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FV 430 SERIES, VEHICLES, ALL MARKS

PURPOSE AND PLANNING INFORMATION

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PURPOSE AND PLANNING INFORMATION

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PREFACE

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INTRODUCTION

1 Service users should forward any comments on this publication through the channels prescribed in AESP 0100-P-011-013. An AESP Form 10 is provided at the end of this Preliminary Material; 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 of itself be sufficient authority for such action and also for the demanding of the necessary stores, subject to the provisions of Para 3 below.

3 The subject matter of this publication may be affected by Defence Council Instructions (DCIs), Standard Operating Procedures (SOPs) or by local regulations. When any such instruction, order or regulation contradicts any portion of this publication it is 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 as follows. All references are prefixed with the Final eight digits of this publication. The availability of the publications can be checked by reference to the relevant Group Index (see AESP 0100-A-001-013).

Category/Sub-category			Information Level			
			1 User/Operator	2 Unit maintenance	3 Field maintenance	4 Base maintenance
1	0	Purpose and Planning Information	101	101	101	101
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	1	Aide-Memoire	*	*	*	*
	2	Training Aids	*	*	*	*
3		Technical Description	201	302	302	302
4	1	Installation Instructions	*	412	*	*
	2	Preparation for Special Environments	*	*	*	*
5	1	Failure Diagnosis	201	512	*	*
	2	Maintenance Instructions	201	522	523	523
	3	Inspection Standards	*	532	532	532
	4	Calibration Procedure	*	*	*	*
6		Maintenance Schedules	601	*	*	*
7	1	Illustrated Parts Catalogues	711	711	711	711
	2	Commercial Parts Lists	*	*	*	*
	3	Complete Equipment Schedule, Production	*	*	*	*
	4	Complete Equipment Schedule, Service Edition (Simple Equipment)	*	*	*	*
	5	Complete Equipment Schedule, Service Edition (Complex Equipment)	*	*	*	*
8	1	Modification Instructions	811	811	811	811
	2	General Instructions, Special Technical Instructions and Servicing Instructions	821	821	821	821
	3	Service Engineered Modification Instructions (RAF only)	*	*	*	*

* Categories/Sub-categories not published

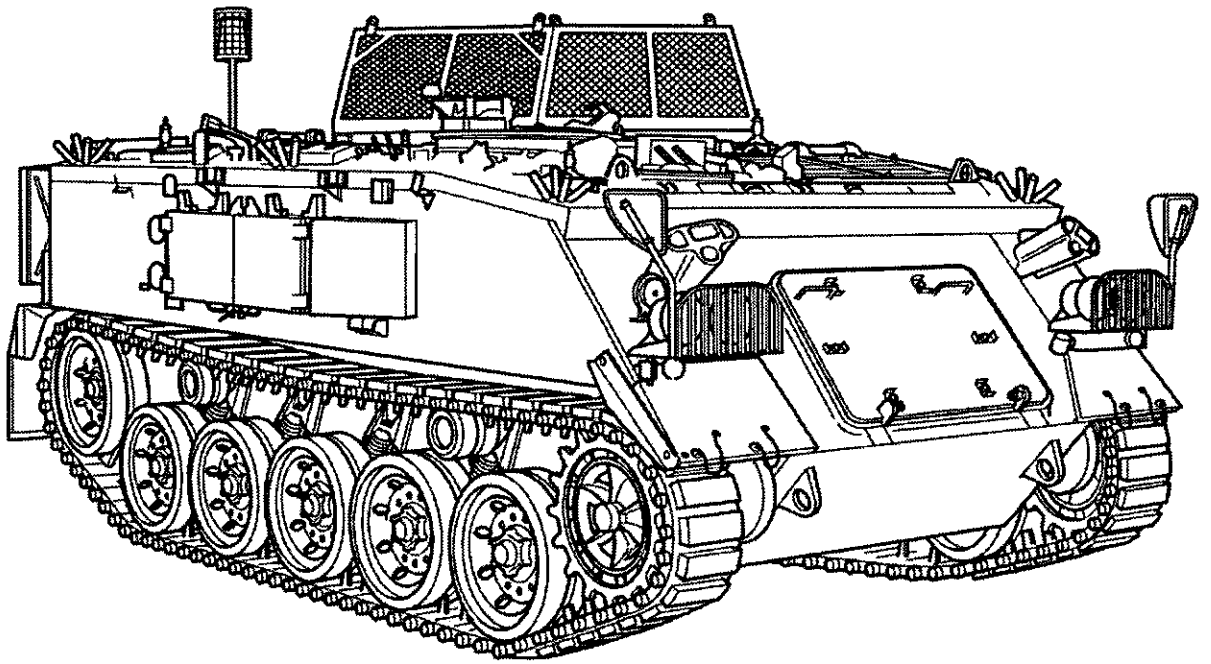
Associated publications

5 The following publications and references should be read in conjunction with this publication;

<u>Reference</u>	<u>Title</u>
AESP 2350-T-250-111	FV430 Series, Equipment Support Policy Directive

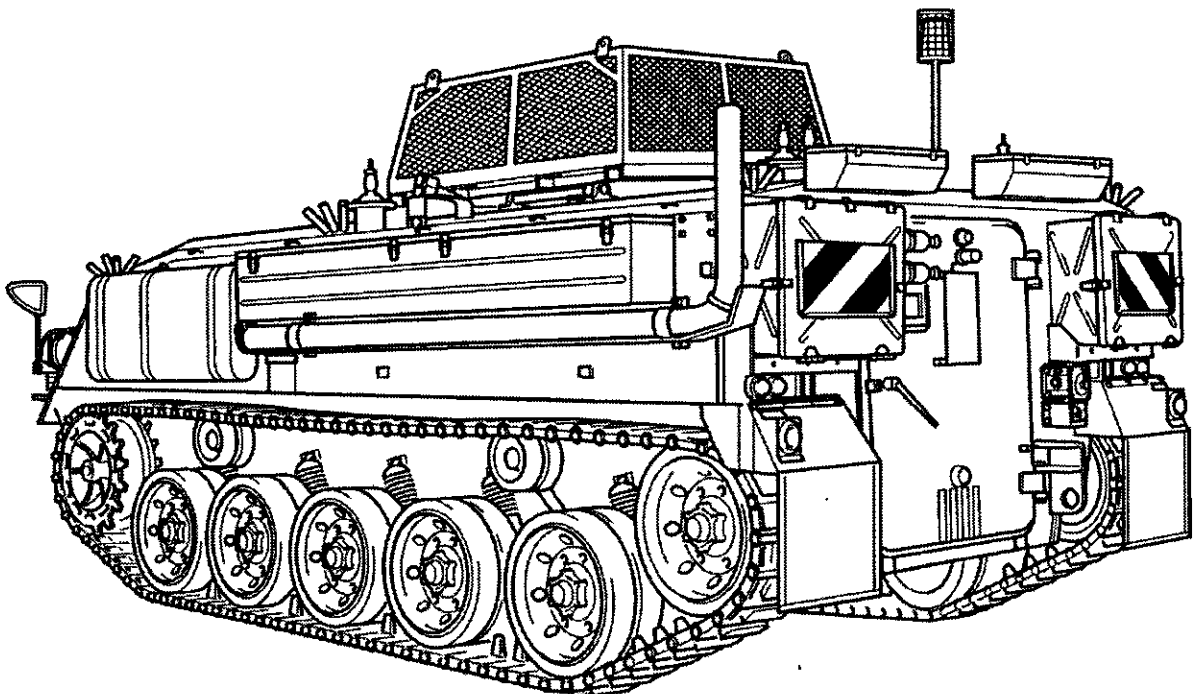
ABBREVIATIONS

6 Where non-standard abbreviations are used, the full meaning is written out the first time the subject is mentioned in text followed by the abbreviation in brackets.



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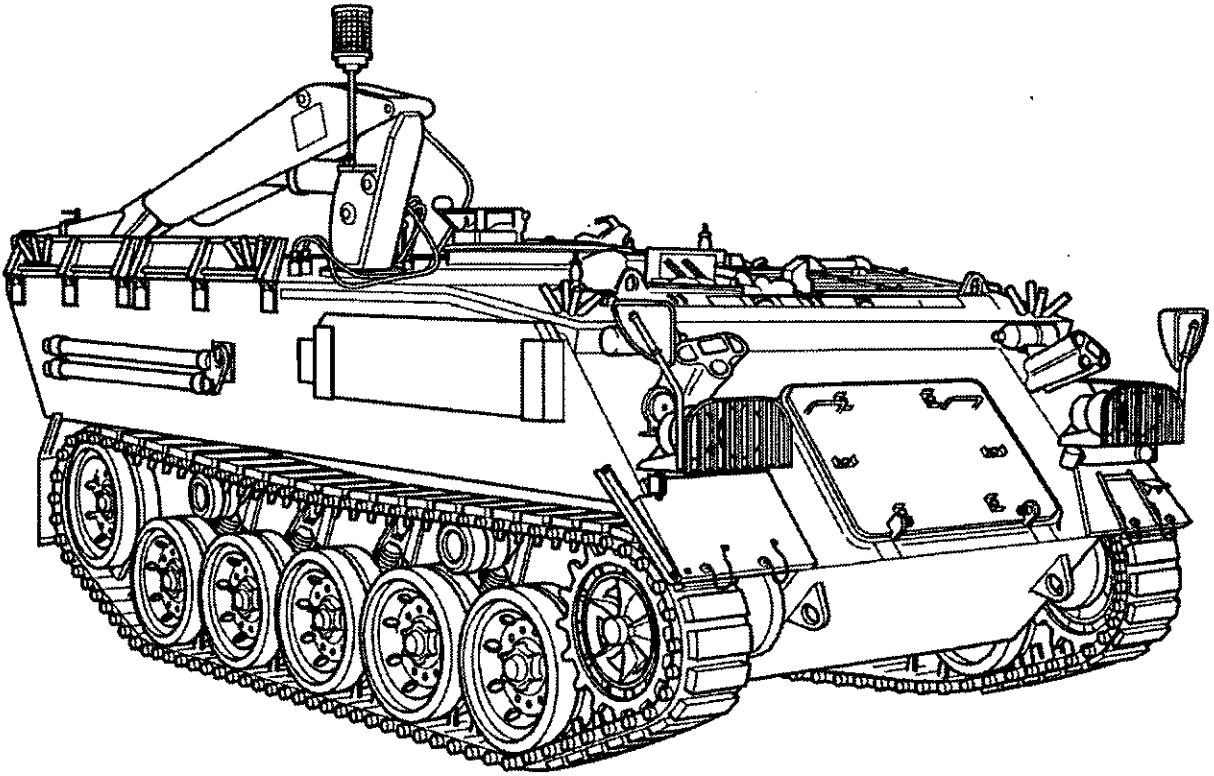
FV432 – Three-quarter front view



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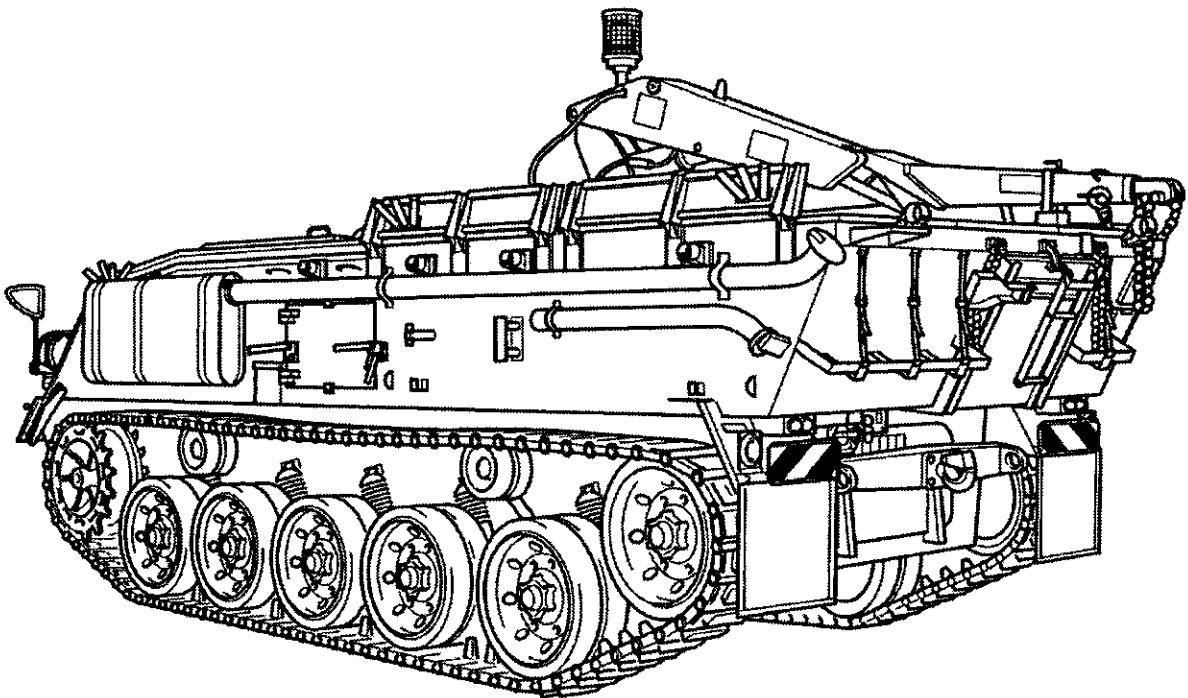
FV432 – Three-quarter rear view

Frontispiece



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FV434 – Three-quarter front view



434/002a

FV434 – Three-quarter rear view

Frontispiece

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PURPOSE AND PLANNING INFORMATION

EQUIPMENT IDENTITY

1 The FV430 series of vehicles contains the variants as detailed in Table 1.

TABLE 1: FV430 SERIES OF VEHICLES

Serial	Vehicle Designation	CES	Asset Code	NSN
1	APC FV 432 Mk 2 (EW)		GA0039 3000	2350 99 908 5507
2	APC FV 432 Mk 2 (EW) BOWMAN		GA0039 3099	
3	APC FV 432 Mk 2/1	31382	GA0040 2112	2350 99 893 2406
4	APC FV 432 Mk 2/1 BOWMAN		GA0040 3098	
5	APC FV 432 Mk 2/1 BOWMAN COMD DAUGHTER		GA0040 3094	
6	APC FV 432 Mk 2/1 BOWMAN COMD		GA0040 3096	
7	APC FV 432 Mk 2/2	31382	GA0040 3002	2350 99 893 5051
8	APC FV 432 Mk 2/2 BOWMAN		GA0040 3097	
9	APC FV 432 Mk 2/2 BOWMAN COMD DAUGHTER		GA0040 3093	
10	APC FV 432 Mk 2/2 BOWMAN COMD		GA0040 3095	
11	APC FV 432 SCRA Mk 2	31382	GA0042 3000	2350 99 893 6737
12	APC FV 432 SCRA Mk 2/1	31382	GA0042 3001	2350 99 893 6738
13	APC FV 432 BATES CLANSMAN	32076	GA0060 3000	2350 99 893 9041
14	APC FV 432 BATES BOWMAN		GA0060 3099	
15	APC FV 432 ASP		GA0060 3001	
16	APC FV 432 ASP BOWMAN		GA0060 3098	
17	FV 434 Mk 1/1	33060	GA0070 3000	2350 99 893 5782
18	FV 434 Mk 1	33060	GA0070 3001	2350 99 893 5900
19	FV 434 Mk 1 BOWMAN		GA0070 3097	
20	FV 434 Mk 1/1 BOWMAN		GA0070 3099	
21	FV 439 RR	31785	GA0735 3000	2350 99 893 6835
22	FV 439 RR BOWMAN		GA0735 3099	
23	FV 439 SAS/MC	31763	GA0736 3000	2350 99 893 6753
24	FV 439 SAS/MC BOWMAN		GA0736 3099	
25	FV 439 RR/SHF	31785	GA0738 3001	2350 99 893 7443
26	FV 439 RR/SHF BOWMAN		GA0738 3099	
27	FV 436 ASV (EW)		GA0753 3000	2350 99 893 5508
28	FV 436 ASV (EW) BOWMAN		GA0753 3099	
29	FV 436 ASV	31731	GA0754 3000	2350 99 893 6615
30	FV 436 ASV BOWMAN		GA0754 3099	
31	FV 436 BATES	32077	GA0755 3000	5820 99 893 6616
32	FV 436 BATES BOWMAN		GA0755 3099	

ROLE

2 The FV432 was designed, primarily for use in Europe, to meet the requirement for a light armoured tracked vehicle to transport ten Infantryman in full battle order and their weapons safely in battlefield conditions.

BRIEF DESCRIPTION

3 The basic FV430 series vehicle is a fully tracked personnel carrier having a welded armour steel hull of box-like construction. A power pack is mounted in the left-hand forward compartment, comprising the engine, transfer gearbox, automatic gearbox, two hydraulically operated fans, radiator and heat exchanger. The vehicle is powered by a Rolls Royce K 60 No. 4 Mk 4F or Mk 6F CI engine. Power is transmitted to the tracks through the transfer box and the six-speed GM Allison TX 200B automatic gearbox, which incorporates a torque converter, through a controlled differential type steering unit, to the final drive units. Two AC generators with DC rectification provide a 24-volt negative earth electrical system. The vehicle and ventilation batteries, connected in parallel, are charged by the front generator. The rear generator is used to charge the radio and specialist installation batteries when fitted. An electrically operated ventilation system provides a means of moving ambient air around the crew compartment.

4 There are two marks of FV430 currently in operation.

4.1 Mk 2: Overall hull width increased due to the air ventilation filter box being externally mounted (only established in Electronic Warfare (EW) units)

4.2 Mk 2/1: As Mk 2 vehicle but the air ventilation filter box is mounted inside the hull, thereby reducing the hull width. The FV439 (SAS/MC) is fitted with a NBC protection system, there is no NBC protection for the remainder of the fleet.

5 There are two basic vehicle types; the basic box bodied APC, FV432, from which the FV436 and FV 439 are derived and the FV434 repair / recovery vehicle. The standard FV432 APC can be converted to the following roles after fitment of an installation kit; 81mm Mortar, Command Post and Ambulance. The vehicle is also utilized by the Royal Artillery in the BATES role and by the Royal Engineers as a Bar mine layer.

PHYSICAL DATA6 FV432 Mk 2.

6.1	Length	-	5.2 M (17 FT 0½ in)
6.2	Width	-	2.982 M (9ft 9 in.)
6.3	Height	-	2.172 M (7ft 1½ in.)
6.4	Weight unladen		13,607 Kg (13.6 Tonnes)
6.5	Weight laden		15,104 Kg (15.1 Tonnes)
6.6	Bridge Classification		15

7 FV432 Mk 2/1

7.1	Length		5.2 M (17ft 0½ in.)
7.2	Width	-	2.87 M (9ft 5 in.)
7.3	Height	-	2.172 M (7ft 1½ in.)
7.4	Weight unladen		13,607 7Kg (13.6 Tonnes)
7.5	Weight laden		15,104 Kg (15.1Tonnes)
7.6	Bridge Classification		15

8 FV434

8.1	Length	5.88 M
8.2	Width	2.84 M
8.3	Height	2.77 M
8.4	Weight unladen	15,050 Kg (15.05 Tonnes)
8.5	Weight laden	17,800 Kg (17.80 Tonnes)
8.6	Bridge Classification	18

9 FV436 ASV

9.1	Length	5.37 M
9.2	Width	2.83 M
9.3	Height	2.83 M
9.4	Weight unladen	TBA
9.5	Weight laden	16,000 Kg (16.00 Tonnes)
9.6	Bridge Classification	17

10 FV439 SAS/MC

10.1	Length	5.18 M
10.2	Width	2.812 M
10.3	Height	2.78 M
10.4	Weight unladen	TBA
10.5	Weight laden	17,708 Kg (17.7 Tonnes)
10.6	Bridge Classification	18

11 FV439 R/R

11.1	Length	5.2 M
11.2	Width	2.87 M
11.3	Height	3 M
11.4	Weight unladen	TBA
11.5	Weight laden	17,700 Kg (17.7 Tonnes)
11.6	Bridge Classification	17

PERFORMANCE

12

12.1 Maximum road speed (see note): 52 km/h (32.5 miles/h)

12.2 [REDACTED]

12.3 [REDACTED]

12.4 [REDACTED]

12.5 [REDACTED]

12.6 Turning radius: 5.33 m (17ft 6 in)

12.7 Max gradient: 35°

12.8 Vertical obstacle, max: 609 mm (2ft 0 in)

12.9 Trench width, max: 2060 mm (6ft 9 in)

NOTE:

Speed restriction in UK – 25miles/h, Germany – 18miles/h or 30km/h

VARIANT CHARACTERISTICS

FV432 Armoured Personnel Carrier (APC) Mk 2 & 2/1

13

13.1 Under armour vision: Driver, wide-angle periscope AFV No 33 Mk 1 and L5A1 night vision periscope (CES item). Commander, 360 deg rotation cupola two outer periscopes fixed, the centre one pivoted axially in the vertical plane, periscope No 32, Mk 1.

13.2 The standard radio installation consists of Clansman radio and harness facilities UK/RT 353 with radio stations UK/PRC 320 and UK/PRC 344, provision for teleprinter and associated equipment is also included. BOWMAN is replacing Clansman and will be fitted in all variants.

13.3 Armament: GPMG fitted on the No 3 Mk 1 mount. Crew: driver, commander + 8 personnel

14 The FV432 APC is the basic variant that can be converted to other roles by fitting an installation kit, when fitted for these roles there is no asset code change.

FV432 Ambulance Role

15 Armament: GPMG fitted on the No 3 Mk 1 mount. Crew: driver, commander + 1 Medic & 4 stretchers or 1 Medic, 2 stretchers & 5 seated. BOWMAN is replacing Clansman and will be fitted in all variants.

FV432 Mortar Role

16 Armament: GPMG fitted on the No 3 Mk 1 mount. Crew: driver, commander + 2 personnel & 81mm mortar + 160 rounds. BOWMAN is replacing Clansman and will be fitted in all variants.

16.1 Mortar Monopod Assembly weight – 1480lbs / 673kg

16.2 Ammunition weight:

[REDACTED]

[REDACTED]

FV432 Command Post Role

17

17.1 Armament: GPMG fitted on the No 3 Mk 1 mount. Crew: driver, commander + 4 personnel, penthouse installation available for this role only.

17.2 BOWMAN is replacing Clansman and will be fitted in all variants. Once BOWMAN is fitted the Command Post furniture becomes a permanent fixture with it's own vehicle asset code (see page 1).

FV432 BATES (fitted with Acoustic Sounding Platform (ASP))

18 A small number of BATES vehicles have been fitted with the ASP system. Due to the weight of this system, the FV432 ASP vehicles are fitted with the FV434 Final Drive assemblies.

FV434, Carrier, Maintenance, Full tracked Mk 1 & 1/1.

19

19.1 Armament as FV432, Equipment:- 3 tonne crane. Crew: - driver, commander + 2 fitters.

19.2 Crane, HIAB, Model 6111

19.3 Crane details

Angle of slew	190 deg	(3 377mils)
Hook height	3.81m at 2.89m rad	(12ft 6in at 9ft 6in rad)
Hook height with extension fitted	6.1m at 3.96m rad	(20ft 0in at 13ft 0in rad)

19.4 Maximum lifts

Main hook	3 048kg at 2.26m rad	(6720lb at 7ft 5in rad)
	2585kg at 2.59m rad	(5700lb at 8ft 6in rad)
	2390kg at 2.98m rad	(5270lb at 9ft 6in rad)
Extension hook	1524kg at 3.2m rad	(3360lb at 10ft 6in rad)
	1247kg at 3.96m rad	(2750lb at 13ft rad)

FV436 Carrier, Personnel, Full Tracked, Mk 2 and 2/1 Armoured Staff Vehicle (ASV)

20

20.1 Based on FV432 hull, roof mounted 1.5kw or 3kw generator power supply for external charging of radio batteries. Generators can be removed from the roof using a generator hoist fitted as a modification. Common ASV FV436 radio facilities include the following: Clansman basic harness, Clansman conversion kit, Clansman 3-set control harness, Installation kits (IK) for up to three UK/VRC 353. Remoting system for UK/VRC 321. A secure remoting system for secure radio nets (UK/VRC 353'Z'), a Commander's box fixed (digital) for mobile radio working. Loudspeaker secure net monitoring system (UK/VCR 353'Z'). Tactical Intercom communications system (UK/VIC 418). Ptarmigan patching facilities. Also provision for one DEL telephone and a SCRA facility. BOWMAN is replacing Clansman and will be fitted in all variants.

20.2 Armament: - GPMG, Crew: - driver, commander + 3 staff users and 1 radio operator.

FV439 Radio Relay (RR) Station, Carrier Mounted, Full Tracked. Mk 2/1.

21

21.1 Based on FV432 hull, two 3.0kw diesel generators are roof mounted in an armoured enclosure, radio station installed: UK/TRC 471 giving PTARMIGAN/TRIFFID communications or Super High Frequency (SHF) radio relay. BOWMAN is replacing Clansman and will be fitted in all variants.

21.2 Armament: GPMG fitted on the No 3 Mk 1 mount. Crew: - driver, commander + 2 personnel.

FV439 Secondary Access Switch/Message Centre (SAS/MC), Full Tracked. Mk 2/1

22

22.1 Based on FV432 hull, two roof mounted 3.0kw diesel generators, Ptarmigan access / civilian telephone link. When converted to BOWMAN, the system becomes known as the BOWMAN Gateway Interface (Tracked) (BGI(T))

22.2 Armament: GPMG fitted on the No 3 Mk 1 mount. Crew: - driver, commander + 2 personnel.

PLANNING DATA

23 Planned life. The equipment was introduced into service during 1962 with a planned life of 30 years. This period has been extended to meet with FCLV and FRES ISD dates. FCLV is due into service in 2007 but is only expected to replace a small handful of FV430 vehicles. FRES is currently planned to enter service in 2011 to replace the majority of the FV430 fleet. The FV430 OSD is currently 2015.

24 Production programme. The production programme of vehicles is complete.

25 Planned utilization. The planned utilisation is shown in the following table.

TABLE 2-PLANNED UTILIZATION

LOCATION	432 Mk2/1	432 EW	432 BATES	434 Mk1/1	436 ASV	436 EW	436 BATES	439 RR	439 SAS/MC	TOTAL
UK	403	21	76	85	101	4	11	14	12	754
GERMANY	399	0	34	75	107	0	9	10	10	644
ATRA	44	0	4	5	1	0	0	0	0	54
BATUS	54	0	4	7	0	0	0	0	0	65
TOTAL	900	21	118	172	209	4	20	24	22	1490

26 Mean Variance Between Repair (MVBR). The MVBR for major assemblies and running gear are as follows: -

- 26.1 Engine K60 Mk 6F - NSN 2815-99-808-1275 is 3637 km
- 26.2 Steering Gearbox - NSN 2530-99-865-3847 is 4251 km
- 26.3 Gearbox TX200-4B - NSN 2520-99-867-0403 is 6046 km
- 26.4 Final Drive - NSN 2520-99-808-0563 is 44000 km
- 26.5 Track - NSN 2530-99-838-4922 is 317 km
- 26.6 Road Wheel - NSN 2530-99-865-6129 is 629 km

27 Availability. The required availability of serviceable equipment is:

27.1 At any time. - 70%.

27.2 After a warning period of 24 hours. - 80%.

REVIEW OF PURPOSE AND PLANNING INFORMATION

28 The details set out in this planning document are based on existing and planned deployments intended roles and experience of utilisation and reliability. The composition and deployment of the FV430 series fleet will be subject to much change over the coming years. Therefore, this document will be reviewed on an annual basis and amended as required.

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