

Chapter 1 FUSELAGE

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WARNING . . .

An aircrew ejection seat is fitted to this aircraft. Before attempting to enter the cabin, ensure that the instructions detailed on the LETHAL WARNING marker card at the front of this Handbook have been complied with.

Introduction

1. This chapter contains a general description of the fuselage together with the lubrication and servicing information necessary to maintain it in an efficient condition. Illustrations showing the method of slinging, trestling and dismantling it into major components, are also included.

DESCRIPTION

General

2. The fuselage is an all metal monocoque structure, built in three main portions to facilitate manufacture and transport. The front fuselage is provided with a detachable nose piece and houses the pilot's cabin, armament package and radio equipment while

the centre fuselage, which is constructed with the stub wings as an integral part, contains the engine and the forward fuel tanks. The rear fuselage, which is constructed with the lower portion of the fin as an integral part and is terminated by a detachable tail cone, houses the engine jet pipe and carries the hydraulically-operated air brake installation. The rear fuel tanks, which fit around the rear end of the engine, are also housed in the rear fuselage. The three major components of the fuselage are illustrated in fig.2, 3, 4 and 5.

Nose piece and front fuselage (fig. 1 and 2)

Structure

3. The detachable nose piece, which extends from the radome to frame 3, consists of a light alloy skin supported by frames; it houses the radar scanning equipment together with the camera gun. A metal nose cone is fitted to the nose piece in lieu of the radome when Mod 1422 is embodied. The front fuselage continues from frame 3 to frame 18A, which forms the front frame of the forward transport joint. The structure consists of a number of frames and four longerons reinforced by a box-sectioned keel member extending between

frames 6 and 11, the whole assembly being covered with a metal skin. The nose wheel is pivoted to the keel member at frame 8 and when retracted is enclosed in the front fuselage by fairings. The pilot's cabin is housed between frames 6 and 14, while the armament package is located between frames 15 and 17A with the gun barrels projecting forward under the cabin floor. The radio bay is situated immediately forward of the transport joint.

Cabin

4. The pilot's cabin, which is protected by heavy plating and provided with an ejection seat, is enclosed by a windscreens and an electrically-operated hood. The hood slides rearwards for entry and exit and may also be jettisoned in an emergency. To enable the cabin to be pressurised, it is sealed from the remainder of the airframe by a floor extending from frame 6, which is a solid bulkhead, to a diaphragm at frame 14. Ejection seat leg restraint anchorages in the form of a pair of fork fittings are fitted to the cabin floor. Above the floor the fuselage

structure is enclosed to form side walls and above these walls are shelves for controls and instruments. The centre instrument panel, together with the port and starboard side panels, are located at the forward end of the cabin above the shelves, on a structure which extends across the top of frame 8 and is stiffened by two tubular struts projecting forwards to frame 7. The gun sight is carried on a mounting located above the centre instrument panel.

Windscreen and hood

5. The windscreens consists of a flat bullet proof centre panel and two curved transparent side panels, all three of which are held in a cast light-alloy frame secured to the cabin decking. The centre panel consists of two plates of glass between which is a layer of dry-air to prevent misting, the air being maintained in a dry state by silica gel housed in a container mounted on the forward face of frame 8 on the starboard side and connected to a valve on the bottom of the windscreens by rubber tubing. An adjustable convex type rear view mirror is attached to the top of the windscreens frame. The hood

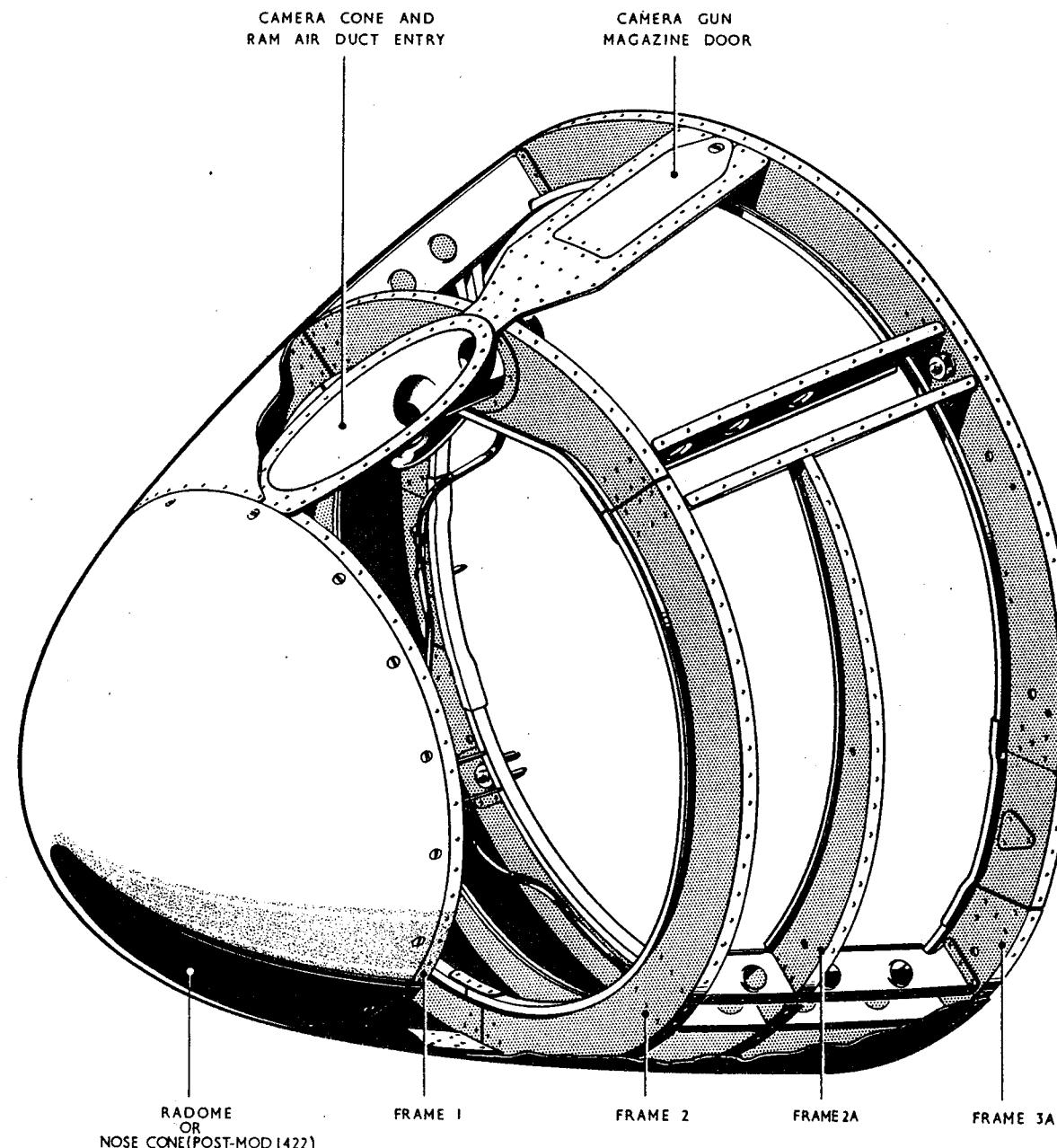


Fig.1 Front fuselage nose piece
► (Mod 1422 added) ◀

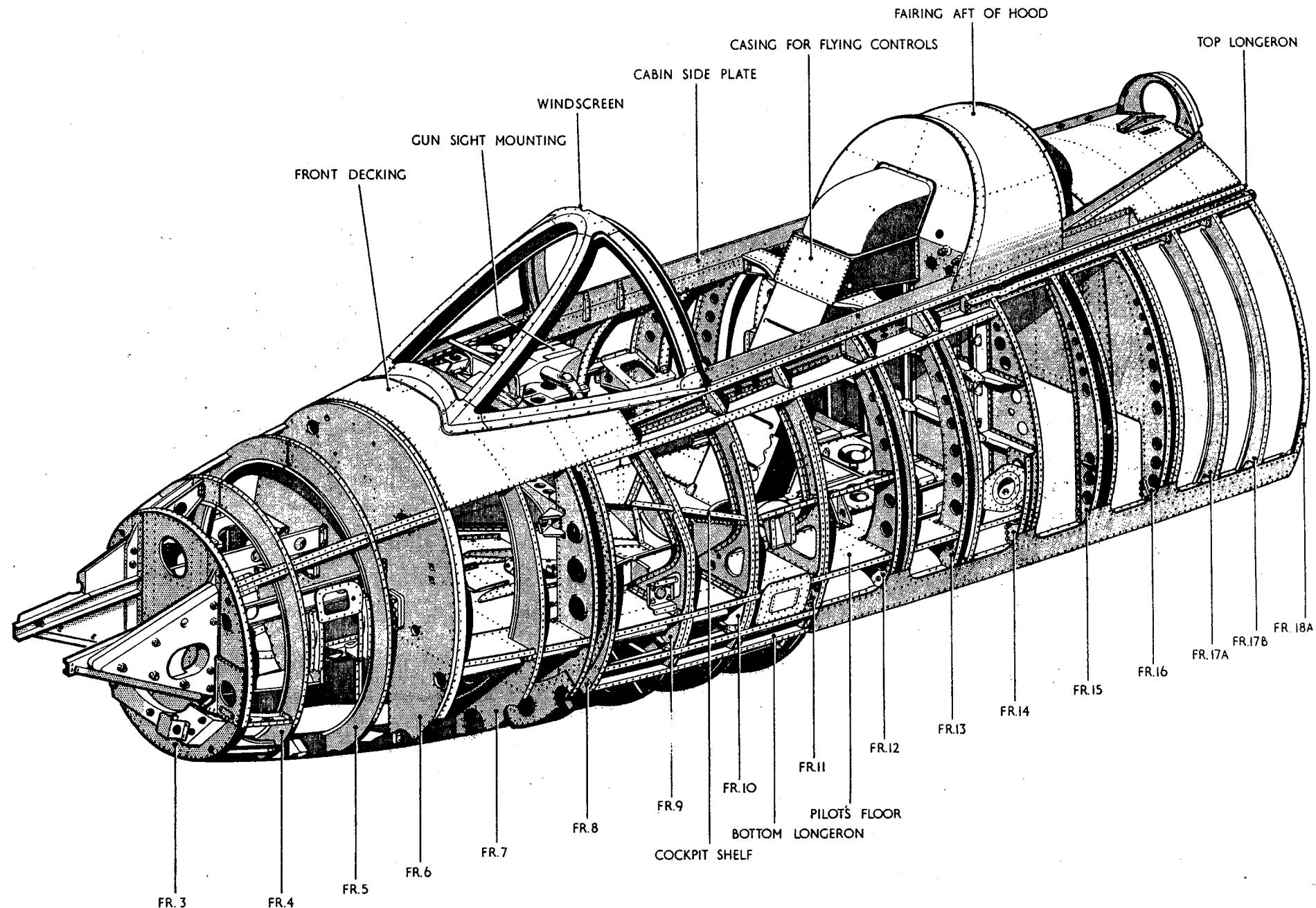


Fig.2 Front fuselage

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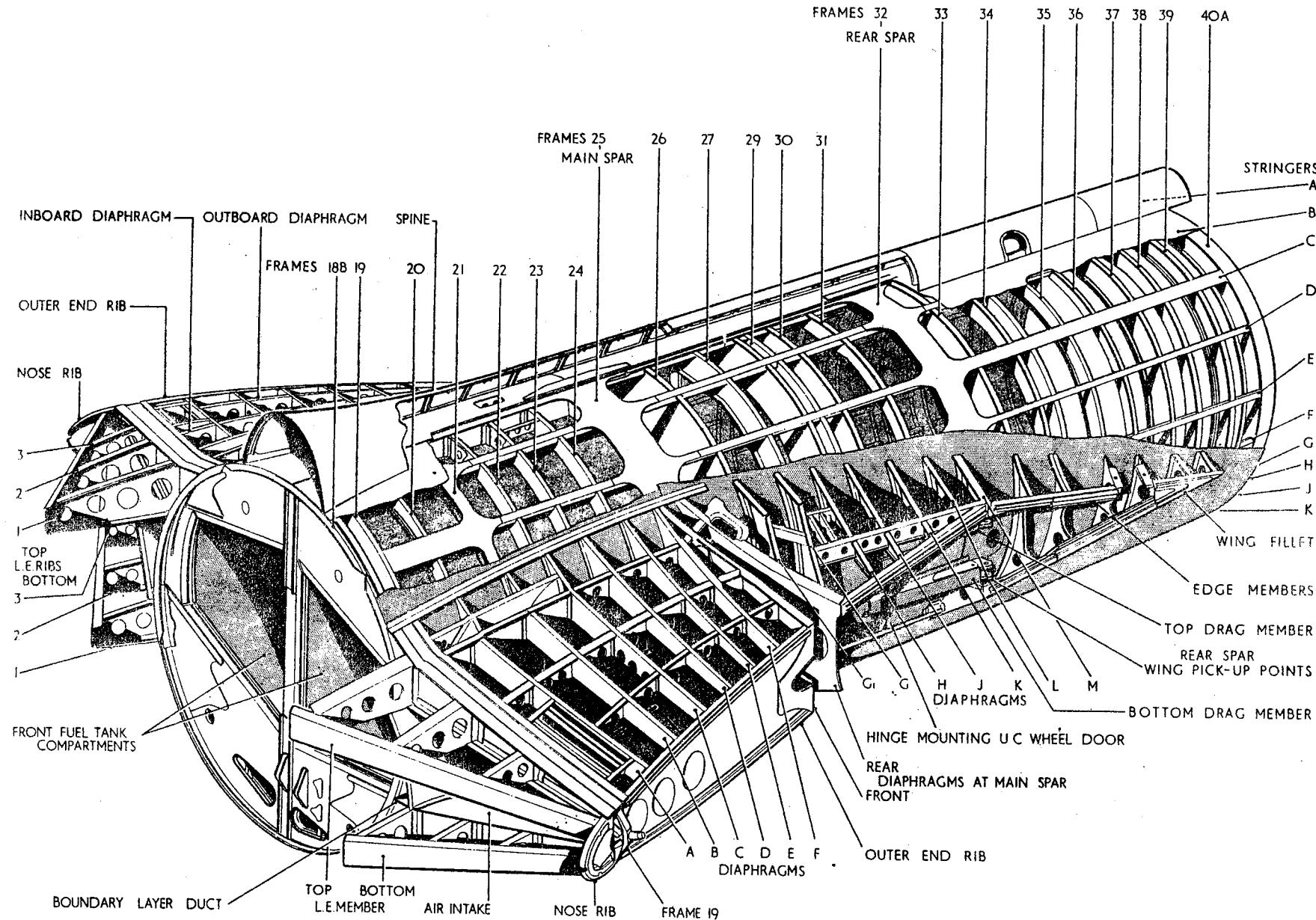


Fig. 3. Centre fuselage and stub wing (I)

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is moulded from a single sheet of transparent plastic mounted in a frame consisting of a steel arch member at the forward end and two edge members at the sides. A rack and roller assembly is bolted to each edge member and the complete hood slides in rails attached to the structure by locks, located just aft of frame 10 and forward of frame 13, and by a pivot point just aft of frame 16.

6. The cabin hood is opened and closed by an electric actuator which drives a cross-shaft carrying pinions which engage with the racks on each side of the hood. The actuator is controlled by a control box and integral clutch lever situated on the port side of the cabin just forward of frame 10. The lever is provided to disengage the actuator clutch and at the same time, deflate the hood seal so that the hood can be moved by hand. In an emergency the cabin hood may be jettisoned by the use of a control handle which projects upwards from the forward end of the cabin port shelf. Pulling this handle fires the hood jettison gun which opens the locks securing the hood side channel members and gases from the gun are utilised to jettison the hood. An interconnection between the control handle and the spring-loaded release unit ensures that the hood locks open in the event of the hood jettison gun failing to fire. In the event of the pilot being physically incapable of operating this control while the aircraft is on the ground, there is an external release ring enclosed behind a transparent break-in panel on the port side of the fuselage below the cabin. Pulling the enclosed ring operates the spring-loaded release unit to release the locks securing the hood side channel members, deflates the hood seal and declutches the hood motor so that the hood may be lifted off by hand. Finger holes between the hood and windscreens are provided to facilitate the removal of the hood.

Armament package

7. The armament package consists of a removable container, which carries four 30 mm. Aden guns together with their ammunition. The package is provided with guide spigots at the forward end which engage with brackets attached to the bottom longerons

and is supported by six spherical ended mounting spigots, three on each side, which project downwards from the bottom longerons, to engage with sockets integral with the package. The mountings are locked by rack operated pins which pass through holes in the mounting spigots and sockets, the locking mechanisms being located on each side at the forward end of the package and operated by a special removable key. The forward portions of the gun barrels, which are detachable from the package, are staggered and extend forward under the cabin floor to blast tubes in the underside of the fuselage structure. The guns are electrically-fired and controlled by a trigger on the control column

handgrip. For a full description of the armament installation, reference should be made to Sect. 7, Chap. 3 and to A.P.1641S, Vol. 1.

Radio mountings

8. The radio bay is situated in the front fuselage, where it extends aft from frame 16 to frame 19. This bay also contains certain components of the aircraft electrical system. The mountings consist of an upper and lower structure, each supporting anti-vibration mounting racks for the transmitter-receivers and associated equipment. For a full description of the radio installation reference should be made to Sect. 6.

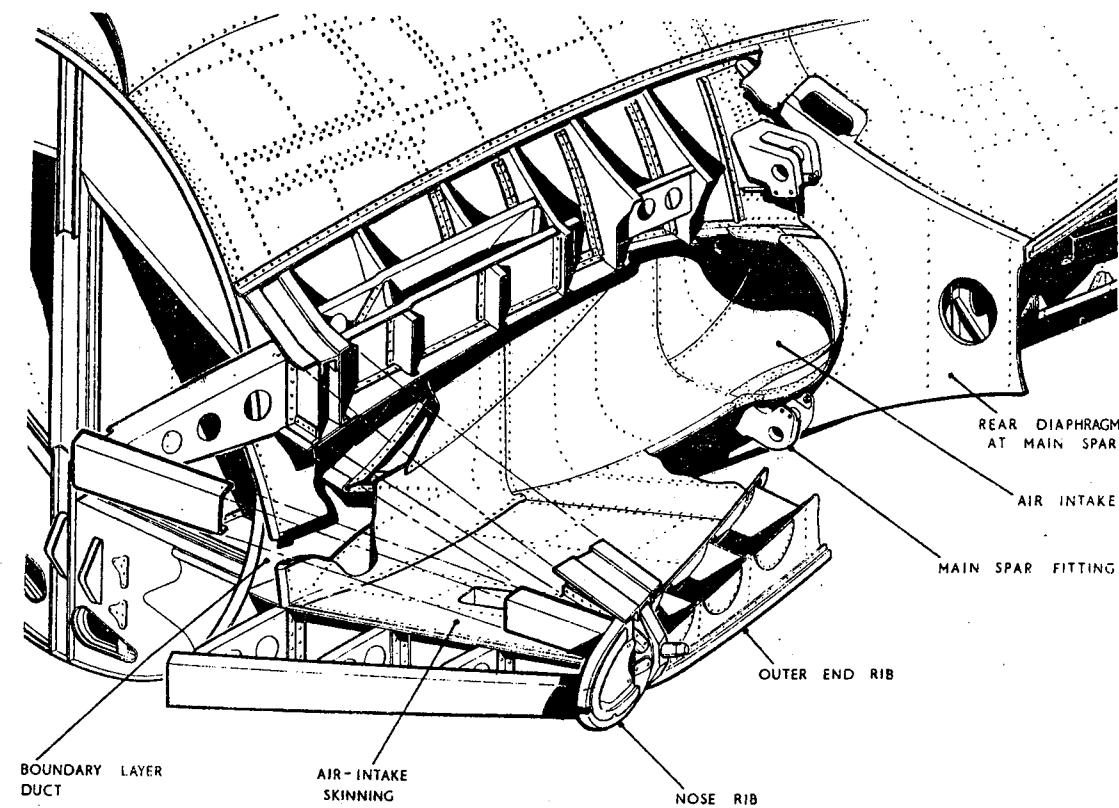


Fig. 4. Centre fuselage and stub wing (2)

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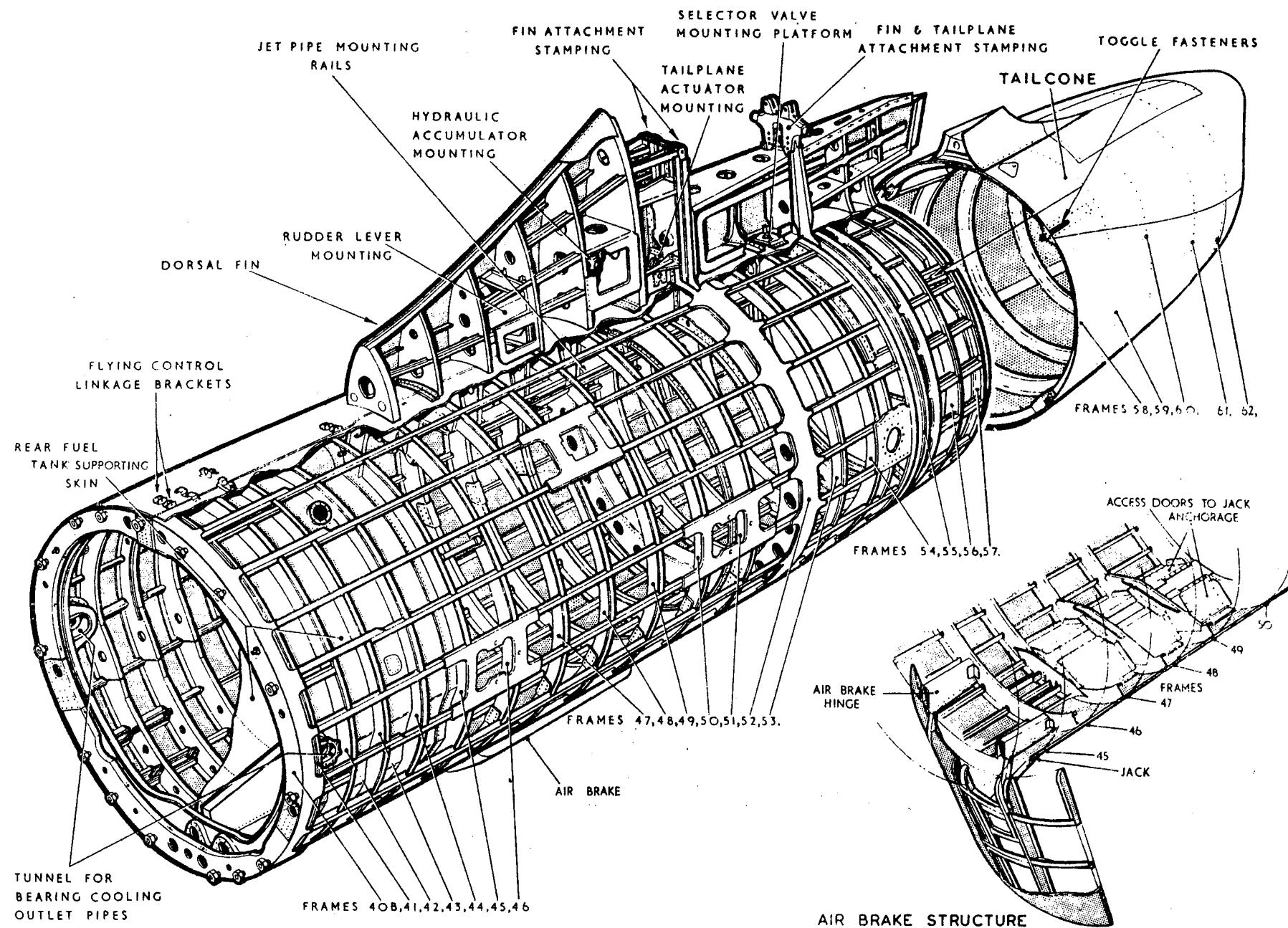


Fig.5 Rear fuselage

Forward transport joint fittings

9. The front and centre fuselage structures are assembled together at a butt joint formed by the flanges of frames 18A and 18B, which are bolted together, and by special attachments at the four longerons. These attachments consist of large threaded fittings, bolted to the front fuselage longerons, which extend aft through frame 18A to engage with special captive nuts carried on spigots projecting forward through frame 19 of the centre fuselage from fittings bolted to stringers C and H. The special nuts are locked to the spigots with nickel-alloy wire when assembled to the front fuselage fittings.

Centre fuselage and stub wings (fig. 3 & 4)**Structure**

10. The centre fuselage extends from frame 18B to frame 40A, both of these frames forming transport joints. It is a monocoque structure consisting of a number of frames and stringers covered with a light-alloy skin, at the top of which is a spine member enclosing the flying controls. Frames 19, 25 and 32 are of heavier construction than those of the remaining frames and continue outward to form the nose, main and rear spars of the stub wings which are an integral part of the centre fuselage structure. The stub wing consists of these three spars, together with a number of ribs and diaphragms which are covered externally by a light-alloy skin and internally by the air intake and boundary layer ducting. The spars contain high-tensile steel fittings to which the outer wings are attached.

Fuel tank compartment

11. The structure between frames 19 to 25 of the centre fuselage is double-skinned to form a compartment in which the front flexible bag type fuel tanks are supported. For a full description of the fuel tank installation, reference should be made to Sect. 4, Chap. 2.

Engine compartment

12. The engine is situated aft of the main spar frame, being mounted at frames 34 and 40A, with the engine-driven accessories gearbox between frames 29 and 30. A diaphragm at frame 38 engages with the engine to form a firewall and to divide the engine compartment into two zones for cooling purposes. Another firewall at frames 29 and 30 isolates the engine bay from the engine starter bay. For further details of the engine installation, reference should be made to Sect. 4, Chap. 1.

Rear transport joint fittings

13. The centre and rear fuselage structures are assembled together at frames 40A and 40B by special attachments at fifteen points between these frames. These attachments consist of large threaded fittings bolted to the stringers of the centre fuselage and extending aft through frame 40A to engage with special captive nuts carried on fittings bolted to the stringers of the rear fuselage, which project forward through frame 40B. When assembled these special nuts are locked together with nickel alloy wire and the gap between the two frames is covered by a fairing strap.

Rear fuselage and tail cone (fig. 5)**Structure**

14. The rear fuselage extends from frame 40B (*rear transport joint*) to frame 57. It consists of a number of frames and stringers covered with a light alloy skin to form a monocoque structure, at the top of which is a spine member enclosing the flying controls. Frames 52 and 55 are of heavier construction than the remaining frames and extend upwards to form the major framework of the lower fin structure, which is integral with the rear fuselage. The lower fin structure consists of the above-mentioned major frames together with a dorsal fin extending forward to the spine member and an anti-buffet fairing extending aft below the rudder. The

upper portion of the fin, which carries the rudder, is attached to the lower part by fittings incorporated at the top of frames 52 and 55, while the tail plane is pivoted on a fitting at frame 55 and anchored at the leading edge to the tail plane actuator in the lower fin structure (Sect. 3, Chap. 3). A small bumper block type tail skid is attached to the bottom of frame 55 to take the loads should the tail strike the ground during landing or take-off. The bottom skin between frames 47 to 50 is cut away and the gap so formed is reinforced and boxed in by side members and a top skin to form a housing for the hydraulic air brake jack. The jack is anchored on a bolt extending between fittings bolted to the aft ends of the side members and extends forward in the housing to engage with the air brake flap which is attached by two extended hinges to channel fittings located between frames 45 and 46 on each side of the aircraft. The tail cone, which is detachable, incorporates the braking-parachute housing, and is secured to the rear fuselage by four toggle fasteners together with locating spigots. It extends from frame 58 to frame 63 and consists of the braking-parachute housing, which is a fairing with two upward opening spring-loaded doors extending rearward over the top of the tail cone, surmounting a structure of six frames covered with a light-alloy skin stiffened by butt straps. The tail cone terminates in a stainless steel tail piece, a duct of which engages with the jet pipe. A small tail fairing is incorporated at the top of the tail cone between frames 58 and 61.

Fuel tank compartment

15. Internal structure between frames 41 and 45, consisting of tank support beams and skinning, forms an annular compartment around the rear of the engine in which the rear flexible bag-type fuel tanks are housed. For further details of the tank installation and fuel system generally, reference should be made to Sect. 4, Chap. 2.

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Braking parachute installation

16. The braking parachute is housed in a stowage in the top of the tail cone and is streamed through two doors which are hinged to open outwards from the upper centre line of the fairing. These doors are operated by means of a spring-loaded release gear (fig. 5A) consisting of two telescopic spring box units which are located athwart the housing, together with a spring release unit. The inner end of the port telescopic unit is attached to the release unit, and the inner end of the starboard telescopic unit to a bracket attached to the housing. The outer ends of the telescopic units are attached to their respective door links by hinge pins so that, in effect, they form spring-loaded toggle action units to hold the doors open or closed, according to the operational position of the spring release unit. A lip on the starboard door forms a landing for the port door, which holds the starboard door in the closed position. The port door, when closed, is secured in that position by locks mounted one forward and the other aft on the housing. The doors are closed manually and, when closed, the port telescopic unit is held compressed by the release unit. The doors are opened upon the operation of the spring release unit, the actuation of which is initiated electrically by means of a control switch in the cabin. When this switch is placed to the STREAM position it energizes a solenoid, the plunger of which is in connection with a lever of the release unit assembly. Once the solenoid is energized, the plunger retracts and pulls the lever which opens the front lock by means of a connecting link, and the rear lock by means

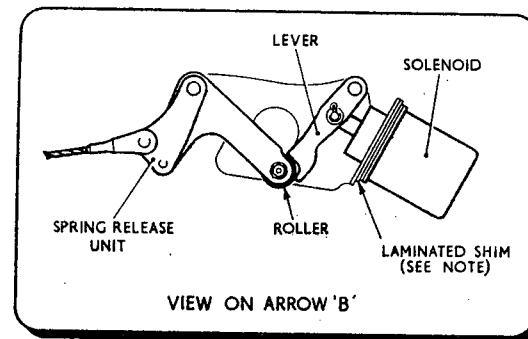
of a Bowden cable. At the same time, the solenoid lever frees the release unit lever, thereby permitting the port telescopic unit to extend and open the port door, followed by the automatic extension of the starboard unit to open the starboard door as soon as the port door is clear of its landing on that door. A mechanical indicator rod on the front lock is in the 'up' position when the lock is closed, visual indication being obtained through a sighting hole in the door. Visual indication of the rear lock being closed can also be obtained through a sighting hole in the door, but no indicator rod is provided. The parachute is attached to the aircraft by means of a shackle which engages with an electro-mechanical release unit bolted to the aircraft structure. Operation of the release unit to jettison the parachute is effected by the control switch in the cabin when it is placed to JETTISON, but an electrical interconnection in the form of a microswitch operated by the parachute doors ensures that it is impossible to jettison the parachute until it has been streamed. A ▲ parachute warning lamp in the cabin, controlled by a microswitch that is operated by the parachute door when open, illuminates to indicate that the parachute has streamed and remains illuminated after the parachute has been jettisoned. A servicing test switch is provided in the cabin. For further information on the electrical operation and circuit details, reference should be made to Sect. 5, Chap. 1. An illustration of the parachute installation will be found in Sect. 2, Chap. 2, which also gives detailed instructions for the assembly and removal of the parachute and the mechanical opening of the doors. ▶

Air brake flap

17. This structure consists of a series of curved formers attached to a channel sectioned centre rib with a hinge rib on either side and a curved nosing at the forward end. The lower surface of the structure is completely covered with a light-alloy skin, but its upper surface is only covered at the forward and centre portion. Each hinge rib carries an arm of the extended hinges, which engage with fittings incorporated in the rear fuselage. The centre rib incorporates the anchorage fitting to which the operating jack is attached. The complete assembly is carried under the rear fuselage on hinge fittings as described in para. 14. The air brake embraces the fuselage when in the UP position.

Jet pipe mounting

18. The jet pipe is rigidly secured to the engine at its forward end and extends aft to terminate at the end of the tail cone. The pipe is supported at frame 55 by blocks, attached to each side of the pipe, which engage with adjustable mounting slides secured to the fuselage structure. These blocks move along the slides to allow for expansion of the pipe. A rail incorporated at the top of the fuselage between frames 48 and 56 is provided to facilitate jet pipe assembly and removal, small rollers on the pipe running along this rail during these operations. For further details of the jet pipe installation, reference should be made to Sect. 4, Chap. 1.



NOTE

THE LAMINATED SHIM IS FITTED
BETWEEN THE SOLENOID AND
MOUNTING BRACKET TO
ENSURE CONTACT AT THE TWO
POINTS SHOWN IN DETAIL 'A'

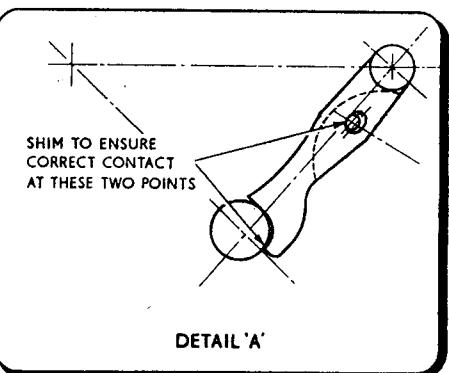
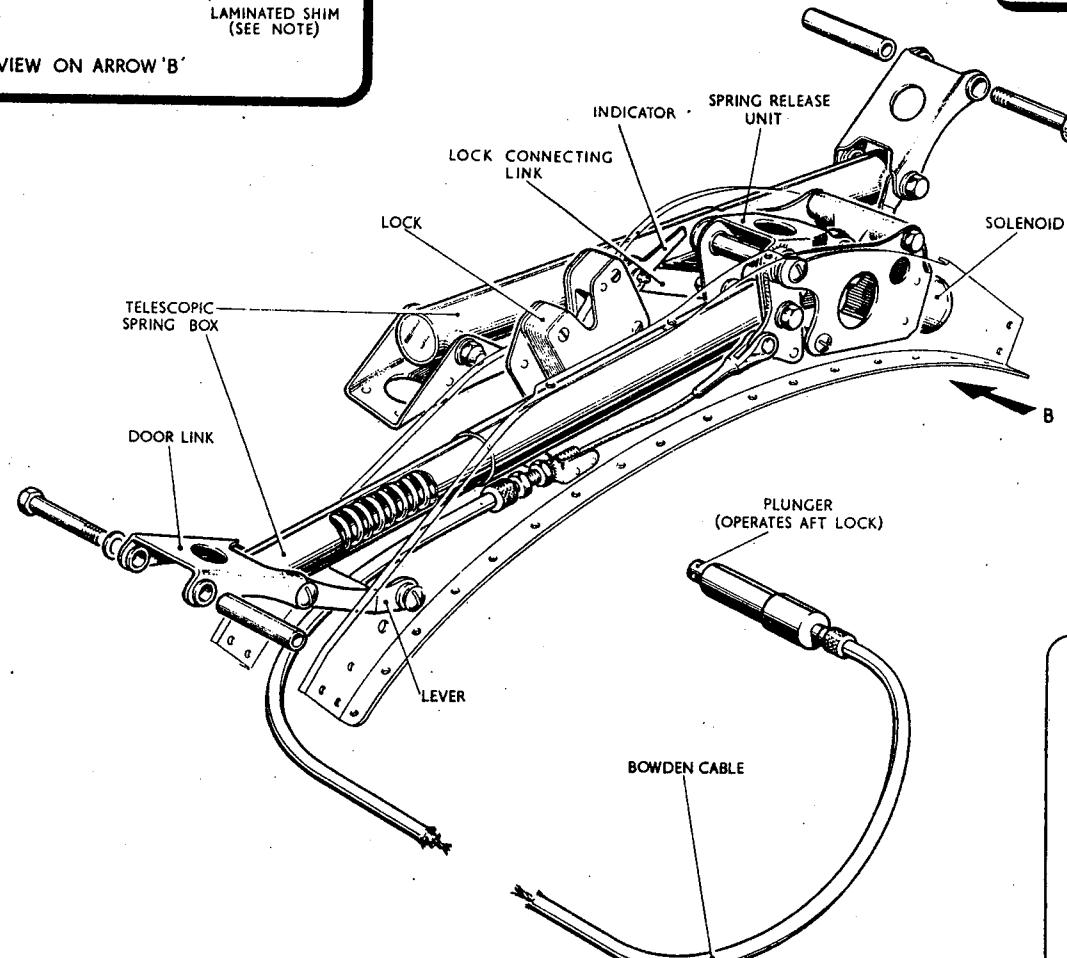


Fig. 5A Parachute door release gear

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SERVICING

General

19. In general, the only servicing required to the fuselage itself is that described in para. 20. Otherwise the servicing is confined mainly to the systems and accessories which are contained in the fuselage and which are dealt with in their respective chapters.

20. A regular examination of the fuselage structure must be carried out to ensure that no damage, such as buckling of the skin, corrosion, or loose nuts, rivets, etc., has occurred. If any damage is found it must be rectified in accordance with authorised procedure before the next flight. It is also necessary to check that all the detachable access panels and hinged doors are securely locked and flush with the surrounding structure. This is very important, as many of these are stress-bearing panels, and the safety of the aircraft is dependent upon their correct fitment. Extreme care must therefore be taken to ensure that these panels are not damaged or distorted in any way during fitting or removal. The drain holes at the bottom of the fuselage aft of frames 37 to 40A, 50, 52, 53, 56 and in the tail cone should be inspected frequently to ensure freedom from obstruction.

Note . . .

Any alteration in contour will give rise to a shock-wave, resulting in a vast increase in drag and corresponding loss in performance.

4 Bolts securing drag members rear ends to frame 32.

20A. These should be examined periodically as follows. After removing the access panels over the port and starboard main plane rear spar pin joints; check that the eight 2 B.A. bolts and their nuts, lying immediately inboard of the pin joint and securing the flanges of the top and bottom drag members, are in place. If any are missing, fulfil a loose article check in the main wheel, and engine bays. Tests have shown

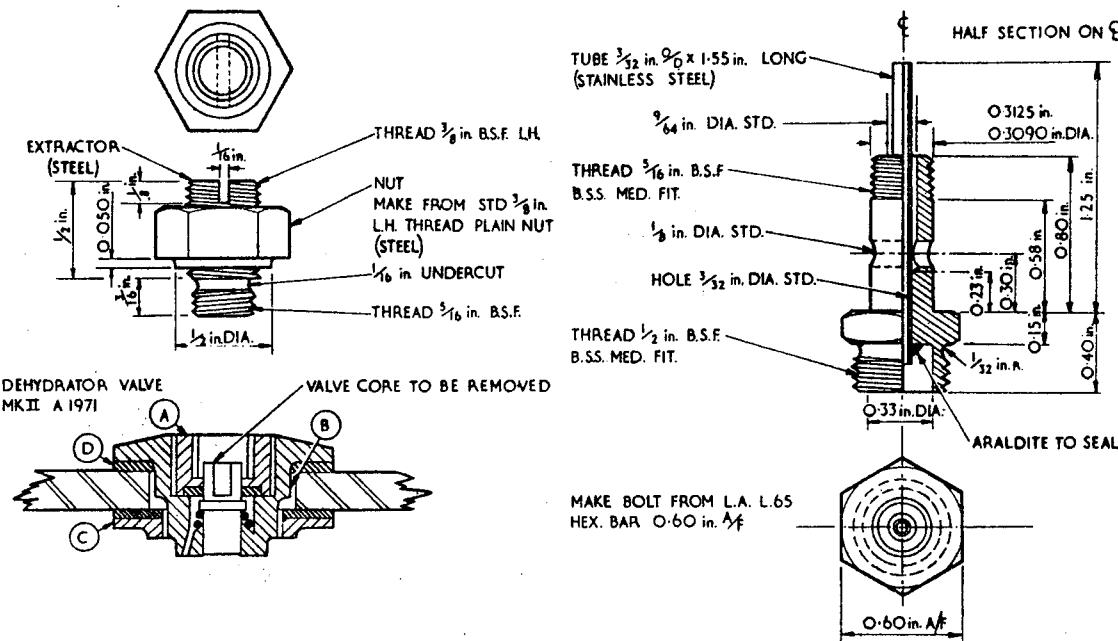


Fig. 5b Extractor and special bolt

that there is no significant loss of strength due to the loss of a bolt or nut and the fitment of new parts can be postponed to the next engine removal; when all eight bolts and nuts should be replaced by new parts.

20B. All eight bolts, nuts and washers should be changed for new parts at each major servicing or partial reconditioning as follows:—Fit new bolts Pt.No. A.25/5C with the bolt heads inboard, new washers Pt.No. SP/15/C

and new nuts Pt.No. A.27/CP. Do not overtighten the nuts; if the bolt head or nut is at an angle to the surface, the fixture is satisfactory providing one corner of the bolt head or of the nut is bearing on the metal. Peen the bolt tails over the nuts.

Windscreen dry-air sandwich

21. The procedure for examining the air drier of the windscreen dry-air sandwich installation is contained in Sect. 2, Chap. 2.

Demisting of internally misted windscreens (fig. 5b)
21A. In the event of the windscreens becoming misted up internally the following S.T.N./Hunter/54 procedure may be adopted as a possible means of demisting:—

- (1) Make up an extractor consisting of a screw and nut as shown in fig. 5b.
- (2) Empty the air drier of silica gel crystals and leave empty while demisting.
- (3) Remove the banjo bolt, banjo, 2 rubber washers and 1 L.A. washer from the windscreens (Sect. 2, Chap. 2, fig. 2b).
- (4) Fit a $\frac{5}{16}$ inch internally toothed shake-proof washer, reduced to $\frac{1}{2}$ inch outside diameter, on the $\frac{5}{16}$ inch dia. threaded portion of the extractor so that it lies in the undercut.
- (5) Screw the extractor R.H. thread end tightly into the valve assembly part (A) by means of the screwdriver slot in the L.H. threaded portion. Then tighten the nut (L.H. thread) hard on to the shakeproof washer so that the extractor locks to the valve. Gently turn the nut anticlockwise so that the valve assembly (B) completely unscrews from its nut (C) inside the windscreens, leaving this nut adhering to the glass by its rubber washer.
- (6) Remove the rubber washer (D) from the valve assembly and lightly clamp the valve assembly in a vice on diameter (B).
- (7) Unlock and unscrew the extractor from the valve assembly.

- (8) Using a $\frac{1}{16}$ inch drill, drill out the three punch marks $\frac{1}{32}$ inch deep locking the thread on part (A).
- (9) Fit the extractor to the valve [as in sub-para. (4) and (5)] and extract part (A) from the assembly.
- (10) Remove the valve stem and its surrounding spring.
- (11) Reassemble part (A) to the valve assembly and make three new centre punchings to lock it as before.
- (12) Procure a short length of very flexible rubber tubing of $\frac{1}{2}$ inch maximum outside diameter and taking care not to disturb the valve assembly nut (C) on the inside of the windscreens, insert it through the hole left by the valve assembly and secure it to avoid displacement.

Note . . .

The end of the rubber tube must not butt hard up to the opposite face of the windscreens glass.

- (13) Pass warm dry air at 150°F . maximum and $\frac{1}{2}$ lb/in² pressure through the tube until the windscreens are completely demisted. Continue for one further hour.
- (14) Immediately the instructions in sub-para. (13) have been completed the dehydrator valve assembly, now minus the valve stem and spring, is to be refitted to the windscreens, after checking the rubber washer (D) for serviceability and replacing if necessary. The valve assembly should be carefully offered up to the windscreens and gently screwed into the nut (C) on the inside of the windscreens and then tightened using the extractor. Care must be taken not to overtighten, otherwise it could crack the glass.
- (15) Refit the banjo bolt and three washers (2 rubber and one light alloy) complete with the tube and air drier, which must be filled with fresh silica gel crystals, immediately the instructions in sub-para. (14) are completed. (Sect. 2, Chap. 2, fig. 2b).
- (16) If the valve stem and spring have been removed previously, make up a special bolt to the dimensions shown in fig. 5b.
- (17) Operation as in sub-para. 2.
- (18) Replace the existing banjo bolt (Sect. 2, Chap 2, fig. 2b) with the special bolt and connect an air line to the bolt head using an A.G.S. connector.
- (19) Pass warm dry air at 150°F . maximum and $\frac{1}{2}$ lb/in² pressure through the special bolt until the windscreens are completely demisted. Continue for one further hour.
- (20) Remove the air line and special bolt and refit the banjo bolt and 3 washers (2 rubber and one light alloy) complete with the tube and air drier, which must be filled with fresh silica gel crystals, immediately the instructions in sub-para. (19) are completed (Sect. 2, Chap. 2, fig. 2b).

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Lubrication

22. The lubrication points for the hood mechanism and air brake, together with the types of lubricant to be used, are given on fig. 10, and 16

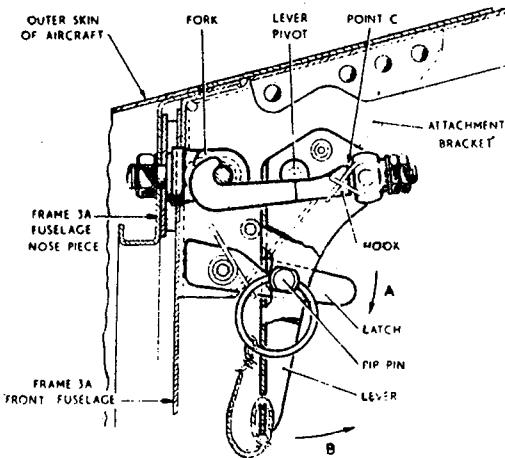


Fig. 6 Typical fastener for fuselage nose piece

Bolts securing drag members rear ends to frame 32.

22A. These should be examined periodically as follows. After removing the access panels over the port and starboard main plane rear spar pin joints; check that the eight 2 B.A. bolts and their nuts, lying immediately inboard of the pin joint and securing the flanges of the top and bottom drag members, are in place. If any are missing, fulfil a loose article check in the main wheel, and engine bays. Tests have shown that there is no significant loss of strength due to the loss of a bolt or nut and the fitment of new parts can be postponed to the next engine removal; when all eight bolts and nuts should be replaced by new parts.

22B. All eight bolts, nuts and washers should be changed for new parts at each major servicing or partial reconditioning as follows:—Fit new bolts Pt.No. A.25/5C with the bolt heads inboard, new washers Pt.No. SP/15/C and new nuts Pt.No. A.27/CP. Do not overtighten the nuts; if the bolt head or nut is at an angle to the surface, the fixture is satisfactory providing one corner of the bolt head or of the nut is bearing on the metal. Peen the bolt tails over the nuts.

REMOVAL AND ASSEMBLY

General

23. The separation of the fuselage at its transport joints and the removal of various components, together with the method of slinging and trestling, is described in the following paras. and shown in the illustrations contained in this chapter. In general, the assembly of the units is a reversal of the removal, but where there is any special feature peculiar to assembly, it is covered in the description.

Removal of nose piece (fig. 6)

24. The nose piece is a quickly detachable unit held in position by four fasteners and four locating dowels. To release the fasteners, gain access through the nose-wheel bay, remove the pip pin passing through the lever and latch, and move the latch in the direction of the arrow A to free the lever, which should then be pulled in the direction of arrow B, thus freeing the hook from the fork of the nose piece. The nose piece may now be withdrawn from the front fuselage. On initial assembly, the attachment nuts should be tightened so that they grip the rubber washer without compression. After assembly, a slight gap between the shoulder of the hook and trunnion should be apparent at point C when the lever is locked home; the attachment nuts should then be adjusted if necessary. After assembling the nosepiece to the front fuselage, the four hooks (painted white) must be checked through the viewing aperture in the lever to ensure that they have been engaged correctly with the nose piece forks.

Removal of braking parachute

25. Before removing the tail cone the braking parachute must first be disconnected and removed as follows:—

- (1) Place the parachute switch in the cabin to the STREAM position whilst the starboard parachute door is controlled by manual pressure to ensure that it does not open fully. Apply pressure to the centre of the drogue container, then allow the door to open fully and the drogue parachute to rise.
- (2) Open the tail cone fillet door (thus switching off the electrical supply) and place the parachute switch to the JETTISON/OFF position. Apply a load

of at least 10 lb to the cable between the parachute and the release slip and shut the fillet door whilst this load is being applied. This will energize the electro-mechanical release unit.

Note . . .

As the E.M.R.U. used in the installation was initially designed as a bomb slip, it will be apparent that a load should always be acting on the jaws of the slip, when electrically energized to jettison, and the instruction to apply a load to the parachute cable when JETTISON is selected is therefore important. If an aircraft has landed with a candled parachute and has subsequently jettisoned it (or if jettison has been selected when the parachute canopy was deflated) it must be assumed that the slip has been energized without the necessary load being applied. In these cases the E.M.R.U. should be removed and examined for possible rotor deterioration.

- (3) Remove the braking parachute which must be repacked before being replaced in the aircraft.

Note . . .

For refitment of the braking parachute reference should be made to Sect. 2, Chap. 2.

Removal and assembly of tail cone

26. The tail cone incorporating the braking parachute, is attached to the rear fuselage by four locating dowels and toggle fasteners. Before removing the tail cone, the braking parachute must first be disconnected. The procedure for the removal of the tail cone is described in Sect. 4, Chap. 1. To assemble the tail cone to the rear fuselage proceed as follows:—

With the parachute doors open and the parachute removed, attach the tail cone by the four fasteners and refit the electrical connection. For refitment of the parachute and completion of the assembly, reference should be made to Sect. 2, Chap. 2.

Replacement of windscreen front panel

27. Before a windscreen front panel is replaced after removal, all old sealing strips and compound must be removed and the frame cleaned. Attach new sealing (Ref. 26FX-8418) with Bostic C, ensuring that the bead seats firmly in the corner of the frame.

(On some aircraft, there is a step between side and bottom frame members. In such circumstances, sealing strip (26FX-8418) should be fitted around the side and top members only, and sealing strip (26FX-8419) at the bottom.) When the Bostic C is dry, prime the surface of the sealing strip with Boscolite primer No. 9252 and, after this has dried, apply a generous layer of Boscoprene No. 2100. Assemble seal (26FX/398) to front panel. No jointing or sealing compound is to be used between the seal and windscreen. When the Boscoprene 2100 is partly dry, bed the windscreen in and secure by fitting the finishers. There must be a clearance of 0.05 in. between the edge of the finishers and the edge of the top layer of the front panel. If clearance is insufficient, file the finisher. If it is excessive, fit a new finisher. The finisher attachment screws should be coated with Heldite before assembly.

◀ Note...

It is important that no sealing compound or jointing compound is permitted to come into contact with the Perspex or laminated glass. To obviate crazing due to contact with solvent vapour given off by the adhesive, mask the perspex quarterlights. After replacement of panels, pressure test the cabin in accordance with the instructions given in Sect. 3, Chap. 8.

Replacement of windscreen quarter lights

28. The procedure for the replacement of the windscreen quarter lights is the same as that for the replacement of the front panel (para. 27) except that no sealing strip is fitted to the frame and that Bostic Glazing Compound or Bostic Sealing Compound No. 1222 is used instead of Boscoprene for bedding the panel in.

Removal of front fuselage

29. The procedure for removing the front fuselage from the centre fuselage is as follows:—

- (1) Render the aircraft electrically safe (Sect. 5 Chap. 1).
- (2) Remove the gun package.
- (3) Remove the aircraft batteries.
- (4) Jack and trestle the aircraft (as shown in Sect. 2, Chap. 4) with the exception of the front fuselage jack, but with the addition of the trestling for the front fuselage (fig. 7) and the centre fuselage (fig. 8).
- (5) Remove the radio sets and mounting structure (Sect. 6, Chap. 1 and 2). Unclip and stow all radio cables and connectors which extend between the transport joints.
- (6) Unclip, disconnect and stow all electrical cables which extend between the two transport joints.
- (7) Dissipate the pressure in the hydraulic system and drain the system (Sect. 3, Chap. 6). Unscrew the unions of the pipes connecting the front and centre fuselage systems and remove the pipes. Blank off open ends of pipes to prevent the ingress of dirt, etc.
- (8) Remove the bonding leads, disconnect and remove the pipes of the pitot installation between the front and centre fuselage. Blank off the open ends of the pipes to prevent the ingress of dirt, etc.
- (9) Disconnect the cable and break rod assemblies of the engine controls at the transport joints.
- (10) Remove the detachable hood fairing at the forward section of the spine and disconnect the three flying control tubes.
- (11) Uncouple the cabin pressurising pipes connecting the front and centre portions of the fuselage. These pipes should be tied up to support their weight to avoid damage at the forward end.
- (12) Remove the stub wing fairings.
- (13) Remove the four forward external retaining nuts securing the stub wing nosing to the front fuselage.
- (14) Remove the four set screws and streamline spacers from the boundary layer ducts in the air intakes.
- (15) Attach the slinging gear and bracing struts to the front fuselage (fig. 7) ensuring that the two long cables are attached to either side of the rear support trestle and take the weight on the sling.
- (16) Remove the nuts and bolts attaching the front fuselage to the centre fuselage.
- (17) The front fuselage may now be swung clear, complete with trestles.

Removal of rear fuselage

30. The procedure for removing the rear fuselage from the centre fuselage is as follows:—

- (1) Render the aircraft electrically safe (Sect. 5, Chap. 1).
- (2) Trestle the aircraft, except the rear fuselage (as shown in Sect. 2, Chap. 4), with the trolley under the rear fuselage (fig. 9) and trestles under the centre fuselage.
- (3) Drain the fuel system.
- (4) Pull out the spring loaded bearing cooling outlet pipe and turn to engage the retaining pin against the skin plating.

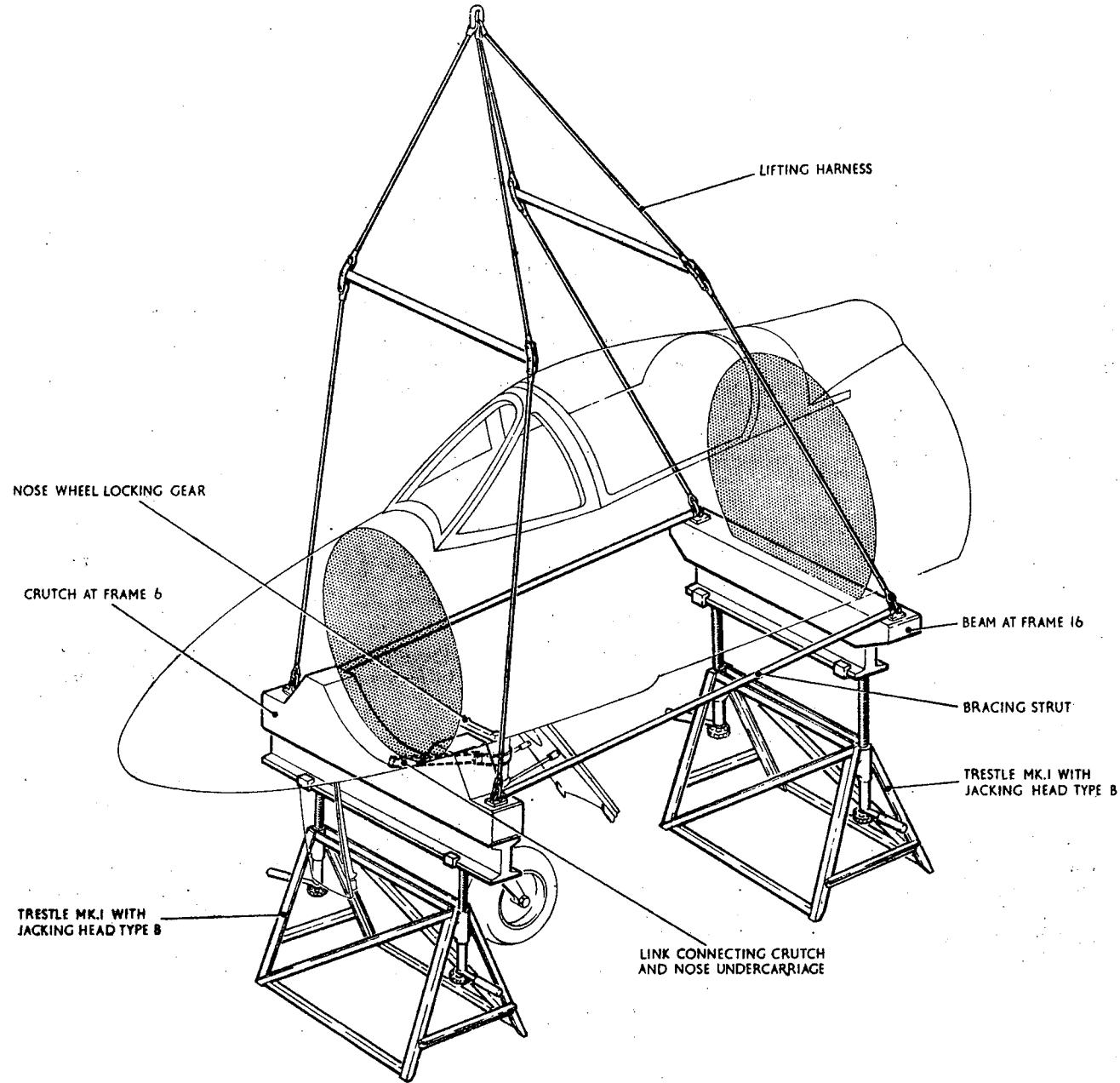


Fig. 7 Slinging and trestling front fuselage

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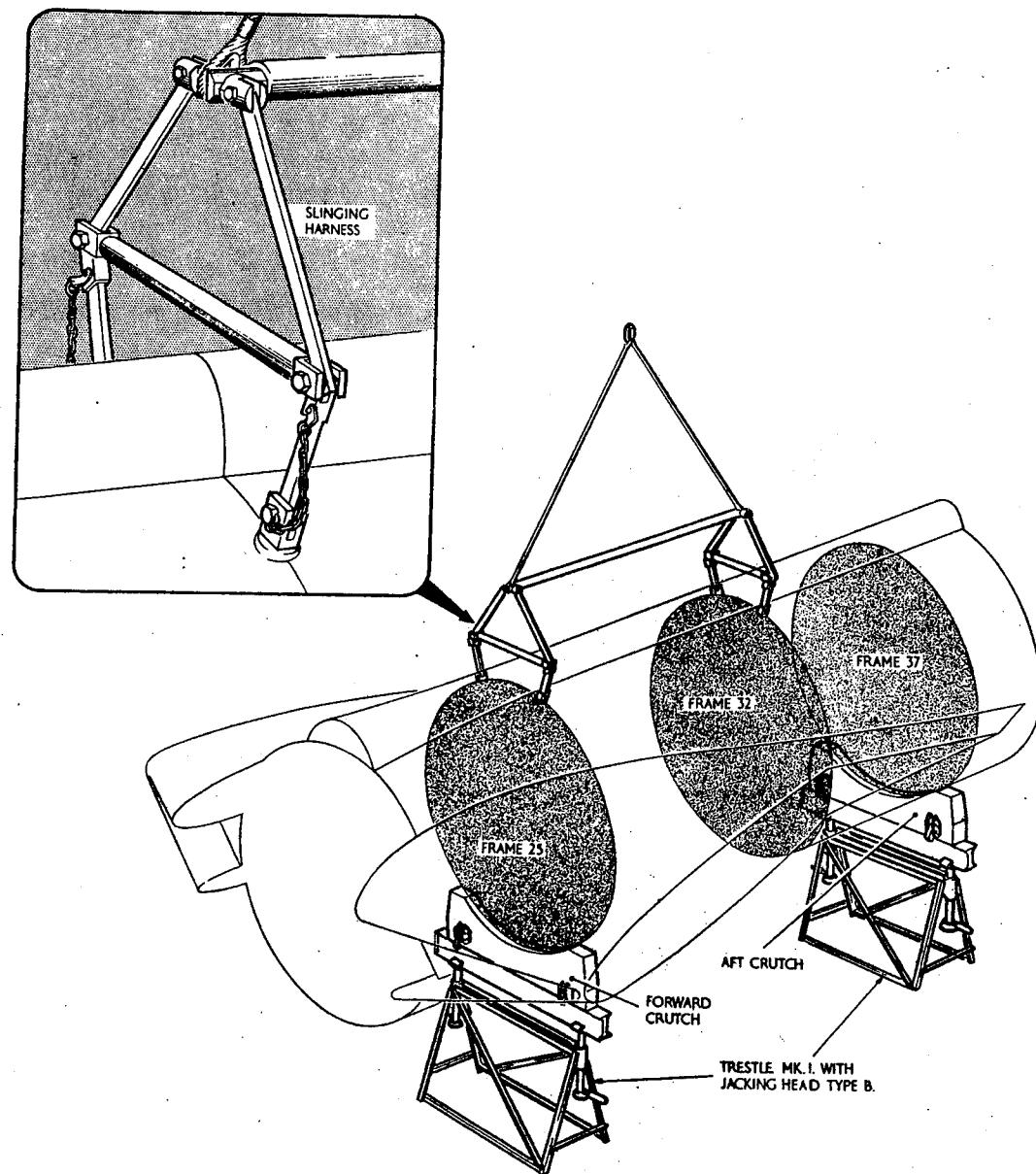


Fig. 8 Slinging and trestling centre fuselage
 ▲ (Completely revised) ▶

- (5) Pull out the engine drain pipe and turn anti-clockwise to engage in the retaining slot.
- (6) Remove the port and starboard access panels to the jet pipe coupling.
- (7) Unfasten the access doors on the engine casing and loosen the stirrup nut, raise the stirrup and slide the keeper plate downward to release. Close the access doors.
- (8) Remove the detachable spine above the rear transport joint and disconnect the flying control rods.
- (9) Dissipate the hydraulic pressure and then disconnect the hydraulic couplings in the spine, blank off the open ends and stow in position.
- (10) Remove the rear transport joint butt strap.
- (11) Turn off the fuel gate valve at the bottom of the transport joint and disconnect the fuel pipes in the spine and around the transport joint.
- (12) Disconnect the electrical cables.
- (13) Disconnect the hydraulic couplings around the transport joint.
- (14) Ensure that the rear fuselage is adequately supported and unscrew the nuts securing the centre to the rear fuselage. The nuts should be undone in opposing pairs and not one by one all the way round.

The rear fuselage is now free from the engine and centre fuselage and may be carefully withdrawn.

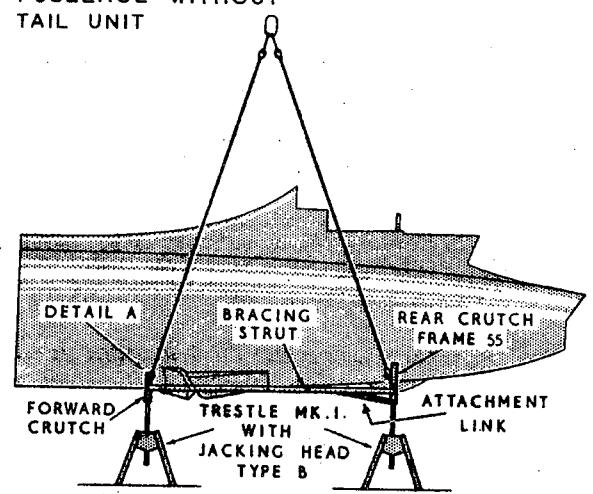
Note . . .

Before assembly of the rear fuselage to the centre fuselage, the attachment spigots (Ref. 26FX/721, Part No. F181010) should be checked for tightness, using the special tool (Ref. 26FX/95223, Part No. B.200521). Any retightening of the spigots will necessitate re-penning of the spigot securing nut.

During assembly of the rear fuselage to the centre fuselage, ensure that the chains of the blanking caps for the hydraulic couplings pass under the trunnion bolt of the butt strap.

When fitting the butt strap at frame 40 ensure that the half-inch black mark on the butt strap and access panel is aligned with the two matching marks on the centre and rear sections of the fuselage.

SLINGING OF REAR
FUSELAGE WITHOUT
TAIL UNIT



SLINGING HARNESS
FOR REAR FUSELAGE
WITH TAIL UNIT

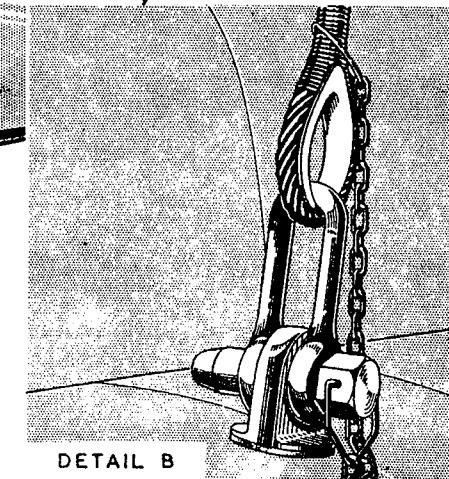
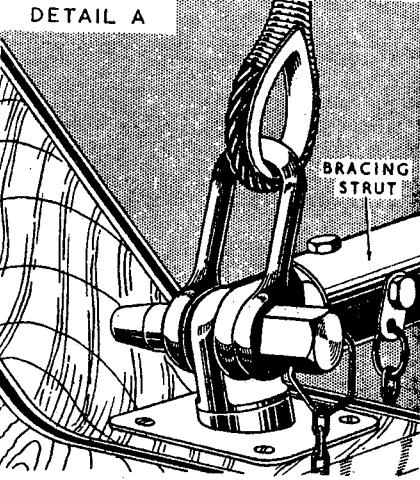
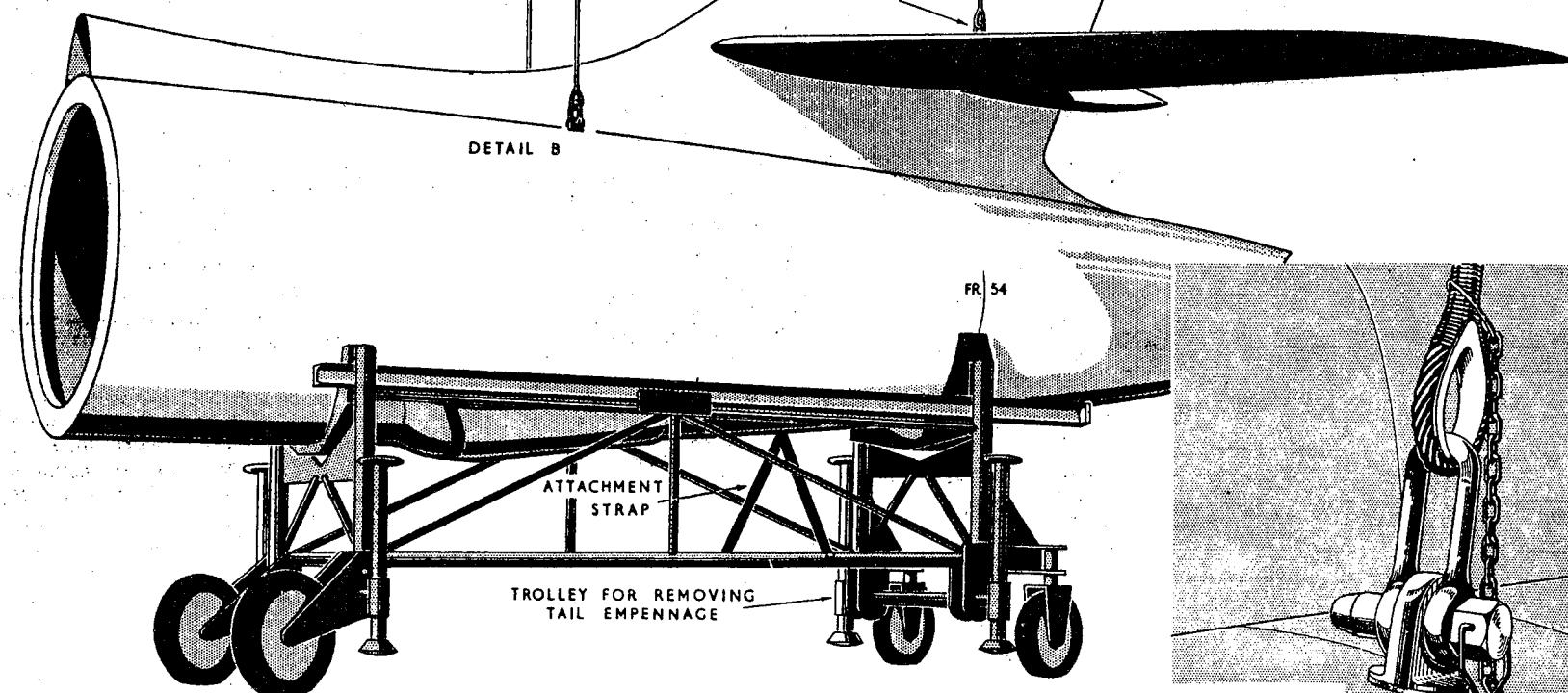


Fig. 9 Slinging and trestling rear fuselage

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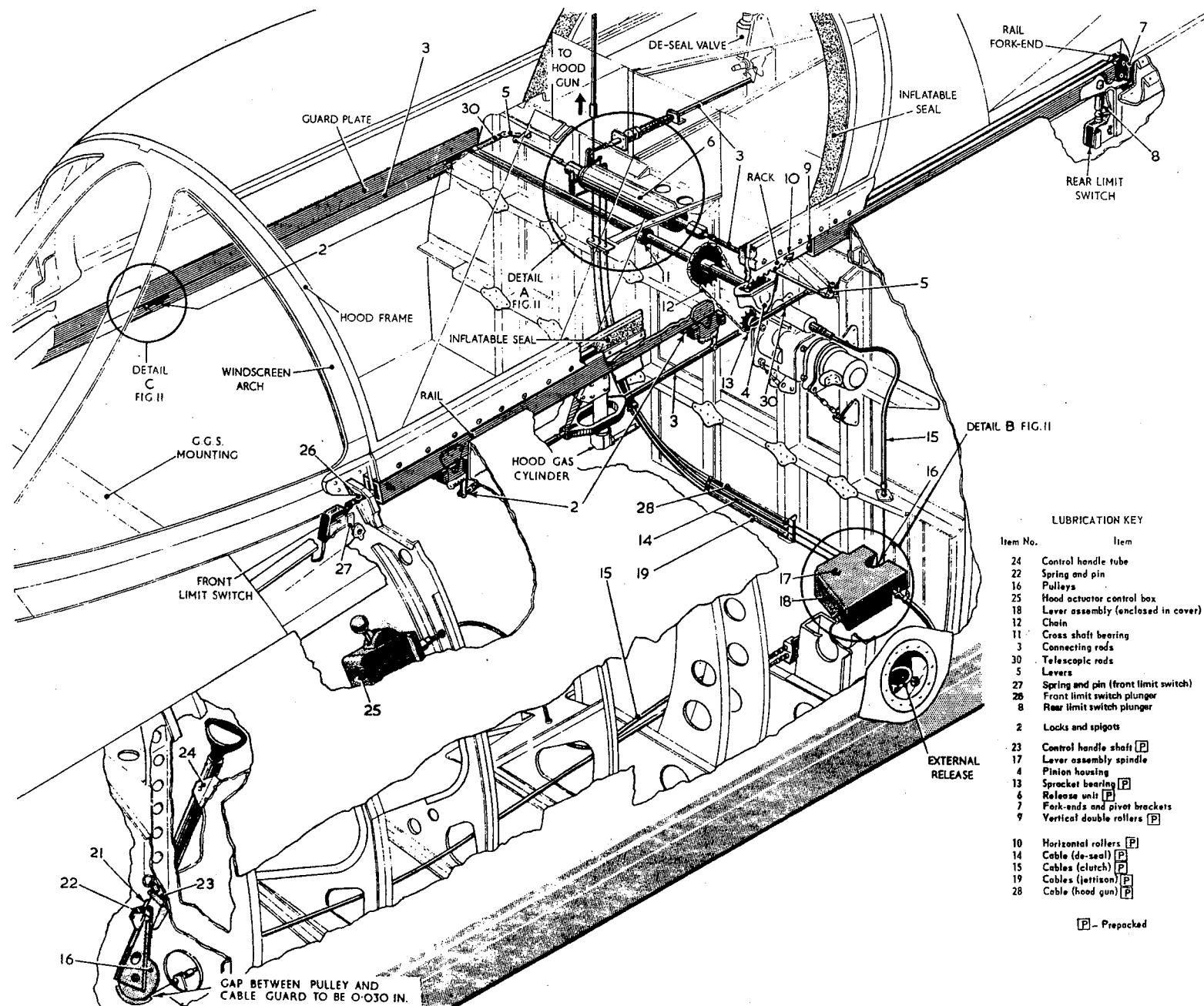
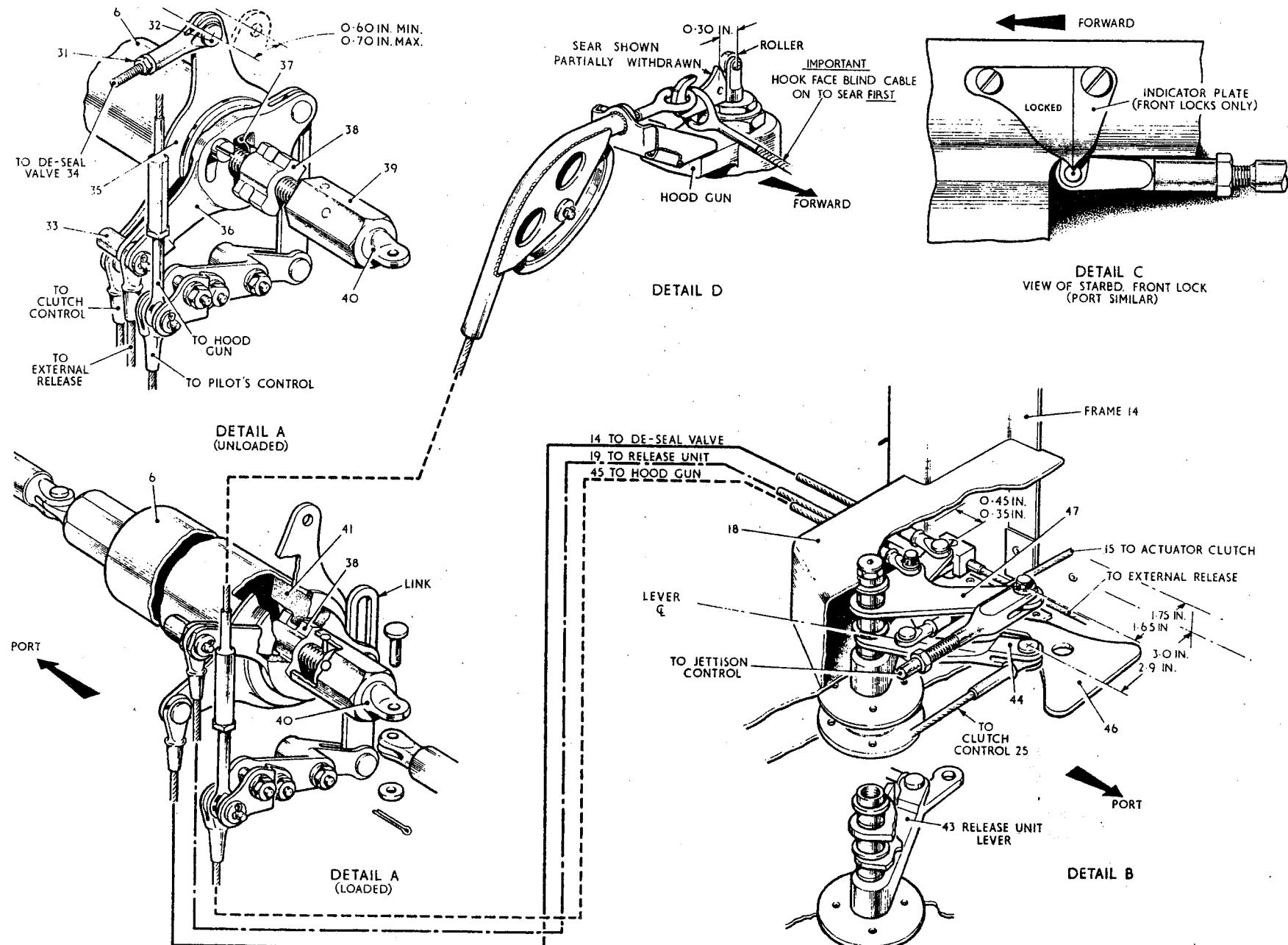


Fig. 10 Sliding hood, jettison mechanism and controls (1)

◀ Lubricant symbol corrected ▶



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WARNING

AN AIRCREW EJECTION SEAT IS FITTED TO THIS AIRCRAFT.

Before attempting to enter the cabin ensure that the instructions detailed on the LETHAL WARNING marker card at the front of the handbook have been complied with.

THIS IS VERY IMPORTANT

Removal of sliding hood

Note ...

Special precautions such as positioning foam rubber or other soft material over the U.H.F. aerial, should be taken during the removal and replacement of the hood to prevent inadvertent contact with the aerial and resultant damage to the hood.

31. To remove the sliding hood, together with the hood rails and without operating the hood jettison mechanism, proceed as follows:-

- (1) Render the aircraft electrically safe (Sect. 5, Chap. 1), and check that the safety pin has been fitted in the hood gun sear.
- (2) Move the port and starboard interconnecting rods aft by using the hood lock opening tool (Part No. A.236181) as shown in fig. 12, thus causing the hood locks to open fully.

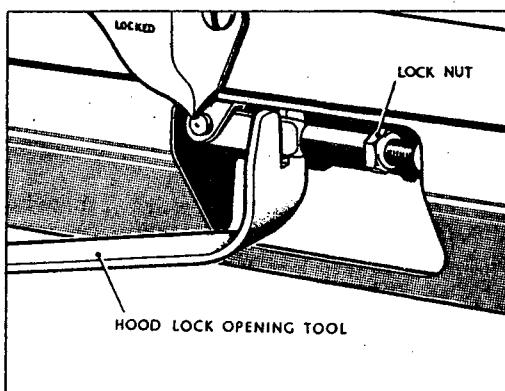


Fig. 12 Hood lock opening tool

- (3) Without handling the perspex shell, and taking care not to allow the hood to run on its rails, and not to damage the seals or rail housings, raise the hood and rails at the forward end through approximately 25 deg. to disengage the rail fork ends from the rear pivot brackets. Lift the hood and rails clear of the structure.

Hood lock adjustment

32. The adjustment of the connecting rods to the hood locks should be carried out as follows:-

- (1) Disconnect the forward end of the telescopic connecting rods (30) and load the release unit.
- (2) Disconnect the forward connecting rods at the forward locks.
- (3) Disconnect the centre connecting rods at the rear locks.
- (4) Close the hood locks and by viewing through the lock recesses or through the inspection hole in the locks ensure that the lock hood and sear are fully engaged as shown in fig.13.
- (5) With the levers from the hood cylinders held fully forward adjust the forward connecting rods until the holes in the forward hood lock levers are in line with the holes in the connecting rods, unscrew one half turn, tighten the lock-nuts and assemble the pins.
- (6) With the levers from the hood cylinders still held fully forward adjust the centre connecting rods until the holes in the rear hood lock levers and the connecting rods are in line, tighten the lock-nuts and assemble the pins.
- (7) Still holding the levers from the hood cylinders forward to fully close the locks adjust the telescopic connecting rods until the holes in the rods are in line with the rear hole in the centre rods and connect. Unscrew the sliding fitting at the

aft end of the telescopic connecting rods one half turn, using the spanner flats provided and re-tighten the lock-nuts.

- (8) Check again that the lock hooks and sears are fully engaged, if not, re-adjust until this condition is obtained.

Note ...

It is most important that the hood locks be kept scrupulously clean as any small particle of swarf, etc., lodging on the face of the hook may prevent the sear lever from full engagement giving a false impression of the locked condition. The lock can be examined by shining a light downwards into the lock recess while operating the lock from open to shut.

- (9) Check that the indicator plates are correctly adjusted for the hood locked position (fig. 11, detail C).

Note ...

It is most essential that the lock lever is not moved during this operation. It may be necessary, when fitting a new indicator plate, to re-set the tip of the plate slightly to lie not less than 0.040 in. from the head of the pin. The point should also be trimmed back, if need be, so that the appearance of the indicator pointer and pin is in accordance with fig. 11, detail C.

WARNING

The perspex of spare hoods has a protective coating of latex (Perspex protective lacquer I.C.I. F.962-5005) to prevent damage during transit and storage. The coating should be removed very carefully to avoid damage to the surface of the perspex. Tools or sharp instruments must not be used. Rubbing with the thumb will usually cause the coating to lift locally, the remainder may then be peeled off. In some cases of prolonged storage where the coating has become hard, application of warm soapy water may prove beneficial, or in extreme cases, a small quantity of methylated spirits may be used.

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Assembly of hood

33. The hood should be assembled to the aircraft as follows:—

- (1) Check that the lubrication of the hood rollers, rack, lock spigots, fork ends and pivot brackets has been satisfactorily effected.

Note...

Ensure that the seals are in position on the hood lock spigots and the metal discs and sealing tapes on the gas gun cylinders before attempting to fit the hood.

- (2) Ensure that the hood rails are correctly engaged at the rear end as far aft as possible before lowering the assembly to engage the rail spigots in the locks, thus eliminating the possibility of damage to the lock housings.

- (3) When the hood/rail assembly has been lowered to the aircraft, and before closing the locks, de-clutch the hood motor and move the hood to the forward position. Lift the hood slightly at the rear end, so that the racks on the hood are clear of the drive pinions, then push the hood forward to contact the windscreens frame. This will ensure that when the hood is lowered again the rack on each side will engage correctly with pinions and will not be one tooth out on one side, as can happen if this procedure is not adopted.

- (4) Move the hood to the rear position again and (*without handling the perspex shell*) press down the hood rails at the forward locks. Check that the locks are fully engaged by examination of the indicators. The mark in the centre of the pin must line up with the mark on the indicator plate.

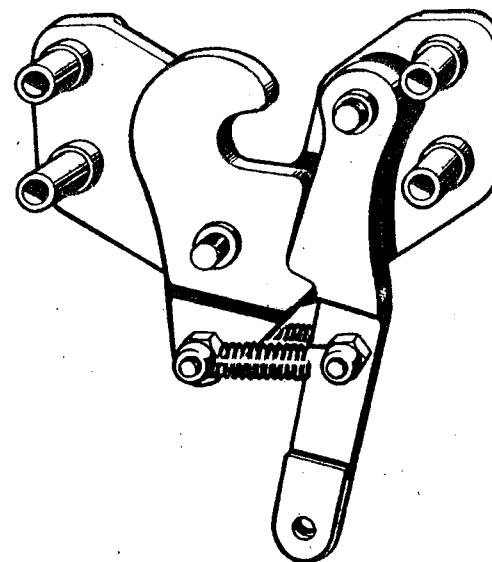


Fig. 13 Hood lock in closed position

Micro-switch adjustments (fig. 10)

34. Adjust the front limit switch plunger (26) so that the sliding hood comes to rest within

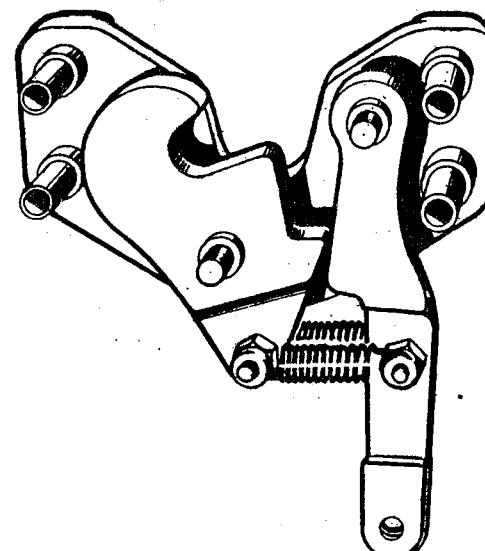


Fig. 14 Hood lock in open position

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0-10 in. max. of the hood fully forward position when power operated. Push the hood rearward until the tail end of the rack meets the inner face of the rail fork-end, then move the hood forward leaving a gap of 0.35 in. to 0.50 in. and set the rear limit switch to just contact the plunger (8) and tighten the switch in place. Finally, check the functioning of the electrically-operated hood winding system.

Unloading and loading release unit (fig. 11)

35. To unload the release unit hold the release lever (36) in the loaded position and turn the coupling (39) *anti-clockwise* to the full extent. To load the release unit rotate the coupling (39) in an *anti-clockwise* direction to allow the 'H' nut (38) to enter the hole (37) in the lever (36) and continue rotation, with the lever (36) in the unloaded position, until the nut (38) is flush with the outer face of the lever (36). If the lever (36) will not now turn to the loaded position, rotate the coupling further, in the same direction, until the lever can be freely moved upward to the loaded position (*a minimum upward movement of 25° is necessary*). *No further rotation of the coupling in this direction is permissible*.

Note...

It is important that the lever (36) is retained in this loaded position throughout the rest of the reloading operation to prevent accidental release and possible injury to personnel.

Load the unit by rotating the coupling (39) in a *clockwise* direction to the full extent of its travel, to fully compress the spring of the unit, then *unscrew* the coupling one half turn. When the painted red line $1\frac{1}{8}$ in. wide on the lever (36) and on the release unit body (6) should be aligned. If necessary repaint taking care not to apply paint to hood de-seal lever (35).

WARNING

The release unit, shown in both loaded and unloaded positions in fig.11, is loaded when the painted red line on the lever (36) and on the body of the release unit correspond and the spindle (40) is fully extended to the port side.

Adjusting the hood de-seal connecting rod (fig.11)
36. Adjust the connecting rod (34) from the lever (35) to the de-seal valve so that the movement of the jettison lever (36) from loaded to the release position produces a travel of from 0.60 in. to 0.70 in. on the de-seal connecting rod lever (35). Remove pin (32) and set the de-seal lever (35) touching the striking pin (33) with the lever (36) in the unloaded position. Push the connecting rod (34) fully rearward and adjust it so that the pin holes of the connecting rod and de-seal lever line up. Shorten the rod by one turn and re-insert the pin (32) and tighten the locknut (31). Finally check that the free travel required is obtained.

Adjusting hood jettison mechanism (Pilot's release) (fig.11)

37. With the release unit unloaded, adjust the cable to the hood gun so that the peak of the sear is 0.30 in. from the centre line of the roller as shown in fig.11. *It is important that the cable to the seat face blind is hooked on to the sear first before the cable from the release unit.* With the release unit loaded and the sear inserted in the firing pin, adjust the cable from the release unit to the lever (47) until the centre of the pin connecting the cable from the hood jettison handle to the lever (47) is 1.65 in. to 1.75 in. from the face of frame 14 (as shown in fig.11). With the jettison handle in its lowest position and maintaining the position of the lever (47), adjust the fork end connecting the cable from the jettison handle to the lever (47) until all slack in the cable is taken up. On aircraft pre Mod.378 check that the operating lever of the gyro gun sight automatic retraction micro-switch is engaged with the latch (21).

Note . . .

The adjusters at each end of the outer casing of this cable are used solely for the purpose of installing the cable in the straightest possible run.

The maximum load applied to the jettison handle to complete the jettison operation must not exceed 55 lb.

Setting of lever (36) for external release cable (fig.11)

38. Adjust the cable (fig.10, item 19) to the operating lever (36) so that the lever has a minimum travel of 25° and the release unit is released just before the pin on the shackle of the external release cable at lever (43) enters the hole in the catch plate (46).

Setting of lever (43) for external release cable (fig.11)

39. This lever must be set with the pin centre for the external release cable 0.35 in. to 0.45 in. from the face of the port outboard stiffener on frame 14 (as shown on fig.11).

Setting of lever (44) for hood actuator control and de-seal valve (fig.11)

40. Adjust the cables to lever (44) so that the lever is set with the centre of the pin connecting the cable from the hood actuator control box to the lever 2.90 in. to 3.0 in. from the face of frame 14, as shown on fig.11, at the same time ensuring that adjustments previously made to other units are not upset.

Testing hood jettison mechanism (fig.15)

41. The hood jettison mechanism should be tested as follows:—

- (1) Check that the safety pins are fitted into the sears of the hood and seat firing units.
- (2) Unload the hood and seat firing units.
- (3) Remove the hood as detailed in para.31. Hold the inter-connecting rods in the fully aft position (beyond the hood lock opening position) by means of pieces of wood wedged between the rear of the gas gun cylinders and connecting rod yokes as indicated.

(4) Remove the P.V.C. tape securing the discs in position over the hood jettison guns under the hood rail housings (*port and starboard*), remove the discs and retain for later fitment.

(5) Assemble the test union body and washer in place of the firing body on the hood firing unit. Connect the test rig to the union and couple up a low-pressure trolley, Mk.2 to the rig.

(6) With the test rig release valve closed, run the trolley equipment to charge the trolley air container fully and set the output pressure control valve to give a pressure of 90 lb/in² in the line to be used.

(7) Place a 2 in. by 1 in. piece of hardwood, of approximately 3 feet in length across the cabin so that it lies over the pistons of the hood gas gun cylinders, then quickly open the release valve on the rig and check that the pistons of the gas gun cylinders have extended.

(8) Release pressure, remove the wooden wedges and return the pistons to their normal position.

(9) Replace the discs over the hood jettison guns (*port and starboard*) and secure by P.V.C. adhesive tape.

(10) Remove the test equipment. Refit the hood. Re-load the firing body and lock. Replace the safety pins in the sears of the firing unit.

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Removal of brake (fig.16)

42. Jack up the aircraft (*described in Sect.2, Chap.4*) and retract the undercarriage. After ensuring that the area below the air brake is free from obstruction, select air brake OUT on the throttle twist grip, and operate the hydraulic handpump until the air brake is fully extended. The air brake can now be removed as follows:—

- (1) Select air brake IN to release the hydraulic pressure from the jack.
- (2) Ensure that the check chain is securely attached to the aircraft structure and to the jack body.
- (3) Remove the jet pipe (*described in Sect.4, Chap.1*).

- (4) Remove the split pin, slotted nut and washer from the pivot bolt (2) and withdraw the bolt.
- (5) Support the air brake, and from the inside of the rear fuselage, remove the two pivot bolts (1). The air brake can now be removed.

Adjustment of braking parachute microswitches

43. The braking parachute microswitches should be set as follows:—

- (1) **Door microswitch**
With the door fully open set the microswitch to give a gap of 0.09 in. to 0.11 in. with the switch fully bottomed at the end of the override.
- (2) **Fillet access door microswitch**
With the door closed set the microswitch to give a gap of 0.09 in. to 0.10 in. with the switch fully bottomed at the end of the override. (This will necessitate removal of the tail cone).
- (3) **Door indicator microswitch**
With an Allen key slacken the clamp screw of the auxiliary actuator and move the roller arm away from the striker pad until it is up against the stop, taking care not to move the arm too far, otherwise the stop may be fractured. *The clamp screw should be slackened only enough to allow the roller arm to be moved away from the striker pad but retaining sufficient friction to allow the pad to be moved by the roller arm.* Attach a strip of metal 0.10 in. thick, with thin adhesive tape, to the underside of the striker arm and close the parachute doors gently thereby allowing the striker pad to depress the microswitch to its full override position, the final closure of the door causing the roller arm to slip on its pivot to its correct position. Open the parachute doors, tighten the clamp screw, remove the metal strip from the striker arm and carry out a functional check (Sect.5, Chap.1).

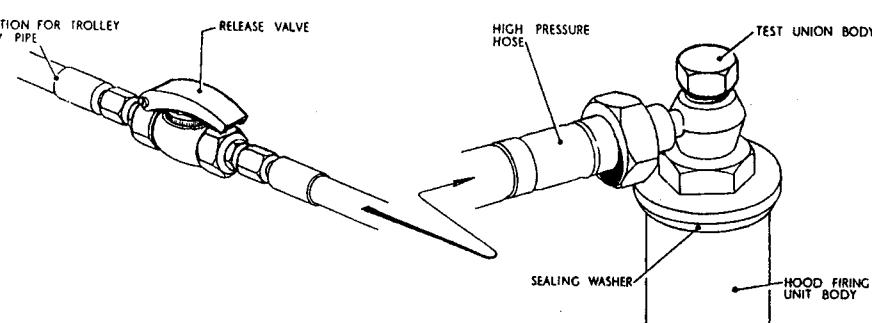
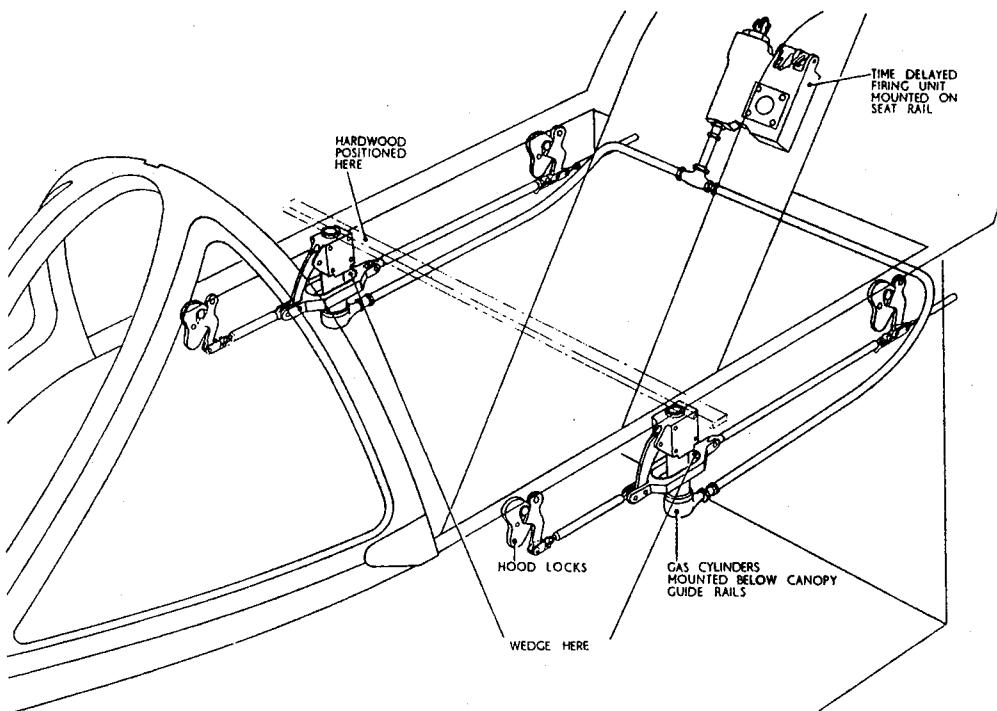


Fig.15. Testing hood jettison mechanism

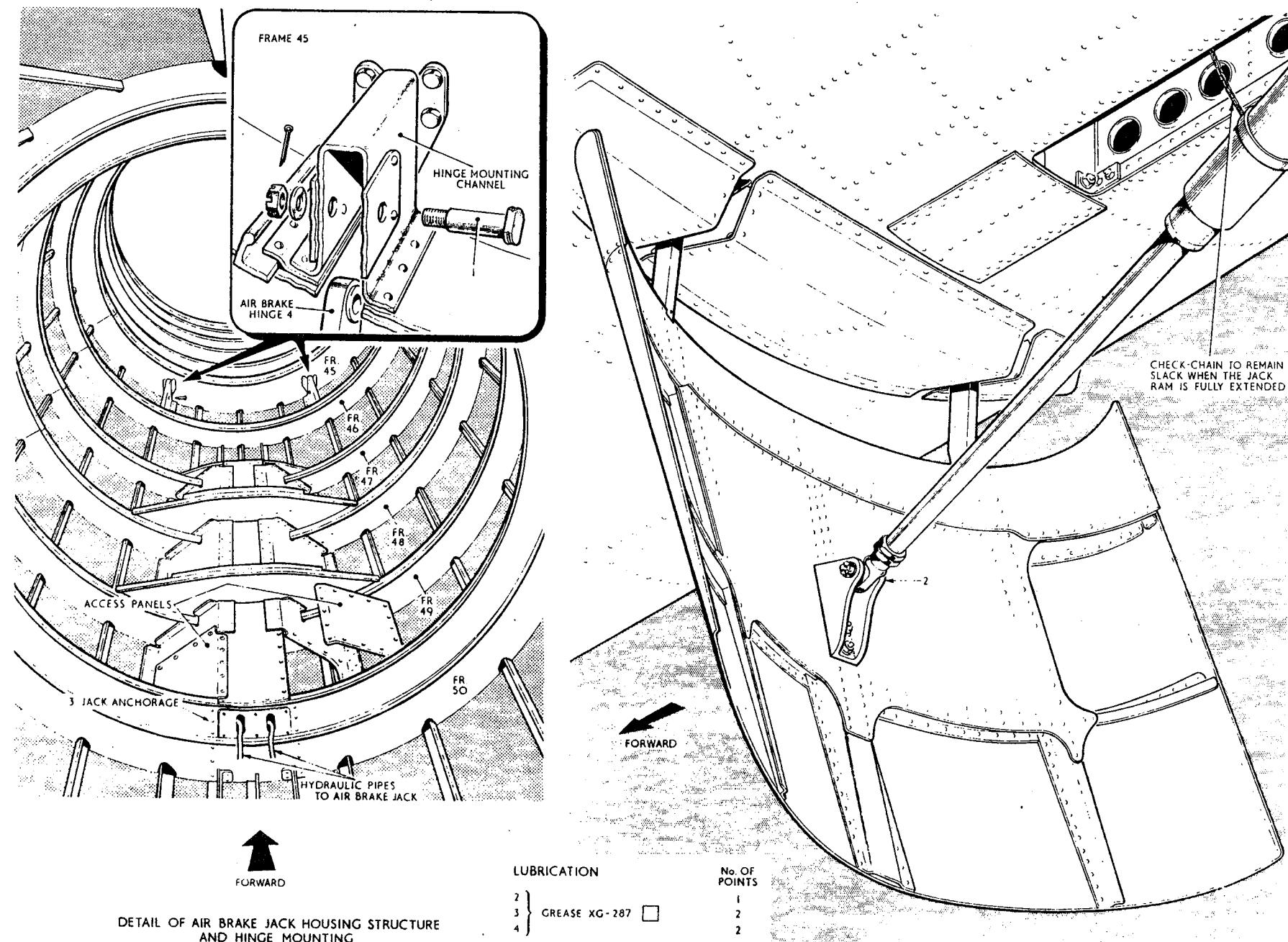


Fig. 16 Removing the air brake

Assembly of guard over braking parachute door lock (Mod. 947)

44. If a new guard has to be fitted it is important that the door lock is adjusted to its highest position with the doors flush with the tail cone. The new guard is to be cut and filed to conform to the shape and fit of the guard being replaced. The filed edges of the guard are to be coated with varnish or shellac.

Lubrication of braking parachute door lock

45. Where any lock is suspected of being faulty in operation it should be dismantled and cleaned as in the case of undercarriage door locks (Sect. 3, Chap 5). On refitment, care should be taken to position the lock as mentioned in para. 44.

Replacement of parachute doors rear lock release cable

46. When fitting a new release cable carefully adjust the position of the plunger housing with shims Part No. F.220615 to ensure smooth and satisfactory engagement of the plunger.

Adjustment of brake parachute rear lock release cable (fig. 5A)

47. To adjust the brake parachute rear lock release cable proceed as follows :—

- (1) Remove the brake parachute as described in Sect. 3, Chap. 1.
- (2) Remove the guard over the front door lock and disconnect the door link from the port telescopic spring box. Lift the telescopic spring box to provide access.
- (3) Slacken the lock nut on the release cable with the release mechanism in the unlocked position adjust the cable until all slackness is just taken up and the plunger of the rear lock is flush with the front of its housing.

- (4) Tighten the lock nut on the adjuster, lower the telescopic spring box and reconnect to the door link.
- (5) 'Cock' the spring release unit as described in Sect. 2, Chap. 2, para. 29, sub-para. 4, and close the doors. Remove the access panel from the forward end of the starboard door and ensure, whilst restraining the doors manually, that when the spring release unit is depressed, the roller rides up the lever. This should release the front lock and simultaneously withdraw the plunger of the rear lock, allowing the doors to open without obstruction.
- (6) Repeat (5) with a packed parachute (*do not remove the cord securing the drogue flaps*) in the compartment and also by operating the solenoid release by selecting STREAM.
- (7) Refit the guard over the front lock.
- (8) Refit the brake parachute as described in Sect. 2, Chap. 2, para. 29.

► Drilling sighting holes in replacement brake parachute doors

48. Replacement parachute doors are supplied without sighting holes for the door forward lock indicator and, in some cases, for the rear locking plunger. Holes are to be drilled and opened up, and the doors marked, to suit each individual aircraft. The procedure is as follows:—

- (1) Close the starboard door.
- (2) Ensure that the door forward lock indicator is fully up.
- (3) Mark the inside of the starboard door immediately above the tip of the indicator as shown in fig.17 in the scrap view at detail A.

- (4) Open the door and drill a 5/16 in. diameter hole at the position marked.
- (5) Close the starboard door.
- (6) Apply a thin coat of plasticine to the port door in the area above the 5/16 in. hole in the starboard door.
- (7) Close the port door down on to the starboard door to obtain an impression in the plasticine of the 5/16 in. hole.
- (8) Open both doors.
- (9) From the impression in the plasticine, find the centre for the hole in the port door and drill a 1/8 in. diameter pilot hole through the door and fairing, then open up this hole with a 3/8 in. diameter drill.
- (10) Open up the hole in the starboard door to the dimensions shown in fig.17 at detail A.
- (11) Open up the 5/16 in. hole in the port door to the dimensions shown in fig.17 at detail B.
- (12) At the rear end of the port door (if a hole does not already exist in the replacement door), drill a 1/4 in. diameter hole in the skin only and open this up to the dimensions shown in fig.17, detail C.
- (13) Through the hole made in operation (12), paint the inside of the channels with gloss white paint (using a brush).
- (14) Treat the edges of the holes with Alocrom 1200.
- (15) Paint the end 1/4 in. of the forward lock indicator with fluorescent fire orange paint (fig.17, scrap view in detail A).
- (16) Paint white patches on the port door skin, around each sighting hole, to the dimensions shown in fig.18.

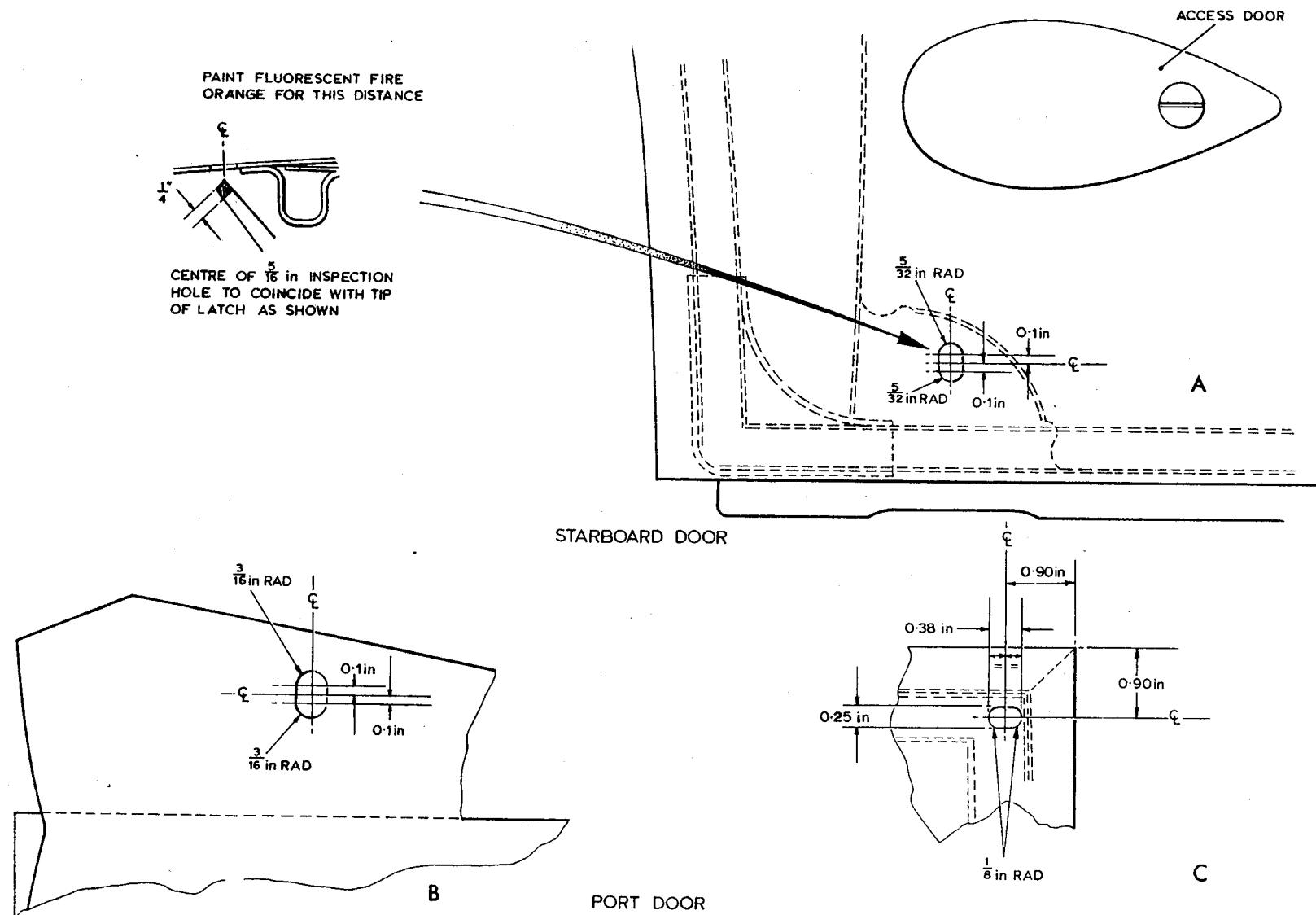


Fig.17 Brake parachute door sighting holes

- ◀ (17) Close both doors and lock, ensuring the lock and plunger are fully engaged (Sect.2, Chap.2, *Assembly of braking parachute*).
- (18) Paint red lines on the port door skin, at each sighting hole, as detailed in fig.18.

Loose bolts in air intakes

49. The bolts securing the detachable panels in the air intakes (fig. 19) are to be checked at regular intervals for tightness. Ensure that the panels are held firmly against the aircraft structure and that all bolt heads seat firmly on the panels (the bolts are not thread-bound).

50. The assembly of the attachments was affected by STI/Hunter/408. The incorporation of the STI cannot be physically checked without disassembly but if disassembly is necessary, because of defects or for any other reason, ensure that the following requirements are complied with:—

- (1) The bolts at A screw into anchor nuts AGS 2007/C/1 mounted on the leading edge members (fig. 3). Check that 18 s.w.g. packing pieces are present between the anchor nuts and the structure; if not, remove the anchor nuts and make up packing pieces (shaped to suit) from L.72 aluminium alloy sheet and fit. Use rivets AS 164/306 (3/32 in. dia. x 3/8 in. long) for securing the anchor nuts, which are to be renewed.
- (2) Bolts A are to be AS 1242-2C.
- (3) Bolts B are to be AS 1242-1C fitted with nuts A 27-C-P, peened to lock. Tighten and re-peen if found loose.
- (4) Bolts C are to be A 25-2C fitted with washers SP 16-C.
- (5) All other bolts are to be AS 1242-1C.▶

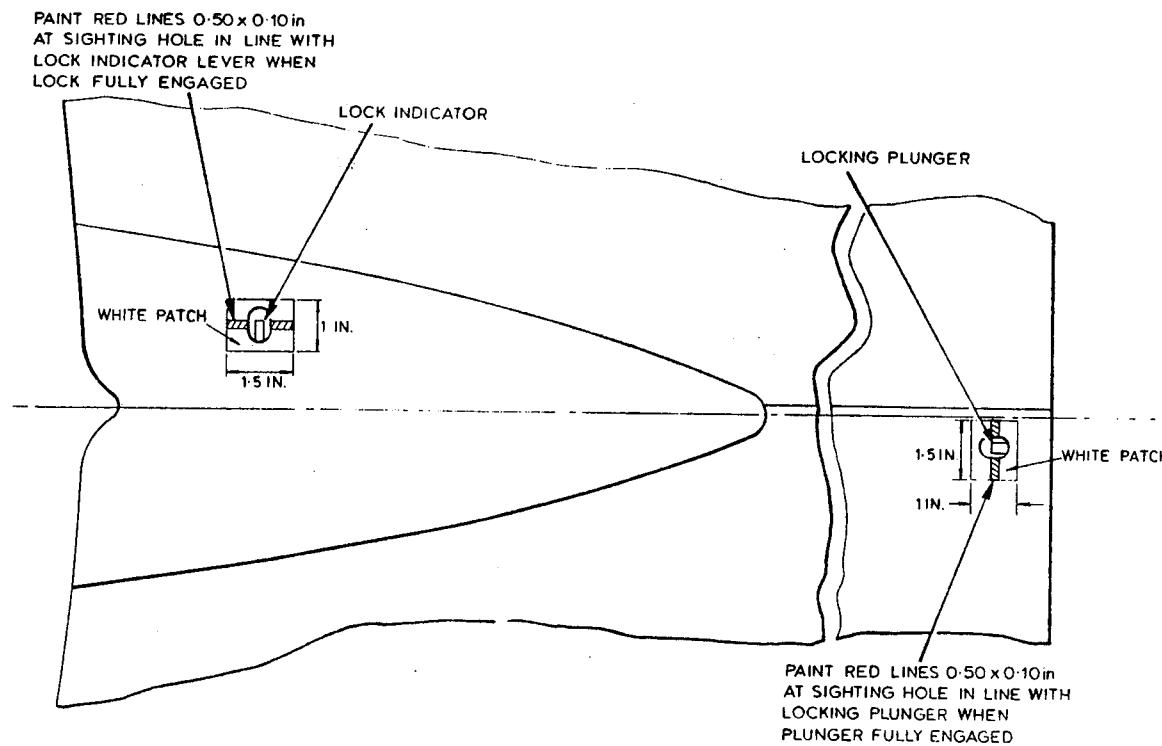


Fig.18 Lock indicator and plunger locked alignment marks

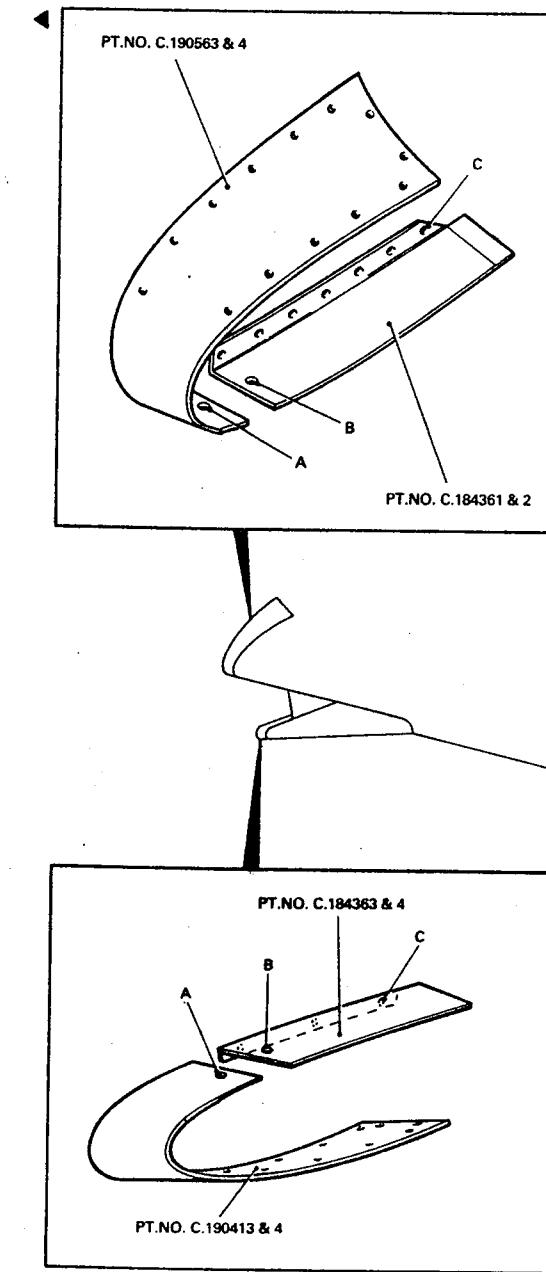


Fig.19 Panels in air intakes

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