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CARRIER ARMOURED STAFF VEHICLE, FULL TRACKED, MK 2 AND 2/1 FV436 (ASV) (BOWMAN)

MAINTENANCE INSTRUCTIONS

BY COMMAND OF THE DEFENCE COUNCIL

Ministry of Defence
Issued by

DEFENCE LOGISTICS ORGANISATION

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PREFACE

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INTRODUCTION

1 Service users should forward any comments concerning this Publication through the channels prescribed in AESP 0100-P-011-013. An AESP Form 10 is provided at the end of this document; it should be photocopied and used for forwarding comments on this AESP.

2 AESPs are issued under Defence Council authority and where AESPs specify action to be taken, the AESP will itself be of sufficient authority for such action and also for the demanding of the necessary stores, subject to the provision of Para 3 below.

3 The subject matter of the Publication may be affected by Defence Council Instructions (DCIs). Standard Operating Procedures (SOPs) or by Local Regulations. When any such Instruction, Order, or regulation contradicts any portion of this Publication, they are to be taken as the overriding authority.

RELATED AND ASSOCIATED PUBLICATIONS

Related Publications

4 The Octad for the subject equipment consists of the Publications shown. All references are prefixed with the first eight digits of this Publication. The availability of the publications can be checked by reference to the relevant Group Index (refer to AESP 0100-A-001-013).

5 This publication has been produced in both hard copy and microfiche formats. Each page therefore carries a number page and a frame number.

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

* Categories/Sub-categories not published

Associated Publications

Reference	Title
AESP 0200-A-221-013	Painting of service equipment
AESP 0200-A-220-013	Preservation, Identification and Packaging of assemblies
AESP 6140-H-100-013	Secondary batteries Lead-acid
AESP 2300-A-200-Octad	Introduction to 'A' 'B' and 'C' vehicle hydraulic systems
AESP 2350-T-250-Octad	FV430 Series, Vehicles, All Marks
AESP 5800-H-280-Octad	Electronic installations for Staff Users in Carrier Full Tracked FV436 system
AESP 5800-H-281-Octad	ASV 436 Harness and installation kits
AESP 5800-H-282-Octad	ASV 436 Basic Installation
AESP 5800-H-285-412	ADCIS installation in ASV 436
AESP 5800-H-290-412	C3I ASV 436, Armoured Staff Vehicle (BATES)
AESP 5800-H-291-412	C3I installation in ASV 436 BATES Minor Access Cell
Army Code 71276	Standing orders for the safety of crews of Armoured Fighting Vehicles
Army Code 45334	INSTALLATION KIT Electronic Equipment, Basic loom and furniture kit for FV436 (ASV)
Army Code 45335	CONVERSION KIT Electronic Equipment for Armoured Staff Vehicle
Army Code 45338	INSTALLATION KIT Electronic Equipment, Radio Station, UK/VRC 322 in FV436
Army Code 45341	INSTALLATION KIT Electronic Equipment, Radio Station, UK/VRC 323 in FV436 (3rd set) (ASV)
Army Code 45342	INSTALLATION KIT Electronic Equipment Radio Station, UK/PRC 344 in FV436
Army Code 45343	INSTALLATION KIT Mast 8 metre mounting for FV432/FV436
Army Code 45345	INSTALLATION KIT Electronic Equipment, Facsimile set in (FV436/ASV)
Army Code 45346	INSTALLATION KIT Electronic Equipment combat Net Radio Interface in FV436
Army Code 45347	INSTALLATION KIT Electronic Equipment, Single Channel Radio Access in FV436
Army Code 45350	INSTALLATION KIT Electronic Equipment, for UK/TGC 401 Teleprinter on FV436
Army Code 46177	INSTALLATION KIT Electronic Equipment for TASV conversion from FV432 Mk 2 to FV436 Mk 2/2
Army Code 46441	INSTALLATION KIT Electronic Equipment for Digital Master Unit (DMU) in 'A' position in FV436 (BATES)
Army Code 46548	INSTALLATION KIT Electronic Equipment for ADCIS in ASV 436
Army Code 46596	INSTALLATION KIT Electronic Equipment Sanie in FV436 ASV (Bates Mac)
Army Code 46597	INSTALLATION KIT Electronic Equipment DED in FV436 ASV (Bates Mac)
Army Code 46839	INSTALLATION KIT Electronic Equipment UK 321 in FV436 (Bates Processing Cell)
Army Code 46840	INSTALLATION KIT Electronic Equipment Tie and MCE in FV436 (Bates Processing Cell)
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Army Code 46851	INSTALLATION KIT Electronic Equipment IKEE DMU (D) in A Position in FV436 (Bates Processing Cell)
Army Code 46873	INSTALLATION KIT Electronic Equipment IKEE DIV HQ Arty Ops in FV436 (Bates Processing Cell
Army Code 46874	INSTALLATION KIT Electronic Equipment IKEE CLANSMAN Basic Harness for FV436
Army Code 46875	INSTALLATION SET Electronic Equipment Div HQ Arty Int in FV436 (Bates Processing Cell)
Army Code 46876	INSTALLATION SET Electronic Equipment Field Regt TAC HQ in FV436 (Bates Processing Cell)
Army Code 46877	MODIFICATION KIT, Vehicular Equipment Components, Stage 3 in FV436 (Bates Processing Cell)
Army Code 46924C	BATES Minor Access Cell FV436 ASV (ARTY Plans NUC OPS & CRA)
Army Code 46950C	BATES - Processing Cell FV436 (D1 HQ Arty Ops)
Army Code 46951C	BATES - Processing Cell FV436 (DIV HQ Arty Int)
Army Code 46952C	BATES - Processing Cell FV436 (FSCC TAC HQ Arty Ops)
EMER Gen O 331	Preparation for the repair of vehicle fuel tanks and other metal containers for flammable liquid
EMER Pwr M 106	Fuel injection equipment technical handbook – Preferred repair scheme
EMER Pwr M 112/3	Fuel injection equipment CAV fuel injection pumps, types N and NN technical handbook – Technical description
EMER Pwr M 114/3	CAV Fuel injection pumps, types N and NN technical handbook – Field and Base repairs
EMER Pwr M 132	Fuel Injection equipment, CAV Governors and stop assemblies, Technical Handbook – Technical Description
EMER Pwr M 134	Fuel Injection equipment, CAV Governors and stop assemblies, Technical Handbook – Field & Base Repairs
EMER Pwr P 154/11	Panel, Distribution, No 6 Mk 1 (FV 534891) Technical Handbook – Field & Base Repairs
EMER Pwr P 324/11	Starter, No 3 Mk 1 (FV546101) & Mk 2 (FV546165) Technical Handbook – Field & Base Repairs
EMER Pwr P 424/1	Pump, fuel pressurizing, No 2 Mk 1 (FV342593) Technical Handbook – Field & Base Repairs
EMER Pwr P 454/4	Firewire control box, No 1 Mk 1 (FV494568) Technical Handbook – Field & Base Repairs
EMER Pwr S 562/1	Engines, K60, No 4, Mk 4G, Technical Handbook – Technical Description
EMER Pwr S 567/1	Engine, Rolls Royce, K60, Multi fuel technical handbook – Modification Instructions 1-29
EMER T & M A 028 Ch 56	Material Quality Assessment – Principles and Practices in REME – Inspection and Testing of Mechanical Components
EMER T & M A 028 Ch 60	Material Quality Assessment – Principles and Practices in REME – Inspection and Examination of Ball and roller bearings
EMER T & M A 028 Ch 153	Tester, Radiator and Cooling Systems
EMER T & M B 021	Operators instructions for Avometer universal
EMER Pwr W 001	Vehicles equipped with Alternators / AC Generators
EMER Pwr W 104/12	Alternator, No 1 Mk 1
EMER Pwr W 114/2	Control Panel, alternator, No 1 Mk 1
EMER Pwr W 124/2	Rectifier unit, No 1 Mk 1, (FV342588) Technical Handbook – Field & Base Repairs
EMER Wksp G 300	The cleaning, de-rusting and phosphation of iron and steel
IETP (TBA)	Bowman radio publications

ABBREVIATIONS

6 Throughout this Publication any reference to right or left is as seen from the rear of the vehicle looking forward, unless otherwise stated. Where non-standard abbreviations are used, the full meaning is written out in full the first time the subject is mentioned in the text, followed by the abbreviation in brackets.

WARNINGS

(1) PERSONNEL HAZARD. ENSURE THAT ALL LOCAL STANDING OPERATING PROCEDURES AND ALL CURRENT HEALTH AND SAFETY REGULATIONS ARE COMPLIED WITH, WHEN CARRYING OUT ANY OF THE PROCEDURES DETAILED WITHIN THIS PUBLICATION.

(2) HEAVY WEIGHT. THE POWER PACK WEIGHS 1816 kg (4000 lb). DUE CONSIDERATION MUST BE GIVEN TO THE REGULATIONS GOVERNING THE LIFTING OF HEAVY WEIGHTS WHEN MOVING THIS EQUIPMENT.

(3) HEAVY WEIGHT. THE LOUVRE ASSEMBLY WEIGHS 254 kg (560 lb)). DUE CONSIDERATION MUST BE GIVEN TO THE REGULATIONS GOVERNING THE LIFTING OF HEAVY WEIGHTS WHEN MOVING THIS EQUIPMENT.

(4) SAFETY HAZARD. DO NOT WALK OR WORK UNDER A SUSPENDED POWER PACK.

(5) HEAVY WEIGHT. THE AIR CLEANER WEIGHS APPROX 40 kg (90 lb). DUE CONSIDERATION TO THE REGULATION GOVERNING THE LIFTING OF HEAVY WEIGHTS, SHOULD BE GIVEN.

(6) HEAVY WEIGHT. THE RADIATOR WEIGHS 72 kg (160 lb). DUE CONSIDERATION TO THE REGULATION GOVERNING THE LIFTING OF HEAVY WEIGHTS SHOULD BE GIVEN.

(7) HEAVY WEIGHT. THE HEAT EXCHANGER WEIGHS 46 kg (102 lb). DUE CONSIDERATION SHOULD BE GIVEN TO THE REGULATIONS GOVERNING THE LIFTING OF HEAVY WEIGHTS.

(8) HEAVY WEIGHT. EACH SPROCKET HUB, COMPLETE WITH RINGS, WEIGHS 86 KG (190 LB). DUE CONSIDERATION SHOULD BE GIVEN TO THE REGULATIONS GOVERNING THE HANDLING OF HEAVY WEIGHTS.

(9) HEAVY WEIGHT. THE COMMANDERS CUPOLA WEIGHS 109 kg (240 lb). DUE CONSIDERATION WARNING SHOULD BE GIVEN TO THE REGULATIONS GOVERNING THE LIFTING OF HEAVY WEIGHTS.

(10) HEAVY WEIGHT. THE ROTATING RING WEIGHS 76 kg (167 lb). DUE CONSIDERATION SHOULD BE GIVEN TO THE REGULATIONS GOVERNING THE LIFTING OF HEAVY WEIGHTS

(11) ASBESTOS. THE STEERING BRAKE BANDS USED ON THIS EQUIPMENT CONTAIN ASBESTOS. NO ATTEMPT IS TO BE MADE TO WORK WITH ASBESTOS MATERIALS WITHOUT CONFORMING TO DEPARTMENTAL/UNIT INSTRUCTIONS.

(12) HEAVY WEIGHT. THE HATCH COVER WEIGHS 100 kg (220 lb). DUE CONSIDERATION SHOULD BE GIVEN TO THE REGULATIONS GOVERNING THE LIFTING OF HEAVY WEIGHTS.

(13) HEAVY WEIGHT. THE OUTER FLAP WEIGHS 49 kg (108 lb). DUE CONSIDERATION SHOULD BE GIVEN TO THE REGULATIONS GOVERNING THE LIFTING OF HEAVY WEIGHTS.

(14) PERSONNEL HAZARD. 'DO NOT' ATTEMPT TO REMOVE STRIKER HEAD FROM FIXED FIRE EXTINGUISHER CYLINDERS.

(15) PERSONNEL HAZARD. UNDER NO CIRCUMSTANCES IS THE CYLINDER CLAMP TO BE REMOVED UNTIL BOTH CONTROL CABLES HAVE BEEN DISCONNECTED.

(16) PERSONNEL HAZARD. UNDER NO CIRCUMSTANCES IS WORK ON THE CONTROL CABLE TO BE UNDERTAKEN UNTIL SECURITY OF CYLINDERS HAS BEEN CONFIRMED.

(17) HEAVY WEIGHT. THE STEERING LEVERS WEIGH 23 kg (50 lb). DUE CONSIDERATION SHOULD BE GIVEN TO THE REGULATION GOVERNING THE LIFTING OF HEAVY WEIGHTS.

(18) LETHAL VOLTAGE. THE SUPPRESSION SYSTEM OF THE FAN MOTOR INCLUDES CAPACITORS RATED AT D.C. WORKING VOLTAGES OF 150 VOLTS. THE MOTOR MUST BE ISOLATED PRIOR TO INSULATION TESTS BEING CARRIED OUT ON THE REMAINDER OF THE SYSTEM. LIMITED INSULATION TESTS ON THE MOTOR MAY BE CARRIED OUT AT UNIT LEVEL ONLY IF A 100 MEGOHMMETER IS AVAILABLE.

(19) HEALTH HAZARD. ASBESTOS. THIS EQUIPMENT/ASSEMBLY CONTAINS ASBESTOS COMPONENTS. NO ATTEMPT IS TO BE MADE TO WORK WITH ASBESTOS MATERIALS WITHOUT CONFORMING TO APPROPRIATE DEPARTMENTAL/UNIT INSTRUCTIONS.

(20) HEAVY WEIGHT. EACH BATTERY WEIGHS 80LB. DUE CONSIDERATION MUST BE GIVEN TO THE REGULATIONS GOVERNING THE LIFTING OF HEAVY WEIGHTS WHEN MOVING EQUIPMENT.

(21) ACCIDENTAL GRENADE DISCHARGE. BEFORE CARRYING OUT ANY MAINTENANCE ON THE SMOKE GRENADE DISCHARGER SYSTEM, ENSURE EACH GRENADE TUBE IS UNLOADED.

(22) HEAVY WEIGHT. EACH ALTERNATOR WEIGHS 32 kg (70lb). DUE CONSIDERATION MUST BE GIVEN TO THE REGULATIONS GOVERNING THE LIFTING OF HEAVY WEIGHTS WHEN MOVING EQUIPMENT.

(23) PERSONNEL DANGER. SHOULD IT BE NECESSARY TO TURN THE ENGINE IN ORDER TO OBSERVE THE CHAMFERED TEETH OR DOWELS IN THE GEARBOX THE FUEL PIPES BETWEEN THE FUEL PUMP AND THE INJECTORS SHOULD BE SLACKENED OFF AND OPEN TO ATMOSPHERE. THIS WILL PREVENT THE ENGINE FROM BEING INADVERTENTLY STARTED.

(24) PERSONNEL HAZARD. BEFORE USING ANY HAZARDOUS SUBSTANCE OR MATERIAL, ENSURE THAT YOU KNOW THE SAFETY AND FIRST AID INSTRUCTIONS:

(24.1) ON THE LABEL OF THE CONTAINER IT WAS SUPPIED IN.

(24.2) ON THE MATERIAL SAFETY DATA SHEEET.

(24.3) IN THE LOCAL SAFETY ORDERS AND REGULATIONS.

(25) LETHAL VOLTAGES. DANGEROUS VOLTAGES EXIST IN THIS EQUIPMENT. WHEN CARRYING OUT WORK ON ANY BOWMAN RADIO EQUIPMENT DURING FAILURE DIAGNOSTICS, REFER TO EMER MGMT S-262.

(26) FIRE HAZARD. BOWMAN EQUIPMENT MAY CAUSE FLAMMABLE SUBSTANCES TO IGNITE AT REFUELLING POINT. BOWMAN SYSTEM MUST BE TURNED TO STANDBY DURING REFUELLING.

(27) PERSONNEL INJURY. BOWMAN ANTENNAS MAY TRANSMIT AT ANY TIME. SHOULD A CREW MEMBER GRAB AN ANTENNA WHILST TRANSMITTING THEY MAY SUFFER RF BURNS. UNDER NO CIRCUMSTANCES MUST AN ANTENNA BE TOUCHED WHEN FITTED TO THE VEHICLE UNLESS EQUIPMENT IS TURNED TO STANDBY.

(28) PERSONNEL INJURY. CARE MUST BE TAKEN WHILST MOVING THE VEHICLE WITH THE ANTENNAS FITTED. TOUCHING OF OVERHEAD CABLES MAY INDUCE HIGH VOLTAGES INTO THE VEHICLE CAUSING POSSIBLE ELECTROCUTION OF CREW MEMBERS.

(29) PERSONNEL INJURY. WHEN CARRYING OUT ANY TYPE WORK ON THE FV436 (BOWMAN) VEHICLE ATTENTION MUST BE MADE TO THE VARIOUS SAFETY NOTICES WHICH ARE POSITIONED THROUGHOUT THE VEHICLE.

(30) PERSONAL INJURY. ALL USERS AND MAINTAINERS MUST PAY ATTENTION TO THE BOWMAN SAFETY NOTICES AS ISSUED BY BOWMAN LAND DIGITIZATION (BLD) TO UNITS.

CAUTIONS

(1) ELECTRICAL COMPONENT PROTECTION. Semi-conducting devices and capacitors, having a comparatively low d.c. working voltage, are included in some of the assemblies. The following precautions must therefore be taken when carrying out insulation tests with a test set, Megohmmeter. Harnesses both ends of interconnecting harnesses or cables must be disconnected. Any semi-conducting device or capacitor, which is included in the circuit of an assembly, must be isolated.

(2) FILTER PROTECTION. The fan unit of the ventilation and NBC system must not be run unless the paper element has been fitted to the filter unit, otherwise dust particles in incoming air can erode fan blades and reduce the efficiency of the equipment.

(3) ELECTRICAL PRECAUTION. Both the ventilation system and vehicle batteries are charged from the belt driven generator. If the former batteries are disconnected or removed, the positive lead MUST be secured to the insulated terminal post located on the left hand side of the hull wall in the vicinity of the batteries

(4) SEALING INSPECTION. All sealing throughout the vehicle must be maintained in a serviceable condition at all times. This is important, as efficient operation of NBC equipment will depend on good and sound sealing of the vehicle. Hull sealing should be inspected at regular intervals.

(5) OIL AND COOLANT TEMPERATURES. The maximum engine coolant temperature should not exceed 105°C (220°F). The maximum gearbox oil temperature should not exceed 122°C (250°F).

(6) EQUIPMENT DAMAGE. With the power pack removed, it is essential that the propeller shaft be removed from the gearbox output flange before running the engine. Failure to do so will result in considerable damage.

(7) EQUIPMENT DAMAGE. Before test running the power pack, check that all tools are removed, particularly from fan casing.

(8) EQUIPMENT DAMAGE. It is essential that engine coolant temperature is kept under constant observation during test running; the engine must be switched 'OFF' immediately when the coolant temperature reaches 100°C (212°F). A coolant temperature time graph, based on an ambient temperature of 18°C (65°F) with engine speed at 1500 rev/min under NO LOAD is shown in Fig 1 as a guide only.

(9) EQUIPMENT DAMAGE. The thermostat must NOT be removed from the engine for normal running, otherwise overheating, resulting in damage to the engine will occur.

(10) EQUIPMENT DAMAGE. Except in (11) below, vehicles should not be towed without first removing or disconnecting the gearbox coupling connecting main gearbox to steering unit.

(11) EQUIPMENT DAMAGE. In an emergency, vehicle may be towed up to half a mile without action as in (10) above.

(12) EQUIPMENT DAMAGE. In cases of defective steering unit where it is necessary to tow the vehicle, the drive shafts between the steering unit and final drives must be disconnected.

(13) EQUIPMENT DAMAGE. In the event of final drive failure, tracks must be removed.

(14) EQUIPMENT DAMAGE. An 'A' frame tow bar should be used and towing must not exceed 16 kph (10 mph).

(15) EQUIPMENT DAMAGE. Finger marks alone can cause the sealing surfaces to deteriorate. Avoid touching surfaces, except with clean tissue, at every stage in dismantling and assembling.

(16) EQUIPMENT DAMAGE. If this setting procedure is not adhered to either the engine will not shut down in the event of governor failure or the pump will be damaged possibly in the full speed condition.

(17) EQUIPMENT DAMAGE. The distribution panel is a sealed unit and should not be opened up at unit level. If frequent changing of the desiccator's element is found necessary the panel should be removed and sent to workshops for drying out, resealing and subsequent pressure testing.

(18) EQUIPMENT DAMAGE. Before insulation testing is carried out on the cable harness, the harness must be disconnected at each end, to prevent damage to the semi-conductor devices. Megohometer testing must not be used on any assemblies except the alternators.

(19) EQUIPMENT DAMAGE. Do not let cable ends touch or earth, feed to horn bypasses master switch, when test switch at firewire control box is operated.

(20) EQUIPMENT DAMAGE. Before insulation testing is carried out on the cable harness, the harness must be disconnected at each end, to prevent damage to the semi-conductor devices. Megohmeter testing must not be used on any assemblies except the alternators.

(21) EQUIPMENT DAMAGE. Do not disturb settings of other potentiometers in the control panel.

(22) EQUIPMENT DAMAGE. Do not let cable ends touch or earth, feed to horn bypasses master switch, when test switch at firewire control box is operated.

(23) EQUIPMENT DAMAGE. When running the power pack outside the vehicle, one man is to occupy the driver's seat to start the engine and observe the instruments; the second man is to control operations at the power pack.

(24) EQUIPMENT DAMAGE. All components must be thoroughly checked for correct functioning whilst test running the power pack. Particular attention should be given to all hose/pipe connections, since most of these will be inaccessible when the power pack is installed. Test run after any adjustments or rectifications have been made.

(25) EQUIPMENT DAMAGE. It is essential that the blower be blanked off with a clean cover plate when the air cleaner is removed. Failure to protect the blower assembly from dirt/foreign matter will result in severe damage to the blower assembly and/or engine. The cover plate, which may be of steel, wood, hardboard or any suitable material available, is to be manufactured to the required dimensions.

(26) EQUIPMENT DAMAGE. When the Pitot tube bolts have been slackened, the flange must NOT be turned, as this will cause damage to the rear governor housing and the pitot tubes. Hold flange firmly in one position with tool throughout removal procedure.

(27) EQUIPMENT DAMAGE. Personnel are to ensure that care is taken to prevent locking wire and nuts from falling inside steering unit.

(28) EQUIPMENT DAMAGE. DO NOT keep an axle arm jacked up for excessively long periods, as this will adversely affect the torsion bar.

(29) EQUIPMENT DAMAGE. The upper and lower mounting bolts are finished to close limits and are chrome surfaced on bearing diameters. Accurate alignment of holes before entering bolts is essential so as not to damage them. Additionally, smear bearing surfaces of bolts with jointing compound, H1/8030-99-220-2370 before entering them.

CHAPTER 1-0

POWER PACK ASSEMBLY – LIST OF CHAPTERS

CONTENTS

LIST OF CHAPTERS

1 This chapter is further sub-divided as follows:

Chap

1-1 Power pack
1-2 Engine
1-3 Fuel system
1-4 Cooling system
1-5 Transmission

CHAPTER 1-1

POWER PACK

CONTENTS

GENERAL

1 The power pack for the Carrier, Armoured Staff Vehicle, Full Tracked MK 2 and 2/1 FV436 (ASV) is similar to that used on the FV432 Vehicles, All Marks. Unit repairs are detailed in AESP 2350-T-251-522 Chap 1-1.

CHAPTER 1-2

ENGINE

CONTENTS

Para

GENERAL

1 The engine for the Carrier Armoured Staff Vehicle, Full Tracked MK 2 and 2/1 FV436 (ASV) is similar to that used on the FV432 Vehicles, All Marks. Unit repairs are detailed in AESP 2350 -T-251-522 Chap 1-2.

CHAPTER 1-3

FUEL SYSTEM

CONTENTS

GENERAL

1 The fuel system for the Carrier Armoured Staff Vehicle, Full Tracked MK 2 and 2/1 FV436 (ASV) is similar to that used on the FV432 Vehicles, All Marks, except for the removal of the main fuel tanks, which is detailed in this Chapter. Unit repairs for all other equipment is detailed in AESP 2350-T-251-522 Chap 1-3.

Adhesives, sealants and lubricants

2 Table 1 lists the adhesives, sealants and lubricants required to carry out the procedures detailed in this chapter.

TABLE 1 ADHESIVES, SEALANTS AND LUBRICANTS

Serial (1)	NSN/FV (2)	Mfr ID (3)	Description (4)
1	8040-99-225-0098	EC 1099	Adhesive, 1 litre

MAIN FUEL TANKS

3 The main fuel tanks are located in compartments in the LH and RH rear of the Command staff compartment. Both tanks are connected via a two-way fuel tap to a collecting tank fitted underneath the floor plates between the two tanks. To prevent the accumulation of debris, a fuel filter is fitted between the fuel filler neck and the collector/filter. The supply from both main tanks are gravity fed to a collecting tank, only one fuel gauge is necessary, this being fitted to the RH tank.

Removal

WARNINGS

(1) FIRE HAZARD. A DANGER OF FIRE ALWAYS EXISTS WHEN WORKING ON FUEL SYSTEMS WITHIN THE VEHICLE. MASTER SWITCHES ARE TO BE TURNED OFF, HATCHES OPENED TO DISPERSE FUMES, VEHICLE EARTHED TO DISCHARGE ANY STATIC ELECTRICITY, AND A SUPPLY OF COTTON WASTE AVAILABLE TO 'MOP UP' ANY SPILT FUEL.

(2) FIRE HAZARD. FIRE EXTINGUISHING EQUIPMENT MUST BE AVAILABLE AT ALL TIMES. THE FIXED FIRE EXTINGUISHING EQUIPMENT IS INOPERATIVE WHEN THE POWER PACK IS REMOVED.

(3) FIRE HAZARD. BOWMAN EQUIPMENT MAY CAUSE FLAMMABLE SUBSTANCES TO IGNITE AT REFUELLING POINT. BOWMAN SYSTEM MUST BE TURNED TO STANDBY DURING REFUELLING

(4) HEAVY WEIGHT. EACH FUEL TANK WEIGHS 46.3 KG (102 LB). DUE CONSIDERATION MUST BE GIVEN TO THE REGULATIONS GOVERNING THE LIFTING OF HEAVY WEIGHTS WHEN MOVING EQUIPMENT

NOTE

Before commencing the removal of fuel tanks ensure a container of a suitable size and material is available to drain the fuel into.

4 Turn the fuel tap ON and drain fuel through the drain valve, which is located at the bottom of the collector tank, remove the filler cap to increase the draining speed.

Right hand fuel tank

5 If the RH fuel tank is being removed:

5.1 Remove the rearmost sliding table assembly (Fig 1 (3)) and mapboard (2) as detailed in Chap 3 of this publication.

5.2 Remove the two self-tapping screws securing the rear section of the ventilation ducting to the front section.

5.3 Commencing from the rear, remove screws securing the alternate ball diffusers to the ducting, and then gently prise out each ball-diffuser.

5.4 Remove the nuts and washers from the mounting studs inside the ducting.

5.5 Lift the ducting clear and lay to one side where it cannot be damaged, otherwise difficulty will be experienced when refitting.

5.6 Disconnect the lead from the fuel gauge unit by uncoupling the plug from the cable socket in the sidewall.

5.7 Remove the fuel vent pipe completely, by disconnecting at the tank and vent valve.

5.8 Remove the bolts and lift away the tank cover plate complete with thermal sheeting.

5.9 Raise the filler cap armoured cover and remove the tank filler cap, complete with the securing chain and the neck filler (prise out the spring ring to which the cap securing chain is anchored).

5.10 Remove the bellows-type spill cap from tank neck. If the spill cap is undamaged, mark the seal, the metal flange and the hull to ensure the cap is refitted in the correct position to take up its original set.

5.11 Disconnect the fuel outlet pipes at the T-junction adjacent to the tank and at the tank outlets.

Left hand fuel tank

6 If the LH fuel tank is being removed:

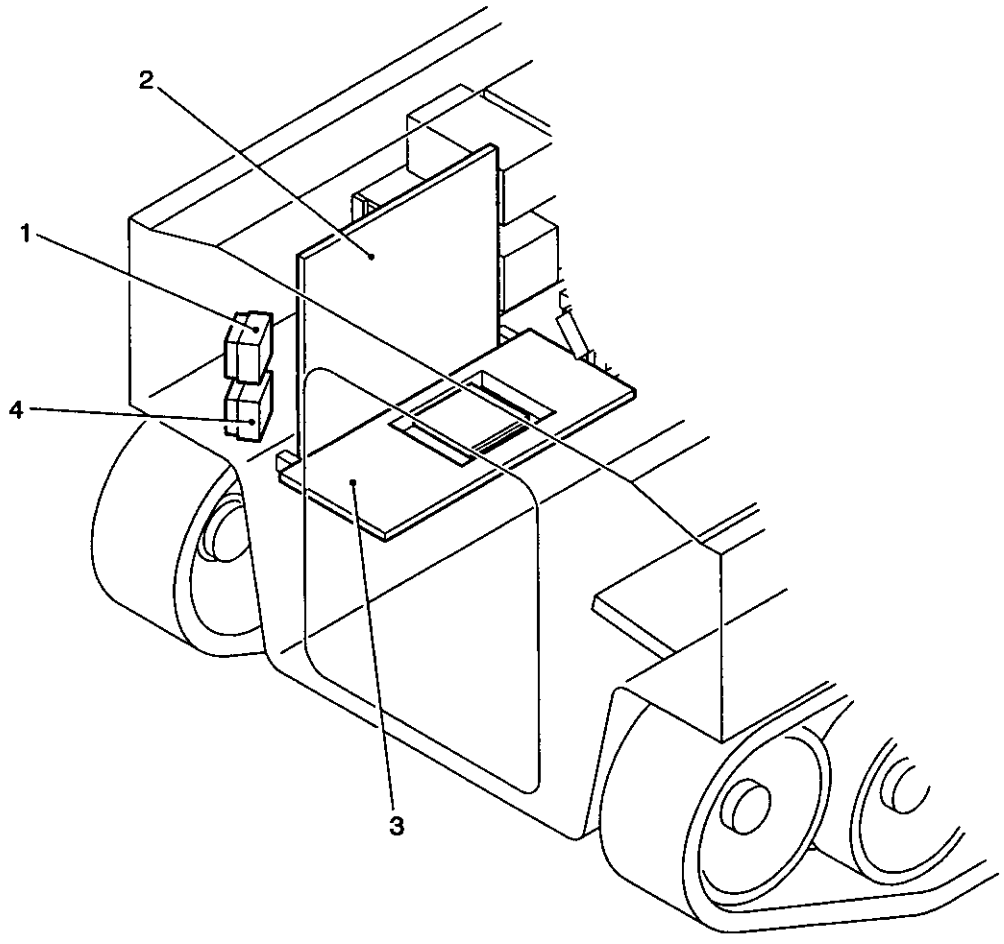
6.1 Remove the rearmost sliding table assembly (Fig 1 (3)) and mapboard (2) as detailed in Chap 3 of this publication.

6.2 Set the battery master switch to OFF.

6.3 Disconnect and remove User Control Device (UCD) (1) and Vehicle Loud Speaker (VLS) (4) as detailed in the Bowman radio EITP (TBA) and if necessary remove the combined mounting bracket. Tie back the cables so as not to catch the fuel tank on removal.

6.4 Disconnect the spill return pipes at the tank unions.

6.5 Remove the fuel vent pipe completely, by disconnecting at the tank and vent valve.



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1	User Control Device	3	Sliding table assembly
2	Mapboard	4	Vehicle Loud Speaker

Fig 1 Rear communications furniture

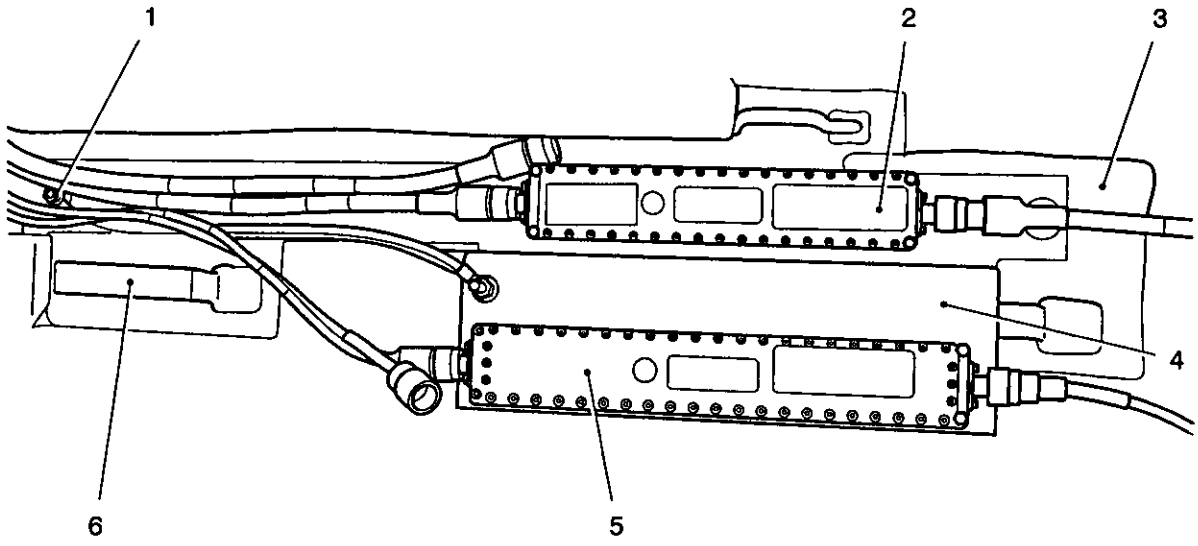
6.6 To gain access to the tank cover plate lifting handles (Fig 2 (6)):

6.6.1 Disconnect cables and remove the VHF bandpass filter (5) and high bandpass filter (2) in accordance with the Bowman radio IETP (TBA).

6.6.2 Withdraw the special nuts (1) securing the stepped filter bracket assembly (4) and remove the bracket. Tie back the cables so as not to catch the fuel tank on removal.

6.7 Remove the bolts and lift away the tank cover plate (3) complete with thermal sheeting.

6.8 Loosen the tank strap nuts and remove the two strap nut brackets.



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1	Special nut	3	Tank cover plate	5	VHF bandpass filter
2	High bandpass filter	4	Stepped filter bracket	6	Handle

Fig 2 Stepped filter bracket assembly

Fitments

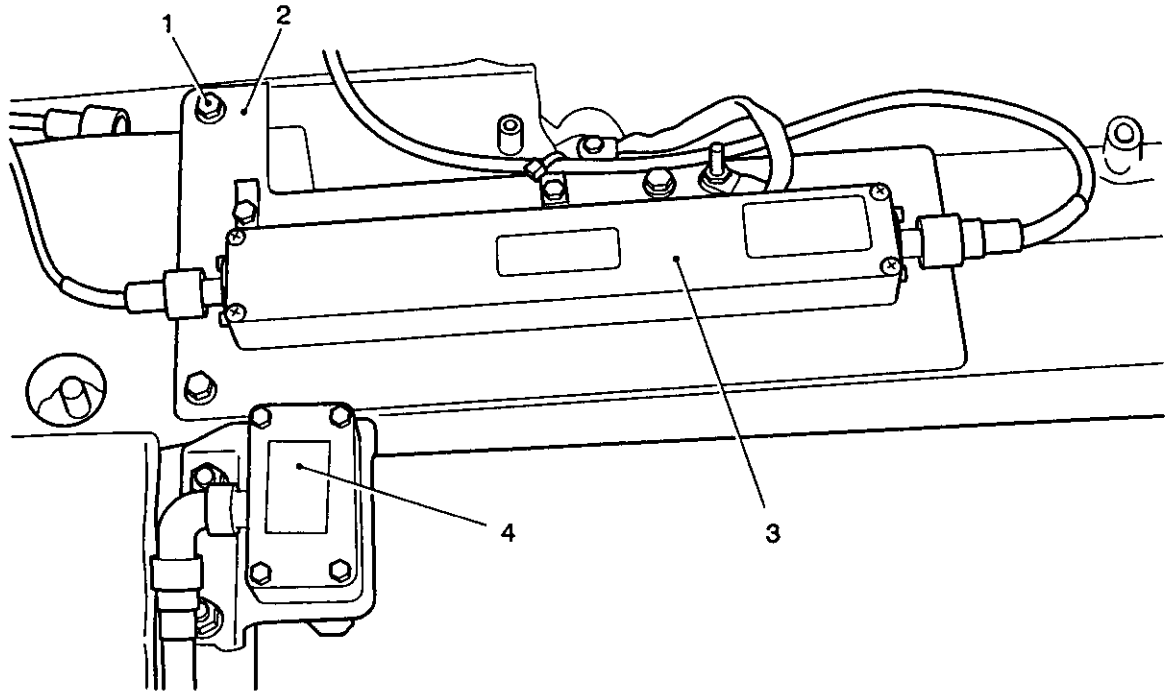
7 Before the tanks can be removed from the recess, the following electrical units must be removed as they impede the outward movement of the tanks:

7.1 Disconnect cables and remove the rear bandpass filter (Fig 3 (3)) in accordance with the Bowman radio IETP (TBA).

7.2 Remove the screws (1) securing the filter supporting bracket (2). Remove the supporting bracket. Tie back the cables so as not to catch the fuel tank on removal.

7.3 Remove the door contact and blackout switch (4) from the rear door aperature.

7.4 The tanks may now be removed from the recesses by pulling inward and tipping downward. Ensure that the tank does not foul the hull thermal sheeting. (Weight of tank 46.31 kg (102 lb)).



430/50010

1	Screws	3	Bandpass filter
2	Rear bandpass filter plate	4	Door contact and blackout switch

Fig 3 Rear band pass filter

Maintenance

8 Carry out the following maintenance:

8.1 Check the exterior of tank for signs of damage. Inspect seams and cover plates for signs of leaking. Renew the cover plate gasket, if necessary. Repairs involving the welding of seams or external fittings will NOT be carried out as a unit repair but back loaded to the supporting workshop.

8.2 Clean the filler neck filter.

8.3 Inspect the securing clamp and cables.

8.4 For removal and testing of the fuel gauge unit refer to AESP 2350-T-251-522..

Refitting

9 Refit the tank in reverse order to removing, noting the following:

9.1 The felt supports, fitted in the recess, must be in good condition. The felts that have become detached must be properly secured with adhesive (Table 1, Serial 1).

9.2 The tank recess must be thoroughly cleaned.

9.3 Ensure the fuel pipe unions are correctly tightened.

9.4 The securing straps must hold the tank firmly in position: Do not over-tighten the strap-securing nuts.

CHAPTER 1-4

COOLING SYSTEM

CONTENTS

GENERAL

1 The cooling system for the Carrier Armoured Staff Vehicle, Full Tracked MK 2 and 2/1 FV436 (ASV) is similar to that used on the FV432 Vehicles, All Marks. Unit repairs are detailed in AESP 2350-T-251-522 Chap 1-4.

CHAPTER 1-5

TRANSMISSION

CONTENTS

GENERAL

1 The transmission for the Carrier Armoured Staff Vehicle, Full Tracked MK 2 and 2/1 FV436 (ASV) is similar to that used on the FV432 Vehicles, All Marks. Unit repairs are detailed in AESP 2350-T-251-522 Chap 1-5.

CHAPTER 2-0

FINAL DRIVE, SUSPENSION AND TRACKS – LIST OF CHAPTERS

CONTENTS

LIST OF CHAPTERS

1 This chapter is further sub-divided as follows:

Chap

2-1 Final drive
2-2 Suspension and tracks

CHAPTER 2-1

FINAL DRIVE

CONTENTS

GENERAL

1 The Final Drive for the Carrier Armoured Staff Vehicle, Full Tracked MK 2 and 2/1 FV436 (ASV) is similar to that used on the FV432 Vehicles, All Marks. Unit repairs are detailed in AESP 2350-T-251-522 Chap 2-1.

CHAPTER 2-2

SUSPENSION AND TRACKS

CONTENTS

GENERAL

1 The suspension and tracks for the Carrier Armoured Staff Vehicle, Full Tracked MK 2 and 2/1 FV436 (ASV) is similar to that used on the FV432 Vehicles, All Marks. Unit repairs are detailed in AESP 2350-T-251-522 Chap 2-2.

CHAPTER 3

HULL, FITTINGS AND CONTROLS

CONTENTS

ADHESIVES, SEALANTS AND LUBRICANTS

1 Table 1 lists the adhesives, sealants and lubricants required to carry out the procedures detailed in this chapter

TABLE 1 ADHESIVES, SEALANTS AND LUBRICANTS

Serial (1)	NSN (2)	Mfr ID (3)	Description (4)
1	9150-99-220-2418	XG 279	Grease, automotive and artillery

GENERAL

2 The hull, fittings and controls for the Carrier Armoured Staff Vehicle, Full Tracked MK 2 and 2/1 FV436 (ASV) is similar to that used on the FV432 Vehicles, All Marks, except for the procedures detailed in this Chapter. Unit repairs for all other equipment is detailed in AESP 2350-T-251-522 Chap 3.

3 The following publications may be necessary to repair or remove specialist equipment.

3.1 AESP 5800-H-281-Octad ASV 436 Harness and installation kits

3.2 AESP 5800-H-282-Octad ASV 436 Basic installation.

3.3 Bowman radio IETP (TBA).

MAPBOARD

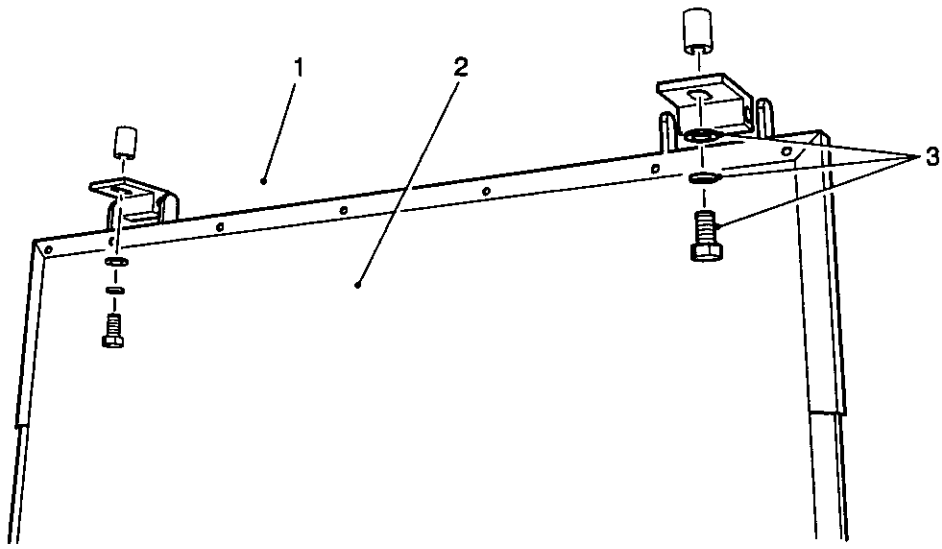
Removal

4 The procedure to remove the mapboard is as follows:

4.1 Unscrew and remove the screws and washers (Fig 1 (2)) securing the mapboard (3) to the vehicle roof (1) and lift the mapboard out of its recess in the rearmost sliding table assembly.

Refitting

5 Refitting the mapboard is the reverse of the procedure detailed for removal.



430/50018

1 Vehicle roof
2 Screws and washers (2 off)
3 Mapboard

Fig 1 Mapboard

REARMOST SLIDING TABLE ASSEMBLY

Removal

6 The procedure to remove the rearmost sliding table assembly is as follows:

6.1 Ensure the battery master switch is set to OFF.

6.2 Disconnect and remove the Bowman Management Data Terminal (BMDT) (if fitted) from its recess (Fig 2 (1)) in the sliding table assembly (2) as detailed in the Bowman radio IEPT (TBA).

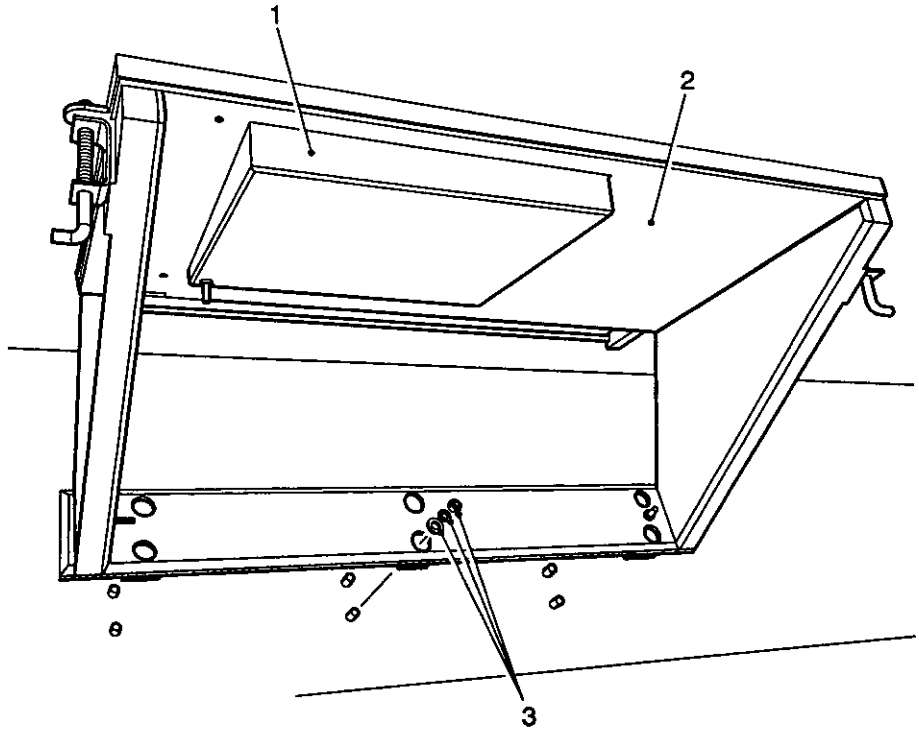
6.3 Remove the mapboard and ensure the sliding table is locked in its closed position.

6.4 Detach the earth braid from the table.

6.5 Unscrew and remove the six 1/2in. UNC nuts and washers (3) and lift out the table assembly.

Refitting

7 Refitting rearmost sliding table assembly is the reverse of the procedure detailed for removal.



430/50019

1 BMDT recess
2 Sliding table assembly
3 Nuts and washers (6 off)

Fig 2 Rearmost sliding table assembly

MORTAR HATCH

Main (outer) hinges

Removal

8 The procedure to remove the main (outer) hinges is as follows:

8.1 Ensure the command crew lighting is switched OFF. Clip the lighting fluorescent tube from the mortar hatch (Fig 3 (2)) and tie back clear of the mortar hatch opening.

8.2 Remove the mapboard and rearmost sliding table assembly.

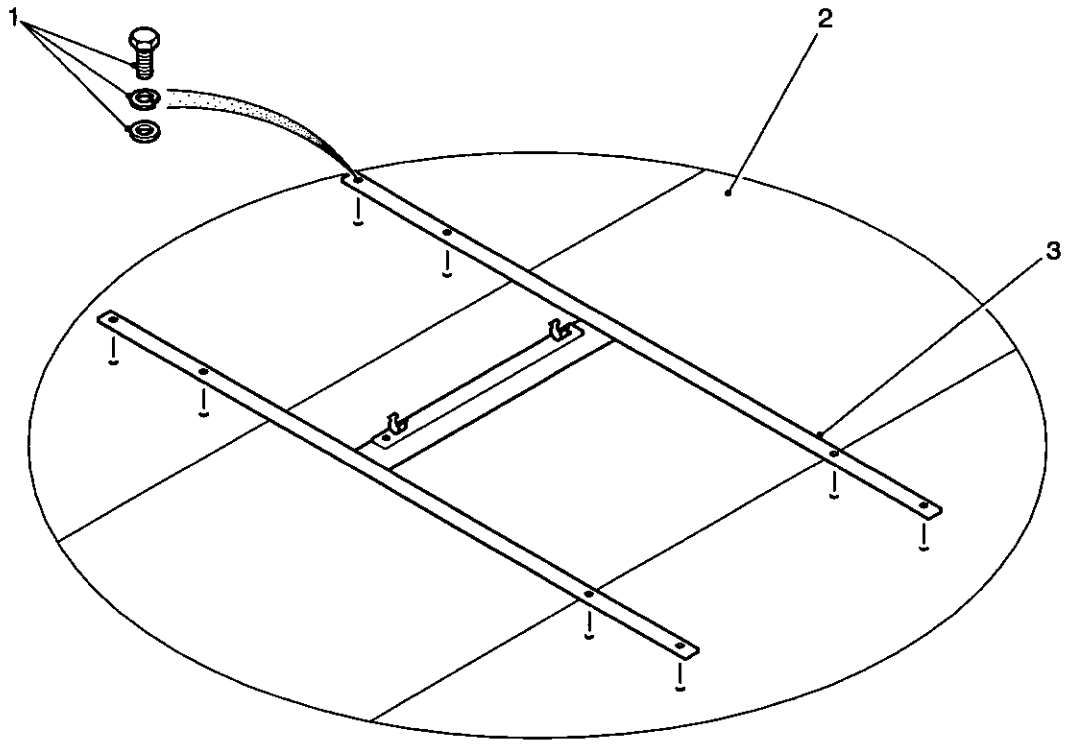
8.3 Unscrew and remove the eight 5/16 UNC screws and associated washers (1) securing the mortar hatch lighting bracket to the mortar hatch.

8.4 Fold back the inner flap and open and hold the hatch cover at 10 deg to the vertical.

8.5 Remove the bolts and lift off the anchor block plate at the centre of the hinge tube.

8.6 Remove the end plugs from the hinge tubes by removing the retaining screw and plate and levering off the end plugs.

8.7 Tap out the torsion spring from the tubes (the torsion spring consists of a number of laminated sleeves). Lower the hatch cover.



430/50020

1 Screws and washers (8 off)
2 Mortar hatch
3 Mortar hatch lighting bracket

Fig 3 Mortar hatch lighting bracket

WARNING

HEAVY WEIGHT. THE HATCH COVER WEIGHS 100 kg (220 lb). DUE CONSIDERATION SHOULD BE GIVEN TO THE REGULATIONS GOVERNING THE LIFTING OF HEAVY WEIGHTS.

8.8 If it is necessary to remove the hatch covers, remove the bolts securing the tube flanges to the anchor block and remove the tubes. Fit a sling and lift off the hatch cover

Inspection

9 Inspect the torsion spring and renew if damaged or broken.

10 Inspect the head pads and sealing rings. AESP 2350-T-251-522 Chap 3 refers to method of fitting new pads and sealing rings.

Refitting

11 Refit in reverse order to removing, ensuring that the hatch cover is held at 10 deg to the vertical when assembling.

Inner hinges

Removal

WARNING

HEAVY WEIGHT. THE OUTER FLAP WEIGHS 49 kg (108 lb). DUE CONSIDERATION SHOULD BE GIVEN TO THE REGULATIONS GOVERNING THE LIFTING OF HEAVY WEIGHTS.

12 The procedure to remove the inner hinges is as follows:

12.1 Open and hold the inner flap at 10 deg to the vertical. Remove the hinges from the outer flap cover to part the inner flap from the outer flap.

12.2 Remove the square headed end plug and tap out the torsion spring from the opposite end of the tube (torsion spring consists of a number of laminated sleeves).

Inspection

13 Renew the torsion spring if damaged or broken.

Refitting

14 Refit in reverse order to removing, ensuring that the hatch cover is held at 10 deg to the vertical when assembling.

FIXED FIRE FIGHTING EQUIPMENT

WARNING

PERSONNEL HAZARD. DO NOT ATTEMPT TO REMOVE STRIKER HEAD FROM FIXED FIRE FIGHTING EQUIPMENT CYLINDERS.

General

15 The consists of two cylinders filled Hectoflouropropane (FM 200) mounted in the personnel compartment on the personnel/power pack bulkhead. The cylinders are clamped to a delivery head from which outlet pipes are routed to the power pack compartment.

16 The fire fighting equipment can be actuated by remote cables from the driver's compartment or from the LH and RH side of the vehicle exterior. The cables are routed into a junction box where they are paired to a single cable routed to each cylinder. The cylinders can also be actuated from the personnel compartment by finger controls fitted to the striker head.

17 The cylinders are pre-charged and are fitted with test buttons, or pressure gauges, in their base. Unit repairs will consist of removing and replacing complete cylinders.

Fixed fire fighting equipment cylinders

WARNINGS

(1) PERSONNEL HAZARD. UNDER NO CIRCUMSTANCES IS THE CYLINDER CLAMP TO BE REMOVED UNTIL BOTH CONTROL CABLES HAVE BEEN DISCONNECTED AND PLUGS FITTED.

(2) PERSONNEL HAZARD. UNDER NO CIRCUMSTANCES IS WORK ON THE CONTROL CABLE TO BE UNDERTAKEN UNTIL SECURITY OF CYLINDERS HAS BEEN CONFIRMED.

Removal

18 To gain full access to the fixed fire extinguishers it is necessary to remove the following radio equipment, in accordance with the Bowman radio IETP (TBA):

REDACTED

19 With the radio equipment removed the forward radio table (6) can be unbolted from the LH sponson

NOTE

To gain better access, to the fixed fire extinguishers, the sliding table assembly (8) may also have to be removed

20 To prevent the possibility of a charged cylinder being accidentally discharged, it is essential that the following procedure be strictly adhered to:

20.1 Ensure the cylinder clamp is secure.

20.2 Disconnect the remote control cables at both cylinders.

20.3 Remove the two nuts securing the cylinder clamp (Fig 5(10)).

20.4 Lift bottle clear of manifold (12) and fit plastic plug (14) to discharge head.

20.5 Only when Para's 20.1 to 20.4 have been completed disconnect the safety cable (11) by opening its clip (15).

20.6 Lift both cylinders clear.

Fitting

21 Fit in reverse order of removal, ensuring the delivery head washer is serviceable.

21.1 Maximum clearance between cradle and saddle at pivot point, 1.5 mm (0.060 in.).

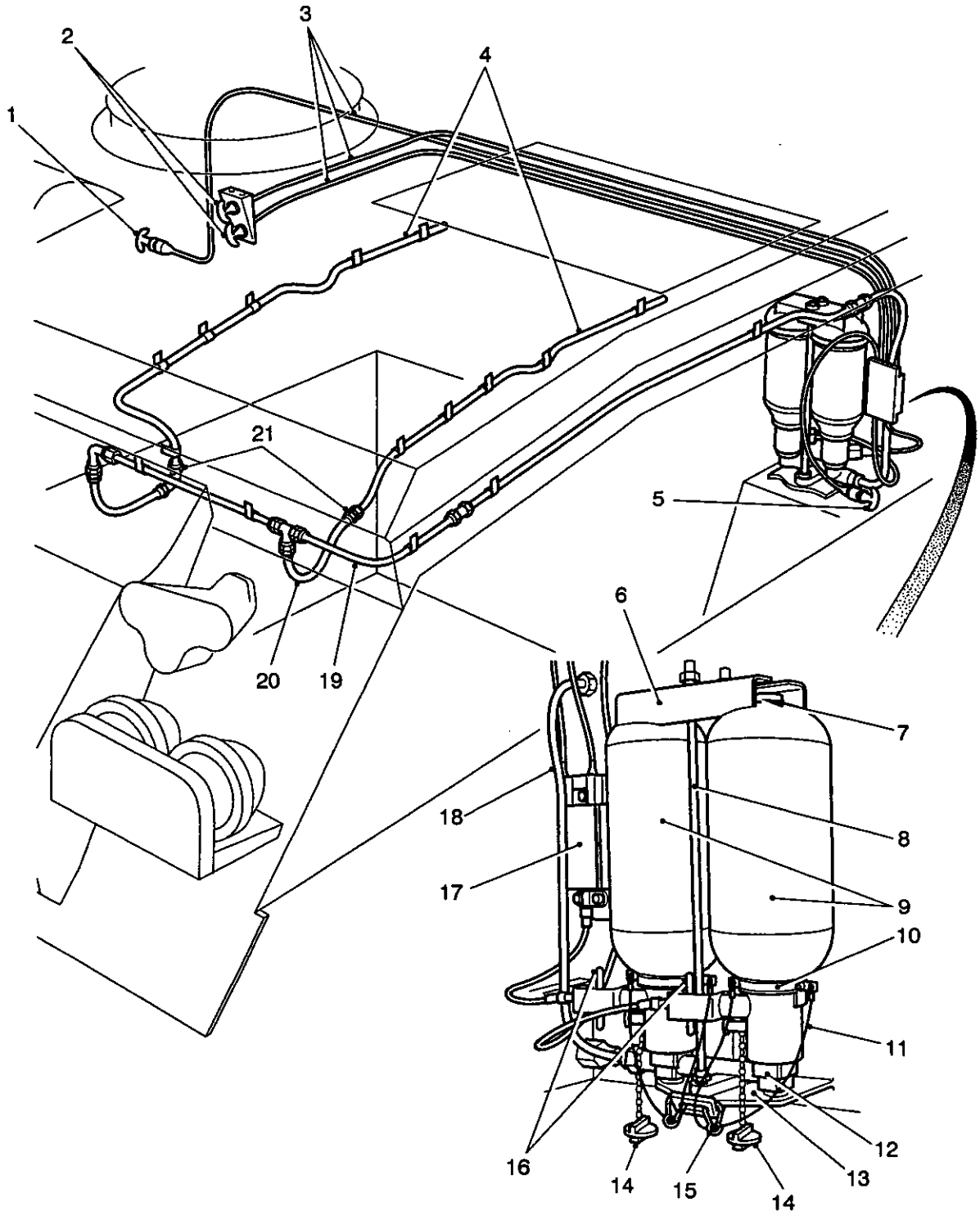
21.2 Ensure that front and rear sight clamping screws operate correctly, i.e. sights can be clamped anywhere on its length of travel.

21.3 Ensure that the travel-locking arm, fits between the cradle and cupola.

21.4 Apply grease (Table 1, Serial 1) to all untreated surfaces. 6

REDACTED

Fig 4 Radio equipment



1	Right external turn and pull handle	7	Test diaphragm or pressure gauge	14	Plastic plug
2	Driver's turn and pull handles	8	Tie bar	15	Clip
3	Bowden cable	9	BCF cylinders	16	Finger bars
4	Spray pipes	10	Clamp	17	Cables junction box
5	Left external turn and pull handle	11	Safety Cable	18	Copper tubing
		12	Manifold	19	Tubing
6	Securing plate	13	Bracket	20	Flexible hoses
				21	Disconnect points

Fig 5 Fixed fire fighting equipment

CHAPTER 4

VENTILATION CONTROL SYSTEM

CONTENTS

GENERAL

1 The Ventilation Control System for the Carrier Armoured Staff Vehicle, Full Tracked MK 2 and 2/1 FV436 (ASV) is similar to that used on the FV432 Vehicles, All Marks. Unit repairs are detailed in AESP 2350-T-251-522 Chap 4.

CHAPTER 5

ELECTRICAL SYSTEM

CONTENTS

GENERAL

1 The Electrical system for the Carrier Armoured Staff Vehicle, Full Tracked MK 2 and 2/1 FV436 (ASV) are similar to that used on FV432 Vehicles, All Marks, with the exception of specialist to role equipment (refer to Para 2). Common item unit repairs to the vehicle are detailed in AESP 2350-T-251-522 Chap 5.

2 The following publications may be necessary to repair specialist to role equipment.

2.1 AESP 5800-H-281-Octad ASV 436 Harness and installation kits

2.2 AESP 5800-H-282-Octad ASV 436 Basic installation

2.3 Bowman radio IETP (TBA).

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