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CARRIER PERSONNEL FULL TRACKED FV432 MK 2 & 2/1 (BOWMAN)

INSPECTION STANDARDS

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PREFACE

Sponsor: LASS IPT DLO Andover
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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 of itself be 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 this publication may be affected by Defence Instructions and Notices (DIN's), 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. 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 (see AESP 0100-A-001-013).

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

| 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 |
| | 1 | Equipment Support Policy Directives | 111 | 111 | 111 | 111 |
| 2 | 0 | Operating Information | 201 | 201 | 201 | 201 |
| | 1 | Aide Memoire | * | * | * | * |
| | 2 | Training Aids | * | * | * | * |
| 3 | | Technical Description | 302 | 302 | 302 | 302 |
| 4 | 1 | Installation Instructions | 412 | 412 | 412 | 412 |
| | 2 | Preparation for Special Environments | * | * | * | * |
| 5 | 1 | Failure Diagnosis | * | * | | * |
| | 2 | Maintenance Instructions | * | 522 | 523 | * |
| | 3 | Inspection Standards | * | * | 533 | * |
| | 4 | Calibration Standards | * | * | * | * |
| 6 | | Maintenance Schedules (Army) | 601 | 601 | 601 | 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) | 741 | 741 | 741 | 741 |
| | 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 |

* Categories/Sub-categories not published

Associated publications

| <u>Reference</u> | <u>Title</u> |
|-------------------------|------------------------------------|
| DCI (Army) 41/68 | Classification of A Vehicles |
| EMER Pwr N 025 | Testing of antifreeze mixture |
| 033/41 | ETS |
| EMER Mgmt O 028 | |
| EMER Whld Vehicles A028 | |
| FV432 | |
| 2350-T-251-101 | Equipment Support Policy Directive |
| 2350-T-251-201 | Operating Information |
| 2350-T-251-302 | Technical Description |
| 2350-T-251-522 | Maintenance Instructions |
| 2350-T-251-523 | Maintenance Instructions |
| 2350-T-251-601 | Maintenance Schedule |
| 2350-T-251-711 | Illustrated Parts Catalogue |
| 2350-T-251-741 | CES |
| 2350-T-251-811 | Modification Instructions |
| 2350-T-251-821 | General Instructions |

ABBREVIATIONS

6 Throughout this Publication, any reference to right or left is seen as from the rear of the vehicle looking forward, unless otherwise stated. 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.

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) **PERSONNEL HAZARD. BEFORE COMMENCING ANY REPAIR TO A VEHICLE, ENSURE THAT BATTERY MASTER SWITCHES AND FUEL COCK ARE TURNED TO OFF POSITION. ALSO, ENSURE THAT THE VEHICLE IS SECURELY CHOCKED TO PREVENT MOVEMENT.**
- (3) **FIRE HAZARD. DANGER OF FIRE ALWAYS EXISTS WHEN WORKING ON FUEL SYSTEM WITHIN VEHICLE. BATTERY MASTER SWITCHES AND FUEL COCK MUST BE TURNED OFF; DOORS AND HATCHES MUST BE OPENED TO DISPERSE FUMES THAT MAY ARISE; FIRE EXTINGUISHING EQUIPMENT MUST BE TO HAND. WHEN REFUELLING OR DRAINING, THE WARNING GIVEN IN THE USER HANDBOOK, MUST BE OBSERVED.**
- (4) **FIRE HAZARD. DUE TO THE EXTREME HEAT FROM EXHAUST MANIFOLD AND CONSEQUENT FIRE RISK, IT IS ESSENTIAL, WHEN HYDRAULIC CONNECTIONS ARE BROKEN TO REMOVE PIPES OR COMPONENTS, THAT OIL SPILLAGE IS KEPT TO A MINIMUM. ANY SPILLED OIL MUST BE CLEANED UP IMMEDIATELY AND NOT ALLOWED TO ACCUMULATE ON OR AROUND THE ENGINE.**
- (5) **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.**
- (6) **HEAVY WEIGHT. THE SUPERSTRUCTURE WEIGHS 408 kg (900 lb). DUE CONSIDERATION MUST BE GIVEN TO THE REGULATIONS GOVERNING THE LIFTING OF HEAVY WEIGHTS WHEN MOVING THIS EQUIPMENT.**
- (7) **PERSONNEL HAZARD. OIL WILL BE EXTREMELY HOT, REMOVE DRAIN PLUG AND FILTER WITH CARE.**

- (8) **PERSONNEL HAZARD. OIL WILL BE EXTREMELY HOT. ENSURE ALL OIL IS DRAINED BEFORE ATTEMPTING TO REPLACE DRAIN PLUG.**
- (9) **ASBESTOS HEALTH HAZARD. THIS EQUIPMENT CONTAINS ASBESTOS COMPONENTS. NO ATTEMPT IS TO BE MADE TO WORK WITH ASBESTOS MATERIALS WITHOUT CONFORMING TO APPROPRIATE DEPARTMENTAL/UNIT INSTRUCTIONS.**
- (10) **SAFETY HAZARD. BEFORE ANY REPAIR IS CARRIED OUT TO A FUEL TANK, OBSERVE SAFETY PRECAUTIONS DETAILED IN EMER GEN 0 331.**
- (11) **PERSONAL HAZARD. AFTER ANY REPAIRS OR REPLACEMENTS TO HEAT EXCHANGER, COOLANT SIDE OF ASSEMBLY MUST BE PRESSURE TESTED. WHEN THE OIL COOLER HAS BEEN REPAIRED, THE OIL COOLER IS ALSO TO BE PRESSURE TESTED.**
- (12) **PHYSICAL INJURY. WHEN CARRYING OUT A CONVERTOR STALL TEST, VEHICLE MUST BE POSITIVELY PREVENTED FROM MOVING.**
- (13) **PHYSICAL INJURY. APPLY BOTH STEERING BRAKE LEVERS AND ENGAGE PARKING CONTROLS; 'CHOCK' VEHICLE TO PREVENT MOVEMENT FORWARD OR IN REVERSE.**
- (14) **PERSONNEL INJURY. THE SPRING FORCE WITHIN FRICTION TYPE SHOCK ABSORBER CAUSES THE SHOES TO EXERT CONSIDERABLE RADIAL PRESSURE. WHEN ASSEMBLY IS BEING DISMANTLED OR ASSEMBLED, SPECIAL TOOL FV559632 MUST BE USED. ANY ATTEMPT TO DISMANTLE BY OTHER MEANS MAY RESULT IN INJURY TO PERSONNEL, AS THE SHOES WILL TEND TO FLY OUTWARDS AS THEY CLEAR THE CYLINDER.**
- (15) **PERSONAL INJURY. DURING THIS OPERATION, SHOES MUST NOT PROTRUDE PAST OPEN END OF CYLINDER, AS TOOL RETAINING SLEEVE IS NOT BEING USED.**
- (16) **COSHH HAZARD. HARDENER SHOULD NOT BE ALLOWED TO TOUCH SKIN. PERSONNEL PREPARING MIXTURE SHOULD APPLY INDUSTRIAL PROPHYLACTIC OINTMENT TO HANDS AND WEAR RUBBER GLOVES. ANY TRACE OF HARDENER ON SKIN SHOULD BE REMOVED IMMEDIATELY WITH WARM SOAPY WATER.**
- (17) **PERSONNEL HAZARD. BEFORE USING ANY HAZARDOUS SUBSTANCE OR MATERIAL, ENSURE THAT YOU KNOW THE SAFETY AND FIRST AID INSTRUCTIONS:**
 - (17.1) **ON THE LABEL OF THE CONTAINER IT WAS SUPPLIED IN.**
 - (17.2) **ON THE MATERIAL SAFETY DATA SHEET.**
 - (17.3) **IN THE LOCAL SAFETY ORDERS AND REGULATIONS.**
- (18) **HEAVY WEIGHT. THE TRANSFER GEARBOX WEIGHS 70 kg (154 lb). DUE CONSIDERATION MUST BE GIVEN TO THE REGULATIONS GOVERNING THE LIFTING OF HEAVY WEIGHTS WHEN MOVING THIS EQUIPMENT.**
- (19) **HEAVY WEIGHT. THE FINAL DRIVE WEIGHS 136.2 kg (300 lb). DUE CONSIDERATION MUST BE GIVEN TO THE REGULATIONS GOVERNING THE LIFTING OF HEAVY WEIGHTS WHEN MOVING THIS EQUIPMENT.**
- (20) **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**
- (21) **FIRE HAZARD. BOWMAN EQUIPMENT MAY CAUSE FLAMMABLE SUBSTANCES TO IGNITE AT REFUELLING POINT. BOWMAN SYSTEM MUST BE TURNED TO STANDBY DURING REFUELLING**

(22) 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.

(23) 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.

(24) PERSONNEL INJURY. WHEN CARRYING OUT ANY TYPE WORK ON THE FV432 (BOWMAN) VEHICLE ATTENTION MUST BE MADE TO THE VARIOUS SAFETY NOTICES WHICH ARE POSITIONED THROUGHOUT THE VEHICLE.

(25) 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) EQUIPMENT DAMAGE. A vehicle with a disabled engine should not be towed without first removing or disconnecting the gearbox coupling connecting the main gearbox to the steering unit. Unless this is done, moving parts of the main gearbox will be running at high speed with only a limited supply of oil from the rear oil pump (front oil pump will be inoperative). In these conditions, there is a definite risk of the gearbox overheating and seizing. In an emergency, vehicle may be towed FORWARD, for up to half a mile, without serious risk of damage, but in no circumstances must vehicle be towed in reverse. This is because the rear oil pump operation is non-reversible and only operates when the vehicle moves forward.

(2) EQUIPMENT DAMAGE. If steering unit trouble occurs and it is necessary to tow the vehicle, the drive shafts between the steering unit and final drives must be disconnected. In the event of a final drive failure, tracks must be removed.

(3) EQUIPMENT DAMAGE. An A-frame towing bar should be used and towing speed should not exceed 10 mph.

(4) EQUIPMENT DAMAGE. Oil temperature must not exceed 66 deg C (150 deg F) during scavenge operation. If an oil temperature gauge is not fitted the 'stalled' condition must not be maintained longer than thirty seconds due to rapid heating of gearbox oil.

(5) EQUIPMENT DAMAGE. Engine oil tank and pipes and heat exchangers (AESP 2350-T-251-522) must be cleaned before fitting replacement engine.

(6) EQUIPMENT DAMAGE. It is imperative that water is not allowed to penetrate the oil side of the heat exchanger and extra care should be taken during this test.

(7) EQUIPMENT DAMAGE. It is very important that all traces of detergent solution are completely removed, otherwise aerating will occur in the oil.

(8) EQUIPMENT DAMAGE. Do not probe tubes to remove obstruction as this may render heat exchanger unserviceable.

(9) EQUIPMENT DAMAGE. Do not tap control plate seat on end of cylinder barrel. This seat is a lapped fit to control plate and care must be taken, while removing and subsequently during overhaul, to avoid damage to either component.

(10) EQUIPMENT DAMAGE. Do not use a centre punch or other similar tool that will distort the components.

- (11) EQUIPMENT DAMAGE.** Retaining plate, which secures pistons to rear face of carrier, must not, in any circumstances, be subjected to impact. Bearings should not be fitted to shaft while retaining plate and piston carrier is held rigidly.
- (12) EQUIPMENT DAMAGE.** Do not remove bush unless necessary, as damage may occur during removal, necessitating renewal of the bush.
- (13) EQUIPMENT DAMAGE.** Transfer tubes will be damaged if transfer gearbox is not supported until casing clears tubes.
- (14) EQUIPMENT DAMAGE.** Oil remaining in gearbox will be a mixture of preservative oil and engine oil. Temperature must not be allowed to exceed 66 deg C (150 deg F) during scavenging operations described in Para 71. Stalled condition must not be maintained in excess of twenty seconds, otherwise over heating of gearbox will occur.
- (15) EQUIPMENT DAMAGE.** Do not maintain stalled condition for longer than thirty seconds due to rapid heating of gearbox.
- (16) EQUIPMENT DAMAGE.** With gearbox in neutral, run engine at 1200 to 1500 rev/min for two minutes to cool oil between tests.
- (17) EQUIPMENT DAMAGE.** Do not allow gearbox oil temperature to exceed 108 deg C (225 deg F).
- (18) EQUIPMENT DAMAGE.** Keep a close check to prevent engine-cooling system from over-heating.
- (19) EQUIPMENT DAMAGE.** Maximum figure of 108 deg C (225 deg F) for this test is given as a safety factor due to rapid rise in oil temperature. Maximum oil temperature during road test should not exceed 108 deg C (250 deg F gauge reading).
- (20) EQUIPMENT DAMAGE.** Maximum engine coolant temperature should not exceed 105 deg C (220 deg F).
- (21) EQUIPMENT DAMAGE.** Maximum gearbox oil temperature during road test should not exceed 122 deg C (250 deg F).
- (22) EQUIPMENT DAMAGE.** During test, engine and brakes will be under severe load.
- (23) EQUIPMENT DAMAGE.** Steering unit must be re-aligned to final drives when a replacement assembly is fitted. It is important that steering unit output shafts are aligned to within 0.38 mm (0.015 in.) in both horizontal and vertical planes and that angular displacement is within 0.76 mm (0.030 in.). When checking alignment, mounting bolts must be fully tightened.
- (24) EQUIPMENT DAMAGE.** If these shims are omitted, steering drift or damage to sprocket labyrinth will occur, due to misalignment of sprocket hub.
- (25) EQUIPMENT DAMAGE.** Do not use cleaning solvents to remove grease or dirt from torsion bars with the rubber/tape protection, as these may damage covering.
- (26) EQUIPMENT DAMAGE.** Semi-conducting devices and capacitors, having a comparatively low dc working voltage, are included in some of the assemblies. When carrying out insulation tests with a test set, megger, both ends of interconnecting harnesses or cables must be disconnected, and any semi-conducting device or capacitor, which is included in the circuit of an assembly, must be isolated.

- (27) **EQUIPMENT DAMAGE.** If the ventilation batteries are disconnected or removed, the positive lead must be secured to the insulated terminal post located on the left hand hull wall adjacent to the batteries. This will avoid the danger of a short circuit occurring between the disconnected positive lead and earth should the engine be run.
- (28) **EQUIPMENT DAMAGE.** The bearings in this motor are pre-packed and sealed. Any cleaning involving the use of solvents in which lubricants may be dissolved, must be avoided.
- (29) **EQUIPMENT DAMAGE.** Ensure that controller knob is set to position 1DC before closing single pole switch.
- (30) **EQUIPMENT DAMAGE.** Fan unit of ventilation and Environmental Control System must NOT be run unless the paper element has been fitted to the filter unit, otherwise dust particles in the incoming air can erode fan blades and reduce the efficiency of the equipment.
- (31) **EQUIPMENT DAMAGE.** All sealing throughout vehicle MUST be maintained in a serviceable condition at all times, this is important, as efficient operation of Environmental Control System depends on good and sound sealing of the vehicle. Hull sealing should be inspected at frequent intervals.

INTRODUCTION

1 This regulation details the field standards to be applied to FV430 Series vehicles. Column 3 details the minimum standard acceptable to the user. Equipment below this standard requires repair. Column 4 details the minimum standard acceptable after repair in a field or equivalent workshop. This regulation is to read in conjunction with Mgmt O 028 and Whld Veh A 028.

2 Road and cross country tests should be carried with the vehicle at normal working temperatures, fully serviced and ballasted to operational weight. To help reduce loading time, ballast should be placed in containers and made up in basic sets. When loaded into the vehicle the ballast container should be secured against movement. Approximate ballast weights is as follows:

2.1 FV432 (All marks) 15.1 tonnes

3 Vehicles are to be classified in accordance with DCI (Army) 41/68

TABLE 1 SPECIFICATIONS

| Serial (1) | Detail (2) | Size or specification | | Remarks (5) |
|---------------|--|-------------------------------|------------------------------|--|
| | | Field standard minimum (3) | Field standard repair (4) | |
| 1 | ENGINE K60, No 4 Mk 6F | | | FV432, Mk 2 & 2/1 |
| 2 | 2.1 Compression pressure (engine cold) | 350 lb/sq in. | 400 lb/sq in. | Engine turning at starter speed. |
| | 2.2 Maximum variation between cylinders | 50 lb/sq in. | 50 lb/sq in. | |
| | 2.3 Check oil consumption, exhaust smoke, fire rings and general performance before rejecting on low compression pressures. To inspect fire rings, remove power pack from vehicle and remove LH exhaust manifold. Press each fire ring and rotate them. They should be springy and the top land should be square and clean. There should be no score marks on the periphery of the ring. Apply standard only if performance is suspect | | | |
| 3 | Idling speed (Engine hot) | 780-800 rev/min | 780-800 rev/min | Vehicle tachometer reading |
| 4 | 4.1 Governed speed (No load) | 3850/4100 rev/min | 780-800 rev/min | Vehicle tachometer reading |
| | 4.2 Check accuracy of vehicle tachometer by use of a hand tachometer held on the crankshaft damper. The damper revolves at 2380 rev/min when the engine output shaft is revolving at 3750 rev/min. | | | |
| 5 | Maximum permissible coolant temperature | 220 deg F | 220 deg F | For ambients not exceeding 95 deg F. For ambients above 95 deg F, temperatures will rise in step with the ambient up to 240 deg F. |

(continued)

TABLE 1 SPECIFICATIONS (continued)

| Serial (1) | Detail (2) | Size or specification | | Remarks (5) |
|--|---|-------------------------------------|------------------------------------|---|
| | | Field standard minimum (3) | Field standard repair (4) | |
| 6 | Minimum oil pressure at 3150 rev/min with oil temperature at 176 deg F. | 45 lb/sq in. | 50 lb/sq in. | Fit 'T' piece to F.I pump lubricating oil feed connector. Reconnect feed pipe and fit suitable gauge to 'T' piece outlet. Apply standard only if oil pressure is suspect. |
| 7 | Oil consumption | 20 mile/pt | 35 mile/pt | Check on extended road test or from vehicle AB413 records. |
| HYDRAULIC FAN DRIVE SYSTEM | | | | |
| 8 | Clearance of fan blades to fan stator casing | 0.015 in. (min) | 0.015 in. (min) | |
| 9 | FV432 (All marks) | | | |
| <p>9.1 Refer to AESP 2350-T-251-522 for details of functional tests to hydraulic fan drive systems and maximum permissible leakage rates for hydraulic pumps and motors. It is important that oil temperature is maintained at 50 deg C during tests on pumps and motors. This can be ascertained by stopping the engine, removing the magnetic filter from the oil tank and inserting a thermometer through the filter aperture.</p> <p>9.2 Acceptable leakage rates for new or reconditioned pump and motors fitted by field workshops are detailed in AESP 2350-T-251-523</p> | | | | |
| STEERING UNIT | | | | |
| 10 | Total free travel of steering levers from OFF to ON position. | H-8 in. | H-6 in. | Measured at top of levers. |
| | | L-6 in. | | |
| 11 | Operating pin protrusion with steering levers in the OFF position. | 0.280 in. | | |
| 12 | Brake drum end float (Max) | H-0.100 in. | H-0.040 in. | Needs only to be checked if suspect. Measured between drum and inside face of casing. |
| | | L-0.004 in. | | |
| FINAL DRIVES | | | | |
| 13 | End float, input and output shafts | H-0.012 in. | H-0.006 in. | Adjustable by shims |
| | | L-0.005 in. | | |
| SUSPENSION | | | | |
| 14 | End float, Axle arms | H-0.085 in. | | Adjustable by shims, affects road wheel alignment |
| | | L-0.080 in. | | |
| 15 | Rim rock, road wheel and track adjusting wheel hubs. | H-3/16 in. | H-1/16 in. | Non adjustable bearing. Check at wheel rim. |
| | | L - ZERO | | |

(continued)

TABLE 1 SPECIFICATIONS (continued)

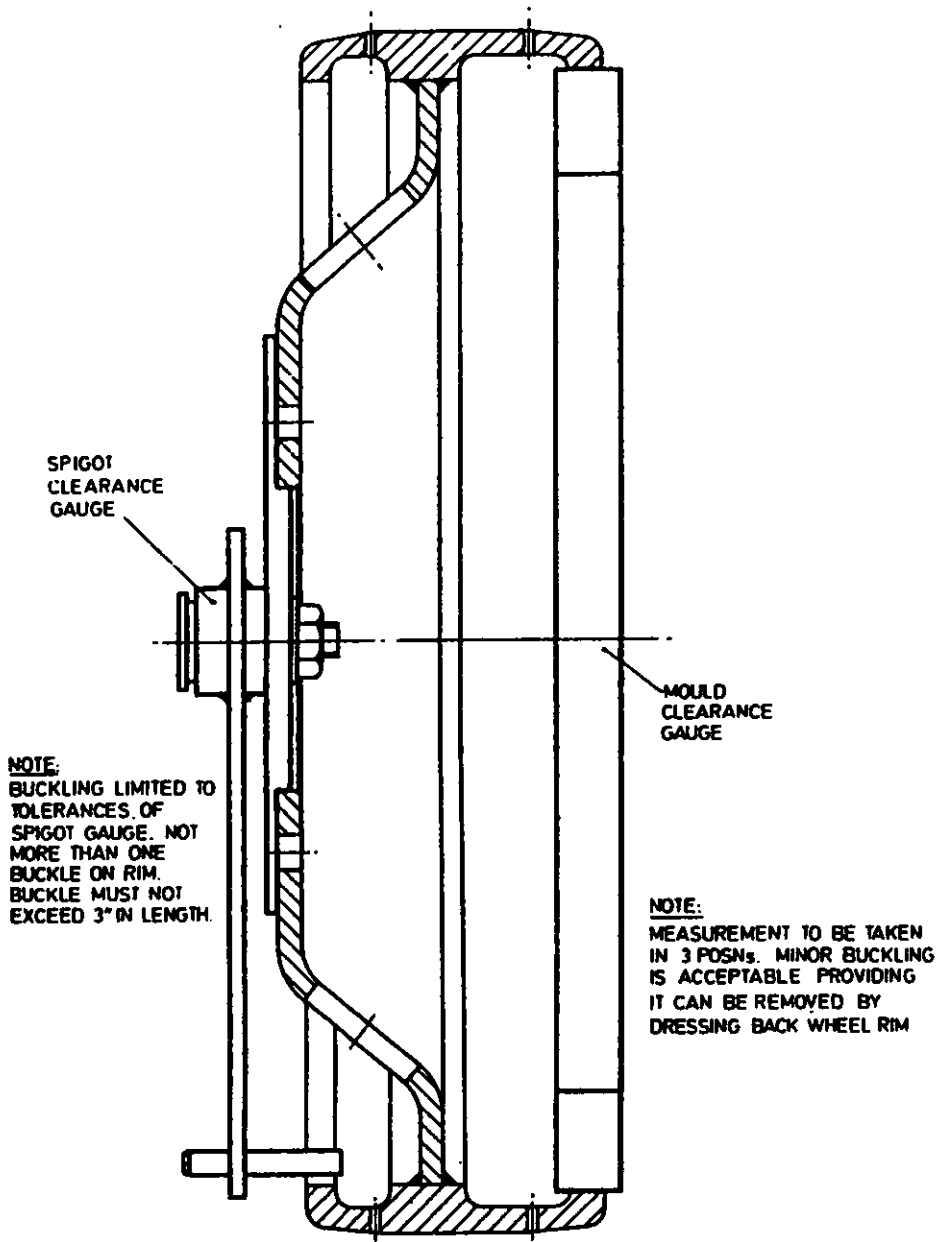
| Serial (1) | Detail (2) | Size or specification | | Remarks (5) |
|---------------|--|--|------------------------------|--|
| | | Field standard minimum (3) | Field standard repair (4) | |
| 16 | End float, guide rollers | H-3/32 in. | H-1/32 in. | Non adjustable bearing. Check at roller rim. |
| 17 | Torsion bar settings 17.1 FV432 (All marks) (1) No 1 & 2 stations (2) No 3 & 4 stations (3) No 5 station | L-ZERO | | Check torsion bar settings if hull sags to one side, or after repairs to suspension involving stripping of axle arms and torsion bars. |
| | | H-6 7/8 in. | | |
| | | L-6 5/8 in. | | |
| | | H-6 1/2 in. | | |
| | | L-6 1/4 in. | | |
| | | H-6 1/8 in. | | |
| | | L-5 7/8 in. | | |
| 18 | Track adjuster – end float of idler arm | H-0.030 in. | H-0.025 in. | See AESP 2350-T-251-811 Mod Instr No 1 |
| | | L-ZERO | | |
| 19 | Number of track links, all adjustment used up | H-90 links | | Tracks to be sentenced BLR or BER in accordance with AESP 2350-T-251-522 |
| | | L-86 links | | |
| 20 | Track tension - sag | H-1 1/2 in. | | Check midway between rollers |
| | | L-1 in. | | |
| 21 | Road wheel, width of rim | Measurement to be taken using width gauge (See Fig 2) | | |
| 22 | Road wheel stud hole diameter | H-0.650 in. | | No elongation |
| | | L-0.641 in. | | |
| 23 | Bore diameter | H-8.815 in. | | |
| | | L-80800 in. | | |
| 24 | Road wheel mould location diameter (outer rim I/D) | H-19.995 in. | | Minor buckling is acceptable providing the correct I/D can be obtained by dressing back the rim |
| | | L-19.995 in. | | |
| | | (Measurements to be taken at positions using Mould Clearance Gauge (see Fig 1)) | | |
| 25 | Road wheel rim I/D (inner rim) | H-19.850 in. | | Buckling limited to the tolerance of spigot gauge. Not more than one buckle per rim. Buckle must not exceed 3 in length. |
| | | L-19.750 in. | | |
| | | (Measurements to be taken at positions using Spigot Clearance Gauge (see Fig 1)) | | |

(continued)

TABLE 1 SPECIFICATIONS (continued)

| Serial (1) | Detail (2) | Size or specification | | Remarks (5) |
|---------------|--|--|---------------------------------|-----------------------------|
| | | Field standard minimum (3) | Field standard repair (4) | |
| 26 | Road wheel tyre | Tyres to be free of major defects i.e. loss of large section of tyre and bonding failure | | |
| | NOTE Road wheels rejected for reasons at Para 26 but fall within the standards detailed in Para's 21 to 25 are to be returned to stores for reclamation. All other wheels are sentenced 'scrap' | | | |
| | VENTILATION SYSTEM AND HULL SEALING | | | |
| 27 | Internal air pressure, vehicle closed down | +3 in. SWG | +3 in. SWG | |
| | NOTE For details of testing ventilation system, see the following AESP'S FV432 (all Marks) – 2350-T-251-522 and 523 | | | |
| | VEHICLE ELECTRICAL SYSTEM | | | |
| 28 | Should any component of vehicle electrical system prove to be faulty carry out the appropriate test detailed in the following AESP'S:- | | | |
| | ROAD PERFORMANCE TEST | | | |
| 29 | Maximum speed on hard level surface in 6 th gear | | | |
| | 29.1 FV432 (All marks) | 30 mile/h | 32 mile/h | |
| 30 | Speed over 1/4 mile, flying start, on hard level surface | | | |
| | 30.1 FV432 (All marks) | 30 mile/h | 30 mile/h | |
| 31 | From a standing still position, vehicle shall accelerate from 0 -20 mile/h within | | | |
| | 31.1 FV432 (All marks) | 22 sec | 18 sec | |
| 32 | At full throttle, in any gear range, check gear changes | | | |
| | 32.1 Change up | 3500-3700 rev/min | 3500-3700 rev/min | Vehicle tachometer reading. |
| | 32.2 Change down | 2000-2500 rev/min | 2000-2500 rev/min | Vehicle tachometer reading. |

(continued)



432/50057

Fig 1 Spigot and mould clearance gauge

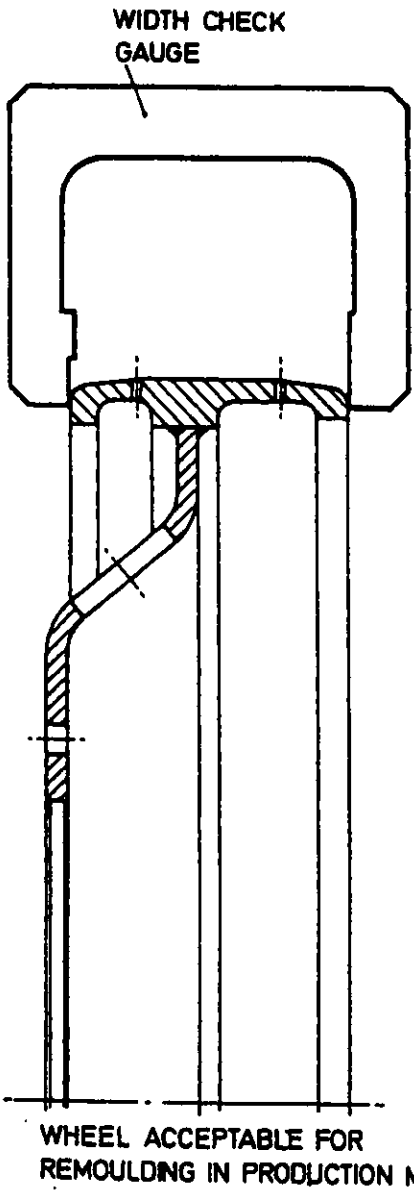
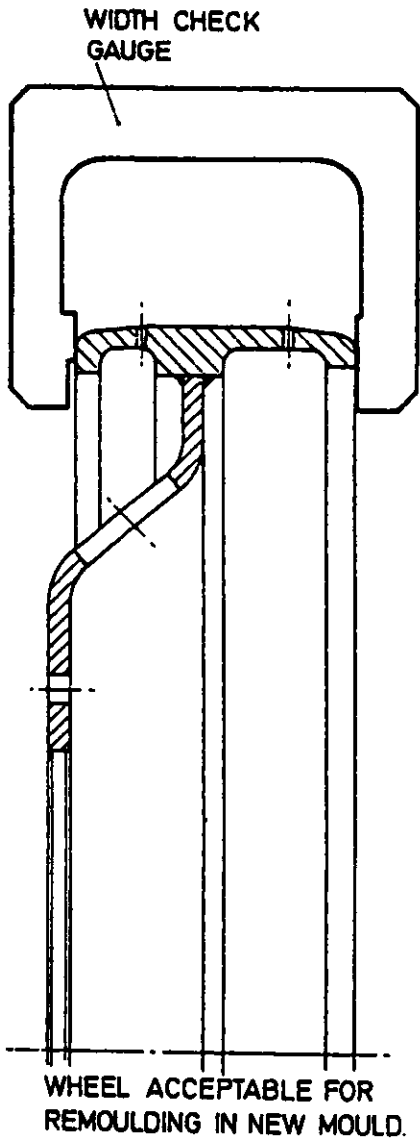
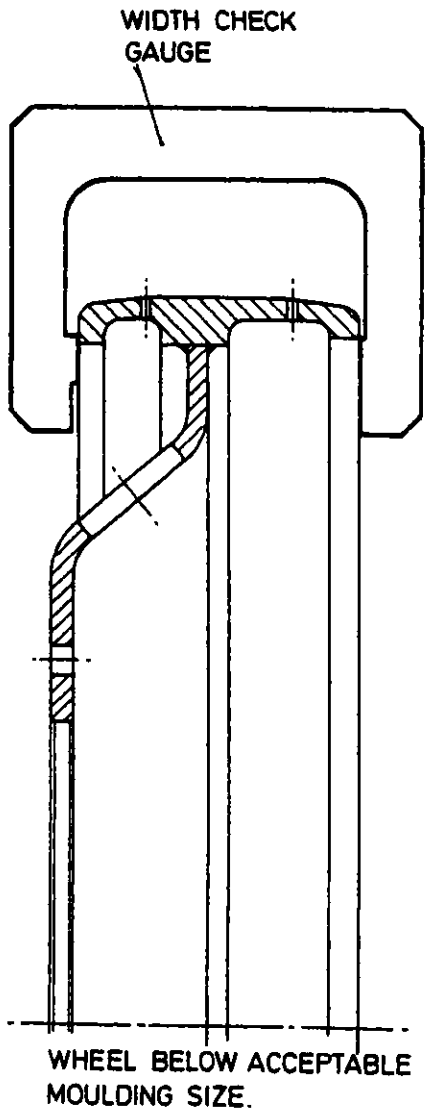


Fig 2 Gauge road wheel

4332/50058

TABLE 1 SPECIFICATIONS (continued)

| Serial (1) | Detail (2) | Size or specification | | Remarks (5) |
|---------------|---|-------------------------------|------------------------------|---|
| | | Field standard minimum (3) | Field standard repair (4) | |
| 33 | STEERING Maximum turning radius in each direction | 18 ft 6 in. | 17 ft 6 in. | On hard level surface. |
| 34 | BRAKE TESTS Stopping distance at 20 miles/h on a hard level surface | 40 ft | 30 ft | Average of four runs, two in each direction. |
| 35 | Stopping time at 20 miles/h on a hard level surface | 2.8 sec | 2.1 sec | |
| 36 | Parking brakes to hold vehicle on a slope of: | 1 in 4 (15 deg) | 1 in 3 (20 deg) | Hot or cold brakes must hold indefinitely. |
| 37 | FUEL CONSUMPTION 37.1 FV432 (Mark 2 & 2/1) | | | Diesel fuel only |
| | | | mile/gall | |
| 38 | MORTAR MOUNT 38.1 End float or elevating gear shift | 0.005 (max) | 0.005 (max) | Elevating gear must be 'free' throughout its range Mount must be 'free' to traverse through 360 deg. Measured at any point around the base. |
| | 38.2 End float on traverse gear worm | 0.002 (max) | 0.002 (max) | |
| | 38.3 Clearance between clamp bracket lips and base | 0.005 (max) 0.002 (max) | 0.005 (max) 0.002 (max) | |

TABLE 2 TESTING

| Serial (1) | Detail (2) |
|---------------|---|
| 1 | TRACKING TEST 1.1 This test is to be carried out on a smooth, level, hard surface. There must be an equal number of links in each track with the track tension correctly adjusted (Ser 20) Ensure that the brakes are correctly adjusted and not binding. 1.2 The vehicle is to be driven at a speed of 10 mile/h without steering control and must not deviate more than 1 ft in 100 ft from a straight line. (This deviation is not proportional directly to distance travelled, i.e. vehicle describes an arc). NOTE If facilities do not exist for this test, examiners should use their own judgement as to whether vehicle drift is within controllable limits. |
| 2 | INCLINATION TESTS Engine inclination tests |

(continued)

TABLE 2 TESTING (continued)

| Serial (1) | Detail (2) |
|---------------|---|
| 3 | <p>2.1 Tests should be carried out with the vehicle on a 20 – 30 deg slope, nose up and down.</p> <p>2.2 With vehicle on level ground, check engine oil level as detailed in User Handbooks</p> <p>2.3 Place the vehicle on the slope and apply the brakes. Carry out the following tests in each attitude as in ser 2.1.</p> <p>2.3.1 Run the engine at 2500 rev/min for three minutes. Oil pressure should be maintained (check that oil pressure warning light does not glow). Check that exhaust smoke is not excessive.</p> <p>2.3.2 Run the engine for a further two minutes at 1000 rev/min and then switch OFF. Engine should restart after being inoperative for not less than two minutes.</p> <p>2.4 Move the vehicle to level ground and re-check the engine oil level. Switch the engine OFF and after five minutes standing, inspect for oil, fuel and coolant leaks.</p> <p>NOTE</p> <p>See WARNING in User Handbooks, which refers to oil spillage from K60 engine crankcase breather when driving up an incline. EMER Pwr S 567/1 Mod Instr No 7 is designed to prevent this defect.</p> <p>CROSS COUNTRY AND SUSPENSION TESTS</p> |
| | <p>3.1 If facilities are available, vehicle should complete a minimum of two miles cross country, fully testing (under load) automotive and suspension systems. Check that natural movement of the vehicle does not give sudden acceleration when vehicle brakes at speed over small surface irregularities. Ensure that axle arms move naturally and that there is no settling of the suspension. Observe wheel and shock absorber movement for satisfactory functioning</p> <p>3.2 If cross country test cannot be carried out due to lack of facilities, suspension should be checked over undulating ground or conditions simulated as follows:</p> <p>3.2.1 Place twenty wooden blocks (approx the same size as railway sleepers) in two lines of ten about 5 ft apart and staggered so that opposite suspension stations do not lift together.</p> <p>3.2.2 The vehicle is to be driven over this obstacle at a speed of not more than 10 mile/h. Observe the functioning of the suspension units as in Ser 45.1.</p> <p>3.2.3 After road and cross country tests, check the condition of the shock absorbers and torsion bars.</p> <p>NOTE</p> <p>Broken torsion bars are indicated either by hull sagging to one side or road wheel tyre NOT bulging where it contacts the track. If a road wheel can be lifted with a crowbar, the torsion bar is broken.</p> <p>FINAL INSPECTION</p> |
| 4 | <p>Upon completion of road test, carry out a final check as follows:-</p> <p>4.1 Check for coolant, oil, fuel and grease leaks on all appropriate components and assemblies.</p> <p>4.2 Check coolant and all oil levels as detailed in AESP 2350-T-251-601.</p> <p>4.3 Check that the radiator matrix is not obstructed.</p> <p style="text-align: right;">(continued)</p> |

TABLE 2 TESTING (continued)

| Serial (1) | Detail (2) |
|---------------|--|
| | <p>4.4 Check fire fighting equipment for serviceability.</p> <p>4.5 Check track tension and condition of tracks. Note that over tightening of the tracks can cause secondary faults. Track pads should be replaced before the rubber is worn down to the level of the metal spud of the track link. They should also be replaced if the rubber has broken away to the extent that 60% of the area of the pad remains in contact with the ground. Unless cracked or broken the polyurethane washer should be re-used on the same track link at each re-padding.</p> <p>4.6 Check wheel nuts for tightness.</p> <p>4.7 Test anti freeze mixture</p> <p>4.8 Check wheel nuts for tightness.</p> <p>4.9 Test anti freeze mixture</p> <p>4.10 Record any instances of tracks jumping sprockets.</p> <p>4.11 Check shock absorbers and torsion bars for serviceability.</p> <p>4.12 Check welding of suspension brackets for cracks. Check that the axle arm retaining plates are secure. Check that bump stops secure and not damaged.</p> <p>4.13 Check that guide roller mounting brackets are secure.</p> <p>4.14 Check that the sprocket rings are secure, and that the hub nut is tight.</p> <p>4.15 Check that there is no overheating of assemblies, wheel and guide roller hubs.</p> <p>4.16 Check that the tyres have no cuts or tears at bonded areas longer than 4 in. and deeper than 1 1/2 in. for road wheels tyres or longer than 3 in. and deeper than 1 in. for guide roller tyres. Tyre cuts must not intersect if close to maximum limits. Excessive 'chunking' is not acceptable. To achieve a uniform rate of wear, new tyres should be fitted to No 1 and 5 wheel stations and part worn tyres to No's 2, 3 and 4 stations. Tyres can continue in use until the rubber is worn down to an effective thickness of 3/4 in. providing there are no deep cuts, bonding failure or other damage which is likely to result in immediate failure. Wheels which are distorted, bent, broken, cracked or which have damaged stud holes must be replaced.</p> <p><u>ENGINE COUPLING</u></p> <p>NOTE</p> <p>Failure of the current pattern engine coupling Metalastik bush is a known defect.</p> |
| 5 | <p><u>General</u></p> <p>5.1 <u>FV432</u> Upon completion of road test, the Metalastik bush is to be inspected for signs of failure.</p> |
| 6 | <p><u>Inspection</u></p> <p>FV432</p> <p>6.1 Remove ventilation system batteries and battery box, remove documentation box and bottom access plate from rear wall of power pack compartment. Remove small inspection cover located at left hand side of mechanical (transverse) casing.</p> <p>NOTE</p> <p>On vehicles fitted with K60 engine, disconnect breather pipe from small inspection cover.</p> <p>6.2 Rotate engine coupling and inspect Metalistik bush, with the aid of a torch and mirror, for signs of rubber breaking away from bonded area of the metal rings, inspect also for circumferential tears or cracks in the rubber. Should the rubber show any signs of failure (however small the cracks) the coupling has failed.</p> |

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