



Ministry  
of Defence

de&s

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Via:

19 February 2019 Our Reference: FOI2019/02105

Dear

Thank you for your email of 15 February 2019 requesting the following information:

*I have various ex-military vehicles all of which are fitted with variations of the Rotating Towing Pintle. They are manufactured by Dixon Bate and the NSN is 2540-99-825-6119. I would be grateful if you could supply a copy of:*

*AESP 2540-A-100-201*

I am treating your correspondence as a request for information under the Freedom of Information Act 2000 (FOIA).

A search for the information has now been completed within the Ministry of Defence, and I can confirm that the information in scope of your request is held.

The information you have requested can be found below.

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](mailto: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,

DES SEC PolSec Land Equipment

Defence Equipment & Support

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PINTLE, TOWING, ROTATABLE (ALL CAPACITIES)  
OPERATING INFORMATION, TECHNICAL DESCRIPTION  
AND  
MAINTENANCE INFORMATION AND INSTRUCTIONS

This publication contains information covering the requirements of categories 2, 3 and 5 at all levels

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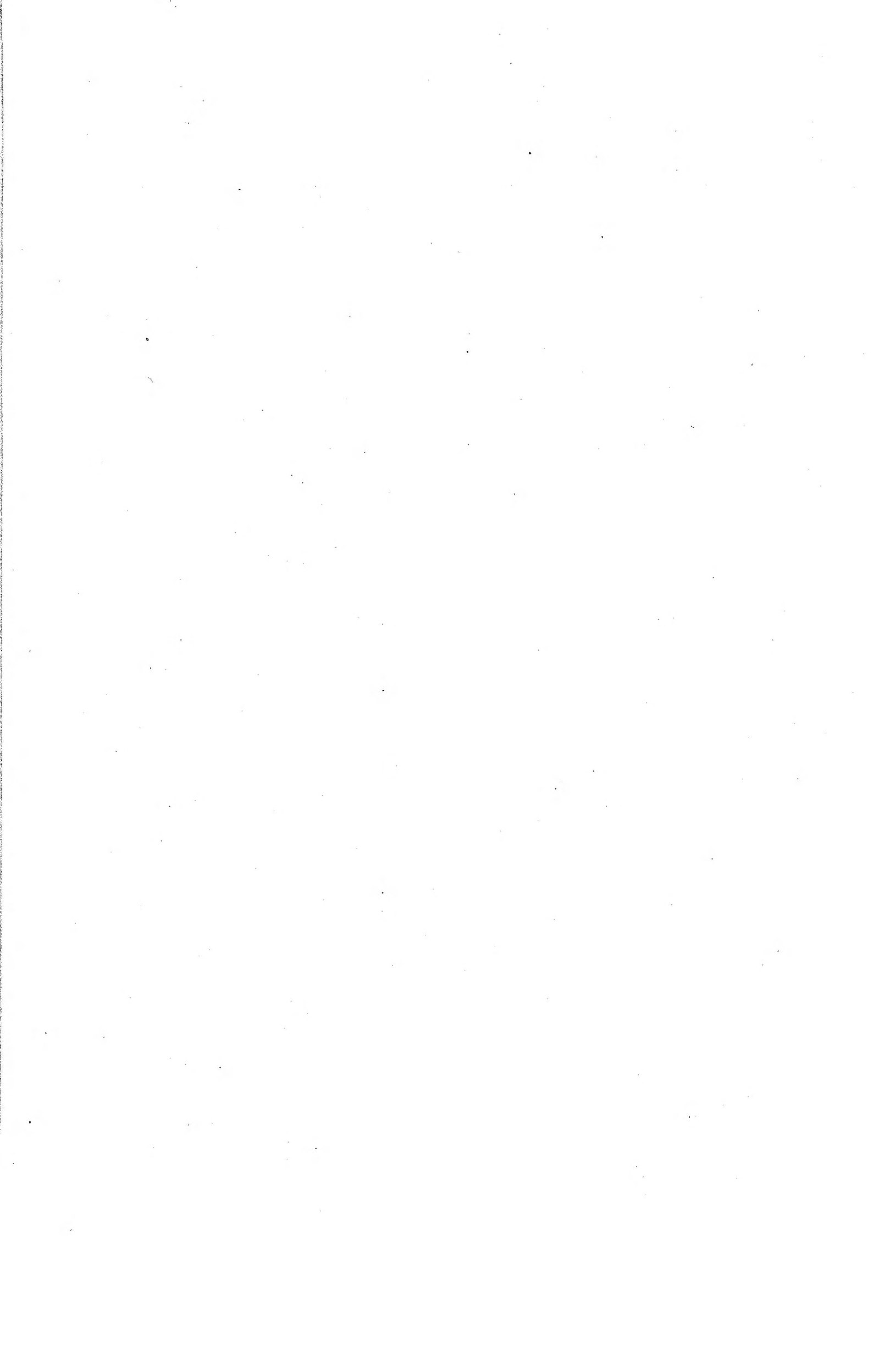
*Steve Whitmore.*

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Ministry of Defence

AMENDMENT RECORD

Amdt	Incorporated by	Date	Amdt	Incorporated by	Date
1	INCORPORATED		7		
2			8		
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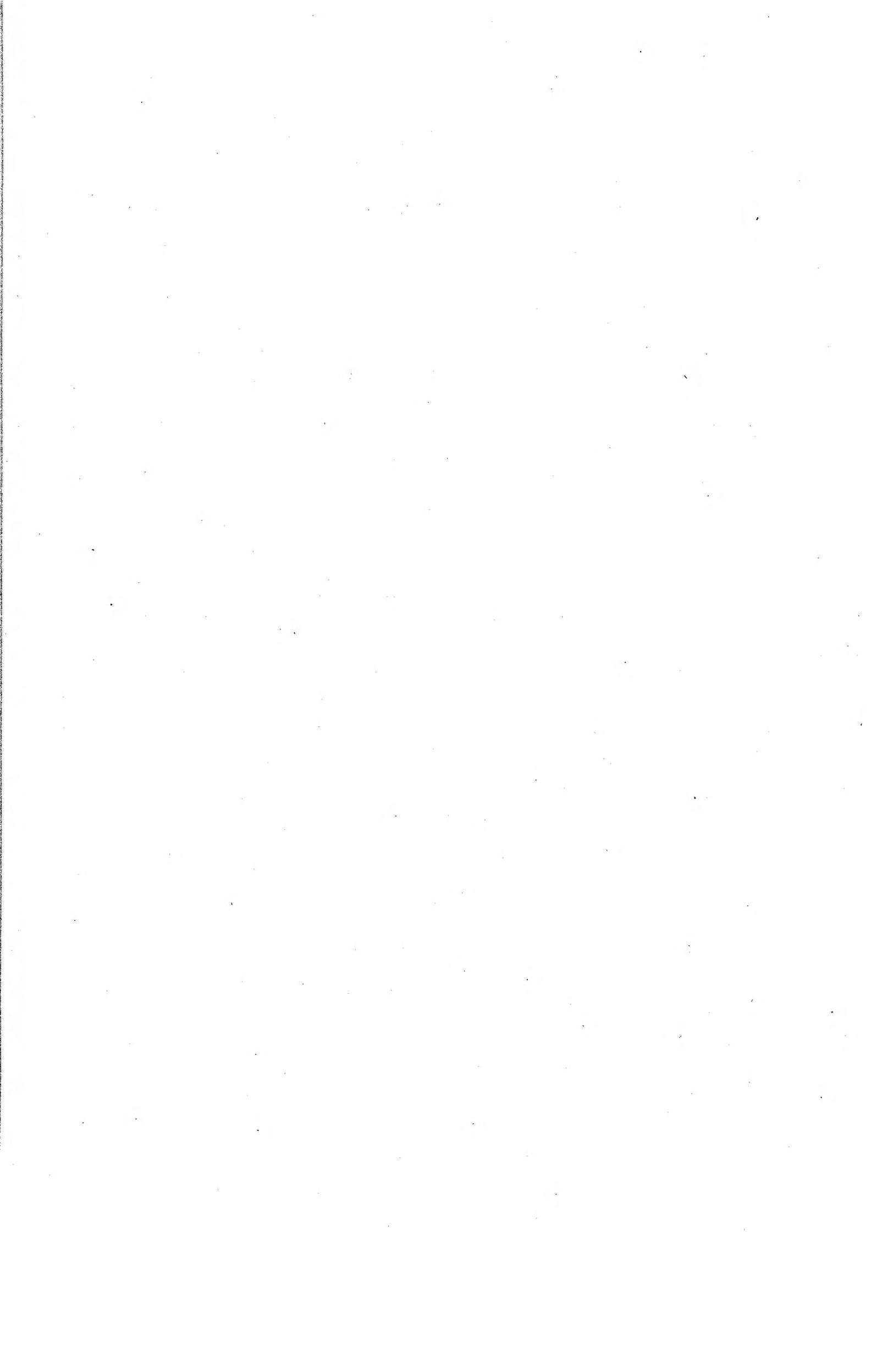
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PREFACE

- 1 Amendments are identified by marginal side lining.
- 2 Comments on this publication are to be forwarded in accordance with AESP 0100-P-011-013 to Vehicles and Weapons Branch REME, Chobham Lane, Chertsey, Surrey, KT16 0EE.
- 3 A poster, in A2 and A3 sizes, highlighting the need to actively consider the need for safety and maintenance of towing pintles is available from 'B' Veh D&M Sect, 6 MAG, at the address given in para 2 above. This poster is primarily aimed at the user, and should be displayed in any area where it is likely to bring these aspects to their attention.



WARNINGS AND CAUTIONS

TOWING SAFETY

WARNINGS ...

- (1) TOWING PINTLE LOCKS MUST BE SECURED IN THE CLOSED DOWN POSITION BY CORRECT ENGAGEMENT OF THE SPRING LATCH WITH THE HOOK MATING FACE. ACCIDENTAL OPENING OF THE LOCK CAN RESULT IN SERIOUS ACCIDENTS. THESE CAN ENDANGER THE LIVES OF BOTH SERVICE PERSONNEL AND THE PUBLIC.
- (2) A LOCKING PIN OF THE CORRECT TYPE MUST ALWAYS BE FITTED WHEN THE PINTLE IS IN USE.
- (3) IF THE LATCH DOES NOT SEAT CORRECTLY ON THE HOOK MATING FACE, IT IS NOT SAFE TO USE. WITHDRAW IT FROM SERVICE IMMEDIATELY.

1 Where decoupling in motion has occurred, investigation has revealed the causes to be mainly incorrect use or poor maintenance. The locking pin is inserted to ensure that the latch is correctly engaged on the hook mating face.

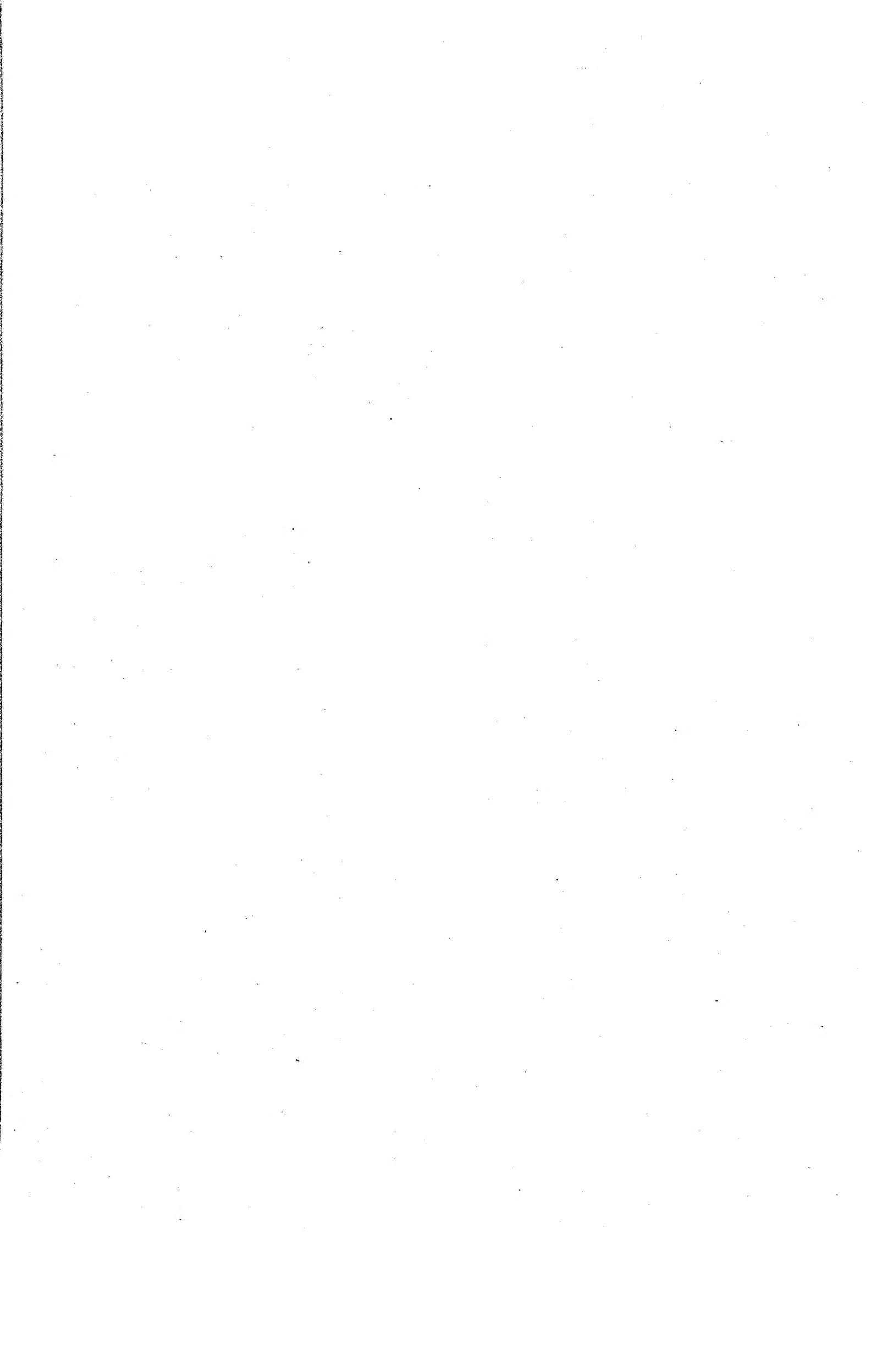
2 The latch must have the correct angular relationship with the hook mating face (see Fig 5). Where this requirement is not met, the towing pintle is to be withdrawn from service immediately and submitted to REME workshops for rectification action.

USE OF EQUIPMENT

CAUTION ...

Speed and load restrictions for individual equipments/towing pintles must be strictly adhered to.

3 EMER and AESP publications for parent equipments in the 'User Handbook' and 'Equipment Operating Instructions' sections contain information on speed restrictions and loading capacities which are to be observed when towing. Abuse of these regulations will increase stress and wear on pintles and towing eyes, with consequent reduction in safety factors.



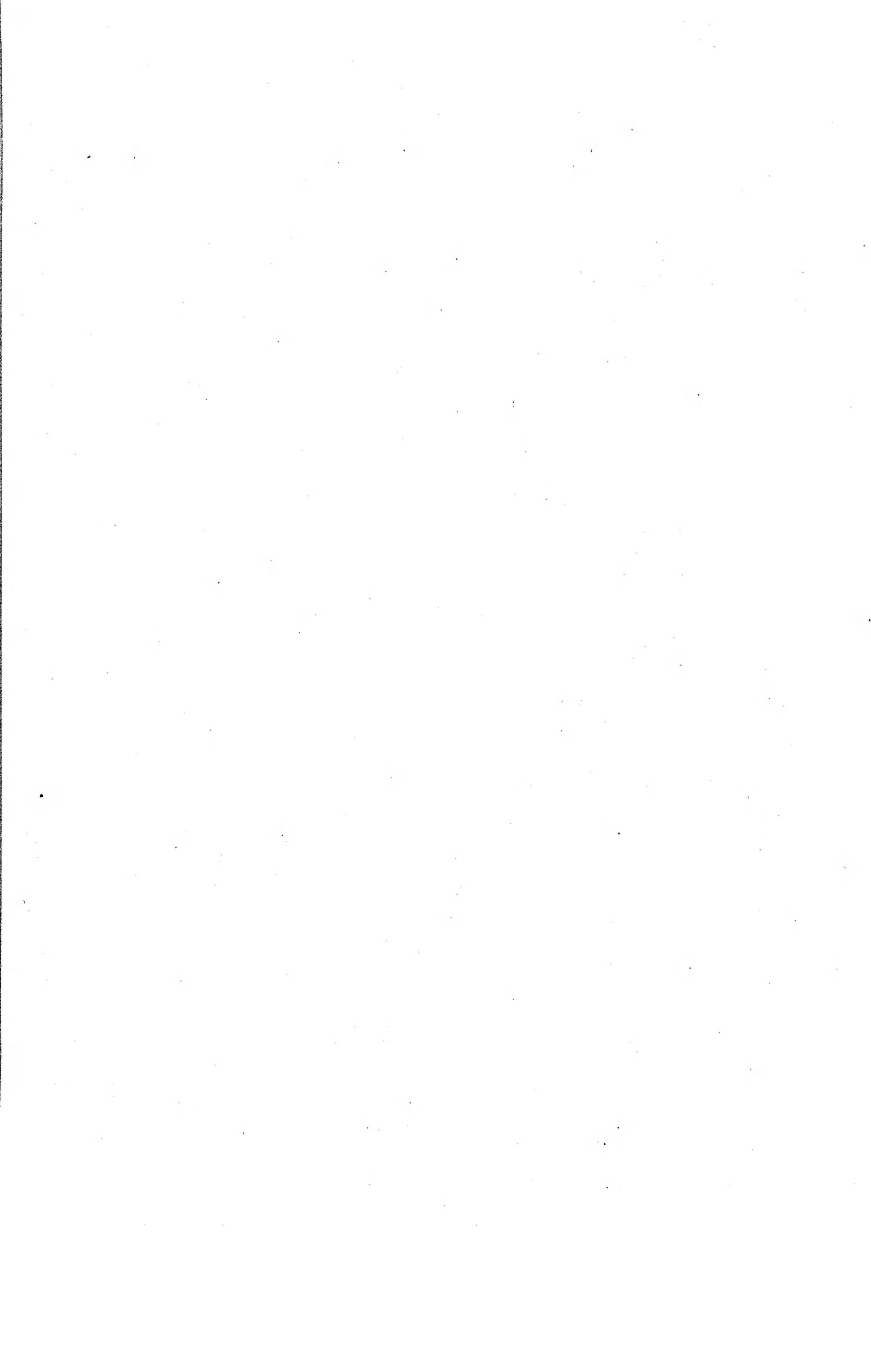


ASSOCIATED PUBLICATIONS

4 Because of the wide range of equipments fitted with the type of Pintle towing assembly to which this publication refers, it is not feasible to define each associated publication under this section.

5 Given below are the publications, or parts thereof, which contain some information concerning towing pintles, where applicable. Except for Test and Measurement, the user must select the publication relating to the parent equipment.

AESP xxxx-x-xxx-201	Operating information
AESP xxxx-x-xxx-601	Maintenance schedules
AESP xxxx-x-xxx-711	Parts catalogue and related information (service edition: IPC)
AESP xxxx-x-xxx-721	Parts catalogue and related information (commercial parts list: CPLS)
EMER XY0	Data Summary
EMER XY2	Description and theory
EMER Test & Measurement A 028	Chap 150, Table 1, Sers 4 and 29 - static inspection of towing pintles
Army Code xxxxx	User Handbook
Army Code xxxxx	Servicing Schedule



## INTRODUCTION

1 This AESP applies to rotatable towing pintle assemblies fitted with a spring loaded latch. These are used in a variety of capacities on service vehicles and trailers. A table showing the most commonly used types is provided at Table 1.

2 This AESP combines a number of categories of information. There is no intention to introduce further parts of this octad.

## ROLE

3 The purpose of the rotatable pintle towing assembly is to provide a simple and effective means of coupling an equipment to be towed to a prime mover.

4 Equipments to be towed will be fitted with either a fixed or revolving towing eye. For permissible combinations of eye and pintle, see para 8.

5 There are various designs and capacities of towing pintle in service; consult the user handbook of the parent equipment to establish the capabilities of a particular pintle towing assembly.

## DESCRIPTION

6 Fig 1 shows a typical design of rotatable towing pintle assembly; the main components are identified. Whilst designs vary, depending upon method of securing to chassis and towing capacity, they are basically similar in concept, layout and operation.

7 Refer to Fig 1. The major component parts are described as follows:

7.1 The bearing housing (item 2) may be of unitary or two-piece design. Two-piece housings are bolted to chassis cross-members and unitary types may be secured by this method or welded into the chassis.

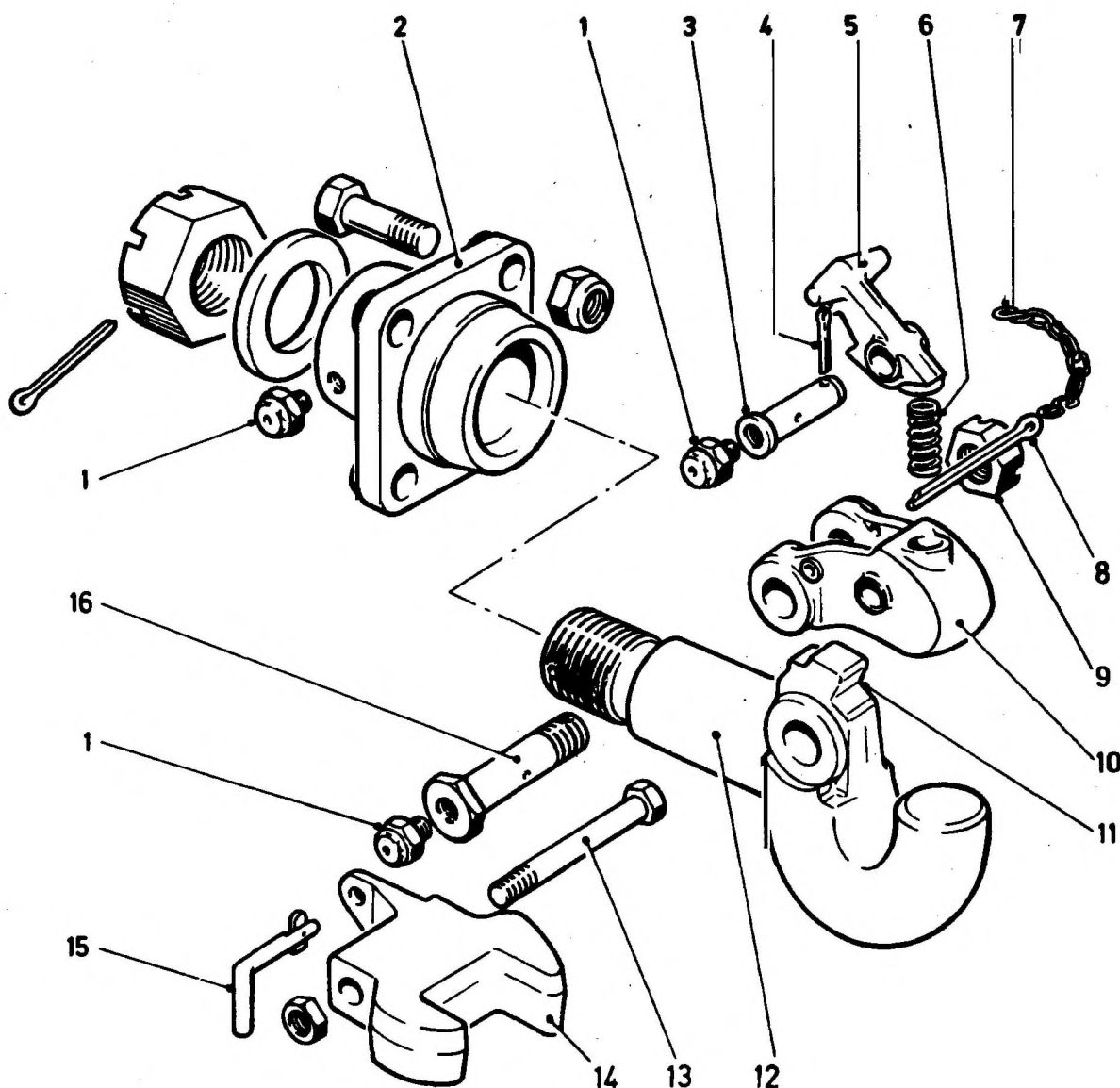
7.2 The towing hook (item 12) complete with shaft, runs inside the bearing housing and is free to revolve through 360°. It also contains a cross-drilled hole to house the pivot pin (item 16) of the lock (item 10). It also incorporates a mating face (item 11), for the latch (item 5).

7.3 The lock (item 10) is held in position on the hook by means of a pivot pin (item 16) about which it is hinged. With the towing hook vertical (as depicted in Fig 1) the lock closes against the anvil face of the hook.

7.4 The latch is housed within the lock where it pivots about a pin (item 3). An elliptical leaf spring or a coil compression spring (item 6) (depending upon design) is located within the nose of the lock to force the latch into engagement with the mating face (item 11).

7.5 A locking pin (item 8) is provided. When the latch is fully engaged with its mating face, it can pass through corresponding holes in the latch and lock. A chain (item 7) secures the locking pin to the rotatable parts of the assy (when not inserted through the lock).





V 7586/1

Item Identification

- |                                      |                             |
|--------------------------------------|-----------------------------|
| 1 Grease nipple.                     | 9 Nut, to suit item 16.     |
| 2 Bearing housing, fixed.            | 10 Lock.                    |
| 3 Pin, latch pivot.                  | 11 Latch mating face.       |
| 4 Splitpin, securing item 3.         | 12 Tow hook c/w shaft.      |
| 5 Latch.                             | 13 Bolt, pivot for item 14. |
| 6 Compression spring, latch tension. | 14 Fork, pivoting.          |
| 7 Chain assy, to retain item 8.      | 15 Pin, toggle headed.      |
| 8 Locking pin.                       | 16 Pin, pivot for item 10.  |

Fig 1 - Towing Pintle Assy - Exploded View



7.6 The fork (item 14) is retained by means of a bolt, pivot pin (item 13) housed in either chassis mounted bosses or extensions on the bearing housing. The fork can be locked into two positions, one engaging the lower body of the hook, preventing it from revolving, the other position holding the fork clear of the hook thus allowing the hook to revolve. The fork locking mechanism is a toggle headed pin (item 15) or a clevis pin.

#### PRINCIPLES OF OPERATION

8 Pintle towing assemblies may be used with towed equipments fitted with either fixed or revolving towing eyes subject to the following rule:

8.1 Fixed towing eyes; pintle assembly must be free to revolve, ie fork disengaged from towing hook.

8.2 Revolving towing eyes; pintle assembly is held in vertical position. ie fork locked in engagement with towing hook.

9 To secure the pintle assembly in the closed position, ie with the nose of the lock against the anvil of the hook (see Fig 2), draw the lock down towards the hook. At a point where the lock is almost in contact with the hook, the latch will snap sharply into engagement with the hook mating face under spring pressure.

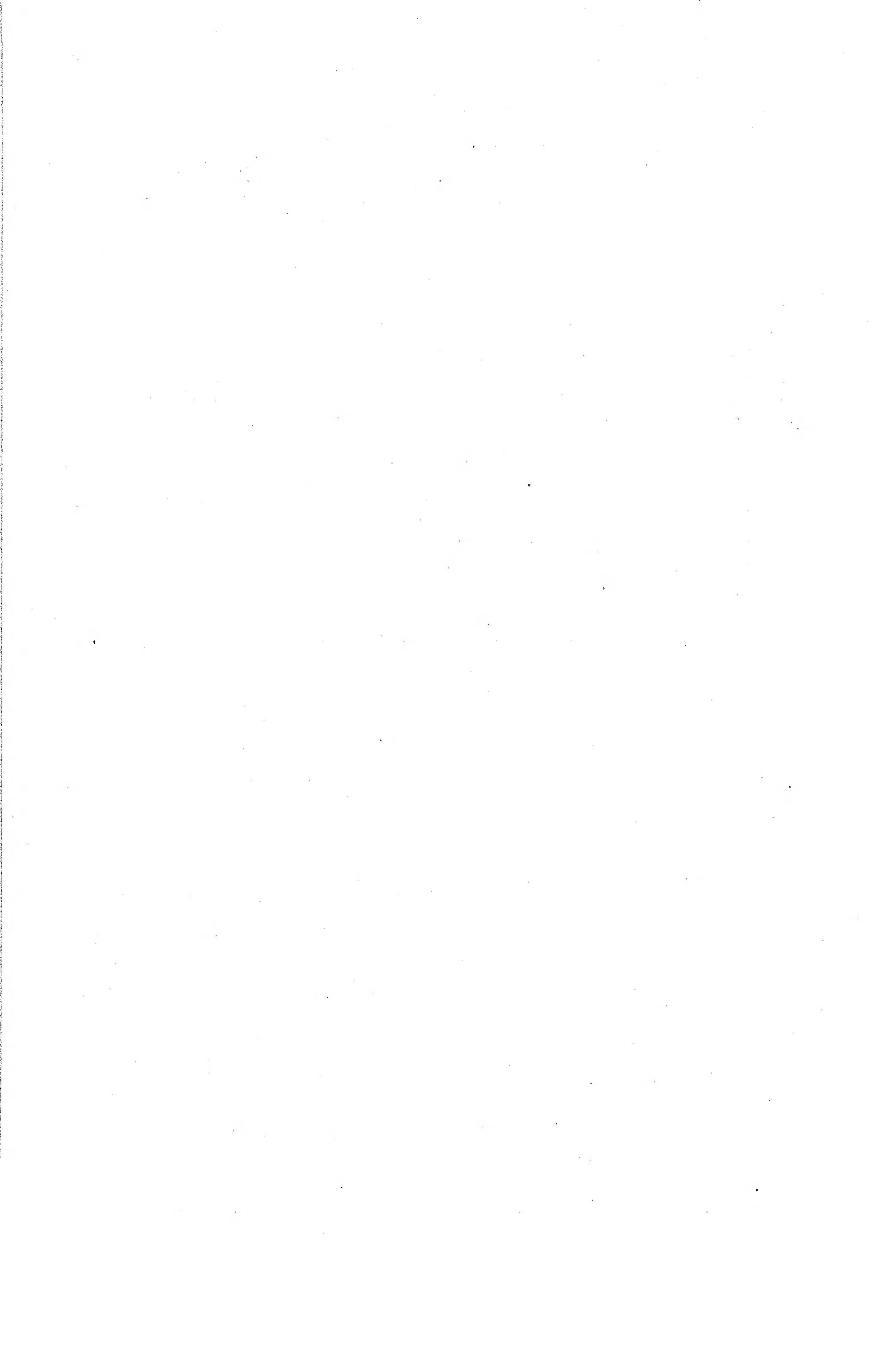
10 The latch must bear at point 'B' (see Fig 5), the base of the hook to latch mating face. This is the primary method of locking the pintle assembly in the closed position. It is then not possible to open the pintle lock simply by upwards pressure on it. To open the lock, the latch must first be lifted, against spring pressure, until it clears the hook mating face.

11 In the fully closed position, three lateral holes in the locking mechanism (one in the latch, two in adjacent faces of the lock) align. A locking pin can be inserted through all three holes thus holding the latch in engagement with the hook mating face. This provides a secondary form of locking the pintle assembly in the closed position. This secondary method of locking is a compulsory requirement.

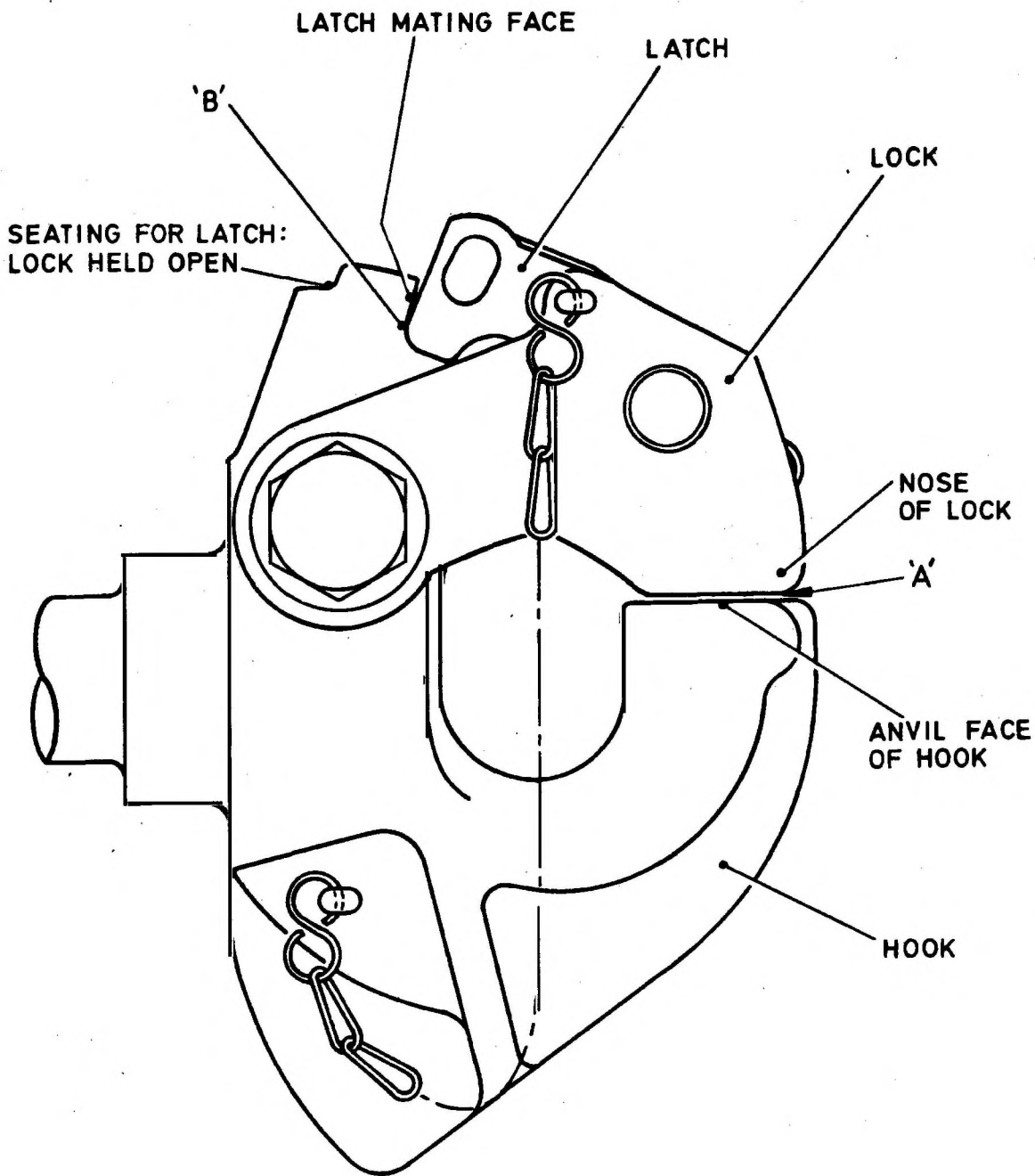
12 The locking pin should be either of a type specifically intended for use with a particular pintle assembly (an 'R' type spring clip) or a split cotter pin. The former is the preferred fitment. Either type should be secured to the rotatable part of the pintle assembly via a short chain.

13 Where a split cotter pin is to be used as the secondary locking medium, it should be opened slightly to form a 'V' shaped 'spring', see Fig 3. To insert the pin, pinch the open ends together and feed into the locking mechanism. Once inserted the tendency of the pin to regain the 'V' form will prevent it from sliding out of engagement whilst in transit. To select a suitable split cotter pin, use the following criteria:

13.1 Select largest diameter pin which can be inserted, using hand pressure only, into the first hole in the lock. It follows that with a pintle assembly in good condition, this size pin will also pass through corresponding holes in the latch and lock.







V 7586/2

Clearance at 'A' may be measured by ensuring the latch is fully home at 'B' (this is done by lifting the lock) and inserting a feeler gauge between the nose of the lock and the anvil. A selection of permitted clearances, depending upon pintle type, are given at Table 1.

Fig 2 - Measuring Clearance Between Lock and Hook



13.2 Length must be sufficient to allow the open end of the pin to protrude a minimum of 10mm when fully inserted.

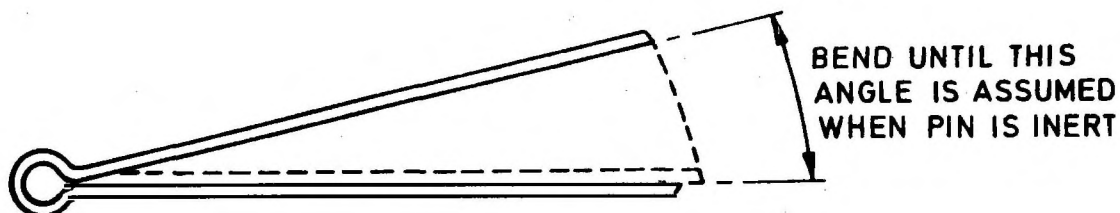


Fig 3 Split cotter pin: open to 'V' form

V7586/3

14 For safety and ease of operation whilst connecting a towing eye to a pintle assembly, it is possible to secure the lock in the fully open position. This is achieved by lifting the lock, having raised the latch, until the latch engages a seating in the hook casting above the lock pivot pin, item 16, Fig 2.

#### USER MAINTENANCE

15 User unit repairs are restricted to the locking pin. Any bending or noticeable wear render the pin unserviceable. For selection of a replacement, read para 13 in conjunction with the parts list for the parent equipment.

16 If any other part of the pintle assembly becomes worn, seized or broken, submit to REME workshops for repairs.

17 Servicing schedules for individual equipments instruct on the correct service intervals. Shown below are general instructions which apply to all pintle towing assemblies; these are supplementary to information in servicing schedules. At the laid down service interval:

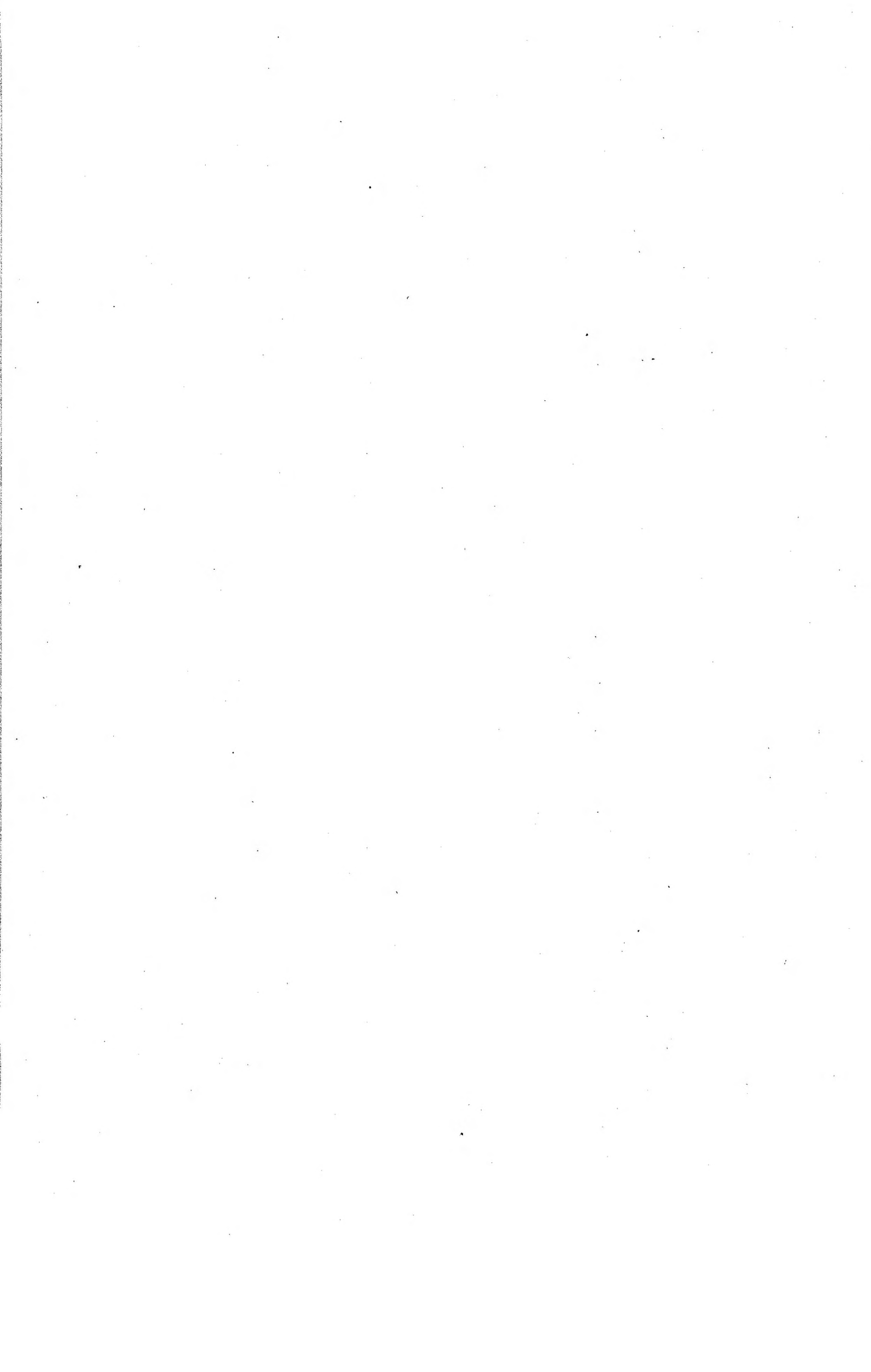
17.1 Thoroughly grease all nipples (where fitted) using XG 279.

17.2 Lubricate all other pins, springs and pivots using OMD 80.

17.3 Working surfaces of hook, lock and latch to be lightly coated with XG 276 (NSN9150-99-942-5139).

#### FIELD REPAIRS

18 For most patterns of pintle assembly, component parts are available to facilitate overhauls. Only in the event of non-availability of spares, or unacceptable wear or damage to the hook, may the whole assembly be replaced. On some patterns of pintle, the complete assembly is a non-provided item; these can only be repaired by overhaul.



19 No welding repairs are to be carried out on the hook, lock or anti-rotation fork.

20 Where the latch does not engage the hook mating face correctly (see Fig 5), or there is excessive clearance at point 'A' (see Fig 2), rectify as follows (refer to Fig 4):

20.1 To correct latch engagement. Back off face 'B-C' by minimum amount of filing until latch bears at point 'B' when lifting the lock.

WARNING ...

IF THE LATCH DOES NOT SEAT CORRECTLY ON THE HOOK MATING FACE, IT IS NOT SAFE TO USE.

20.2 To reduce clearance between hook and nose of lock. If clearance at 'A' (see Fig 2) exceeds field tolerances given at Table 1, either because of wear or following correction of latch face engagement (as per 20.1 above), the latch face must be built up by the process of metal spraying.

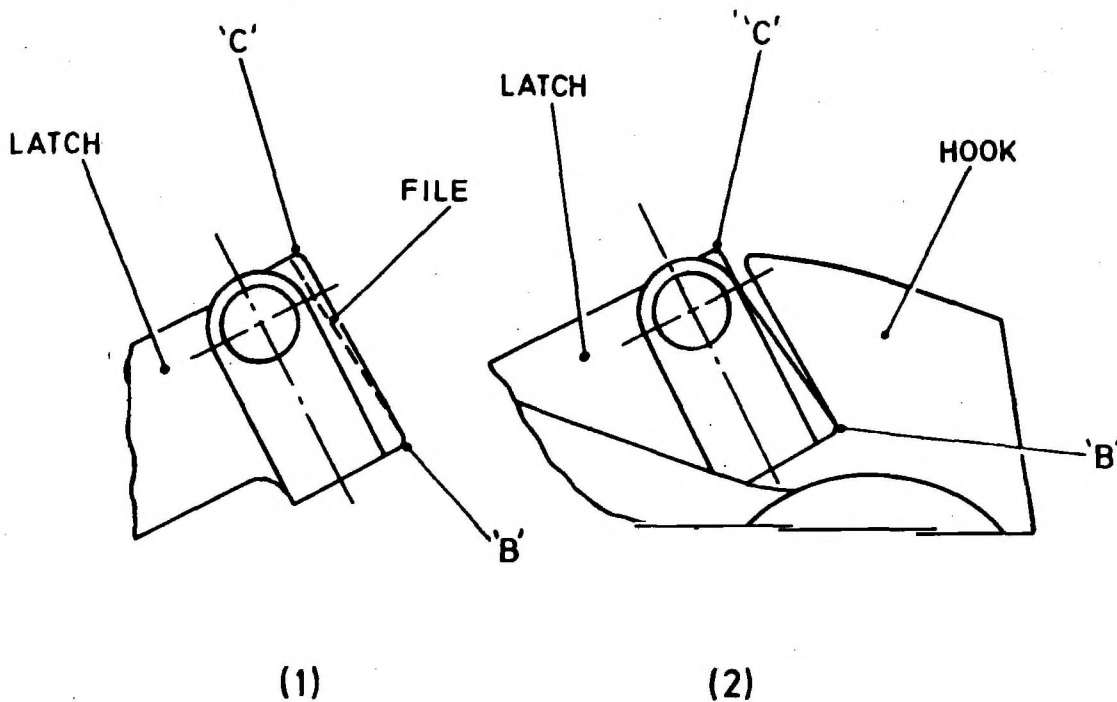


Fig 4 - Correcting latch engagement angle and hook clearance

V7586/5



## 21 Metal Spraying

- 21.1 The area to be built up should be hand dressed and free from contaminants.
- 21.2 Pre-heat area to be built up to approximately 150°C.
- 21.3 Pre-spray using 10185 micro-powder (NSN 3439-99-965-6795) to approximately 0.010 in. thickness.
- 21.4 Diffuse powder into base metal and build up to required size.
- 21.5 Machine or file face of latch to the correct angle (see Fig 4) and also for clearance 'A' (see Fig 2 and Table 1).

## TESTING

- 22 The following tests should determine whether or not a pintle assembly is functioning correctly:
  - 22.1 All moving parts should be free to move throughout their whole designed range of articulation.
  - 22.2 Fully open the lock. It should remain open due to the engagement of the latch with a seating at the rear of the hook.
  - 22.3 Using light hand pressure on the lock (not the latch) draw the hook down. There should be no tight spots and the latch should suddenly engage the hook mating face under spring pressure.
  - 22.4 With the latch fully engaged at point 'B' (check against Fig 5) lift the lock and check clearance between hook and lock in accordance with Fig 2.
  - 22.5 With the lock closed, the locking pin should pass through the corresponding holes in the locking mechanism without recourse to other than hand pressure on the pin.

## INSPECTION

### 23

- 23.1 The latch and hook mating surfaces must be clean and free from paint.





23.2 Refer to Fig 5. Check that the latch bears correctly against the mating face on the hook. Adjustments may be only those detailed at paras 20 and 21.

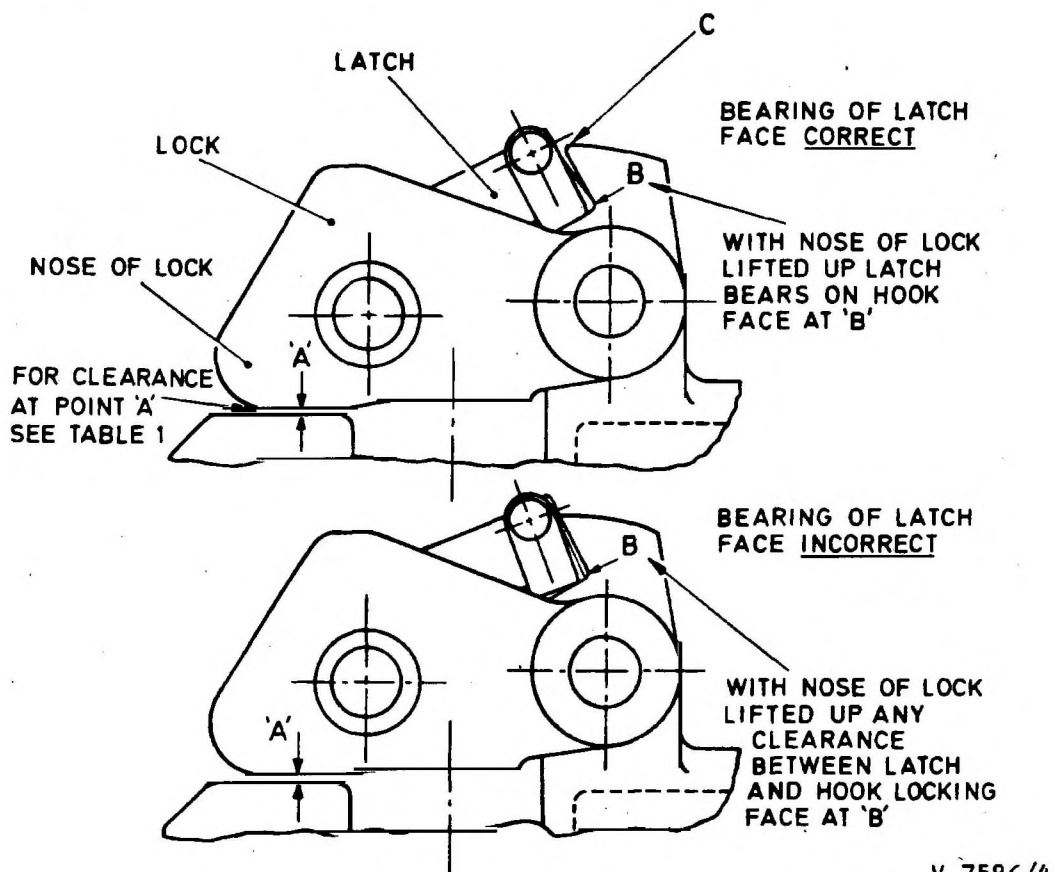


Fig 5 - Method of Checking Engagement of Latch

23.3 Refer to Fig 2 and Table 1. Check clearance at point 'A'. Adjustment to be in accordance with instructions at paras 20 and 21.

23.4 The locking pin must be straight and free from wear. It must be secured to rotatable parts of the pintle via a short chain.

23.5 All moving parts should be free to travel throughout their whole designed range of movement.

23.6 Inspect complete assembly for cracks. None are acceptable, if any are found take defect reporting action immediately.

23.7 Inspect for wear on load bearing surfaces. If performance of the pintle assembly is likely to be impaired, worn parts must be replaced.

23.8 Pivots must be free from excessive play. Where a pin or its housing is worn, repairs must be by renewal only.



TABLE 1 - TOWING PINTLE HOOK TO LOCK CLEARANCES

SERIAL	DESIGNATION OF PINTLE ASSY, TOWING	MAX TOWING CAPACITY (TONS)	FV NO	MAXIMUM CLEARANCE AT POINT 'A'	
				UNIT/ FIELD	BASE
(1)	(2)	(3)	(4)	(5)	(6)
1	Light	4	987958	.040"	.030"
2	Medium	7.5	987957	.040"	.030"
3	Heavy (G S range)	10	192721	.060"	.050"
4	Heavy (Prime Mover)	20	249496	.060"	.050"

Note ...

Point 'A' is defined at Fig 2 as being the clearance between the anvil face of the hook and the nose of the lock when the lock is lifted.

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