Ministry of Defence

Defence Equipment and Support
Secretariat
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Ministry of Defence
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Email: DES SEC-PolSec LE-JSC-WPNS@mod.uk

Our Reference:
FOI2022/00578
Date:
11 February 2022

Dear xxxxx,

I am writing about your email of 16 January 2022, requesting the following information:

'Can you please supply in PDF format the following publication AESP 2330-S-301-201 which refers to REYNOLDS BOUGHTON DROPS MLRS CLOSE COUPLED AESP 2330-S-300-201 Which refers to KIng DB20 Drops Trailer"

Your request has been handled in accordance with the Freedom of Information (FOI) Act 2000.

A search has been carried out of Ministry of Defence (MOD) records and it is confirmed that some information is held on your vehicle that can be released. This is enclosed, as follows:

Annex A – AESP 2330-S-301-201
Annex B – AESP 2330-S-300-201

It has proved necessary to withhold some information in accordance with qualified exemptions of the FOI Act. Some of the general description information for AESP 2330-S-301-201 (Annex A), relates to classified equipment and has been redacted in accordance with Sections 26(1) (a) and (b) (Defence). Section 26 applies to information that if disclosed would or would likely; prejudice the defence of the British Islands or any colony; and/or the capability, effectiveness or security of the Armed Forces of the Crown or any forces cooperating with them.

Section 26 is a qualified exemption and subject to public interest testing which means that the information requested can only be withheld if the public interest in doing so outweighs the public interest in disclosure.

Section 26(1)(b) has been applied to some of the information because it contains details which are operationally sensitive and would prejudice the capability and effectiveness of our armed forces. The balance of public interest was found to be in favour of withholding the information given that, overall, the public interest is best served in not releasing any details that would prejudice the security and safety of UK personnel and which would provide tactical advantage to our enemies. For these reasons I have set the level of prejudice

against release of the exempted information at the higher level of “would” rather than “would be likely to”.

If you have any queries regarding the content of this letter, please contact this office in the first instance. If you wish to complain about the handling of your request, or the content of this response, you can request an independent internal review by contacting the Information Rights Compliance team, Ground Floor, MOD Main Building, Whitehall, SW1A 2HB (e-mail CIO-FOI-IR@mod.gov.uk). Please note that any request for an internal review should be made within 40 working days of the date of this response.

If you remain dissatisfied following an internal review, you may raise your complaint directly to the Information Commissioner under the provisions of Section 50 of the Freedom of Information Act. Please note that the Information Commissioner will not normally investigate your case until the MOD internal review process has been completed. The Information Commissioner can be contacted at: Information Commissioner’s Office, Wycliffe House, Water Lane, Wilmslow, Cheshire, SK9 5AF. Further details of the role and powers of the Information Commissioner can be found on the Commissioner's website at https://ico.org.uk/.

Yours sincerely,

DE&S Secretariat

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Defence Technical Documentation

TRAILER CARGO 10 TONNE SHORT WHEEL BASE MULTI-LAUNCH ROCKET SYSTEM

(TLR CARGO 10T SWB MLRS)

2330-S-301-201

OPERATING INFORMATION

Edition No. 003
February 2021

Sponsored for use in the
United Kingdom Ministry of Defence
and Armed Forces by

Vehicle Support Team (VST)
Support Vehicle (SV)
Defence Equipment and Support
MoD Abbey Wood
Cedar 1A #3157
Bristol
BS34 8JH

Publication Authority: DES JSC TLSTD

Service users should send their comments through the channel prescribed for the purpose by the publication sponsor.

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PREFACE

Sponsor: Support Vehicle
Publication Authority: Support Vehicle

INTRODUCTION

1. Users should forward any comments on this publication in accordance with Army Equipment Support Publication (AESP) 0100-P-011-013. All comments are only to be submitted using the electronic and interactive Form 10 (F10) which can be accessed and downloaded from the Joint Asset Management and Engineering Solutions (JAMES) Portal (via Hot Topic – Forms) or from the Design Repository Technical Documentation On Line (DR TDOL) (F10)). This procedure is only to be used for the purposes of commenting on the content of an individual AESP.

2. All electronic F10s are to be completed and forwarded to the F10 Cell using the instructions accompanying the F10 in its template location. Security procedures are to be IAW JSP 440: Defence Manual of Security, Resilience and Business Continuity.

3. The F10 procedure is only to be used for the purpose of commenting on the content of an individual AESP and must not be used:

3.1. In place of the Equipment Failure Reporting (EFR) procedure outlined in The Land Equipment Unit Maintenance Standards (LEUMS).

3.2. For subjects, which are the concern of the Technical Staff Suggestions outlined in Army General and Administrative Instructions (AGAIs).

4. AESPs are issued under UK MOD authority and when AESPs specify action to be taken, the AESP will be itself sufficient authority for such action and also for the demand of the necessary stores, subject to provisions of Para 5.

5. The subject matter of this publication may be affected by Defence Instructions and Notices (DIN), Standard Operating Procedures (SOP), Standard Operating Instructions (SOI), Tactics Techniques and Procedures (TTP) or local regulations. When any such instruction, order or regulation contradicts any portion of this publication, it is to be taken as the overriding authority.

Amendments

6. Amendments to the publication will be published as and when necessary. These will be numbered consecutively, and the Amendment Record sheet is to be completed for each amendment list embodied. New or amended material will be highlighted by side lining to show the extent of the amendment.

Publication information

7. Any communication regarding this publication should be made to the controlling publication authority.

Publication authority

8. The publication authority for this AESP is as follows:

Vehicle Support Team (VST)
Support Vehicle
Defence Equipment & Support
Neighbourhood 3
Cedar 1A Mailpoint #3157
MoD Abbey Wood
Bristol
BS34 8JH

RELATED AND ASSOCIATED PUBLICATIONS

Related publications

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

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	*	*
	1	Equipment Support Policy Directive	*	*	*	*
2	0	Operating Information	201	201	*	*
	1	Aide Memoire	*	*	*	*
	2	Training Aids	*	*	*	*
3		Technical Description	302	302	*	*
4	1	Installation Instructions	*	*	*	*
	2	Preparation for Special Environments	*	*	*	*
5	1	Failure Diagnosis	512	512	*	*
	2	Repair Instructions	*	522	*	*
	3	Inspection Standards	*	532	*	*
	4	Calibration Procedures	*	*	*	*
6		Maintenance Schedule (Joint Service)	601	601	*	*
7	1	Illustrated Parts Catalogue	711	711	*	*
	2	Commercial Parts List	*	*	*	*
	3	Complete Equipment Schedule, Production	*	*	*	*
	4	Complete Equipment Schedule, Service Edition (Simple Equipment)	741	741	*	*
	5	Complete Equipment Schedule, Service Edition (Complex Equipment)	*	*	*	*
8	1	Modification Instructions	811	811	*	*
	2	General Instructions, Special Technical Instructions and Servicing Instructions	821	821	*	*
	3	Service Engineered Modification Instructions (RAF only)	*	*	*	*

* Category / Sub-category not published

Associated publications

10. The following publications should be read in conjunction with this publication:

Publication	Description
AESP 2330-S-301-101	TLR CARGO 10T SWB MLRS - Purpose and Planning Information
AESP 2330-S-301-201	TLR CARGO 10T SWB MLRS - Operating Information
AESP 2330-S-301-302	TLR CARGO 10T SWB MLRS - Technical Description
AESP 2330-S-301-512	TLR CARGO 10T SWB MLRS - Failure Diagnosis
AESP 2330-S-301-522	TLR CARGO 10T SWB MLRS - Maintenance Instructions
AESP 2330-S-301-532	TLR CARGO 10T SWB MLRS - Inspection Standards
AESP 2330-S-301-601	TLR CARGO 10T SWB MLRS - Maintenance Schedule (Joint Service)
AESP 2330-S-301-711	TLR CARGO 10T SWB MLRS - Illustrated Parts Catalogue
AESP 2330-S-301-741	TLR CARGO 10T SWB MLRS - Complete Equipment Schedule, Service Edition (Simple Equipment)
AESP 2330-S-301-811	TLR CARGO 10T SWB MLRS - Modification Instructions
AESP 2330-S-301-821	TLR CARGO 10T SWB MLRS - General Instructions
AESP 2320-W-125-Octad	Support Vehicle EPLS
AESP 0200-A-090-013	Land Equipment Engineering Standards (LEES)
AESP 0200-A-093-013	Land Equipment User Maintenance Standards (LEUMS)
AESP 3990-F-101 Series	Flatrack MLRS Type
DLF	Defence Logistics Framework
JSP 375	Management of Health and Safety in Defence
JSP 418	Management of Environmental Protection in Defence
JSP 800	Defence Movement and Transport Regulations
ESRS	Equipment Standards Regulatory Schedule
TD-76-0543-00	Defence Technical Documentation Guide
DSA 01.1	Defence Policy for Health, Safety and Environmental Protection (previously JSP815)
DSA 02 DLSR LSSR	Land System Safety and Environmental Protection Directive (previously JSP454 Pt1)
DSA 03 DLSR LSSR	Land System Safety and Environmental Protection Guidance. Defence Codes of Practice (DCoP) (previously JSP454 Pt2)
ACSO 3216	Organisation & Arrangements for the Management of Safety & Environmental Protection
ACSO 9015	Land Equipment Assurance (LEA)

ABBREVIATIONS

11. 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

Abbreviation	Definition
ABS	Anti-Lock Braking System
DC	Direct Current
in.	Inch
JAMES	Joint Asset Management Engineering Solution
kg(s)	kilogram(s)
kph	kilometers per hour
LEA	Land Equipment Assurance
LEES	Land Equipment Engineering Standards
LEUMS	Land Equipment User Maintenance Standards
MICaT	Maintenance Inspection Certification and Testing
mm	Millimeter
mph	miles per hour
OBI	Order Book Item
OM	Operations Manager
psi	pounds per square inch
SOM	Senior Operations Manager
SV	Support Vehicle
TTLS	Technical Through Life Support
V	Volt
VST	Vehicle Support Team

WARNINGS

(1) HAZARD: COLLISION / UNINTENDED MOVEMENT. PRIOR TO CARRYING OUT ANY WORK ON THE TRAILER, ENSURE THAT:

A. THE TRAILER IS POSITIONED ON FIRM, FLAT AND LEVEL GROUND.
B. THE TRAILER IS UNCOUPLED FROM THE PRIME MOVER - ADHERE TO THE PRIME MOVER COUPLING / UNCOUPLING PROCEDURES.
C. APPROVED WHEEL CHOCKS ARE FITTED AT ALL TIMES TO ONE OF THE TRAILER REAR WHEELS IN BOTH DIRECTIONS.

(2) HAZARD: COLLISION / UNINTENDED MOVEMENT. PRIOR TO COUPLING / UNCOUPLING, ADHERE TO THE PRIME MOVER COUPLING / UNCOUPLING PROCEDURES. ENSURE THAT:

A. THE TRAILER IS POSITIONED ON FIRM, FLAT AND LEVEL GROUND.
B. SUITABLE WHEEL CHOCKS ARE FITTED AT ALL TIMES TO ONE OF THE TRAILER REAR WHEELS IN BOTH DIRECTIONS.

(3) HAZARD: COLLISION / UNINTENDED MOVEMENT. DO NOT STAND BETWEEN THE PRIME MOVER AND THE TRAILER WHILST COUPLING / UNCOUPLING. ADHERE TO THE PRIME MOVER COUPLING.UNCOUPLING PROCEDURES.

(4) HAZARD: COLLISION / UNINTENDED MOVEMENT. THE PRIME MOVER IS TO BE REVERSED UP TO THE TRAILER FOR COUPLING WITH THE ASSISTANCE OF A GUIDE. THE GUIDE IS TO BE POSITIONED TO THE SIDE AND TOWARDS THE REAR OF THE PRIME MOVER IN CLEAR VIEW OF THE DRIVER. THE GUIDE MUST BE IN A POSITION TO OBSERVE THE REAR OF THE VEHICLE AND THE FRONT OF THE TRAILER. ADHERE TO THE PRIME MOVER COUPLING / UNCOUPLING PROCEDURES.

(5) HAZARD: COLLISION / UNINTENDED MOVEMENT. THE PRIME MOVER IS TO BE GUIDED TO A POSITION APPROXIMATELY ONE METRE FROM THE FRONT OF THE TRAILER AND THE PRIME MOVER BRAKES APPLIED. ONCE FINAL CHECKS HAVE BEEN COMPLETED REVERSE THE PRIME MOVER ONTO THE DRAWBAR UNTIL THE TOW PINTLE OF THE PRIME MOVER IS UNDER THE TOW EYE ON THE DRAW BAR OF THE TRAILER. ADHERE TO THE PRIME MOVER COUPLING / UNCOUPLING PROCEDURES.

(6) HAZARD: COLLISION / UNINTENDED MOVEMENT. THE TRAILER MUST BE UNCOUPLED FROM THE TOWING VEHICLE BEFORE ATTEMPTING TO LOAD OR UNLOAD A FLATRACK. ADHERE TO THE PRIME MOVER COUPLING / UNCOUPLING PROCEDURES. ENSURE THAT:

A. THE TRAILER IS POSITIONED ON FIRM, FLAT AND LEVEL GROUND.
B. APPROVED WHEEL CHOCKS ARE FITTED AT ALL TIMES TO ONE OF THE TRAILER REAR WHEELS IN BOTH DIRECTIONS.

(7) HAZARD: COLLISION. THE ABS DOES NOT SHORTEN THE OVERALL STOPPING DISTANCE OF THE VEHICLE. DEPENDENT UPON THE ROAD CONDITION, THE OVERALL VEHICLE STOPPING DISTANCE CAN BE INCREASED.

(8) HAZARD: COLLISION. TO MAXIMISE THE EFFICIENCY OF THE ABS SYSTEM, DO NOT USE A CADENCE BRAKING TECHNIQUE (I.E. RAPID AND REPETITIVE APPLICATIONS OF THE SERVICE BRAKES). WHEN BRAKING, ENSURE THAT A CONTINUOUS PRESSURE IS APPLIED TO THE FOOT BRAKE PEDAL.

(9) HAZARD: COLLISION / UNINTENDED MOVEMENT. FAILURE OF THE VEHICLE OR TRAILER ABS WARNING LAMPS TO ILLUMINATE INDICATES A POSSIBLE MAJOR MALFUNCTION OF THE ABS ELECTRONIC CONTROL UNIT (ECU). DO NOT ATTEMPT TO DRIVE THE VEHICLE AND TRAILER IF THE ABS WARNING LAMPS ILLUMINATES.

(10) HAZARD: COLLISION. A PRIME MOVER FITTED WITH ABS CAN TOW A SUITABLE TRAILER, WITH OR WITHOUT ABS FITTED.

(11) HAZARD: COLLISION. A PRIME MOVER NOT FITTED WITH ABS CANNOT TOW A TRAILER WHICH IS FITTED WITH ABS, UNLESS THE PRIME MOVER HAS THE ABILITY TO TRIGGER THE TRAILER ABS THROUGH AN APPROVED INTER-VEHICLE SOCKET (I.E. ISO 7638).

(12) HAZARD: COLLISION. A SECOND TRAILER CANNOT BE TOWED WHEN OPERATING ON THE PUBLIC HIGHWAY

(13) HAZARD: COLLISION / UNINTENDED MOVEMENT. CORRECT TORQUE SETTINGS MUST BE APPLIED TO THE ROAD WHEEL NUTS.

(14) HAZARD: EXPOSURE TO HOT SURFACES. IF RECENTLY OPERATED, THE BRAKE SYSTEM (DISCS, PADS, ETC.) WILL BE HOT. PRIOR TO CARRYING OUT WORK ON THE BRAKE SYSTEM, ENSURE THE BRAKES HAVE HAD SUFFICIENT TIME TO FULLY COOL.

(15) HAZARD: CRUSH INJURY. NEVER PLACE A JACK AT THE CENTRE OF AN AXLE BEAM, ALWAYS PLACE A JACK AS CLOSE TO THE HUB AS POSSIBLE. NEVER GET BENEATH THE VEHICLE WHEN IT IS SUPPORTED SOLELY BY A JACK.

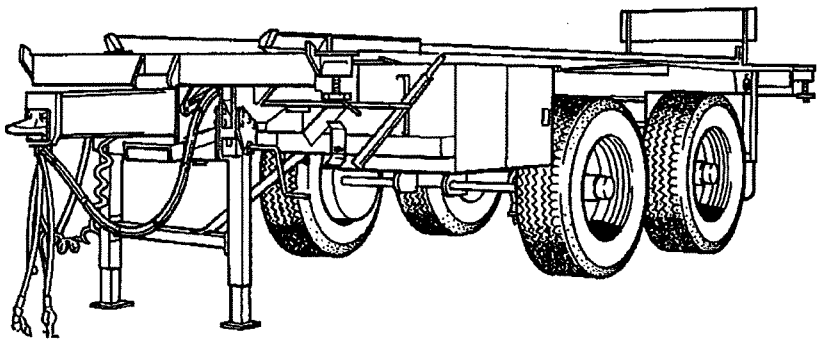
(16) HAZARD: EXPOSURE TO PRESSURISED FLUIDS (LIQUID, GAS. AIR IN THE AIR RESERVOIR IS UNDER PRESSURE. KEEP EYES AND FACE AWAY FROM THE DRAIN VALVE WHEN OPENING THE TILT VALVE. WHERE APPRVED PPE: GOGGLES.

CAUTIONS

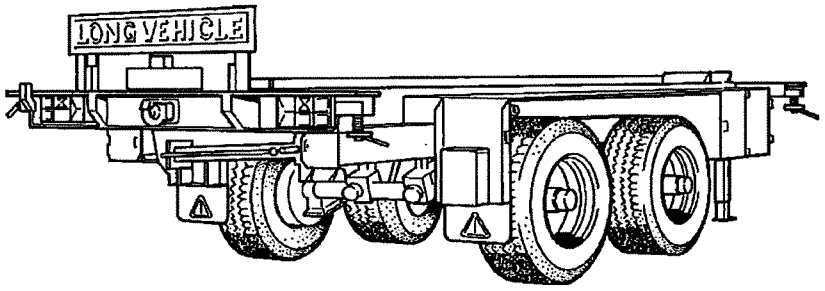
(1) Equipment Damage. Do not exert pressure on the handle when stowing the landing legs. Winding must stop as soon as resistance is felt when the legs are in the stowed position. The handles must, if necessary, be turned back to be secured.

(2) Equipment Damage. Before driving off with the trailer coupled, ensure that the telescopic drawbar is locked in the fully forward position.

(3) Equipment Damage. Ensure legs are stowed correctly before moving vehicle.



Front three-quarter view



Rear three-quarter view

CHAPTER 1

GENERAL DESCRIPTION

CONTENTS

GENERAL DESCRIPTION INTRODUCTION

1. The MLRS trailer is a four wheeled trailer [redacted]
The unladen trailer weighs approximately 4 tonnes and the maximum laden weight is 14,440 kg.

AXLES

2. The two axles are basically identical with the exception of brackets, spring seats, etc. welded to the axle tube.

SUSPENSION

3. The single point suspension, consists of a single beam with a spring fixed at each end of the compensator. The springs are connected to the axles.

WHEELS

4. The wheels are 10 stud spigot mounted. The tyres are tubeless.

AIR PRESSURE AND BRAKING SYSTEM

5. The braking system consists of a conventional air operated braking system with load sensing and a mechanical parking brake, to the first axle brakes only. An Anti-lock Braking System (ABS) is incorporated to prevent wheel lock on brake application.

Anti-lock Braking System (ABS)

6. The ABS for the trailer has a sensor at each wheel. The sensors respond to a wheel speed signal generated by the serrated face on the wheel hub. An electrical impulse is transmitted to activate the anti-lock system through a single

Electronic Control Unit (ECU)

7. The ECU electrical circuit is housed within a waterproof junction box located centrally within the trailer chassis frame. The ECU ensures ABS compatibility through the power supply cable between the prime mover and the trailer.

8. The ABS is designed to monitor itself for electrical defects. A socket in the left hand side of the trailer chassis, between the rear mud flap and the rear side marker lamp, enables the diagnostic controller to be attached for the retrieval of any error messages stored by the ECU.

ELECTRICAL SYSTEM

9. All the lamps on the trailer are 24 volt and they are operated from the tractor via the 12 pin coupling. The two pin coupling on the trailer connects the low air pressure indicator valve on the trailer to the warning light on the tractor.

10. Power to activate the trailer ABS is provided by the prime mover through the inter-vehicle power supply cable.

CHASSIS FRAME AND FITTINGS

11. The frame is of welded construction consisting of sidemembers and crossmembers. A tow bar is fitted to the front of the trailer.

CHASSIS NUMBER PLATE

12. The chassis number plate carries the chassis number and axle weight details. The plate is fitted on the LH front of the frame above the handbrake lever.

IDENTIFICATION PLATE

13. The identification plate carries the contract number, registration number etc. The plate is fitted on the front of the LH sidemember of the trailer.

CHAPTER 2

CONTROLS

CONTENTS

CONTROLS

INTRODUCTION

1. The only controls on the trailer are the handbrake, the telescopic drawbar coupler release, the front and rear landing leg controls, the front and rear air couplings, and the twistlocks. Electrical couplings and ABS power supply cable are also fitted on the front of the trailer.

HANDBRAKE

2. The ratchet type handbrake is fitted on the left hand sidemember of the trailer (see Fig 1). To apply the handbrake, move the lever backwards and forwards. To release the handbrake, move the lever sharply rearwards.

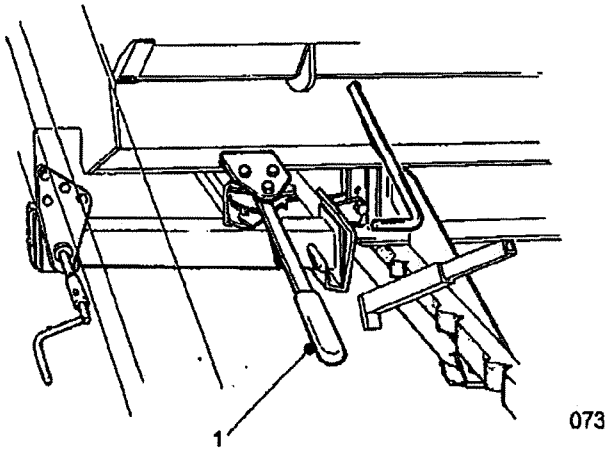


Fig 1 Handbrake lever

DRAWBAR COUPLER RELEASE LEVER

3. The drawbar coupler release lever is situated on the left hand side of the trailer (see Fig 2). To release the drawbar the lever must be pulled out sharply.

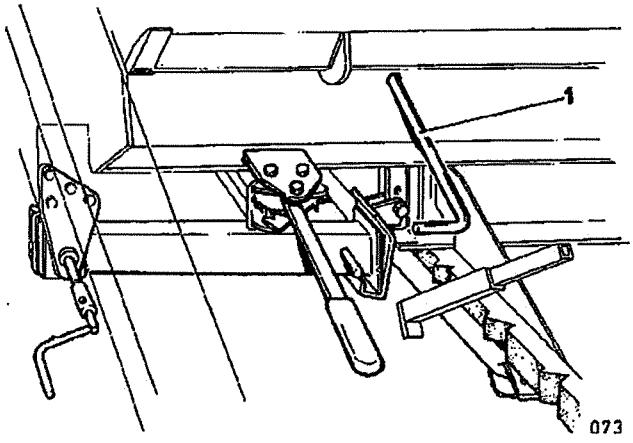
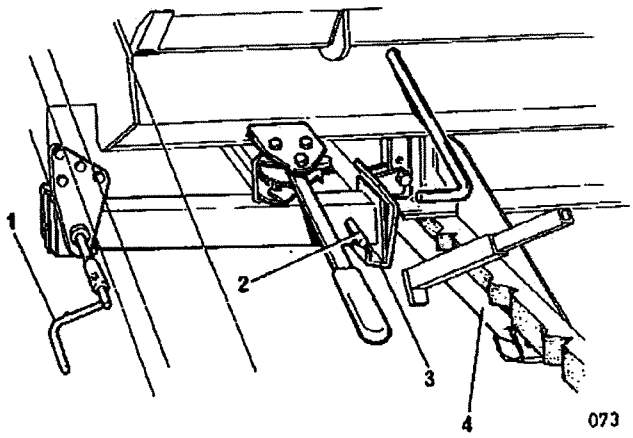


Fig 2 Drawbar coupler release lever

FRONT LANDING LEG CONTROLS

4. The winding handle (Fig 3(1)) is fitted on the left hand front landing leg to raise or lower the two front landing legs together.



1 Winding handle 2 Lifting handle
3 Stowing ledge 4 Strut in stowed position

Fig 3 Front landing legs in stowed position

5. A lifting handle is fitted to the side of the left hand leg to raise or lower the two front legs together from or into the stowed position.

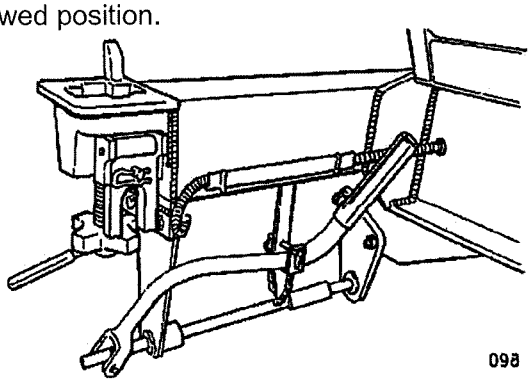


Fig 4 Front landing leg winding handle in stowed position

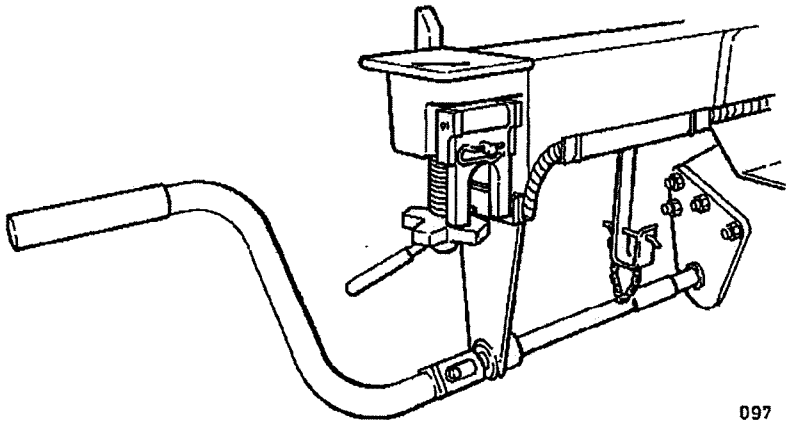
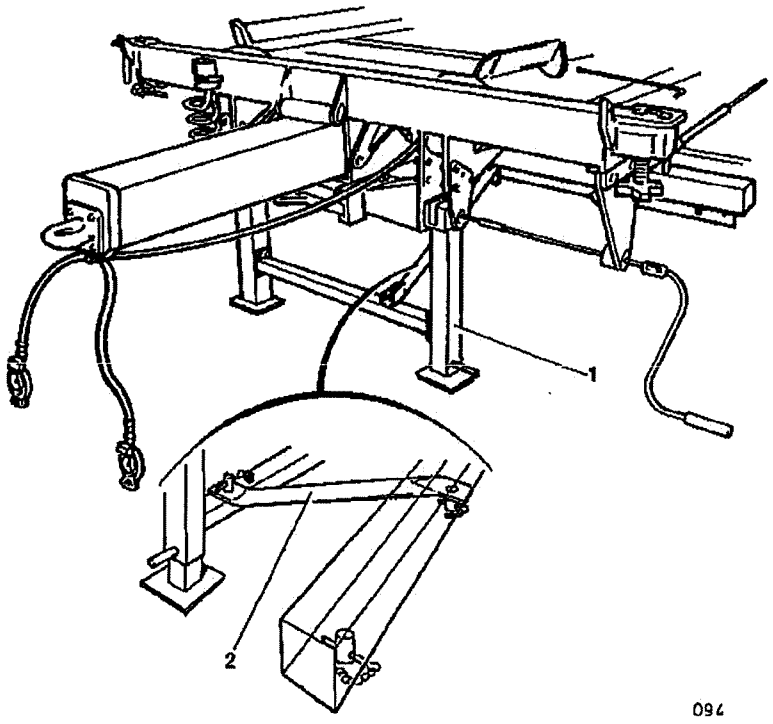


Fig 5 Front landing leg winding handle in operating position

6. A stay is provided to secure the front legs in the operating position (see Fig 6).

7. The stay (Fig 6(2)) must be returned to the stowed position before moving the front legs to the stowed position.

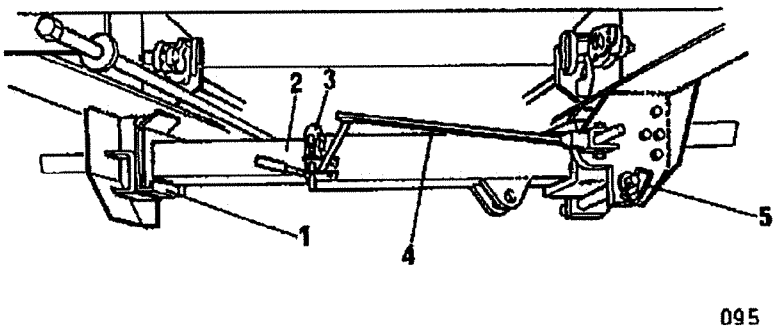


1 Landing leg 2 Stay

Fig 6 Front landing legs in operating position

REAR LANDING LEG CONTROLS

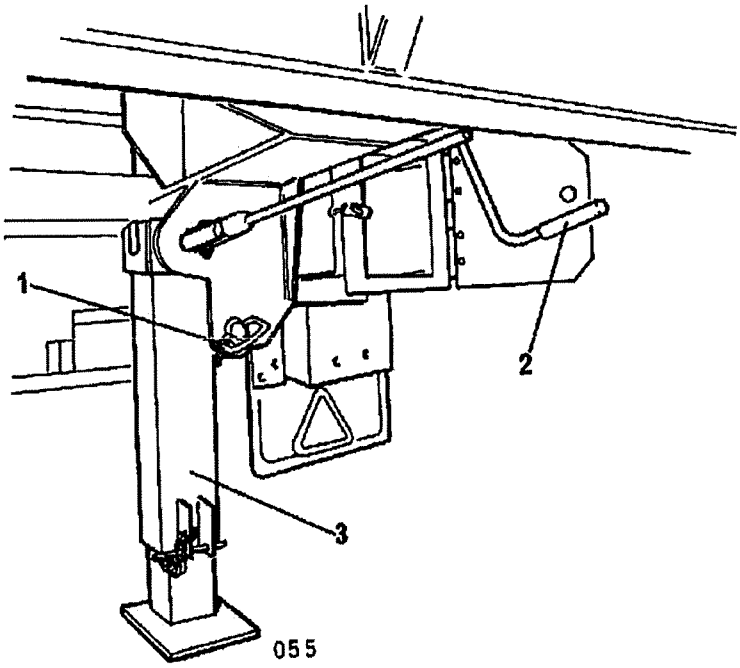
8. The rear winding leg is fitted with a winding handle (Fig 7(4)) to raise or lower the leg. A stowing ledge (Fig 7(1)) is provided to secure the leg in the stowed position. A securing pin (Fig 7(3)) is fitted to secure the winding handle in the stowed position.



1 Stowing ledge
2 Rear leg
3 Securing pin for winding handle
4 Winding handle
5 Securing pin for leg

Fig 7 Rear leg in raised position

9. The securing pin (Fig 8(1) must be used to lock the rear landing leg in the upright position.



1 Securing pin
2 Winding handle
3 Rear leg

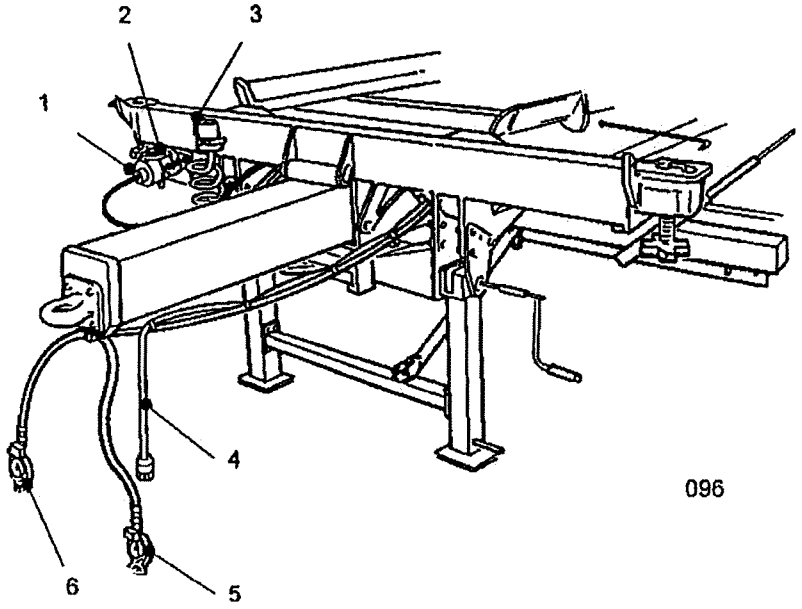
Fig 8 Rear leg in operating position

FRONT AIR AND ELECTRICAL COUPLINGS

10. One (red) emergency air coupling and one (yellow) service air coupling are fitted to the front of the trailer towbar (see Fig 9).

11. One 12 pin electrical plug is provided on the front of the trailer (see Fig 9).

12. One two pin electrical plug is also provided on the front of the trailer.



1 ABS power supply cable (shown connected to the dummy coupling)	3 12 Pin plug
2 Dummy coupling	4 2 Pin plug
	5 Air coupling (yellow) service
	6 Air coupling (red) emergency

Fig 9 front air, ABS power supply cable and electrical connections

ABS POWER SUPPLY CABLE

13. The ABS power supply cable (Fig 9(1)) is permanently attached to the Electronic Control Unit (ECU). It has a 7 pin end connector for coupling to the prime mover. A dummy coupling (2) is mounted at the front of the trailer for cable stowage.

REAR COUPLINGS

14. Two rear air couplings (Fig 10) are fitted for recovery purposes only.

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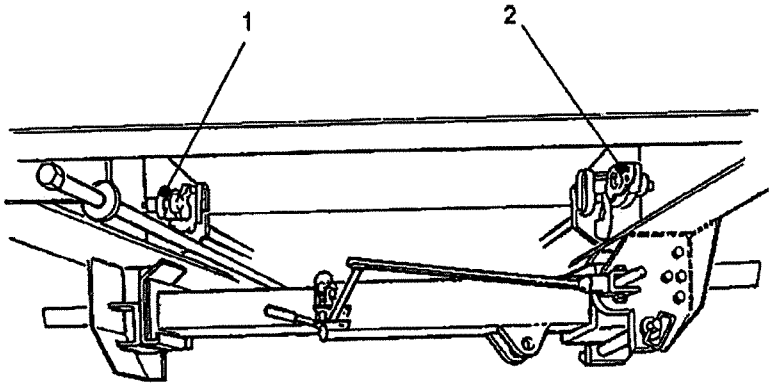
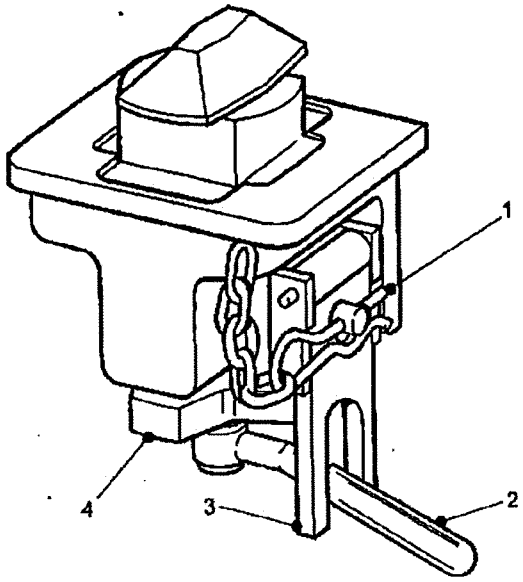


1 Air coupling (service) 2 Air coupling (emergency)

Fig 10 Rear couplings

TWISTLOCK

15. Four twistlocks, one on each corner of the trailer frame, are fitted to secure the flatracks in position (see Fig 11). The twistlock handles (2) must face inwards of the trailer in the locked position.



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1 Locking pin 3 Locking hatch
2 Handle 4 Locknut

Fig 11 Twistlock

CHAPTER 3

OPERATING INSTRUCTIONS

CONTENTS

COUPLING PRIME MOVER TO MLRS TRAILER

WARNINGS

(1) HAZARD: COLLISION / UNINTENDED MOVEMENT. PRIOR TO COUPLING / UNCOUPLING, ADHERE TO THE PRIME MOVER COUPLING / UNCOUPLING PROCEDURES. ENSURE THAT:

A. THE TRAILER IS POSITIONED ON FIRM, FLAT AND LEVEL GROUND.
B. SUITABLE WHEEL CHOCKS ARE FITTED AT ALL TIMES TO ONE OF THE TRAILER REAR WHEELS IN BOTH DIRECTIONS.

(2) HAZARD: COLLISION / UNINTENDED MOVEMENT. DO NOT STAND BETWEEN THE PRIME MOVER AND THE TRAILER WHILST COUPLING / UNCOUPLING. ADHERE TO THE PRIME MOVER COUPLING.UNCOUPLING PROCEDURES.

(3) HAZARD: COLLISION / UNINTENDED MOVEMENT. THE PRIME MOVER IS TO BE REVERSED UP TO THE TRAILER FOR COUPLING WITH THE ASSISTANCE OF A GUIDE. THE GUIDE IS TO BE POSITIONED TO THE SIDE AND TOWARDS THE REAR OF THE PRIME MOVER IN CLEAR VIEW OF THE DRIVER. THE GUIDE MUST BE IN A POSITION TO OBSERVE THE REAR OF THE VEHICLE AND THE FRONT OF THE TRAILER. ADHERE TO THE PRIME MOVER COUPLING / UNCOUPLING PROCEDURES.

(4) HAZARD: COLLISION / UNINTENDED MOVEMENT. THE PRIME MOVER IS TO BE GUIDED TO A POSITION APPROXIMATELY ONE METRE FROM THE FRONT OF THE TRAILER AND THE PRIME MOVER BRAKES APPLIED. ONCE FINAL CHECKS HAVE BEEN COMPLETED REVERSE THE PRIME MOVER ONTO THE DRAWBAR UNTIL THE TOW PINTLE OF THE PRIME MOVER IS UNDER THE TOW EYE ON THE DRAW BAR OF THE TRAILER. ADHERE TO THE PRIME MOVER COUPLING / UNCOUPLING PROCEDURES.

(5) HAZARD: COLLISION. THE ABS DOES NOT SHORTEN THE OVERALL STOPPING DISTANCE OF THE VEHICLE. DEPENDENT UPON THE ROAD CONDITION, THE OVERALL VEHICLE STOPPING DISTANCE CAN BE INCREASED.

(6) HAZARD: COLLISION. TO MAXIMISE THE EFFICIENCY OF THE ABS SYSTEM, DO NOT USE A CADENCE BRAKING TECHNIQUE (I.E. RAPID AND REPETITIVE APPLICATIONS OF THE SERVICE BRAKES). WHEN BRAKING, ENSURE THAT A CONTINUOUS PRESSURE IS APPLIED TO THE FOOT BRAKE PEDAL.

(7) HAZARD: COLLISION / UNINTENDED MOVEMENT. FAILURE OF THE VEHICLE OR TRAILER ABS WARNING LAMPS TO ILLUMINATE INDICATES A POSSIBLE MAJOR MALFUNCTION OF THE ABS ELECTRONIC CONTROL UNIT (ECU). DO NOT ATTEMPT TO DRIVE THE VEHICLE AND TRAILER IF THE ABS WARNING LAMPS ILLUMINATES.

(8) HAZARD: COLLISION. A PRIME MOVER FITTED WITH ABS CAN TOW A SUITABLE TRAILER, WITH OR WITHOUT ABS FITTED.

(9) HAZARD: COLLISION. A PRIME MOVER NOT FITTED WITH ABS CANNOT TOW A TRAILER WHICH IS FITTED WITH ABS, UNLESS THE PRIME MOVER HAS THE ABILITY TO TRIGGER THE TRAILER ABS THROUGH AN APPROVED INTER-VEHICLE SOCKET (I.E. ISO 7638).

1. For instructions on the coupling and decoupling process for this trailer look in the prime mover AESP operating instructions.

NOTE

If the drawbar is fully extended operate the drawbar release lever and move the drawbar. It may be necessary to use a tommy bar through the drawbar pivot point to assist movement.

CAUTIONS

(1) Equipment Damage. Do not exert pressure on the handle when stowing the landing legs. Winding must stop as soon as resistance is felt when the legs are in the stowed position. The handles must, if necessary, be turned back to be secured.

(2) Equipment Damage. Ensure legs are stowed correctly before moving vehicle.

(3) Drive slowly forward to avoid excessive shock loading of towing attachment when towbar locks in position.

LOADING FLATRACK TO TRAILER

WARNING

HAZARD: COLLISION / UNINTENDED MOVEMENT. THE TRAILER MUST BE UNCOUPLED FROM THE TOWING VEHICLE BEFORE ATTEMPTING TO LOAD OR UNLOAD A FLATRACK. ADHERE TO THE PRIME MOVER COUPLING / UNCOUPLING PROCEDURES. ENSURE THAT:

A. THE TRAILER IS POSITIONED ON FIRM, FLAT AND LEVEL GROUND.
B. APPROVED WHEEL CHOCKS ARE FITTED AT ALL TIMES TO ONE OF THE TRAILER REAR WHEELS IN BOTH DIRECTIONS.

CAUTUON

Equipment Damage. Before driving off with the trailer coupled, ensure that the telescopic drawbar is locked in the fully forward position.

2. For instructions on the cross loading and unloading processes for this trailer, look in the prime mover AESP operating instructions.

NOTE

If transporting a single flatrack on the public highway it must (EEC Traffic Regulations) be placed on the prime mover leaving the trailer empty.

RECOVERY OF TRAILER FROM REAR

3. To allow rearward recovery of a disabled or bogged trailer to take place, rear towing eyes are fitted.

4. Apply trailer handbrake and drain the trailer air system (Chap 4 para 21) to release the air brakes.

5. Secure tow chains to the rear towing eyes provided.

6. Ensure all landing legs are raised and release trailer handbrake.

7. Carry out rearward recovery operation.

8. On completion of recovery operation:

8.1. Apply trailer handbrake, lower landing legs.

8.2. Remove tow chains.

8.3. Recharge the trailer air system for normal braking.

TOWING A SECOND TRAILER

WARNING

HAZARD: COLLISION. A SECOND TRAILER CANNOT BE TOWED WHEN OPERATING ON THE PUBLIC HIGHWAY

9. For emergency purposes only and in off road conditions, a second trailer can be towed behind the MLRS trailer by adopting the following procedure:

9.1. Secure a suitable towing hook to the rear of the MLRS trailer in position provided.

9.2. Connect air couplings from the second trailer to the coupling at the rear of the MLRS trailer (yellow to yellow and red to red).

9.3. After towing the second trailer apply the trailer hand brake, disconnect the air lines between the trailers and uncouple the second trailer.

9.4. Remove the towing hook from the rear of the MLRS trailer and return it to its stowed position.

CHAPTER 4

USER MAINTENANCE

CONTENTS

AXLES

1. Axles do not require any lubrication other than renewal of the grease in the hubs, which should be carried out when checking the hub end float.

Hub end flat adjustment

2. At regular intervals as stated in the maintenance schedule, the hub end float should be checked and adjusted if necessary. This work should be carried out by suitably qualified personnel in accordance with AESP 2330-S-301-522 Chapter 1. The grease in the hub should also be renewed at the same time.

SUSPENSION

3. The single point suspension does not require any regular lubrication.

4. The "U" bolts should be checked at regular intervals as stated in the maintenance schedule for correct tightness.

WHEELS AND TYRES

5. The tyres should be examined at regular intervals for wear, cuts, breaks etc. and renewed as necessary. The depth of tread must not be allowed to go below the legal minimum.

Tyre pressure

6. Tyre pressures should be checked regularly as stated in the maintenance schedule. The tyre pressure should be 7 bar (100 psi).

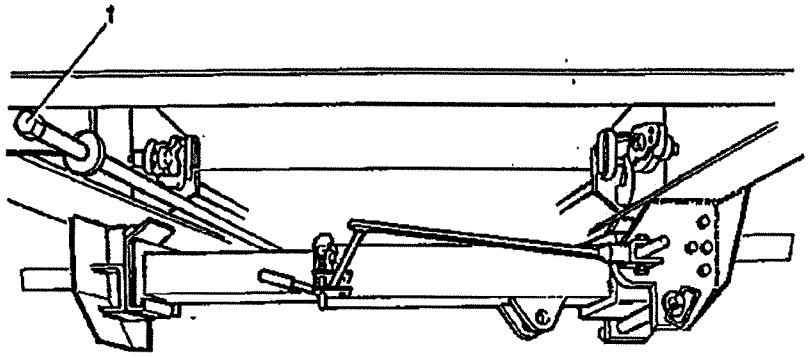
Wheel balancing

7. Wheel balance may affect tyre wear and it is therefore recommended that the wheel balance is checked at regular intervals.

Spare wheel removal/installation

8. The spare wheel is carried in a winch-type carrier located towards the rear of the chassis. Before attempting to remove the spare wheel from its carrier ensure that the cable of the winch is fully wound up. Using the wheel nut wrench remove the two nuts holding the wheel to the carrier.

9. Again using the wheel nut wrench turn the winch bar screw anti-clockwise to lower the spare wheel to the ground. When installing a wheel to the carrier turn the winch bar clockwise until the wheel support bar studs engage the carrier and the nuts can be started on the studs. Securely tighten nuts.



095

Fig 1 Spare wheel carrier screw

Wheel changing

WARNINGS

(1) HAZARD: COLLISION / UNINTENDED MOVEMENT. PRIOR TO CARRYING OUT ANY WORK ON THE TRAILER, ENSURE THAT:

A. THE TRAILER IS POSITIONED ON FIRM, FLAT AND LEVEL GROUND.
B. THE TRAILER IS UNCOUPLED FROM THE PRIME MOVER - ADHERE TO THE PRIME MOVER COUPLING / UNCOUPLING PROCEDURES.
C. APPROVED WHEEL CHOCKS ARE FITTED AT ALL TIMES TO ONE OF THE TRAILER REAR WHEELS IN BOTH DIRECTIONS.

(2) HAZARD: CRUSH INJURY. NEVER PLACE A JACK AT THE CENTRE OF AN AXLE BEAM, ALWAYS PLACE A JACK AS CLOSE TO THE HUB AS POSSIBLE. NEVER GET BENEATH THE VEHICLE WHEN IT IS SUPPORTED SOLELY BY A JACK.

10. Park the trailer on a firm, level surface apply the handbrake if removing a rear wheel and chock the rear wheel if removing a front wheel.

11. Place the jack directly under the suspension pivot and raise the jack until it just touches the suspension pivot.

12. Release the wheelnuts half a turn. Raise the jack until the wheels are just clear of the ground. Remove the wheelnuts and wheel. Lightly oil the stud threads to prevent corrosion.

13. Ensure that the mating surfaces on the nut and wheel are free of foreign matter. Failure to observe this point could result in the nuts not seating properly and slackening off during service. Tighten the wheel nuts to 700 Nm (516 lb.ft).

14. Lower and remove the jack then re-check the wheel nut torques.

15. Whenever a wheel has been removed and replaced the wheel nut torques should be checked regularly after running (see maintenance schedule). It is also good engineering practice to regularly check the torque of all wheel nuts as stated in the maintenance schedule.

16. If a torque wrench is not available tighten the wheel nuts as far as possible using the wheel brace only. Drive the vehicle for approximately three miles and recheck the tightness of the wheel nuts. Have the torque checked using a torque wrench set to 700 Nm (516 lb.ft) at the first opportunity.

17. When a wheel has been raised off the ground and freely rotated an error may register in the ABS memory. This error should be removed from the system at the first opportunity.

AIR PRESSURE AND BRAKING SYSTEM

WARNINGS

(1) HAZARD: COLLISION. THE ABS DOES NOT SHORTEN THE OVERALL STOPPING DISTANCE OF THE VEHICLE. DEPENDENT UPON THE ROAD CONDITION, THE OVERALL VEHICLE STOPPING DISTANCE CAN BE INCREASED.

(2) HAZARD: COLLISION. TO MAXIMISE THE EFFICIENCY OF THE ABS SYSTEM, DO NOT USE A CADENCE BRAKING TECHNIQUE (I.E. RAPID AND REPETITIVE APPLICATIONS OF THE SERVICE BRAKES). WHEN BRAKING, ENSURE THAT A CONTINUOUS PRESSURE IS APPLIED TO THE FOOT BRAKE PEDAL.

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Anti-lock Braking System (ABS)

18. The ABS warning lamp operates in the following ways:

18.1. On switching the ignition on, the warning lamp will illuminate. As a complete sensor check is unable to be made until the vehicle is in motion, the lamp will remain on.

18.2. At approximately 7kph the warning lamp will extinguish and remain off for the duration of the journey, whether the vehicle is stationary or moving. If a fault is detected the warning lamp will illuminate and remain on.

18.3. On stopping the vehicle, switch the ignition off and back on again, the safety circuit will reset itself. If the fault was intermittent and is no longer present, then moving off the lamp will extinguish in the normal manner otherwise the lamp will remain on.

NOTE

Following a revision of the electronic logic in the trailer ECU, when towing a DROPS trailer fitted with ABS two circumstances prevail concerning the trailer ABS warning light in the driver cab. When the vehicle key switch is switched on the trailer ABS warning light will either:

A Illuminate and extinguish after 3 seconds (i.e. as truck ABS warning lights).

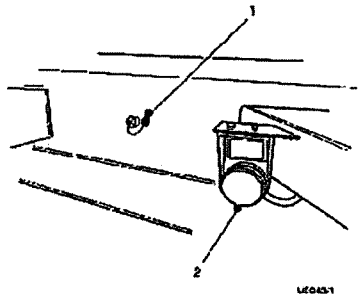
OR

B Illuminate and remain on until the vehicle speed exceeds 7 kph (All assuming no faults are present).

If the trailer ABS warning light does not extinguish in either condition carry out the same actions as with a vehicle ABS fault.

19. Faults are stored in the non-volatile memory of the Electronic Control Unit (ECU) for subsequent analysis in the workshop using one of the following:

19.1. Diagnostic controller (Plugs into the trailer ABS diagnostic socket situated on the left hand side of the trailer between the rear mud flap and the rear side marker lamp).



1 ABS diagnostic socket 2 Rear side marker lamp

Fig 2 ABS diagnostic socket location

19.2. Flash code sequence used in conjunction with the blink code adaptor plugged into the trailer ABS diagnostic socket.

20. In the event of the ABS warning light illuminating during use, the vehicle should be driven with due care and attention directly to a workshop where qualified personnel can diagnose and rectify the fault. As the ABS system operates independently from conventional braking, normal braking will still be possible.

Air reservoir drainage

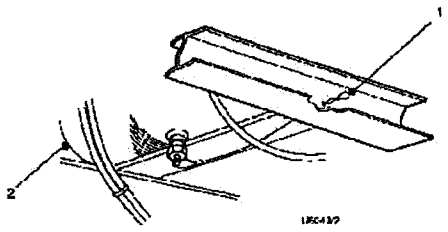
WARNING

HAZARD: EXPOSURE TO PRESSURISED FLUIDS (LIQUID, GAS. AIR IN THE AIR RESERVOIR IS UNDER PRESSURE. KEEP EYES AND FACE AWAY FROM THE DRAIN VALVE WHEN OPENING THE TILT VALVE. WHERE APPRVED PPE: GOGGLES.

21. To drain the condensation from the air reservoirs pull the wire loop connected to the release valve.

NOTE

On completion ensure that air pressure is high enough for normal braking.



1 Wire loop 2 Air reservoir

Fig 3 Air reservoir tilt valve

BRAKE ADJUSTMENT

22. "S" type cam brakes are adjusted by means of self-adjusting slack adjusters fitted to the camshaft.

Brake lining Inspection

WARNING

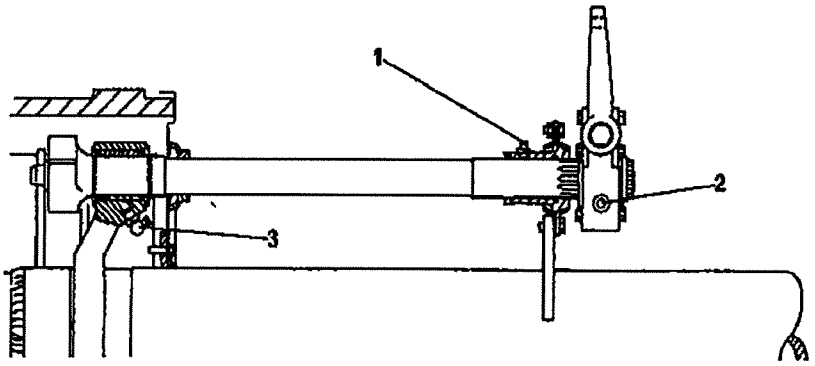
HAZARD: EXPOSURE TO HOT SURFACES. IF RECENTLY OPERATED, THE BRAKE SYSTEM (DISCS, PADS, ETC.) WILL BE HOT. PRIOR TO CARRYING OUT WORK ON THE BRAKE SYSTEM, ENSURE THE BRAKES HAVE HAD SUFFICIENT TIME TO FULLY COOL.

23. Check thickness of brake linings at regular intervals as specified in the Maintenance Schedule. Inspection apertures are provided in the backplate for this purpose and these are sealed by rubber grommets.

24. A more thorough inspection of the lining condition is also required occasionally and this will necessitate the removal of the brake drums. This work should be carried out by suitably qualified personnel.

Brake camshaft lubrication

25. At regular intervals as stated in the maintenance schedule lubricate the four brake camshafts. The lubricator on the outside of the camshaft next to the brake backplate must only be lubricated with one shot of grease using a hand gun.



1 Lubricator 2 Lubricator 3 Lubricator

Fig 4 Brake lubrication points

Brake adjuster lubrication

26. At regular intervals as stated in the lubrication schedule lubricate the four brake adjusters.

ELECTRICAL SYSTEM

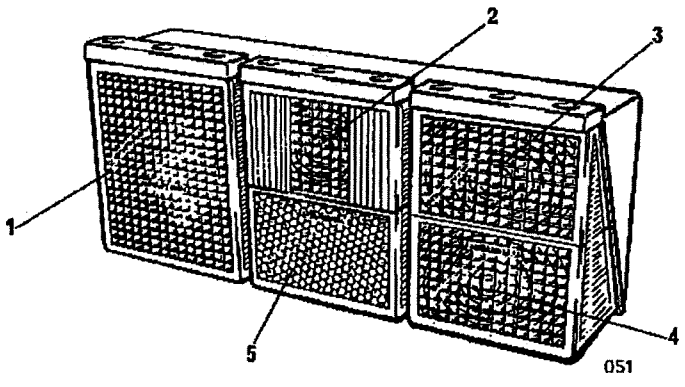
27. Daily check the operation of all lamps. Rectify any fault before moving the trailer.

28. Occasionally check cable connections for security and check the cables for chafing.

Rear light cluster lamp replacement

29. The rear light cluster (Fig 5) encloses five lamps i.e. stop, tail, flasher, fog and reversing lamps. The reversing lamp is not wired up and is therefore inoperable at this time.

30. To gain access to the lamps flip up the relevant lens and remove the lamp by pushing in and turning anti-clockwise.



1 Fog light
2 Reversing light
3 Stop light
4 Flasher
5 Tail light

Fig 5 Rear light cluster (RH)

Number plate light lamp replacement

31. To gain access to the lamp remove the screws securing the lens to the body and remove lens. The lamp can be removed by pushing in and turning anti-clockwise.

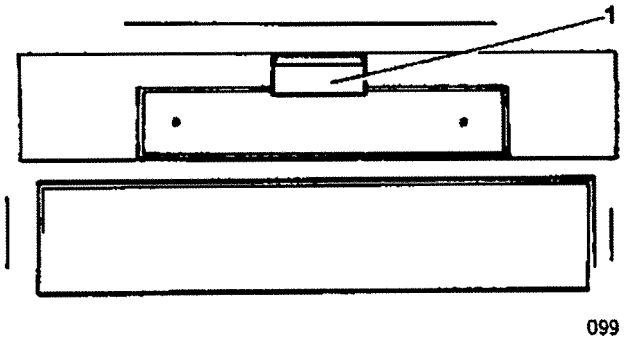


Fig 6 Number plate light

Convoy light lamp replacement

32. To gain access to the lamp remove the screws securing the cover to the body and remove the cover and lens. The lamp can be removed by pushing in and turning anti-clockwise.

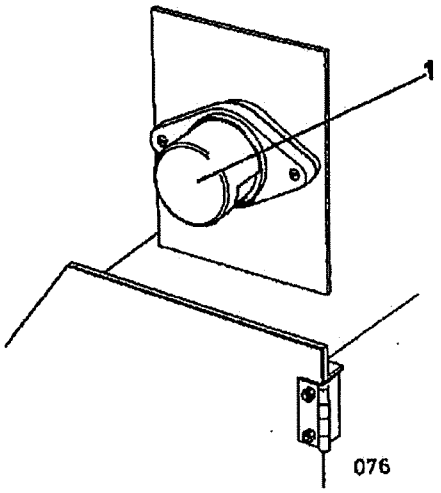


Fig 7 Convoy light

Side marker light lamp replacement

33. To gain access to the lamp remove the lens from the rubber body. The lamp can be removed by pushing in and turning anti-clockwise.

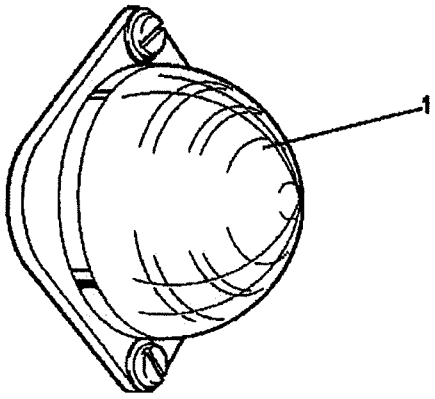


Fig 8 Side marker light

Corner marker light lamp replacement

34. To gain access to the lamp remove the lens from the rubber body. The lamp can be removed by pushing in and turning anti-clockwise.

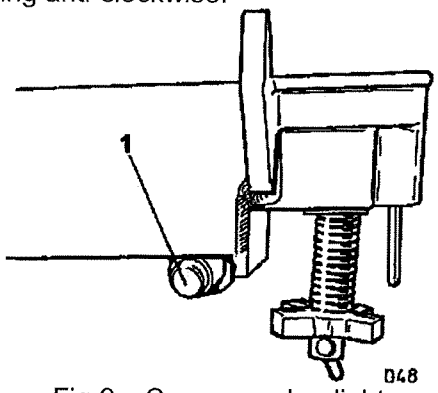


Fig 9 Corner marker light

CHASSIS FRAME AND FITTINGS

35. At regular intervals as stated in the maintenance schedule inspect the trailer for cracks and damage.

Coupler jaws adjustment

36. At regular intervals as stated in the maintenance schedule the jaw adjustment should be checked by suitably qualified personnel. For instruction see AESP 2330-S-301-522.

Coupler lubrication

37. At regular intervals as stated in the maintenance schedule the two lubricators on the top of the jaw swivel pins must be lubricated. To gain access to the two lubricators open the cover, close and secure cover after lubrication.

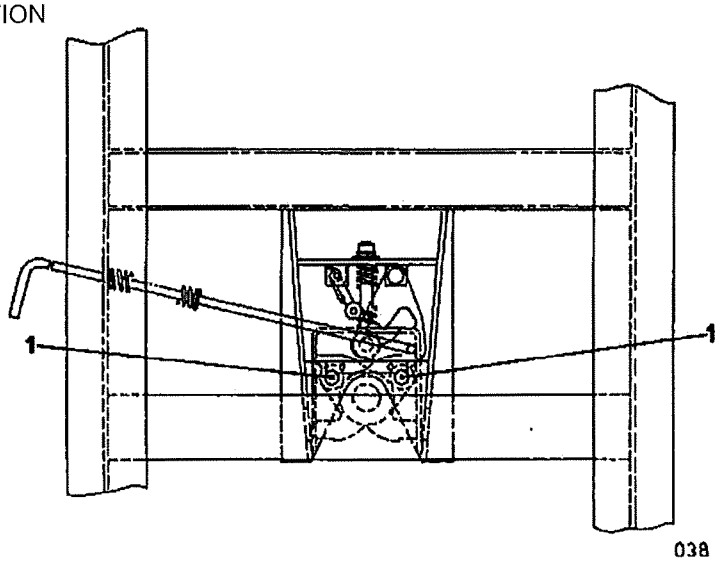


Fig 10 Coupler lubricators

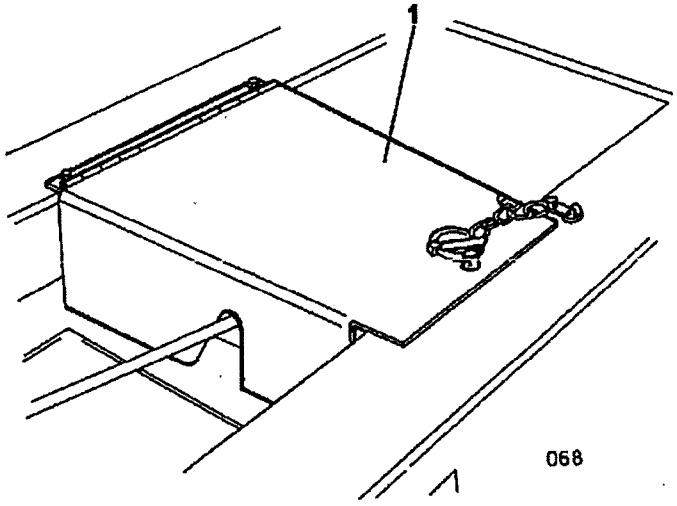


Fig 11 Coupler cover

Drawbar swivel pin lubrication

38. The two grease nipples on the top and bottom of the drawbar swivel pin must be lubricated at regular intervals as stated in the maintenance schedule.

Drawbar rollers lubrication

39. At regular intervals as stated in the maintenance schedule the six grease nipples (2 on each roller) must be lubricated.

Drawbar roller adjustment

40. At regular intervals check the vertical movement of the towbar in the casing. If the vertical movement is excessive re-adjust the roller height as per AESP 2330-S-301-522.

Drawbar wear pad screws

41. Visually check that wear pad screws are secure. Any screws which have come loose must be tightened after loctiting the threads.
Landing legs lubrication

42. At regular intervals as stated in the maintenance schedule lubricate the swivel points using an oil can.

43. Also lubricate the grease nipples on the landing legs (1 nipple on each leg) at regular intervals as stated in the maintenance schedule.

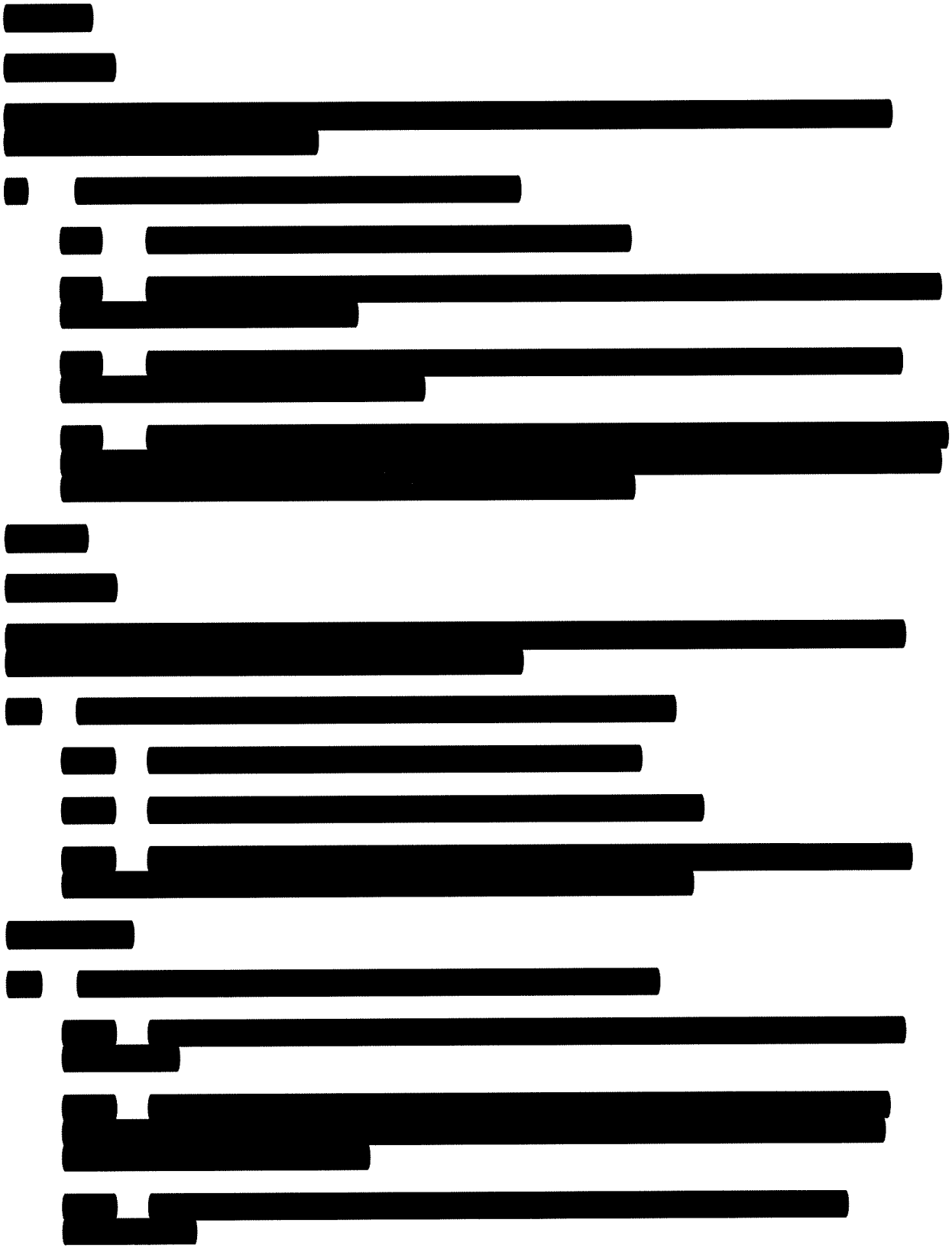
CHAPTER 5

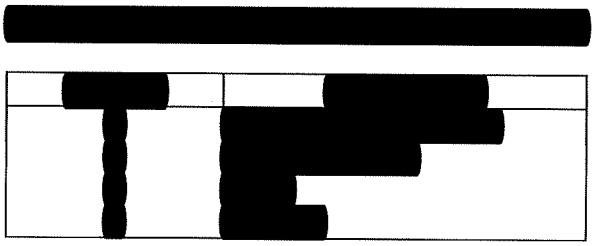
USER SPARES DATA

CONTENTS

TABLE 1 - LAMP DATA

Lamp	Volts	Watts	Type	Lamp No
Reverse	24	21	BA15S SCC	241
Stop/tail) indicator) rear)	24	5	BA15S SCC	149 (4 off)
Front corner marker light	24	5	BA15S SCC	149
Side marker light	24	5	BA15S SCC	149
No. Plate light	24	5	BA15S SCC	149
Convoy light	24	5	BA15S SCC	149





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Defence Technical Documentation

TRAILER CARGO 15 TONNE LONG WHEEL BASE

PALLETISED LOAD SYSTEM (TLR CARGO 15T LWB PLS)

2330-S-300-201

OPERATING INFORMATION

Edition No. 003
October 2020

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AMENDMENT RECORD

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PRELIMINARY MATERIAL Page

OPERATING INFORMATION

Chapter 1

Annex

PREFACE

Sponsor: Support Vehicle
Publication Authority: Support Vehicle

INTRODUCTION

1. Users should forward any comments on this publication in accordance with Army Equipment Support Publication (AESP) 0100-P-011-013. All comments are only to be submitted using the electronic and interactive Form 10 (F10) which can be accessed and downloaded from the Joint Asset Management and Engineering Solutions (JAMES) Portal (via Hot Topic – Forms) or from the Design Repository Technical Documentation On Line (DR TDOL) (F10)). This procedure is only to be used for the purposes of commenting on the content of an individual AESP.

0. All electronic F10s are to be completed and forwarded to the F10 Cell using the instructions accompanying the F10 in its template location. Security procedures are to be IAW JSP 440: Defence Manual of Security, Resilience and Business Continuity.

1. The F10 procedure is only to be used for the purpose of commenting on the content of an individual AESP and must not be used:

3.1. In place of the Equipment Failure Reporting (EFR) procedure outlined in The Land Equipment Unit Maintenance Standards (LEUMS).

3.2. For subjects, which are the concern of the Technical Staff Suggestions outlined in Army General and Administrative Instructions (AGAIs).

2. AESPs are issued under UK MOD authority and when AESPs specify action to be taken, the AESP will be itself sufficient authority for such action and also for the demand of the necessary stores, subject to provisions of Para 5.

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

Amendments

4. Amendments to the publication will be published as and when necessary. These will be numbered consecutively, and the Amendment Record sheet is to be completed for each amendment list embodied. New or amended material will be highlighted by side lining to show the extent of the amendment.

Publication information

5. Any communication regarding this publication should be made to the controlling publication authority.

Publication authority

6. The publication authority for this AESP is as follows:

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MoD Abbey Wood
Bristol
BS34 8JH

RELATED AND ASSOCIATED PUBLICATIONS

Related publications

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

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	*	*
	1	Equipment Support Policy Directive	111	111	*	*
2	0	Operating Information	201	201	*	*
	1	Aide Memoire	*	*	*	*
	2	Training Aids	*	*	*	*
3		Technical Description	302		*	*
4	1	Installation Instructions	*	*	*	*
	2	Preparation for Special Environments	421	*	423	*
5	1	Failure Diagnosis	512	512	*	*
	2	Repair Instructions	522	522	523	*
	3	Inspection Standards	532	532	*	*
	4	Calibration Procedures	*	*	*	*
6		Maintenance Schedule (Joint Service)	601	601	*	*
7	1	Illustrated Parts Catalogue	711	711	*	*
	2	Commercial Parts List	*	*	*	*
	3	Complete Equipment Schedule, Production	*	*	*	*
	4	Complete Equipment Schedule, Service Edition (Simple Equipment)	741	741	*	*
	5	Complete Equipment Schedule, Service Edition (Complex Equipment)	*	*	*	*
8	1	Modification Instructions	811	811	*	*
	2	General Instructions, Special Technical Instructions and Servicing Instructions	821	821	*	*
	3	Service Engineered Modification Instructions (RAF only)	*	*	*	*

* Category / Sub-category not published

Associated publications

8. The following publications should be read in conjunction with this publication:

Publication	Description
AESP 2330-S-300-101	TLR CARGO 15T LWB PLS - Purpose and Planning Information
AESP 2330-S-300-111	TLR CARGO 15T LWB PLS - Equipment Support Policy Directive
AESP 2330-S-300-201	TLR CARGO 15T LWB PLS - Operating Information
AESP 2330-S-300-302	TLR CARGO 15T LWB PLS - Technical Information
AESP 2330-S-300-421	TLR CARGO 15T LWB PLS - Preparation for Special Environments
AESP 2330-S-300-423	TLR CARGO 15T LWB PLS - Preparation for Special Environments
AESP 2330-S-300-512	TLR CARGO 15T LWB PLS - Failure Diagnosis
AESP 2330-S-300-522	TLR CARGO 15T LWB PLS - Maintenance Instructions
AESP 2330-S-300-532	TLR CARGO 15T LWB PLS - Inspection Standards
AESP 2330-S-300-601	TLR CARGO 15T LWB PLS - Maintenance Schedule (Joint Service)
AESP 2330-S-300-711	TLR CARGO 15T LWB PLS - Illustrated Parts Catalogue
AESP 2330-S-300-741	TLR CARGO 15T LWB PLS - Complete Equipment Schedule, Service Edition (Simple Equipment)
AESP 2330-S-300-811	TLR CARGO 15T LWB PLS - Modification Instructions
AESP 2330-H-300-821	TLR CARGO 15T LWB PLS - General Instructions
AESP 2320-W-100-Octad	Support Vehicle - General
AESP 2320-W-101-Octad	Support Vehicle - 6T MM
AESP 2320-W-110-Octad	Support Vehicle - 9T MM
AESP 2320-W-120-Octad	Support Vehicle - 15T MM
AESP 2320-W-125-Octad	Support Vehicle - EPLS
AESP 2320-W-130-Octad	Support Vehicle - 9T IMM
AESP 0200-A-090-013	Land Equipment Engineering Standards (LEES)
AESP 0200-A-093-013	Land Equipment User Maintenance Standards (LEUMS)
DLF	Defence Logistics Framework
ESRS	Equipment Standards Regulatory Schedule
JSP 375	Management of Health and Safety in Defence
JSP 418	Management of Environmental Protection in Defence
JSP 800	Defence Movement and Transport Regulations
TD-76-0543-00	Defence Technical Documentation Guide
DSA 01.1	Defence Policy for Health, Safety and Environmental Protection (previously JSP815)
DSA 02 DLSR LSSR	Land System Safety and Environmental Protection Directive (previously JSP454 Pt1)
DSA 03 DLSR LSSR	Land System Safety and Environmental Protection Guidance. Defence Codes of Practice (DCoP) (previously JSP454 Pt2)
ACSO 3216	Organisation & Arrangements for the Management of Safety & Environmental Protection
ACSO 9015	Land Equipment Assurance (LEA)

ABBREVIATIONS

11. 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.

Abbreviation	Definition
DEF STAN	Defence Standard
in.	inch
JAMES	Joint Asset Management Engineering Solution
kg(s)	kilogram(s)
ltr.	litre
mm.	millimeter
mph	miles per hour
OBI	Order Book Items
OSD	Out of Service Date
STANAG	Standard NATO Agreement
SV	Support Vehicle
VST	Vehicle Support Team

WARNINGS

(1) HAZARD: COLLISION / UNINTENDED MOVEMENT. PRIOR TO CARRYING OUT ANY WORK ON THE TRAILER, ENSURE THAT:

A. THE TRAILER IS POSITIONED ON FIRM, FLAT AND LEVEL GROUND.
B. THE TRAILER IS UNCOUPLED FROM THE PRIME MOVER - ADHERE TO THE PRIME MOVER COUPLING / UNCOUPLING PROCEDURES.
C. APPROVED WHEEL CHOCKS ARE FITTED AT ALL TIMES TO ONE OF THE TRAILER REAR WHEELS IN BOTH DIRECTIONS.
D. THE TRAILER PARK BRAKE IS IN THE 'ON' POSITION (PARK BRAKE IS PULLED OUT).
E. THE TRAILER SHUNT VALVE IS IN THE 'OFF' POSITION (SHUNT VALVE IS PULLED OUT).

(2) HAZARD: COLLISION / UNINTENDED MOVEMENT. THE TRAILER IS FITTED WITH A PARK BRAKE / SHUNT VALVE. WHENEVER THE TRAILER IS UNCOUPLED FROM THE PRIME MOVER, ENSURE THAT:

A. THE TRAILER IS POSITIONED ON FIRM, FLAT AND LEVEL GROUND.
B. APPROVED WHEEL CHOCKS ARE FITTED AT ALL TIMES TO ONE OF THE TRAILER REAR WHEELS IN BOTH DIRECTIONS.
C. THE TRAILER PARK BRAKE IS IN THE 'ON' POSITION (PARK BRAKE VALVE IS PULLED OUT).
D. THE TRAILER SHUNT VALVE IS IN THE 'OFF' POSITION (SHUNT VALVE IS PULLED OUT).

(3) HAZARD: COLLISION / UNINTENDED MOVEMENT. THE SHUNT VALVE MUST ONLY BE USED FOR MINOR ADJUSTMENT OF THE TRAILER DRAWBAR ASSEMBLY (A-FRAME) POSITION (I.E. COUPLING / UNCOUPLING, MAINTENANCE ACTIVITIES).

(4) HAZARD: COLLISION / UNINTENDED MOVEMENT. THE SHUNT VALVE WILL ONLY ALLOW THE TRAILER TO BE MOVED IF:

A. THERE IS SUFFICIENT AIR IN THE TRAILER AIR RESERVOIRS.
B. THE TRAILER PARK BRAKE IS IN THE 'OFF' POSITION (PARK BRAKE VALVE PUSHED IN)
C. THE TRAILER SHUNT VALVE IS IN THE 'ON' POSITION (SHUNT VALVE PUSHED IN).

(5) HAZARD: COLLISION/UNINTENDED MOVEMENT. THE TRAILER HAS TWIN AXLES. THE FRONT AXLE IS MANOEUVRABLE TO ALLOW FOR MINOR ADJUSTMENT OF THE TRAILER DRAWBAR ASSEMBLY (A-FRAME) POSITION. THE REAR AXLE IS FIXED - CHOCKING THE REAR ROAD WHEELS AT THE FRONT AND REAR WILL PREVENT / REDUCE THE RISK OF THE TRAILER MOVING DURING MINOR ADJUSTMENT OF THE TRAILER DRAWBAR (A-FRAME) ASSEMBLY POSITION.

(6) HAZARD: COLLISION / UNINTENDED MOVEMENT. IF THE A-FRAME OF A TRAILER IS TO BE ALIGNED TO A PRIME MOVER FOR COUPLING / UNCOUPLING PROCEDURES WHEN DISCONNECTED FROM A PRIME MOVER, OPERATORS SHOULD BE AWARE THAT WHEN DISCONNECTION OF THE EMERGENCY (RED) BRAKE LINE OCCURS, THE FOUNDATION BRAKES WILL BE APPLIED. ADHERE TO THE PRIME MOVER COUPLING / UNCOUPLING PROCEDURES.

(7) HAZARD: COLLISION / UNINTENDED MOVEMENT. IF THE TRAILER IS LEFT PARKED OR UNATTENDED, THE TRAILER PARK BRAKE MUST BE IN THE 'ON' POSITION (PARK BRAKE VALVE PULLED OUT) AND THE SHUNT VALVE MUST BE IN THE 'OFF' POSITION (SHUNT VALVE IS PULLED OUT) AND APPROVED SUITABLE WHEEL CHOCKS ARE FITTED AT ALL TIMES TO ONE OF THE TRAILER REAR WHEELS IN BOTH DIRECTIONS.

(8) HAZARD: COLLISION / UNINTENDED MOVEMENT. DO NOT STAND BETWEEN THE PRIME MOVER AND THE TRAILER WHILST COUPLING / UNCOUPLING. ADHERE TO THE PRIME MOVER COUPLING.UNCOUPLING PROCEDURES.

(9) HAZARD: COLLISION / UNINTENDED MOVEMENT. PRIOR TO COUPLING / UNCOUPLING, ADHERE TO THE PRIME MOVER COUPLING / UNCOUPLING PROCEDURES. ENSURE THAT:

A. THE TRAILER IS POSITIONED ON FIRM, FLAT AND LEVEL GROUND.
B. SUITABLE WHEEL CHOCKS ARE FITTED AT ALL TIMES TO ONE OF THE TRAILER REAR WHEELS IN BOTH DIRECTIONS.
C. THE TRAILER PARKING BRAKE IS APPLIED (PARK BRAKE IS PULLED OUT).
D. THE TRAILER SHUNT VALVE IS IN THE OFF POSITION (SHUNT VALVE IS PULLED OUT).

(10) HAZARD: COLLISION / UNINTENDED MOVEMENT. THE PRIME MOVER IS TO BE REVERSED UP TO THE TRAILER FOR COUPLING WITH THE ASSISTANCE OF A GUIDE. THE GUIDE IS TO BE POSITIONED TO THE SIDE AND TOWARDS THE REAR OF THE PRIME MOVER IN CLEAR VIEW OF THE DRIVER. THE GUIDE MUST BE IN A POSITION TO OBSERVE THE REAR OF THE VEHICLE AND THE FRONT OF THE TRAILER. ADHERE TO THE PRIME MOVER COUPLING / UNCOUPLING PROCEDURES.

(11) HAZARD: COLLISION / UNINTENDED MOVEMENT. THE PRIME MOVER IS TO BE GUIDED TO A POSITION APPROXIMATELY ONE METRE FROM THE FRONT OF THE TRAILER AND THE PRIME MOVER BRAKES APPLIED. ONCE FINAL CHECKS HAVE BEEN COMPLETED REVERSE THE PRIME MOVER ONTO THE DRAWBAR UNTIL THE TOW PINTLE OF THE PRIME MOVER IS UNDER THE TOW EYE ON THE DRAW BAR OF THE TRAILER. ADHERE TO THE PRIME MOVER COUPLING / UNCOUPLING PROCEDURES.

(12) HAZARD: COLLISION / UNINTENDED MOVEMENT. THE TRAILER MUST BE UNCOUPLED FROM THE TOWING VEHICLE BEFORE ATTEMPTING TO LOAD OR UNLOAD A FLATRACK. ADHERE TO THE PRIME MOVER COUPLING / UNCOUPLING PROCEDURES. ENSURE THAT:

A. THE TRAILER IS POSITIONED ON FIRM, FLAT AND LEVEL GROUND.
B. APPROVED WHEEL CHOCKS ARE FITTED AT ALL TIMES TO ONE OF THE TRAILER REAR WHEELS IN BOTH DIRECTIONS.
C. THE TRAILER PARKE BRAKE IS IN THE 'ON' (PARK BRAKE VALVE IS PULLED OUT).
D. THE TRAILER SHUNT VALVE IS IN THE 'OFF' POSITION (SHUNT VALVE IS PULLED OUT).

(13) HAZARD: EXPOSURE TO SHARP EDGES, PROTRUSIONS AND PROJECTIONS. WHENEVER THE DRAWBAR SUPPORT LEG IS DEPLOYED OR STOWED, THE LOCKING PIN IS TO BE FULLY ENGAGED AGAINST SPRING TENSION UNTIL THE DROP NOSE OPERATES TO RETAIN THE PIN IN POSITION.

(14) HAZARD: COLLISION / UNINTENDED MOVEMENT. PRIOR TO MOVING OFF, ENSURE THE PRIME MOVER ENGINE HAS BEEN RUN UNTIL THE AIR PRESSURE IN THE TRAILER BRAKING SYSTEM HAS BUILT UP.

(15) HAZARD: MANUAL HANDLING. ALTHOUGH THE DRAWBAR IS COUNTERSPRUNG, IT MUST BE SUPPORTED WHEN UNCOULING FROM A PRIME MOVER. THE ITEM IS HEAVY AND IS A 2-PERSON OPERATION.

(16) HAZARD: COLLISION. THE ABS DOES NOT SHORTEN THE OVERALL STOPPING DISTANCE OF THE VEHICLE. DEPENDENT UPON THE ROAD CONDITION, THE OVERALL VEHICLE STOPPING DISTANCE CAN BE INCREASED.

(17) HAZARD: COLLISION. TO MAXIMISE THE EFFICIENCY OF THE ABS SYSTEM, DO NOT USE A CADENCE BRAKING TECHNIQUE (I.E. RAPID AND REPETITIVE APPLICATIONS OF THE SERVICE BRAKES). WHEN BRAKING, ENSURE THAT A CONTINUOUS PRESSURE IS APPLIED TO THE FOOT BRAKE PEDAL.

(18) HAZARD: COLLISION / UNINTENDED MOVEMENT. FAILURE OF THE VEHICLE OR TRAILER ABS WARNING LAMPS TO ILLUMINATE INDICATES A POSSIBLE MAJOR MALFUNCTION OF THE ABS ELECTRONIC CONTROL UNIT (ECU). DO NOT ATTEMPT TO DRIVE THE VEHICLE AND TRAILER IF THE ABS WARNING LAMPS ILLUMINATES.

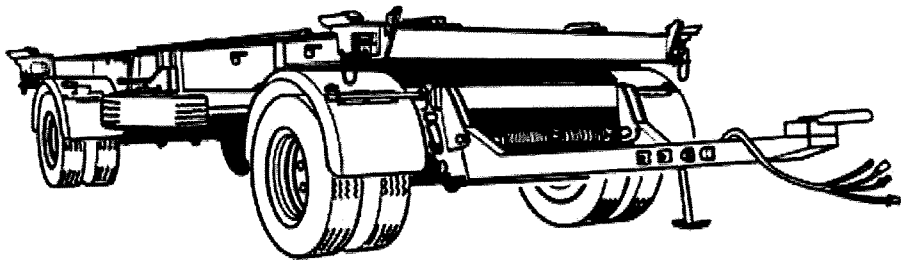
(19) HAZARD: COLLISION. A PRIME MOVER FITTED WITH ABS CAN TOW A SUITABLE TRAILER, WITH OR WITHOUT ABS FITTED.

(20) HAZARD: COLLISION. A PRIME MOVER NOT FITTED WITH ABS CANNOT TOW A TRAILER WHICH IS FITTED WITH ABS, UNLESS THE PRIME MOVER HAS THE ABILITY TO TRIGGER THE TRAILER ABS THROUGH AN APPROVED INTER-VEHICLE SOCKET.

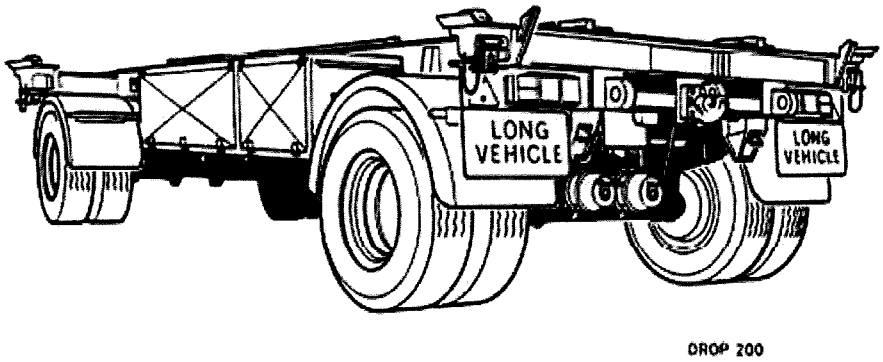
CAUTIONS

(1) Equipment damage. Care must be taken when inserting a screwdriver blade into the rubber housing. If the rubber is punctured, watertight integrity could be lost.

(2) Equipment damage. The blink code system is intended as a Workshop diagnostic aid and must only be operated by authorised workshop personnel. Comprehensive operating instructions are contained in AESP 2330-S-300-512, Chap 10 (ABS supplement).



Front three-quarter view



Rear three-quarter view

Tlr 15T LWB PLS Frontispiece

OPERATING INFORMATION

CHAPTER 1

GENERAL DESCRIPTION

CONTENTS

INTRODUCTION

1. The Trailer Cargo 15 Tonne Long Wheel Base Palletised Load System (Tlr Cargo 15T LWB PLS) is a low mobility trailer for operation with an Enhanced Palletised Load System (EPLS). The trailer is capable of traversing prepared or semi-prepared road surfaces, but not cross country terrain. The trailer is dedicated to the transporting of purpose made Flatracks (A Type and GP Type only. Converted A to GP Type **must** not be used) loaded with a gross weight of 15T, including the weight of the Flatrack, or 20ft. ISO containers to ISO 668-1979 series 1 designations 1C and 1CC, loaded to 15T (Gross).

BRAKES

2. The drum brakes (335 x 210 mm), are 'S' cam type operated by a two-line air system conforming to DEF STAN 25-19. A fail-safe system is fitted. The trailer air pressure supply line is extended to the rear of the trailer terminating in a palm coupling for recovery purposes.

DECK

3. The deck is of skeletal construction, with built-in guides to facilitate the gathering-in of mis-aligned Flatracks and longitudinal loading stops at each corner. Flatracks can be offered onto, or removed from, the deck at either end of the trailer. ISO corner clamps are fitted at each corner for the purpose of securing ISO containers. ISO containers can only be loaded onto the deck from overhead, by a Rail Transfer Equipment (RTE), or other suitable mechanical load handling equipment.

DRAWBAR

4. The drawbar assembly is secured by pivot pins to mounting lugs welded to the turntable frame. The assembly comprises an 'A' frame, two counterbalance springs with adjustable tension and a removable NATO 3-inch towing eye. When the trailer is uncoupled the drawbar can be supported by a pivoting drawbar support leg. The tension in the counterbalance springs counteracts the weight of the drawbar, making it easier for the operators to couple the trailer to an EPLS.

DRAWBAR SUPPORT LEG

5. The drawbar support leg is located on the left side of the drawbar 'A' frame and is used to support the drawbar in a vertical position when the trailer is disconnected from a towing vehicle. The support leg is adjustable for height and can be swung into a stowed position when not deployed. Spring loaded pins with drop noses are used to lock the support leg in either the stowed or deployed position.

ELECTRICAL SYSTEM

6. The electrical system is a 24-volt insulated double pole wiring system, conforming to DEF STAN 25-11. All lighting complies to DEF STAN 25-5; and comprises: front, corner and side marker, rear number plate, high intensity fog, stop, tail, turn and convoy lights. A Beta light (self-luminescent) is located on each side frame between the middle/side and rear corner/side marker lights.

8. Two NATO plugs, a 12-pin and a 2-pin are connected to electrical lead extensions which terminate at a point level with the drawbar towing eye. The 2-pin plug provides a low air pressure warning signal conforming to DEF STAN 25-19.

9. A stowage bracket containing dummy sockets is welded to the drawbar for the stowage of the electrical plugs when not in use.

FRONT SUSPENSION

10. The front suspension is a two spring, seven leaf type with rubber bushed radius rods and fitted with check straps to limit downward travel of the axle.

PARKING BRAKE

11. The parking brakes are effected by spring brake actuators (2 per axle) and are actioned pneumatically through a hand operated valve.

REAR SUSPENSION

12. The rear suspension is a two spring, seven leaf type with rubber bushed radius rods and fitted with check straps to limit downward travel of axle.

SPARE WHEEL

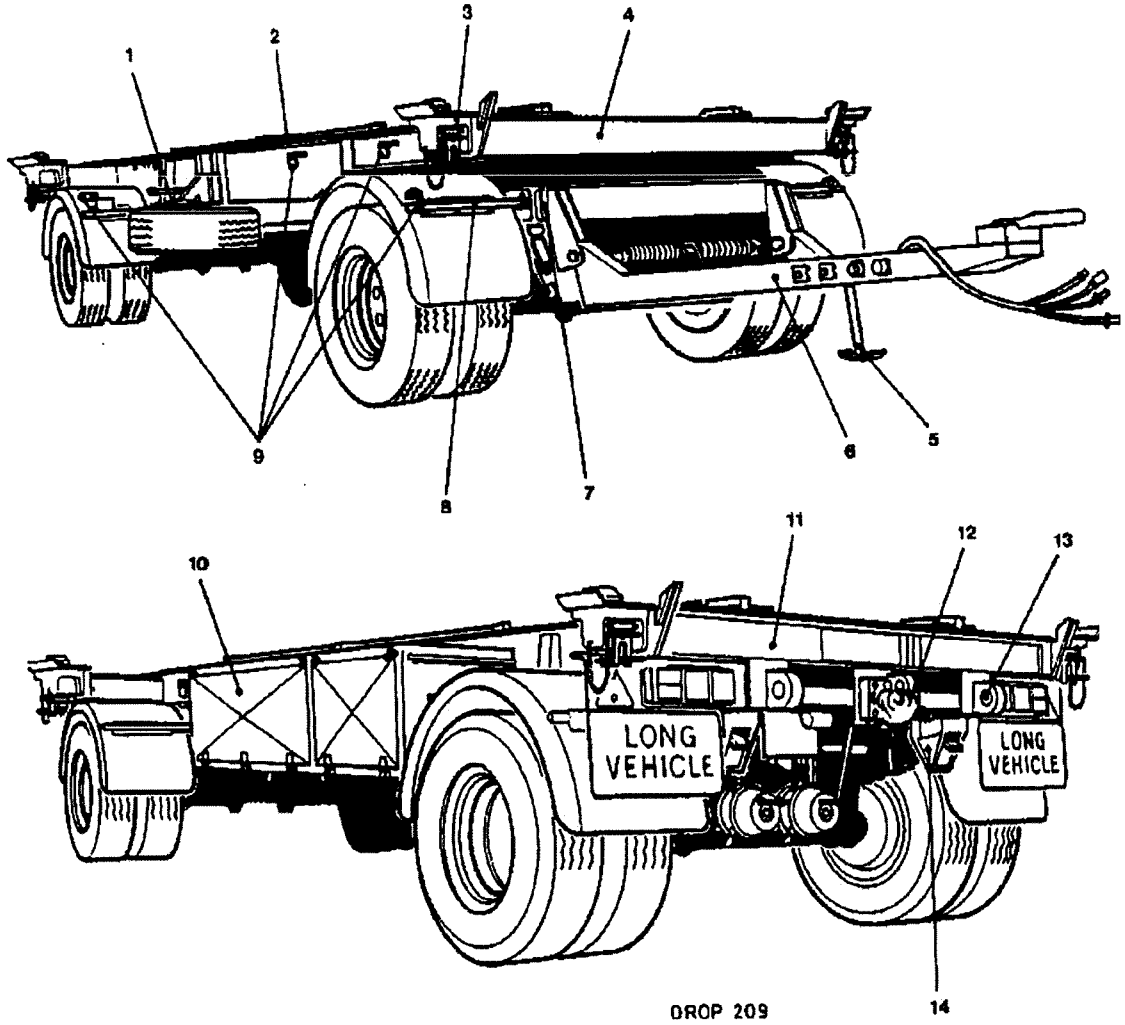
13. The spare wheel is carried horizontally between the axles on the right hand side (when facing forward) of the frame and is raised and lowered to the ground by a simple hand operated winch.

STOWAGE

14. A lockable tool box and camouflage net stowage box are fitted on the left hand side (when facing forward) of the frame.

TYRES AND WHEELS

15. The wheel size is U19.5 x 7.5 B steel disc, ten stud (M22 x 1.5) fitting. Tyres are Michelin 265-70R XZA. There are two twin wheel assemblies per axle.



1	Spare wheel and winch	8	Mudguard mounting brackets
2	Gathering-in guides	9	Corner and side lights
3	Corner screw clamps	10	Stowage lockers
4	Front cross-member	11	Rear cross-member
5	Drawbar support leg	12	Rear towing pintle
6	Drawbar	13	Recovery lugs
7	Turntable	14	Rear suspension mounts

Fig 1 Trailer components

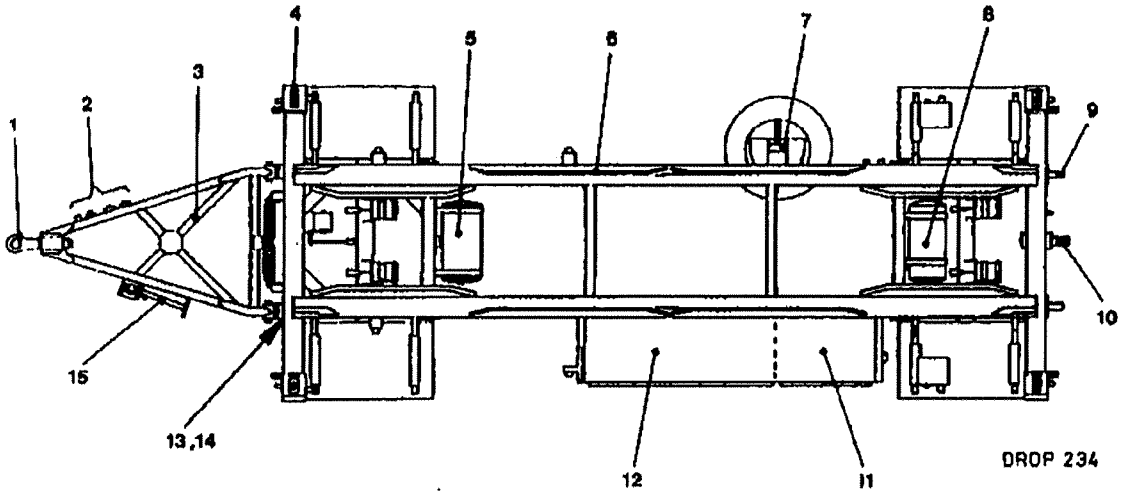
CHAPTER 2

CONTROLS AND INSTRUMENTS

CONTENTS

DRAWBAR ARRANGEMENT

1. The drawbar (Fig 1 (3)) is secured to the trailer turntable and can be pivoted from side to side within the scope of the turntable turning circle. The drawbar is an 'A' frame arrangement terminating in a 3-inch NATO removable towing eye (1). It is countersprung to ease lifting from the down position and has a pivoting drawbar support leg (15) which, when stowed, is pinned along the drawbar left arm, and when deployed, supports the drawbar at any preset height within the scope of the leg length.



1 Towing eye (NATO 3 inch)
2 Stowage for air and electrical couplings
3 Drawbar
4 Corner screw clamps
5 40 ltr. air reservoir
6 Gathering-in guides for Flatracks
7 Spare wheel carrier and winch
8 40 ltr. air reservoir
9 Recovery lug
10 Rear towing pintle
11 Tool locker
12 Camouflage net stowage
13 Parking brake control
14 Shunt control valve
15 Drawbar support leg

Fig 1 Trailer - component location

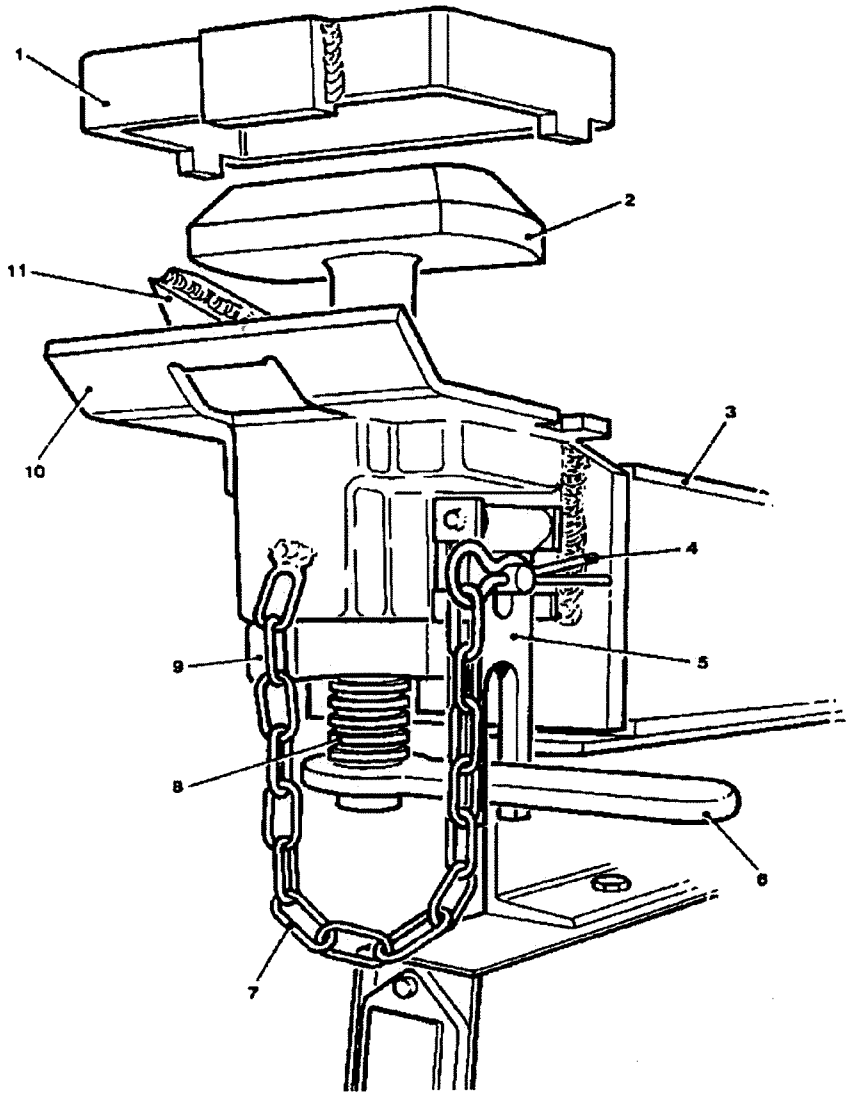
ISO CORNER CLAMP

2. Fitted at each end of the front and rear cross-members is a ISO corner clamp (Fig 2) the purpose of which is to secure Flatracks or 20ft ISO containers to the trailer deck.

2.1. To clamp a Flatrack or ISO container, align 'T' bar (2) of ISO corner clamp with Flatrack ISO corner block slot, lift clamp spindle until 'T' bar is inside block and turn through 90 degrees. Turn locknut handwheel (9) clockwise until tight. Drop slotted plate (5) across clamp handle (6) and insert hairpin locking clip (4) through hole in locking plate spigot.

2.2. Release the clamp in the reverse order. When the ISO corner clamps are not in use ensure they are stowed correctly, or subsequent damage may result to clamp components.

2.3. If ISO containers are to be loaded, corner adaptors (1) are fitted to the trailer corner brackets. When not in use the adaptors are stowed in the stowage locker.



1	ISO corner adaptor	5	Slotted plate	9	Locknut handwheel
2	Clamp 'T' bar	6	Clamp handle	10	Trailer end bracket
3	Trailer frame	7	Chain	11	Flatrack end stop
4	Hairpin locking clip	8	Clamp spindle		

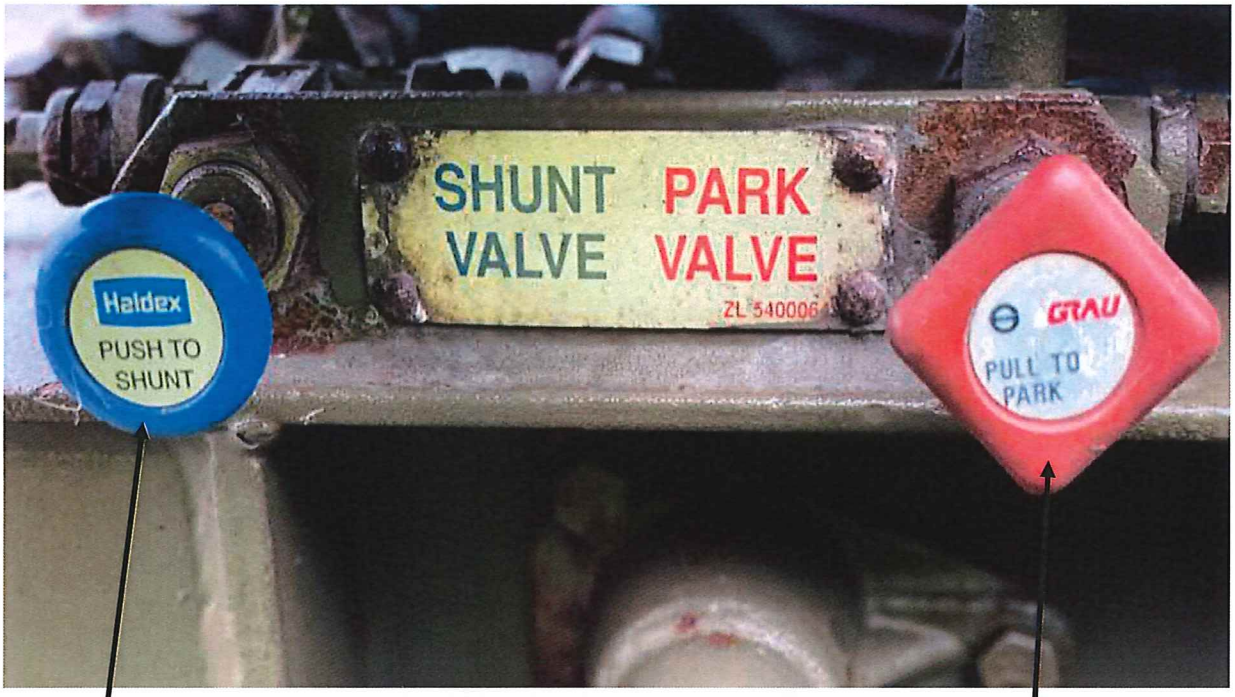
Fig 2 ISO corner clamp

TRAILER HAND BRAKE VALVE

3. Mounted on the left hand side (when facing forward) of the deck above the front axle position is a hand operated parking brake valve (Fig 3 (2)). The brakes are automatically applied during the charging of the trailer air system until a pressure of 60-65 psi is attained. With a fully charged system, pulling the valve knob outwards will re-apply the trailer brakes.

TRAILER PARK BRAKE / SHUNT VALVE

4. A trailer shunt valve (Fig 3 (1)) is mounted on the left hand side (when facing forward) of the deck forward of the hand brake valve. When, if uncoupled from the vehicle, there is a requirement to move the trailer, the Park Brake valve must be in the 'OFF' position (Park Brake Valve pushed in) and the Shunt Valve in the 'ON' position (Shunt Valve pushed in). This will release the brakes, providing there is sufficient air remaining in the reservoirs.



1 Shunt valve
2 Parke brake valve

Fig 3 Park brake and shunt valves

DRAWBAR SUPPORT LEG

5. The drawbar support leg (Fig 4) has a screw clamp handle (5) to tighten/slacken the support leg upper section clamp for height adjustment, and two spring loaded pins (3) and (8) with drop noses for locking the lower, pivoting, section of the support leg in the stowed or deployed position.

BETA LIGHT

6. A lummair (Beta light) can be fitted to each side of the trailer main frame on a bracket secured to the rear mudguard that also houses the rear corner/side marker lights. There are no controls associated with the Beta light.

POWER SUPPLY

7. Air and electricity is supplied via extended flexible pipes and cables clipped to the drawbar 'A' frame. The free ends of the air pipes have self-seal type couplings used for connecting to a towing vehicle.

8. The couplings comprise:

8.1. One 12 pin NATO type plug providing electrical power to the stop and tail lamps, high intensity fog lamps, turn indicators, number plate illumination lamp, convoy lamp and corner marker lamps.

8.2. One 2 pin NATO type plug providing electrical power to the low air pressure warning system.

8.3. One RED palm type coupling supplying EMERGENCY air pressure.

8.4. One YELLOW palm type coupling supplying SERVICE air pressure.

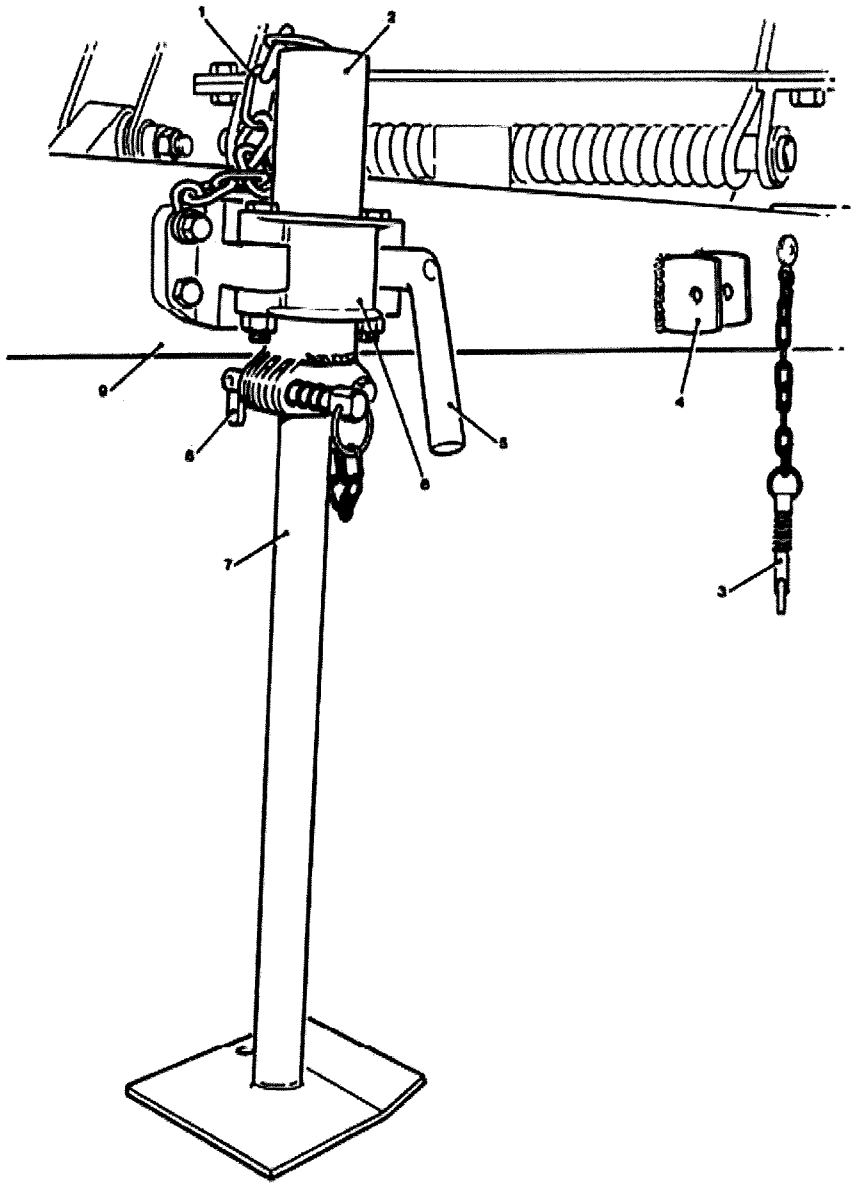


Fig 4 Drawbar support leg

1	Keep chain	4	Stowage bracket	7	Leg - lower section
2	Leg - upper section	5	Screw clamp handle	8	Spring loaded pin
3	Spring loaded pin	6	Clamp	9	Drawbar frame

CHAPTER 3

OPERATING INSTRUCTIONS

CONTENTS

COUPLING / UNCOUPLING THE TRAILER TO AN EPLS VEHICLE

WARNINGS

(1) HAZARD: COLLISION / UNINTENDED MOVEMENT. PRIOR TO COUPLING / UNCOUPLING, ADHERE TO THE PRIME MOVER COUPLING / UNCOUPLING PROCEDURES. ENSURE THAT:

A. THE TRAILER IS POSITIONED ON FIRM, FLAT AND LEVEL GROUND.
B. SUITABLE WHEEL CHOCKS ARE FITTED AT ALL TIMES TO ONE OF THE TRAILER REAR WHEELS IN BOTH DIRECTIONS.
C. THE TRAILER PARKING BRAKE IS APPLIED (PARK BRAKE IS PULLED OUT).
D. THE TRAILER SHUNT VALVE IS IN THE OFF POSITION (SHUNT VALVE IS PULLED OUT).

(2) HAZARD: EXPOSURE TO SHARP EDGES, PROTRUSIONS AND PROJECTIONS. WHENEVER THE DRAWBAR SUPPORT LEG IS DEPLOYED OR STOWED, THE LOCKING PIN IS TO BE FULLY ENGAGED AGAINST SPRING TENSION UNTIL THE DROP NOSE OPERATES TO RETAIN THE PIN IN POSITION.

1. For instructions on the coupling / uncoupling procedures refer to the prime mover AESP operating instructions.

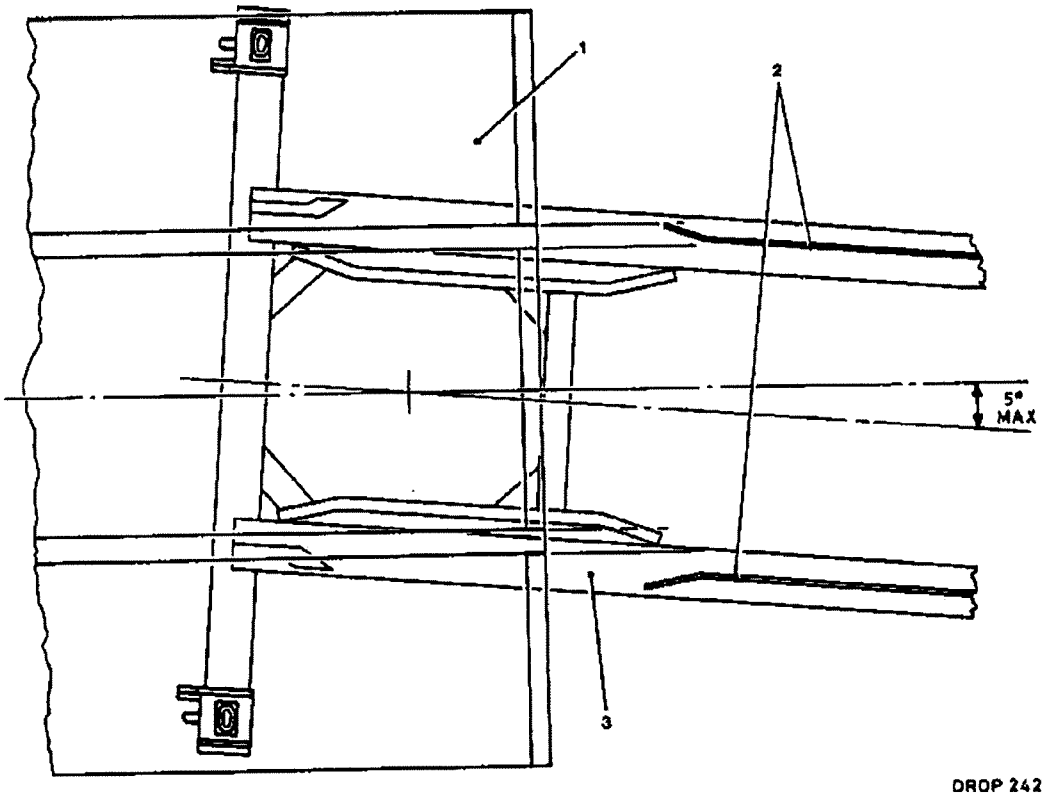
LOADING AND UNLOADING THE TRAILER (FLATRACKS)

WARNING

HAZARD: COLLISION / UNINTENDED MOVEMENT. THE TRAILER MUST BE UNCOUPLED FROM THE TOWING VEHICLE BEFORE ATTEMPTING TO LOAD OR UNLOAD A FLATRACK. ADHERE TO THE PRIME MOVER COUPLING / UNCOUPLING PROCEDURES. ENSURE THAT:

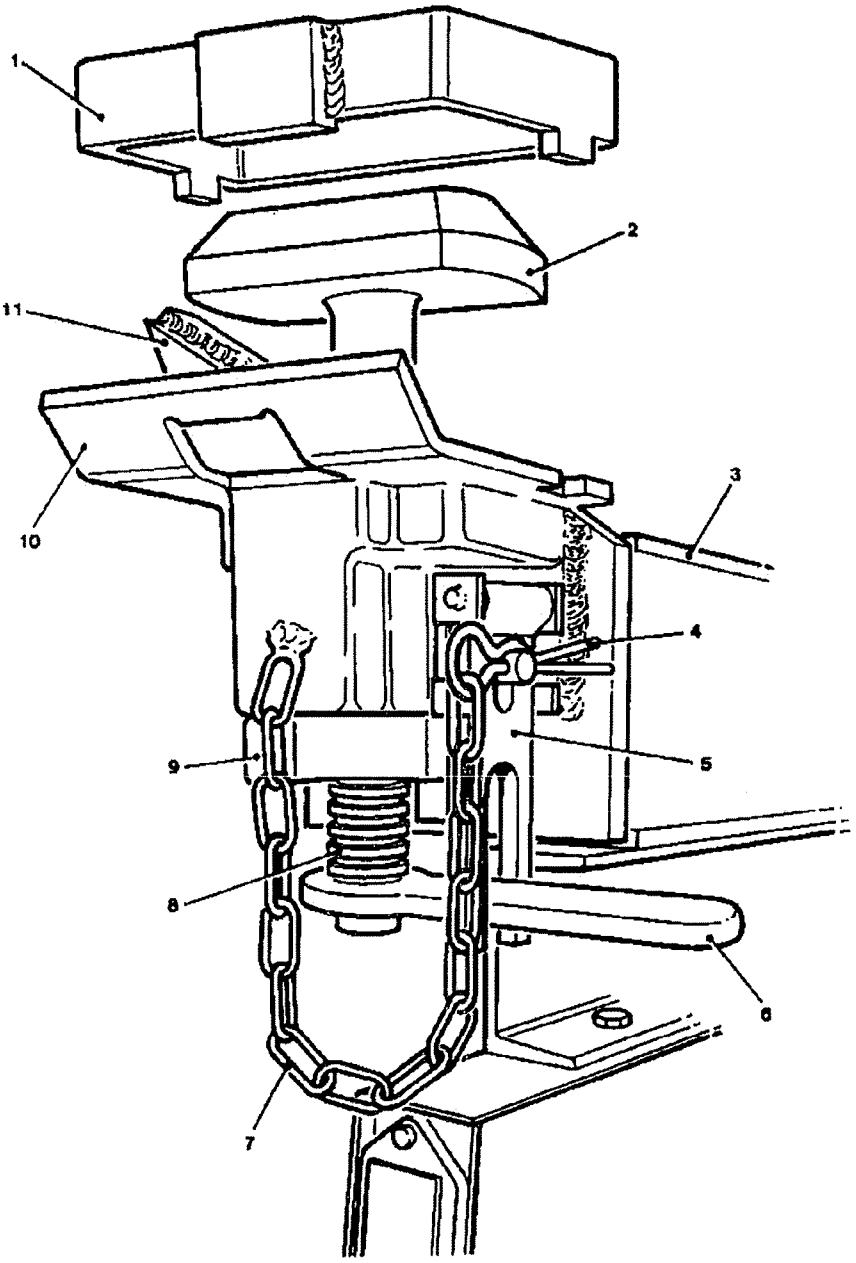
A. THE TRAILER IS POSITIONED ON FIRM, FLAT AND LEVEL GROUND.
B. APPROVED WHEEL CHOCKS ARE FITTED AT ALL TIMES TO ONE OF THE TRAILER REAR WHEELS IN BOTH DIRECTIONS.
C. THE TRAILER PARKE BRAKE IS IN THE 'ON' (PARK BRAKE VALVE IS PULLED OUT).
D. THE TRAILER SHUNT VALVE IS IN THE 'OFF' POSITION (SHUNT VALVE IS PULLED OUT).

2. For instructions on the cross loading and unloading process for this trailer, refer to the prime mover AESP operating instructions.



1 Flatrack 2 Gathering-in guides 3 Trailer

Fig 1 Angular alignment between Flatrack and trailer during transfer



1	ISO corner adaptor	5	Slotted plate	9	Locknut handwheel
2	Clamp 'T' bar	6	Clamp handle	10	Trailer end bracket
3	Trailer frame	7	Chain	11	Flatrack end stop
4	Hairpin locking clip	8	Clamp spindle		

Fig 2 ISO corner clamps

CHAPTER 4

USER MAINTENANCE

CONTENTS

INTRODUCTION

1. The authority for carrying out all maintenance duties on this equipment is the Maintenance Schedule 2330-S-300-601. No maintenance intervals are given in this chapter, reference for these should be made to the above mentioned Maintenance Schedule.

STOWAGE LOCKERS

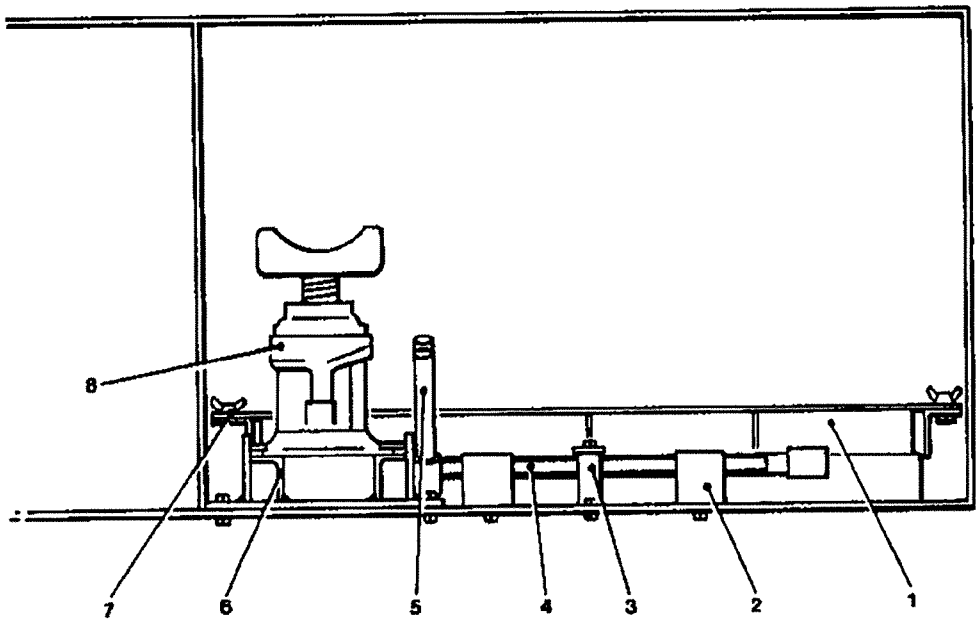
2. Check the contents of the stowage lockers (Fig 1) which comprise:

2.1. A tool box containing: wheel brace and extension bar (4), 1 off, bottle jack (8) complete with handle (5), ISO corner adaptors (1), 4 off.

2.2. A stowage locker containing a camouflage net.

TYRES

3. Check the condition and the air pressures of the eight tyres on the road and the spare wheel tyre. Correct air pressures for all nine tyres is 8.5 bar (123 lbf/in^2). Examine for cuts or abrasions.



1	ISO corner adaptors	5	Jack handle
2	Wheel brace stowage	6	Jack stowage frame
3	Clamping plate	7	Butterfly nut
4	Wheel brace and extension bar	8	Bottle jack

Fig 1 Stowage locker

AIR AND ELECTRICAL COUPLINGS

4. Check the condition of the two NATO type plugs and the air pressure palm couplings.

4.1. Examine the electrical plugs for bent or broken pins and for cut or abraded cables.

4.2. Check the palm couplings for damage to rubber sealing rings and broken or bent locking lugs.

4.3. When uncoupling a trailer, do not throw the electrical and air connections to the ground as damage will result. Place them in the stowage brackets mounted on the trailer 'A' frame.

ISO CORNER CLAMPS

5. Ensure that the ISO corner clamps are in good working order, that ISO corner slots are free from dirt and debris and that locking pin engages correctly.

SUSPENSION

6. Examine the suspension leaves for any sign of shifting or damage, check for damaged or missing parts.

LIGHTS AND REFLECTORS

Note

Table 1 giving LAMP DATA and Fig 5 showing type of lamp are to be used in conjunction with the following paragraphs.

7. Check for damaged or missing side reflectors. When the trailer is coupled to a truck, ensure that the lights are in good working order (fused lamps or cracked/broken lenses).

8. The procedure for changing lamps on all trailer light fittings is as follows:

CAUTION

Equipment damage. Care must be taken when inserting a screwdriver blade into the rubber housing. If the rubber is punctured, watertight integrity could be lost.

8.1. Gently insert a screwdriver blade between lens and housing, apply downward and outward pressure to release the lens.

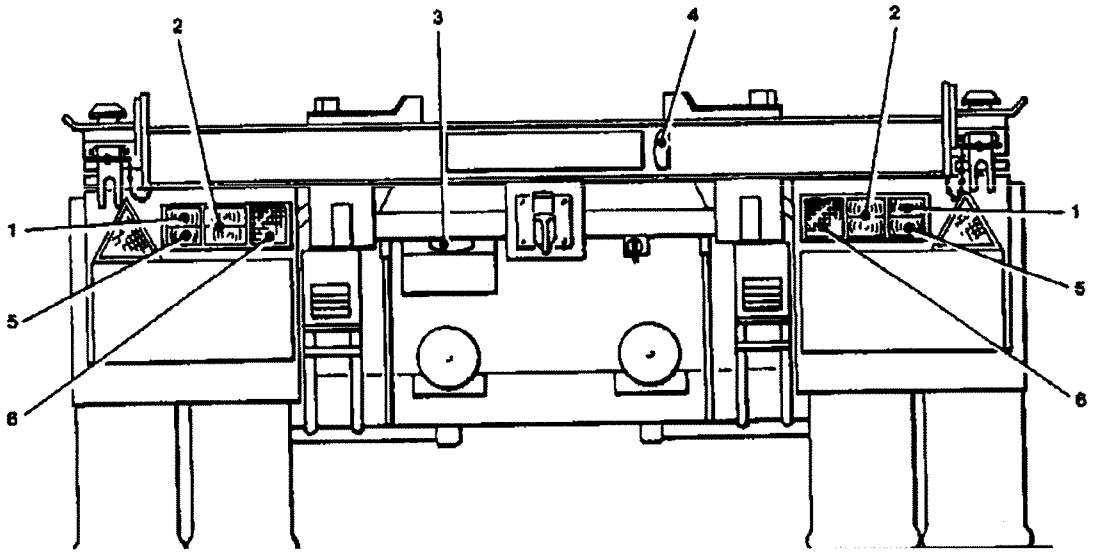
8.2. Grip lamp and push gently downwards and turn counterclockwise to release.

9. Replacement of new lamp is a reversal of the above procedure. Prior to refitting the lens, test lamp function.

10. When lamp function is correct, refit lens ensuring rubber housing is correctly seated over lens lip.

Note

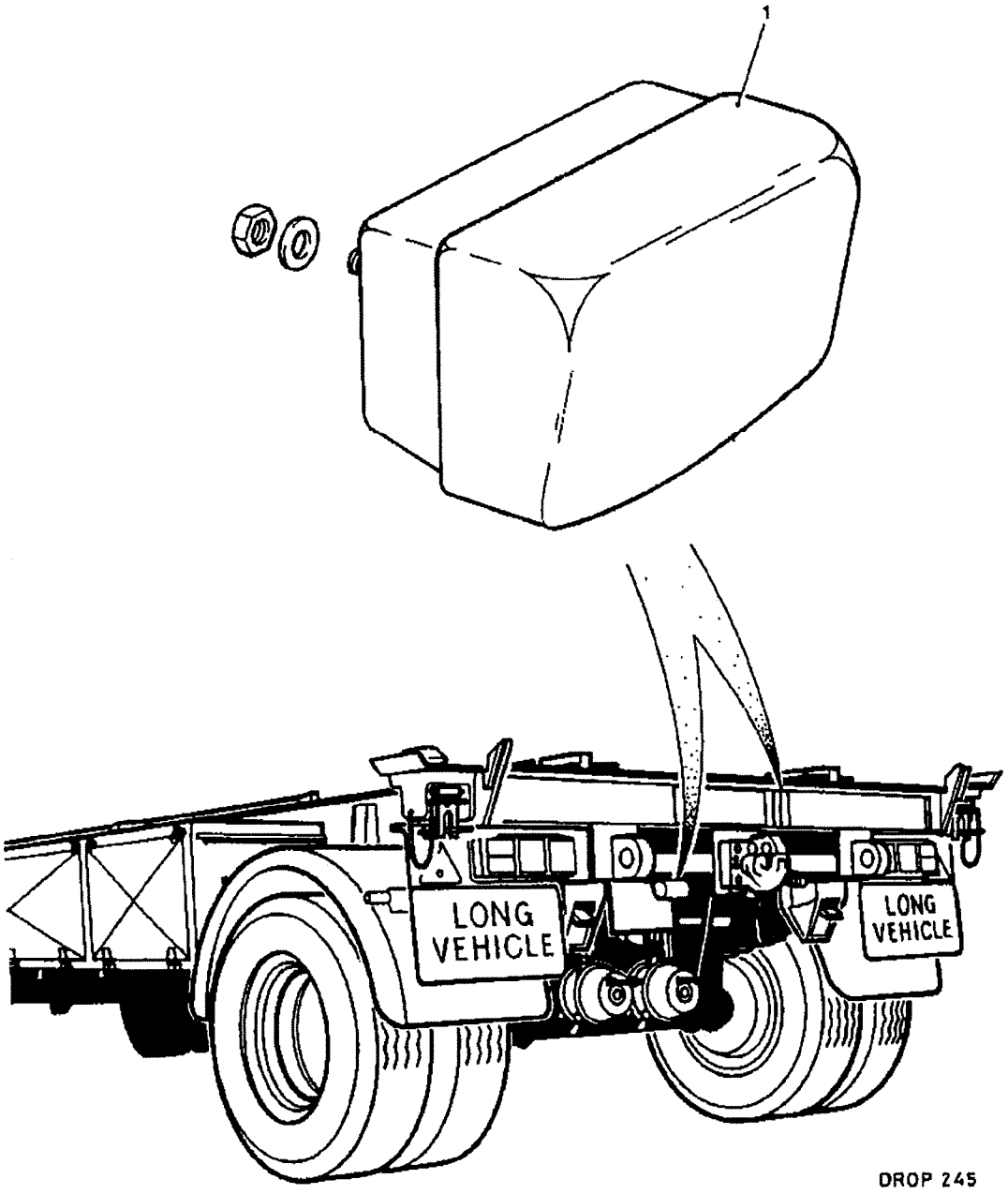
Front corner light is same design as rear corner/side marker light (Fig 4 (1)) but has a clear reflector.



DROP 218

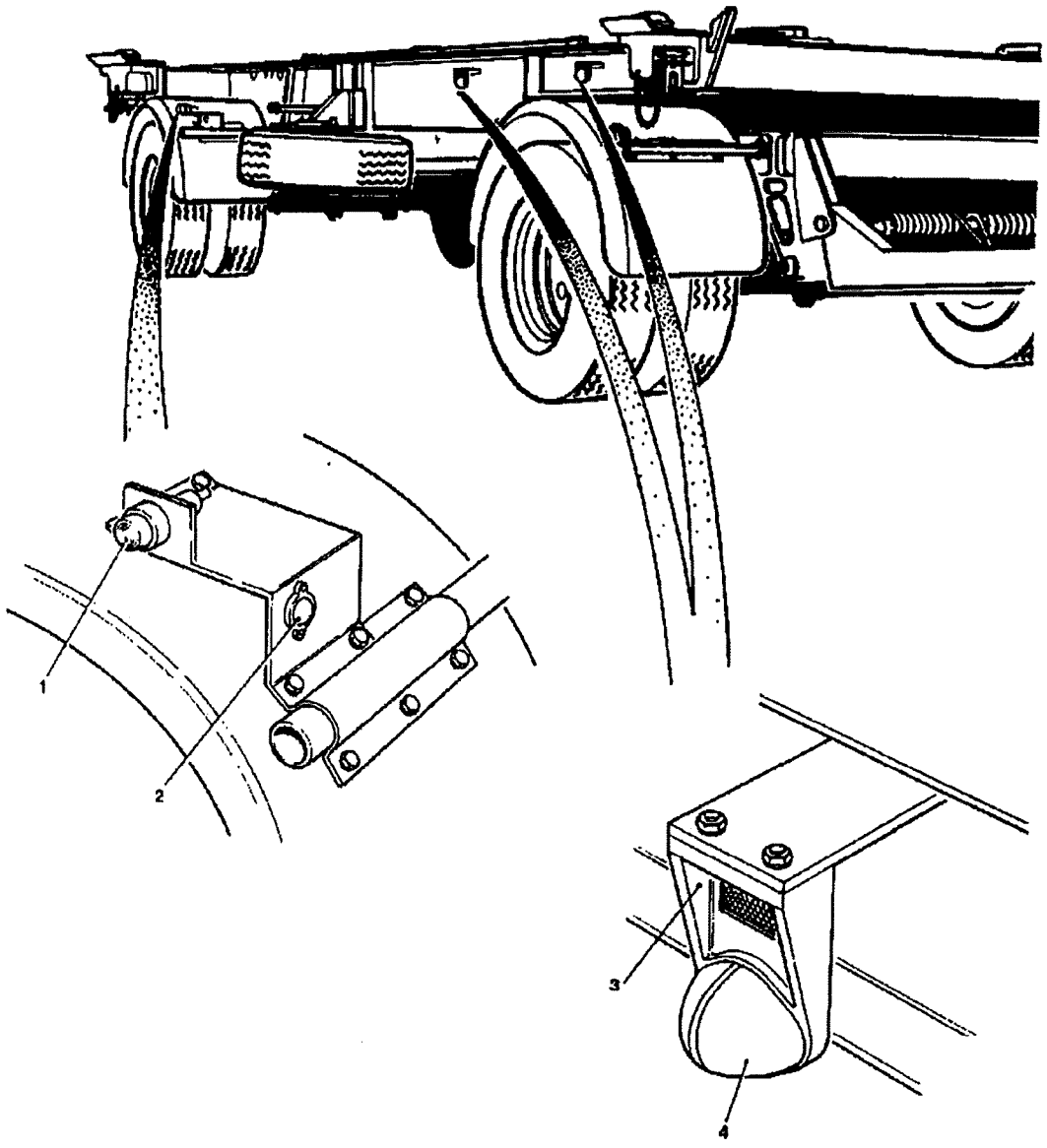
1	Rear lights	3	Convoy light	5	Turn lights
2	Brake lights	4	Number plate light	6	Fog lights

Fig 2 Rear light module



1 Convoy and number plate light

Fig 3 Convoy and number plate light



1	Rear corner/side marker light	3	Bracket housing reflector
2	Beta light (when fitted)	4	Side marker lights

Fig 4 Side and corner lights

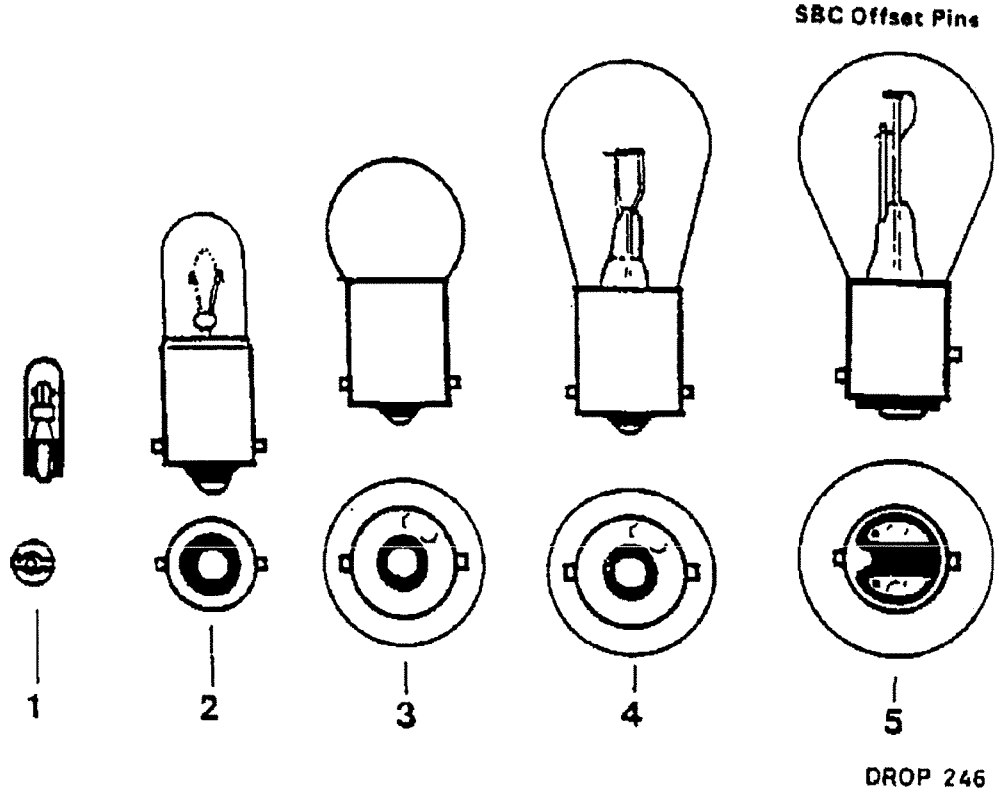


Fig 5 Types of lamp

TABLE 1 LAMP DATA

Lamp	Volts	Watts	Type
(1)	(2)	(3)	(4)
Hazard Warning	24	3	1
Side Repeater	24	4	2
Side Lamps	24	5	3
Rear Convoy	24	5	3
Reversing Lamps	24	21	4
Stop/Tail Lamps	24	21/5	5

REAR TOWING PINTLE

11. Ensure that the moving parts of the towing pintle are free to move and are lubricated.

ANNEX A

ABS SUPPLEMENT

CONTENTS

This supplement is to be read in conjunction with the corresponding chapters within the main body of this AESP.

INTRODUCTION

1. This supplement provides information about the ABS variant of the Trailer Cargo 15T Long Wheel Base Palletised Load System (Tlr Cargo 15T LWB PLS) and must be read in conjunction with the existing non-ABS manual (2330-S-300-201 refers).

2. The structure and layout of this supplement is similar to that of the existing manual. It contains both new information about the ABS system and shows where changes have occurred in the existing manual due to the ABS system. Cross references to existing chapter and paragraph numbers are shown to assist with using the two documents.

3. The contents of the existing manual are shown in this supplement to assist in identifying those areas which have an ABS implication.

ABBREVIATIONS

4. Abbreviations used in this publication, other than those considered to be standard, or engraved/etched as identification for gauges/controls, are listed below:

ABS Anti-Lock Braking System
ECU Electronic Control Unit

CONTENTS OF EXISTING MANUAL SHOWING ABS IMPLICATIONS

ANTI-LOCK BRAKING SYSTEM

Introduction

1. The following information applies to both an ABS equipped trailer and an ABS equipped towing vehicle. It must be read in conjunction with AESP 2320-R-302-201 (ABS supplement).

2. The purpose of an ABS system is to prevent the wheels of a vehicle from locking (stopping) and skidding because the foot brake has been applied too harshly by the driver. The ABS system is automatic and operates when the vehicle is braked. It does not require any action on the part of the driver to operate or select the ABS operation. The rotation of each wheel is constantly monitored by an ECU and the braking force to each wheel is regulated to prevent wheel lock from occurring. This function takes place irrespective of the force being applied on the foot brake by the driver and will achieve a controlled and safe stop in relation to the road surface conditions and other factors.

3. The braking system is not affected by faults within the ABS system other than the partial or total loss of ABS control on one or more wheels. In these circumstances normal braking is still possible but stopping distances may be longer and wheel lock-up leading to skidding is possible. Good braking procedure is necessary at all times as the application or loss of ABS is not noticeable when driving the vehicle.

WARNINGS

(1) HAZARD: COLLISION. THE ABS DOES NOT SHORTEN THE OVERALL STOPPING DISTANCE OF THE VEHICLE. DEPENDENT UPON THE ROAD CONDITION, THE OVERALL VEHICLE STOPPING DISTANCE CAN BE INCREASED.

(2) HAZARD: COLLISION. TO MAXIMISE THE EFFICIENCY OF THE ABS SYSTEM, DO NOT USE A CADENCE BRAKING TECHNIQUE (I.E. RAPID AND REPETITIVE APPLICATIONS OF THE SERVICE BRAKES). WHEN BRAKING, ENSURE THAT A CONTINUOUS PRESSURE IS APPLIED TO THE FOOT BRAKE PEDAL.

(3) HAZARD: COLLISION / UNINTENDED MOVEMENT. FAILURE OF THE VEHICLE OR TRAILER ABS WARNING LAMPS TO ILLUMINATE INDICATES A POSSIBLE MAJOR MALFUNCTION OF THE ABS ELECTRONIC CONTROL UNIT (ECU). DO NOT ATTEMPT TO DRIVE THE VEHICLE AND TRAILER IF THE ABS WARNING LAMPS ILLUMINATES.

4. If during the 'first parade service' an ABS warning light remains illuminated the fault must be reported; do not proceed until authorised.

NOTE

Following a revision of the electronic logic in the trailer ECU, when towing an EPLS trailer fitted with ABS two circumstances prevail concerning the trailer ABS warning light in the driver cab. When the vehicle key switch is switched on the trailer ABS warning light will either:

(a) Illuminate and extinguish after 3 seconds (i.e. as truck ABS warning lights).

or

(b) Illuminate and remain on until the vehicle speed exceeds 7 km/h. (All assuming no faults are present).

If the trailer ABS warning light does not extinguish in either condition, carry out the same actions as with a vehicle ABS fault.

5. If during the journey an ABS warning light illuminates this indicates an ABS fault has occurred which will return the vehicle to a conventional braking system. Missions can be completed as the conventional braking system remains fully operational. On completion of the mission the fault must be reported.

6. The anti-lock braking system (ABS) prevents the vehicle road wheels from locking during an emergency stop or when braking on a slippery road surface. The ABS will enable the driver to retain full control of the vehicle and maintain directional stability during an ABS detected wheel lock condition.

7. It is essential that the vehicle be driven in a safe and conventional manner. Do not adapt your normal driving style when driving a vehicle equipped with ABS.

Vehicle and trailer compatibility

WARNINGS

(1) HAZARD: COLLISION. A PRIME MOVER FITTED WITH ABS CAN TOW A SUITABLE TRAILER, WITH OR WITHOUT ABS FITTED.

(2) HAZARD: COLLISION. A PRIME MOVER NOT FITTED WITH ABS CANNOT TOW A TRAILER WHICH IS FITTED WITH ABS, UNLESS THE PRIME MOVER HAS THE ABILITY TO TRIGGER THE TRAILER ABS THROUGH AN APPROVED INTER-VEHICLE SOCKET.

8. Before towing a suitable trailer equipped with an ABS system insert the trailer ABS plug into the ABS socket on the rear of the vehicle. This will provide power and communication facilities between the vehicle and the trailer ECU.

ABS changes to existing Chap 1, Para 2

BRAKES

9. The drum brakes (335 x 210 mm), are 'S' cam type operated by a two-line air system conforming to DEF STAN 25/19. A fail-safe system is fitted. The trailer air pressure supply line is extended to the rear of the trailer terminating in a pal coupling for recovery purposes. An ABS system is installed to prevent wheel lock-up and skidding.

ABS changes to existing Chap 1, Para 6

ELECTRICAL SYSTEM

10. The electrical system is a 24-volt insulated double pole wiring system, conforming to DEF STAN 25-11. All lighting complies to DEF STAN 25-5; and comprises: front, corner and side marker, rear number plate, high intensity fog, stop, tail, turn and convoy lights. When required, a Beta light (self-luminescent) can be fixed on each side frame between the middle/side and rear corner/side marker lights.

11. The ABS electrical system is independent of the existing lighting system and comprises ECU, sensor and valve circuit.

ABS changes to existing Chap 1, Para 7

12. Two NATO plugs, a 12 pin and a 2 pin are connected to electrical lead extensions. The 2-pin plug provides a low air pressure warning signal conforming to DEF STAN 5-19. An ISO 7638 five pin plug (Fig 1 (1)) is connected to an ABS electrical lead extension to supply power to the trailer ABS system. All the leads terminate at a point level with the drawbar towing eye and when not connected to a vehicle are provided with dummy stowages (Fig 1 (2)) for safe storage.

ABS information additional to existing Chap 1

ABS ELECTRONIC CONTROL UNIT

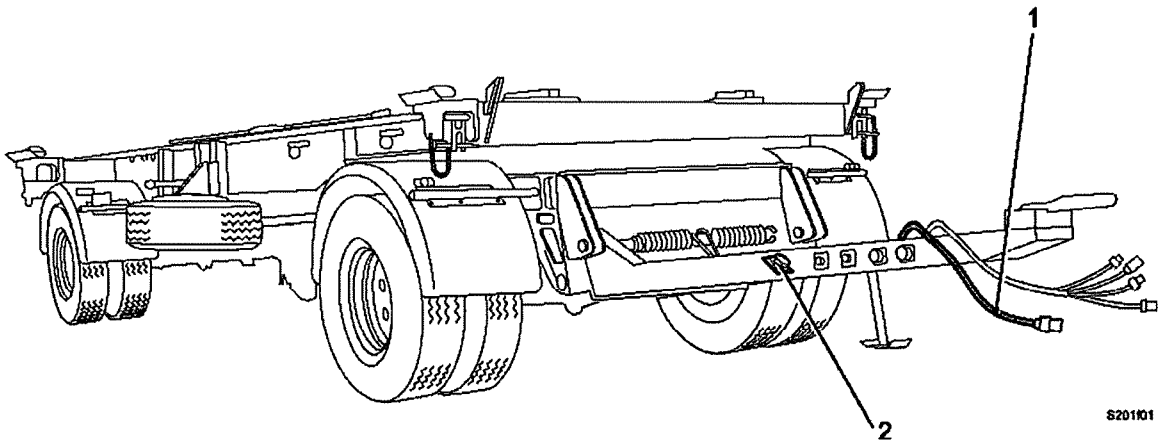
13. A waterproof box fitted to the inner face of the left hand frame contains the ABS ECU and associated electrical plugs. The ECU analyses signals from the ABS sensors at each wheel and operates the modulator valves to control the brake actuator pressures. Faults which occur in the ABS system are detected and stored in the ECU.

CAUTION

Equipment damage. The blink code system is intended as a Workshop diagnostic aid and must only be operated by authorised workshop personnel. Comprehensive operating instructions are contained in AESP 2330-S-300-512, Chap 10 (ABS supplement).

14. A remote ECU diagnostic socket is mounted on the left hand side light bracket and is used for maintenance purposes. A diagnostic controller or blink code plug connected to the socket will indicate fault information stored in the ECU.

15. The trailer ECU operates a trailer ABS warning light in the cab of the towing vehicle to indicate the presence of faults on the trailer (AESP 2320-R-302-201 ABS supplement refers).



1 Seven pin plug 2 Dummy stowage

Fig 1 Trailer components

ABS changes to existing Chap 2, Para 8

POWER SUPPLY

16. The couplings comprise:

16.1. One 12 pin NATO type plug providing electrical power to the stop and tail lamps, high intensity fog lamps, turn indicators, number plate illumination lamp, convoy lamp and corner marker lamps.

16.2. One 2 pin NATO type plug providing electrical power to the low air pressure warning system.

16.3. One 7 pin ISO type plug providing electrical power to the ABS system.

16.4. One RED palm type coupling supplying EMERGENCY air pressure.

16.5. One YELLOW palm type coupling supplying SERVICE air pressure.

ABS changes to existing Chap 3, Para 3

COUPLING THE TRAILER TO AN EPLS VEHICLE

WARNINGS

(1) HAZARD: COLLISION. A PRIME MOVER FITTED WITH ABS CAN TOW A SUITABLE TRAILER, WITH OR WITHOUT ABS FITTED.

(2) HAZARD: COLLISION. A PRIME MOVER NOT FITTED WITH ABS CANNOT TOW A TRAILER WHICH IS FITTED WITH ABS, UNLESS THE PRIME MOVER HAS THE ABILITY TO TRIGGER THE TRAILER ABS THROUGH AN APPROVED INTER-VEHICLE SOCKET.

At Para 3 in the existing manual proceed as follows:

17. If required due to misalignment lift the drawbar into line and attach to the truck towing pintle and secure.

18. Disconnect the air and electrical plugs from dummy stowage, attach the 'RED' and 'YELLOW' air lines to the respective palm couplings on the vehicle and couple the 12 and 2 pin electrical plugs and the 7 pin ABS plug. The truck/trailer air and electrical systems are now common.

ABS changes to existing Chap 3, Para 7

UNCOUPLING THE TRAILER FROM AN EPLS VEHICLE

At Para 7 in the existing manual proceed as follows:

19. Apply the trailer parking brake by pulling OUT the hand operated 'PARK' valve. Withdraw the 2 and 12 pin electrical plugs and the 7 pin ABS plug and detach the two air palm couplings. Re-stow the electrical plugs and palm couplings into the brackets provided on the 'A' frame.

ABS changes to existing Chap 4, Para 4

AIR AND ELECTRICAL COUPLINGS

At Para 4 in the existing manual proceed as follows:

20. Check the condition of the two NATO type plugs and the ISO type ABS plug, and the air pressure palm couplings.

Continue with this procedure at Para 4.1 in the existing manual.

ABS information additional to existing Chap 4

ABS SYSTEM

21. Check the ABS ECU box for damage and security of fixing.

22. Check the ABS diagnostic socket for damage and security of fixing.