

## Chapter I GROUND HANDLING

(completely revised)

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#### WARNING

The relevant safety precautions detailed on the LETHAL WARNING marker card must always be observed before entering the cockpit or performing any operations upon the aircraft.

#### Alighting-gear safety locks (fig. 1)

1. Safety locks must always be fitted to the alighting gear during ground handling. The main undercarriages are locked by inserting a quick-release pin Ref.No. 26DK/95032 through the hole in the down-lock jack, and the nose under-

carriage is secured with a clamp-type ground lock Ref.No. 26DK/95033.

#### Towing (fig. 2)

2. The aircraft is normally towed forward, using a towing arm Ref.No. 4GB/2792 secured to the nose-wheel axle by an adapter Ref.No. 26DK/95001. The towing arm release mechanism must be set to break at 5500 lb (detail A) and locked in this position. Rearward towing is permissible, using a 35-ft bridle Ref. No. 4GB/4138 connected by its shackles to towing eyes Ref.No. 26DK/95003 screwed

into the main-wheel axles (detail C); in addition, a steering arm Ref.No. 26DK/95002 must be connected to the nose wheel with an adapter Ref.No. 26DK/95001. The cockpit must always be occupied, and a minimum of 2000 lb/in<sup>2</sup> hydraulic pressure must be available for braking.

#### Parking and picketing

##### General information

3. The aircraft must be parked with all covers and plugs fitted (para. 7) and the wheels chocked fore and aft with brakes

applied; in wet weather the canopy seal must be kept inflated (*para. 4*) to prevent ingress of moisture to the cockpit. Depending upon wind velocity (*Table 1*), picketing may also be necessary. The flying control surfaces are irreversible and external locks are not required; the controls must, however, be left in the neutral position. General picketing instructions are contained in A.P. 1464G, Vol. 1, Part 2, Sect. 5, Chap. 2.

#### *Inflating the canopy seal*

4. A Type B tyre-inflating pump Ref.No. 4G/3743 connected by an adapter Ref.No. 26DK/95369 to the ground test connection on the nose-wheel starboard beam is used to inflate the canopy seal. The seal must be checked visually at regular intervals after inflation, and re-inflated if necessary.

#### *Picketing points (fig. 3)*

5. Two main and two secondary picketing points are provided. The main picketing points (*detail A*) are in each main-wheel bay, where a hole in rib 11B accepts a shackle Ref.No. 26DK/95041. The secondary points (*detail B and C*) are at the nose-wheel fork, where a hole is provided for a shackle Ref.No. 26DK/95040, and aft of frame 59, on the underside of the aircraft. Removal of a plug in the skin at this latter point permits an eyebolt Ref.No. 26DK/95042 to be screwed into a threaded hole in a bracket attached to the frame.

#### *Lashings (fig. 3)*

6. All rope lashings are of 2-in. hemp

and the three chains on the picketing base are standard picketing chains Ref.No. 4G/1500 secured by six shackles Ref.No. 4G/1501. The secondary lashings must be tensioned as described in A.P. 1464G, Vol. 1, Part 2, Sect. 5, Chap. 2, but the main lashings must be allowed slack 3 in. in excess of these requirements. The chains must have 6 in. of slack.

#### *Covers and plugs (fig. 4)*

7. Covers and plugs required when the aircraft is parked or picketed are listed in Table 2.

TABLE 1  
Picketing requirements

Wind velocity (knots)	Picketing
0-60	none
60-80	secondary points only
above 80	primary and secondary points

#### Note...

*The position of the aircraft in relation to wind direction is immaterial.*

TABLE 2  
Covers and plugs

Covers	Plugs	Ref. No.
Cockpit		27D/3217
Main wheel (2)		27D/3091
Nose wheel		27D/3092
Engine air-intake		27D/3218
Jet pipe		27D/3219
Pressure head		27D/3224
Spine		27D/3242
I.F.F. and Tacan aerials		26DK/95785
	Inward vent pipe	27D/3221-2
	Generator cooling duct	27D/3220
	Reheat zone cooling duct	
	Air turbine exhaust duct	
	G.W. pack air-intake	

**Fire break-in panels**

8. Four (seven after embodiment of Mod. 1911), small circular fire break-in panels, coloured red, are fitted in the skin along the starboard side of the fuselage (Sect. 4, Chap. 5). The panels give access to the engine bays, and can be easily dislodged with the nozzles of fire-fighting equipment.

**Salvaging a crashed aircraft**

9. Two methods of salvaging an aircraft are detailed in this paragraph and illustrated, together with the equipment required, in fig. 5 and 6.

*Jacking method (fig. 5)***Note...**

*Fit the main-plane jacking pad to the secondary jacking point:-*

- (1) Locate the pip pin, positioned on the underside of the main plane, inboard of the aft end of the main under-carriage pivot.
- (2) Using the screwdriver end of the pip pin extractor Ref. No. 26DK/95088, turn the grub-screw clockwise into the body of the pip pin until the ball catches unlock.
- (3) Screw the bolt end of the extractor into the threaded hole left by the grub-screw and pull to remove the pip pin.
- (4) Fit the jacking pad Ref. No. 26DK/95110 to the jacking point.
- (5) Refer to fig. 5 for the remaining jacking operations.

*Slings method (fig. 6)***Note...**

*To sling the aircraft with the under-carriage in the down position it is necessary to remove the main under-carriage forward flap fairings.*

To prepare each eyebolt and rear slinging beam position:-

- (1) Remove the forward fairing flap hinge bolts, disconnect the operating rod at the lower attachment and remove the fairing flap.
- (2) Using the extractor, remove the pip-pins.
- (3) Locate the closing plug on the upper surface of the main plane, directly above the pip-pin position, unlock the plug by turning the central screw and remove it from the main plane.

To prepare each forward slinging pad position:-

- (1) Locate the junction of the leading-edge tank, outboard end, and the leading-edge panel, on the under-surface of the main plane.
- (2) Count inboard to the fifth and ninth countersunk bolts securing the tank to the spar 1 (fig. 6, detail B) and, using an Allen key, remove the bolts.

To fit the slinging bolts and beam brackets:-

- (1) Insert the slinging eyebolts into the main-plane slinging points (fig. 6,

detail A). Note that the bolts are handed.

- (2) Fit the port and starboard rear beam brackets to the underside of the main planes by screwing them on to the protruding portion of the slinging bolts.

**Note...**

*At this stage do not tighten the brackets hard up against the skin.*

- (3) Fix the port and starboard front beam leveling-pad brackets, using bolts Part No. A. 259E outboard and A. 258E inboard.

To fit the slinging beams:-

- (1) Ensure that the rear beam brackets are correctly aligned fore-and-aft, and that both front and rear brackets are tightened until the rubber pads are lightly compressed against the main planes.
- (2) Manhandle the port and starboard beams into position on the rear and front brackets and secure with the 1/2 in. B.S.F. bolts and stiffnuts.
- (3) Tighten all fastenings and check that:-
  - (a) The eye-end of the slinging bolt is inclined forward, facing fore-and-aft.
  - (b) The threaded portion of the slinging bolt protrudes through the rear beam bracket (fig. 6, detail A).

## (4) Assembling the sling

Attach the remaining portion of the sling assembly, consisting of the lateral beam and upper and lower cables, to the hook of the crane. The longer pair of lower cables must be forward when the sling is over the aircraft.

## (5) Attaching the sling

Position the crane either port or starboard of the aircraft, square to the main-plane leading edge, and with the crane hook directly above the point of lift, lower the sling and connect to the slinging points. Ensure that fastenings are locked and secured as necessary.

## (6) Slinging operation

(a) Elevate the jib until the cables are taut.

(b) Check that the crane hook connection is positioned centrally over the fuselage when viewed from the front or rear of the aircraft, and that in the side view the lateral slinging beam is in position to impart equal tension to the four lifting cables.

(c) Chock the main wheels, and start to lift.

(d) Whilst the shock-absorbers are extending check the balance of the aircraft and during the lift restrain at the nose or tail to prevent swinging. In the case of an overturned aircraft, the nose can be lifted off the ground using

the salvaging sling fitted forward of the windscreen to support the nose between frames 4 and 6.

**Note...**

*Damage to the upper bay structure is inevitable during this operation.*

**Warning pennants (fig.4)**

10. Red warning pennants indicate that certain items must be either removed or fitted before flight and their use must not be interpreted as indicating a general rule that the associated system is either safe or unsafe. If in doubt refer to the relevant chapter in this Volume, or to the N.C.O. in charge of servicing.

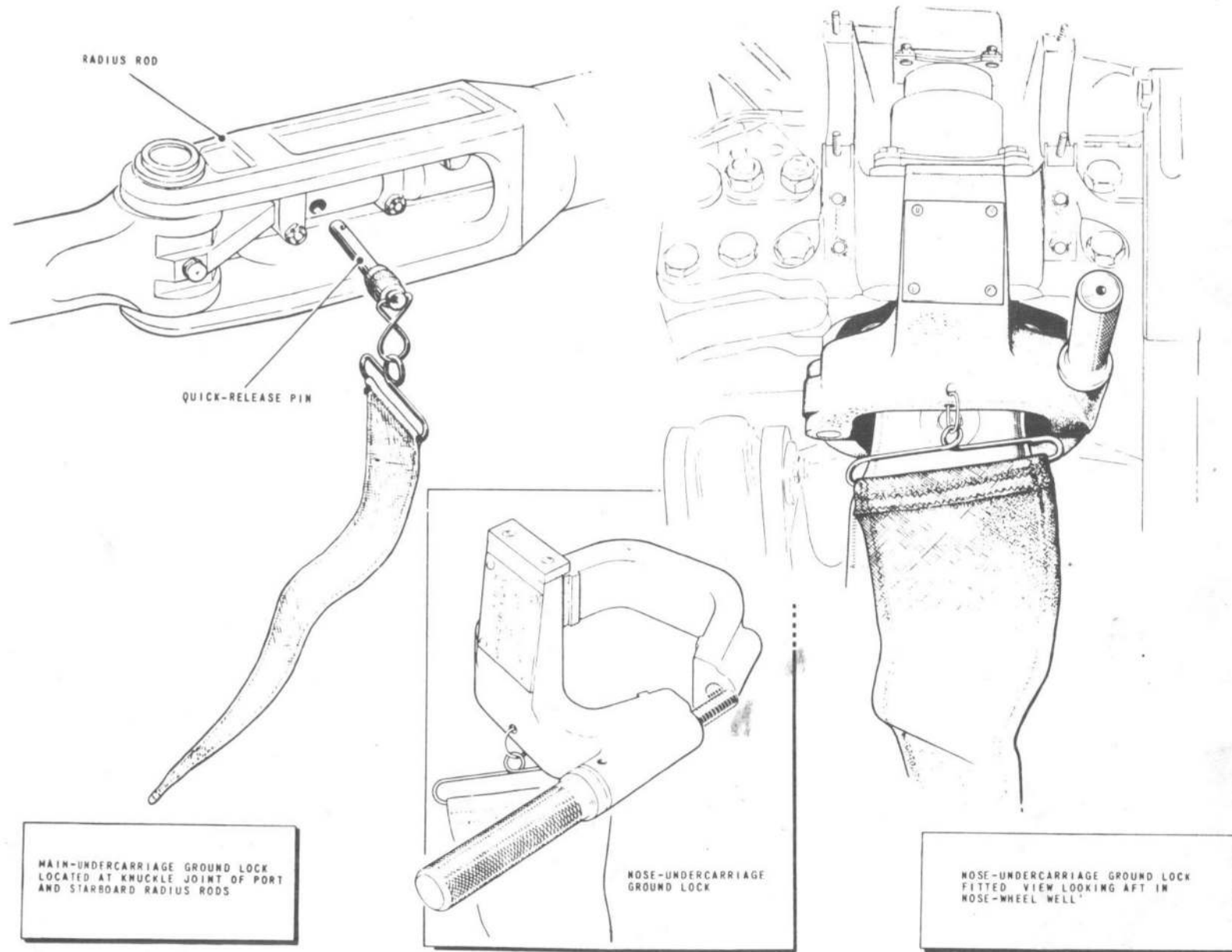
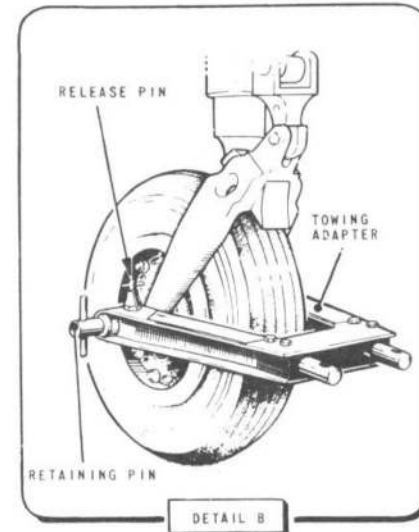
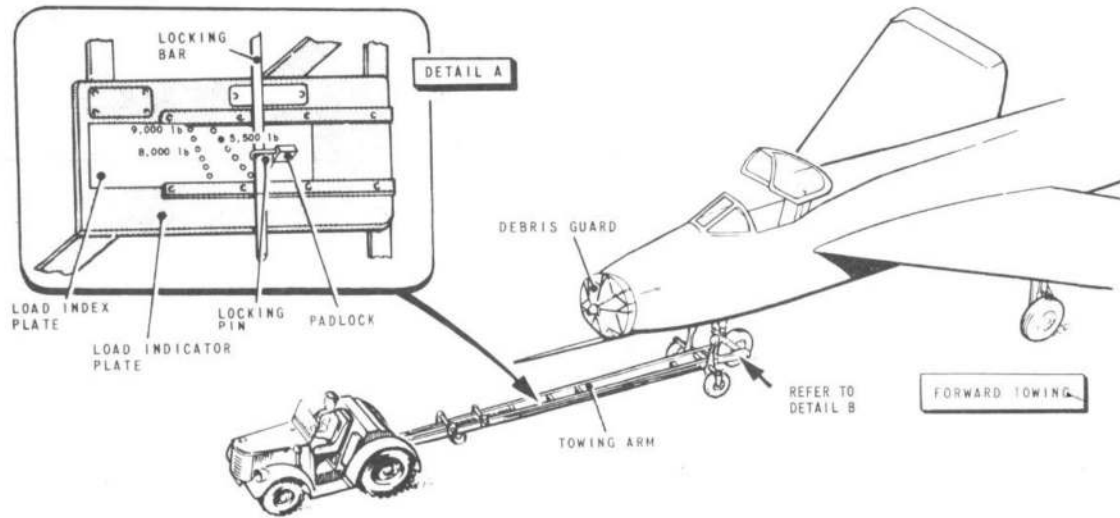


FIG.1. ALIGHTING GEAR SAFETY LOCKS

RESTRICTED



NOTE 1...  
THE STEERING ARM MUST ALWAYS  
BE FITTED DURING REARWARD  
TOWING TO PREVENT UNCONTROLLED  
CASTERING ACTION

NOTE 2...  
BEFORE TOWING OR TURNING  
THE AIRCRAFT THE NOSE  
WHEEL DOOR LINKAGES MUST  
BE CONNECTED

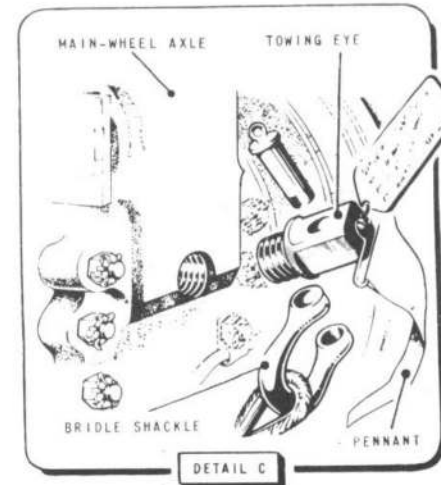
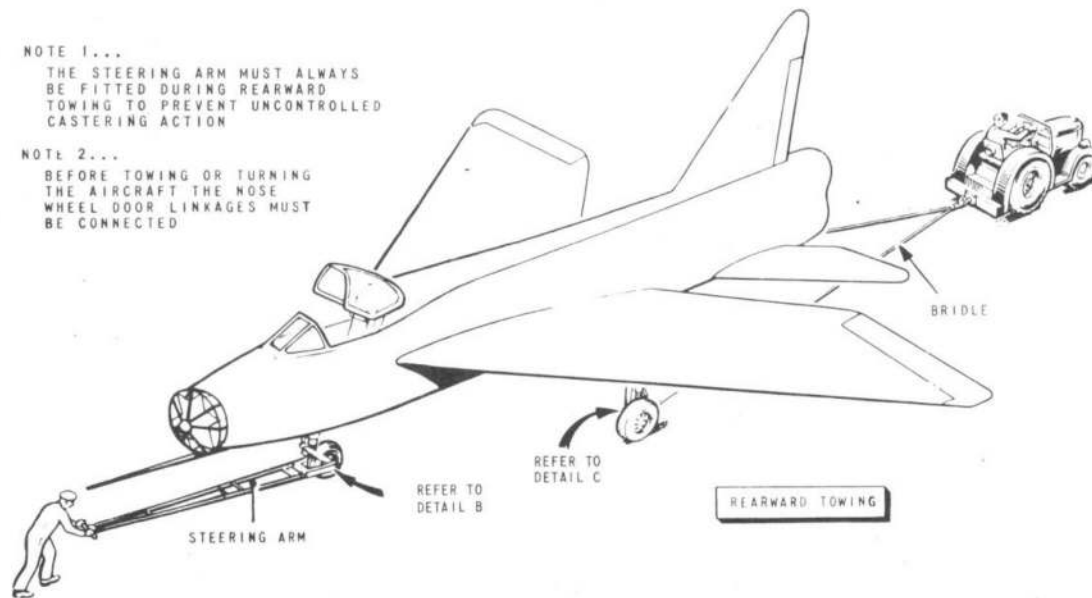


FIG. 2. TOWING

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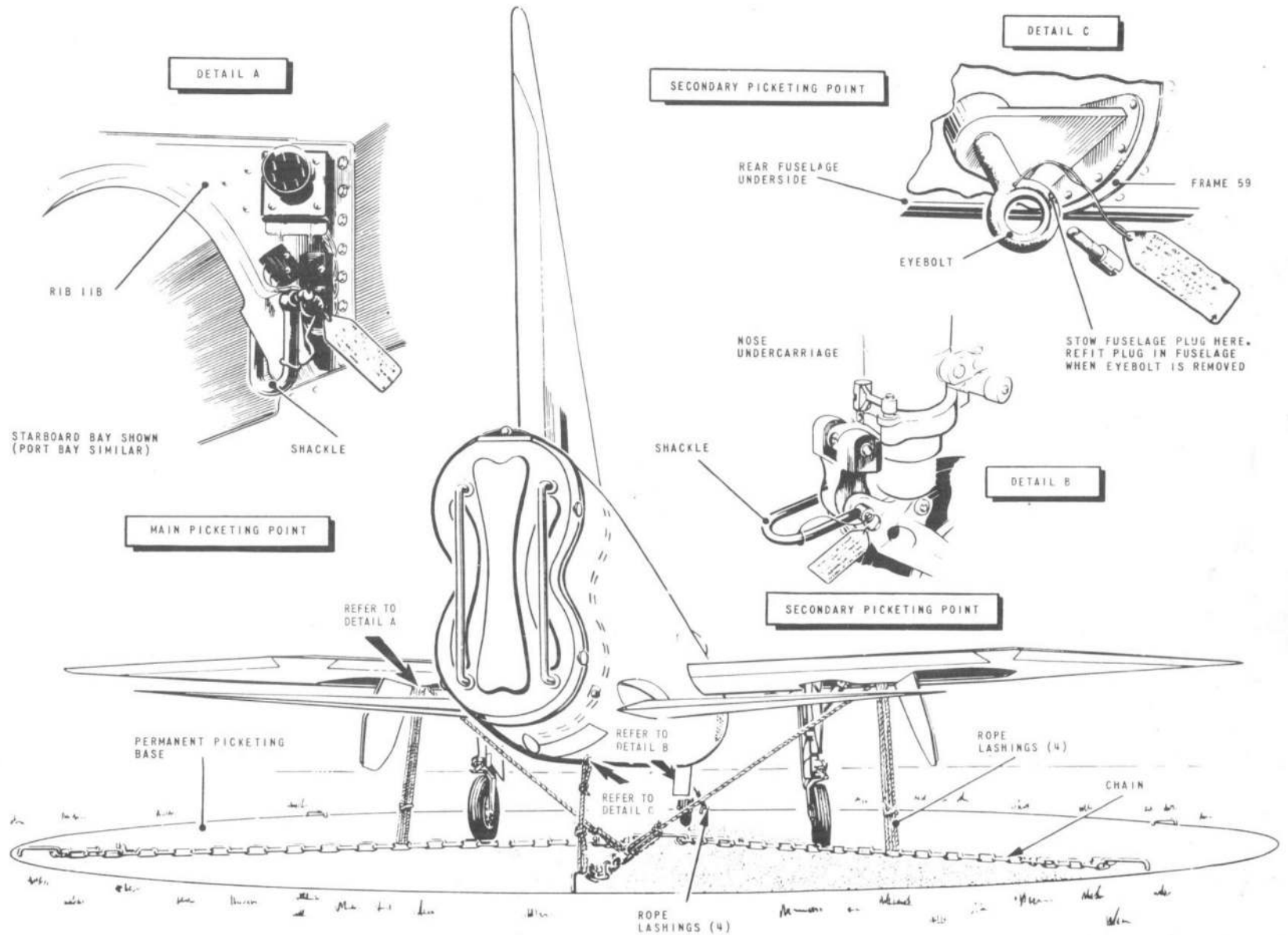


FIG. 3. PICKETING

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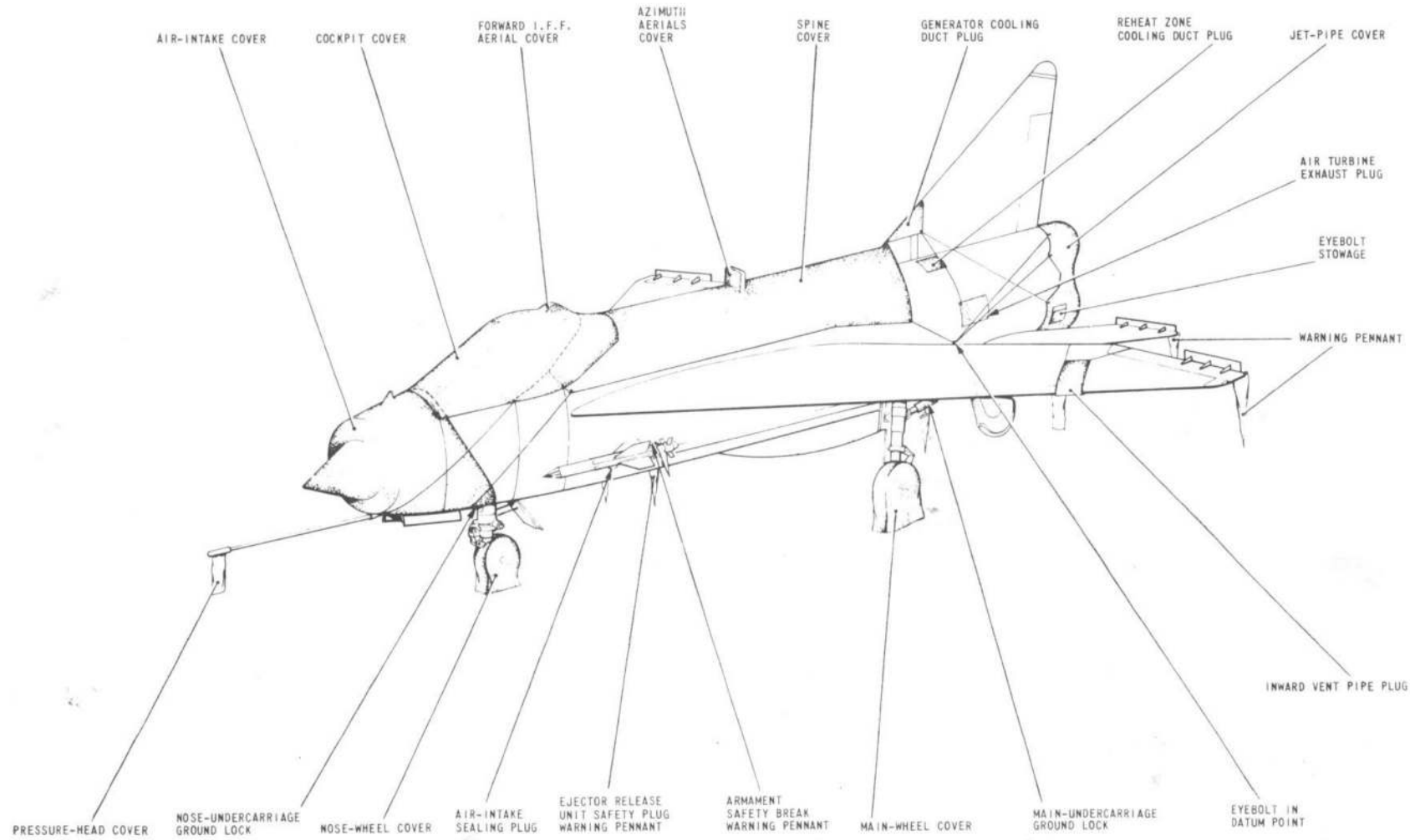
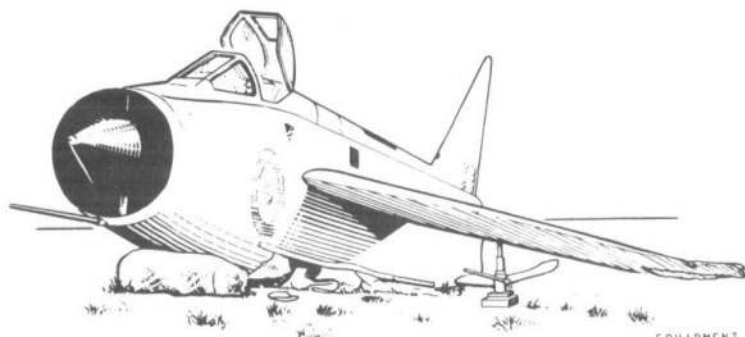


FIG.4. COVERS, PLUGS AND WARNING PENNANTS

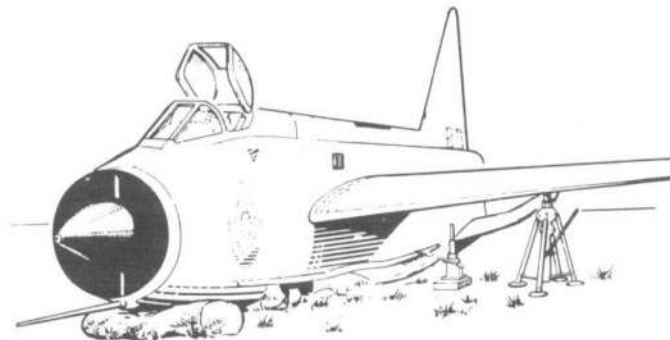
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STAGE 1 LEVEL THE AIRCRAFT BY APPLYING ITEMS 5 AND SUITABLE PACKINGS AT THE MAIN AND SECONDARY JACKING POINTS, ALTERNATELY. USE ITEM 1 AT THE MAIN JACKING POINT, AND ITEM 3 AT THE SECONDARY (WING SLINGING) POINT.



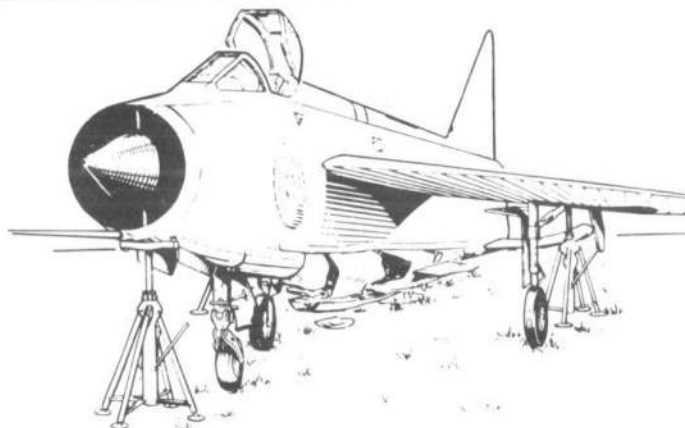
STAGE 2 RAISE THE MAIN PLANES EVENLY BY ALTERNATE USE OF ITEMS 5 AND SUITABLE PACKINGS, UNTIL ITEMS 7 CAN BE POSITIONED AT THE MAIN JACKING POINTS.



EQUIPMENT REQUIRED							
ITEM	REF. NO.	DESCRIPTION	QTY.	ITEM	REF. NO.	DESCRIPTION	QTY.
1	26DX/95004	WING JACKING PAD	2	6	4Q/2232	JACK BODY, 5-TON	1
2	26DX/95005	NOSE JACKING BEAM	1		4Q/2261	TRESTLE, MK. I	
3	26DX/95110	WING JACKING PAD	2	7	4Q/1045835	JACK BODY, 10-TON	2
4	26DX/95139	NOSE JACKING PAD	2		4Q/2294	TRESTLE, MK. I	
	4Q/1045836	HYDRAULIC JACK, 8-TON	4	8	4Q/2661	ADAPTER HEAD, MK. 105	AS RECD.
5	4Q/2663	ADAPTER HEAD, MK. 104	4	9		SPREADER PLATES	AS RECD.
				10	26DX/95088	PIP PIN EXTRACTOR (PARA. 9)	1

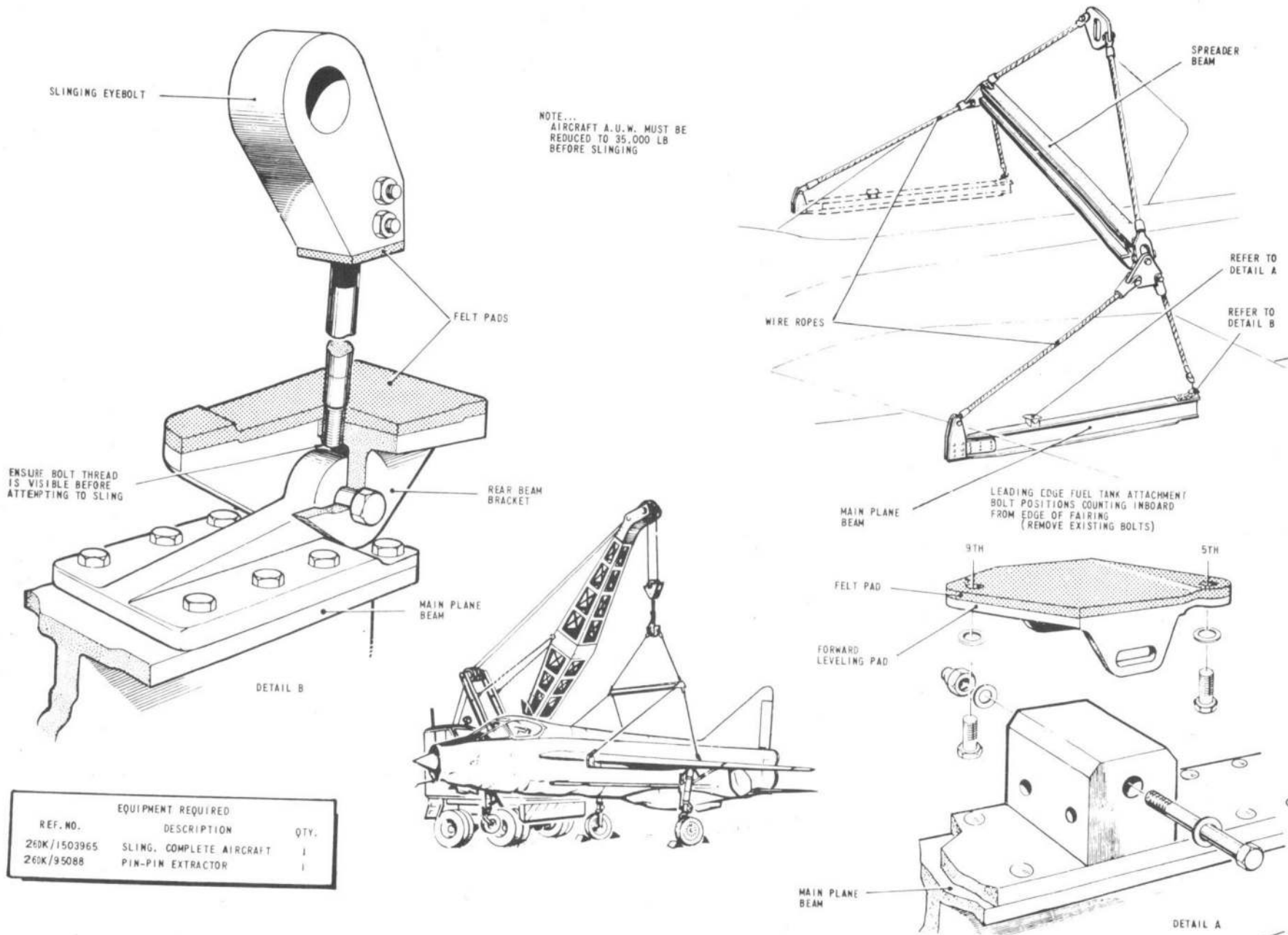


STAGE 3 FIT ITEMS 4 TO THE NOSE JACKING POINT AND RAISE THE NOSE, USING ITEMS 5 UNTIL ITEM 6 CAN BE POSITIONED. USE ITEM 9, AT THE NOSE UNDERCARRIAGE PIVOT PIN POSITION, TO SUPPORT THE FUSELAGE WHILE CHANGING OVER JACKS.  
NOTE... ITEM 6 TO BE USED WITH ITEM 2.



STAGE 4 RAISE THE AIRCRAFT EVENLY AND LOWER THE ALIGHTING GEAR OR, IF THIS IS NOT POSSIBLE, LOWER THE AIRCRAFT ON THE SALVAGE TROLLEY.

FIG. 5. SALVAGING CRASHED AIRCRAFT (JACKING METHOD)



REF. NO.	EQUIPMENT REQUIRED DESCRIPTION	QTY.
260K/1503965	SLING, COMPLETE AIRCRAFT	1
260K/95088	PIN-PIN EXTRACTOR	1

FIG.6. SALVAGING CRASHED AIRCRAFT (SLINGING METHOD)

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