



TRAILER LIGHTWEIGHT GS CARGO

MODIFICATION INSTRUCTIONS AND INDEX

Sponsored for use in the

**UNITED KINGDOM MINISTRY OF DEFENCE
AND ARMED FORCES**

By

**DEFENCE EQUIPMENT & SUPPORT
SPECIALIST & LOGISTIC VEHICLE PROJECT TEAM**

**MOD Abbey Wood
Bristol
BS34 8JH**

**PUBLICATIONS AUTHORITY:
SPECIALIST & LOGISTIC VEHICLE PROJECT TEAM**

CONDITIONS OF RELEASE

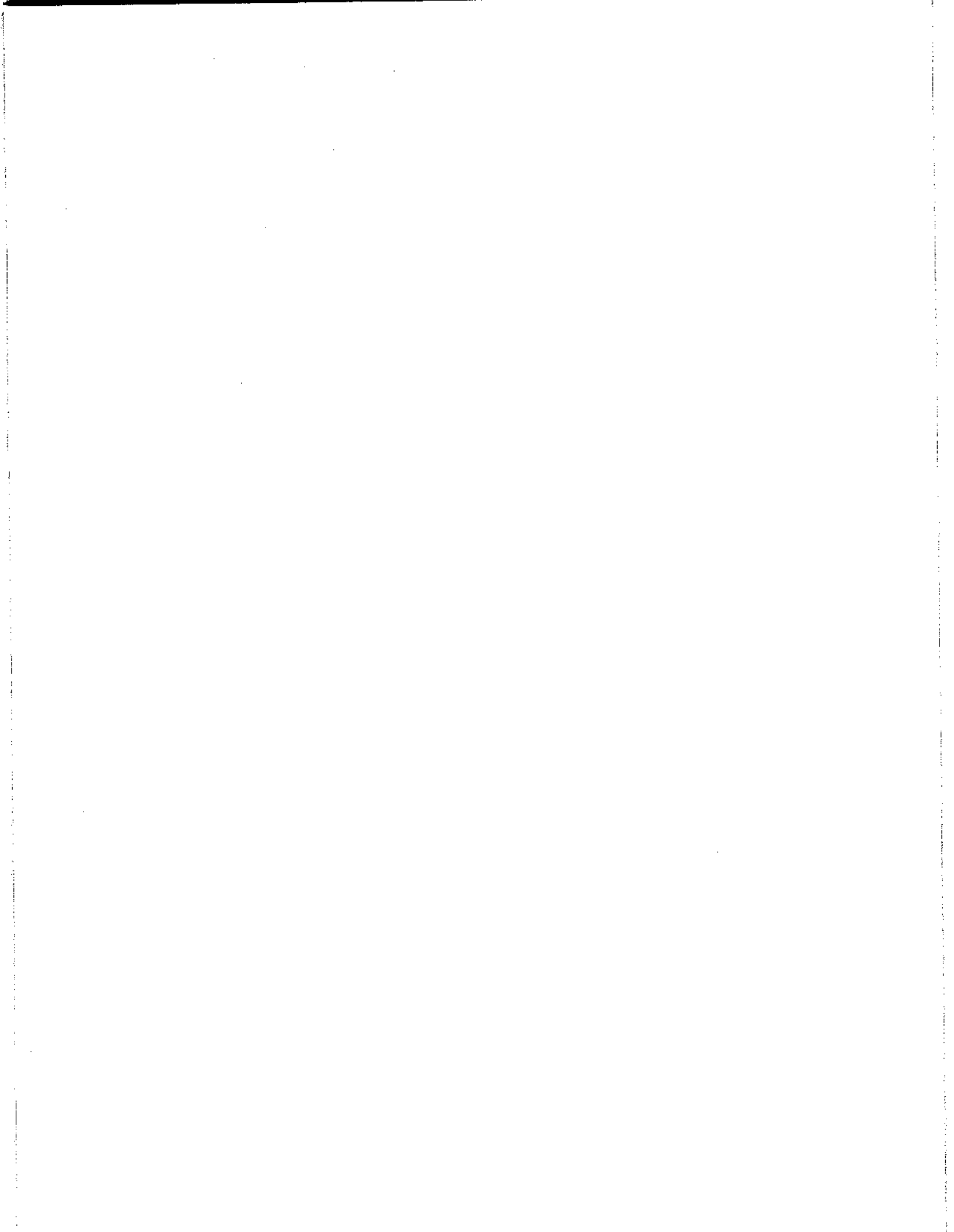
- 1 This information is released by the UK Government for Defence purposes only.
- 2 This information must be afforded the same degree of security protection as that afforded to information of an equivalent security marking originated by the recipient Government or as required by the recipient Government's security regulations.
- 3 This information may be disclosed only within the Defence Department of the recipient Government, except as otherwise authorized by the Ministry of Defence (Army).
- 4 This information may be subject to privately owned rights.

**FOR OFFICIAL USE ONLY
CROWN COPYRIGHT RESERVED**

AMENDMENT RECORD

Amdt No.	Incorporated By (Signature)	Date
1	[REDACTED]	Nov 10
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		

Amdt No.	Incorporated By (Signature)	Date
32		
33		
34		
35		
36		
37		
38		
39		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		
51		
52		
53		
54		
55		
56		
57		
58		
59		
60		
61		
62		



PREFACE

Sponsor: SLV PT
Project Number:
File Ref: GSV/68/33/02

Publication Authority: DES LE GSG SLV OutSp TechDocs

INTRODUCTION

- 1 The Publication Sponsor is responsible for the allocation of instruction numbers.
- 2 All modification instructions as issued are to be recorded in manuscript by the recipient on the Numerical Modification Instruction Index provided. Amendments to individual instructions are to be recorded on the instruction amendment record. All extant instructions and amendments can be found listed in the main AESP index.

NOTE

- The Publication Sponsor is responsible for the preparation and maintenance of the Instruction Index and will advise the Distribution Authority on the issue of completed and subsequent blank index pages necessary
- 3 Service users should forward any comments on this publication through the channels prescribed in JSP (D) 543 Chapter 3.4.1. An AESP Form 10 is provided within this publication; it should be photocopied and used for forwarding comments on this AESP.
 - 4 AESP are issued under Defence Information Notices (DIN) 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.
 - 5 This edition is a new common AESP for Trailer Lightweight GS Cargo. It is produced under the prime number AESP Octad number for Support vehicle 2330-E-202
 - 6 All subsequent Modification Instructions will be contained in this Octad and will be applicable to Trailer Lightweight GS Cargo unless specified within the instruction.

MODIFICATION INSTRUCTION INDEX

Priority (Pty) is shown as: Immediate: I Routine: R

Instr No.	Pty	Page Nos.	Amendment No.	Subject	Applicability
(1)	(2)	(3)	(4)	(5)	(6)
1	R	1-16	1	Improvements to hydraulic braking system	GSV/04/0 145
2					
3					
4					
5					
6					
7					
8					
9					
10					

**TRAILER LIGHTWEIGHT
GS CARGO**

MODIFICATION INSTRUCTION NO. 1

Sponsor:
DE&S SLV PT

Publication Agency:
DES LE GSG SLV OutSp TechDocs
Project No:
File ref: DES LE GSV SLV OutSp TechDocs

AMENDMENT RECORD

Amdt No.	Incorporated By (Signature)	Date
1	[REDACTED]	Nov 10
2	[REDACTED]	May 11
3		

Amdt No.	Incorporated By (Signature)	Date
4		
5		
6		

SUBJECT: Improvement to hydraulic braking system.

(Approval No. GSV/04/0/145)

Reference:

A Letter Equip/SE/02/03/38 dated 12th October 2010

INTRODUCTION

1 This modification details the procedure to remove the brake accumulator and manifold from the existing hydraulic braking system and incorporate a Pressure Relief Valve (PRV).

1.1 Limitations on use of equipment. In order to maintain control and simplicity of policy for trailer usage, the following restrictions will be maintained on both modified and unmodified trailers until further notice.

1.2 Post embodiment of this Modification Instruction No 1 the speed limit will remain at 40 mph.

1.3 Post embodiment of this Modification Instruction No 1 the weight instruction will remain at a max 1410 Kg GVW.

1.4 Reference a above, detailed that trailers which had not been embodied with this Modification Instruction after November 2010 would be deemed non task worthy. Due to the delayed start of the embodiment programme this date has now been extended to June 2011.

APPLICABILITY

2 This instruction applies to Trailer Lightweight GS Cargo with the following Asset Codes:

2.1 NB 2853 3107 Trailer Lightweight General Service Cargo.

2.2 NB 2861 3100 Trailer Lightweight 1.13T 2 Wheeled with 4.5KW 240V AC/28V DC Diesel Genset Mawdsley Ltd.

2.3 NB 2861 3100 Trailer Lightweight 1.13T 2 Wheeled with 4.5KW 240V AC/28V DC Diesel Genset Mawdsley Ltd.

2.4 NB 2861 3102 Trailer Lightweight 2 Wheeled with 15/5 Generator

2.5 NB 2861 4100 Trailer Lightweight 1.13T 2 Wheeled with 3.5KVA 120/240V AC 50Hz Single Phase Petrol Genset Qnan.

2.6 [REDACTED]

2.7 [REDACTED]

2.8 [REDACTED]

2.9 [REDACTED]

2.10 NB 2865 1100 Trailer Lightweight 1.13T 2 Wheeled Mobile Aircraft Support Unit Forward Aircraft Repair

REASON FOR MODIFICATION

3 To remove the brake accumulator and manifold from the existing hydraulic braking system and incorporate a Pressure Relief Valve (PRV).

3.1 Code 4 - to improve maintainability.

PRIORITY

4

4.1 ARMY: Routine

4.2 RAF: Class 2

ESTIMATED TIME REQUIRED

5 Embodiment: 1 man hour

MODIFICATION IMPLEMENTATION PLAN

6

6.1 This instruction is to be implemented by:

6.1.1 ARMY - Units authorized to carry out levels 2, 3, 4 maintenance.

6.1.2 RAF - Units no later than the next schedule maintenance and Vehicle Depots before initial issue of trailer.

6.2 Associated instructions. AESP 2330-E-202

6.3 Strike plate action: As detailed in paragraph 7.2.2

Action required by

7

7.1 Units and establishments holding equipment:

- 7.1.1 Examine equipment documents to see if modification is applicable.
- 7.1.2 Examine equipment to see if modification is embodied or required and where necessary Units with 1st Line REME Support demand the stores required. Stores are to be demanded direct from the supplier listed on page 15/16.
- 7.1.3 ARMY - On receipt of stores, request REME Support workshops to modify equipment.
- 7.1.4 ARMY - Record the AESP and instruction number in equipment documents.
- 7.1.5 RAF - Record modification details on AF G1084A and Form 4870. Units operating STAMA are also to record modification details on ADP MTMS Job Certification Sheet and to follow the procedures laid down in AP 100C-08A.

7.2 Army units authorized to carry out levels 2, 3 and 4 maintenance and RAF units:

- 7.2.1 ARMY - When requested by units or during overhaul of equipment on charge without REME 1st Line Support, obtain the items listed in Para 8 and carry out this modification.
- 7.2.2 Erase Mod Strike 1 from the Trailer modification plate using a letter stamp.
- 7.2.3 Record completion details of modification against appropriate entry in vehicle document.
- 7.2.4 Complete AF G1084A when reporting completion of the modification to FORWARD (RAF) using the following code:

RAF: MODIFICATION CODE: AFB 082

NOTE

RAF units operating STAMA are also to complete ADP MTMS Job Certification Sheet and to follow the procedures laid down in AP 100C-08A.

- 7.2.5 Complete and return the modification embodiment form refer to Annex A.

7.3 All recipients of this instruction. Add particulars to AESP 2330-E-202-811 Mod Instruction Index.

Stores, tools and equipment

8

8.1 Stores to be demanded:

8.1.1 The following item(s)/set are/is to be demanded quoting this instruction as the authority.

8.1.2 Registration/Serial number of vehicle/engine/assembly for equipment held by user units.

Item No.	DMC	NSN/Part No.	Designation	Qty per eqpt
		2530-99-4147543	Mod Kit Comprising	(1)
1			Pressure relief valve	(1)
2			Bracket	(1)
3			Reservoir	(1)
4			Brake pipe master cylinder to PRV	(1)
5			Brake pipe PRV to rear brake pipe	(1)
6			Brake pipe reservoir to PRV	(1)
7			Fluid adaptor	(1)
8			Screw, M8 x 20 mm, s/steel	(2)
9			Nyloc nut, M8, s/steel	(2)
10			Screw, M5 x 40 mm, s/steel	(2)
11			Nyloc nut, M5, s/steel	(2)
12			Copper washer	(1)
13			Dowty sealing washer	(1)
14			Plain nut, 3/8 in.	(1)

8.2 Stores or suitable equivalent to be obtained locally:

15				()
16				()

8.3 Tools and stores to be manufactured:

17				()
18				()

8.4 Stores to be removed and returned through normal channels/reduced to scrap:

Item No.	DMC	NSN/Part No.	Designation	Qty per eqpt
19		12555	Accumulator	(1)
20	7LWT	4730-99-212-6301	Manifold block	(1)
21	7LWT	4720-99-778-0381	Hose	(1)
22	7LWT	2530-99-322-9480	Reservoir	(1)
23		12000	Bracket assembly	(1)
24	7LWT	4720-99-361-2737	Flexible pipe	(1)
25		12717	Screw, machine	(1)
26		11498	Seal	(1)
27		10706	Bolt, machine	(2)
28		12950	Bolt, M8 x 25	(2)
29	7LWT	5310-99-131-8622	Washer, plain	(4)
30	7LWT	5310-99-316-8060	Washer, spring	(4)
31		12147	Nut, full	(4)

8.5 Items/stores to be modified:

32				()
33				()

8.6 Special tools and test equipment required:

34				()
----	--	--	--	-----

Sequence of operations**WARNING**

BEFORE COMMENCING WITH THIS INSTRUCTION ENSURE THAT THE HANDBRAKE IS APPLIED AND THE JOCKEY WHEEL AND REAR STANDS ARE IN THE DOWN POSITION

NOTE

The item numbers of paragraph 8 are used as reference throughout this instruction.

9 Carry out this instruction as follows:

9.1 Position the trailer on a suitable work surface

9.2 Apply the handbrake and deploy the jockey wheel and rear stands as detailed in Cat 201, Chap 2.

9.3 Remove the master cylinder top cover (Fig 1 (2)) as detailed in Cat 201, Chap 3.

9.4 Vent the accumulator (Fig 1 (5)) to atmosphere using one of the following methods:

9.4.1 Standard accumulator fit (unrestricted access), proceed as follows:

9.4.1.1 Loosen the charge screw on the underside of the accumulator.

9.4.1.2 Allow the accumulator nitrogen charge to fully vent to atmosphere.

9.4.2 Non-standard accumulator fit (restricted access), proceed as follows:

9.4.2.1 Slacken the grub screw in the accumulator mounting bracket.

9.4.2.2 Remove one fastener from the accumulator mounting bracket.

9.4.2.3 Slacken but do not remove the second fastener in the accumulator mounting bracket.

9.4.2.4 Pivot the accumulator to gain access to the charge screw on the underside, loosen the charge screw.

9.4.2.5 Allow the accumulator nitrogen charge to fully vent to atmosphere.

9.5 To remove the brake components, proceed as follows:

9.5.1 Release the flexible pipe (Fig 1 (4)) item 20 at the chassis rigid brake pipe.

9.5.2 Remove and discard the banjo union from the hose (1) item 17 at the master cylinder (6).

9.5.3 Remove and discard the two bolts item 24, complete with plain washers item 25, lock washers item 26 and plain nuts item 27 securing the accumulator bracket item 19 to the trailer chassis. Remove the accumulator (Fig 2 (5)) item 15, accumulator bracket (7) item 19, manifold block (2) item 16, flexible pipe (3) and hose (1) from the trailer. Retain the nylon bolt caps.

9.5.4 Remove the hose from the manifold block; salvage the hose as steel.

9.5.5 Remove the flexible pipe from the manifold block; salvage the flexible pipe as steel.

- 9.5.6 Remove and discard the screw (6) item 21 from the accumulator bracket.
- 9.5.7 Remove and discard the two bolts (4) item 23, complete with plain washers' item 25, lock washers item 26 and plain nuts item 27. Separate the manifold block from the accumulator; salvage the manifold block as aluminium. Discard the seal item 22.
- 9.5.8 Salvage the accumulator and accumulator bracket as steel.
- 9.5.9 Remove and retain the cover, inner cap and moisture barrier from the reservoir (Fig 1 (3)).
- 9.5.10 Remove and retain the reservoir fluid adaptor (Fig 3 (2)), plain washer (3), rubber seal (4) and spacer (5). Note the orientation for refitting purposes. Discard the reservoir (1) item 18.
- 9.6 To assemble the replacement brake components, proceed as follows:
- 9.6.1 Secure the PRV (Fig 4 (2)) item 1 to the bracket (1) item 2 using the two screws (3) item 10 and nyloc nuts item 11. Remove the port blanking caps.

NOTE

When positioned correctly the PRV locates within the bracket with ports 'T' and 'P2' to the rear.

- 9.6.2 Fit the PRV bracket assembly (Fig 6 (5)) to the chassis using two screws (6) item 8 and nyloc nuts item 9. Refit the nylon bolt caps removed at Para 9.5.3.
- 9.6.3 Assemble the fluid adaptor (Fig 5 (5)) item 7, sealing washer (4) item 13, copper washer (2) item 12 and plain nut (1) item 14 to the replacement reservoir (3) item 3.
- 9.6.4 Connect the brake pipe (master cylinder to PRV) (Fig 6 (1)) item 4 to the master cylinder (7) and port 'P1' on the PRV.
- 9.6.5 Fit the assembled reservoir (2) (Para 9.6.3) to the master cylinder using the fittings retained at Para 9.5.10.
- 9.6.6 Connect the brake pipe (PRV to rear brake pipe) (4) item 5 to port 'P2' on the PRV and the rigid rear brake pipe.
- 9.6.7 Connect the brake pipe (reservoir to PRV) (3) item 6 to the reservoir fluid adaptor and port 'T' on the PRV

- 9.7 Bleed the Brakes as Follows:

NOTES

- (1) The brakes may be bled using a manual or pressure bleed system where the brake fluid pressure should be within 1.0 to 1.5 bar.
- (2) On the valve block side of the trailer the stone guard should be removed. It is secured by eight set screws and washers.
- 9.7.1 Release the handbrake. Ensure the Right-Hand (RH) wheel brake caliper assembly is held forward holding the auto-reverse valve open.
- 9.7.2 If fitted, remove the reservoir outer cover and cap.

CAUTION

EQUIPMENT DAMAGE. During the operations take all actions necessary to prevent the ingress of foreign bodies into the brake fluid and reservoir.

9.7.3 If fitted, remove the reservoir moisture barrier.

NOTE

The adjustment nut protruding from the back of the coupling and the clevis attached to the brake operating lever is pre-set at the factory and should not require any further adjustment.

9.7.4 Top up the reservoir with brake fluid (refer to Cat 601).

9.7.5 Start at the furthest bleed nipple from the master cylinder (Left-Hand (LH) side).

9.7.6 Remove the dust cap and attach a bleed pipe. The other end of the pipe should be immersed in a container with a quantity of brake fluid.

9.7.7 Open the bleed nipple.

9.7.8 Push the brake operating lever, with smooth even strokes.

9.7.9 Repeat this operation until the air has stopped bubbling from the pipe immersed in the container.

NOTE

(1) Observe the level in the reservoir and ensure this level does not drop below the danger level identified on the reservoir body at any time during the bleeding process.

(2) Ensure that the operator topping up the reservoir during the bleeding process does so slowly to minimise the risk of air bubbles entering the brake system.

9.7.10 Once this state is achieved, the brake operating lever should be held at the end of its stroke (pressure applied). Tighten the bleed nipple.

9.7.11 Release the brake operating lever smoothly.

9.7.12 Check the reservoir, top up if necessary.

NOTE

If no fluid can be passed through the bleed nipple when fully open, the rotating caliper carrier will require adjusting. This is located on the RH wheel assembly and as will be seen the mechanism is kept in a biased position by the employment of a compression spring. By screwing in the adjustment bolt this will increase the compression on the spring. It is recommended that a distance of 6 mm between the back face of the locking nut and the front face of the bolt be employed, which allows the valve within the valve block to be fully open. Care must however be taken to ensure that the spring is not compressed to its coil bound position and therefore it is recommended that a 5 mm allowance of further travel be left within the spring.

9.7.13 Carry out the bleed cycle on the RH wheel as detailed in Para 9.7.6 to 9.7.11.

9.7.14 Check the reservoir, top up if necessary

- 9.7.15 With the stone guard removed the auto-reverse valve bleed nipple is on the upper face of the auto-reverse valve
- 9.7.16 Repeat the bleed cycle on the auto-reverse valve as detailed in Para 9.7.6 to 9.7.11.
- 9.7.17 Check the reservoir, top up if necessary

NOTE

To check that the brake system is operating correctly the brake operating lever must be pushed back firmly with the trailer wheels clear of the ground, they should be rotated in the forward direction and should be met with resistance retarding and stopping the wheels. To check the auto-reverse feature rotate the RH wheel backwards, some initial resistance should be felt at which stage the valve will shut off the pressure coming from the brake operating lever and allow the wheel to rotate freely. The LH wheel should also be checked by a second person (it is worthy of note that if the auto-reverse feature is not initiated by rotating the RH wheel and kept in the reverse position the LH wheel will be retarded and held in a locked position).

- 9.7.18 Force the brake operating lever first to its stopped position (brakes hard on), then over to the master cylinder fully stroked position.
- 9.7.19 A resistance caused by the internal spring load will be felt against the effort applied, which should be held for 10 seconds.
- 9.7.20 If any air is seen rising from the bottom of the reservoir during and after Para 9.7.19 then repeat the bleed cycle as detailed in Para 9.7.5 to 9.7.19.
- 9.7.21 Refit the moisture barrier.
- 9.7.22 Refit the reservoir cap and outer cover.
- 9.7.23 Refit the master cylinder top cover.

TESTING AFTER EMBODIMENT

- 10 Carry out a full brake test.

EFFECT ON WEIGHT

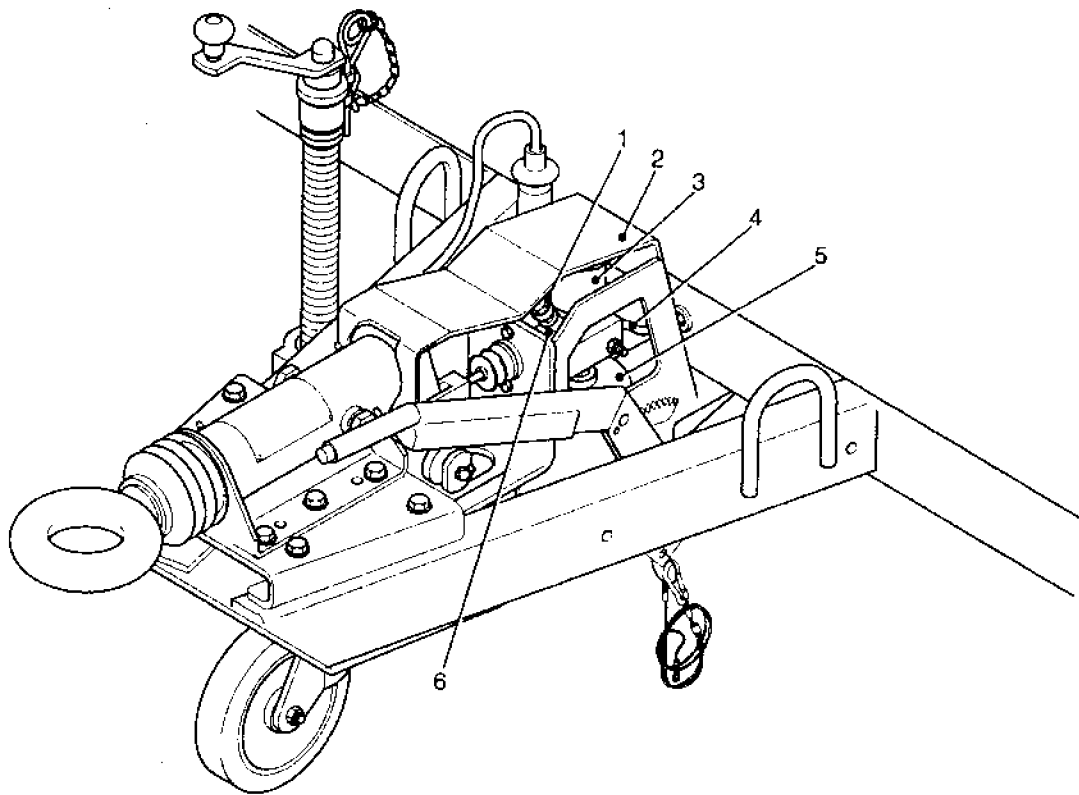
- 11 Nil

PUBLICATION AMENDMENTS

NOTE

Necessary amendments will be issued separately.

- 12 Users are to note: On completion of Modification Instruction No 1, the maintenance history on JAMES or FMT 1004 is to be updated to record that the Brake Fluid has been renewed. From this point on, the Brake Fluid should continue to be changed in line with the Servicing Schedule at 24 months regardless of when this modification has been embodied.

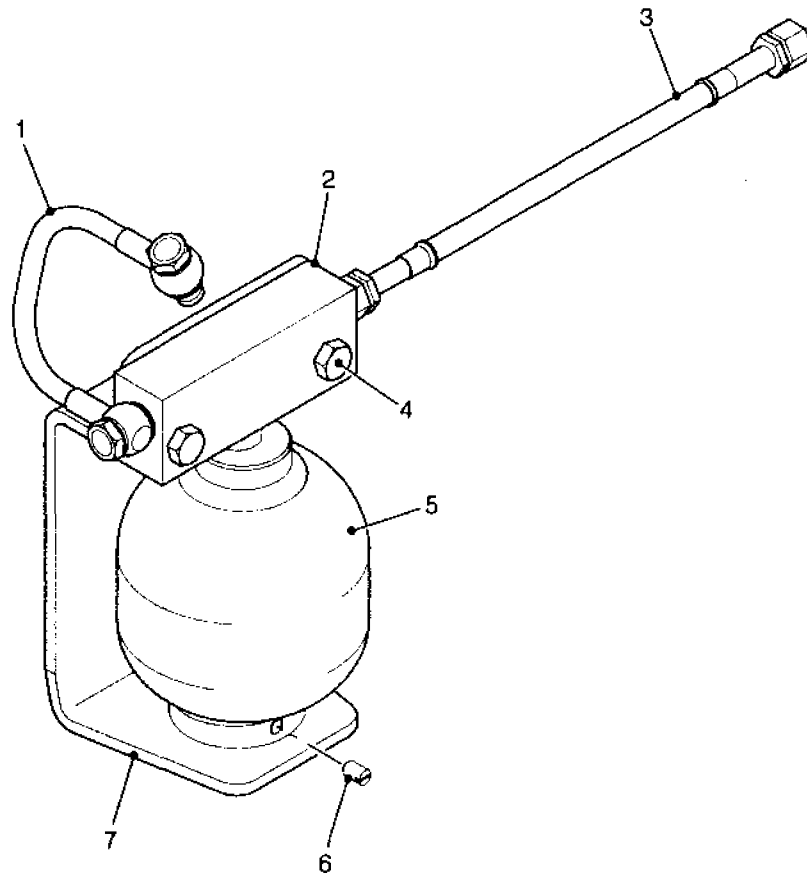


TRL/114

KEY TO FIG 1

- | | | | |
|---|-----------|---|-----------------|
| 1 | Hose | 4 | Flexible pipe |
| 2 | Top cover | 5 | Accumulator |
| 3 | Reservoir | 6 | Master cylinder |

Fig 1 Component location

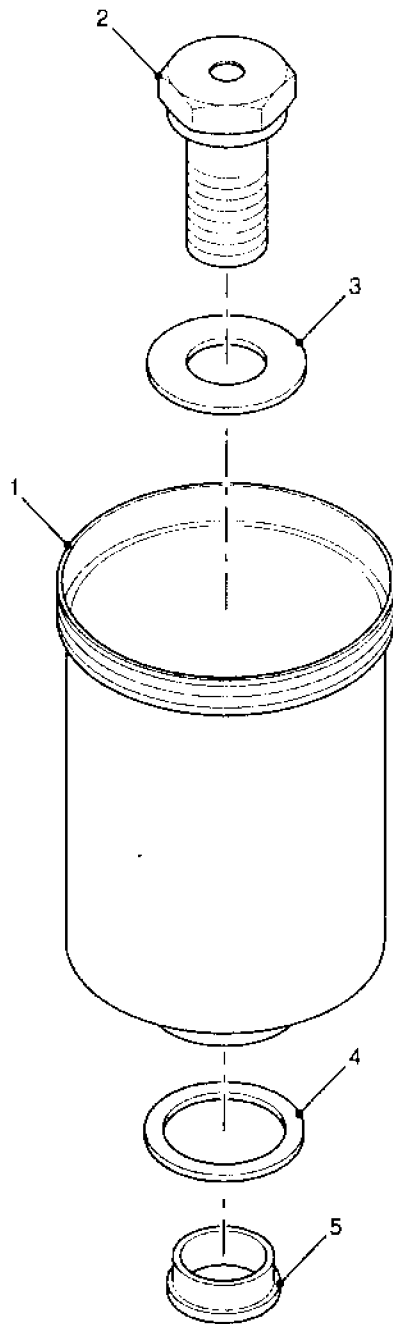


TRL/115

KEY TO FIG 2

- | | | | |
|---|----------------|---|---------------------|
| 1 | Hose | 5 | Accumulator |
| 2 | Manifold block | 6 | Screw |
| 3 | Flexible pipe | 7 | Accumulator bracket |
| 4 | Bolt | | |

Fig 2 Accumulator and manifold block

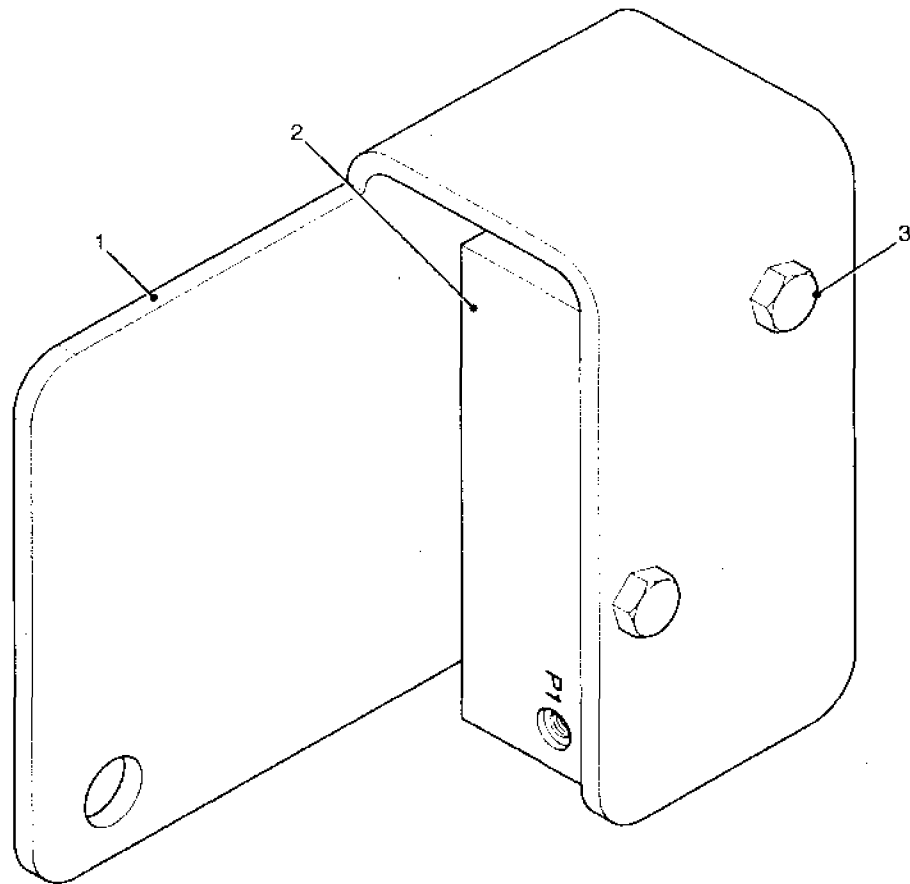


TRL/116

KEY TO FIG 3

- | | |
|-----------------|---------------|
| 1 Reservoir | 4 Rubber seal |
| 2 Fluid adaptor | 5 Spacer |
| 3 Plain washer | |

Fig 3 Reservoir and fittings

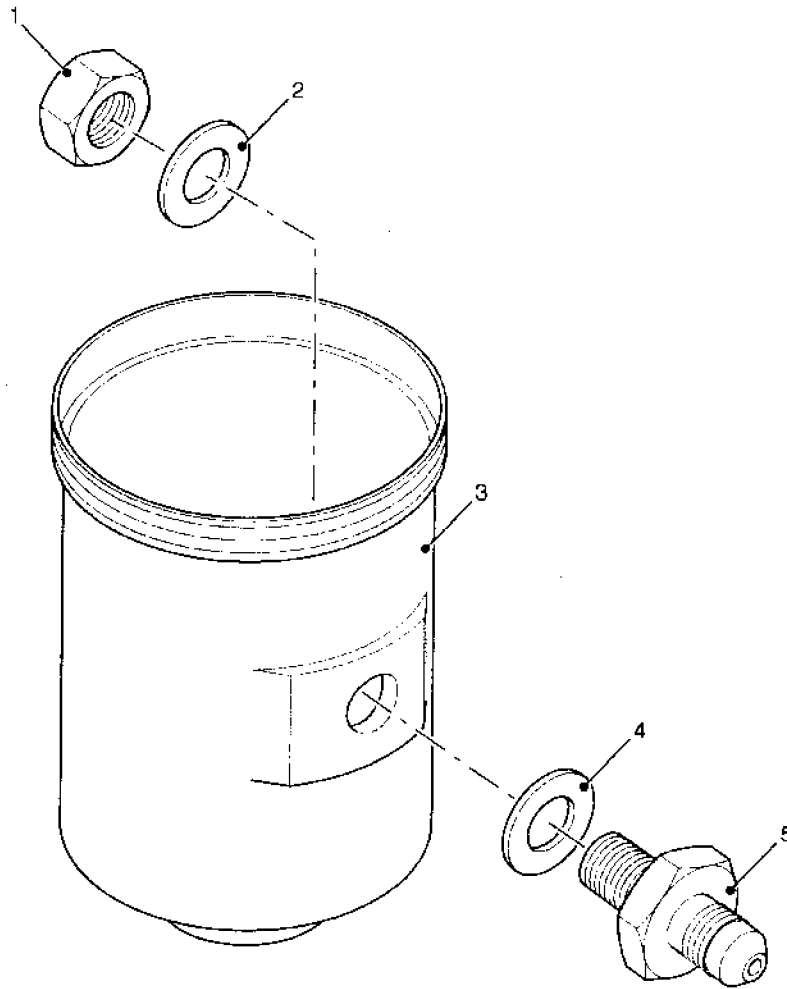


TRL/117

KEY TO FIG 4

- | | |
|-------------------------|---------|
| 1 Bracket | 3 Screw |
| 2 Pressure relief valve | |

Fig 4 Pressure relief valve and bracket

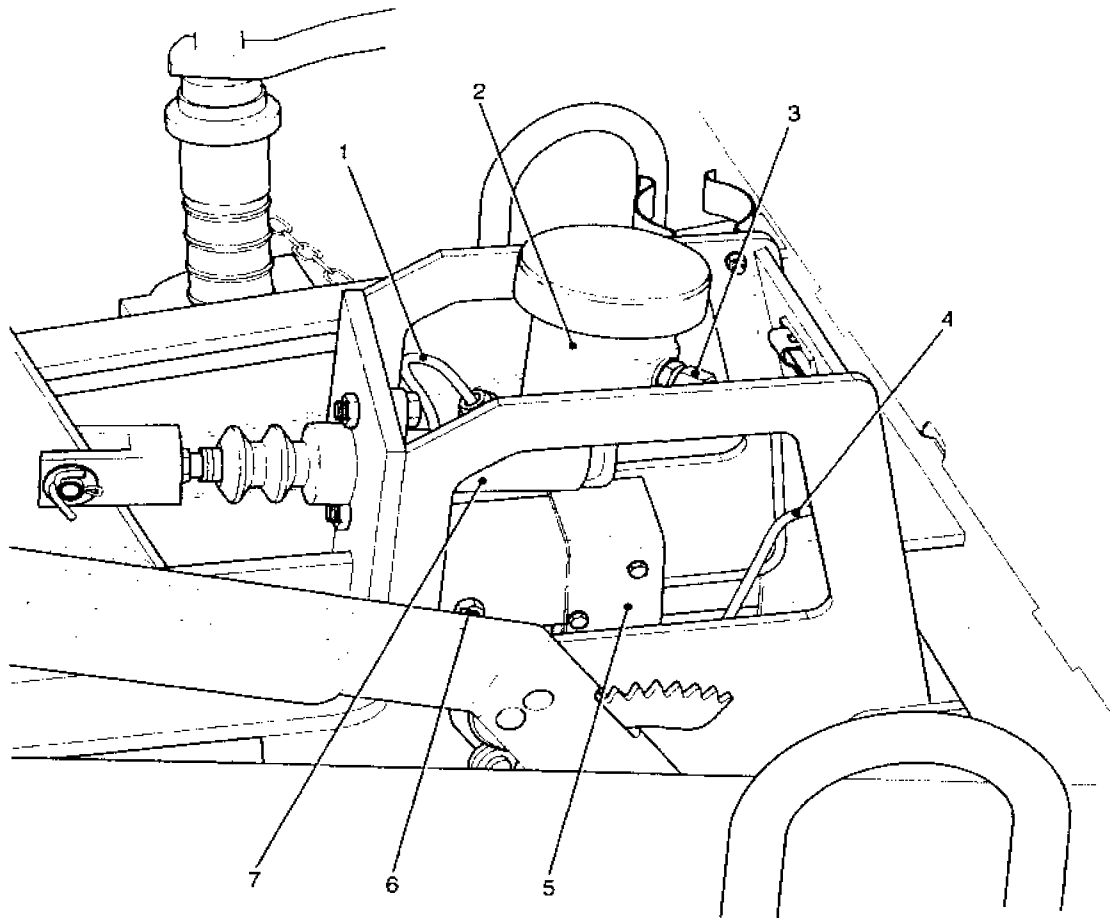


TRU/118

KEY TO FIG 5

- | | |
|-----------------|------------------|
| 1 Plain nut | 4 Sealing washer |
| 2 Copper washer | 5 Adaptor |
| 3 Reservoir | |

Fig 5 Replacement reservoir and fittings



TRL/114

KEY TO FIG 6

- | | |
|--------------|-------------------------------------|
| 1 Brake pipe | 5 Pressure relief valve and bracket |
| 2 Reservoir | 6 Screw |
| 3 Brake pipe | 7 Master cylinder |
| 4 Brake pipe | |

Fig 6 Assembled brake components

PAGE INTENTIONALLY LEFT BLANK

**TRAILER LIGHTWEIGHT
GS CARGO**

MODIFICATION INSTRUCTIONS AND INDEX

MODIFICATION NO 1

ANNEX A

CONTENTS

Leaflet

- 1 Modification Embodiment Leaflet AA-2548-001

PAGE INTENTIONALLY LEFT BLANK

MODIFICATION EMBODIMENT LEAFLET AA-2548-001

APPLICABILITY	TRAILER LIGHTWEIGHT GS CARGO
SUBJECT	Improvements to hydraulic braking system
APPROVAL NO.	GSV/04/0/145
MODIFICATION INST No 1	AESP 2330-E-202-811

I certify that this modification has been fully embodied on VRN.....

Date:

Signature:

Date:

Name:

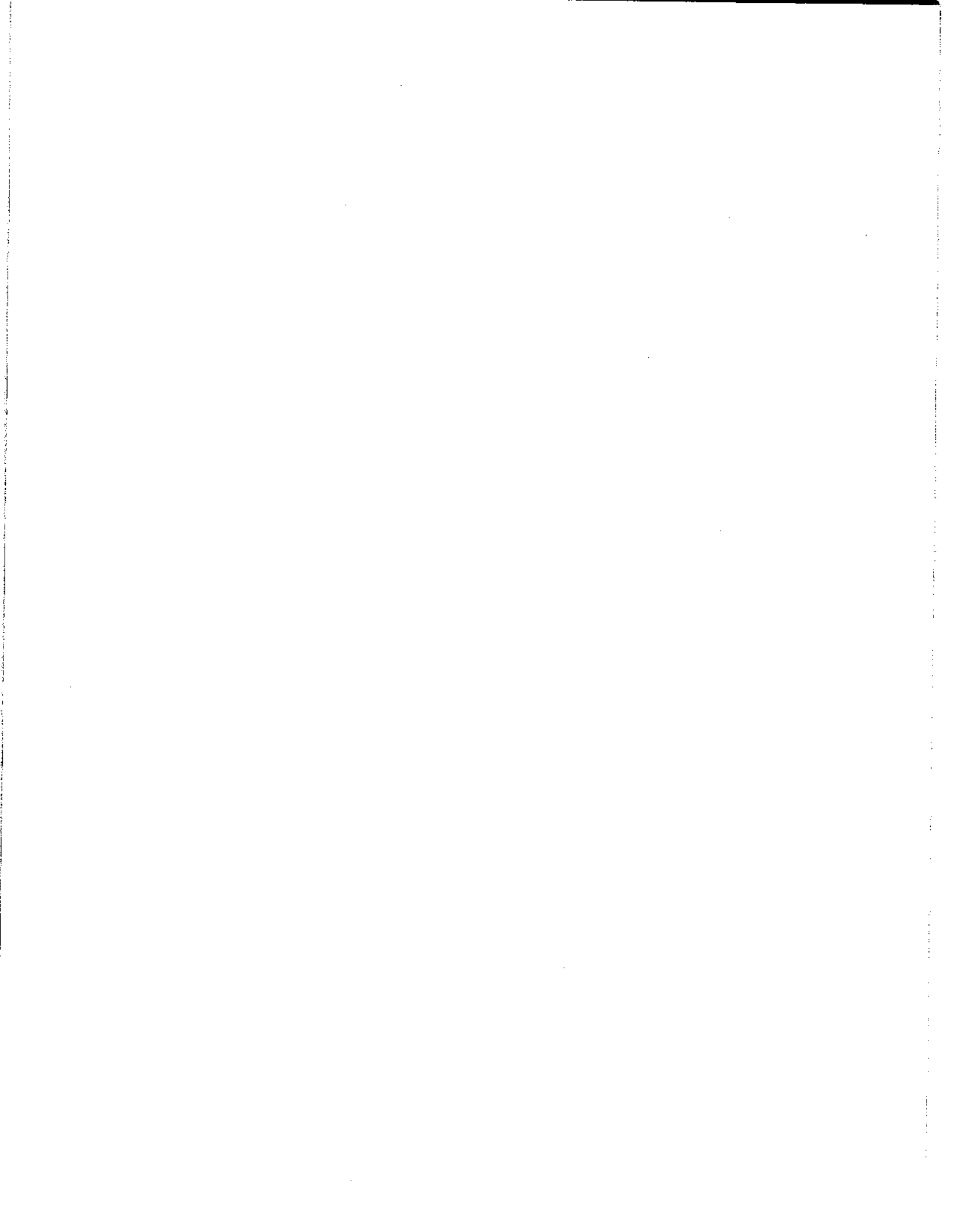
Rank/Job Title:.....

Please return completed form to:

Penman Engineering Ltd
Heathhal
Dumfries
DG1 3NY

FAO: PDS Manager

Tel: [REDACTED]
Fax: [REDACTED]



COMMENT(S) ON AESP*

To: DCCS
BFPO 794

From:
.....
.....

Sender's Reference	BIN Number	Date
AESP Title: TRAILER LIGHTWEIGHT GS CARGO MODIFICATION INSTRUCTIONS AND INDEX		
Chapter(s)/Instruction	Page(s)/Paragraph(s)	
If you require more space, please use the reverse of this form or a separate piece of paper. Comment(s):		

Signed: Telephone No:

Name (Capitals): Rank/Grade: Date:

✕

FOR AESP* SPONSOR USE ONLY

To: From:
.....
.....

Thank you for commenting on AESP

Your reference Dated

Action is being taken to:	Tick	Tick
Issue a revised/amended AESP		Under investigation
Incorporate comment(s) in future amendments		No action required
Remarks		

Signed: Telephone No:

Name (Capitals): Rank/Grade: Date:

* AESP or EMER

AESP Form 10 (Issue 5 dated Dec 01)