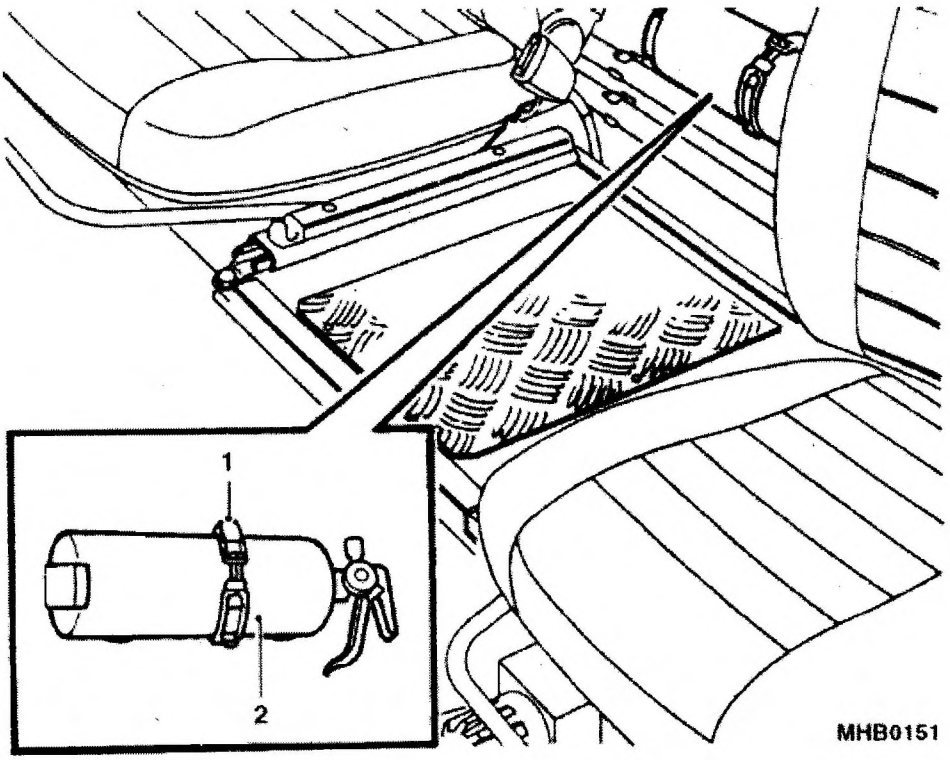


Fig 7 Fire extinguisher bracket

STOWAGE COMPARTMENT

14 The personnel kit stowage area is located on the right hand side of the cab, above head height, with a canvas cover (Fig 8). Turn buttons on the roof of the vehicle cab fastens this. A rifle is placed in a stowage area located on the front panel to the side of the left hand seat.

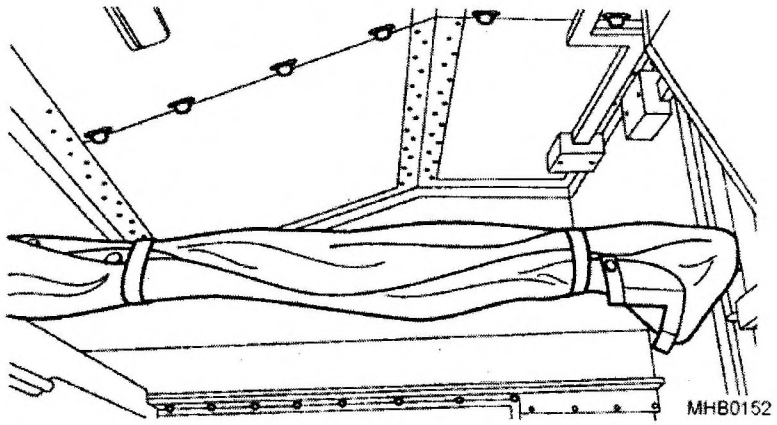
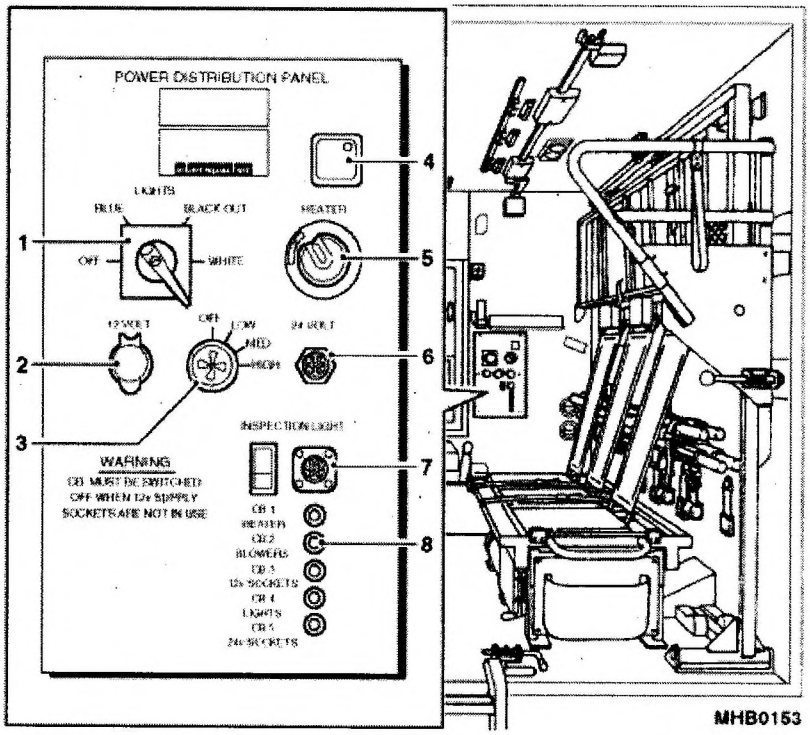


Fig 8 Overhead stowage area

POWER DISTRIBUTION PANEL

15 The power distribution panel (Fig 9) is located on the bulkhead and contains various switches and controls.



1	Lights	5	Heater control switch
2	12 V Resuscitator socket	6	24 V Resuscitator socket
3	Ventilator fan control	7	Inspection light
4	Temperature sensor	8	Circuit breakers

Fig 9 Power distribution panel

Lighting control switch

16 The lighting control switch (Fig 10) is a 4 - position rotary switch and marked OFF/BLUE/BLACK-OUT/WHITE. This controls the roof-mounted fluorescent lights and blue moonlight. When black-out is selected the moonlight is also controlled by micro switches with the opening and/or closing of the bulkhead and rear doors.

16.1 OFF - All lights are off

16.2 BLUE - Moonlight on, Fluorescent lights off

16.3 BLACK-OUT - While both the rear doors and bulkhead door are closed the fluorescent lights are on. The moonlight is off.

16.4 When either the rear or bulkhead doors are opened, microswitch operation will cause the fluorescent lights to extinguish and the moonlight to illuminate.

16.5 WHITE - Fluorescent lights on, moonlight off.

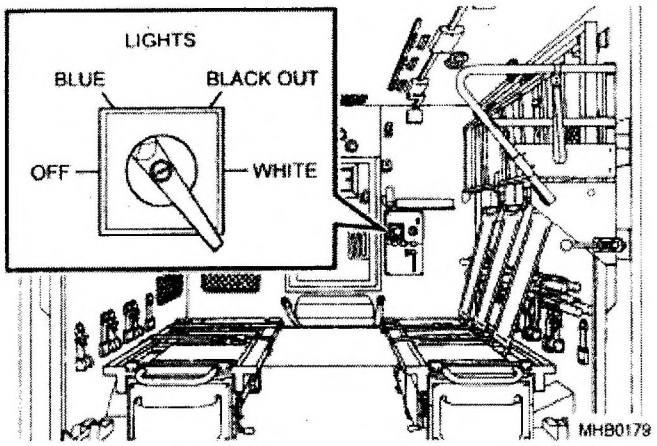


Fig 10 Lighting control switch

Inspection light switch

17 The inspection light is stowed in a compartment within the ambulance and can be plugged into a socket (Fig 11) on the power distribution panel. The light is switched on via the rocker switch adjacent to it.

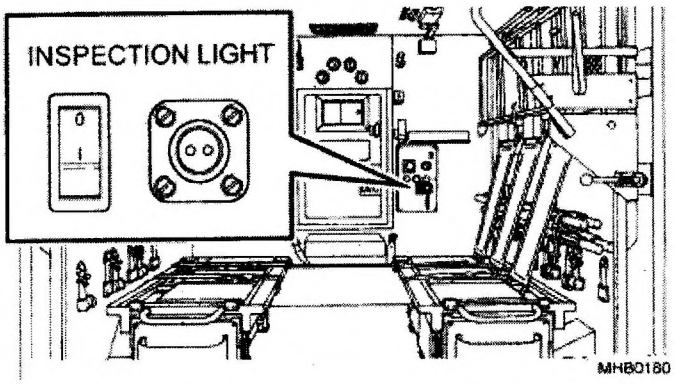


Fig 11 Inspection light switch

Heater control switch

CAUTIONS

(1) 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).

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

18 The heater (Fig 12) is controlled by a rotary switch and has graduations marked from 0 (OFF) to 4 (MAX).

Heater operation

19 To operate the heater, rotate the switch progressively to the number 4 position. Return the switch to 0 to turn the heater OFF.

19.1 A green pilot light situated in the sensor (Fig 9 (4)) illuminates to indicate that the heater is operating.

NOTE

After shut-off there is an automatic, delayed, shut-off period to allow the heater unit to cool down.

19.2 When operating in arctic conditions (-31° C) the starting procedure is as follows:

19.2.1 Ensure that all fresh air vents are closed (including the external grille) and the recirculation vents are open.

19.2.2 Start the heater following the above instructions (Para 18) adhering to the Cautions.

19.2.3 Once the temperature within the compartment has been reached (18°C), the fresh air vents can be opened to allow fresh clean air to circulate.

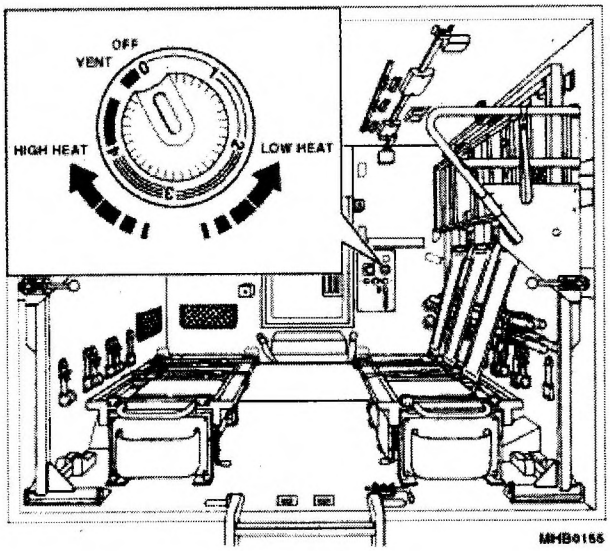


Fig 12 Heater control switch

RESUSCITATOR SOCKETS

20 There are two resuscitator socket outlets, one 12 V (Fig 13) and one 24 V incorporated into the panel.

20.1 As well as the two resuscitator sockets (Fig 13) on the distribution panel there are two more located on the left-hand side of the walk-through door, mounted on a box. These are a 24 V socket and a 12 V socket.

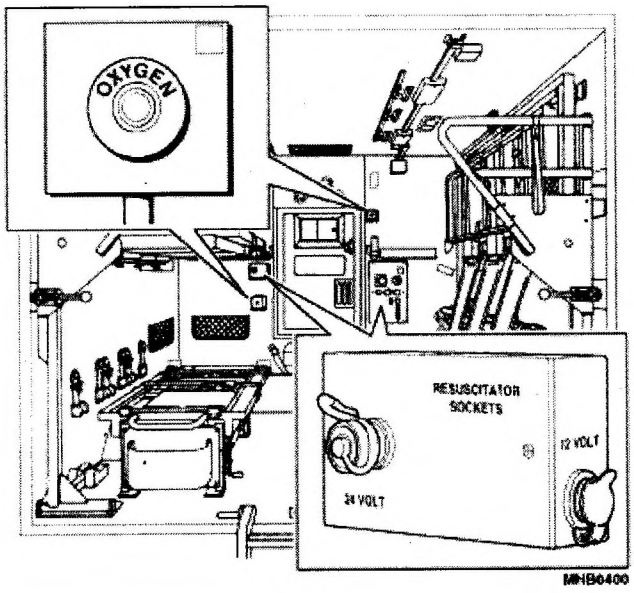


Fig 13 Resuscitator sockets

Circuit breakers

WARNING

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

21 There are five circuit breakers contained in the panel and they protect the following circuits:

21.1 CB.1 – Heater

21.2 CB.2 – Blowers

21.3 CB.3 – 12 V socket

21.4 CB.4 – Lights

21.5 CB.5 – 24 V sockets

Ventilator fan control

22 The ventilator fan control is a rotary switch (Fig 14) with four settings as follows:

22.1 Off - the fan is non-operational.

22.2 Low - The fan operates at a low speed.

22.3 Med - The fan operates within the middle range

22.4 High - The fan operates at its optimum level.

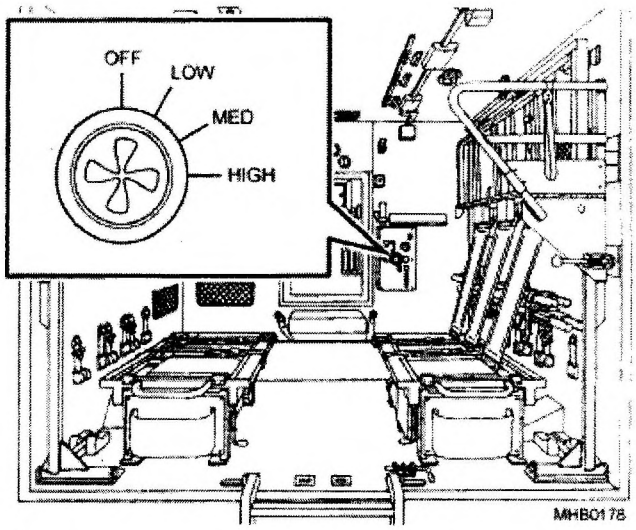


Fig 14 Ventilator fan control

OXYGEN OUTLETS

23 There are two oxygen outlets (Fig 15), one on either side of the walkthrough door on the rear bulkhead. These are connected to the oxygen bottles stowed on the floor beneath the lower stretcher carriers.

24 To operate the oxygen outlets proceed as follows:

24.1 Insert the pipe and oxygen should flow.

24.2 To stop the flow release the pipe from the connection.

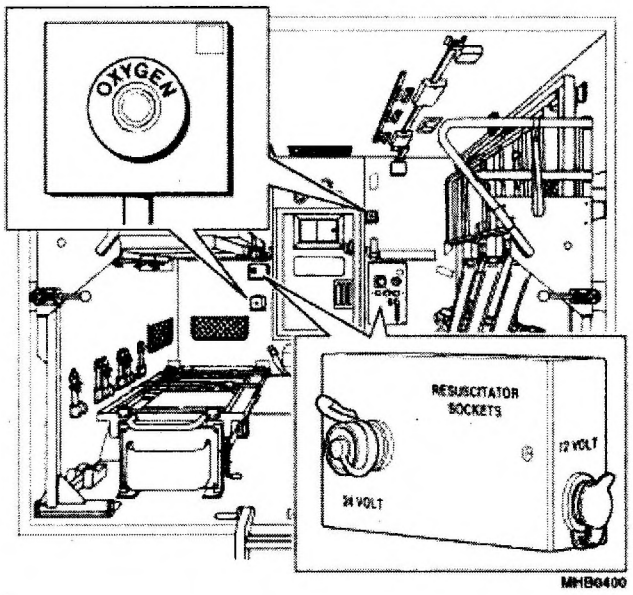


Fig 15 Oxygen outlets

FRESH AIR AND RECIRCULATION VENTS

Fresh air vents

25 Fresh air vents (Fig 16 (1)) are positioned around the ambulance. These are positioned above the walk through door and in the roof of the compartment. They can be rotated and opened to ensure a continuous flow of air in any given direction.

Recirculation vents

26 There are two recirculation vents (2) positioned to the right and below the distribution panel. These allow the air to be recirculated to and from the heater when operating in arctic conditions.

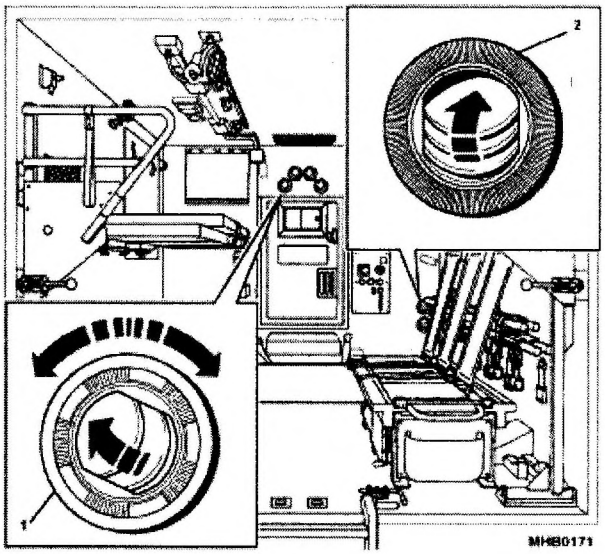


Fig 16 Fresh air and recirculation vents

MEDICAL AND PERSONAL EQUIPMENT STOWAGE

27 There are various stowage areas for the stowing of personal and medical equipment. These are in the luton (vehicle cab) and inside the ambulance compartment as follows:

Oxygen cylinder stowage

28 Oxygen cylinder stowage areas are located on the floor of the compartment on either side of the vehicle under the stretcher frames. The stowage areas comprise of two support brackets and three straps, which hold and retain a single oxygen cylinder.

29 To prevent the oxygen cylinder from sliding forward in the stowage area under heavy braking it is important to ensure that the forward restraining strap is correctly located around the neck of the bottle. (Fig 17).

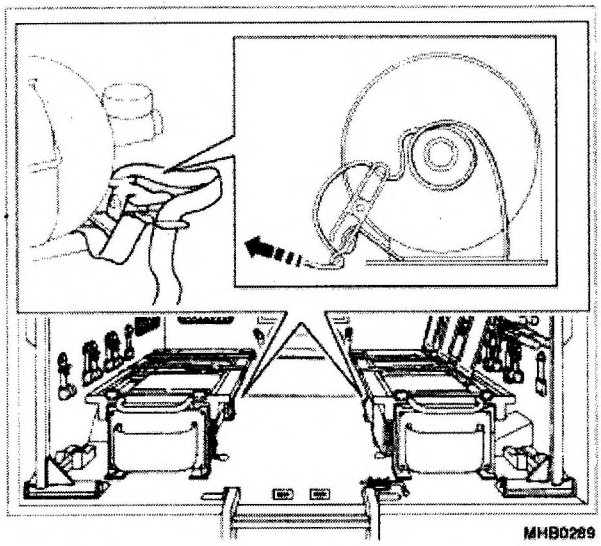


Fig 17 Oxygen cylinder stowage

Floodlight

30 The floodlight is mounted on a swivel-bracket in the roof in front of the main doorway. The floodlight electrical plug connects to a roof-mounted socket supplied through the power distribution panel.

31 A switch on its rear casing operates the floodlight. To turn the light on push the switch to the up position. To switch it off press the switch down.

Equipment stowage

32 The following items are stowed in each of the areas (Fig 18).

32.1 (A) Six Pillows; Eight Blankets; One Bed roll.

32.2 (B) Ruck sack; Scoop stretcher; Box of infusion bottles; Red canvas holdall - splint; Blue canvas holdall - splint; Oxygen bottle (spare); Quick wipe paper towels (may be attached to wall by bracket); Head light; Plastic pipe and oxygen mask; Stiffneck brace; four 5 litre water bottles and Latex gloves.

32.3 (C) Bed pan/urinal

32.4 (D) Yellow polythene bags; Orange jacket; Wad of aprons and two Flasks.

NOTE

The Latex gloves and wad of aprons can also be stowed in the 6 string pockets attached to the compartment walls.

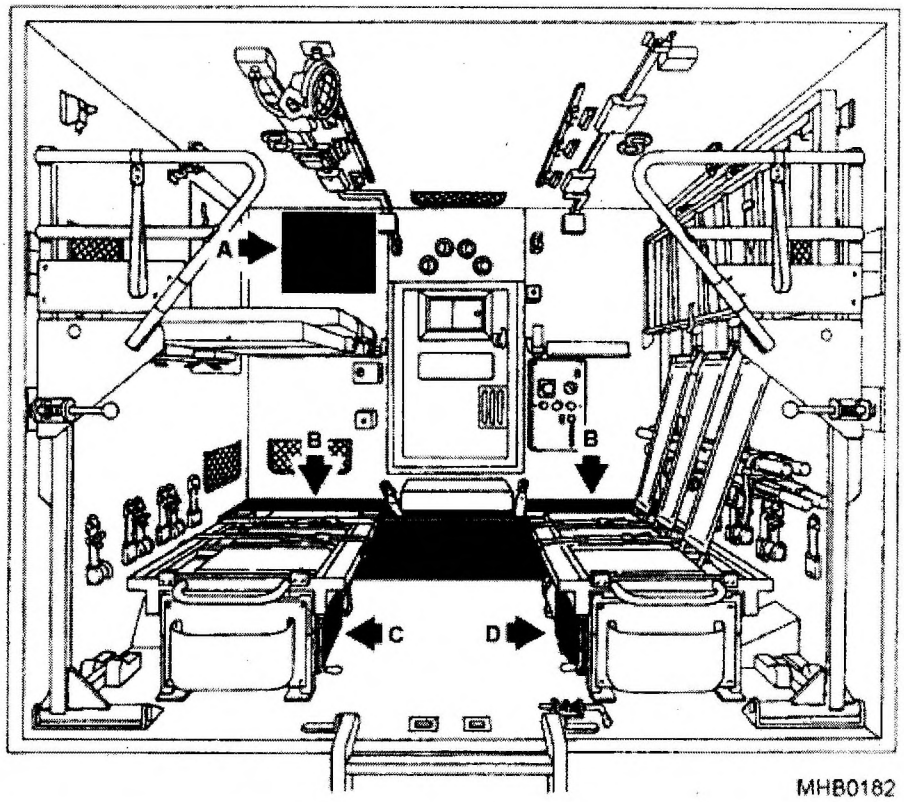


Fig 18 Equipment stowage

Stowage locations

33 The stowage locations (Fig 18) for the equipment are as follows:

33.1 Luton (A).

33.2 General - under and either side of attendants seat (B).

33.3 Left hand (LH) side floor locker (C).

33.4 Right hand (RH) side floor locker (D).

CHAPTER 2-4

WINTERISED/WATERPROOFED

CONTENTS

INTRODUCTION

1 This sub-chapter describes the Controls and Instruments applicable to the Truck Utility Light (TUL) HS and Truck Utility Medium (TUM) HS Winterised/Waterproofed vehicles that have not been covered by Sub-Chapter 2-1, 2-2.

VEHICLE FASCIA

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

INSTRUMENT PANEL

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

Coolant temperature indicator

4 The coolant temperature gauge (Fig 1) indicates the running temperature of the engine under normal running conditions. The indicator needle should register in the black band but should the needle move to the red band, 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 delay of a few seconds before registering after the engine has been started or electrical services are switched on.

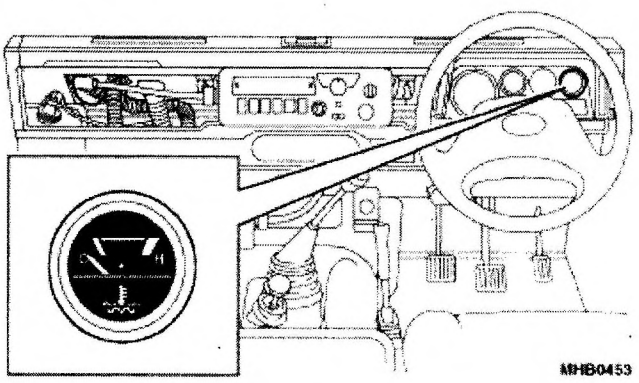


Fig 1 Coolant temperature indicator

Fuel level indicator

5 The fuel level indicator (Fig 2) 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.

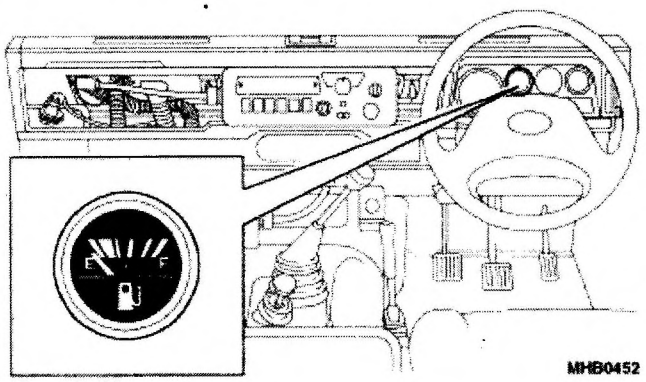


Fig 2 Fuel level indicator

Speedometer

6 The speedometer (Fig 3) 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).

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

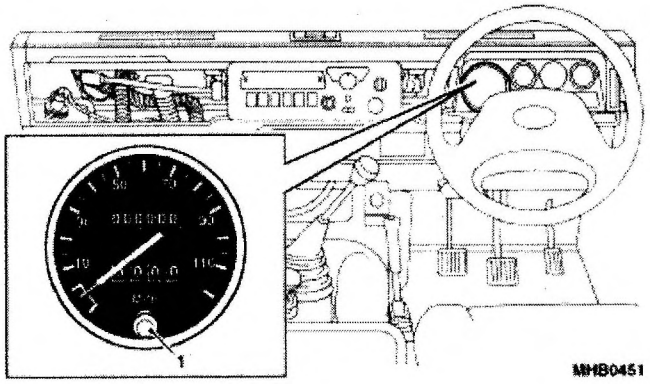


Fig 3 Speedometer and trip setting

WARNING LIGHTS PANEL

7 The warning lights panel (Fig 4) incorporates all the warning symbols located in the instrument console. The warning lights panel is described as follows:

7.1 The red oil pressure warning light (2) will illuminate when the ignition is switched on, also when there is abnormality in the oil pressure.

7.2 The red ignition warning light (3) will illuminate when the ignition is switched on.

NOTE

The ignition and oil warning lights should be checked when starting the vehicle from cold as they should light up immediately the ignition is switched on and extinguish when the engine is running. The warning lights may flicker when the engine is running at idling speed but provided they fade out as the engine speed increases, the charging rate and oil pressure are satisfactory. If the oil pressure warning light comes on during normal running, the vehicle should be stopped immediately and the cause investigated. The ignition warning light is connected in series with the alternator field circuit. Bulb failure would prevent the alternator charging properly; therefore the bulb should be checked before suspecting an alternator fault. A failed bulb should be changed with the minimum of delay otherwise the vehicle battery will become discharged.

7.3 The red brake circuit check warning light (4) will illuminate if there is a fluid leakage, when the ignition is on or the engine is running, from either the front or rear braking system. If leakage occurs the light will illuminate when the brakes are applied. The brake circuit warning light will operate momentarily when the starter is actuated. This will confirm that the warning circuit is functioning correctly. If the light comes on during normal running or braking, the vehicle should be stopped immediately and the cause investigated.

7.4 The green turn light arrows (5) flash in conjunction with the turn lights, when operated by the stalk on the steering column. If the turn lights do not operate as described, there may be a bulb failure in the warning light panel or in one of the turn lights.

7.5 The blue main beam warning light (6) illuminates when the headlight main beams are operating. The purpose is to remind the operator to dip the headlights when entering brightly lit areas, or when approaching other traffic. The light will also illuminate when the headlight flasher switch is operated.

7.6 The amber differential lock warning light (8) will illuminate when the gearbox differential lock control knob is engaged. The differential lock should be engaged if traction to one or more wheels is likely to be lost. A return to the disengaged position should be made as soon as conditions permit.

7.7 The amber heated rear screen warning light (9) will illuminate when the heated rear screen switch is in the "on" position, acting as a reminder to the driver that the switch and heated rear screen are switched "on".

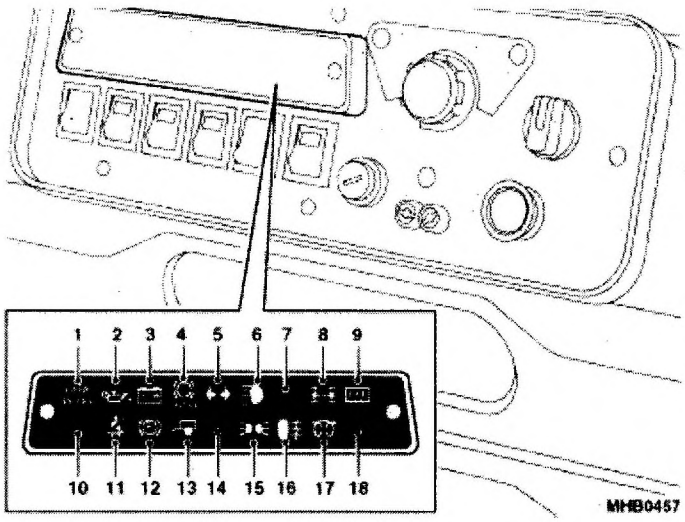
7.8 The green trailer warning light (13) illuminates when a trailer is connected to the vehicle via the twelve pin socket. It will flash in conjunction with the vehicle's turn lights, thus ensuring that the trailer turn lights are functioning correctly. In the event of a turn light bulb failure on the trailer, the warning light will flash once only and then remain extinguished. Where a trailer is not used or connected, the trailer warning light momentarily flashes every time the turn light switch is operated.

7.9 The green side lights warning light (15) will illuminate when the side lights are switched on.

7.10 The amber rear fog guard warning light (16) will illuminate when the rear fog guard switch is switched on.

7.11 The amber diesel-cold start warning light (17) will illuminate when the engine starter key is turned to the heater plugs "on" position and will go off as soon as the correct starting temperature has been reached.

7.12 The amber battery charging warning light (18) (FFR only) will illuminate when the alternator is not charging the radio batteries. When this occurs stop vehicle and investigate the cause.



1	Park Brake (not used)	7	Low fuel (not used)	13	Trailer
2	Oil pressure	8	Differential lock	14	Spare
3	Ignition	9	Heated rear screen	15	Side lights
4	Brake circuit	10	Spare	16	Rear fog
5	Turn lights	11	Seat belt (not used)	17	Cold start
6	Main beam	12	Park brake (not used)	18	Battery charging (FFR only)

Fig 4 Warning lights panel

SIX WAY MAIN LIGHTING SWITCH

8 The six way main lighting switch (Fig 5 (1)) is located in the instrument console and has six positions. Fitted over the top of the switch is an indicator panel plate (2) which shows the individual positions as follows:

8.1 OFF - All lights are off

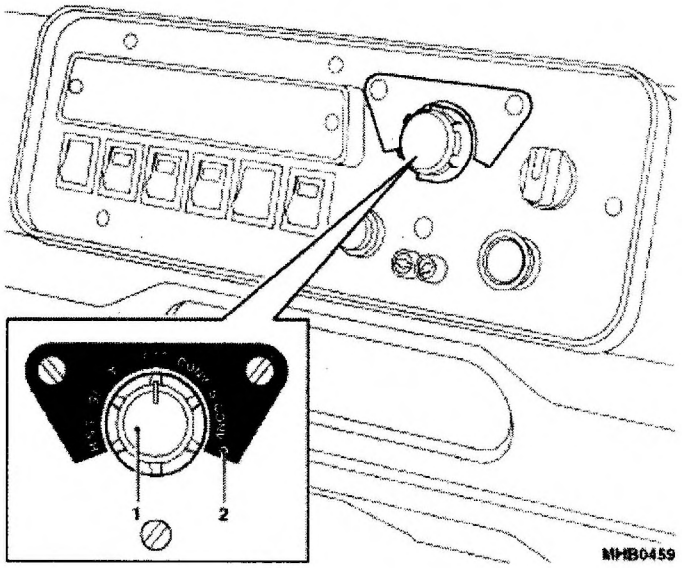
8.2 CONV - Convoy light only

8.3 SCONV - Convoy and side lights

8.4 T - Tail and rear number plate lights

8.5 ST - Side, tail and rear number plate lights

8.6 HST - Head, side, tail and rear number plate lights



1 Six way main lighting switch 2 Indicator panel plate

Fig 5 Six way main lighting switch

SEVEN WAY MAIN LIGHTING SWITCH

9 The seven way main lighting switch (Fig 6) is situated in the centre of the fascia and has seven positions. For normal working operate the switch in positions "TAG", "1" and "2".

10 To operate the switch in the blackout positions "0", "S1", "S2" and "S3", push the bar (2) to the left, push the knob (1) inwards and turn. To release the switch from the blackout position, push the knob inwards.

10.1 Position Tag - Direction indicators, hazard warning, headlamp flash, horn normal, stop lamp, reverse lamp, warning lights, map lamp.

10.2 Position "1" - As position Tag plus instruments, side lamps and tail lamps, number plate lamp.

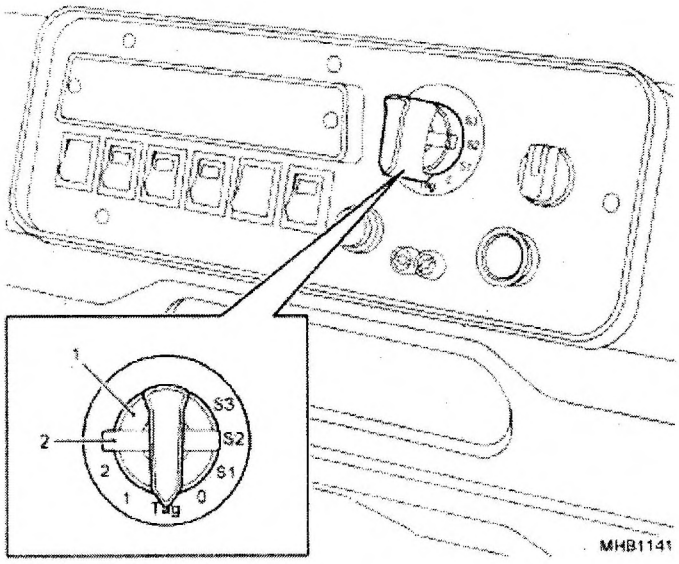
10.3 Position "2" - As position "1" plus headlamps, headlamp dipped facilities and rear fog lamp.

10.4 Position "0" - All lights off.

10.5 Position "S1" - Blackout stop lamp and convoy light.

10.6 Position "S2" - Blackout rear tail lamps only.

10.7 Position "S3" - Blackout stop lamp, blackout tail lamps, blackout head lamps.

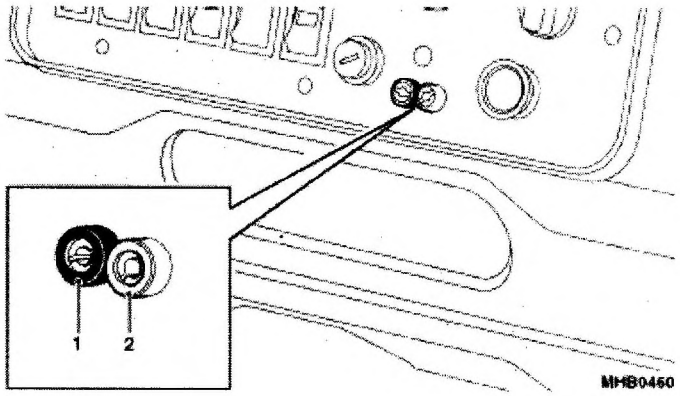


1 knob 2 Bar

Fig 6 Seven way main lighting switch

INSPECTION SOCKETS

11 The inspection sockets are located in the instrument console and are for the purpose of an inspection lamp. The red socket (Fig 7 (2)) is live and the black socket (1) is to earth.



1 Black socket 2 Red socket

Fig 7 Inspection sockets

AUXILIARY HEATER SWITCH

12 The auxiliary heater switch (Fig 8) is located is located in the instrument console and enables the vehicles auxiliary heater to be operated.

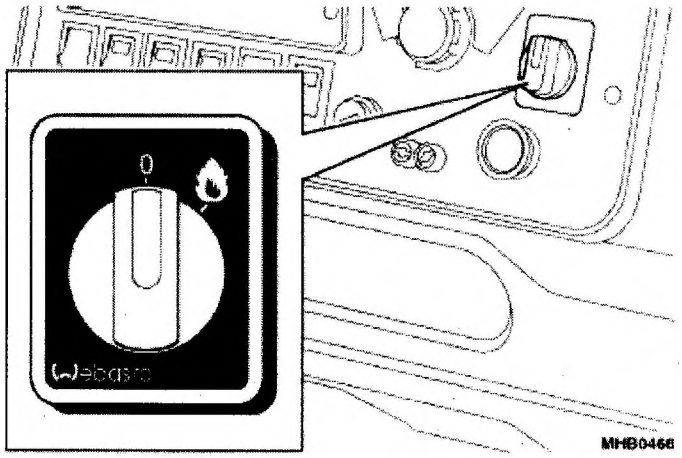


Fig 8 Auxiliary heater switch

REAR SCREEN WASH/WIPE SWITCH

13 The rear screen wash/wipe switch (Fig 9) is located is located in the instrument console and is operated as follows:

13.1 Rotate the switch to the right to activate the rear screen wiper.

13.2 To wash the rear screen, press the spring loaded switch until sufficient water is on the rear screen.

13.3 Release the knob and the water will stop. This operation may be carried out with the screen wiper switch in the ""ON"" or "OFF" position.

NOTE

The rear screen wash/wipe switch is only operative with the starter key in the "I" position.

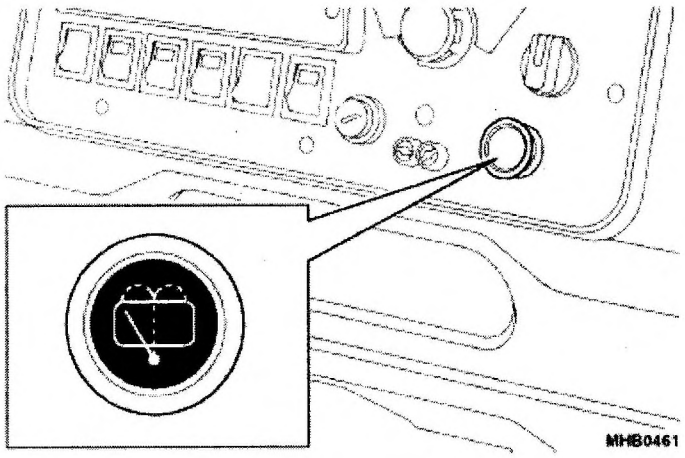


Fig 9 Rear wash/wipe switch

HAZARD WARNING SWITCH

14 The hazard warning switch (Fig 10) is located in the instrument console.

Operating the hazard warning switch

15 The switch has a two way rocker action which operates in the following manner:

15.1 Press the upper end of the switch in, the hazard lights are off.

15.2 Press the lower end of the switch in, the hazard warning lights are on.

15.3 With the switch on, all four turn lights operate simultaneously. The red warning light (with the triangular symbol) in the switch will flash in conjunction with the exterior turn lights; also the trailer light will flash. The trailer light will also flash even when there is no trailer attached.

15.4 Use the hazard warning system to warn following or oncoming traffic of any hazard, that is, breakdown on fast roads, or an accident to the vehicle or other vehicles.

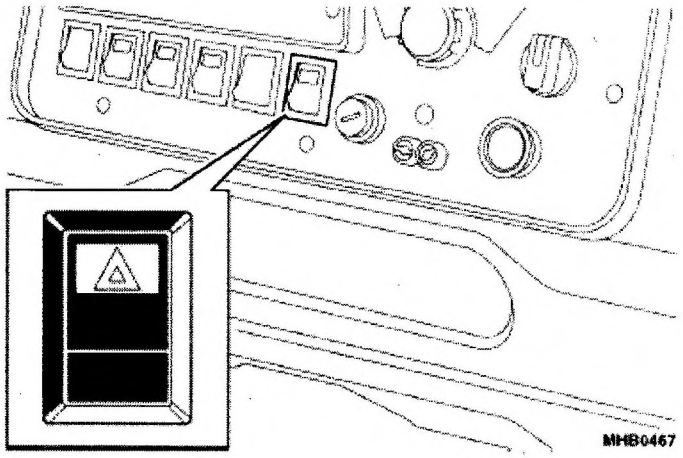


Fig 10 Hazard warning switch

REAR FOG GUARD LIGHT SWITCH

16 The rear fog guard light switch (Fig 11) is located in the instrument console. This is a two-position, on/off rocker switch.

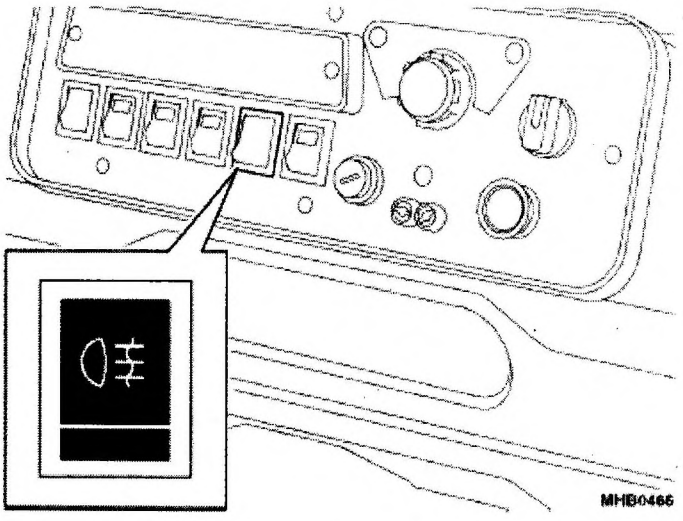


Fig 11 Rear fog guard light switch

FRONT HEATED SCREEN SWITCH

17 The front heated screen switch (Fig 12) is located in the instrument console. The switch has a two way rocker action which operates in the following manner:

17.1 Press the upper end of the switch in, the heated screen is off.

17.2 Press the lower end of the switch in, the heated screen, is on. The heated screen will only be in operation when the engine is running.

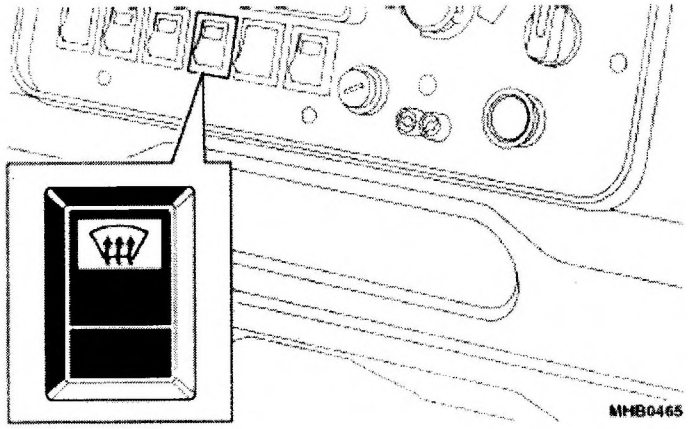


Fig 12 Front heated screen switch

REAR HEATED SCREEN SWITCH

18 The rear heated screen switch (Fig 13) is located in the instrument console. The switch has a two way rocker action which operates in the following manner:

18.1 Press the upper end of the switch in, the heated rear screen is off.

18.2 Press the lower end of the switch in, the heated rear screen, is on. The rear heated screen will only be in operation when the starter key is in the "II" position also the warning light will illuminate to inform the user.

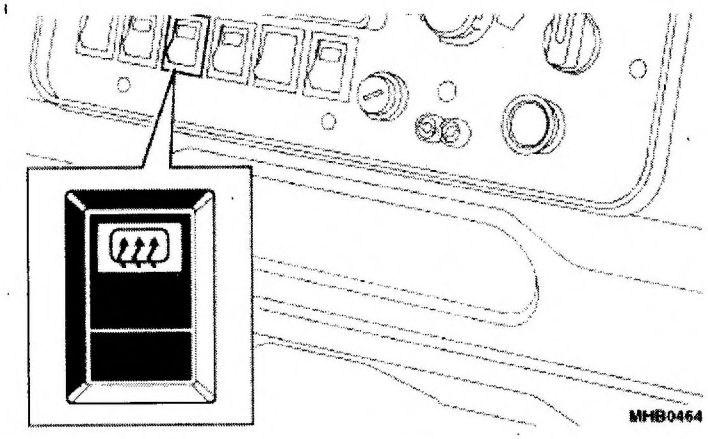


Fig 13 Rear heated screen switch

HEADLAMP LEVELLING SWITCH

19 The headlamp levelling switch (Fig 14) is located in the instrument console. The levelling switch is a two-position rocker switch for laden and un-laden operations of the vehicle and operates as follows:

19.1 Press the upper end of the switch in for an un-laden vehicle.

19.2 Press the lower end of the switch in when the vehicle is fully loaded.

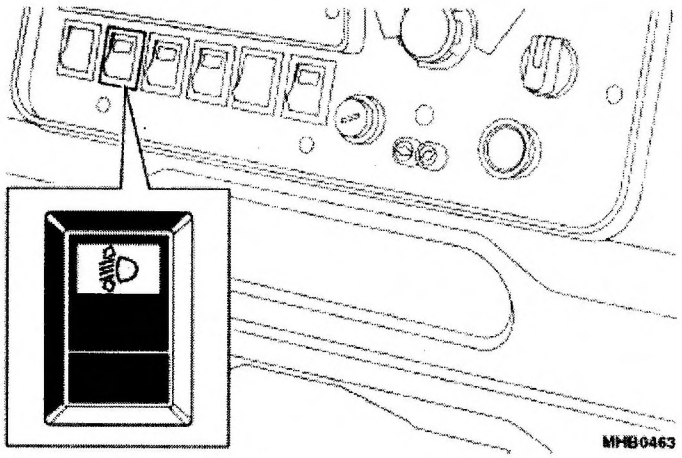


Fig 14 Headlamp levelling switch

MAP READING LIGHT SWITCH

20 The map reading light switch (Fig 15) is located in the instrument console. The rocker switch operates the map reading light.

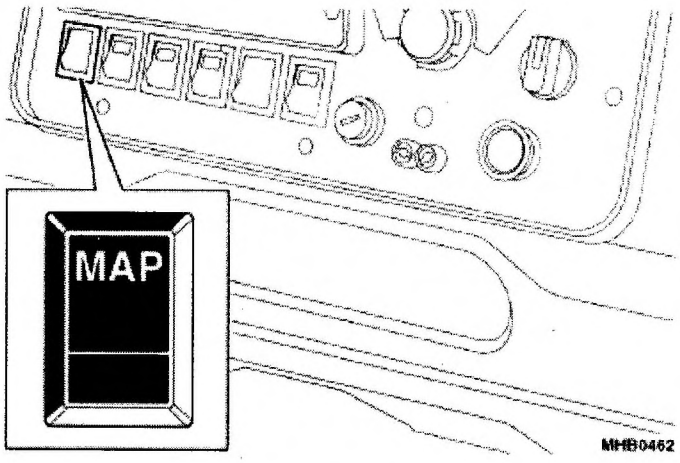


Fig 15 Map reading light

FUSE BOXES

WARNING

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.

21 There are two fuse boxes, the main fuse box and the main harness fuse box.

Main fuse box

22 The main fuse box (Fig 16) is located inside the vehicle to the left of the instrument panel. It contains twenty fuses of the following values: 3; 5; 7.5; 10; 15 and 20 Amperes (A).

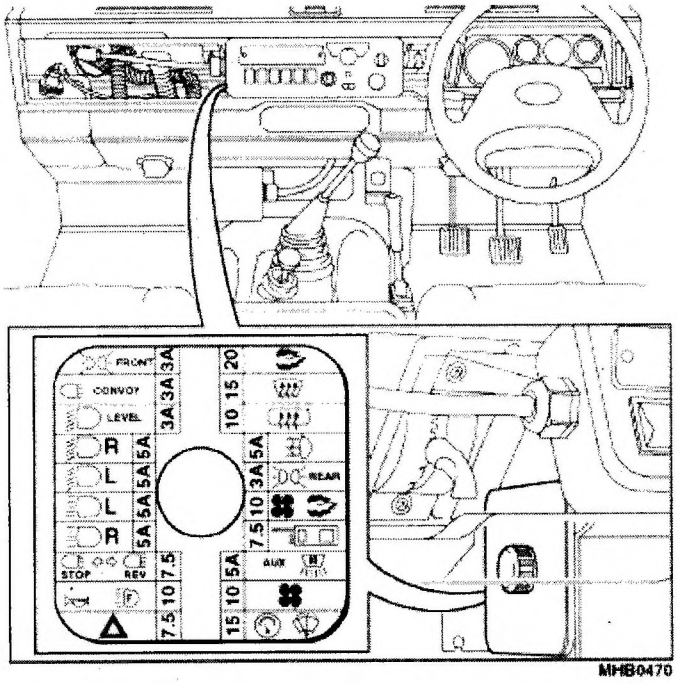


Fig 16 Main fuse box location

Main harness fuse box

23 The main harness fuse box (Fig 17) located below the fascia adjacent to the main gear change lever and contains 4 fuses of the following values: 20, 30 and 40 amperes.

24 Only spade type fuses of the correct rating should be used as replacements. The location and the items protected by the fuses are shown in the chart attached to the inside of the fuse box cover.

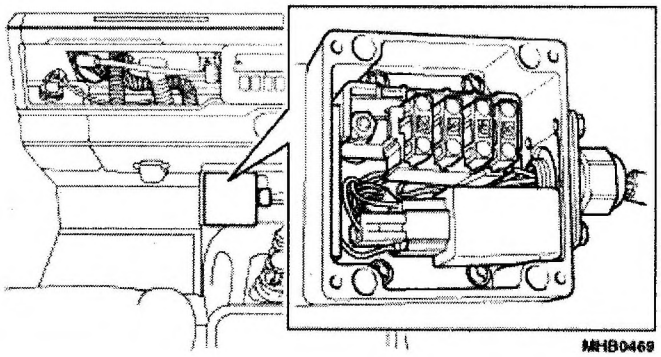


Fig 17 Main harness fuse box location

AMMETER

25 The ammeter (Fig 18) is located in the terminal box, mounted on the rear bulkhead, and graduated to indicate the charge and discharge of the radio system batteries.

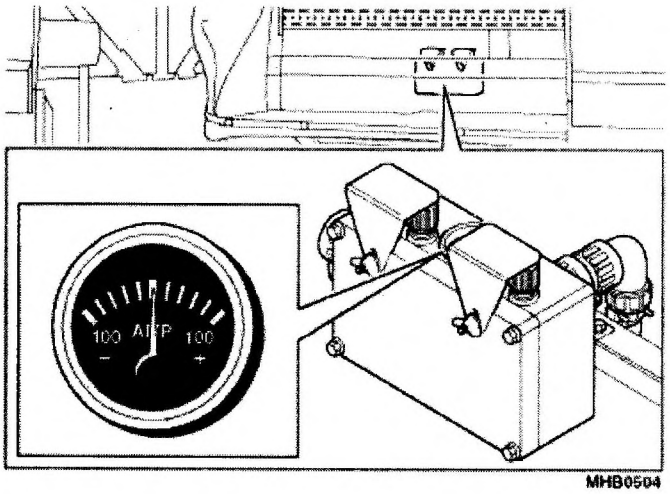


Fig 18 Ammeter

CHAPTER 2-5

AIR DROPABLE

CONTENTS

INTRODUCTION

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

General

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

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CHAPTER 2-6

HELICOPTER SUPPORT VEHICLE

CONTENTS

INTRODUCTION

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

General

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

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CHAPTER 2-7

COMMANDERS IK

CONTENTS

INTRODUCTION

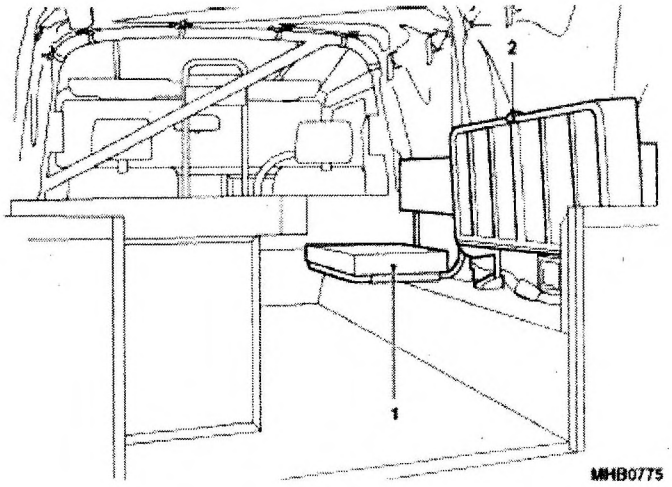
1 This Sub-Chapter describes all the items applicable to the Truck Utility Medium (TUM) HS Commanders Installation Kit (IK) vehicles which are not covered in the previous Chapters.

BENCH SEATS

2 There are two (2 seater) bench type seats located in the rear of the vehicle.

3 The seat cushions (Fig 1 (1)) can be stowed in upright positions by means of a strap with a metal hook (2) which fastens to the side of the seat.

4 To use the seat, release the retaining hook and move the cushion into the horizontal position.

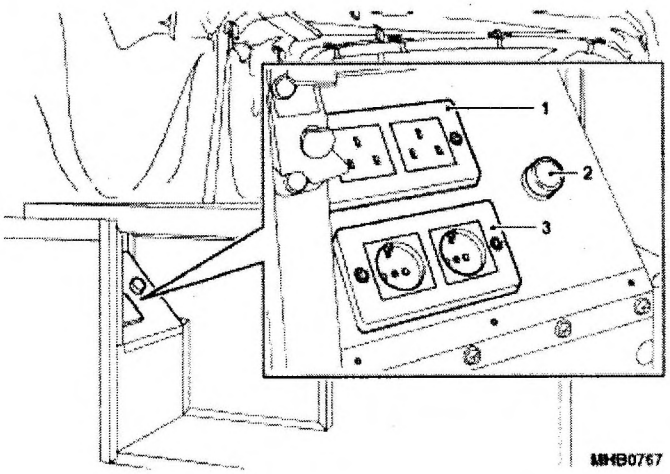


1 Seat cusions 2 Metal hook

Fig 1 Bench seats

SOCKETS PANEL

5 The socket panel (Fig 2) is located at the rear of the vehicle on the left hand side adjacent to the door. It has a cover which is kept in place by a velcro strip. The panel has two pairs of sockets, one pair of standard 240 Volt (V) sockets (1) and one pair of 220 V sockets (3). On the panel is also a 12 V outlet (2).

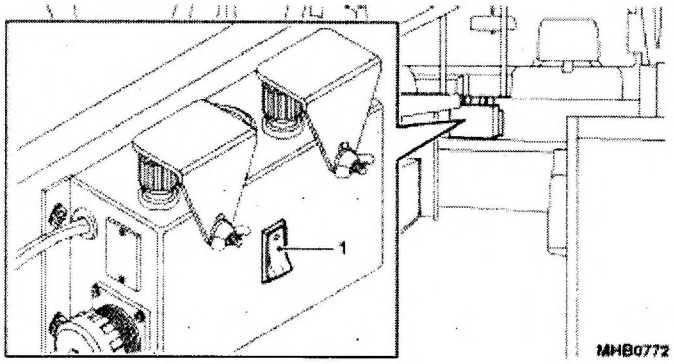


1 240 V sockets 3 220 V sockets
2 12 V outlet

Fig 2 Socket panel

INTERIOR LIGHT SWITCH

6 The light switch (Fig 3) is located in the centre of the terminal box mounted on the rear bulkhead. To turn the two interior lights on and off, press the switch (1) as appropriate.



1 Switch

Fig 3 Interior light switch

RESIDUAL CURRENT DEVICE (RCD)

7 The Residual Current Device (RCD) (Fig 4) is located at the rear of the vehicle on the right hand side.

8 The purpose of the RCD is to measure the current on either side of the device. If the current is found to be unstable, it will isolate the circuit by means of circuit breakers.

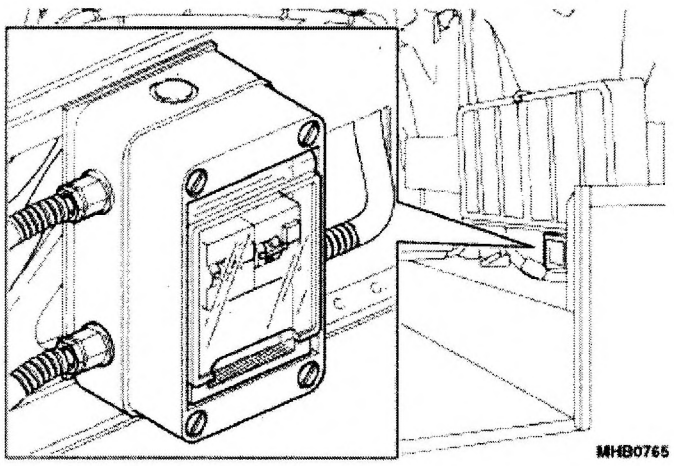


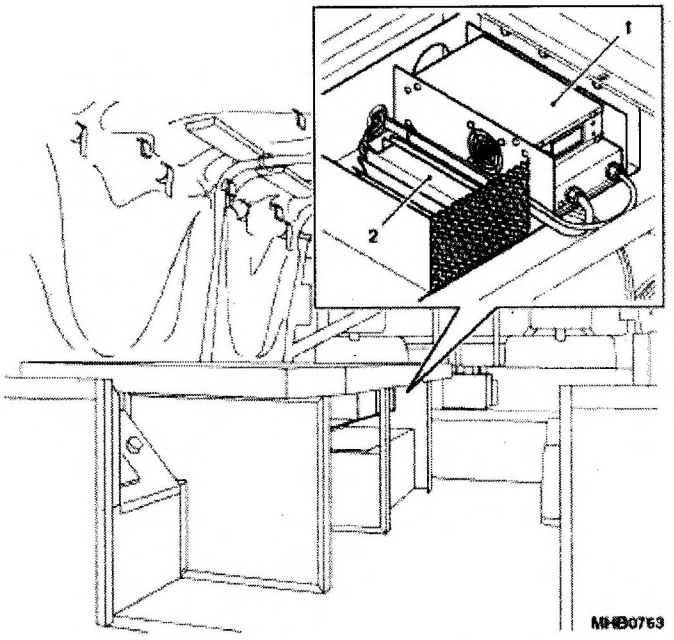
Fig 4 Residual current device (RCD)

BATTERY CHARGER AND CONVERTER

9 The battery charger (Fig 5 (1)) is located in the rear of the vehicle to the left hand side. It is positioned in the mounting bracket assembly adjacent to the converter (2). This ensures that the two batteries remain charged while the vehicle engine is switched off. This then does not put a strain on the vehicle systems when being used.

Converter

10 The converter is situated on the same bracket assembly as the charger and is adjacent to it. This changes the generated current from a 24 V supply to a 12 V supply to enable the 12 V socket mounted on the socket panel to be used.



1 Battery charger 2 Converter

Fig 5 Battery charger and mounting bracket assembly

CHAPTER 2-8

WEAPONS MOUNTED INSTALLATION KIT

CONTENTS

Para

Fig Page

INTRODUCTION

1 This Sub-Chapter describes all the items applicable to the Truck Utility Medium (TUM) HS Weapons Mounted installation Kit (WMIK) vehicles, which are not covered in the previous chapters.

HEIGHT ADJUSTABLE SEAT

2 The height adjustable seat (Fig 1) is provided to give better access to the crew protection weapon.

2.1 To raise the seat. Pull the operating lever fully upwards while lifting body weight from the seat. The seat will rise automatically.

WARNING

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

2.2 To lower the seat. Pull the operating lever fully upwards while remaining seated, the seat will fall slowly but can be stopped at any point by releasing the operating lever.

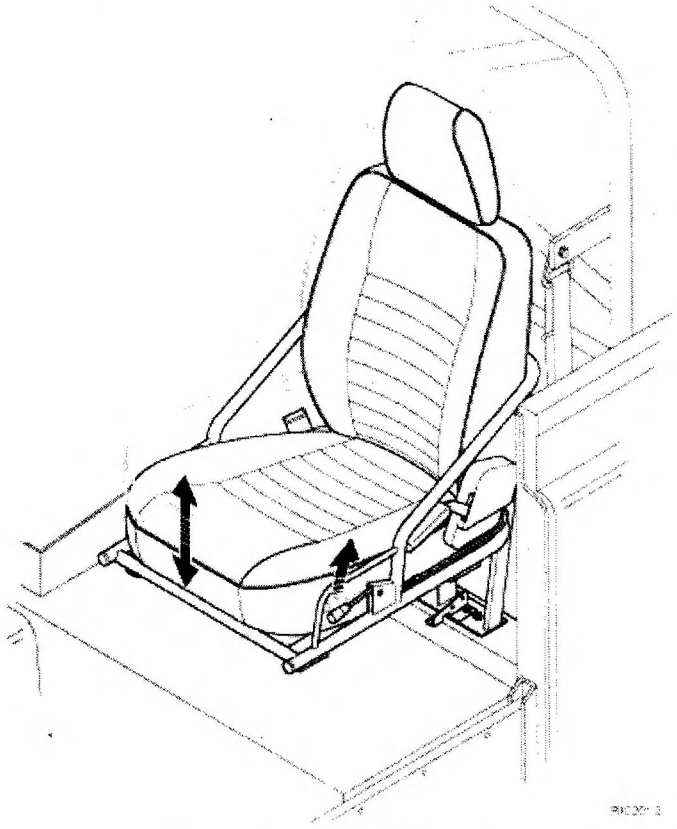


Fig 1 Height adjustable seat

PASSENGER SAFETY BELT EXTENSION

3 When using the passenger's safety belt extension always ensure that the following points are observed and adhered too:

NOTE

The safety belt extension is only to be used when the normal vehicle belt length is insufficient.

3.1 To install, clip the buckle end of safety belt extension on to existing seatbelt.

3.2 Fasten safety belt in the normal way (refer to Chap 2.1).

3.3 To remove, press the release button and disengage the safety belt extension.

3.4 When not in use the safety belt extension should be stored with the vehicle.

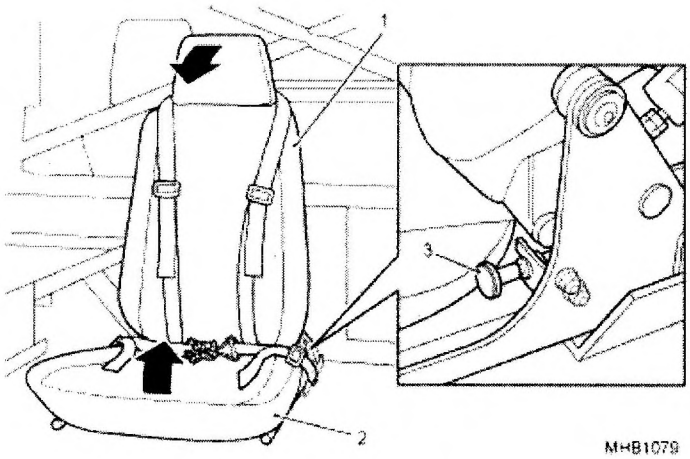
GUNNERS FOLDING SEAT

4 The gunners folding seat (Fig 2) is provided in the gunners position at the rear of the vehicle.

4.1 To unfold the seat. Push the seat base downwards, the seat folds down and out.

4.2 To fold the seat. Pull the seat base upwards, the seat folds up and back.

4.3 To access the area behind the seat lift the knob (3) and fold the seat back towards the rear of the vehicle.



1 Seat back
2 Seat base
3 Knob

Fig 2 Gunners folding seat

GUNNERS SAFETY BELT

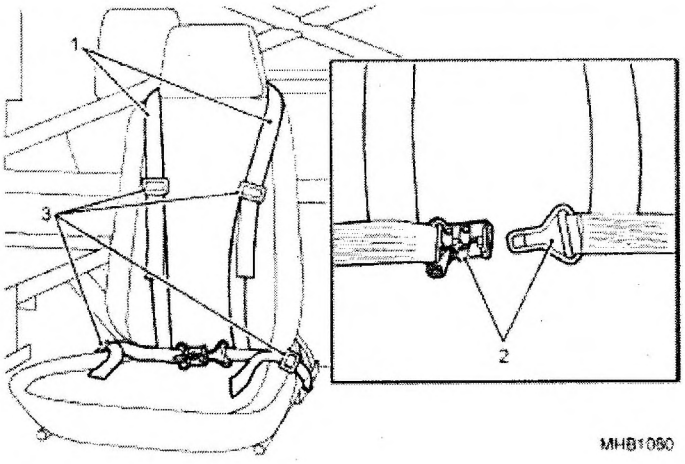
5 When operating the gunners safety belt (Fig 3) always ensure that the following points are observed and adhered too:

5.1 Ensure that the belt is lying flat and is not twisted either on the wearer's body or between the wearer and the anchorage point. Never attempt to use the safety belt for more than one person.

5.2 Fasten draw the belts (1) over the shoulders and across the hips.

5.3 Fasten the buckle (2).

5.4 Pull the belts through the adjusters (3) and adjust until the belts are tight.



1 Belt
2 Buckle
3 Adjusters

Fig 3 Gunners safety belt

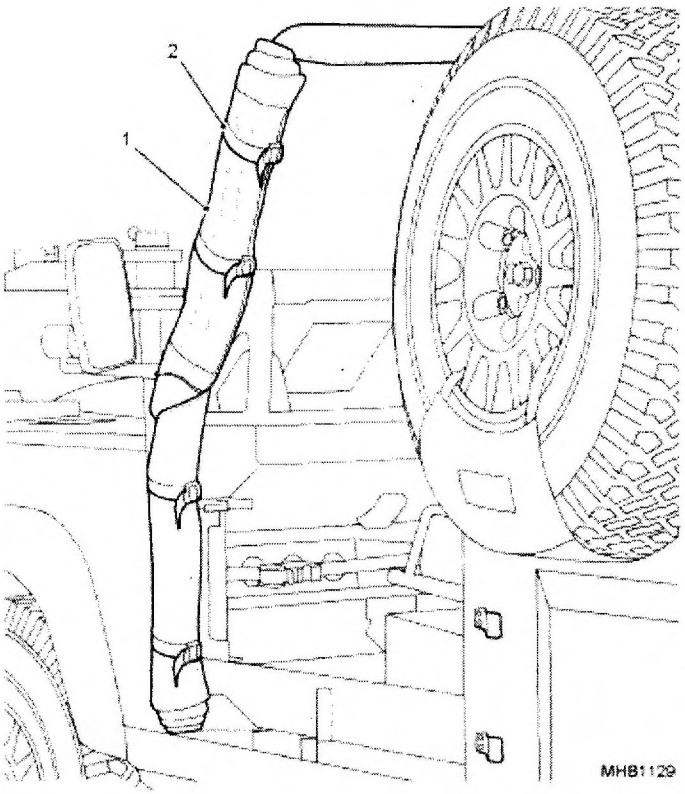
CANOPY SIDE DOORS

6 The canopy has two side doors, which can be rolled back to facilitate access to the vehicle (Fig 4). To open and secure the doors proceed as follows:

6.1 Unzip the door and window from the main canopy.

6.2 Roll the door and window (1) towards the front of the vehicle.

6.3 Wrap the straps (2) around the door or window feed through eyes on the side of vehicle or windscreen and fasten using straps attached to the door/window.



1 Rolled door and window 2 Straps

Fig 4 Canopy side doors

REAR DOOR/PANNIER

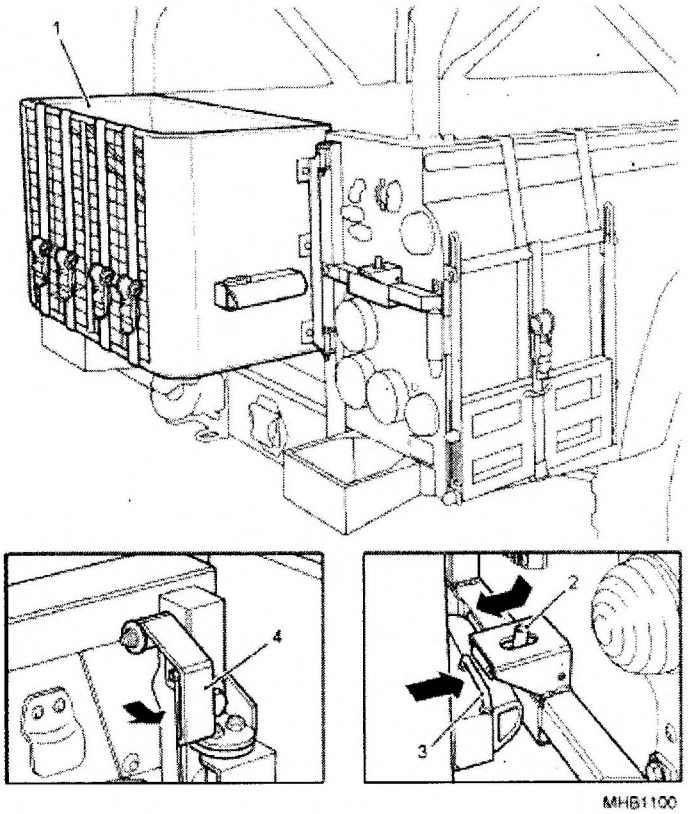
7 The rear door (Fig 5) serves two purposes, for access into the rear of the vehicle and the other as a stowage facility. To open the rear door/pannier.

7.1 Pull the handle (4) on the left hand side of the door.

7.2 Open door and swing round into position and engage the locking mechanism (2) on the rear of the vehicle with the catch (3) on the pannier (1).

7.3 To close the door, release the locking mechanism and swing door around to closed position.

7.4 The rear pannier is for stowage of H84 containers.



1 Pannier
2 Locking mechanism
3 Catch
4 Handle

Fig 5 Rear door/pannier operation

STOWAGE

8 There are several places (Fig 6) on the vehicle, which are for stowage of equipment.

8.1 Located on the bonnet is the cam net stowage.

8.2 There are two areas where Automatic Grenade Launcher (AGL) trays (1 and 3) are located in the rear of the vehicle.

8.3 On the floor at the rear of the vehicle are lashing eyes for stowing weapons.

8.4 On the left hand side there are lashing eyes for a tripod.

8.5 On the right hand side of the roll cage there are two brackets for stowing an SA80 weapon for the rear crewman

8.6 On the side of the transmission tunnel there is a tray for a single H84 ammo tray.

8.7 In the commanders foot well there is an ammo tray

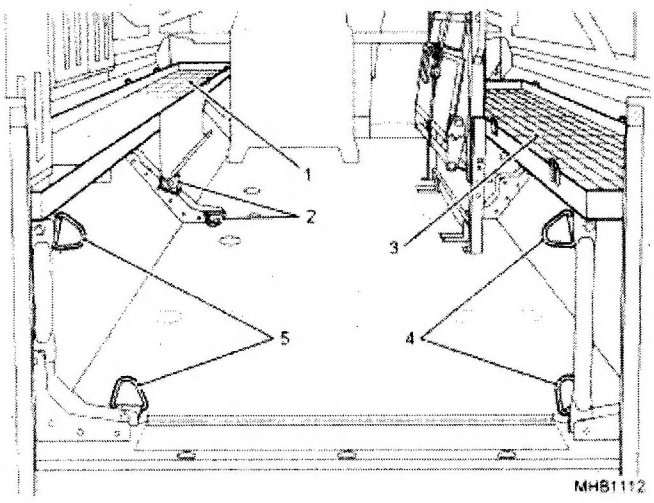
8.8 On the commanders left hand side there is an upright 7.62 mm barrel clamp.

8.9 The rear pannier (Fig 5 (1)) is for H84 containers.

8.10 There are folding supports for jerry can stowage (Fig 11).

8.11 There are three Bergan straps mounted on the roll cage on the side of the vehicle. One strap on the side of the spare wheel and two on the other side of the vehicle.

8.12 There is an AGL support strap attached to eyebolts on the support frame at the rear of the vehicle.



1 AGL tray
2 Eye bolts
3 AGL tray
4 Eye bolts
5 Eye bolts

Fig 6 Rear stowage

8.13 There is provision for two Heavy Machine Gun (HMG) barrels (Fig 7) to be stowed at the front of the roll cage. A barrel clamp adaptor provides alternative stowage for two GPMG barrels when required.

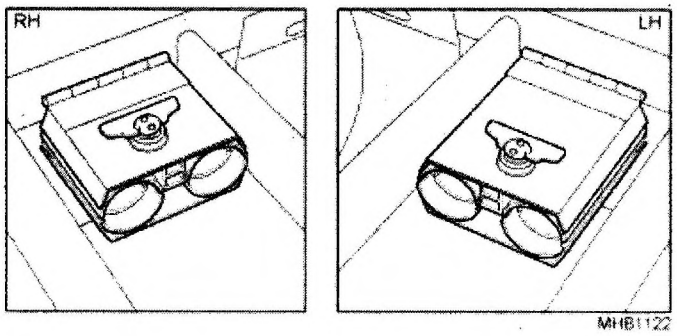
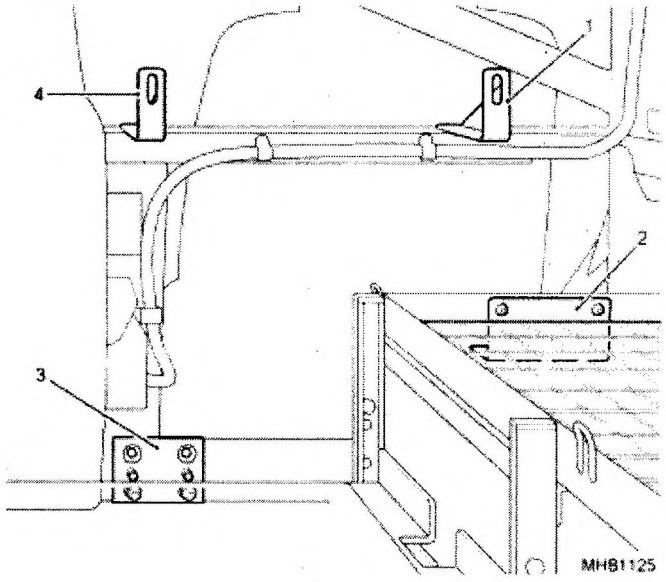


Fig 7 Right and left HMG barrel clamps

BOWMAN MOUNTING BRACKETS

9 Bowman mounting brackets (Fig 8 (1 and 4) are provided on top of the capping behind the driver's seat to secure the Bowman pack.

10 The bowman cover support (2) mounted on the front of the equipment stowage rack supports the Bowman cover when open.



1 Bowman mounting bracket
2 Bowman cover support
3 Bracket
4 Bowman mounting bracket

Fig 8 Bowman mounting bracket

SAND CHANNELS

11 Sand channels (Fig 9) are provided to assist in the recovery of the vehicle in arduous conditions. The sand channels rest on brackets and are secured with a ratchet and strap.

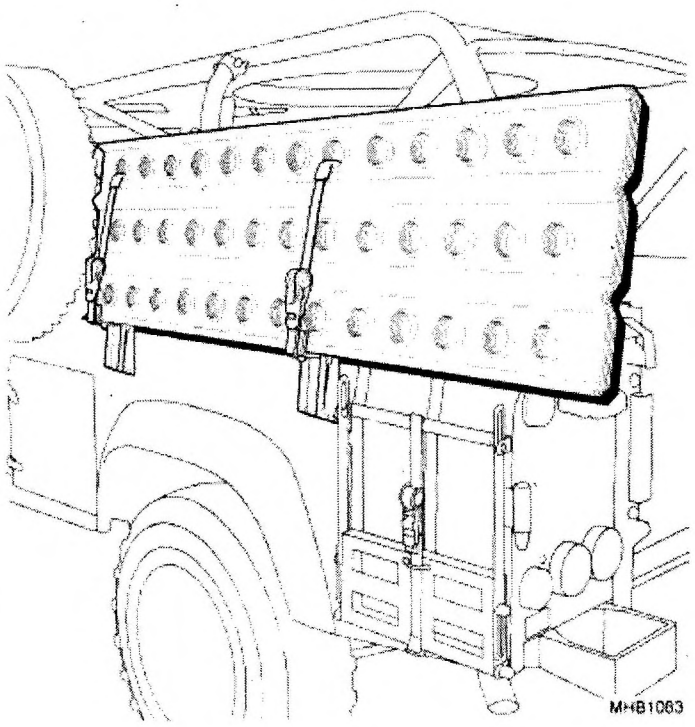


Fig 9 Sand channels

SHOWER PROOF DASH COVER

12 A shower proof dash cover is provided for the protection of the dashboard during adverse weather conditions (Fig 10). The cover is attached to the dashboard by straps secured to the bulkhead.

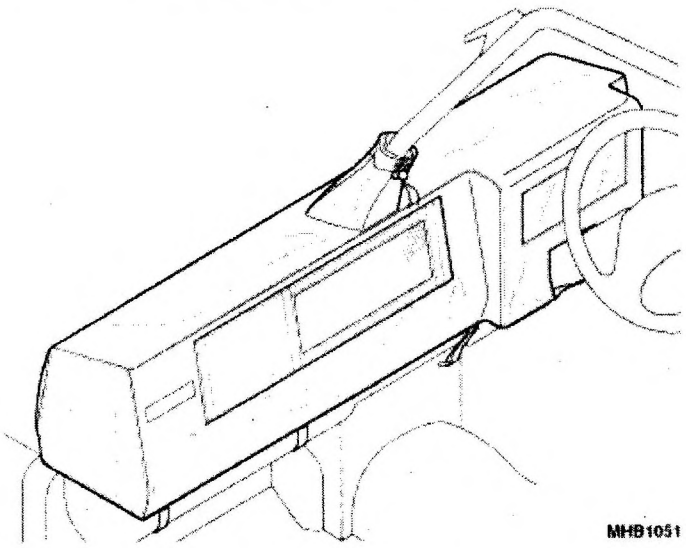


Fig 10 Shower proof dash cover

SHOWER PROOF DRIVERS AND PASSENGER SEAT COVERS

13 Shower proof drivers and passenger seat covers are provided for the protection of the seats during adverse weather conditions.

JERRY CAN STOWAGE

14 There is provision for the stowage of 2 jerry cans. One mounted on each side of the vehicle (Fig 11) on jerry can stowage frames.

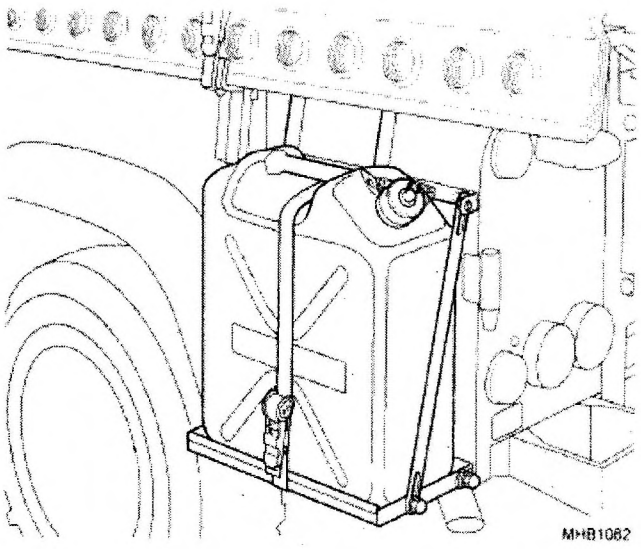


Fig 11 Jerry can stowage

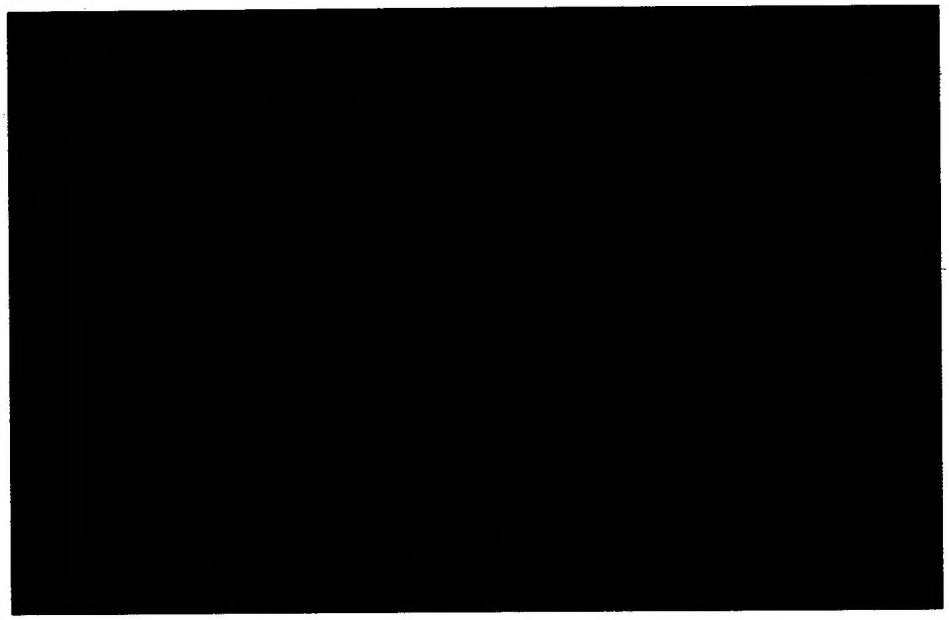
[redacted]

15 [redacted]

15.1 [redacted]

15.2 [redacted]

15.3 [redacted]



1 [redacted]

2 [redacted]

3 [redacted]

[redacted]

POWER OUTLET SWITCHED SOCKET - 12 VOLT

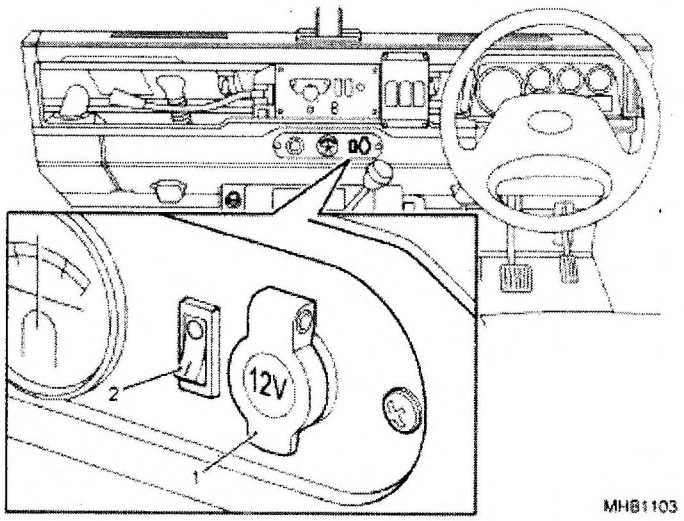
CAUTION

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

16 The 12 Volt (V) power outlet socket (Fig 13 (1)) is located on the vehicle dash. It provides a 12 V output via a DIN type socket controlled by a rocker switch (2), with power supplied from a DC/DC converter mounted behind the vehicle dash. The supply is fitted with an inline fuse.

NOTE

The 12 V socket should be switched off when not in use as the DC/DC converter has a low current draw, which could result in a discharged vehicle battery over a period of time.



1 12 V Power outlet socket 2 Rocker switch

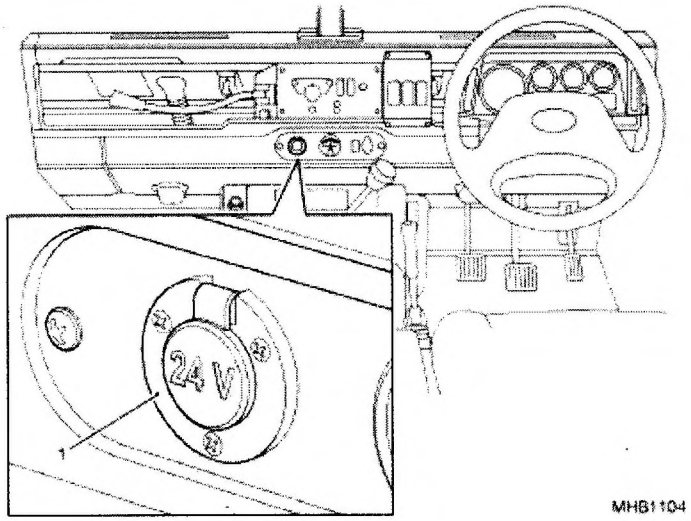
Fig 13 12 V Power outlet switched socket

POWER OUTLET SOCKET - 24 VOLT

CAUTION

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

17 The 24 V power outlet socket (Fig 14 (1)) is located on the vehicle dash. It provides a 24 volt output via a cigar type socket. The supply is fitted with an inline fuse.



1 24 V power outlet socket

Fig 14 24 V power outlet socket

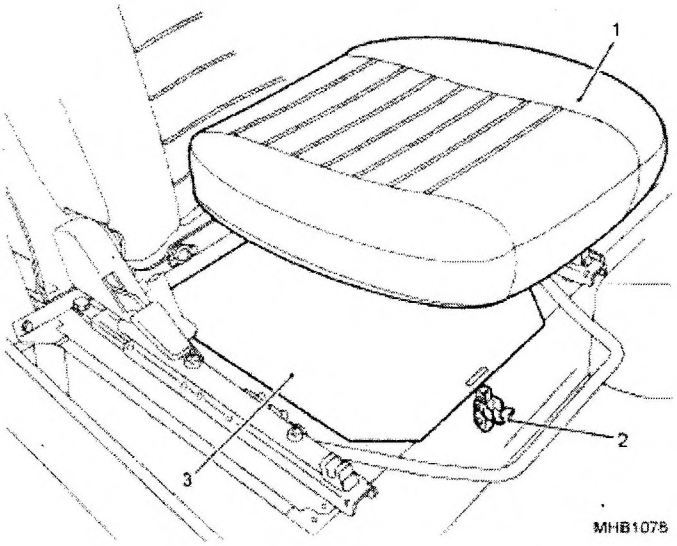
FFR BATTERY STOWAGE

18 The Fitted For Radio (FFR) batteries are located underneath the right hand seat (Fig 15). To obtain access to the FFR battery compartment proceed as follows:

18.1 Lift off the seat cushion (1). Undo the over centre catch (2) and remove the cover plate (3) from the seat base.

18.2 The FFR batteries are now accessible. Slide the cover back into place and secure using the over centre catch.

18.3 Replace the seat cushion.



1 Seat cushion
2 Over centre catch
3 Cover plate

Fig 15 FFR battery stowage

RAISED AIR INTAKE

19 The raised intake (Fig 16) ensures a cleaner air supply to the engine when driving in dusty conditions.

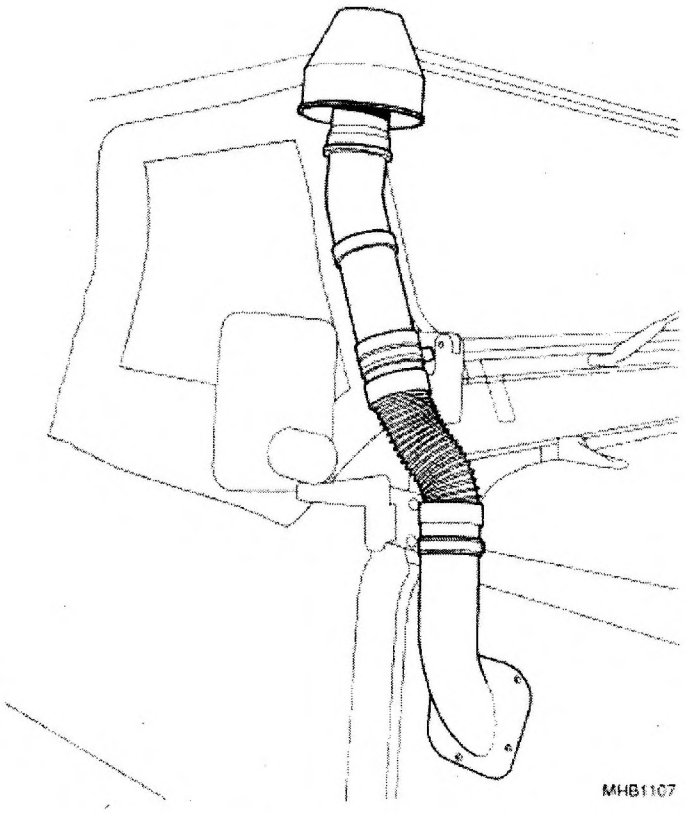


Fig 16 Raised air intake

CHAPTER 2-9

TROPICAL BATTLEFIELD AMBULANCE

CONTENTS

INTRODUCTION

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

General

2 All remaining information appertaining to these vehicles can be found in Sub-Chapter 2-3 Battlefield Ambulance.

AIR CONDITIONING

3 The controls for the air conditioning system are located in the ambulance on the main control panel and the re-circulation grille. They consist of a temperature control switch, and a blower motor fan speed control. Air distribution is achieved via a series of vents located in a roof-mounted duct in the ambulance and in the drivers cab by vents mounted in the side of the evaporator unit.

Temperature control switch

4 To operate the temperature control switch, located in the air outlet duct, (Fig 1), rotate clockwise to reduce the ambient temperature within the compartment.

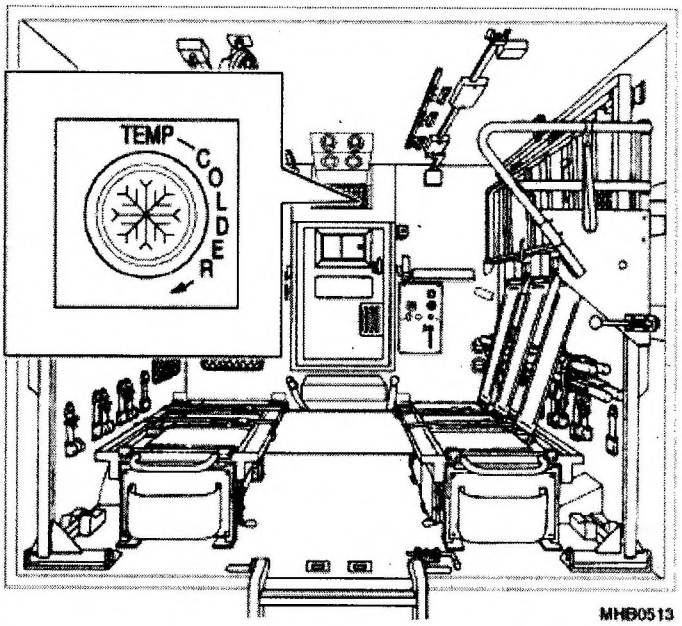


Fig 1 Temperature control switch

Blower motor fan speed control switch

5 The blower motor fan speed control switch is a rotary switch (Fig 2) with 4 settings as follows:

5.1 Off - the fan is non-operational.

5.2 Low - The fan operates at a low speed.

5.3 Med - The fan operates within the middle range

5.4 High - The fan operates at its optimum level.

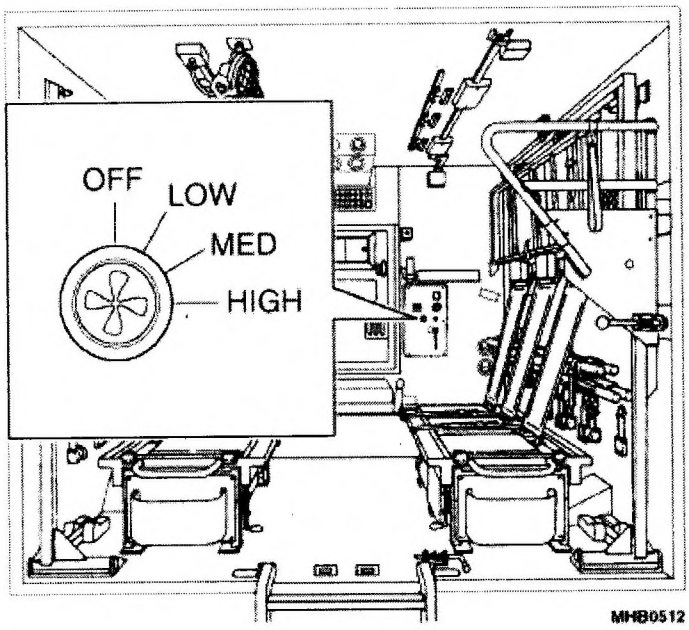


Fig 2 Blower motor fan speed switch

Circuit breakers

WARNING

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

6 There are five circuit breakers contained in the panel and they protect the following circuits:

6.1 CB.1 – Air conditioning

6.2 CB.2 – Blowers

6.3 CB.3 – 12 Volts (V) socket

6.4 CB.4 – Lights

6.5 CB.5 – 24 V sockets

Ventilation deflectors

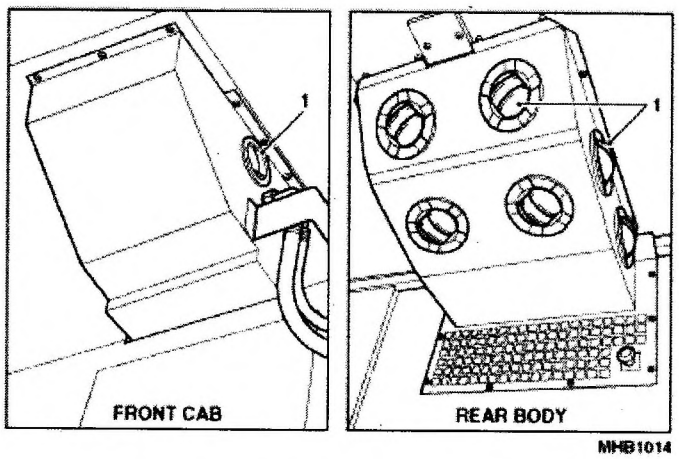
WARNINGS

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

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

7 Air distribution is achieved via a series of ventilation deflectors (Fig 3 (1)) located in a roof mounted duct in the ambulance (rear body) and in the drivers front cab by vents mounted in the side of the evaporator unit.

8 The ventilation deflectors can be adjusted to adjust the direction of air flow.



1 Ventilation deflector

Fig 3 Ventilation deflectors

CHAPTER 2-10

WINTERISED/WATERPROOFED BATTLEFIELD AMBULANCE

CONTENTS

INTRODUCTION

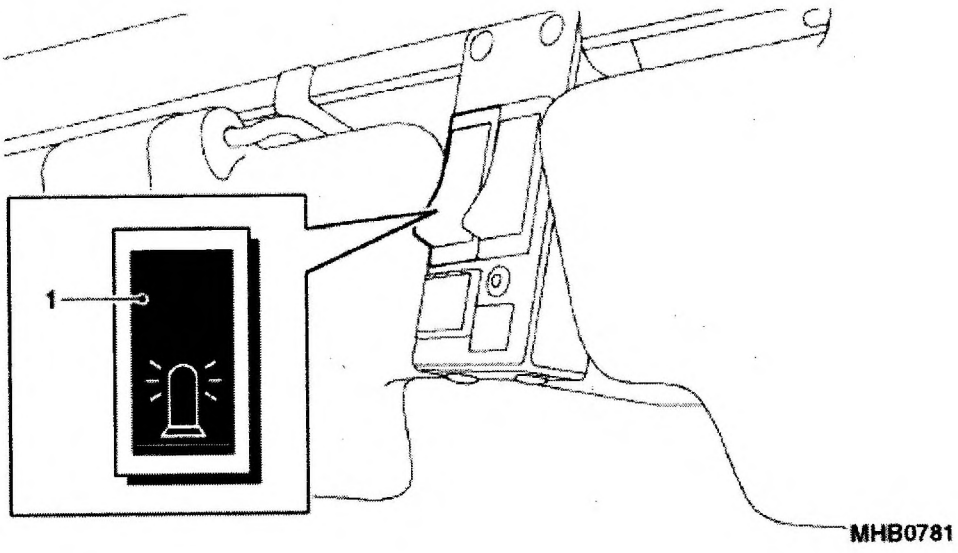
1 This sub-chapter describes all the items applicable to Winterised/Waterproofed Battlefield Ambulance vehicles, which are not covered in the previous chapters.

General

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

BLUE FLASHING BEACON SWITCH

3 The blue light flashing beacon switch (Fig 1 (1)) is a two position, rocker type switch located adjacent to the siren switch to the top and centre of the windscreen. When the lower half of the switch is pressed in, the lights in the roof-mounted beacons will operate.

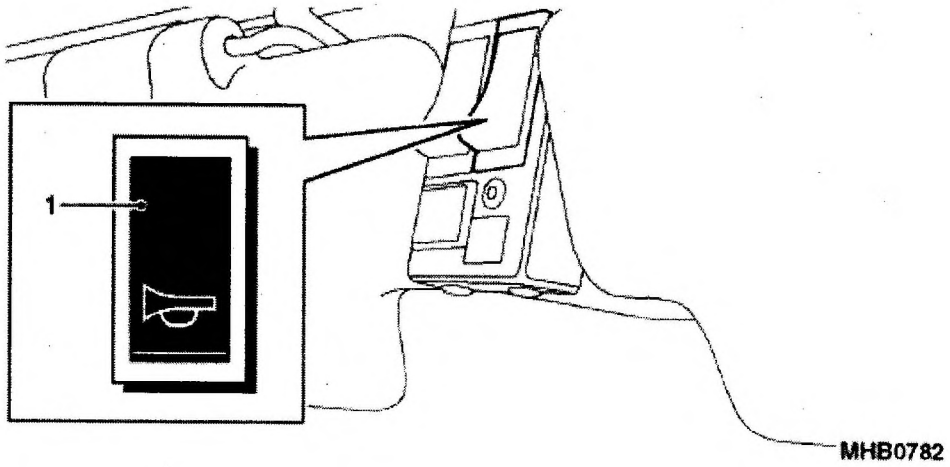


1 Blue light flashing beacon switch

Fig 1 Blue light flashing beacon switch

SIREN SWITCH

4 The siren switch (Fig 2 (1)) is a two position, rocker type switch located adjacent to the blue flashing beacon switch to the top and centre of the windscreen. When the lower half of the switch is pressed in, the siren located on the front of the vehicle cab will operate via the horn column stalk.



1 Siren switch

Fig 2 Siren switch

CHAPTER 2-11

WATERPROOFED WEAPONS MOUNTED INSTALLATION KIT

CONTENTS

INTRODUCTION

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

RAISED AIR INTAKE

2 The Raise air intake (Fig 1) is provided to allow the vehicle to wade in normal conditions (0.6 m). An extension tube is also provided for use when deep wading.

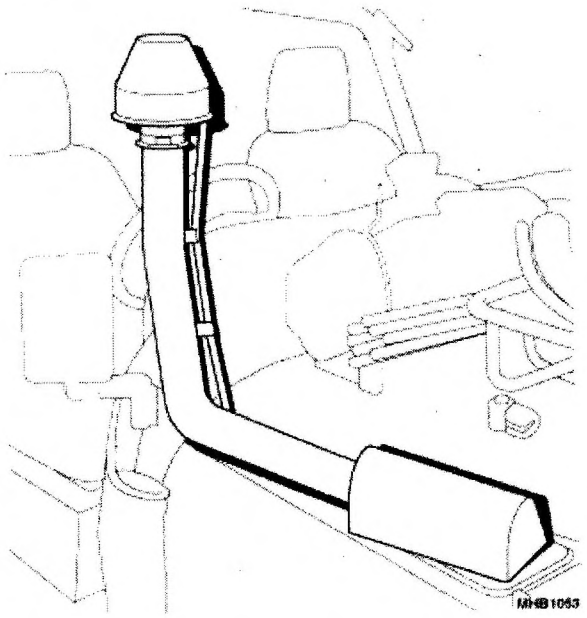


Fig 1 Raised intake

REMOVABLE WINDSCREEN

3 The front windscreen can be removed from the vehicle when not required. To remove the windscreen, refer to Chapter 3-11.

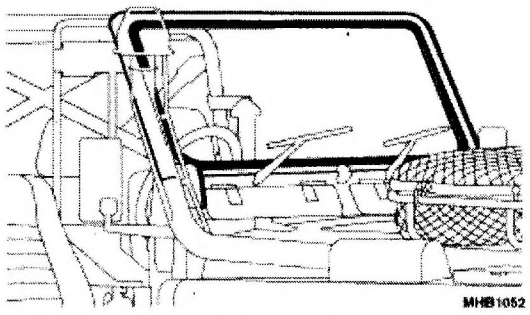


Fig 2 Removable windscreen

SPARE WHEEL CARRIER

4 Where it has been approved by the Equipment Manager at DE&S, an additional spare wheel carrier may be fitted to the opposite side of the vehicle using existing in service equipment and a long arm mirror.

CHAPTER 3

OPERATING INSTRUCTIONS

CONTENTS

INTRODUCTION

1 This Chapter describes the Operating Instructions applicable to 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 3-1 Basic vehicle.

1.2 Chapter 3-2 Fitted For Radio (FFR).

1.3 Chapter 3-3 Battlefield Ambulance.

1.4 Chapter 3-4 Winterised/Waterproofed.

1.5 Chapter 3-5 Air dropable.

1.6 Chapter 3-6 Helicopter Support Vehicle.

1.7 Chapter 3-7 Commanders IK.

1.8 Chapter 3-8 Weapons Mounted Installation Kit (WMIK).

1.9 Chapter 3-9 Tropical Field Ambulance.

1.10 Chapter 3-10 Winterised/Waterproofed Field Ambulance.

1.11 Chapter 3-11 Waterproofed Weapons Mounted Installation Kit.

General

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

USE OF AVIATION FUEL

3 AVTUR (F-34)/AVCAT (F44) may be used in this vehicle. If this fuel is used, lubricating oil to the ratio of 1 litre of oil/100 litres of fuel must be added to the tank prior to filling. It should be noted that no other type of AVTUR/AVCAT should be used.

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CHAPTER 3-1

BASIC VEHICLE

CONTENTS

(continued)

CONTENTS (continued)

INTRODUCTION

1 This sub-chapter gives the Operating Instructions applicable to the Truck Utility Light (TUL) HS and Truck Utility Medium (TUM) HS vehicles.

GENERAL

2 Before operating the vehicle, the operator must be acquainted with the operating instructions given in the subsequent paragraphs.

PRE-START CHECKS

3 Before starting the vehicle, check the vehicle as described in (refer to Cat 601 Table 6) and Paras 12, 13, 14, 15, 16 and 17 in this Sub-Chapter.

STARTING THE ENGINE

CAUTION

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.

4 When starting the engine, do not operate the accelerator pedal during the engine starting procedure. The vehicle diesel engine will start satisfactorily with the proper use of the heater plugs down to temperatures of -32° C (-25.6° F) even with the battery at only 80% charged, provided that the correct grade of oil has been used. Use the heater plug position when starting from cold, for example, with a cold engine and an air temperature of 0° C (32° F) the key should be held in the heater plug position until the light extinguishes. An amber warning light will illuminate when the engine starter key is turned to the 'heater plug' position.

Starting a cold engine

5 When starting a cold engine, do not operate the accelerator pedal during the engine starting procedure. Turn the starter key and hold it in the heater position until the light extinguishes, then turn the key further against spring pressure to start the engine, then release the key immediately the engine starts.

Starting a warm engine

6 When starting a warm engine do not operate the accelerator pedal during the engine starting procedure. Turn the key to the engine start position and release immediately the engine starts.

TRANSFER GEAR/DIFFERENTIAL LOCK LEVER

7 The transfer gear/differential lock lever is positioned rearward of the main gear change lever. The correct method of operating the gearbox is as follows:

Operating the transfer/differential lock lever

CAUTION

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

8 The correct method of transfer gear changing is described as follows:

8.1 Depress the clutch pedal and push the lever fully forward, release the clutch. Should there be any problem in changing gear do not force the lever. With the engine running, engage a main gear and release the clutch momentarily, then return the main gear lever to neutral and try the transfer gear lever again.

8.2 Changes from low 'L' to high 'H' can easily be made without stopping the vehicle as follows:

8.2.1 Depress the clutch pedal and release the accelerator pedal as for normal gear change.

8.2.2 Move the transfer lever firmly into neutral and release the clutch pedal. Depress the clutch pedal again and move the transfer lever firmly into high 'H' position.

8.2.3 Move the main gear lever to second gear and release the clutch pedal while depressing the accelerator to take up the drive smoothly.

8.2.4 As the vehicle accelerates, change gear in the main gearbox in the normal way.

NOTE

This operation can be carried out smoothly and quickly after a little practice.

9 The method of differential lock gear changing is described as follows:

9.1 The vehicle has a permanent four-wheel drive and a third differential fitted in the transfer gearbox between the drives to front and rear axles.

9.2 The third differential allows a high degree of mobility in off road use.

9.3 In conditions requiring maximum traction to both axles, the gearbox differential unit can be locked so that both output shafts rotate at the same speed.

9.4 The differential is controlled through the combined transfer/differential lock lever.

9.5 The control can be operated while the vehicle is travelling (Low to High only) without wheel slip and in a straight line, or while it is stationary. The differential should be locked for slippery or doubtful surface conditions.

9.6 If the warning light remains on, this indicates that the transmission is 'wound-up'. The vehicle must be stopped and reversed for a few metres to 'unwind' the transmission; the warning light will then be extinguished and the vehicle can proceed.

9.7 Under certain conditions a slight delay may be experienced before the differential becomes locked, with subsequent warning light illumination.

NOTES

(1) This delay is a built in safety precaution and ensures that gears are correctly aligned before differential locking commences.

(2) To avoid unnecessary wear and possible damage to the transmission and final drive, it is important that full throttle openings are not used when the vehicle is operating in first and second gear low range with the differential locked. A return to the unlocked position must be made as soon as traction is regained.

(3) The differential lock is a spring engage/disengage action. The warning light sensor is fitted in the gearbox. Some delay may occur whilst the vehicle is stationary.

PROP ROD

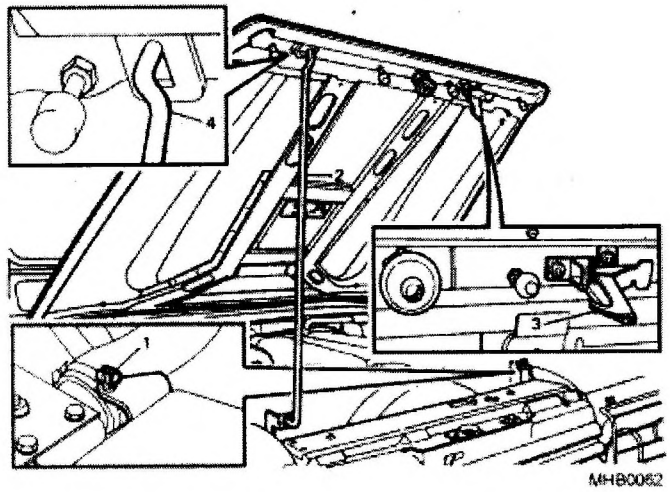
10 The prop rod is located underneath the bonnet. To open the bonnet refer to Bonnet release handle (Chap 2-1). To open and close the bonnet proceed as follows:

10.1 Release the bonnet safety catch (Fig 1(3)), lift the bonnet up and pull the prop rod (2) from the stowage clip (1).

10.2 Locate the upper end of the prop rod in the hole (4) in the bracket on the underside of the bonnet.

10.3 Hold the bonnet open, pull the prop rod from the bracket and locate it into the stowage clip.

10.4 Push the bonnet down firmly until it locks. Do not allow the bonnet to drop from the fully open position.



1 Stowage clip
2 Prop rod
3 Safety Catch
4 Hole

Fig 1 Prop rod

BATTERIES

CAUTIONS

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

(2) 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.

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

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

(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.

11 The air portable batteries are located in a covered well underneath the left-hand seat. They are connected in series to give a 24 volt supply and are of a low maintenance type requiring levels to be checked dependant on the climatic conditions. The electrolyte level should be checked from one year (hot climates) to three years (temperate climates). Check if maintenance is required (refer to Chap 4-1).

NOTE

If air portable batteries fail to recharge refer to Cat 512 Chapter 31-1.

INSTRUMENTS

12 When the engine is running check that the following instruments and warning lights operate correctly:

12.1 Oil pressure warning light is extinguished.

12.2 Cold start warning light is extinguished.

12.3 Engine start warning light is extinguished.

12.4 Fuel level indicator is operating.

12.5 Coolant temperature indicator is operating.

12.6 Differential lock warning light.

LIGHTS

13 Check the operation of all exterior lights and renew any that are defective before taking the vehicle on to the road (refer to Chap 4-1).

ENGINE OIL

14 Check the engine oil level using the dipstick (refer to Chap 4-1). The dipstick is located to the left-hand side of the engine. Top up with the specified oil as stated in the Cat 601.

ENGINE COOLING SYSTEM

15 Check the engine cooling system (refer to Chap, 4-1) and top up as necessary.

WHEELS

16 Check the tyres for correct pressures, also for wear, chafing and imbedded foreign bodies.

Tyre wear

WARNING

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

17 Check tyres for tread depth and visually for external cuts in the fabric, exposure of ply or cord structure.

18 Most tyres fitted to the vehicles are fitted as original equipment which include wear indicators in their tread pattern. When the tread has worn to a remaining depth of 1.6 mm (0.06 in.) the indicators appear at the surface as bars which connect the tread pattern across the full width of the tyre.

19 When the indicators appear in two or more adjacent grooves, at three locations around the tyre, a new tyre should be fitted.

21 If the tyres do not have wear indicators, check daily. If the tread has worn to a depth of 1.6 mm (0.06 in.), new tyres should be fitted. Do not continue to use tyres that have worn to the recommended limit or the safety of the vehicle could be affected and legal regulations governing tread depth may be broken.

Tyre pressures

22 Tyre pressures should be checked daily. Whenever possible check with the tyres cold as the pressure is about 0.14 bar (1.42 lbf/in^2) higher at running temperatures.

22.1 Always refit the valve caps as they form a positive seal on the valves.

22.2 Any unusual pressure loss in excess of 0.21 bar (3 lbf/in^2) per week should be investigated and corrected.

22.3 Always check the spare wheel so that it is ready for use at any time.

22.4 Remove embedded flints etc., from the tyre treads with the aid of a penknife or similar tool and check that the tyres have no breaks in the fabric or cuts to sidewalls etc. Clean off any oil or grease on the tyres using white spirit sparingly.

22.5 Check that there are no lumps or bulges in the tyres or exposure of the ply or cord structure.

22.6 Maximum tyre life and performance will only be obtained if the tyres are maintained at the correct pressure (refer to Cat 601 Table 3).

FUEL

CAUTION

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.

23 Check the fuel level using the fuel level indicator and if low, refill with the correct fuel. The fuel cap is located on the right-hand side of the vehicle.

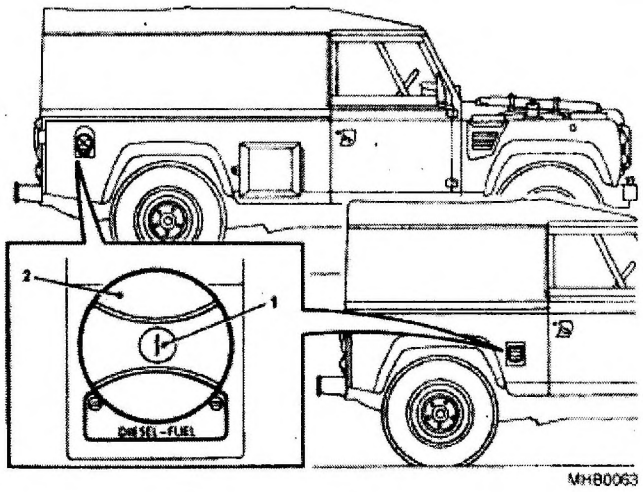
Fuel cap

24 The fuel cap (Fig 2 (2)) is secured by a lock located in the centre of the filler cap on both TUL and TUM vehicles. To release the cap proceed as follows:

24.1 Insert the key into the lock (1) and turn in a counter-clockwise direction.

24.2 Turn the cap in an anti-clockwise direction to remove.

24.3 To refit the cap fit and turn in a clockwise direction and lock using the key.



1 Lock 2 Fuel cap

Fig 2 Fuel cap

EXTENDED FILLER NECK

25 The vehicle is fitted with an extended filler neck for ease of filling when using a jerry can. To use the filler neck proceed as follows:

25.1 Open the filler cap, as described in Para 24, to gain access to the filler neck.

25.2 Pull the inner filler neck (Fig 3) outwards to its fullest extent and rotate slightly, this locks the neck in place.

25.3 To remove the filler neck for cleaning purposes pull the neck out, rotate and then pull again, this releases the filler neck.

25.4 Clean the filter gauze at the base of the filler neck; once clean refit it into the main neck of the fuel tank.

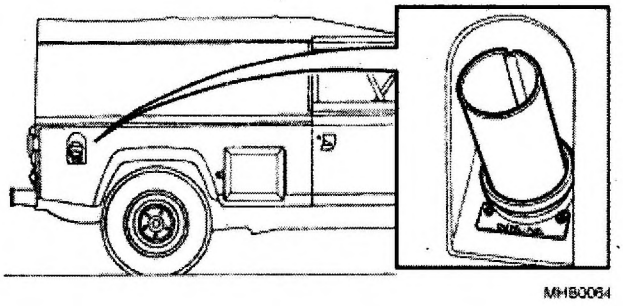
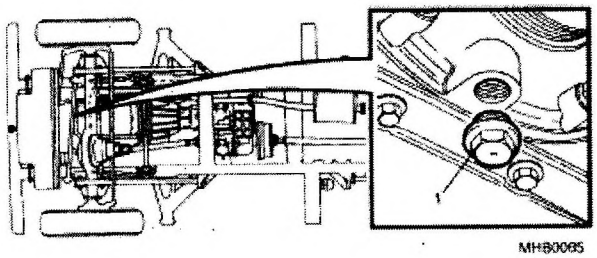


Fig 3 Extended filler neck

ENGINE FRONT TIMING COVER PLUG

26 The engine front timing cover plug (Fig 4 (1)) (early versions) is located at the bottom of the front timing cover.



1 Plug

Fig 4 Engine front timing cover wading plug

27 The plug (1) should only be removed when the vehicle is being serviced to ensure that the bleed hole is not blocked.

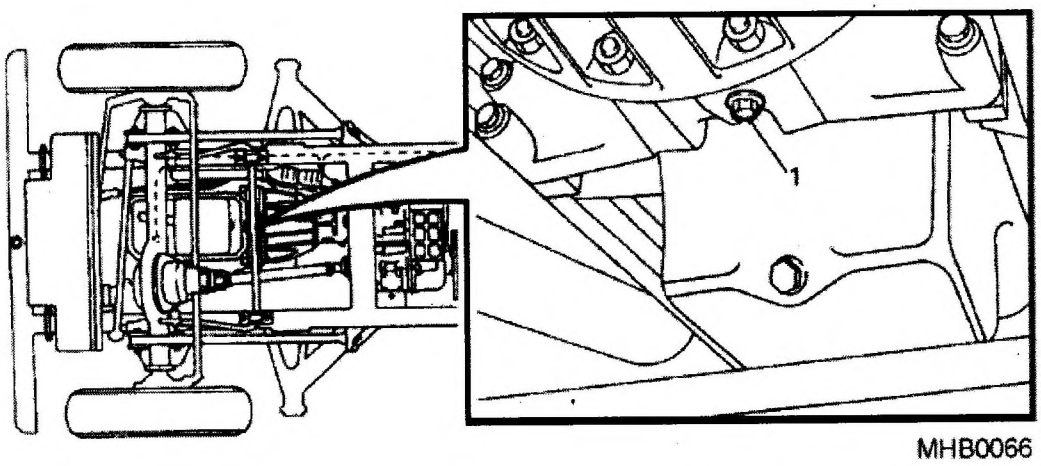
NOTE

Later versions of the timing cover have no plug but a small hole cast into it.

FLYWHEEL HOUSING WADING PLUG

28 By fitting the wading plug into the drain hole at the bottom of the flywheel housing, this will prevent the ingress of mud and water when wading.

29 The plug (Fig 5 (1)) should only be fitted when the vehicle is expected to do wading or very muddy work.



1 Plug

Fig 5 Flywheel housing wading plug

30 When the plug is in use it must be removed periodically and the housing allowed to drain out before it is refitted.

31 When the plug is not in use it should be stowed away in the tool roll which is located behind the right hand seat.

JERRY CAN STOWAGE (TUL)

32 The jerry can stowage facility for the TUL is situated in the rear of the vehicle against the bulkhead (Fig 6). There is one on either side, behind the seats and these are for water only.

32.1 To release the container, undo the retaining strap and remove from its stowage space.

JERRY CAN STOWAGE (TUM)

33 There are two jerry can stowage facilities on the TUM (Fig 7), one on either side of the vehicle. These are provided for the stowage of two jerry cans on each side.

34 Access is gained by releasing the anti-luce cotter (2) securing the compartment door (1). A padlock facility is provided for security.

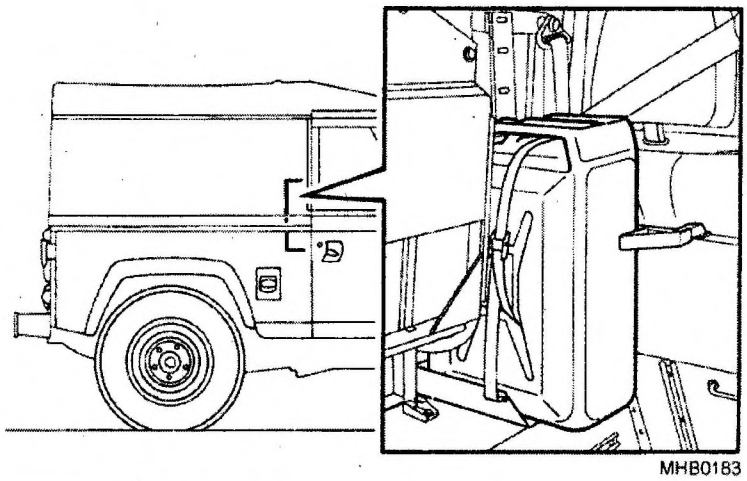


Fig 6 Jerry can stowage (TUL)

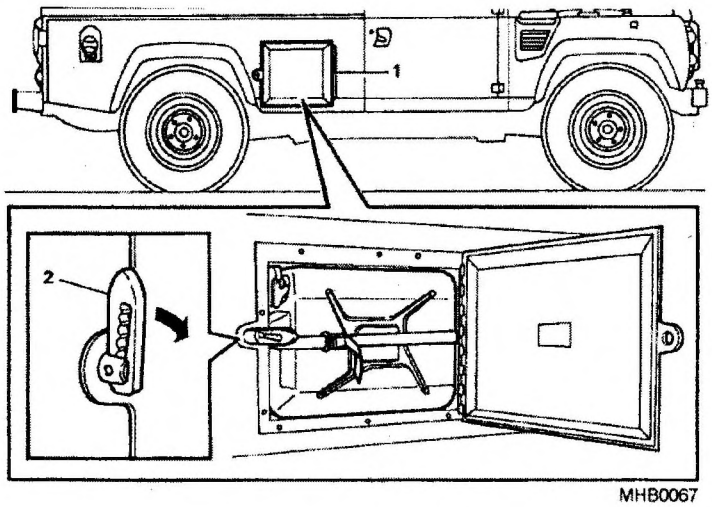


Fig 7 Jerry can stowage (TUM)

35 A warning label is fixed to the inside of the right hand compartment door to inform personnel that the compartment is for jerry cans only.

NOTE

A label is located on the inside of the locker door to indicate whether the jerry cans are for fuel or water.

FRONT TOWING PINTLE

36 The front towing pintle (Fig 8) is integral with the front bumper. To operate the towing pintle proceed as follows:

36.1 Turn the pintle 90° counter clockwise, then pull to release from the retaining mechanism.

36.2 Lift the pintle to provide access to the recess in the bumper.

WARNING

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

36.3 Refit the pintle and turn clockwise to lock it into position.

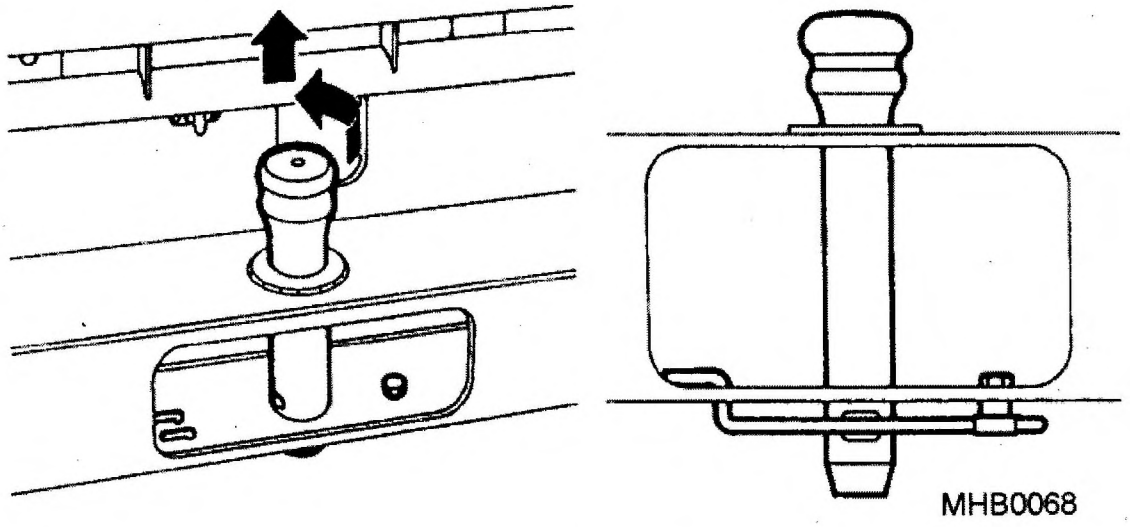


Fig 8 Front towing pintle

CONVOY FLAG HOLDER

37 Convoy flag holders are located on each end of the front bumper and brackets is fitted to the rear corners of the vehicle (Fig 9). They for the purpose of holding a flag when required.

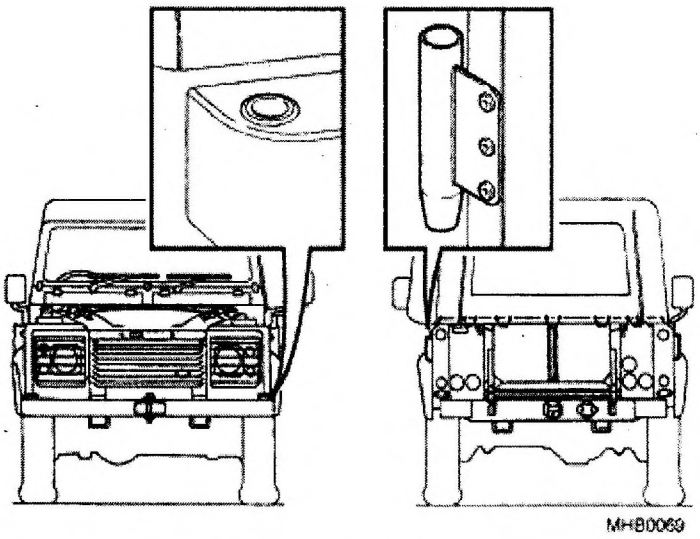
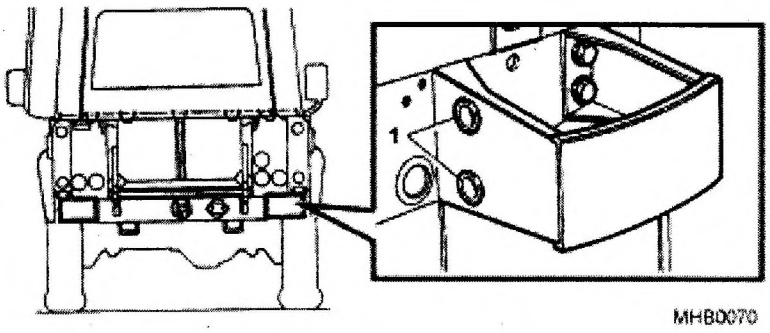


Fig 9 Convoy flag holder

LIFTING/TOWING RINGS

38 The lifting/towing rings are located on top of the front bumper and are bolted to the chassis members. The rear towing rings are located in the rear bumperette (Fig 10 (1)).



1 Lifting/towing rings

Fig 10 Lifting/towing rings

12-PIN TRAILER SOCKET

39 The trailer socket (Fig 11) is located to the right of the towing hook at the rear of the vehicle. When not in use, this socket is protected by a spring loaded cover.

40 To use the socket, lift the cover (Fig 12 (1)) and insert the trailer plug pushing it fully home and the lip of the cover locates in the slot in the plug case.

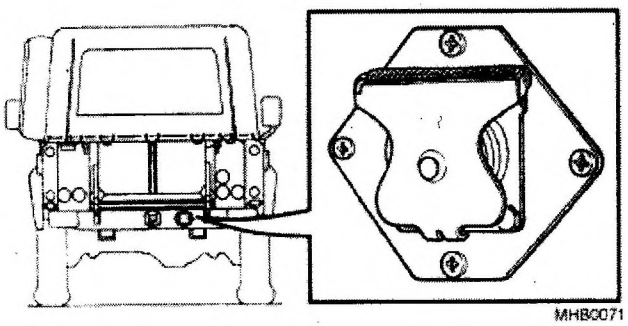
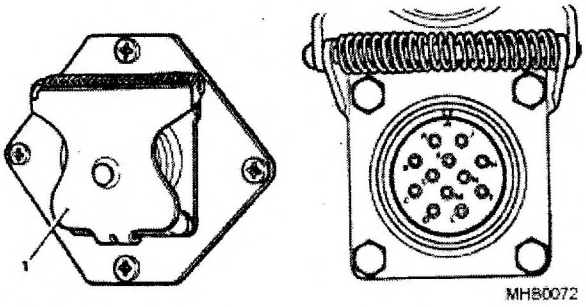


Fig 11 12-pin trailer socket location



1 Cover

Fig 12 12-pin trailer socket operation

ROTATING TOWING HOOK

WARNINGS

(1) 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.

(2) 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.

CAUTION

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

41 The towing hook is located on the rear cross member (Fig 13). To use the towing hook proceed as follows:

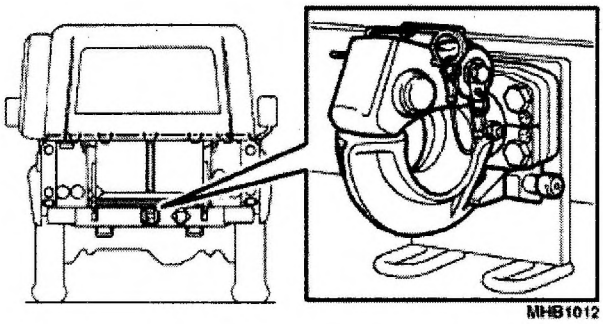


Fig 13 Rotating towing hook location

41.1 Remove the locking pin (Fig 14(1)) securing the jaw.

41.2 Lift the jaw (2) to open the hook.

41.3 Close jaw and secure with the locking pin (1).

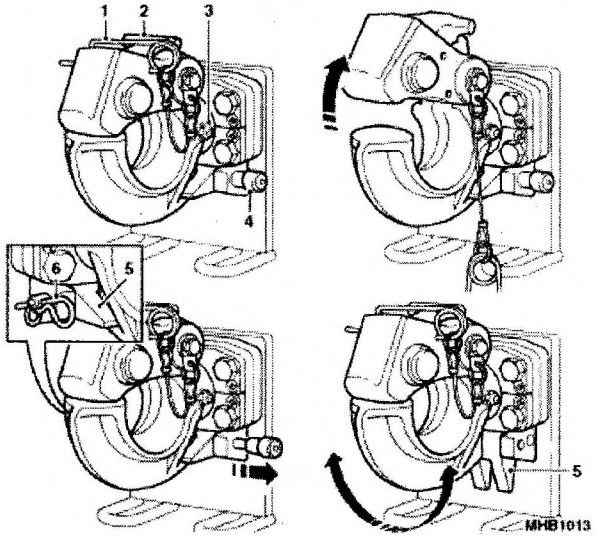
41.4 To rotate the jaw, remove the spring clip (6) retaining the anti-rotation pin (4).

41.5 Withdraw the pin and lower the locking plate (5), the jaw will now rotate to the left or right.

41.6 To lock the jaw, return the locking plate into position and insert the anti-rotation pin and secure with the spring clip.

41.7 Always after use, especially when the hook has been used in extreme conditions clean and oil all moving parts internally and externally.

41.8 Lubricate the towing hook using the specified grease through the grease nipple (3).



1 Locking pin
2 Jaw
3 Grease nipple
4 Anti-rotation pin
5 Locking plate
6 Spring clip

Fig 14 Rotating towing hook operation

PICK AND SHOVEL STOWAGE

42 The pick and shovel stowage areas (Fig 15) are located on the bonnet and right hand wing of the vehicle.

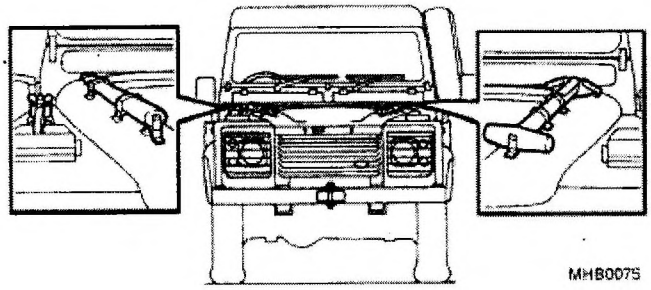


Fig 15 Pick and shovel

WINDSCREEN

43 Provision is made for folding the windscreen down onto the bonnet as follows:

43.1 Remove the hood (refer to Para 44).

43.2 Remove the door seals and the door frame top sections.

43.3 Remove the windscreen wiper arms.

43.4 Slacken the cap nuts on the windscreen clamps (Fig 16).

43.5 Pull the clamps forward out of the brackets and lower the windscreen on to the bonnet.

43.6 Reverse the foregoing to secure the windscreen in the upright position.

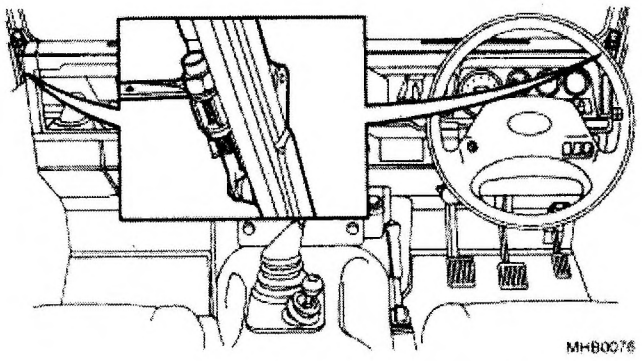


Fig 16 Windscreen lowering operation

HOOD REMOVAL AND REFITTING

44 The hood is made of a plastic material and can be removed from and refitted to the vehicle as follows:

NOTE

The procedure for removing the hood is the same for both TUL and TUM vehicles except that more fastenings are used on TUM vehicles.

Removal of the hood

45 To remove the hood proceed as follows:

45.1 Release the hood rear fastenings, undo ties, lift up opening section and lay flat on top of roof.

45.2 Slacken side retaining cords and release from clips.

45.3 Release all webbing straps and velcro fastenings from inside the hood.

NOTE

At this stage do not release the hood from the windscreen.

45.4 Fold the side panels of the hood up onto the top of the roll cage.

45.5 Release the hood from the channel above the doors, fold the hood forward and allow it to come to rest on the vehicle bonnet.

45.6 Pull the hood forward out from the windscreen top rail, complete folding and remove from the vehicle.

Refitting the hood

46 To refit the hood proceed as follows:

46.1 Position the hood on the vehicle bonnet with the front inside section uppermost.

NOTE

Ensure that the front of the hood is situated centrally over the windscreen before fitting.

46.2 Locate the hood front edge into the recess above the windscreen.

46.3 Using an up and over movement lift the hood up onto the top of the roll cage. Unfold and allow the side panels to drop down.

46.4 Adjust the hood to correctly fit over the roll cage and ensure location in the channels above the doors.

46.5 Secure the velcro fastenings and webbing straps to retain hood.

46.6 Locate the side retaining cords in the clips on the vehicle body and tension with the clamps at the rear of the vehicle.

46.7 Unfold the rear entry panel and do up the ties.

46.8 Secure and tension the hood with the front/rear straps and fasteners.

ROLL CAGE AND FRONT HOOD SUPPORT FRAME

47 The support frame takes the plastic flexible hood which wraps around and attaches to it.

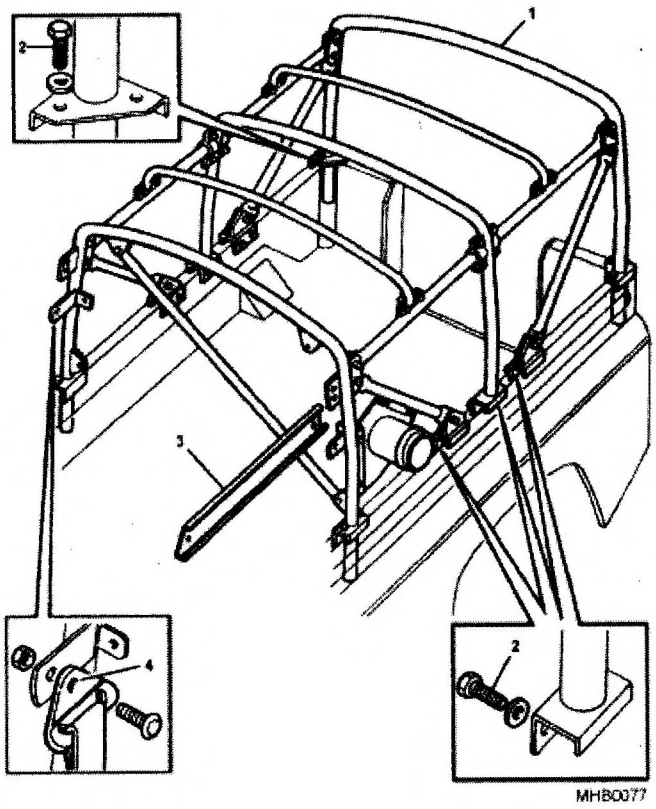
NOTE

The procedure for removing the support frame is the same for both TUL and TUM vehicles except that more fixings are used on TUM vehicles.

48 To remove the support frame proceed as follows:

48.1 Remove the hood (refer to Para 44).

48.2 Detach the drivers and passenger seat belt top fixings (Fig 17 (4)) from the brackets on the support frame.



1 Support frame
2 Bolts
3 Front support frame
4 Seat belt top fixings

Fig 17 Hood support frame

48.3 Remove the bolts (2) securing the drain channel to the front support frame (3).

48.4 Remove the nuts, bolts and washers securing the feet of the support frame to the cargo bay side rails.

CAUTION

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

48.5 Raise the support frame (1) clear of the cargo bay and remove from the vehicle.

48.6 Remove the door seals from both door frames.

48.7 Remove the bolts securing the door frame rear sections to the cargo bay side rails. Remove the top fixings to the windscreen and withdraw the door frame sections from the vehicle.

49 To refit the support frame proceed as follows:

49.1 Locate the support frame into the vehicle and secure the feet to the cargo bay sides with the respective bolts.

49.2 Fit the drain channels and secure to the support frame and to their locations above the windscreen.

49.3 Fit and secure the door frame rear sections to the support frame.

49.4 Fit the door seals ensuring that they are correctly seated.

CAUTION

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

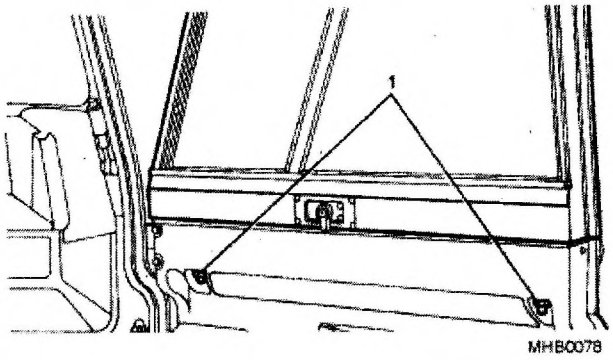
49.5 Locate the support frame onto the cargo bay side panels and secure with nuts, bolts and washers.

49.6 Connect the seat belt top fixings to their respective brackets on the front of the support frame.

49.7 Refit the hood (refer to Para 47).

UPPER DOOR FRAME

50 The removal of the upper door frame is achieved by removing the nuts and washers (Fig 18 (1)) from the studs securing the panel to the lower door and lifting the glass panel clear. Refitting is the reverse of the foregoing.



1 Nuts and washers

Fig 18 Door glass panels

VEHICLE RECOVERY

51 If the vehicle should suffer a breakdown or accident damage and it becomes necessary to make a recovery, it is essential to adhere to one of the following procedures, depending on the type of recovery to be undertaken. This is because the vehicles have permanent four wheel drive.

Towing the vehicle on four wheels.

52 To tow the vehicle on all four wheels proceed as follows:

52.1 Set the main gearbox in neutral.

52.2 Set the transfer box in neutral.

52.3 Ensure that the differential lock is in the normal "unlocked" position.

52.4 Secure the towing attachment to the vehicle.

52.5 Release the handbrake.

NOTE

Unless the engine is running, brake servo cannot be maintained. This will result in a considerable increase in pedal pressure being required to apply the brakes.

Suspended tow on two wheels.

CAUTIONS

(1) 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.

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

53 To tow the vehicle using a suspended tow method proceed as follows:

53.1 Disconnect the propeller shaft from the axle to be trailed.

53.2 The steering wheel and/or linkage must be secured in a straight ahead position. The vehicle can then be attached to the breakdown vehicle and raised.

RECOVERING WHEEL GRIP

54 Should the vehicle become immobile due to loss of wheel grip, the following points could be of value:

54.1 Avoid prolonged wheel spin; this will only make matters worse.

54.2 Try to remove obstacles rather than force the vehicle to cross them.

54.3 If the ground is very soft, reduce tyre pressures if this has not been previously done.

54.4 Clear clogged tyre treads.

54.5 Reverse as far as possible, then the momentum reached in going forward again may get the vehicle over the obstacle.

54.6 Brushwood, sacking, or any similar "mat" material placed in front of the tyres will help in producing tyre grip.

54.7 If possible, jack up the vehicle and place material under the wheels. Great care must be taken when doing this to avoid personal injury.

TOWING

55 The weight of the trailer plus load depends upon several factors when towing:

55.1 Towing stability.

55.2 Weight of the vehicle contents including passengers.

NOTE

When part of the vehicle load is transferable, loading the towing vehicle will generally improve the stability of the combination.

55.3 Engine performance is progressively reduced above altitudes of 1800 m (5905 ft).

55.4 For trailer stability (2 wheel trailers) the maximum load imposed on the vehicle tow bar (nose weight) should be 75 kg (165 lbs).

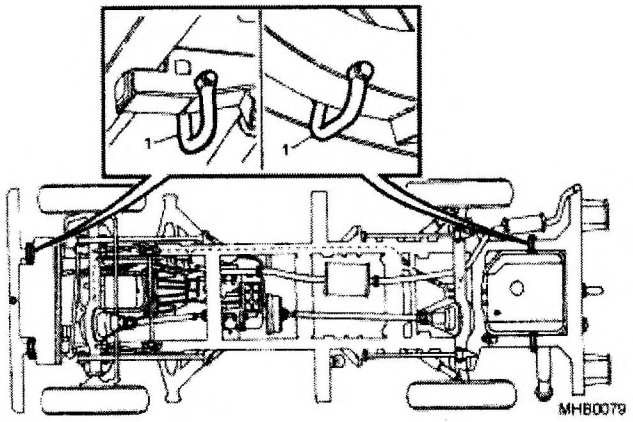
55.5 A maximum trailer weight of 1410 kg (3108 lbs) applies to both on and off road applications.

NOTE

It is the driver's responsibility to ensure that all regulations with regard to towing are complied with.

TRANSPORTING THE VEHICLE

56 Lashing rings (Fig 19 (1)) are available on the front and rear chassis members to facilitate the securing lifting and recovering of the vehicle where necessary.



1 Lashing rings

Fig 19 Lashing rings

DRIVING TECHNIQUES

57 The following information on driving techniques is provided as a guide to the operator on how to drive the vehicle over all types of terrain.

Gear ranges

58 Use high ratio for all normal driving on good roads and surfaces. The "Low" ratio can be used for cross-country and rough terrain driving, moving heavy loads or ascending steep slopes. The two ranges may be used progressively when changing up, as conditions demand.

Transfer gear changing

59 As an example of how the full progressive ranges of the gearbox may be used, consider a vehicle which is heavily laden or towing a heavy trailer and which is required to pull away from a standing start up a steep gradient. With the transfer gear in "Low" position, the vehicle will pull away in first gear and the gear changes for the first four gears can be made in the normal way with the main gear lever. When road conditions are suitable for "High" range they may be brought into operation without stopping the vehicle (refer to Para 8.2).

CAUTION

This should only be attempted when the vehicle is stationary.

60 To change from "High" (H) to "Low" (L), move the transfer gear lever from fully rearward to fully forward (refer to Para 8.1 to 8.1).

Match engine speed to the gear selected

61 Before traversing a difficult section of terrain, select the low ratio in the differential gear. Ensure the differential is locked and a suitable gear is selected, (most purposes, second or third is satisfactory).

62 Remain in this gear whilst driving and use care when applying the accelerator pedal since sudden power surges may cause a loss of traction.

63 Unlock the differential as soon as the difficult section has been passed.

Riding the clutch

64 Keep the foot away from the clutch pedal. The practice of resting the foot on the clutch pedal should be avoided. Apart from premature clutch wear, a sudden bump could cause the pedal to be pressed too far disengaging the drive, and causing the vehicle to go out of control.

Braking

65 Keep the application of the brake pedal to a minimum. Braking on wet or muddy slopes can induce sliding and loss of control.

Engine braking

66 Before descending steep slopes, first gear, low ratio with differential locked should be selected and the engine should be allowed to provide the braking. Failure to adopt this procedure may result in loss of control.

Rough rocky tracks

WARNING

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).

67 Although beaten rough tracks can be negotiated in normal drive, it is advisable to lock the differential if there is excessive suspension movement likely to induce loss of traction.

68 As the track becomes rougher and rockier, low ratio may be necessary to avoid slipping the clutch and to make the vehicle easier to control.

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Fig 20 Holding the steering wheel

Wading

69 The maximum advisable depth is 0.6 metres (23.6 in.) (Fig 21). Before wading make sure that the flywheel housing drain plug is in position.

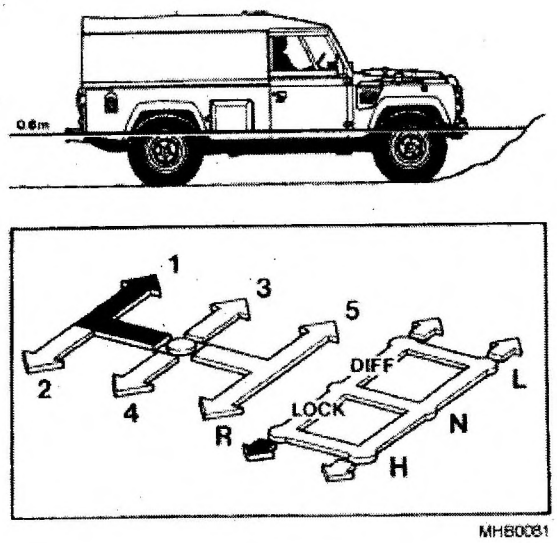


Fig 21 Wading

70 To prevent saturation of the electrical system and air intake, avoid excessive engine speed. A low gear with the differential locked is desirable and sufficient throttle should be maintained to avoid stalling if the exhaust pipe is under water. A speed of 3 mph (5 km/h) should be maintained through deep water.

CAUTION

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.

70.1 After being in water ensure that the brakes are dried out immediately so that they are fully effective when needed again. This can be accomplished by driving a short distance with the footbrake applied.

70.2 Remove the flywheel housing drain plug.

Descending steep slopes

71 Stop the vehicle at least a vehicle length before the slope and engage first gear, low ratio with differential locked (Fig 22 (A)).

71.1 Check gear engagement before moving off. Do not touch the brake or clutch during the descent, the engine will limit the speed, and the vehicle will maintain control while the front wheels are turning (B). If the vehicle begins to slide, accelerate to maintain directional stability.

71.2 When back on level ground (C) unlock the differential then change into second gear.

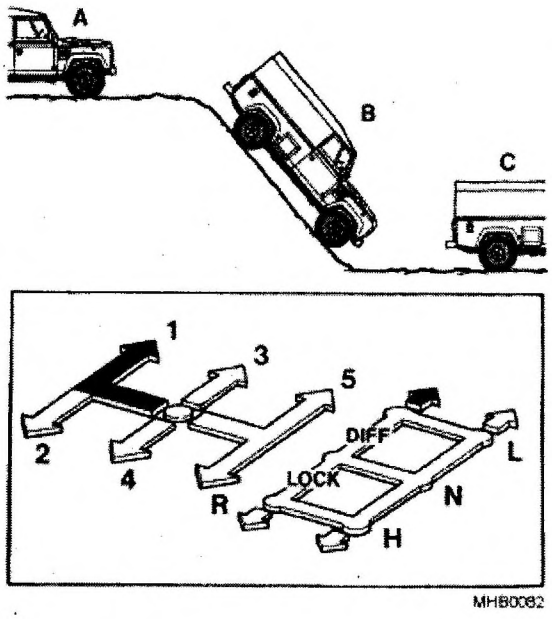


Fig 22 Descending a steep slope

Driving on soft ground

72 Where conditions are soft, such as marsh ground or sand, reduced tyre pressures will increase the contact area of the tyres with the ground. This will help to improve traction and reduce the tendency to sink. Tyre pressures should be reinflated to the standard pressures when firm ground is reached.

Ground clearance

73 Be aware of the need to maintain ground clearance under the chassis and a clear approach and departure angle. Avoid existing deep wheel ruts, sudden changes in slopes and obstacles which could interfere with the chassis.

Rutted and existing wheel tracks

74 Generally the tendency is to over steer the vehicle under these circumstances, resulting in the vehicle being driven on left or right-hand lock in ruts. This should be avoided as it produces drag at the road wheels and can be dangerous, causing the vehicle to veer off the track the moment the front wheels reach level ground or find traction.

Ice and snow

75 The driving techniques are generally the same as driving on mud or wet grass. Select the highest gear possible with the differential locked and use only sufficient engine revolutions to just move the vehicle forward without labouring. Avoid violent movements of the steering wheel and use the brakes, with care, only if necessary.

NOTE

The differential lock can now be engaged or disengaged at any speed providing the road wheels are rotating at the same speed. For example, in slippery conditions if one wheel is spinning, ease off the accelerator before engagement.

Negotiating a "V" shaped gully

76 This should be tackled with caution since steering up or down the gully walls could lead to the vehicle becoming trapped on the bank or an obstacle such as a tree or a rock (Fig 23).

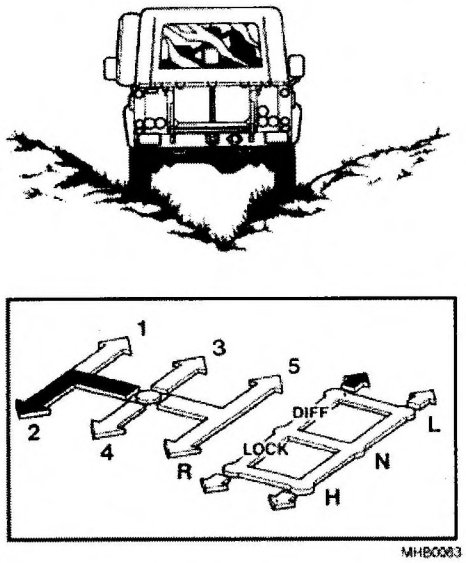


Fig 23 Negotiating a "V" shaped gully

Crossing ridges and ditches

77 When crossing ridges and ditches bear in mind the ramp break over angle and the action of the differential. Select a path so that the condition under each wheel is similar to that under the opposite wheel of the same axle. This principle should be applied both in avoiding dissimilar ground under opposite wheels and in assessing the correct angle of approach to an obstacle so as to avoid the wheels being lifted off of the ground.

77.1 When crossing over a ridge approach the ridge at right angles so that both front wheels go over together (Fig 24). If approached at any angle traction can be completely lost through diagonally opposite wheels leaving the ground.

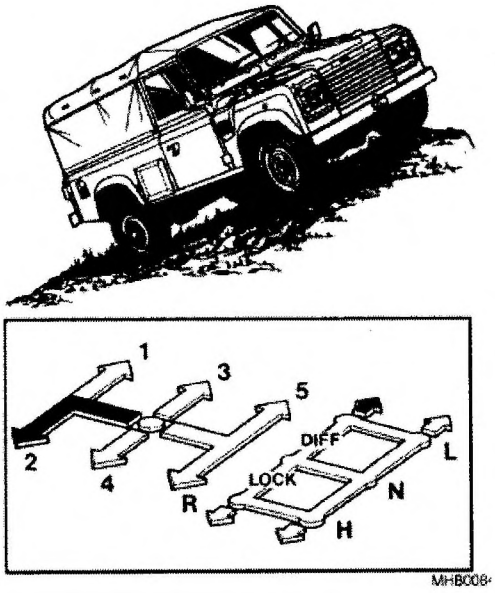


Fig 24 Crossing over a ridge

77.2 Crossing a ditch. Here the opposite to Fig 24 applies. Ditches should be crossed at an angle so that three wheels are kept in contact with the ground (Fig 25). If approached at right angles the two front wheels will drop into the ditch, effectively preventing forward or reverse motion.

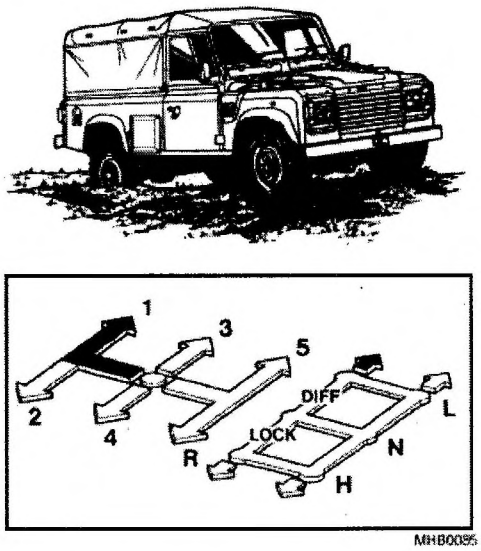


Fig 25 Crossing a ditch

Traversing slopes

78 Traversing a slope should be undertaken in the following way. Check that the ground is firm under the wheels and that it is not soft under the downhill side wheels (Fig 26). Also avoid the uppermost wheels climbing up over a rock or tree root, both of these situations could result in the vehicle rolling onto its side.

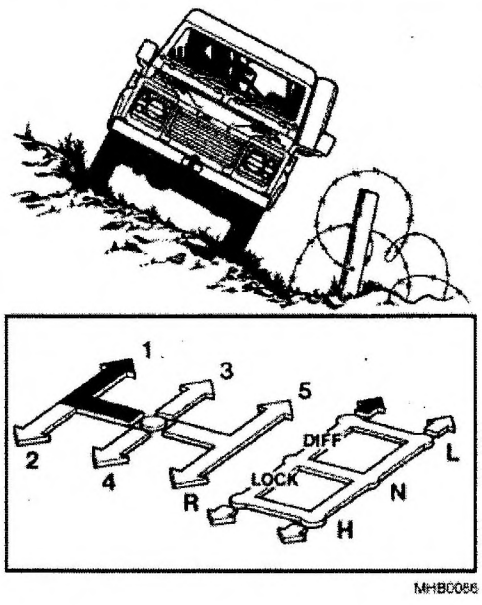


Fig 26 Traversing a slope

Climbing steep slopes

79 This will usually require the use of low range second or third gear with differential locked. Should the slope be slippery, use the highest gear that the engine can manage without labouring or stalling.

80 If the vehicle fails to climb a slope but does not stall, the following procedure should be carried out:

80.1 Hold the vehicle on the footbrake and engage reverse gear as quickly as possible.

80.2 Release the brakes and allow vehicle to reverse down the slope whilst ensuring that both feet are clear of the brake and clutch pedals. If the vehicle stalls on a slope, hold the vehicle on the footbrake, engage reverse gear and remove the feet from both clutch and brake pedals, clutch first.

80.3 Start the engine whilst in gear and allow the vehicle to reverse down the slope, using only the retardation effect of the engine for braking.

80.4 When back on level ground, or where forward traction can be regained, then a possible faster approach will overcome the inertia and the extra momentum will often enable the slope to be climbed.

Driving in soft, dry sand

81 When conditions are soft, reduced tyre pressures will increase the contact area, improve traction and reduce the tendency to sink in it.

82 Because of the drag of the sand, the instant the clutch is disengaged the vehicle will stop. If a standing start in sand or on the side of the dunes is necessary, exercise care in applying the accelerator pedal, as sudden power will induce loss of traction and cause the vehicle to dig in.

NOTE

After using vehicle in ANY off road situation always check satisfactory operation and condition of brakes, steering, tyres, lights etc. before travelling on public roads.

TYRE PRESSURES

83 Emergency soft pressure (Table 1) should only be used in extreme conditions. When emergency pressures are used a maximum speed of 25 mph (40 km/h) should not be exceeded. Pressures should be returned to normal immediately firm ground is regained.

TABLE 1 PRESSURE FOR GOODYEAR G90 TYRES

Serial (1)	Vehicle (2)	Normal (3)		Emergency Unladen (4)		Emergency Laden (5)	
		Bar	lb/in^2	Bar	lb/in^2	Bar	lb/in^2
1	TUL front wheels	2.0	28	1.1	16	1.1	16
2	TUL rear wheels	3.0	42	1.1	16	1.6	23
3	TUM front wheels	2.2	32	1.1	16	1.1	16
4	TUM rear wheels	4.3	60	1.1	16	1.6	23

REPOSITIONING SPARE WHEEL MOUNT

CAUTION

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

84 To reposition spare wheel mounting bracket proceed as follows:

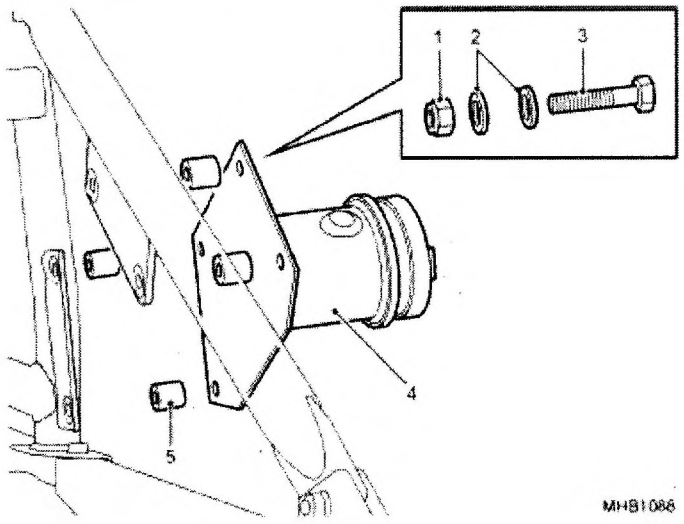
84.1 Remove the fixings securing the blanking plate to the opposite side of the vehicle.

84.2 Remove the blanking plate and gasket.

84.3 Remove the spare wheel from the spare wheel mounting bracket (refer to Chap 4-1).

84.4 Remove the bolts (Fig 27 (3)) washers (2), spacers (5) and nuts (1) securing the mounting bracket (4) to the support frame.

84.5 Hard top vehicles. Remove gasket and seal.



1 Nuts
2 Washers
3 Bolts
4 Mounting bracket
5 Spacers

Fig 27 Repositioning spare wheel mount

85 To reposition spare wheel mounting bracket to other side of vehicle proceed as follows:

85.1 Hard top vehicles. Refit gasket and seal.

85.2 Fit spare wheel mounting bracket through the gaskets and locate on support frame.

85.3 Soft top vehicles. Locate spare wheel mounting bracket on support frame.

85.4 All vehicles. Install the bolts, washers, spacers and nuts to secure the mounting bracket.

85.5 Fit the spare wheel on the spare wheel mounting bracket (refer to Chap 4-1).

85.6 Fit the blanking plate and gasket to the opposite side of vehicle and secure with fixings.

REPOSITIONING THE BOWMAN SPARE WHEEL MOUNT

CAUTION

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

86 To reposition spare wheel retaining plate proceed as follows:

86.1 Remove screw (Fig 28 (5)) from blanking plate (1) on the opposite side of the vehicle.

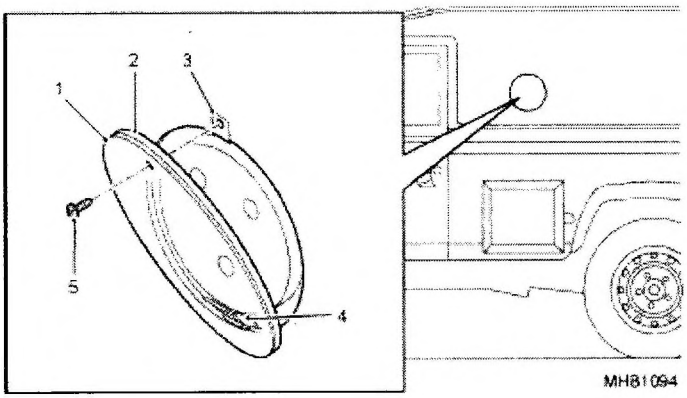
86.2 Lift top edge of blanking plate away from side of roof and unhook clip (4).

86.3 Remove blanking plate and gasket (2).

NOTE

Take care not to damage gasket.

86.4 Remove spare wheel from spare wheel mount (refer to Chap 4-1).

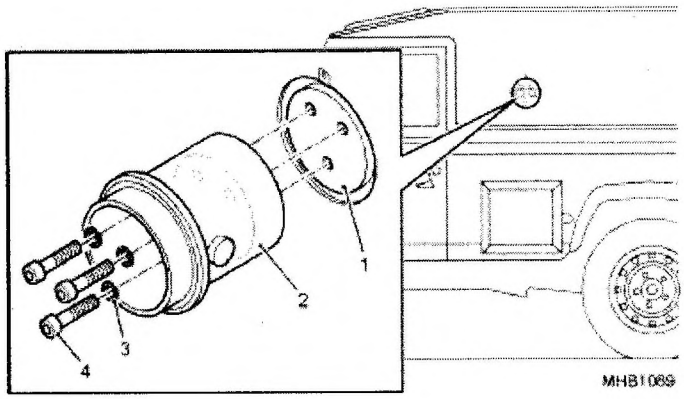


1 Blanking plate 3 Washers 5 Screw
2 Gasket 4 Clip

Fig 28 Blanking plate

86.5 Using a hex head key supplied in tool kit remove three bolts (Fig 29 (4)) and washers (3) securing spare wheel mount (2) to mounting plate (1).

86.6 Remove spare wheel mount.



1 Mounting plate
2 Spare wheel mount
3 Washers
4 Bolts

Fig 29 Repositioning Bowman spare wheel retaining plate

87 To reposition spare wheel retaining plate to other side of vehicle proceed as follows:

87.1 Hard top vehicles. Fit spare wheel mount through gaskets and over mounting plate spigot.

87.2 Soft top vehicles. Fit spare wheel mount over mounting plate spigot.

87.3 All vehicles. Install three hex head bolts and washers (4 and 3) to secure wheel mount (2). Tighten the hex head bolts (110 Nm) with the hex head key supplied in the tool kit.

87.4 Fit spare wheel on the spare wheel mounting bracket (refer to Chap 4-1).

87.5 Install blanking plate (Fig 28 (1)) and gasket (2) to opposite side of vehicle. Hook clip (4) on the blanking plate into the roof.

NOTE

Take care not to damage gasket.

87.6 Slide blanking plate into position and secure with screw when hole is aligned with spring clip (4).

NOTE

Check torque tightness of all fixings after 100 km.

REPOSITIONING LONG ARM MIRROR

CAUTION

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

88 To remove mirror assembly proceed as follows:

88.1 Open front section of door window to provide access to upper hinge internal fixings.

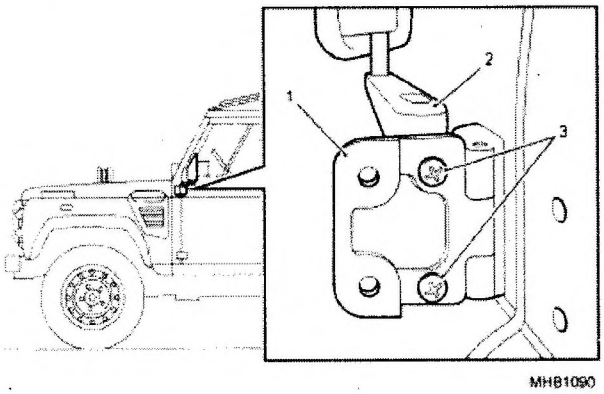
88.2 Close door to retain door and setting in aperture.

88.3 Remove 2 screws holding upper hinge to door.

88.4 Fold door hinge (Fig 30 (1)) forward and remove 2 screws (3) retaining mirror assembly (2).

88.5 Repeat with mirror on other side of vehicle.

88.6 Swap mirrors over and refit in reverse order of removal.



1 Door hinge
2 Mirror assembly
3 Screws

Fig 30 Mirror removal

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CHAPTER 3-2

FITTED FOR RADIO (FFR)

CONTENTS

INTRODUCTION

1 This Sub-Chapter describes operating instructions applicable to the Fitted For Radio (FFR) Truck Utility Light (TUL) and Truck Utility Medium (TUM) vehicles.

AUXILIARY TERMINALS

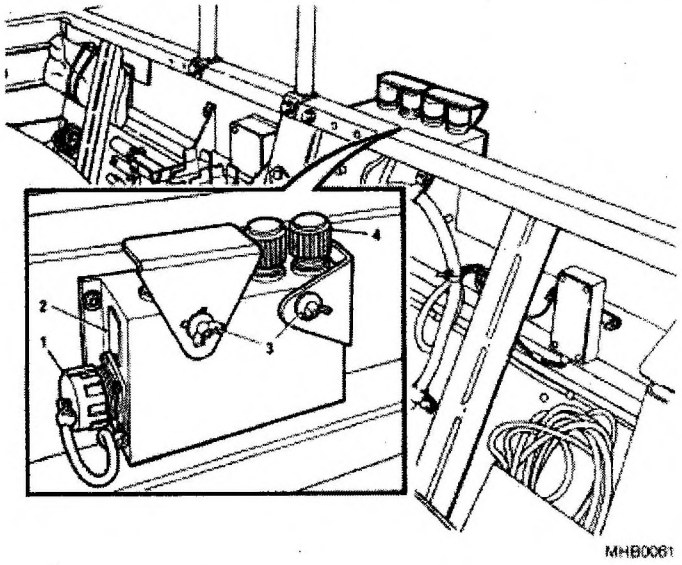
2 The terminal box (Fig 1 (2)) is attached to the bulkhead behind the left hand seat. The auxiliary terminals on the top of the box are for supplying power to the radio and auxiliary equipment, from the batteries stored under the table. The socket (1) on the side of the terminal box connects the batteries to the vehicle charging circuit and the auxiliary terminals.

To use the terminals

3 Slacken the wing nuts (3) securing the keeper plate.

4 Connect the leads to the terminals (4) ensuring the correct polarity is observed i.e. red positive and black negative.

5 Re-position the keeper plate to cover the terminals and tighten the wing nuts.



1 Socket
2 Terminal box
3 Wing nuts
4 Terminals

Fig 1 Auxiliary terminal operation