Chapter 1 FUSELAGE

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LIST OF ILLUSTRATIONS

DESCRIPTION

General

1. The fuselage, or nacelle, is a semi-monocoque structure of balsa sandwiched between an inner and outer plywood skin. The light-alloy nose cap, engine cowlings and jet pipe fairing are separate assemblies. Main constructional features of the fuselage are illustrated in fig. 5.

2. The fuselage is built in half-shells which are joined together at the top and bottom centre-lines. The balsa packing is replaced by spruce multi-ply at the centre-line joints and by laminated spruce at the bulkhead attachments and areas requiring reinforcement (*fig.* 5). The outer skin is covered with madapollam and details of the repair and replacement of this covering will be found in A.P.4099 and 4269, Vol. 2, Part 3 and in A.P.2662A.

3. The locations of the various drain holes in the fuselage are shown in Sect. 2, Chap. 4.

Nose Cap (*fig.* 5)

4. The nose cap is a light-alloy structure forming a half-dome covering over the nose compartment. It is hinged to the top of the front frame forward of bulkhead No. 1 and supported by a telescopic strut when opened fully. Three toggle fasteners on each side secure the nose cap to the fuselage.

Cabin

5. The pressurised cabin is enclosed at the front and rear by No. 1 and No. 2 bulkheads respectively and at the top by a metal framed windscreen and canopy (*fig.* 4). The decking over the gun barrels forms the cabin floor and a hatch in the canopy provides access to the cabin.

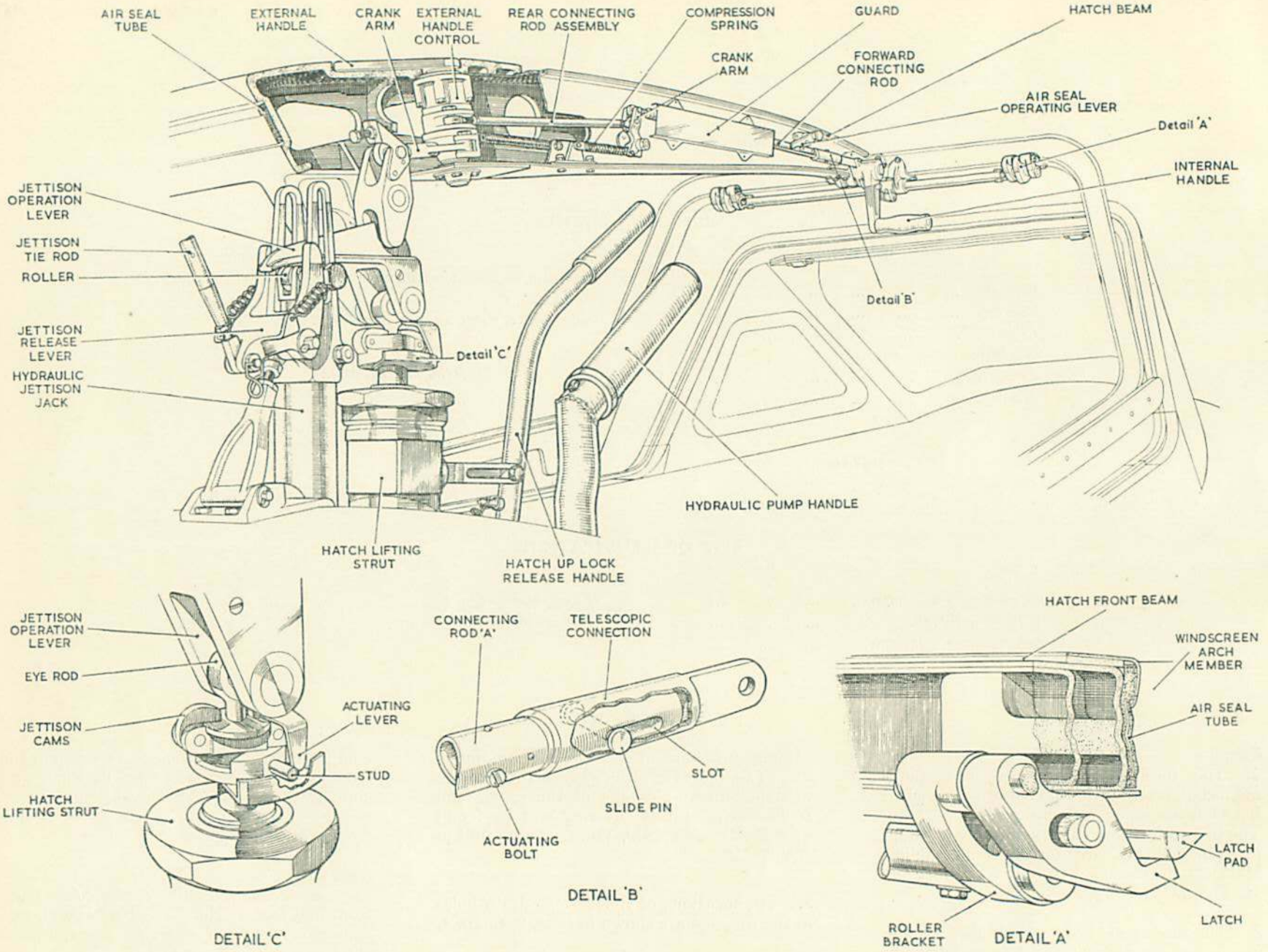


Fig. 1. Hatch locking mechanism

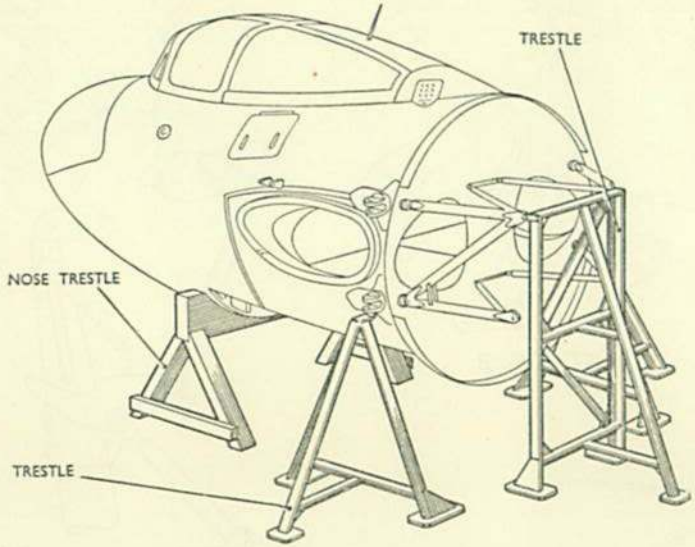


Fig. 2. Fuselage trestling

Windscreen and canopy (*fig.* 4)

6. The canopy is constructed as a unit, comprised of light-alloy frames secured by special attachment bolts to the fuselage. The glass front and Perspex side panels of the windscreen and the light-alloy centre panel and Perspex side panels of the aft portion of the canopy are mounted in the alloy frames.

Canopy hatch

7. The canopy hatch consists of a light-alloy framework in which the Perspex panels are mounted. The hatch, which is hinged at the rear to the canopy frame, is opened and closed by internal and external interlinked handles, the locking mechanism being illustrated in fig. 1.

8. The hatch is jettisoned in an emergency by pulling out the jettison handle on the instrument panel. This handle directly operates a selector valve (*Chap.* 6) to admit hydraulic pressure to the jettison jack. The jack ram forces up the jettison operating lever and releases the claws holding the beam heel eye-bolt. The piston-rod continues to push the lever upwards until the roller overrides the cam arm and frees the rear hinges. The movement of the jettison operating lever also releases the latches via the connecting-rods in the hatch centre beam. When the latches and hinges are released, the hatch is carried clear of the aircraft by the slipstream.

9. The hatch is sealed by the automatic locking forward of the operating lever (*fig.* 1) which actuates the hatch seal valve and inflates the rubber seal around the periphery of the hatch. This retains cabin pressure during flight and gives weather protection when the aircraft is parked.

10. The hatch, after normal opening, is raised to the fully open position by a pneumatic strut which is operated by pressing the button shown in fig. 3 and 7 of Sect. 1, Chap. 1; it is automatically locked in this position by a spring-loaded locking piston engaging in the strut piston. When closing the hatch, its weight must be supported while the up-lock release handle (*fig.* 1) is pulled; the hatch may then be lowered carefully.

Access panels

11. The positions and functions of the various access panels are illustrated in Sect. 2, Chap. 4. The canopy hatch is the only access panel which is subjected to cabin pressurisation.

SERVICING

Trestling

12. The method of trestling the fuselage, after the main planes and engine have been removed, is shown in fig. 2.

Protective treatment of external surfaces

13. The processes for the protective treatment of all wooden and metal surfaces are covered in A.P.2656A, Vol. 1.

Cabin sealing

14. The Bostik sealing process, which is described in A.P.1464B, Vol. 1, Part 2 has been applied to all possible sources of air leakage in the interior of the pressurised cabin.

Adjustment of hatch locking mechanism (*fig.* 1)

15. The hatch locking mechanism should be adjusted as follows:—

(1) Pull the hatch down and move the internal and external handles to the closed position.

(2) Adjust the connecting-rods until the latches engage and disengage fully under the action of either release handle.

(3) Check that the pin (*detail* "C", *fig.* 1) in the forward connecting-rod has full travel in the channel of the swivel sleeve to prevent possible jamming of the hatch.

(4) Check that the hatch seal inflates correctly. If the valve needs to be adjusted, the procedure is given in Chap. 7.

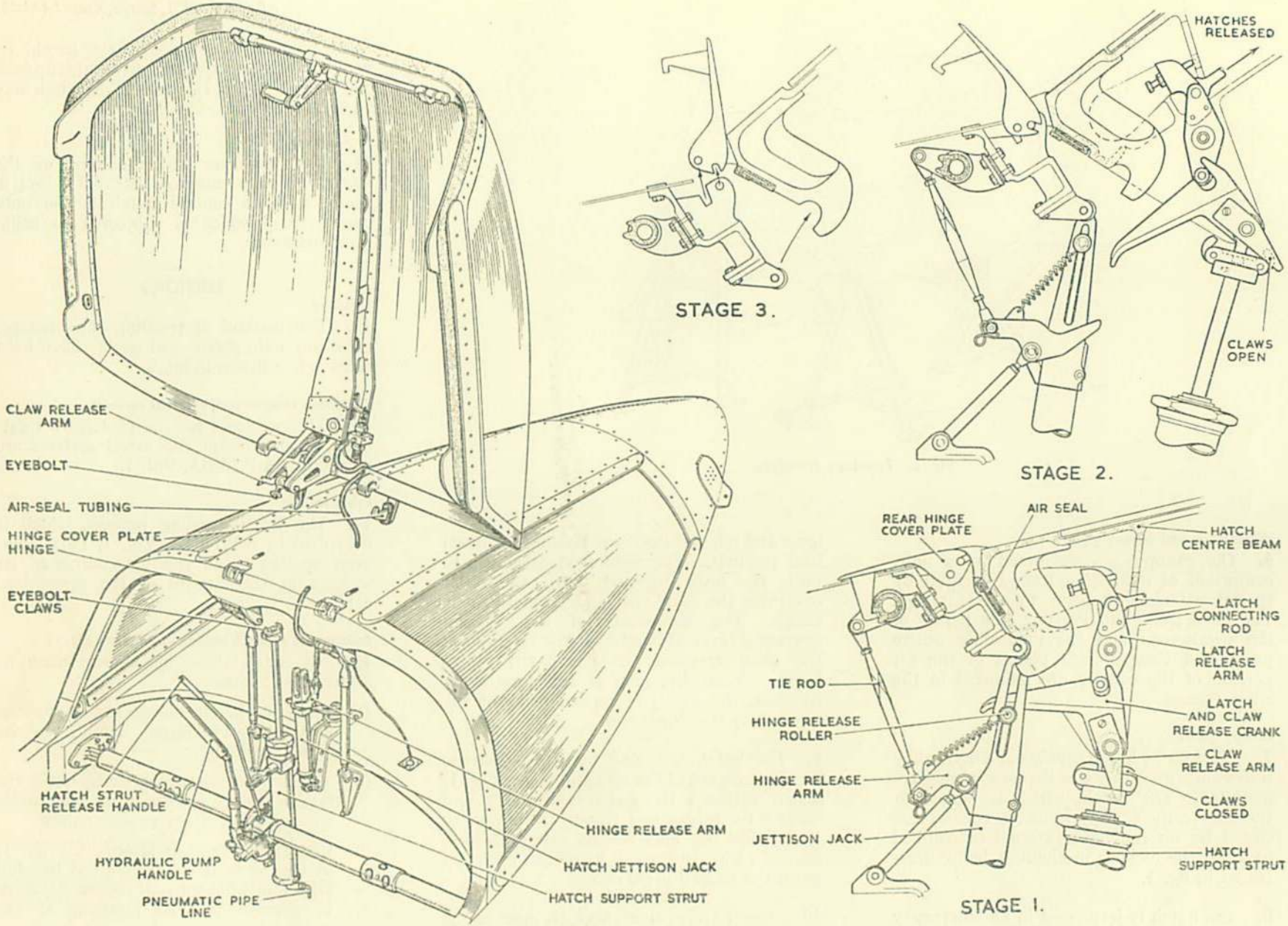


Fig. 3. Hatch jettison mechanism

REMOVAL AND ASSEMBLY

Nose cap (*fig. 5*)

16. To remove the nose cap, proceed as follows:—

(1) Open the nose cap, use a temporary support to hold it in the open position.

(2) Detach the support strut from the fuselage by removing the $\frac{1}{4}$ in. B.S.F. stiffnut and bolt securing it to the fork end.

(3) Disconnect the bonding leads from the two nose cap hinges.

(4) Remove the $\frac{1}{4}$ in. B.S.F. stiffnuts securing the two hinge bolts, and withdraw the bolts to remove the nose cap.

Assembly is the reverse of removal.

Canopy hatch (*fig. 3*)

17. The hatch may be removed by employing the jettison procedure or as follows:—

(1) Unlock and open the hatch fully.

(2) Rotate the support strut head, using the stud (*fig.* 1), to release the claws.

(3) Withdraw the pip pin from the hinge tie-rod.

(4) Remove the hatch and place it on protective material.

Assembly of the original hatch is the reverse of removal, noting that, if the pip pin does not re-engage, the following procedure should be adopted:—

(a) Pull the jettison handle to free the cam arm, and insert the pip pin.

(b) Return the jettison handle to the neutral position.

(c) Press the roller down until it engages the cam face of the cam arm. For the assembly of a new hatch, refer to A.P. 4099 & 4269, Vol. 2.

Canopy (*fig. 4*)

18. Remove the canopy as follows:—

(1) Withdraw the countersunk bolts securing the front windscreen fairing to the lower windscreen frame.

(2) Withdraw the countersunk bolts securing the side and top masking strips to windscreen frame, and remove the windscreen.

(3) Withdraw the special attachment rods securing the canopy frame to the fuselage.

(4) Withdraw the countersunk bolts securing the aft portion of the canopy to the canopy rail.

(5) Remove the windscreen and the aft portion of the canopy as separate units.

Assembling the canopy to the fuselage is considered to be a repair which is described in A.P.4099 & 4269.

Pilots' seats (early aircraft)

19. Before attempting to remove either of the pilots' seats, detach the harness release catch from the front of the seat, the harness shoulder straps from the harness buckle and the electrical leads from the mic/tel junction block. Remove each seat as follows:—

(1) Remove the pip pin and detach the harness fairlead tube from the top of the seat.

(2) Remove the aerotight nut, $\frac{1}{4}$ in. B.S.F. bolt and pulley from behind the seat, and release the bungee assister unit.

(3) Remove the split pins and nuts and the two bearing bolts which secure the lower mounting levers.

(4) Remove the pip pins securing the stay tubes to each side of the seat, and remove the seat vertically from the cockpit.

Assembly is the reverse of removal.

Ejection seats (later aircraft)

20. The procedure for the removal of the ejection seats is given in Chap. 11 and A.P. 4288C, Vol. 1.

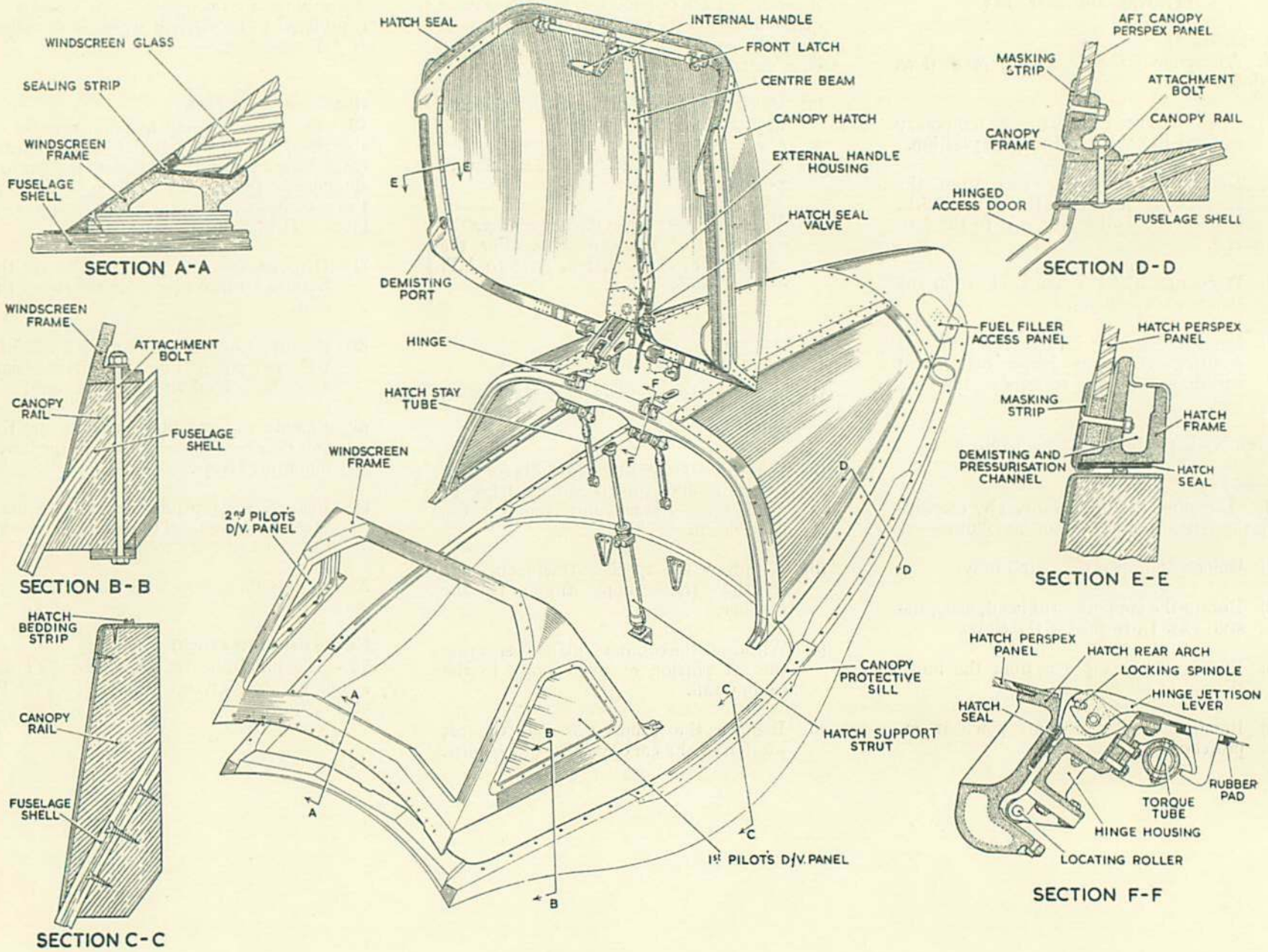
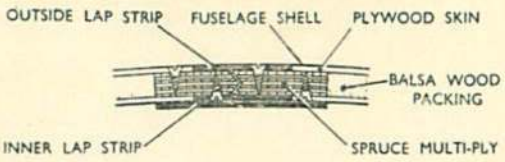
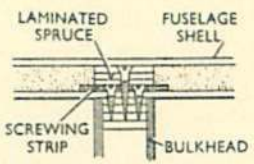


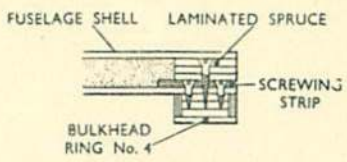
Fig. 4. Canopy construction



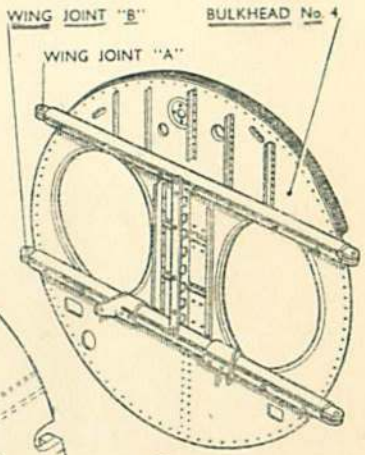
SHELL HALVES JOINT

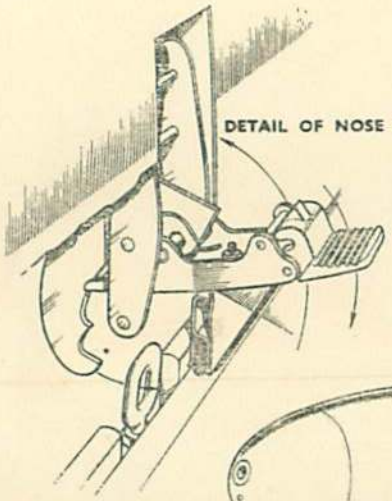


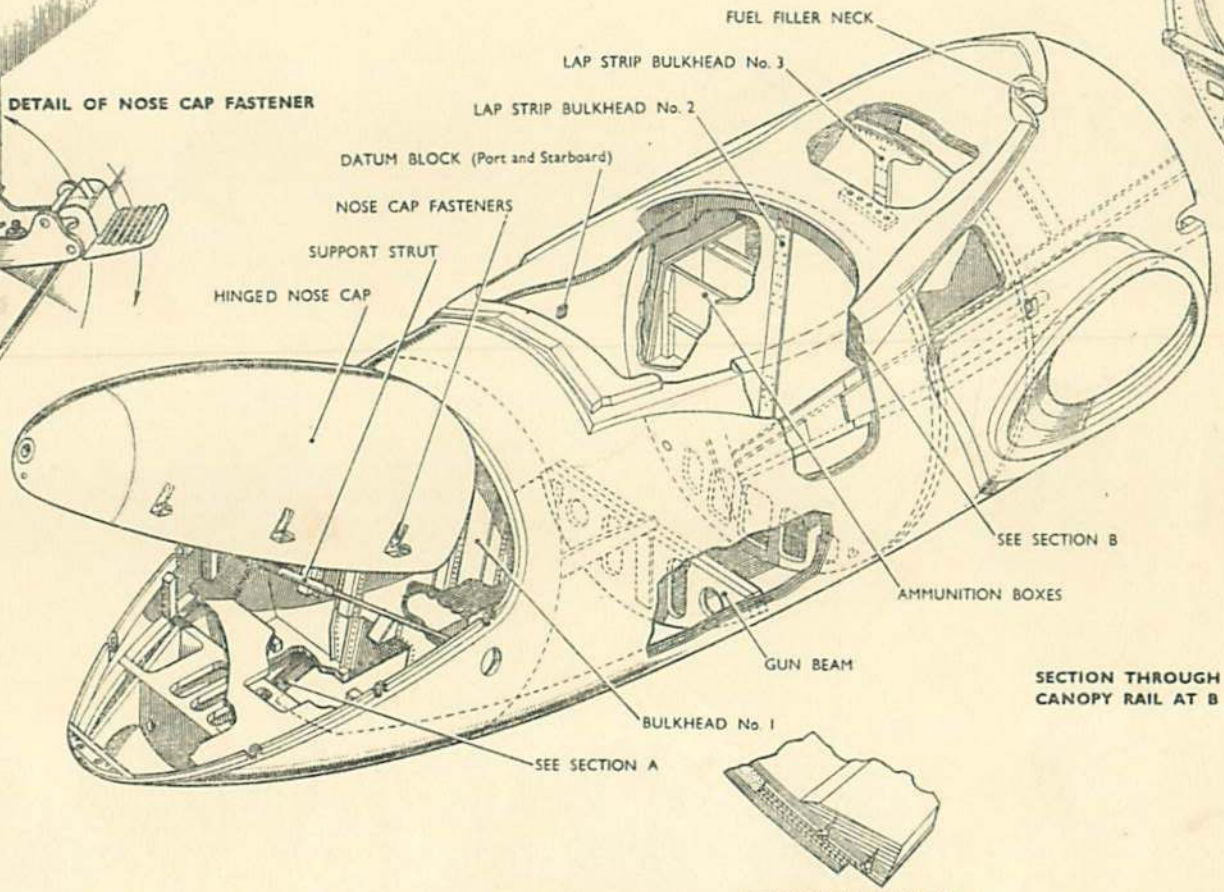
TYPICAL ATTACHMENT OF BULKHEADS



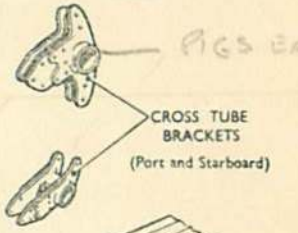
ATTACHMENT OF BULKHEAD RING NO. 4

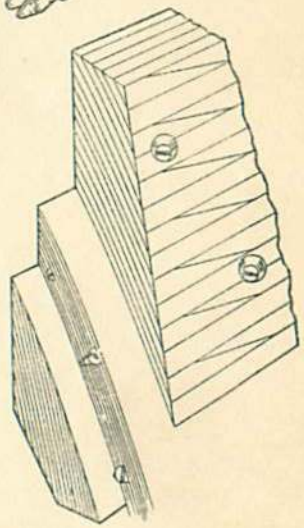






SECTION THROUGH A





SECTION THROUGH CANOPY RAIL AT B

Fig. 5. Fuselage construction

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