Chapter 1

FUSELAGE

LIST OF CONTENTS

LIST OF ILLUSTRATIONS

DESCRIPTION AND OPERATION

General

1. The fuselage is of all-metal construction, and has at the forward end a laminated composition radome which is opened and closed hydraulically (pre mod. 1080), or manually (mod. 1080). Access to the cabin is by a metal ladder which may be fastened to either the port or starboard fuselage side as illustrated in Sect. 2, Chap. 1. A sliding metal-framed Perspex hood, normally electrically-operated, gives access to the pilot's compartment, and a flush-fitting hinged hatch gives access to the observer's compartment. The nose wheel, when retracted, is housed under the cabin where it is enclosed by the nose wheel tunnel. The fuselage construction and station numbers are shown in Fig. 1, and a complete list of access panels in the fuselage is given in Sect. 2, Chap. 4.

FUSELAGE

Construction (fig. 1)

2. The fuselage contour is formed round the two pressure bulkheads which form the fore and aft ends of the cabin, and by intermediate frames secured by longerons and stringers to which the light alloy skin is attached. The frames are identified by their distance in inches from a datum point in the radome, known as station No. 0. Frame No. 49, the first frame of the fuselage and the radome support ring, is therefore 49 in. rear of the datum point. The forward pressure bulkhead is at Stn. No. 79·5 and the rear pressure bulkhead, on which are mounted the fuselage to centre section attachment joints, is at Stn. No. 176. On the top of the pressure cabin the pilot's hood is on the port of the fuselage centre line and the observer's hatch is on the starboard side. The cabin floor and the nose wheel tunnel form the bottom of the pressure cabin. The fuselage skin, reinforced by an inner skin on the port side, between Stn. Nos. 96 and 118·5, completes the pressure cabin. A tie-rod across the pilot's cockpit at Stn. No. 79·5, and vertical struts, at Stns. 79·5 and 131·1, slightly to starboard of the centre line of the cabin, serve to reinforce the structure.

3. Forward of the bulkhead at Stn. No. 79·5 to frame 49 is the unpressurized nose bay, which houses the radar equipment and scanner, the radome and scanner hydraulic equipment (Sect. 3, Chap. 6), the radar pressurizing equipment (Sect. 3, Chap. 7) and some components of the air conditioning system (Sect. 3, Chap. 8). Access to the nose bay can be gained by opening the hinged radome, and through hinged access panels on the port and starboard sides between Stn. Nos. 58·44 and 79·5.

Sealing

4. The pressure cabin is sealed during manufacture by applying Bostik compounds to all joints and the inner side of the structure; access panels in the skin of the pressurized compartment also have rubber seals. The sliding hood and the observer's hatch are pressure-sealed by inflatable rubber seals when in flight (Sect. 3, Chap. 7). The pressure seal for the sliding hood extends from the windscreen casting at the front to a small fixed bulkhead immediately behind the pilot's seat; the rear portion of the hood is not pressurized.

Rocket launchers

5. A rocket launcher is fitted in the fuselage on the port and starboard sides of the nose wheel tunnel. The launchers are hinged at the rear and are projected for firing by a hydraulic jack at the forward end (Sect. 3, Chap. 6). When retracted, the launchers are faired into the fuselage profile. ◀When mod. 1265 is embodied, the launchers are inoperative electrically, and can only be opened by manual operation of the selector valve.▶

Air brake bay access doors

6. Three hinged doors (port, centre and starboard), immediately aft of Stn. No. 131·1, give access to the air brake bay. The oxygen, H.P. pneumatic and No. 2 hydraulic accumulator charging points can be reached through the centre door, and the air brake ground/flight switch through the port door. The port door partially controls the operation of the air brake via an insulated pad attached to the door (fig. 17) which contacts the ground/flight switch. When the door is closed, the switch is moved to FLIGHT, and when the alighting gear is retracted the air brake will be controllable by the throttle switch. When the door is open, the switch can be moved to the GROUND position, and when the throttle switch is moved to the open position the air brake will open 29 deg. to give access to the other components in the air brake bay.

Air brake (fig. 17)

7. The air brake is a large heavily-reinforced panel hinged at Stn. 142·25 on two extensions mounted on the rear of the gun beam at Stn. No. 131·1. The air brake is lowered by

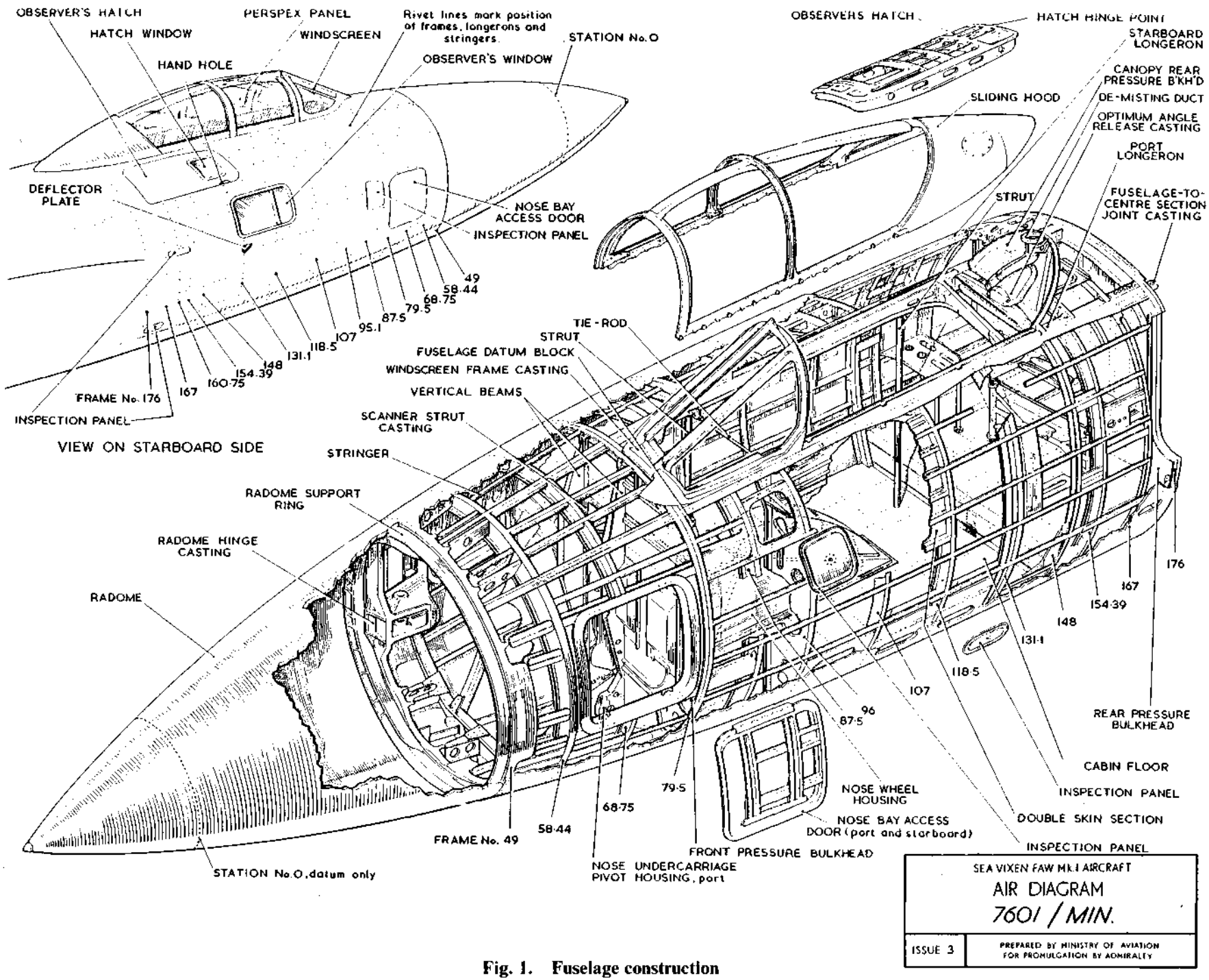


Fig. 1. Fuselage construction

the extension of a hydraulic jack attached to the centre of the air brake and to a mounting at Stn. No. 189·25 on the aircraft centre line. When retracted, the air brake is faired into the fuselage profile, and forms the bottom skin between Stns. 154 and 197·45.

Deflector plates

8. Mod. 892 introduces deflector plates riveted to the fuselage skin at Stn. No. 131 in line with the wing datum. These deflectors guide the nylon crash barrier vertical straps clear of the boundary layer bleeds.

Cabin lagging (fig. 2)

9. The cabin is insulated with two layers of fibreglass enclosed in 'V' film bags and covered with a layer of Vynide. Holes, punched through the completed sections and reinforced with celluloid washers, are provided for venting purposes, The lagging is attached to the cabin on the interior faces of the port, starboard and top cabin panels by press studs, and by fibreglass cords passing through eyelets riveted to the aircraft structure; the lagging is in separate sections between frames. The floor of the observer's cockpit is insulated by wood panels.

RADOME

10. The laminated radome is built up of two layers of Hycar with inner and outer layers of glassfibre cloth bonded together with resin. Pre mod. 1442 the exterior is covered with Neoprene; post mod. 1442, the normal DTD 5555 finish is applied. The aft end of the radome is shaped to fit into a circular metal support ring which carries the hinge casting and operating arm for the opening mechanism, it is also slotted to receive the locking mechanism latch bolts.

Operating mechanism

11. On pre mod. 1080 aircraft, the radome is opened and closed hydraulically by a jack that is connected by a rack and pinion, and an operating link to the radome hinge arm (fig. 3). The jack selector valve is fitted on the port side of the nose bay, and is only accessible when the radome lock operating lever has been pulled down and the radome latch bolts are unlocked (fig. 5). The operation of the selector and the hydraulic circuit are described in Sec. 3, Chap. 6.

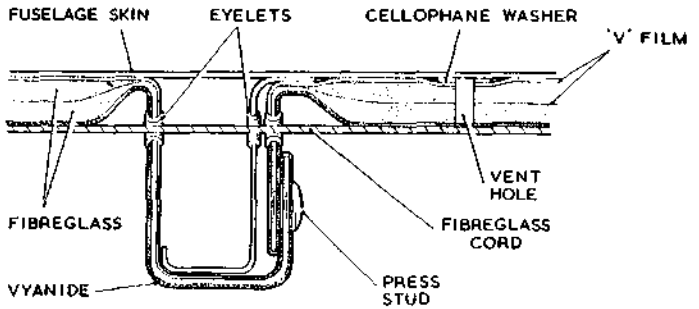
12. On post mod. 1080 aircraft, the radome is opened and closed manually. The jack is used as a damper, and the rate of movement of the radome is controlled by two relief valves (adapted AS.4550 valves), two non-return valves (D5213Y) and an accumulator (AIR 45150). A charging block on the port side of the nose bay is fitted with a Schrader type valve for charging the accumulator with air, and with a bleed screw and charge valve for use when priming the system (fig. 4).

Locking mechanism (fig. 5)

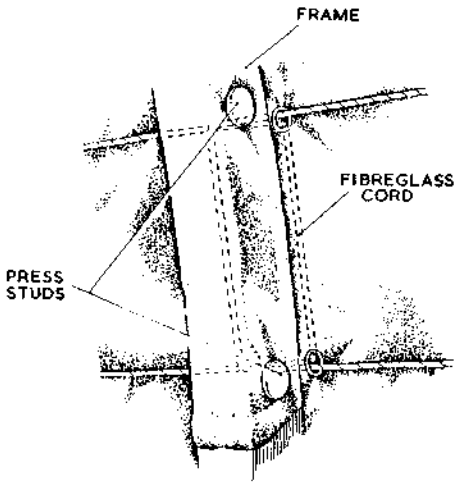
13. The radome is locked in the closed position by five latch bolts which project forward from the frame at Stn. No. 49, and engage in slots in the radome casting ring. The lock operating lever on the port side of the nose bay lies flush with the fuselage skin in the locked position, and is secured by a toggle fastener. When the fastener is released, and the lever pulled down, the latch bolts are rotated through 90 deg. into the unlocked position by a series of connecting rods and levers which link the five latch bolts. The interlock mechanism also operates a hydraulic by-pass valve which prevents the scanner from being operated when the radome is open. Care must be taken when the radome is being closed to ensure that the radome casting ring is touching the frame at Stn. No. 49 before the latch bolts are returned to the locked position. A cockpit indicator, energized by a microswitch which is actuated by the toggle fastener, shows when the radome is properly locked. The adjustment of the microswitch is given in Sect. 5, Chap. 1.

WINDSCREEN (fig. 6)

14. The windscreen comprises two centre and two side panels mounted in a cast metal frame. The frame is



TYPICAL SECTION THROUGH FRAME



VIEW SHOWING CORDING

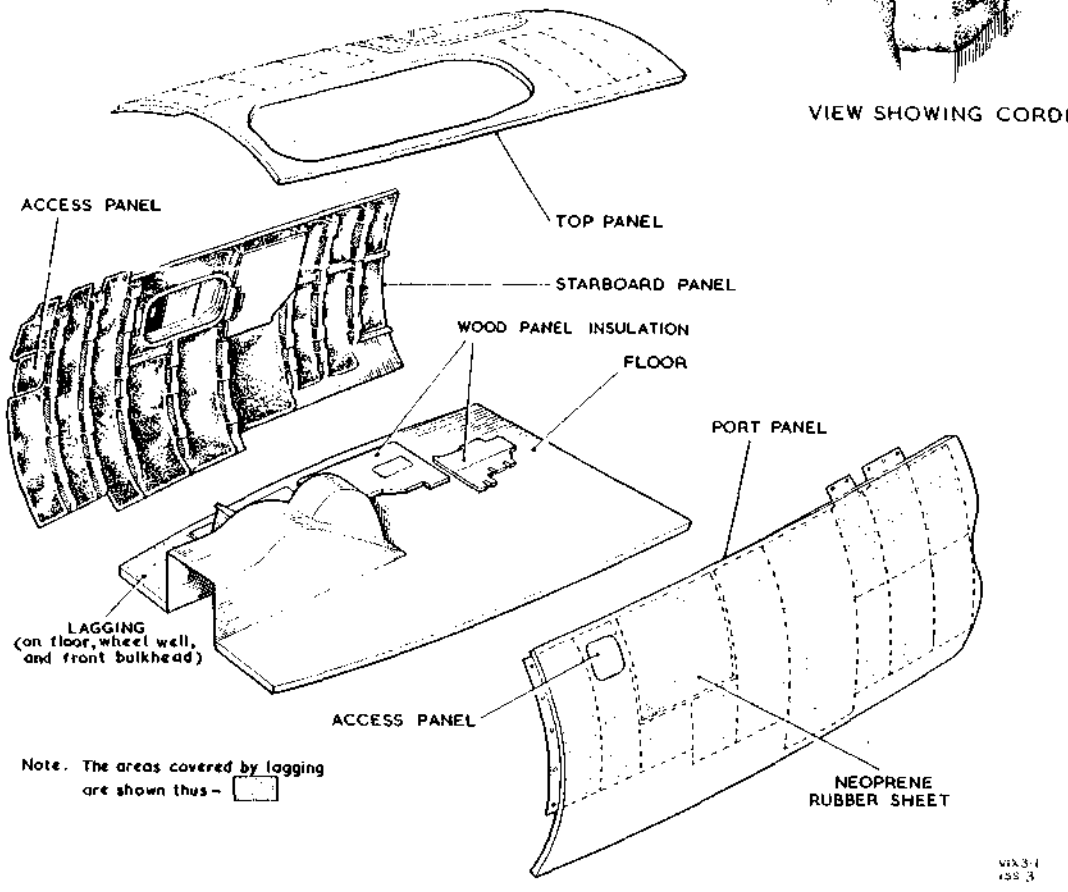


Fig. 2. Cabin lagging

positioned so that the centre line of the windscreen is offset to port from the centre line of the aircraft. The two centre panels are of the sandwich type (two glass panels with a space between). The exterior panels are single sheets of green toughened glass, and the interior panels are laminated sheets of strengthened clear glass. The two side panels are curved laminations of strengthened and optically polished clear glass. The windscreen panels are bedded into the metal frame on rubber strips and sealed with a fillet of Bostik sealant. The panels are retained by metal strips which are bolted to the windscreen frame. ◀A rear vision mirror is attached to the windscreen arch; post mod. 1352 the mirror is retracted when the hood is open, and is raised to the operational position when the hood is closed.▶

De-icing

15. The front structure of the windscreen casting is ducted to transfer hot air from the windscreen de-icing system (Sect.3, Chap.9) through the sandwich space in the centre panels. The hot air exhausts to atmosphere through outlets at the top of the windscreen arch. The hot air is also directed through a heating duct over the centre beam of the windscreen to relieve the stresses set up in the glass panels by the contraction of the metal frame at very low temperatures.

Rain shedding

16. Mod. 346 introduced a hydraulically-operated windscreen wiper for the port centre panel (Sect. 3, Chap. 6), with rain repellent being applied to the other panels (Sect. 2, Chap. 2). Mod. 913 introduced an air blast system of rain shedding for the port centre panel, again with rain repellent on the other panels.

Sliding hood (Fig. 9)

17. The sliding hood comprises two runners, to which are attached three arches. Curved Perspex panels are fitted between the arches, and a metal fairing is attached to the rear arch. The aft portion of the fairing is hinged to give access to the electrical panel on the centre section. When closed, the hood is sealed to the fuselage by an inflatable rubber seal which contacts the hood round the front and rear arches and along the runners; the aft fairing is not therefore subject to cabin pressure. The Perspex panels are $\frac{1}{4}$ in. thick, reinforced with fibreglass, or, post mod. 1228, $\frac{5}{16}$ in. thick, reinforced with Terylene. A duct running the length of the hood, picks up with a duct on the rear pressure bulkhead to convey hot air for demisting. A diffuser, fitted with a pivoted cover plate, is located fore and aft of the centre arch. The forward duct is drilled for further diffusion of the air.

Rail assembly

18. The hood opens and closes by sliding along the canopy rails on vertical and horizontal rollers placed at intervals within the runners at the bottom of the hood. The canopy rail assemblies comprise the canopy rail and a latch rail, which are both fitted with a series of interlocking tongues; these tongues project on the outer side of the channel of each canopy rail and interlock with those on the bottom edge of the latch rail. The vertical rollers of the runners slide in the latch rail and the horizontal rollers between the latch rail and the inner vertical side of the canopy rail. When the hood is jettisoned, the latch rail slides aft, disengages the tongues, and jettisons the hood. Further details and illustrations of the canopy rail assembly are given in Sect. 3, Chap. 11.

Operating mechanism (Fig. 10)

19. The sliding hood is normally opened and closed by a small electric rotary actuator lying transversely on the starboard side of the pilot's cockpit at Stn. No. 107. The actuator is operated by switches in the cabin and on the fuselage port exterior wall, but the hood may also be opened and closed manually from within the cabin by a winding handle which is stowed in the pilot's compartment under the centre longeron at Stn. No. 107.

WARNING . . .

1. Before opening the sliding hood, ensure that the port electrical wing-deck panel is correctly closed.

2. A ground electrical supply must always be used when the sliding hood is opened and closed electrically. If, in an emergency, the hood has been operated using the aircraft battery, an electrical tradesman must be informed in order that the battery is tested and passed as serviceable before the next flight.

20. The hood has a rack rail bolted to the starboard runner, and the actuator drives a gear wheel on to this rack rail through a shaft, bevel and worm gears. The two push switches on the exterior fuselage skin (Fig. 9), allow the hood to be opened and closed electrically, from the outside, but it can only be manually opened from the outside by operating the exterior jettison handle (Fig. 9); the hood will be stopped at any desired position when the operating button is released. Microswitches control the fore and aft travel, and automatically break the electrical circuit to the actuator when the hood is fully opened or closed (see Sect. 5, Chap. 1 for adjustment). The seal is automatically inflated or deflated by an electro-pneumatic valve under the top skin at Stn. No. 154 when the hood is fully closed or being opened respectively using the internal switch. The aft travel of the hood is limited by a stop, bolted to the starboard side of the hood frame at the centre arch, which contacts the combined microswitch bracket and stop riveted to the canopy seal support at Stn. No. 148.40. When the manual internal winding handle is inserted in the gearbox, it automatically disengages the electrical drive by moving a spring-loaded transmission shaft, within the gearbox, clear of the electrical pinion drive (Fig. 10). Mod. 468 introduces a lever, beneath the gearbox, which when depressed disengages the transmission shaft from the driving pinion. This

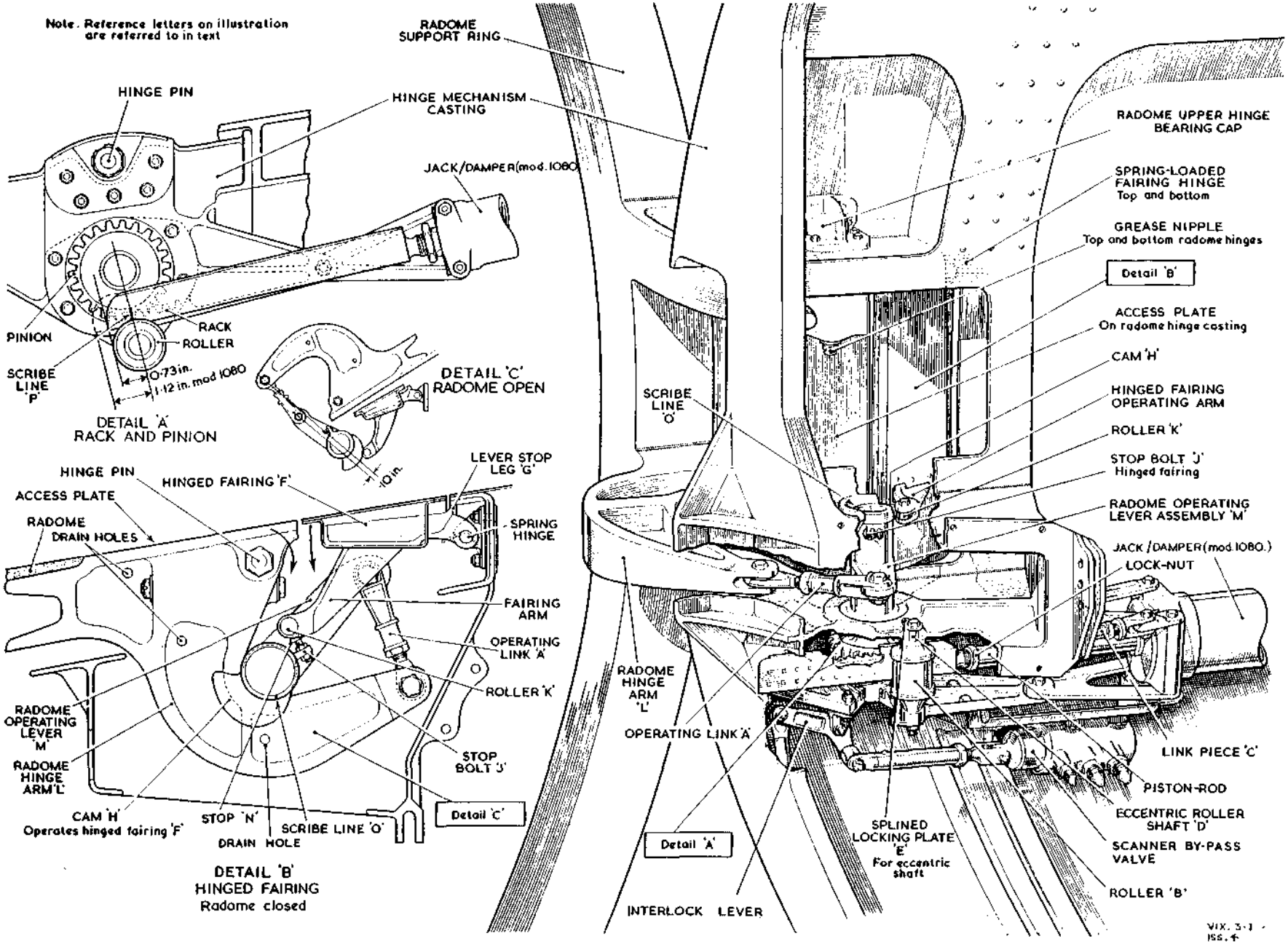
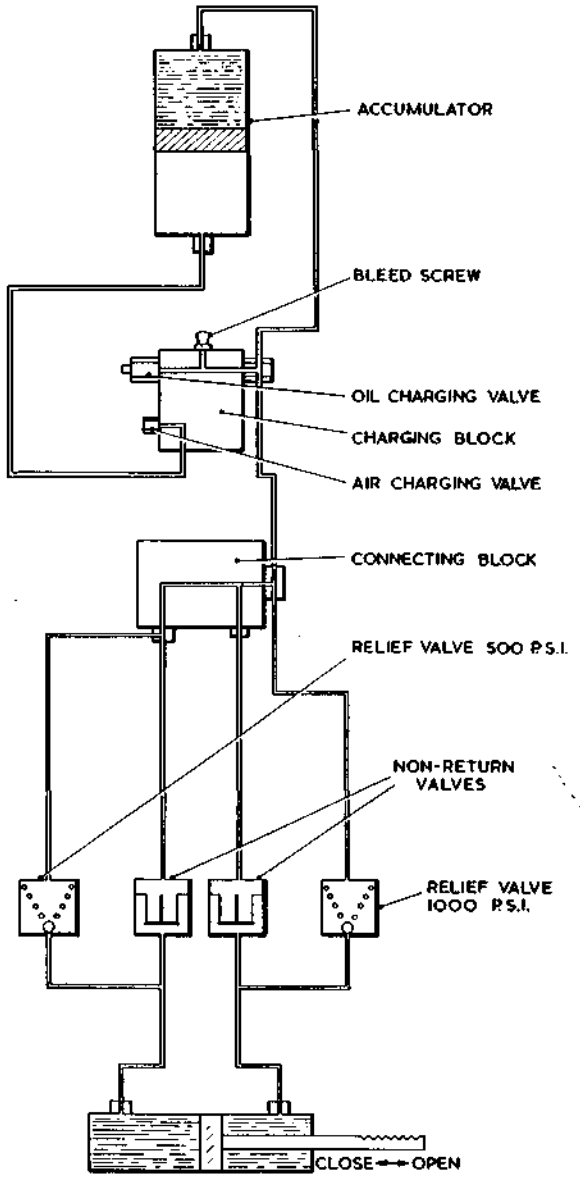
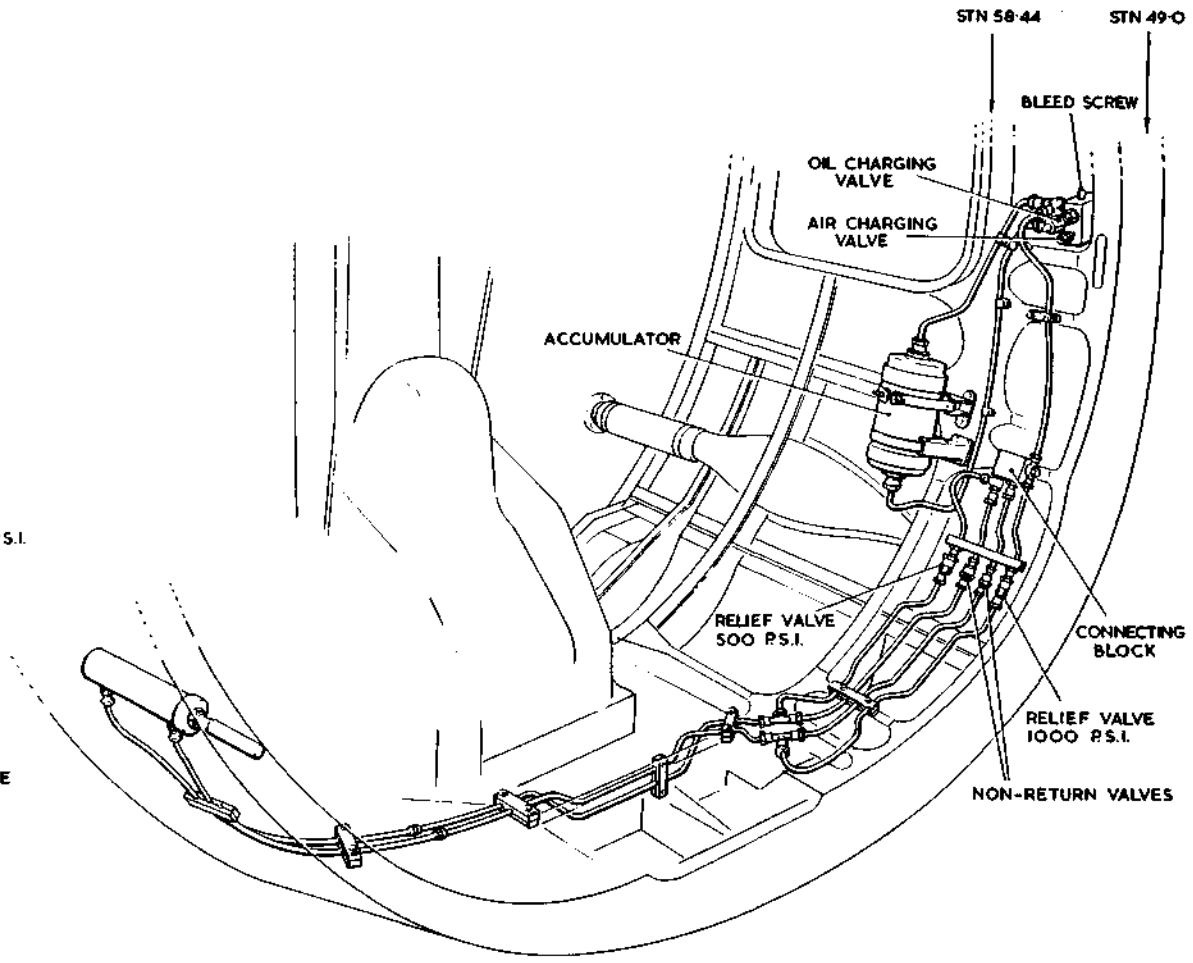


Fig. 3. Radome hinge mechanism

◀Annotation amended▶



DIAGRAMMATIC CIRCUIT



VIEW ON FRAME 49·0, PORT SIDE
(For clarity the scanner hydraulics are omitted)

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Fig. 4 Radome damper system

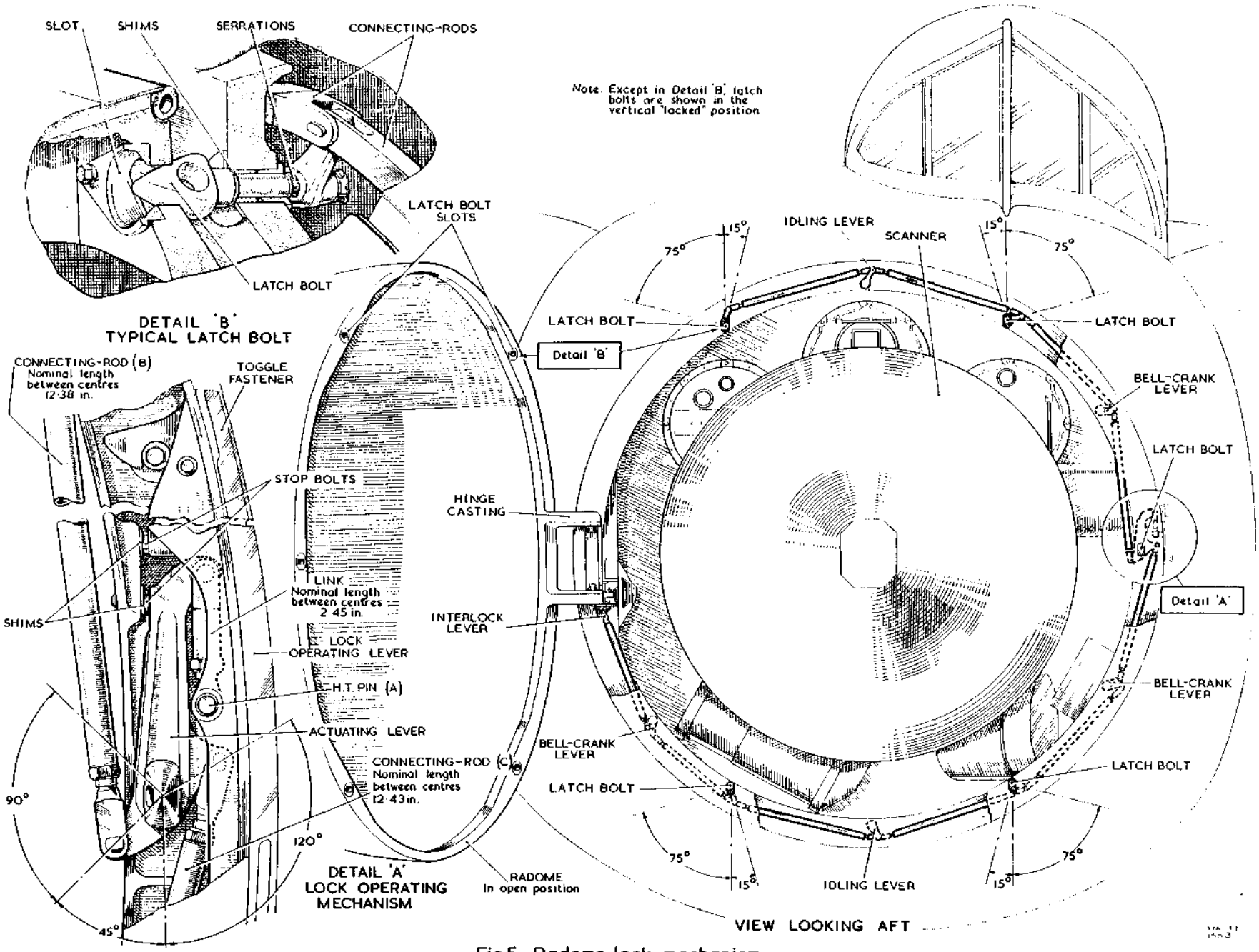
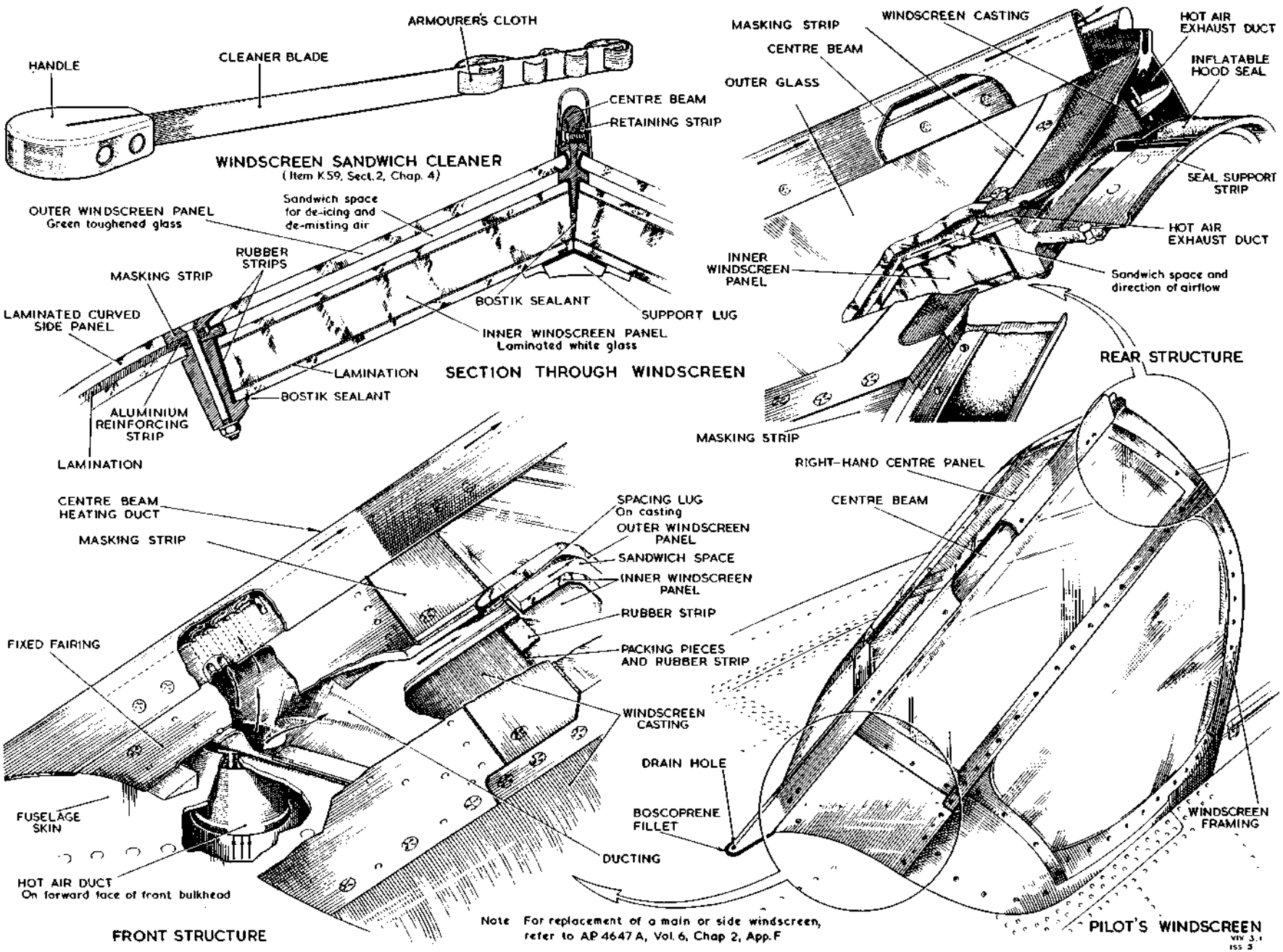


Fig.5 Radome lock mechanism



Note For replacement of a main or side windscreen, refer to AP 4647 A, Vol. 6, Chap 2, App. F

Fig.6 Windscreen structure (post mod.528)

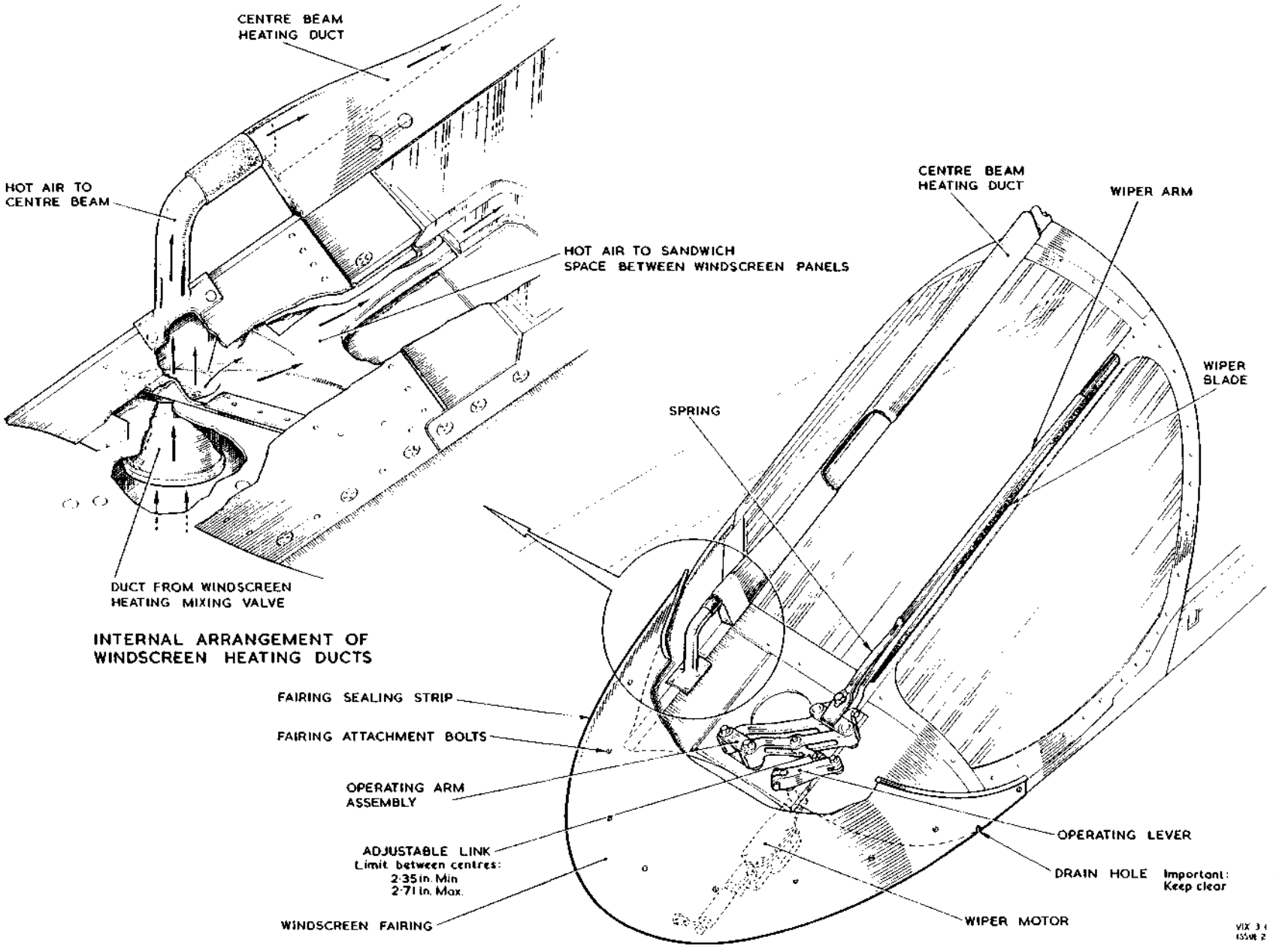


Fig.7 Windscreen wiper and heating ducts (post mod 346)

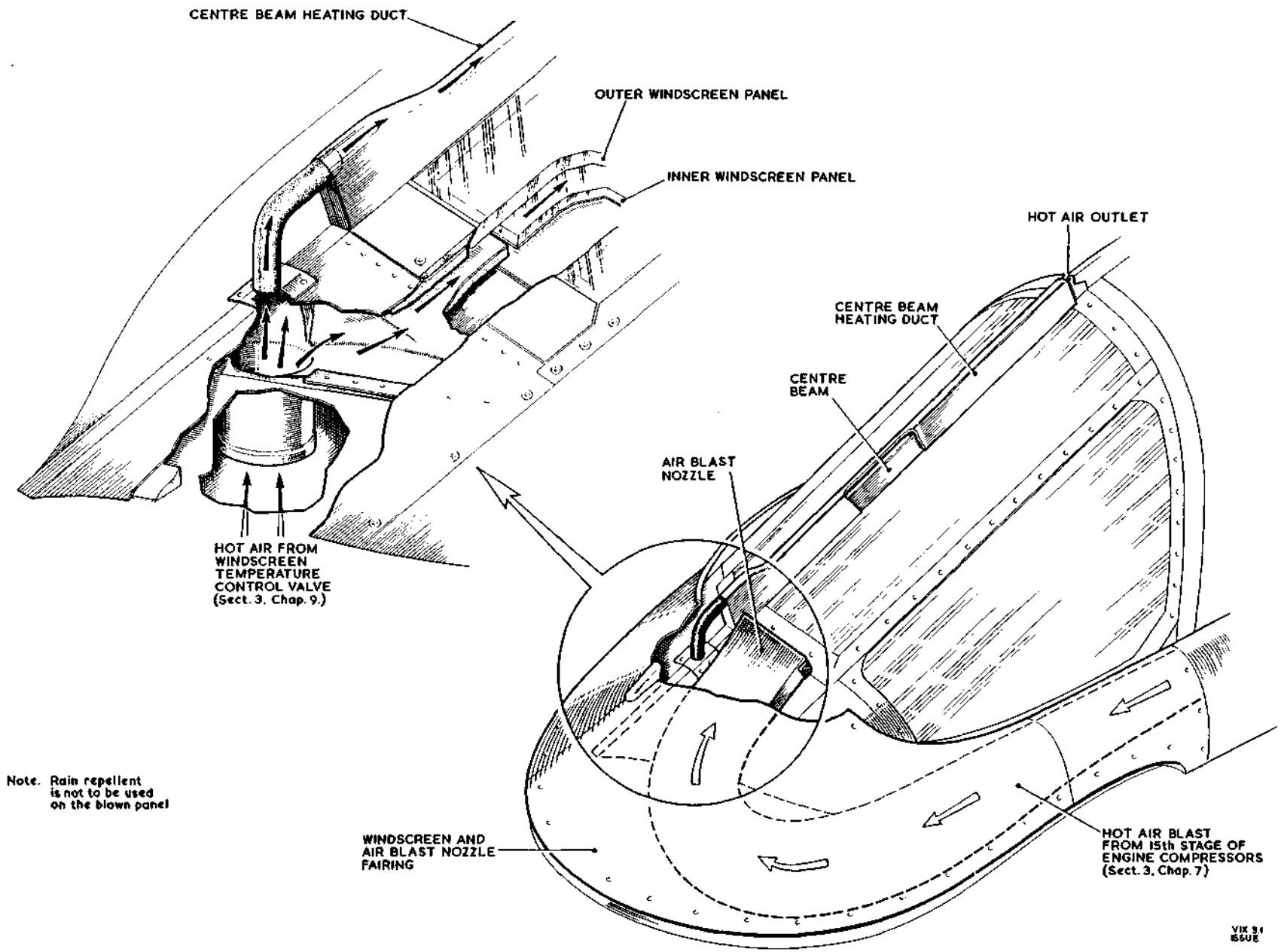


Fig.8 Windscreen rain-shedding and heating ducts (post mod. 913)

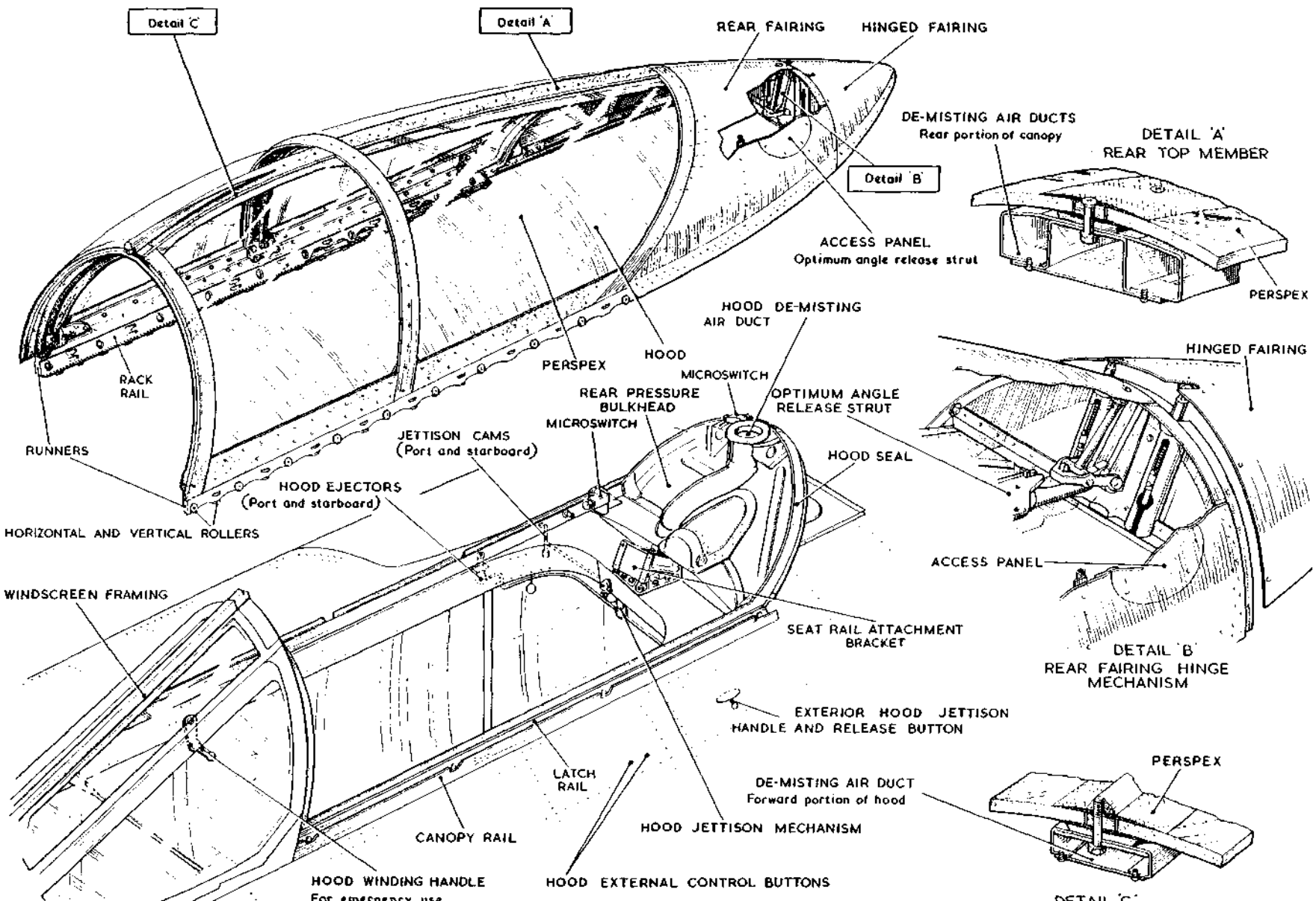


Fig. 9 Canopy sliding hood

◀ Mirror deleted; microswitches added ▶

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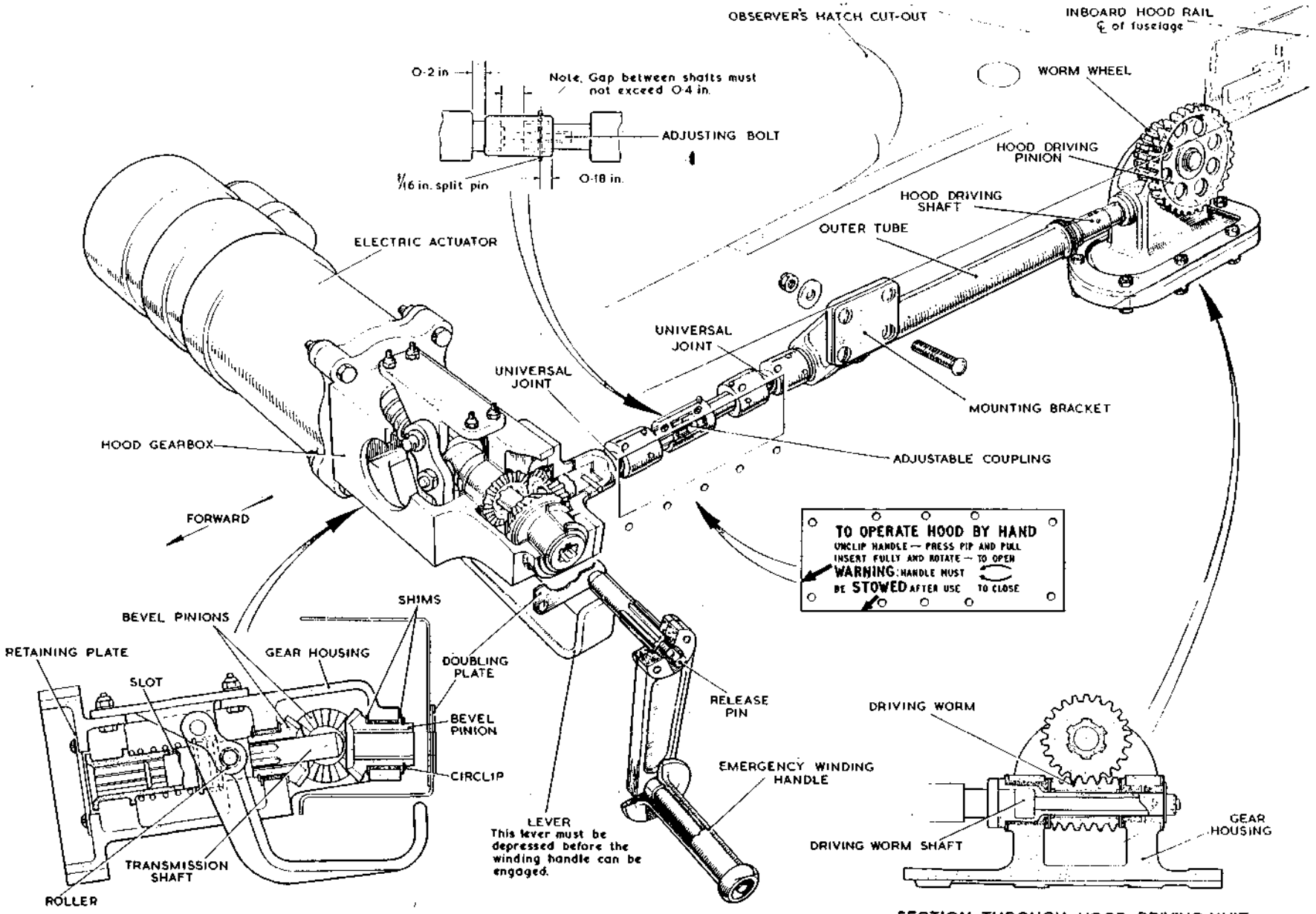

Fig. 10. Hood winding gear mechanism ▶◀

◀Access hole and cover plate—Mod. 1330▶

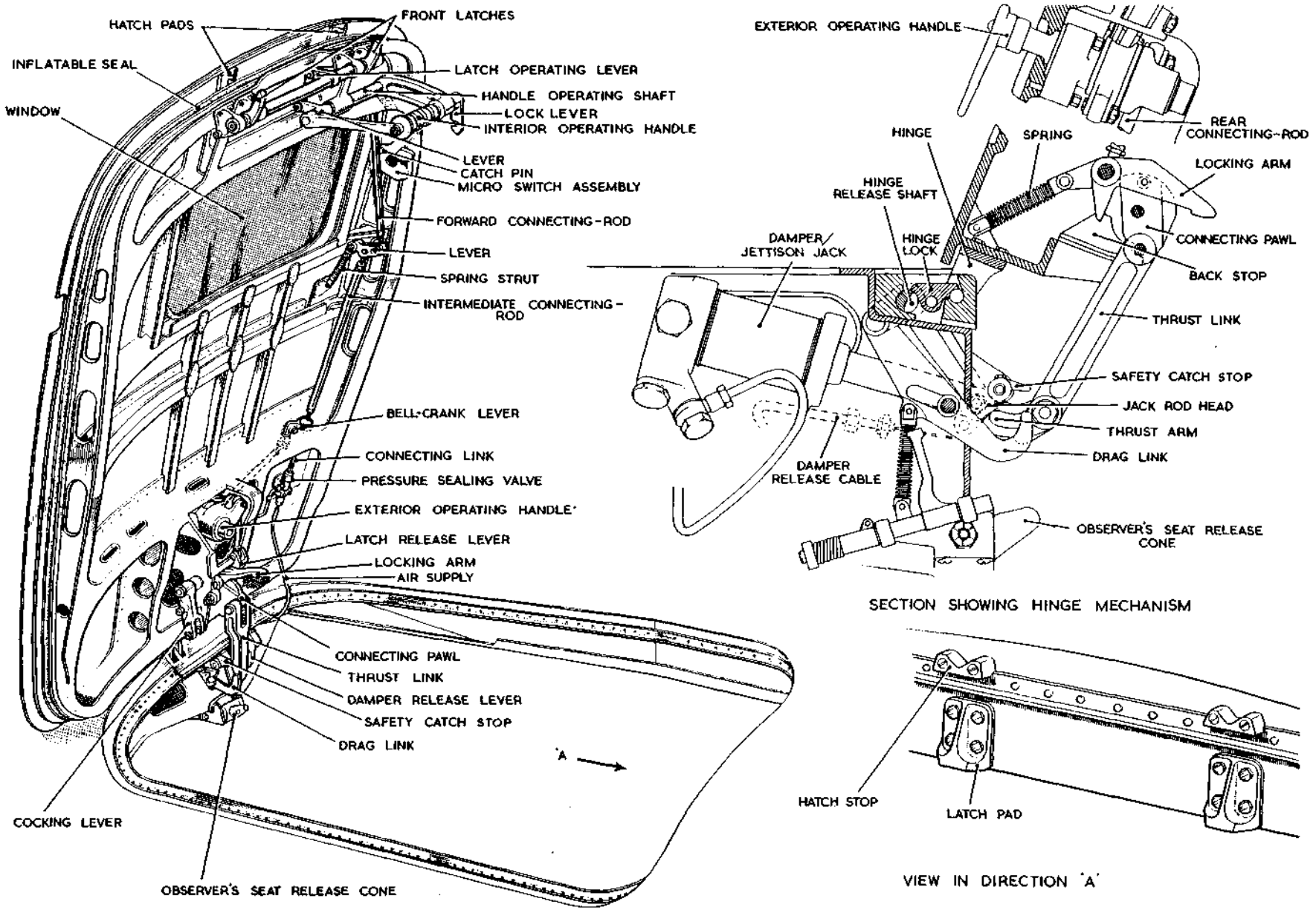

Fig. 11. Observer's hatch

◀Safety claw deleted—Mod. 1550▶

enables the handle to be inserted without having to compress the transmission shaft spring. The handle is turned in the natural sense to open or close the hood, and is removed by first depressing the release pin in the boss to disengage the shaft.

Hinged rear fairing (Fig. 9, detail B)

21. The fairing at the aft end of the sliding hood is hinged at its forward end to give access to components in the centre section. The fairing is retained by four fasteners and when these are released it must first be raised vertically before being hinged forward; the vertical rise is necessary to avoid damage to the leading edge lip of the fairing on the aft end of the hood. To allow the fairing to be raised, its hinges are attached to rods which slide in slots in the casting which forms part of the optimum angle release strut rear pivot bearing on the canopy pressure bulkhead; the rods are connected by a bridge piece to ensure that they rise together.

Observer's hatch (Fig. 11)

22. The observer's hatch is a metal frame structure hinged at the aft end and locked by two latches at the front, and incorporates a window of single thickness, ½ in. Perspex, in the forward portion, painted black on the inside. When the hatch is closed, an inflatable rubber strip around the hatch seals it to the cabin structure; the seal is automatically inflated or deflated by a sealing valve when the locks are operated. A damper/jettison jack restricts the rate of descent and a jettison air bottle, in conjunction with the damper/jettison jack, provides the motive power for jettisoning the hatch in an emergency; manual jettison is also available. The damper/jettison jack is connected to the hatch by a thrust link, and the jettison mechanism frees the front latches and lifts the hatch via this link. The jettison sequence is described in Sect. 3, Chap. 11.

WARNING . . .

The hatch must always be opened and closed with care, and must be supported whilst being closed.

Interior handle

23. The hatch may be opened from either inside or outside the cabin. The handle for interior use is on the port side of the hatch at the forward end, and is secured in the locked position by a lock lever which must be operated before the handle can be moved; the handle is pulled downward to disengage the latches. A microswitch ◀actuated▶ by the lock lever energizes an indicator to warn the observer if the hatch is not properly locked. The adjustment of the microswitch is given in Sect. 5, Chap. 1.

24. Connecting rods run between the latches at the front of the hatch and between both the exterior operating handle and the jettison mechanism, which lie at the aft end of the hatch within the cabin structure. Between the forward and intermediate connecting rods is a lever connected to a small spring. This lever and spring absorb the difference in linear motion of the two rods when the latches are being operated by either the interior or exterior handles, or by the jettison mechanism respectively.

Note . . .

Under adverse conditions, the lock lever can pass in front of the lever lug stop on the forward connecting rod and give a hatch unlocked indication. Release from this position can be made by moving the forward connecting rod fully forward. Check that the bracket is not distorted by checking the gap with the roller halfway down the face of the guide, and the handle turned to its full extent in the unlocked direction. Maximum gap permitted is 0·030 *in.*

Exterior handle (Fig. 13)

25. The handle for unlocking the hatch from the outside normally lies flush with the hatch skin, but springs out to the operating position when the release plunger button is pressed. To open the hatch, the handle is turned anti-clockwise; the initial movement of the handle lifts the lock lever from the interior handle, and further movement unlocks the latches. The hatch can then be lifted to the open position using the hand hole provided in the starboard edge (mod. 1223). To close the hatch, the hatch release lever on panel N in the observer's cockpit is operated and the hatch is lowered. To lock the hatch, the exterior handle is turned clockwise to the CLOSE mark, and is then turned back and pressed in the handle stowage.◀ When the observer's cockpit is unmanned, check from the pilot's cockpit that the hatch interior handle is in the fully locked position and that the lock lever is engaged.▶

Up position lock

26. The damper jack piston is extended when the hatch is up. In this position a damper strut lock engages over a pin in the yoke head of the damper piston-rod and holds the hatch open, the lock is released by pulling the cable operated damper release lever (Fig. 12).▶◀

Observer's side window (pre mod. 1085)

27. The observer's observation window is situated on the cabin starboard side just forward of the ejection seat. It is constructed of inner and outer panels of Perspex, set in rubber spacing and sealing strips (Fig. 14). A Schrader valve (less core) is fitted in the inner panel, and a Perspex silica gel desiccator is attached to this to dry the air in the window space and prevent condensation (Fig. 16); the silica gel crystals must be renewed periodically as instructed in para. 44.

Observer's side window

(post mod. 1085 and 1151)

28. Mod. 1085 introduces an inward opening side window to allow the internal and external pressures to equalize if the fuselage is submerged, and thus facilitates underwater escape. Mod. 1151 restricts the opening of the window to 6·5 in. at the rear edge to give the observer a safe ejection path, and also introduces a blackout for the window (Fig. 15).

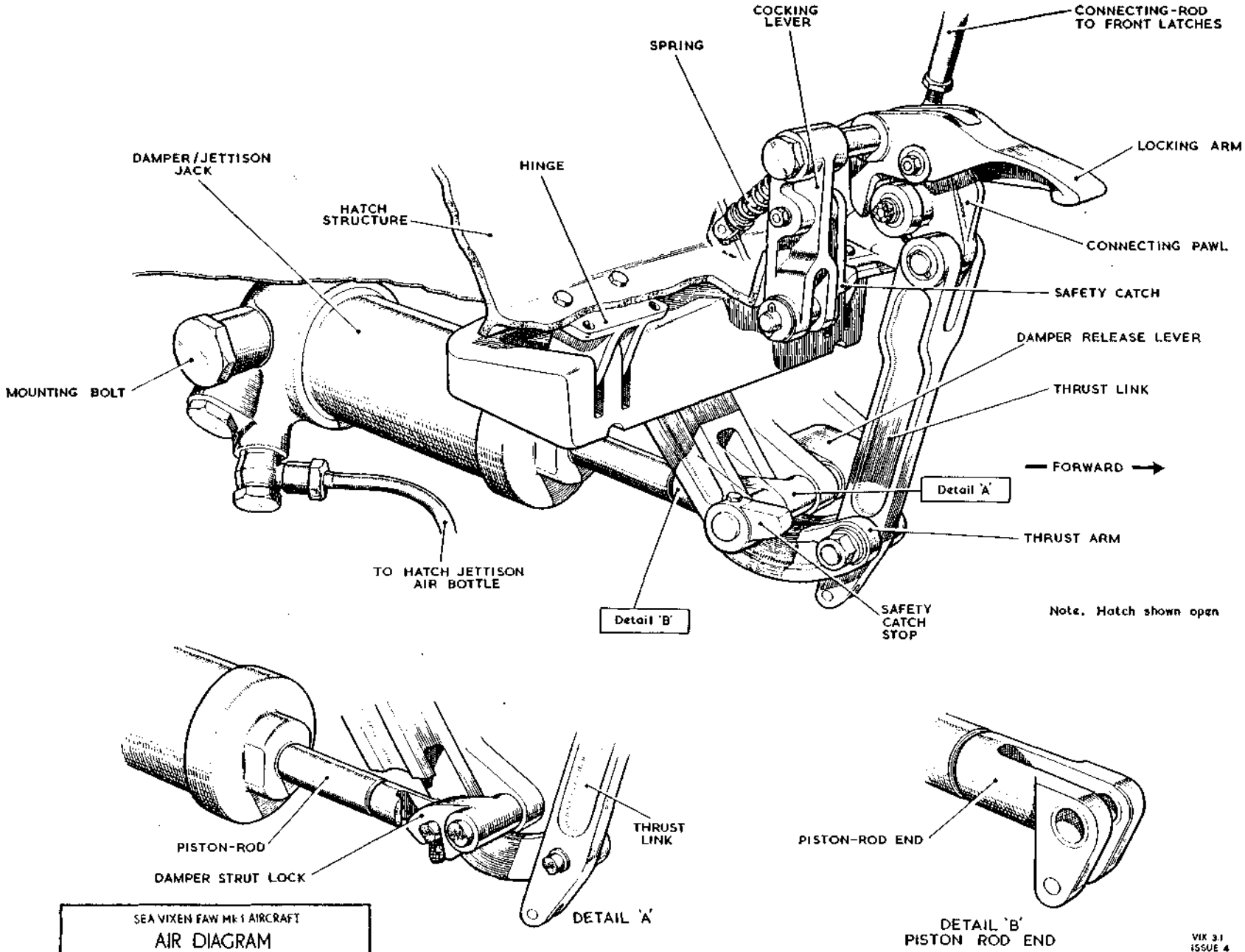

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Fig. 12. Observer's hatch hinge mechanism
◀Mod. 1485 and 1550▶

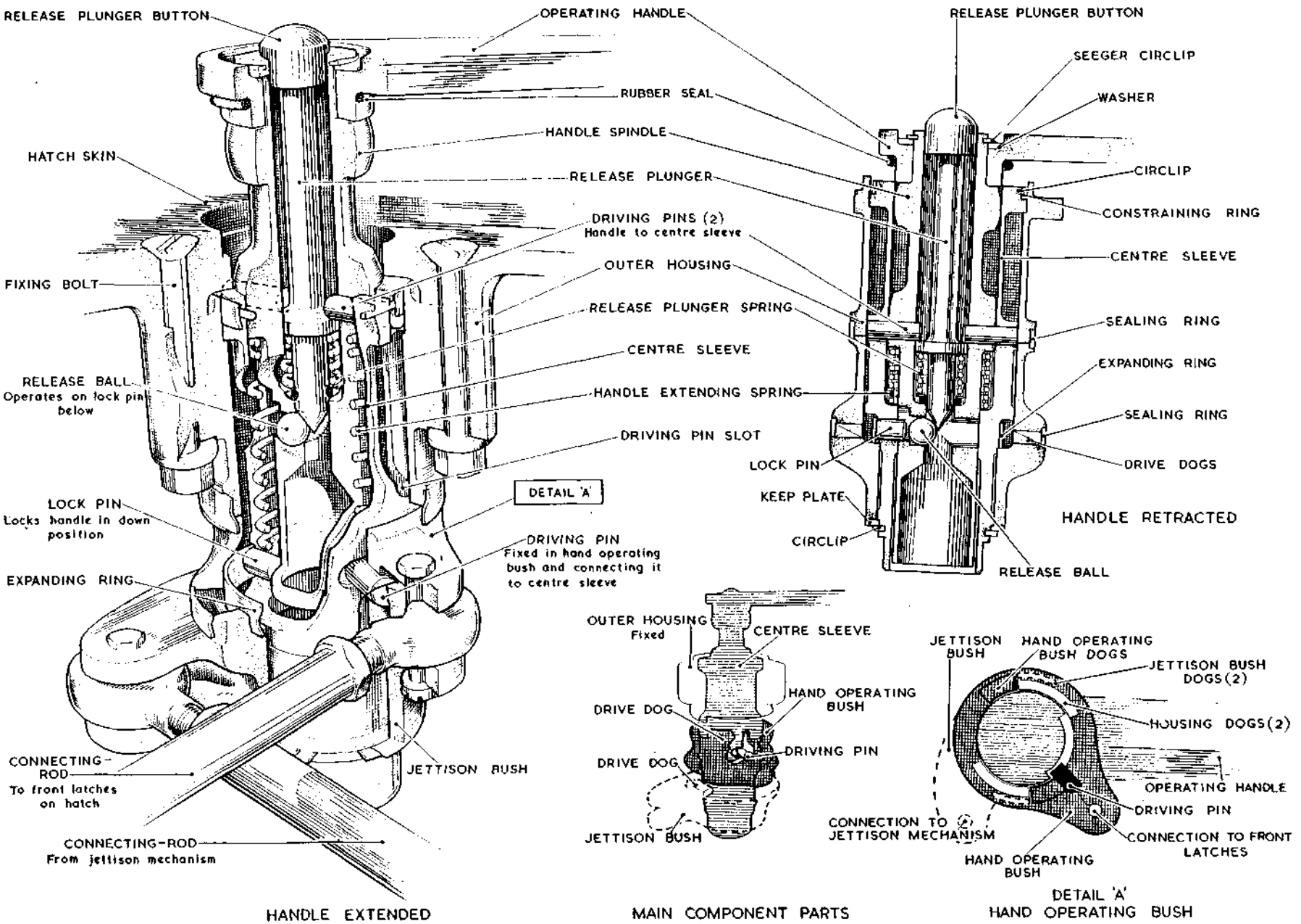

Fig. 13. Observer's hatch external operating handle

29. The side window is divided into a forward fixed portion, occupying approximately one quarter of the window aperture, and an aft portion which can move inward 6·5 in. at the rear edge. The movement is restricted by links fitted to the top and bottom of the window frame. The hinged window is retained in the closed position by two spring-loaded roller catches and a window lock, which bear on catch pads on the window frame. The window lock is operated by a lever which is held in the locked or unlocked position by a spring-loaded plunger knob. Both windows have an air gap between the inner and outer Perspex panels. The air gap is kept free of moisture by a desiccator containing silica gel crystals. The desiccator is clipped to the window frame, or to the window blind plate, when Mod.1151 is embodied.

30. The window black-out comprises a window blind plate over the aft portion of the hinged window, a roller blind which covers the forward portion, and angle plates at the top and bottom edges. The fixed window is painted black on the inside except for a small rectangle in the centre of the panel, through which the position of the master armament switch indicator can be seen.

31. When the window is unlocked by pulling the knob and moving the lever down, the window will remain closed until a differential pressure of 1·75 p.s.i. overcomes the spring loading on the catch rollers, and allows the window to move inward. The lever should normally be in the unlocked position during take-off and landing when the risk of submersion exists. When the aircraft is safely airborne, the lever is returned to the locked position to prevent the possibility of the window opening as a result of a possible cabin depression should the canopy or hatch be jettisoned.

PILOT'S AND OBSERVER'S SEATS

32. Fully automatic ejection seats are fitted for the pilot and observer. The pilot's seat is ◀a Type 4D1 (pre mod. 439), Type 4DS1 or 4DSA1 (mod. 439), or Type 4DSA1 Mk. 2 (mod. 1333).▶ The observer's seat is similar but /2 in each instance. The main differences between the seats are that the Type 4DSA seat has a ◀personal equipment connector (P.E.C.), and the▶ Mk. 2 has a guillotine firing unit and self-contained emergency oxygen system. ▶◀ The seats and seat servicing are described in A.P.4288 (Naval), Vol. 1, Part 1, Sect. 11, and Part 2, Sect. 4. The interconnecting mechanisms between the seats and their respective hood and hatch mechanisms are described in Sect. 3, Chap. 11.

SERVICING

GENERAL

Treatment of metal surfaces

33. The processes for the protective treatment of external and internal metal surfaces are described in A.P. 2656A, Vol. 1.

Treatment of magnesium castings

34. To prevent deterioration of the radome ring and frame 49 magnesium castings, treat corroded areas as follows:—

(1) Wash thoroughly with clean fresh water and allow to dry.

(2) Remove all traces of corrosion until clean metal is revealed.

(3) Scurf these areas; remove the minimum amount of material and smooth edges to $\frac{1}{16}$ in. radius.

(4) Treat with selenious acid in accordance with A.P.2656A, Vol. 1.

(5) Reprotect by applying chromate primer (Ref. No. 33B/9429197).

(6) When any bolts or screws are removed from the castings, refit them using liberal quantities of chromated jointing compound (Ref. No. 33H/113). Excess compound should be left round the heads of bolts and nuts to form a protective fillet. When components are refitted, the mating surfaces of dissimilar metals must also be coated with the compound on reassembly.

Note . . .

Mod. 1134 *introduces zinc shims between the magnesium castings and steel bolt heads and nuts.*

(7) Repaint all reprimed areas with two coats matt black lacquer (Ref. No. 33B/2202014) and accelerator (Ref. No. 33B/2202013). If these materials are not available, use three coats of epoxy resin finish to DTD. 5555 (Paint (Ref. No. 33B/220) and accelerator (Ref. No. 33B/2102)).

(8) Fill all crevices and pockets of frame 49 with PR1422 (Ref. No. 33H/131) or PR1422 BT (Ref. No. 33H/132).

(9) Brush on two coats of compound, PX-3 (Ref. No. 34B/9100482) on all exposed surfaces of the radome ring and frame 49.

(10) Lubricate all moving parts and bearing surfaces as shown in fig. 22.

(11) Fill all pockets in the lower portion of the radome ring with grease, XG-295.

WARNING . . .

It is very important to observe the precautions given in the Lethal Warning card of this volume relating to the use of paint remover in the vicinity of Reduxed joints. Special precautions may also be specified in the vicinity of titanium alloys, and reference must be made to the requisite manual for these.

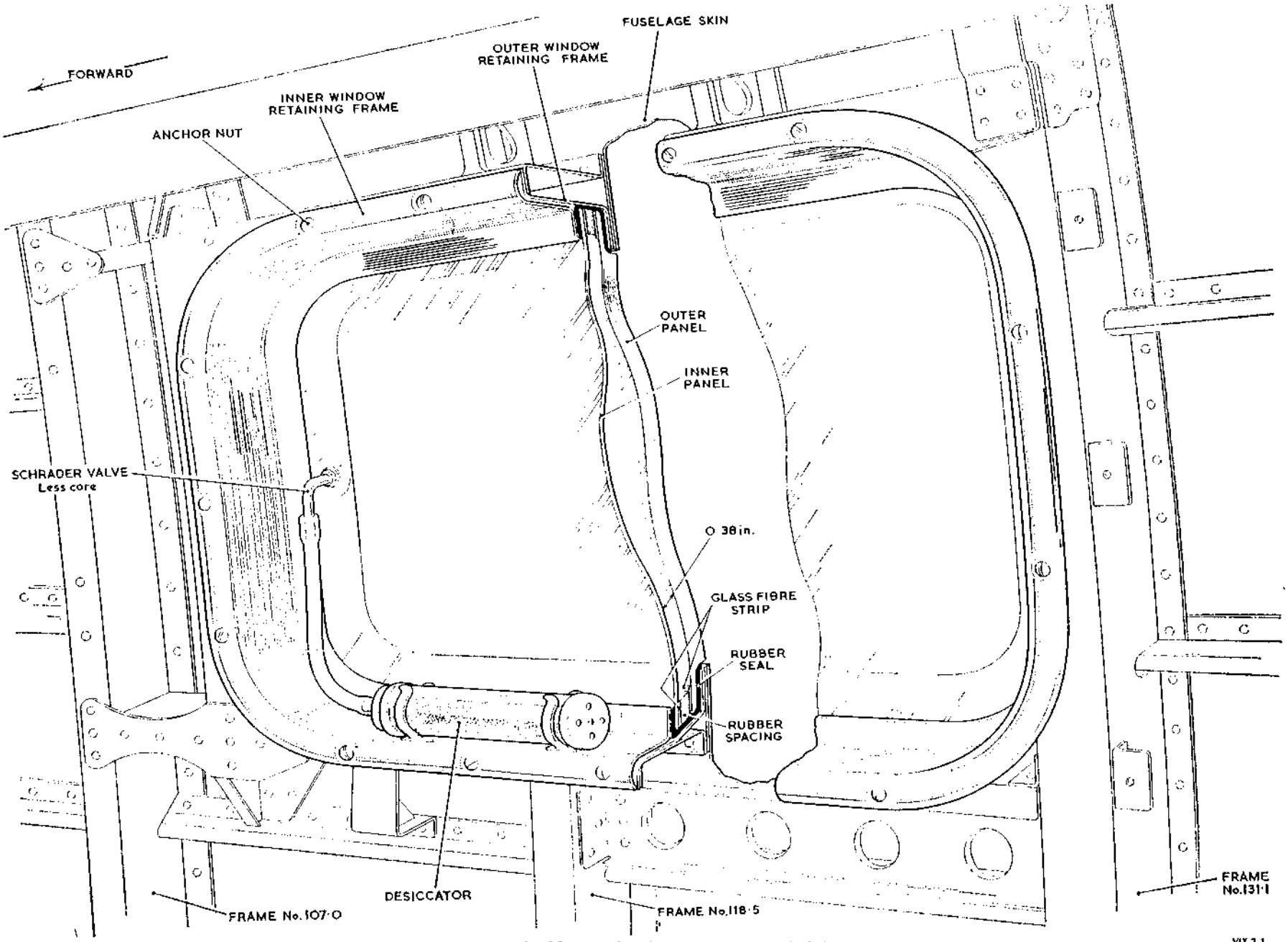

Fig. 14. Observer's window (pre-mod. 1085)

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ISSUE 4

Windscreen cleaning

35. A special tool (Item K59, Sect. 2, Chap. 4) is provided to clean the internal surfaces of the sandwich windscreen.

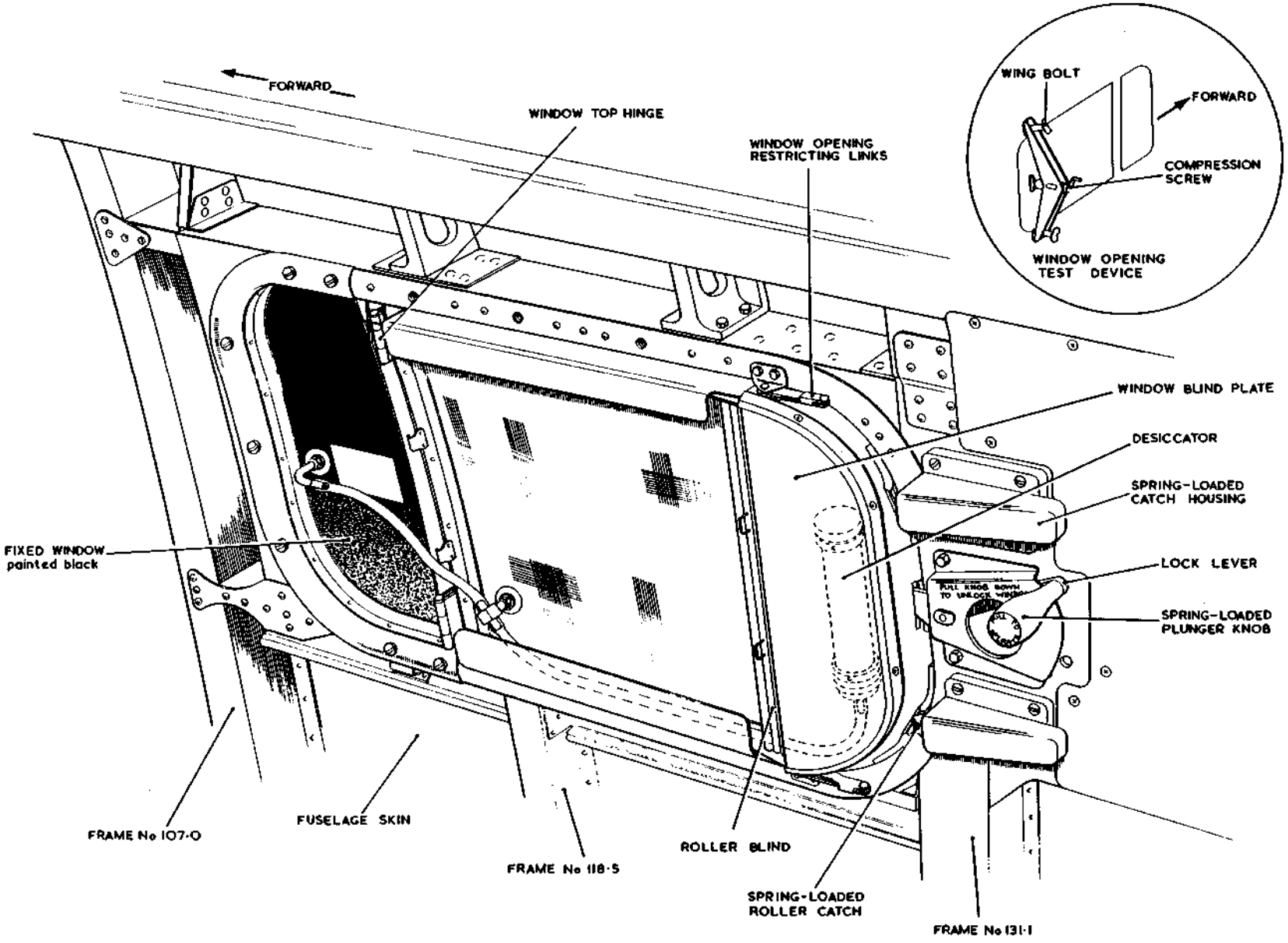
Cabin sealing

36. The Bostik sealing process is applied during manufacture to all possible sources of air leakage in the pressurized compartment. The process is described in A.P.1464B, Vol. 1.

Access panels

37. When refitting panels that are secured by bolts, ensure that the correct length bolt is fitted. The plain length of the correct bolt is stencilled on the panel or on the adjacent structure.

F.S./12



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VIX 2-1
ISSUE 2

Fig. 15 Observer's window (post mod. 1085 and 1151)

RESTRICTED

RADOME

Hinge mechanism adjustments (Fig. 3)

38. The radome hinge mechanism must be adjusted as follows :-

(1) Disconnect the operating link 'A' between the radome hinge arm 'L' and the operating lever assembly 'M' (detail B). The stop bolt 'J' must be temporarily removed before operating the jack.

(2) Slacken the nut and the screw holding the splined locking plate 'E' at the top of the eccentric roller shaft 'D', and rotate the shaft so that the roller is adjusted away from the rack and pinion; this will give clearance for adjusting the rack.

(3) Check that the scribed lines 'O' and 'P' coincide, (details A and B).

(4) With the jack closed on to its internal stop, adjust the rack to the clearance given on detail 'A' from the end of the rack to the scribed pinion tooth.

(5) Adjust the link piece 'C' between the jack and the hinge casting to give a full engagement between the rack and pinion teeth, but without imparting a side load on the rack; then lock the link with the locknuts, and wire-lock.

(6) Rotate the eccentric roller shaft 'D' until gap between roller 'B' and rack is -0.000 +0.015 in. Check the rack and pinion for easy operation without side play

(7) Set the operating link 'A' to the nominal length of 3.5 in. and reconnect the link 'A' between the radome hinge arm 'L' and the operating lever 'M' (detail B), and open the radome fully by hand until the operating link 'A' and the hinge arm 'L' are on dead centre. Readjust the jack to its internal stop in this extended position, and lock with the tab washer. Disconnect the operating link 'A' and extend the length by three turns (detail C); this procedure will slightly increase the nose angle and ensure that the link will not break on the wrong side of dead centre when the radome is operated by hand.

(8) On post mod. 1080 aircraft only:-

(a) With the rack and pinion in the fully closed position, adjust the eccentric roller shaft away from the rack and remove the two damper attachment bolts.

(b) Disengage the rack, turn the pinion back one tooth, and re-engage the rack to give 1.12 in. from the marked tooth to the end of the rack (detail A).

(c) Fit the damper attachment bolts, and adjust the eccentric roller shaft 'D' as described in sub-para. (6).

(9) Fit the splined locking plate 'E', and punch to lock the countersunk screw.

(10) Connect the operating link 'A', and fit and adjust the stop bolt 'J' (para. 39).

Note...

All moving parts must be assembled with grease, XG-295.

Hinged fairing adjustments

(Fig. 3, detail B)

39. Adjust the hinged fairing as follows :-

(1) With the hinged fairing against the stop 'G', and the operating lever 'M' in the fully closed position, adjust the stop bolt 'J' until it just touches the roller 'K'. The correct adjustment of the stop bolt is found by trial and error, opening and closing the radome, and adjusting the stop bolt a quarter of a turn at a time.

(2) Lock the stop bolt with the two locknuts, leaving the flats of the stop bolt horizontal.

Lock mechanism adjustments (Fig. 5)

40. To ensure that the radome ring is locked with an even pressure at each latch bolt, the radome lock mechanism is manufactured to close tolerance dimensions and these must be maintained during service. The locking mechanism must be adjusted as follows :-

(1) Disconnect the lock operating lever at the H.T. pin 'A' and adjust the connecting rods 'B' and 'C' to their nominal lengths so that the actuating lever is against its stop with the latch bolts in a vertical position (detail A).

(2) Reconnect the lock operating lever. Adjust the link between the actuating and lock operating levers to its nominal length, so that the lock operating lever closes against its stop without strain. This adjustment must be made with care turning the eye-bolt of the link a half turn at a time; no undue force must be exerted on the lock operating lever as considerable leverage exists and the lever can easily be distorted or broken. The stops may be shimmed if necessary.

(3) Apply 'engineers blue' to the engaging faces of the latch bolts, and close and lock the radome. Then open the radome and examine the latch bolt faces; these should show an even engagement over the face of each latch bolt. Where a latch is too tight, additional shims will be required under the shoulder of the latch (detail B); if rotation without an adequate mating on the latch bolt faces is indicated, remove shims as required. Each latch bolt may be shimmed to a maximum thickness of 0.04 in. to remove end play, but free movement and correct engagement of the latch bolts must be ensured. The nuts on the latch bolt stems must be tightened only sufficiently to give free rotation without any end play. The idling levers and bell-cranks must also operate freely and no end play must exist.

Priming the radome damper system

41. Prime the radome damper system as follows :-

(1) Attach a bleed hose to the bleed screw on the charging block located on the port side of the nose bay.

(2) Place the end of the bleed hose in a container, open the bleed screw and operate the radome to exhaust the accumulator.

(3) With the radome fully open, check that the accumulator pressure is 100 p.s.i.

(4) Attach a hand pump rig to the oil charging connection on the charging block, and pump oil, OM-15 into the system, whilst opening and closing the radome until oil, free from air, emerges from the bleed screw.

(5) Tighten and wire-lock the bleed screw.

(6) Pump oil into the system until the accumulator air pressure is 130 p.s.i.

(7) Remove the pump connection and fit the blanking cap to the charging valve.

SLIDING HOOD MECHANISM

Gearbox adjustment (Fig. 10)

42. The three bevel pinions within the gearbox must be shimmed as necessary to ensure good meshing of the teeth with free rotation and a minimum of backlash (a nominal shim thickness of 0.030 in. has been allowed for on each side of the pinions). The transmission shaft in the gearbox must be a free sliding fit on the splines and engage freely with the actuator drive when the manual winding handle is removed. The free length of the spring should be 1.30 in. The actuator and its associated electrical circuit together with the setting of the fore and aft travel microswitches are described in Sect. 5, Chap. 1.

Adjustable coupling adjustment (Fig. 10)

43. Adjust the sliding hood drive adjustable coupling as follows :-

(1) Turn the adjusting bolt to eliminate all fore and aft movement, but do not induce any fore and aft pressure.

(2) Check that the distance between the ends of the shafts does not exceed 0.4 in.

(3) Check that the distance from the aft face of the forward Mollart joint and the forward face of the

coupling does not exceed 0.2 in.

OBSERVER'S WINDOW

Desiccator (Fig.16)

44. The silica gel crystals in the desiccator must be renewed, when they change from BLUE to PINK. The saturated crystals can be emptied from the container when the rubber end cap and filter screen are removed. The container must be cleaned and dried, and filled with new silica gel crystals (Ref.No.33C/790). If the container is removed from the aircraft, the pipeline to the window must be blanked off. Periodically check the cotton wool in the container for serviceability.

Inward opening test device

45. A test device is provided (Item G40, Sect.2, Chap.4) to check that the observer's window (post mod.1085) opens inward when 1.75 p.s.i. is applied to the outside of the window. This pressure is equivalent to 100 lb. applied to the point where the test device is fitted. The test device is calibrated so that when the compression screw has loaded the spring to 100 lb. the red lines on the calibration strip and the datum pin are in line. Two white lines, one on each side of the red line on the calibration strip, mark the permissible tolerance of $\pm$0.125 p.s.i.

46. The calibration can be checked as follows :-

(1) Mount the device vertically, and fit a 0.5 in. bar in place of the compression screw.

(2) Place a 100 lb. weight on the bar, and check that the red lines are in alignment.

(3) Check that red datum pin line aligns with the white lines when 92 lb. 14 oz. and 107 lb. 2 oz. are placed on the bar.

Inward opening test

47. Test the loading of the observer's window spring catches as follows :-

(1) Turn the compression screw of the test device to unload the spring completely.

(2) Fit the test device to the outside of the fuselage by screwing the wing-bolts into the tapped blocks above and below the window (Fig.15).

(3) Check that the window lock handle is in the UNLOCKED position.

(4) Turn the compression screw in until the window opens; the red

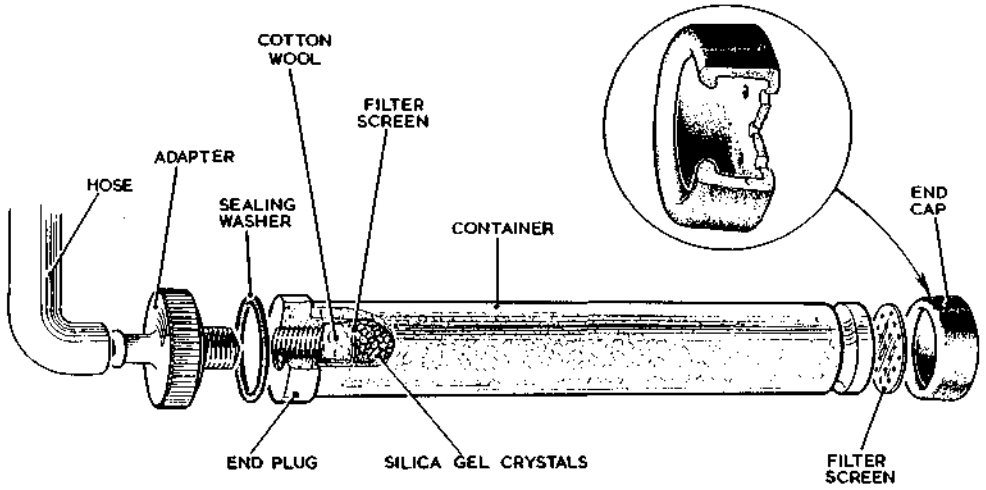

Fig. 16 Observer's window desiccator.

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datum pin line must be between the two white limit-lines.

(5) If the window fails to open at the correct loading, check the spring-loaded catches for freedom to depress and the rollers for freedom to rotate. Clean and lubricate as necessary, and repeat the test.

(6) If retensioning of the catches becomes necessary, the tensioning screws and lock rivets or splitpins will have to be removed and new items fitted.

Note . . .

1. *A few aircraft are fitted with springs 0·2 in. longer than standard. If difficulty is met in meeting the test requirement, these springs may be shortened to a free length of 2·11 in.*

2. *If the window seat breaks down it can be remade using Boscoprene 2100 (Ref.No.33H/50) as described in A.P.1464B, Vol. 1, Pt. 2. Oil, OM-15 must be used a release agent to prevent the hinged window sticking to the seal whilst the Boscoprene is setting.*

WINDSCREEN

Wiper adjustment (Fig.7)

48. Adjust the windscreen wiper as follows:—

(1) Remove the windscreen fairing.

(2) Set the adjustable link at mid-adjustment (2·53 in. between centres), and the motor to PARK.

(3) Fit the operating lever on to the spindle, choosing the serration which will place the blade nearest to the parked position, i.e. on the port retaining strip, with a minimum of 0·1 in. between the blade and the inner edge of the strip.

(4) Adjust the position of the blade, as necessary, by altering the adjustable link within the limits of 2·35 in. and 2·71 in.

(5) Check that the end of the motor spindle is not more that 0·1 in. below the top face of the operating lever, and that a minimum clearance of 0·05 in. exists between the lever and the base plate.

(6) Tighten and lock the clamping bolt.

(7) Apply a spring balance load to the wiper arm, where the arm is attached to blade, just sufficient to lift the blade.

(8) Adjust the nut securing the wiper arm spring until the load is 8 lb. ± 0·5 lb.

(9) Refit the windscreen fairing.

CAUTION . . .

1. Do not operate the windscreen wiper over a dry windscreen.

2. The windscreen wiper must only be operated slowly, when testing on the ground, to prevent hammering against the centre ducting.

Panel delamination

49. Delamination can occur in storage, during fitting, and through contact with solvents. The panels must be handled with extreme care, and stored away from paint and solvents. Only soap and/or water must be used for cleaning. The use of cellulose thinners and trichlorethylene on structures surrounding the panels is to be avoided; the vapour from these solvents is sufficient to encourage delamination. The in-service limits of delamination, subject to the pilot's acceptance, are for the centre panels—any delamination, and for the side panels—up to but not exceeding 1·0 in. from any edge.

PERSPEX PANEL CRAZING

50. Crazing is acceptable if it is in the form of fine hair-lines which are neither extensive nor closely concentrated, and they should be free from cracks of a perceptible depth. It should be possible to polish out the crazing without seriously affecting the optical properties of the panel. The maximum depth to which polishing is permissible is 0·03 in. within 2 in. of the edges of the panel, and 0·05 in. over the remainder of the panel. After polishing, the surface should be scratch free. High speed buffing, which will cause local heating and consequent crazing, must not be used. When doubt exists as to the serviceability of a panel, the matter should be referred to an Engineer Officer, or a senior rating with the appropriate qualifications.

REMOVAL AND INSTALLATION

RADOME

Removal

51. Remove the radome as follows:—

(1) With the radome fully open, disconnect the hinge arm 'L' at the operating link 'A' (Fig. 3, detail B).

(2) Remove the two small fairing plates on the starboard fuselage side, each retained by two 2 BA countersunk screws, that give access to the top and bottom hinge pins.

(3) Remove the split pin, nut and washer from each hinge pin.

(4) Support the radome so that all weight is taken off the hinge pins; slide the pins out.

(5) Remove the radome, taking care to retain the spacing washers and to refit them on their respective hinge pins.

Installation

52. Installation is the reverse of removal, but note the following points:—

(1) Fit the spacing washers in their original positions to ensure correct alignment of the radome.

(2) Tighten the hinge pin nuts finger-tight.

(3) Lock the countersunk screws

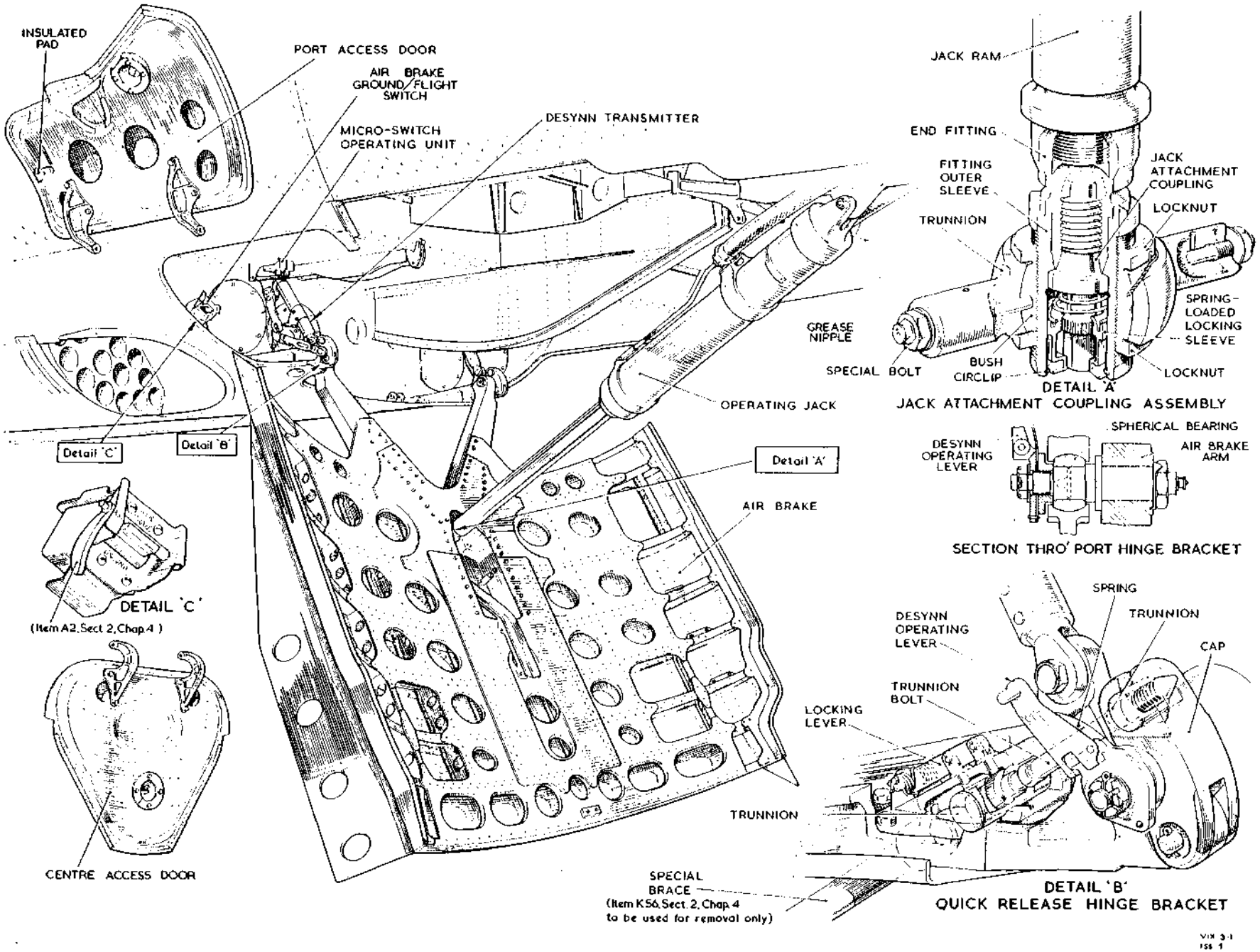

Fig. 17. Air brake

◀Special brace restriction▶

securing the hinge fairings by punching metal into the slot. Renew the fairing when locking has been done four times previously.

(4) Check the adjustments described para. 38.

Latch bolts installation

53. If the radome latch bolts have to be removed, care must be taken on installation that the latch bolts are refitted on the splines in a vertical position (para. 40 (1)). The top and bottom latch bolts are interchangeable, but it is advisable to mark each latch bolt when dismantling so that it is refitted on the same spline from which it was taken and in the same angular position.

AIR BRAKE

Removal

54. Remove the air brake as follows:—

(1) With the air brake retracted, open the hinged access fairing on the air brake centre-line to expose the operating jack attachment coupling assembly (Fig. 17, detail A).

(2) Place a $\frac{7}{16}$ in. B.S.F. box spanner over the hexagonal head of the jack attachment coupling, press in the spring-loaded locking sleeve and unscrew approximately seven turns to release the air brake from the jack ram.

(3) With the air brake lowered and suitably supported at the front end, unscrew the trunnion bolts of the two quick-release hinges using special brace (Item K56, Sect. 2, Chap 4), disengage the Desynn operating lever, and remove the air brake; retract and lash up the operating jack.

Installation

◀**55.** Installation of the original air brake is the reverse of removal, but note the following points:—

(1) Torque load the trunnion bolts to 12·5 lb. ft. using an A1 Acratork spanner (Item K123, Sect. 2, Chap. 4) and a suitable adapter.

Note . . .

Special brace (Item K56, Sect. 2, Chap. 4) must NOT be used for tightening.

(2) Check that when the jack attachment coupling has been tightened and spanner removed, the face of the locking sleeve lies flush with the face of the hexagon head.

(3) Check the clearances given in Fig. 18 to ensure that the setting of the air brake has not been altered.▶

56. Fit a new air brake as follows:—

(1) Attach the air brake at the two hinge points.

(2) Check the alignment of the air brake and fuselage centre lines, and adjust the eccentric starboard hinge as necessary. The hinge pin gives a maximum adjustment of 0·07 in., which alters the rear edge of the air brake laterally by 0·15 in. The normal position of the hinge pin head is with the centre flat placed horizontal.

(3) Close the air brake on to the rear stop, and shim the stop pad as necessary to align the air brake and fuselage profiles.

(4) Adjust the length of the jack ram by loosening both locknuts and turning the outer sleeve, as required, so that when the jack piston has bottomed in the closed position the air brake stops are touching. Tighten the locknuts, and wire-lock when the adjustment is completed.

(5) Check the into-wind and out-of wind tolerances given in Fig. 18.

(6) Shorten the jack ram by 0·10 in. to ensure that the air brake is stressed in the closed position.

(7) Check the clearances given in Fig. 18.

(8) Fit the jack attachment access fairing. If the Dzus fastener does not align, it is permissible to increase the diameter of the hinge pin hole to $\frac{19}{64}$ in.

SLIDING HOOD (Fig. 9)

Removal

57. Before removing the hood, Sect. 3, Chap. 11 should be consulted in conjunction with the following instructions:—

(1) Check that the Before Servicing precautions have been made in the pilot's cockpit.

(2) Open the hood approximately 6 in.

(3) Pull the exterior jettison handle on the port fuselage side.

(4) Disconnect the optimum angle release strut.

(5) Lift the hood clear of the fuselage, complete with the latch rails, and hold the hood so that the latch rails do not drop away from the hood; care should be taken to avoid fouling the fore and aft travel microswitches during this operation. The hood should be marked to ensure that it is refitted to the same aircraft.

Note . . .

1. *Great care must be taken that the hood is safely handled, as this component is easily damaged.*
2. *Do not apply any downward load on the jettison control arm.*

Installation

58. Before refitting the hood, Sect. 3, Chap. 11 should be consulted in conjunction with the following instructions:—

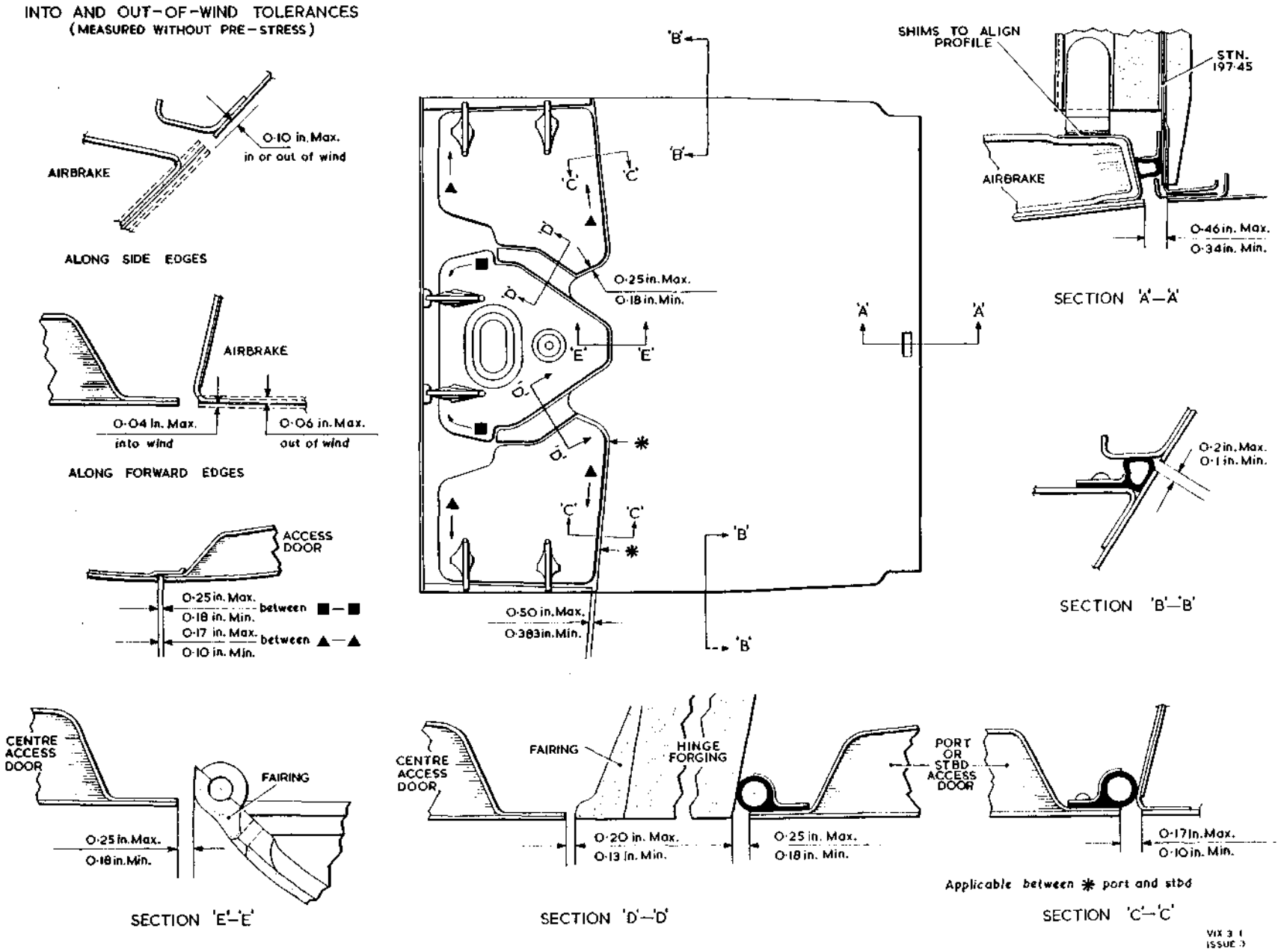

Fig. 18. Air brake and access door clearances

◀Fibreglass deleted—Mod. 1238▶

(1) Check that the jettison mechanism is set in the jettisoned position, with the jettison cams within the fixed canopy rails pointing aft.

(2) Place the latch rails in position along the runners of the hood to engage the vertical rollers.

(3) Place the hood complete with the latch rails into the fixed canopy rails on the fuselage, and ensure that:—

(a) The latch rails engage over the jettison cams correctly.

(b) The four studs on each latch rail are at the aft end of the canopy rail slots.

(c) The studs on the latch rails bed into the base of the slots in the canopy rails.

(4) Reset the jettison mechanism as detailed in Sect. 3, Chap. 11, checking that the studs on the latch rails are then at the forward end of the canopy rail slots and still bedding on the base of the slots, indicating that the tongues of the latch and canopy rails are properly interlocked.

(5) Reconnect the optimum angle release strut.

◀**59.** When a new sliding hood is fitted it may be necessary to add a permanent packing to the forward end of the starboard hood rail; determine the thickness of packing and fit as follows:—

(1) Manually operate the hood to produce a gap of 0·05 in. to 0·12 in. between the beak at the top centre of the hood and the windscreen.

(2) Insert a 20 s.w.g. (0·036 in.) gauge between the forward stop on the starboard hood rail and forward end of hood runner, and measure the gap to determine the gauge of packing required.

(3) Make up the packing 0·78 in. × 0·45 in. in the gauge determined, using alum. alloy, Spec. B.S. L72 (Ref. No. 30B/-).

(4) Secure packing to forward end of hood rail with two evenly spaced self-tapping screws (Ref. No. 28S/8544), using a 2·55 mm drill and countersinking packing to suit.▶

OBSERVER'S HATCH (Fig. 11 and 12)

Removal

60. Before removing or refitting the observer's hatch, Sect. 3, Chap. 11 should be consulted in conjunction with the following instructions:—

(1) Raise the hatch to its fully open position using the hand hole.

(2) Check that the Before Servicing precautions have been made in the observer's cockpit.

(3) Disconnect the seat guide rail at the top and pull to its fully forward position.

(4) Disconnect the hatch seal flexible hose at its connection to the supply pipe.

(5) Remove the microswitch electrical plug and lead clear of the hatch.

(6) Support the hatch, release the safety catch at the side of the cocking lever, and pull the cocking lever fully forward.

(7) Rotate the connecting pawl by the latch release lever; this will unlock the thrust link.

(8) Pull the drag link forward; this will rotate the hinge release shaft and unlock the hinges.

(9) The hatch will now be free to lift away.

61. Installation is the reverse of removal, ensuring that the hinges are locked by pushing the drag link fully aft until the forward end of drag link slot butts against the stop bolt.

◀**Note . . .**

Pre and post mod. 1183 *hatches are not interchangeable unless the packing plate and shims on the hatch locking arm are changed to suit the appropriate modification state. Information about the relevant packing plates and shims is given in the modification leaflets for mod.* 936 *and* 1183. *Similarly, pre and post mod.* 1550 *hatches are not directly interchangeable; the correct locking arm for the aircraft modification state must be fitted.*▶

External handle

62. When refitting the hatch external handle, ensure that the handle is fitted on the square shaft so that the locking and unlocking movement is towards the rear of the hatch, and that the arc of movement is approximately 90 deg. on each side of the hatch centre line. A transfer on the hatch shows the OPEN and CLOSE positions. After assembly, using the external handle, close and lock the hatch, and press the handle into its recess. Then check that the hatch can be opened using the internal handle.

FUSELAGE

Removal

63. The fuselage should be jacked up (Sect. 2, Chap. 4, Fig. 3), until it is longitudinally and laterally level; the nose wheel must be retracted. Before dismantling the fuselage from the centre section, the following disconnections must be made, and components removed; refer to Sect. 3, Chap. 2, Fig. 2, and Fig. 20 and 21 of this chapter.

(1) Unscrew and remove the top and bottom air intake detachable panels.

(2) Unscrew and remove the air intake boundary layer bleed outlets.

(3) Open the hinged access door of the nose portion of each boundary layer bleed, and remove two bolts from the floating nuts on the fuselage wall, and

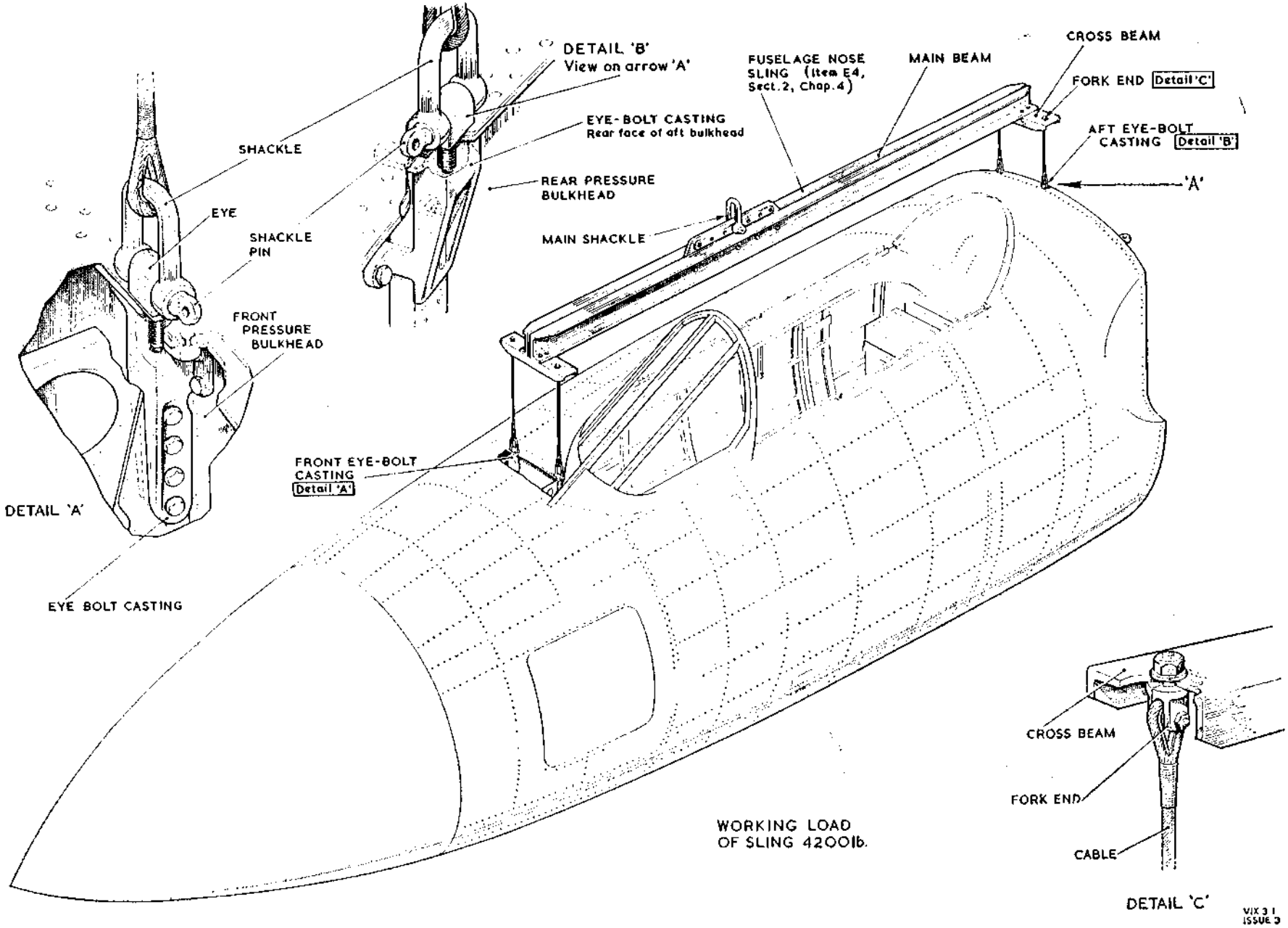

Fig. 19. Fuselage slinging

pull the boundary layer bleed forward to disengage the four spigots at the joint.

(4) Remove the two bolts securing the main boundary layer bleed to the upper and lower fuselage attachment brackets. Remove the two attachment lugs from the leading edge of the boundary layer bleed by unscrewing three bolts from each lug.

(5) Remove the access panel from the main boundary layer bleed. Remove two bolts from the support brackets securing the leading edge members inside, and then remove the support brackets by unscrewing the bolts securing them to the fuselage wall; care must be taken to retain their respective shims.

(6) Remove the ground pressure connection from within the port side access panel of the main boundary layer bleed by unscrewing five bolts from the fuselage wall.

(7) Remove two screws securing the centre section capping strip to the fuselage rear bulkhead.

(8) Render the aircraft electrically safe, and remove the electrical deck panels, port and starboard (Sect. 2, Chap. 4, Fig. 6).

(9) Disconnect all electrical and radar services between the fuselage and centre section in accordance with the wiring diagrams given in Sect. 5 and 6.

(10) Remove the air brake as described in para. 54.

(11) Release all hydraulic pressure as detailed in Sect. 3, Chap. 6 and disconnect all service pipelines (blanking caps must be fitted to all exposed pipelines), flying and auxiliary controls between the fuselage and centre section as detailed in the Key to Fig. 20 and 21.

Slinging (Fig. 19)

64. The fuselage (from the radome to the rear pressure bulkhead) may be slung complete with the nose undercarriage and radar equipment, but the sliding hood should be removed. The fuselage sling (Item E4, Sect. 2, Chap. 4), is used, in conjunction with four eye-bolts which must be attached and screwed into sockets on the top of the front and rear pressure bulkheads. Alternative positions for the main shackle are provided on the longitudinal spreader beam of the sling to allow for variations in the C.G. position for different fuselage weights. The weight of the fuselage as normally slung is estimated to be approximately 4088 lb., but the exact weight will depend on the equipment in the fuselage at the time of slinging.

Disconnecting and trestling

65. With a suitable crane and the fuselage sling attached (para.64), proceed as follows:—

(1) Take the weight of the fuselage on the sling, the main wing jacks still taking a share of the aircraft weight.

Note . . .

Do not allow the tail boom trestles to take any appreciable weight; they are in position merely as a safety measure at this stage.

(2) Lower and remove the nose jack.

(3) Push the fuselage trolley into position immediately so that the frames lie under the correct sections of the nose fuselage.

(4) Disconnect the joints between the fuselage and the centre section (fig. 20) and 21); these will be relieved of all weight if the sling is taking the correct load.

(5) The weight of the fuselage should now be carefully transferred from the sling to the trolley by raising the adjustable formers on the trolley by use of the hand wheels, by lowering the sling gently until the cables go slack, or by a combination of both.

WARNING . . .

The rear former of a trolley may be fitted with spigots; these must engage correctly with their mating holes in the beam at Stn. No. 131.

(6) Disconnect and remove the sling.

(7) Push the fuselage clear of the centre section.

Installation

66. With the aircraft (less the nose fuselage) trestled as shown in Sect. 2, Chap. 4, adjust the jacks so that the fuselage horizontal datum is 72·21 in. above the ground line, and ensure that the aircraft is longitudinally and laterally level. Proceed as follows:—

(1) Carefully ease the fuselage into position on the trolley; raise or lower the adjustable formers on the trolley by use of the hand wheels until the attachment joints on the nose fuselage align with the joints on the centre section. Secure the top and bottom joints with special bolts, which must be a slide fit and not more than 0·005 in. undersize. The bolts securing the link pieces to the top fuselage fittings must be inserted with the nut uppermost. Care must be taken during this operation to insert the rubber seal on the front spar into the channel without damage to either component.

Note . . .

Check that there is a minimum clearance of 0·1 *in. between the air intake casting and the fuselage skin and also that the gap between the fuselage and shear panel skin is* 0·05 *in. min. to* 0·110 *in. max.*

(2) With a suitable crane and the nose fuselage sling attached, connect the four hoisting points on the fuselage (para. 63).

(3) Transfer the weight of the nose of the aircraft carefully from the trolley to

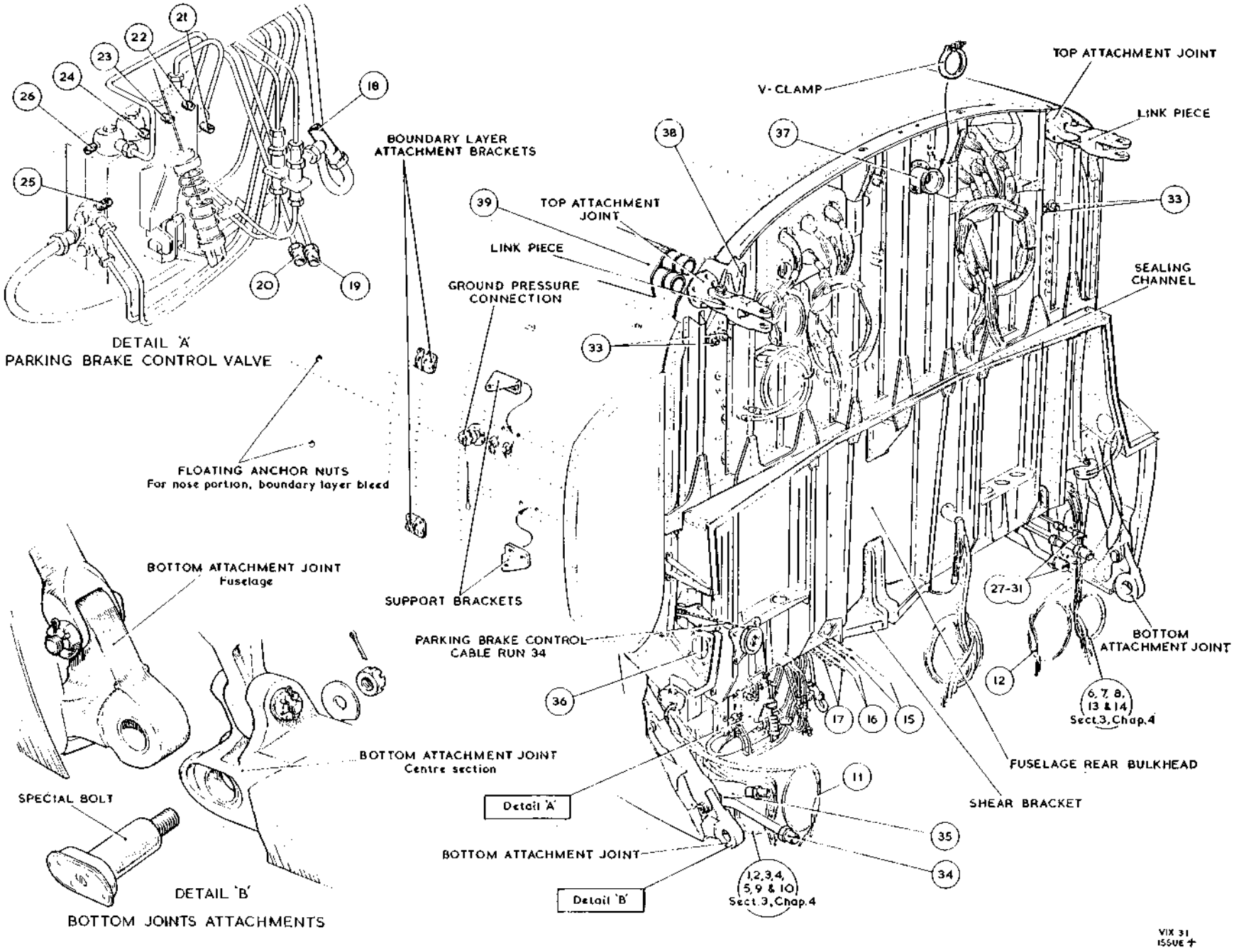

Fig. 20. Fuselage to centre section joints (1)

◀Numbers amended—Mod. 365 cancelled▶

KEY TO FIG. 20 AND 21 FUSELAGE TO CENTRE SECTION—Breakpoints for controls and services (1)

KEY No.	CONTROLS	DETAILS OF CONNECTION AND LOCATION
	Auxiliary Controls:—	
1	Crossfeed (cable runs 1 and 2)	Disconnect at turnbuckles and tension rods between pulleys on aft side of semi-bulkhead at Stn. No. 197·4 (*Sect.* 4, *Chap.* 2).
2	L.P. fuel cocks (cable runs 3 to 6)	
3	Air shut-off valve (cable runs 7 and 8)	Disconnect at turnbuckles and tension rod between pulleys at Stn. No. 211·65 and 228·75 under main spar.
4	Air temperature (cable runs 9 and 10)	Cable run 9, disconnect at tension rod between pulleys at Stn. No. 211·65 and 228·18 under main spar. Cable run 10, disconnect at tension rod between Stn. No. 176 and 194·4 under wing, port side.
5	Port throttle (cable runs 13 and 14)	Cable run 13, disconnect at tension rod between pulleys at Stn. No. 213·15 and 216·41 under wing, port side. Cable run 14, disconnect at tension rod just aft of pulley at Stn. No. 216·41.
6	Starboard throttle (cable runs 15 and 16)	Disconnect at turnbuckles on either side of pulleys at Stn. No. 228·8 in starboard side of rib. No. 0.
7	Main undercarriage (cable runs 17 and 18)	Disconnect at tension rods between Stn. No. 197·4 and pulleys at Stn. No. 232·33 under wing, starboard side.
8	Flaps (cable runs 19 and 20)	Disconnect at turnbuckles between pulleys at Stn. 226·64 under wing, starboard side and pulleys at Stn. No. 224·7 under rib No. 0.
9	Emergency air brake (cable run 21)	Disconnect at turnbuckle between Stn. No. 197·4 and pulley at Stn. No. 213·15 under wing, port side.
10	Arrester hook (cable runs 23 and 24)	Disconnect at turnbuckles between pulleys at Stn. No. 213·15 under wing, port side, and pulleys at Stn. No. 231·55 on rib No. 0, port side.
11	Wing lock (port) (cable runs 25 and 26)	Disconnect at turnbuckles and tension rods on the forward faces of the front spars, port and starboard, adjacent to rib. No. 3.
12	Wing lock (starboard) (cable runs 27 and 28)	
13	Wingfold (cable runs 29 and 30)	Disconnect at turnbuckles just aft of Stn. No. 197·4 under wing, starboard side.
14	Emergency hydraulic pump (cable run 31)	Disconnect at tension rod between Stn. No. 176 and 197·4 under wing, starboard side.
	Flying Controls:—	
15	Tail plane and port rudder (3 cables)	Release wing nuts of hinged pulley at Stn. No. 227·04 to allow bracket to hinge forward, thereby releasing the tension of these cables, and remove H.T. pins to disconnect cable joints between hinged pulley and semi-bulkhead at Stn. No. 197·4.

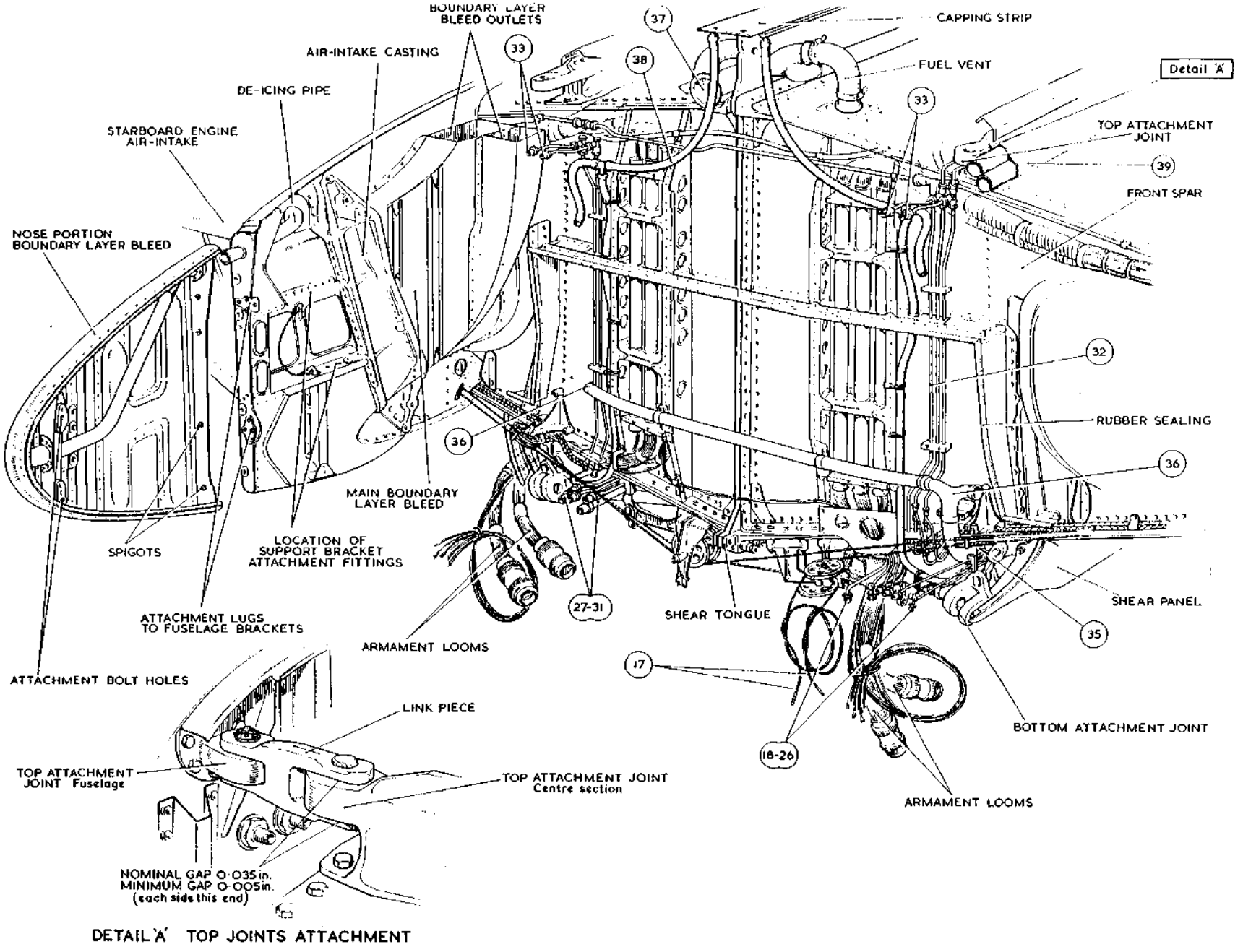

Fig. 21. Fuselage to centre section joints (2)

◀Numbers amended—Mod. 365 cancelled▶

KEY TO FIG. 20 AND 21 FUSELAGE TO CENTRE SECTION—Breakpoints for controls and services (2)

KEY No.	CONTROLS	DETAILS OF CONNECTION AND LOCATION
16	Starboard rudder cable	Disconnect turnbuckle at rear of semi-bulkhead at Stn. No. 197·4.
17	Aileron cable	Disconnect at turnbuckles between pressure seals at Stn. No. 148 and pulleys on the front spar.
	Services *Hydraulic pipes:—*	
18	Rocket installation return	Disconnect aft union of T-piece at Stn. No. 176.
19 20	Blue pressure Yellow pressure	Disconnect union joints between Stn. No. 176 and 180.
21 22 23 24 25 26	Emergency supply pressure Starboard normal pressure Starboard emergency pressure Port emergency pressure Normal supply pressure Port normal pressure	Disconnect at respective unions on brake control valve aft of Stn. No. 176, port side.
27 28 29 30 31	Scanner pressure Scanner return Nose wheel U/C up Nose wheel U/C down Nose wheel U/C emergency down	Disconnect at respective unions aft of Stn. No. 176, starboard side, from pipes running below cockpit floor.
	Miscellaneous pipes:—	
32	Pneumatic	Disconnect union at pressure maintaining valve aft of front spar and remove pipe adjacent cleat.
33	A.S.I. (4 unions)	Disconnect unions from two pairs of adapters, port and starboard, at top of rear bulkhead, Stn. No. 176.
34 35	Anti-g air supply Windscreen heater	Disconnect at unions between Stn. No. 176 and 197·4 under wing, port side. Remove port and starboard pipe clamps between lower rear bulkhead and front spar.
36	Firestreak heater	Remove access panels below lower lips of air intakes (*Sect.* 2, *Chap.* 4, *fig.* 7, *Item* 260 and 329). Remove pipe clamps and cleats inside to withdraw pipe sections passing through rear bulkhead sealing channel.
37	Cabin heater	Remove pipe clamp between upper rear bulkhead and front spar.
	▶◀	
38	Water drain hoses	Disconnect hose clips, port and starboard, and remove outboard branch hoses from hoppers.
39	Air blast rain shedding pipes	Remove aft section of piping (*Sect.* 3, *Chap.* 7).

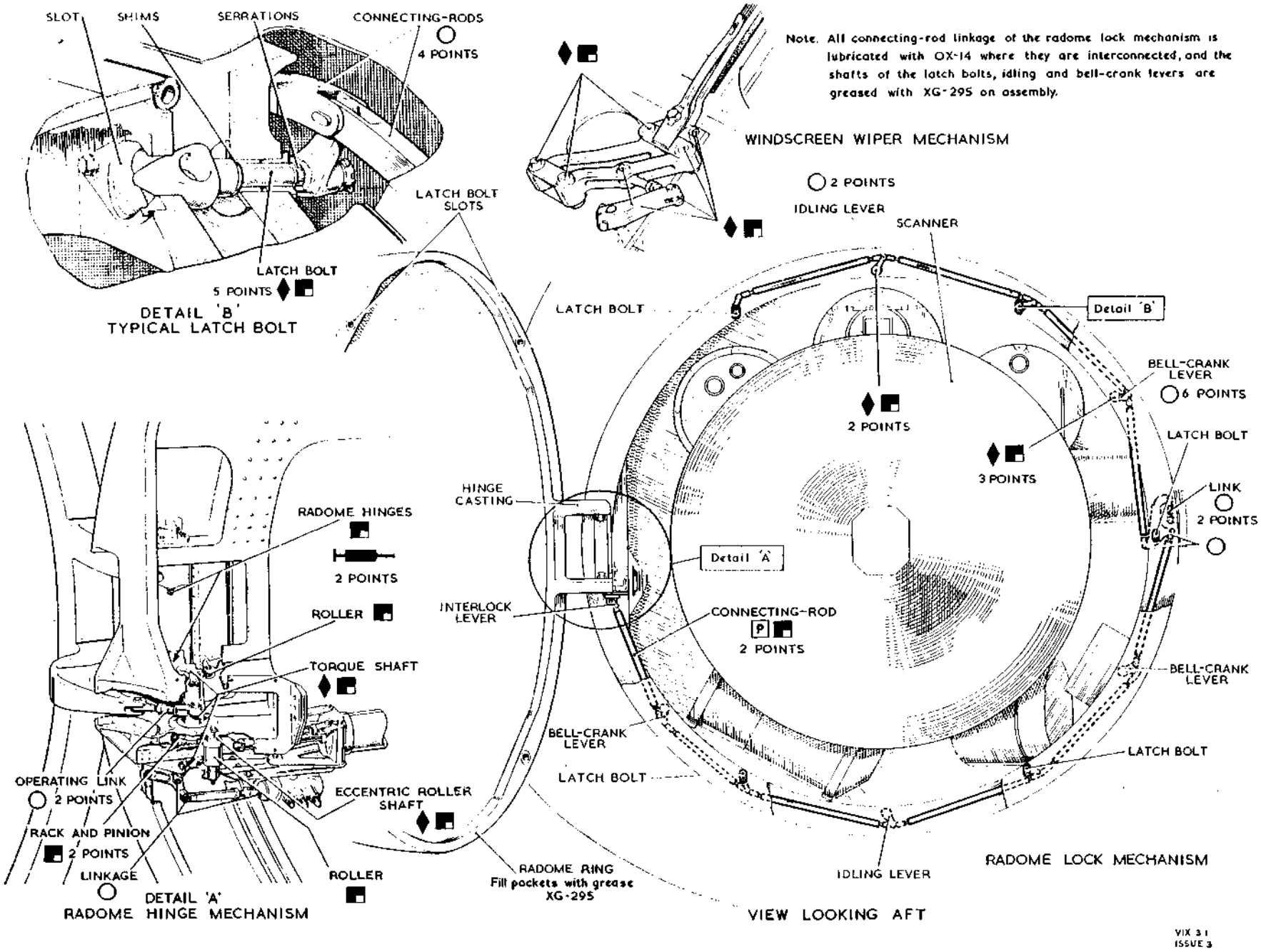

Fig. 22. Lubrication—radome lock and hinge mechanism and windscreen wiper

the sling by tightening the sling cables until the weight is almost but not quite taken on the sling, then lower the adjustable formers on the trolley to put the final weight on the sling.

WARNING . . .

Be careful not to overlift the fuselage as this would put load which must remain on the main wing jacks onto the tail boom trestles, and probably damage the aircraft structure.

(4) Place the nose jack in position and carefully lower the sling until the aircraft weight is on the jack. The nose wheel may be extended and locked if required.

67. After the attachment of the fuselage to the centre section; all services may be reconnected and components refitted. This procedure is the reverse of that outlined in para. 63; it is important that the following details receive attention during and after installation

(1) Blanking caps must not be removed from the pipeline unions until immediately before they are reconnected.

(2) All pipeline union threads and collars are to be treated with grease, ZX-28, immediately before reconnection. Pipes must not be distorted to make a joint.

(3) All pipeline unions must be wire-locked and pipes bonded.

(4) Priming, bleeding and functional checks of the hydraulic system must be carried out in accordance with instructions in Sect. 3, Chap. 6.

(5) All auxiliary and flying control cables must be checked for tension and locking; functional tests on each system must be carried out as stated in Sect. 3, Chap. 4.

(6) All sealing rings on the flanged couplings of the heater pipes must be examined for serviceability before being refitted.

(7) All fixed and floating clamp blocks and fairleads that have been removed must be refitted.

(8) When refitting the support brackets and lug attachments for the main boundary layer bleed, and the ground pressure connection, the surfaces must be degreased, and the appropriate sealing compounds applied in accordance with A.P.1464B, Vol. 1, Part 2.

HOOD DRIVE (Fig. 10)

Removal

68. Remove a defective drive shaft as follows:—

(1) Ensure that the Before Servicing safety precautions have been made in the pilot's cockpit (Book 1, Cover 2, Sect. 3, Chap. 11).

(2) Remove the sliding hood as described in para. 57.

(3) Remove the plug from the elevation/azimuth control unit on the pilot's starboard shoulder guard, and disconnect the bonding wire.

(4) Remove the pilot's starboard shoulder guard.

(5) Remove the instruction label/access panel (mod. 1330).

(6) Remove and retain the nuts, friction washers, four bolts and shim from the mounting bracket at Stn. No. 117.

(7) Remove the split pin from the adjustable coupling and remove the coupling.

(8) The broken section of the drive and mounting bracket can now be removed.

(9) Pull the outer tube forward as far as possible along the drive shaft, then raise the forward end of the shaft and tube assembly and move forward as far as possible to allow the aft end of the tube to drop through the aperture underneath the longeron at Stn. No. 118·5 to 125·5, or use the access hole introduced by mod. 1330.

(10) Withdraw the shaft.

Installation

69. The installation of a new drive is the reverse of removal, but the following points must be noted:—

(1) Remove the protective treatment from the drive shaft, and lubricate the splines, and universal joint with the grease, XG-295, and the mounting bracket bearing with XG-276.

(2) Assemble the drive shaft temporarily to adjust the coupling as described in para. 41 and to mark the position for the split pin hole in the splined shaft and adjusting bolt.

(3) Remove the drive shaft to drill the shaft and bolt, using a 1·70 mm drill. Remove all burrs.

(4) When finally assembled, adjust the bolt to align the split pin holes in shaft and bolt. Slide the coupling into position and fit a $\frac{1}{16}$ in. split pin.

(5) The joints of the outer tube are made with Dowty seals (SP900/17), which are fitted with sealing compound Type 1754 (Ref.No.33H/111). Normally two seals are fitted at each end of the tube, but one may be used at the aft end, and adjustment can be made by fitting a washer between the two forward seals to give a good fit.

(6) Before operating the hood electrically, check the setting of the travel limiting microswitches as described in Book 2, Cover 1, Sect. 5, Chap. 1, Group H3.

HATCH SEAL

Installation

70. When installing a new hatch seal, ensure that it is correctly orientated by positioning the thicker section of the seal along the front edge of the hatch.