

Chapter 13A

**BRAKE PARACHUTE**

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**Introduction**

1. This chapter contains a description of the brake parachute installation in the Mk.1A aircraft, gives certain servicing operations and recommends the method of installation. Fig.1 shows the parachute stowage with the release/lock and door opening mechanisms exposed. Fig.2 shows the jettison hook assembly together with its operating mechanism. For details of the electrical installation refer to Book 2, Sect.5, Chap.1, Group 6 of this publication. General information on parachutes is given in A.P.1182A, Vol.1.

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**DESCRIPTION**

**General**

2. The landing brake parachute assembly (Ref.No.15D/629, Type LB54 Mk.1) is housed in a built-in stowage in the top of the fuselage, aft of the rudder, and faired-off by a fixed front fairing and a single door which is hinged at its forward edge. The door release/lock mechanism and the jettison hook, by which the parachute is attached to the aircraft, are electrically operated, each having two actuators coupled in tandem.

3. Normally the parachute is used to

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supplement the drag of the wheel brakes, when the aircraft has reached the ground, to reduce the landing run. It can also be used as an emergency brake or to assist braking in bad conditions, e.g. icy runway.

**CONTROLS AND INDICATOR**

4. Two switches located on the starboard side of the first pilot's instrument panel control the actuators for parachute stream and jettison. Normally the switches are operated together, being coupled by a

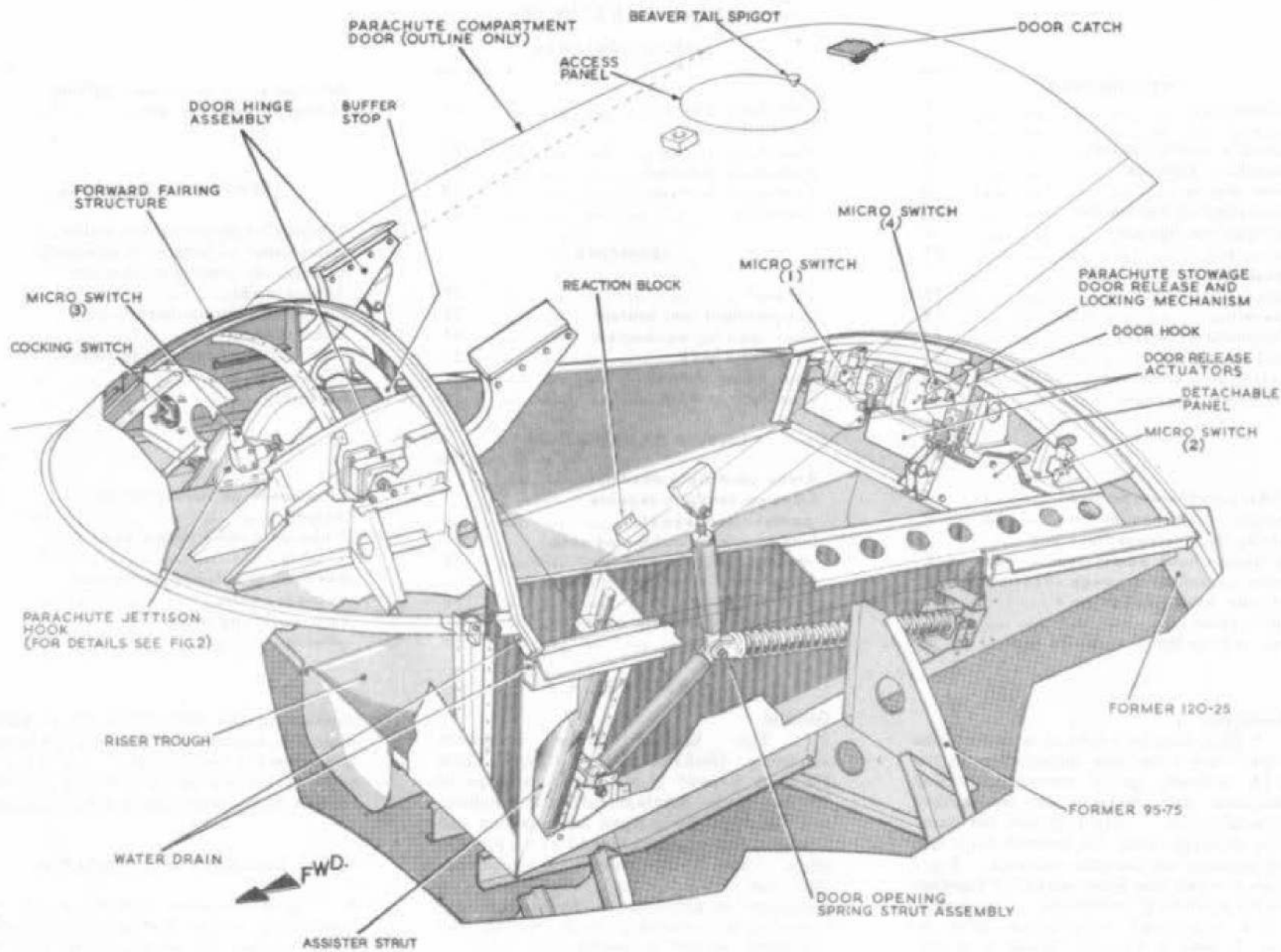


Fig. 1. Brake parachute stowage  
(Mod No 2049)

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split toggle link, but either can be used should a failure occur in the other, in which case a slower operation of the selected service would result. The down position selects STREAM and the up position selects JETTISON/OFF to release the parachute from the aircraft. A magnetic indicator (doll's eye), fitted on the ground intercomm. panel, is revealed when the small access panel located in the lower starboard side of the rear fuselage is raised; it is energised black when the parachute door is locked and all switches and relays are in their correct positions ready for a stream operation. A cocking switch, situated in the fixed front fairing of the stowage on the starboard side, is used when installing the parachute assembly in the aircraft and is marked DOOR HOOK - PARA. HOOK.

#### PARACHUTE STOWAGE

5. The parachute stowage is a box-type built-in structure in the rear fuselage above the F.C.M. equipment compartment. The double side walls of the stowage incorporate sections of the moisture draining system and house the door opening struts. A longitudinal trough in the base of the stowage accommodates the parachute riser when the pack is correctly stowed. At the rear, occupying the width of the stowage, is a compartment containing the door release/lock mechanism, this normally being covered by a removable panel. The structure surrounding the rear compartment is suitably reinforced against impact from the parachute shackle after jettison, and thick rubber padding on the front face of the removable panel provides additional protection. On post Mod.1837 aircraft the rubber padding is removed from the removable panel and a plywood panel is bolted in position over the front face of the panel. The drag beam structure with the jettison hook and associated mechanism is forward of the stowage, and is covered by the fixed front fairing. A rubber-padded tubular-steel guard is provided over the jettison hook and below the fixed fairing, to restrict any

flaying motion by the shackle during jettison.

#### WATER DRAINS

6. To prevent water from seeping into the stowage, water drain troughs are provided beneath each edge of the door. Water which runs into these troughs is ducted overboard through light-alloy tubing at the front and rear of the stowage on the port side of the aircraft. Branch pipes in this tubing also drain the stowage floor, the spring strut compartments and the special tool recess. All joints in the water drain troughs and in the corners of the stowage where water leakage may occur are sealed with a mixture of Bostik 1752 (Ref.No.33H/9450627) and Bostik 1790 (Ref.No.33H/2202125).

#### DOOR OPENING MECHANISM

7. Selection of STREAM on the cockpit control switches will energise the actuators in the door release/lock mechanism to retract and disengage the lever from the door catch. The door is then thrust open by two spring strut assemblies, which are aided initially by two spring-loaded struts bearing directly on to two reaction blocks mounted on the underside of the door. The port side struts are shown in fig.1., the starboard side arrangement is identical.

8. With the door closed and locked, the spring struts and assister struts are compressed, the elbow-joint coupling of the tubular struts having moved in an arc formed by the forward lower struts swivelling in their fixed bottom mountings. The door is held in the closed position, against the thrust of the strut assemblies by the electrically actuated lever engaged in the door catch. The method of setting the door release/lock mechanism is given in para.36.

#### JETTISON MECHANISM

9. The jettison mechanism, located at the forward end of the stowage, consists of a pivot mounted hook and a fixed block

attached to a drag beam. The drag beam is part of the aircraft structure and houses the jettison hook operating mechanism and a system of cam-levers and rollers operated by two electrical actuators which are controlled from the cockpit.

10. Selection of the JETTISON position on the cockpit control switches will energise the actuators to retract, moving the cam-levers away from the stop link to unlock the assembly. Further movement of the cam levers brings their cam-faces into contact with the rollers on the stop link, forcing the link to swivel downward. The stop link is connected, through a strut link, to the lower end of the jettison hook, which is drawn aft as the stop link pivots downward. This movement opens the hook, and the parachute shackle and restraining strop are released. To prevent the jettison hook damaging the stop link pivot bolt at the end of its travel, a steel striker block bolted to the hook contacts a rubber buffer in the form of a bush fitted to the stop link pivot bolt. At this stage the hook restraining lever catch will engage, under the influence of the tension spring at its aft end, with the block in the arm of the jettison hook to hold the hook in the open position. This device prevents damage being caused to bearings micro switches etc., by arresting the jettison hook operating mechanism before any recoil action occurs.

#### Spring box

11. When the nose of the stop link approaches top dead centre of the cam lever roller it exerts a high load on the roller which is transmitted, through the actuating rods, to the actuators. To prevent overloading the actuators this momentary high load is absorbed by a spring box, fitted at the forward end of the assembly and connected by a pivoted lever to the rod of the forward actuator. Setting procedure for the jettison hook operating mechanism is given in para.37 and illustrated in fig.3.

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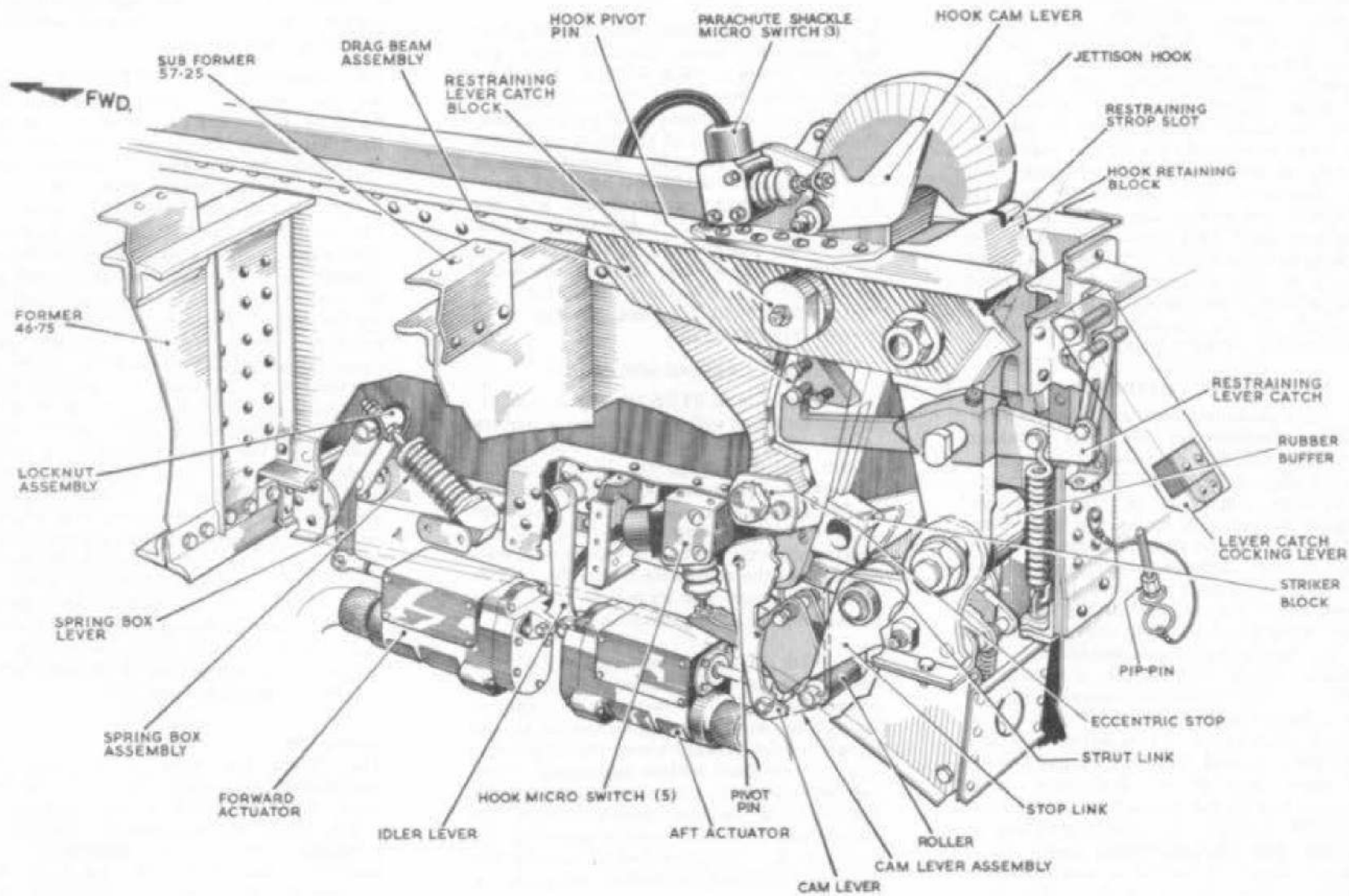


Fig. 2. Jettison hook mechanism  
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associated actuator, the mechanism of the selected service will be operated at half speed and half travel by the remaining unit. In the case of the jettison hook, this movement will be sufficient to unlock the cam-lever assembly, the hook will then be opened fully by the pull of the parachute; similarly, the door release/lock mechanism movement will be sufficient to unlock the door due to the large overtravel obtained when using both actuators.

#### Operation

13. The actuators of the jettison mechanism retract to open the jettison hook when the cockpit switches are set to JETTISON, they also retract automatically if the door opens in flight (para.25). The actuators extend and close the jettison hook when, with the cocking switch in the PARA.HOOK position, micro-switch (3) is depressed by placing the parachute shackle in the jettison hook. The actuators of the door-lock mechanism retract to unlock the door latch when the cockpit switches are set to STREAM; they extend and lock the door when, with the cocking switch in the DOOR HOOK position, micro-switches (1) and (2) are depressed by the door. It should be noted that although some of the functions of the micro-switches have been given, reference must be made to Book 2 of this publication for complete information on their functions.

#### PARACHUTE ASSEMBLY

14. The parachute assembly consists of a main canopy of concentric rings, a riser, which connects the main canopy to the jettison hook mechanism (para.9), an extractor parachute and packs for the main and extractor parachutes.

#### Main parachute

15. A 45 foot ring-slot parachute constitutes the main canopy. It has 56

rigging lines which are bound together by a keep ring at a point 10 feet from their end. This 10 foot length forms the riser and is protected by a canvas sleeve. A woggle and a snap hook, positioned on the sleeve, at a point marked in black, 42 to 46 in. from the inside of the rigging line attachment eyes, is for the attachment of the restraining strop (para.17).

16. A light-alloy line shackle is attached to the end of the riser and is connected to a steel ring shackle by a shear pin. A bolt, fitted with two clamp washers, passes through the line shackle, the washers bear on the faces of the ring shackle fork end to reduce the tendency of the fork end to splay out under high loads. When the parachute assembly is installed in the aircraft, the ring shackle rests inside the jettison hook, which is secured to the aircraft structure. The shackle assembly is protected by a fabric and felt sock.

#### Restraining strop

17. The purpose of the restraining strop is to prevent the parachute riser fouling the aircraft structure during a crosswind landing, or when the aircraft turns. One end of the strop, located in a slot in the hook-retaining block of the jettison-hook mechanism, is held in position with the parachute shackle, by the jettison hook. From this point the cable passes round a steel tube in a bracket attached to the detachable panel which covers the door release/lock mechanism. The other end of the strop is attached to the snap hook on the parachute riser.

#### Extractor parachute

18. The vane-type extractor parachute is spring-loaded by a helical coil spring, 24 in. in length, housed in a pocket running vertically down from the canopy vent. The canopy is 102 in. in diameter, has

six vanes and twelve gores. This parachute is secured to the end of the beaver tail of the main pack (para.19) by four continuous loops of 1,200 lb. nylon cord, bound as a single 18 in. strop.

#### Parachute packs

19. The main pack is divided into two parts, one containing the canopy and the other the rigging lines. The canopy is folded and stowed in the pack, concertina fashion, with the metal vent ring lying flat on the base of the pack; this part of the pack is then closed by nylon cord side-lacing. The rigging lines, stowed horizontally on the lower flap of the pack, are held in position in stowage loops at the sides of the flap. The lower flap terminates in a 'beaver tail' which incorporates a flat metal ring for attachment to the spigot on the parachute stowage door. The main pack is secured to the canopy apex by four continuous loops of 1,200 lb. nylon bound as a single 6 in. strop. The extractor pack is of the simple envelope type with two small side flaps and two longer horizontal top and bottom flaps. This pack is firmly secured to the 'beaver tail' of the main pack with 700 lb. nylon cord. On aircraft pre Mod.2049 the extractor-parachute pack is held closed, against the spring-loading of the parachute, by two ripcord pins which are attached, via a branched cable, to the two snap hooks, attached by cables to the stowage door. The snap hooks are fitted to face in opposite directions with the loops of the attachment cables secured together with six loops of 22 s.w.g. copper wire, three loops of wire on each side of the attachment cable loop. On aircraft post Mod.2049 the pack is held closed by a transit tie which is removed during installation, the pack then being held closed by the stowage door.

20. The parachute packs and the extractor parachute remain attached to the main canopy during the landing, but can be detached and replaced separately, if

required, during servicing operations on the parachute assembly.

#### OPERATION

##### Parachute stream

21. Selection of STREAM on the cockpit switches causes the release/lock actuators to retract; this moves the door hook, about its pivot away from the roller of the door catch. When this movement is complete, the spring-strut assemblies and the spring-loaded assister struts force the stowage door open. On aircraft pre Mod.2049 the branched cable which is attached to the two clips on the inside face of the door, pulls the pins from the extractor parachute pack, to release the extractor parachute. On aircraft post Mod.2049 the opening of the door releases the flaps of the extractor parachute pack. Simultaneously the 'beaver tail', which is attached to the inside of the door, is pulled taut; this causes the extractor parachute to be ejected, upward and aft.

22. The extractor parachute is ejected into the slipstream, clear of the pack and the stowage, where it is deployed by its spring loading. This movement causes the release cable, attached to the extractor parachute, to withdraw the attachment pin

#### WARNING...

*Personnel must keep well clear when the parachute compartment door is tested since it opens with considerable force.*

#### General

27. Servicing of the brake parachute assembly should be to the same standard as that detailed in A.P.1182A, Vol.1. The limit to the number of permissible streaming operations is governed by the condition of the parachute assembly after each operation. Following a stream, provided that the assembly has not been exposed to climatic conditions, and after examination to ensure that the standard of serviceability is in accordance with the

which secures the ring of the 'beaver tail' to the spigot on the inside of the door, allowing the 'beaver tail' to be pulled clear. The extractor parachute develops just aft of the tail structure and pulls the main parachute pack out of the stowage and clear of the aircraft.

23. Continued pull by the extractor parachute, together with the action of the main pack leaving the stowage, causes the rigging lines of the main parachute to be released from their stowage loops and draw the brake parachute free of its pack to develop in the airstream. Drag produced by the developed parachute reacts along the rigging lines, up the riser to the ring shackle, and is then transferred to the main structure of the aircraft through the jettison hook and drag beam assembly.

##### Parachute jettison

24. Selection of the cockpit switches to the JETTISON position retracts the actuators of the jettison mechanism and, through the cam-lever assembly, opens the jettison hook. This releases the parachute ring shackle, and the ball end of the restraining strop, and the parachute assembly is jettisoned. The hook will be held in the open position by the release catch lever.

#### SERVICING

requirements of A.P.1182A, Vol.1, the parachute assembly may be packed and installed in the aircraft.

28. Routine servicing should consist of airing, examination and packing, at the stipulated intervals, or more frequently if necessitated by the ingress of moisture during aircraft installation life.

29. For servicing purposes, so that a controlled door opening can be achieved, a special tool (Ref.No.26DC/95567) is provided. This tool is also used to close the door against the force of the spring-strut assemblies. The method of using this tool is illustrated on fig.6 and described in para.34.

#### Automatic jettison

25. In the event of an unselected stream taking place, due to the door opening inadvertently, the jettison hook opens automatically releasing the parachute assembly before the main canopy can develop. This is arranged electrically if the micro switches (1) and (2) (fig.1) are released when the cockpit switches are not in the STREAM position.

#### SHEAR PIN

26. Should the parachute be streamed at an excessive speed the drag load would damage either the parachute assembly or the aircraft structure. To prevent this damage occurring the ring shackle is attached to the line shackle by a 1.9/16 in. diameter light-alloy shear pin; this allows the brake parachute assembly to break away from the aircraft before its braking load becomes excessive. The pin, which is designed to shear at a load of 76,000 lb.  $\pm$  5 per cent, is dyed blue and marked MK.1A AIRCRAFT ONLY. The maximum stream speed is at present 135 knots. In the event of a shear pin being sheared, the ring shackle must be thoroughly checked for damage, distortion etc. and, rectified or replaced as necessary.

#### COMPARTMENT MECHANISM

30. Periodic lubrication of the compartment mechanism is the only servicing normally required, this must be carried out in accordance with Vol.4 of this publication. Grease nipples are provided at the pivot points of the spring-strut assemblies and the jettison hook mechanism. These and other moving parts of the installation must be lubricated as indicated on fig.4 and 5. An oil channel, fitted with a screwed plug, is drilled in the top end fitting of each spring strut to enable 5 c.c. of oil OX-16 to be introduced into the spring struts at the periods specified in Vol.4 of this publication. All surplus lubricant must be removed and

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care must be taken to ensure that no oil or grease comes into contact with the parachute assembly. Locking wire used on the installation must be 22 s.w.g. (Ref.No.30A/3339).

#### Door opening mechanism

31. If, during servicing or replacement operations, adjustment is required on the parachute compartment door operating mechanism, the adjustable upper lever must be set to a nominal 9.3 in. between attachment bolt hole centres. If further adjustments, on the levers, are required it is important that the two levers are kept to an equal length.

#### ACTUATOR CHECK

32. Mechanisms for the jettison hook and door hook will still operate if one actuator in the mechanism is unserviceable, therefore a check must be carried out after each stream, and when called for in Vol.4 of this publication, to prove that both actuators in each mechanism are operating.

33. Indication of failure of an actuator in the jettison-hook mechanism is given by the jettison hook not opening to its full extent, making it necessary to force the hook open against the stop link spring in order to insert the ring shackle. Indication of failure of a door-hook actuator is given by the restricted travel of the door hook, which, when in the open position will only just clear the door catch roller.

#### DOOR MANIPULATION

34. During servicing operations which necessitate the opening or closing of the parachute compartment door, the special tool (Ref.No.26DC/95567) must be used. This tool is provided to control the door against the upward thrust of the spring strut assemblies. Prior to fitting the tool an inspection must be carried out on the tool attachment points and the surrounding area for damage and security. To close the door, refer to fig.6 and proceed:▶

- (1) Locate and 'PRESS' as indicated, the small hinged flap in the top fuselage structure just aft of the parachute stowage, to expose the tool attachment lug.
- (2) Attach the fork-end fitting, at the base of the tool, to the lug using the Pip-pin provided.
- (3) Remove the door attachment hook, from the sliding block on the tool, and engage it with the cross-bar in the small recess at the aft end of the door top surface. The hook is engaged pointing forward and upward with its pad aft of the recess.
- (4) Turn the handwheel up the screwed rod until contact is made with the stop collar at the top of the rod, then raise the sliding block until the door attachment hook can be assembled to it, using the Pip-pin provided.
- (5) The door can now be closed by turning the handwheel down the screwed rod.
- (6) Before the door is moved down, ensure that the cocking switch is selected PARA.HOOK, otherwise; the door lock mechanism will operate in the normal manner when micro switches (1) and (2) are tripped by the door to energise the actuators and move the door hook lever to the closed position. Both these operations occur in rapid succession and, in most cases, faster than final movement of the door, to the closed position, can be achieved with the handwheel.
- (7) When the handwheel is screwed firmly down, the door is fully closed and is then locked by selecting DOOR HOOK on the

cocking switch. When the doll's eye shows black the door is locked and the tool may be removed. Note that the doll's eye will only show black if the jettison hook is closed.

35. When used to open the door, the tool is assembled in a similar manner to that described for door closing, except that the handwheel is turned down the rod to hold the sliding block firmly at the base of the tool. The door is thus held in the closed position by the handwheel which, after the door is unlocked by selecting STREAM on the cockpit switches, is turned up the rod, allowing the door to open under the influence of the spring strut assemblies.

#### DOOR LOCK SETTING

36. The door lock and the rear micro switches (1), (2) and (4) are set up from inside the stowage with the door closed. Reference must be made to fig.3 when carrying out the following procedure:-

- (1) Remove the detachable panel which covers the door lock mechanism, on post Mod.1837 aircraft the plywood panel must be removed before the detachable panel. Unlock the adjuster bolts for micro switches (1), (2) and (4) and screw in each bolt fully. Ensure that the actuators are connected with their eye-ends screwed fully in.
- (2) Ensure that the cockpit switches are in the JETTISON/OFF position and connect an external electrical power supply to the aircraft.
- (3) Raise the jettison hook release catch cocking lever and insert the Pip-pin to secure the catch lever so that the jettison hook is free to close. Select PARA.HOOK on the cocking switch and depress the

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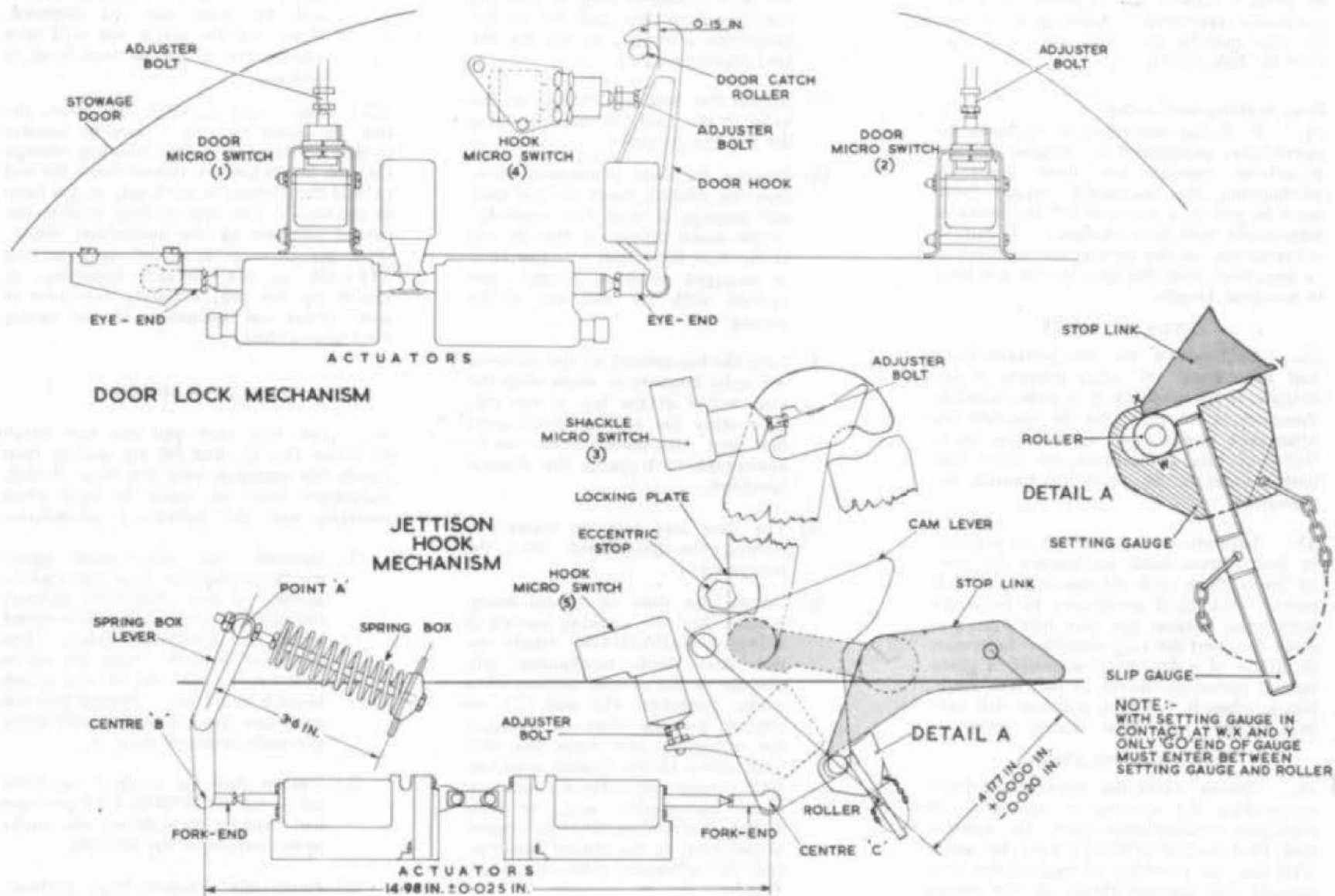


Fig.3. Setting door release/lock and jettison-hook mechanism

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parachute shackle micro switch (3) by hand to close the jettison hook.

- (4) When the hook is fully closed, remove the Pip-pin from the catch lever and stow the hook release catch cocking lever flat against the bulkhead and secure with the Pip-pin.
- (5) Remove the circular access panel located in the parachute compartment door and enter the stowage. Close the compartment door using the special tool (para.34). When the door is fully closed select DOOR HOOK on the cockingswitch. The tool must be left in position holding the door closed.
- (6) Unscrew the adjuster bolt for the door micro switch (1) until the micro switch is just tripped. Measure the extension of the adjuster bolt and unscrew the bolt a further 0.125 in., tighten the adjuster bolt locknut.

**NOTE...**

*The tripping point of the door micro switch (1) can be ascertained by listening for the door hook actuators starting to operate.*

- (7) When the door hook actuators are fully extended adjust both actuator rod eye-ends evenly to obtain a clearance of  $0.15 \pm 0.015$  in. between the door hook and the door catch roller, measured at the position shown in fig.3. It will be advantageous to use a piece of plasticine to check this clearance. Lock the eye-ends.
- (8) Unscrew the adjuster bolt on the door hook until the door hook micro switch (4) is just tripped. Tighten the adjuster bolt locknut.
- (9) Unscrew the adjuster bolt for the door micro switch (2) until the micro switch is just tripped, this is indicated by the doll's eye indicator operating when the

shackle micro switch (3) is tripped. Unscrew the adjuster bolt a further 0.125 in. and tighten the adjuster bolt locknut.

- (10) Ensure that the special tool is correctly in position and select STREAM on the cockpit switches. Open the door fully using the special tool and select JETTISON/OFF on the cockpit switches.
- (11) Repeat op. (3) and (4).
- (12) Enter the stowage and close the door fully using the special tool. When the door is fully closed select DOOR HOOK on the cocking switch. Check the clearance between the door hook and the door catch roller and adjust, if necessary, on the door hook micro switch (4) to obtain the  $0.15 \pm 0.015$  in. clearance.
- (13) Select STREAM on the cockpit switches and open the door fully using the special tool.
- (14) Fit the detachable panel removed in op. (1), on post Mod.1837 aircraft the plywood panel and the circular access panel on the parachute compartment door. Select JETTISON/OFF on the cockpit switches to open the jettison hook and prepare for installing a parachute.

**JETTISON HOOK MECHANISM SETTING**

37. The mechanism, as set on initial installation, should normally require no further adjustment in service. If it is necessary to remove an actuator from the mechanism its extended pin centre length must be carefully noted, the actuator which is to replace it must be set to the same dimension, before assembly, in order that the setting of the mechanism is undisturbed. All parts of the mechanism, except the jettison hook and eccentric stop, are contained within a housing which is attached to the drag beam by eight bolts. To set the assembly it must be

removed from the drag beam and set in the following manner:-

- (1) Remove the release mechanism sub-assembly from the drag beam as detailed in para.41 and suitably support the sub-assembly on a bench.
- (2) Remove the shackle pins which secure the fork-ends of the actuator rods to the spring-box lever and to the cam lever.
- (3) Connect an electrical supply to the actuators. Fully extend the actuator rods and adjust the fork-ends until the dimension  $14.98 \pm 0.025$  in. is obtained between their pin centres (B and C fig.3). Adjustment on the fork-ends must be kept as near equal as is possible. Lock the fork-ends.
- (4) Attach the fork-ends to the spring-box lever and to the cam lever.
- (5) With the setting gauge (Ref.No. 26DC/95508) in position and making contact with the cam lever roller and the stop link at positions W, X and Y (detail A, fig.3) adjust the locknuts at point A until only the 'GO' end of the 'GO/NO GO' gauge can be inserted between the setting gauge and the cam lever roller. This setting gives the dimension of  $4.177^{+0.00}_{-0.02}$  in. between the centre of the cam lever roller and the centre of the stop link pivot. Lock the locknut assembly at point A.
- (6) With the stop link in contact with the cam lever roller, unscrew the adjuster bolt for the hook micro switch (5) until the micro switch is depressed, the maximum overtravel is 0.02 to 0.05 in. Lock the adjuster bolt.
- (7) Fit the release mechanism sub-assembly to the drag beam as detailed in para.42 and connect an electrical supply to the aircraft.

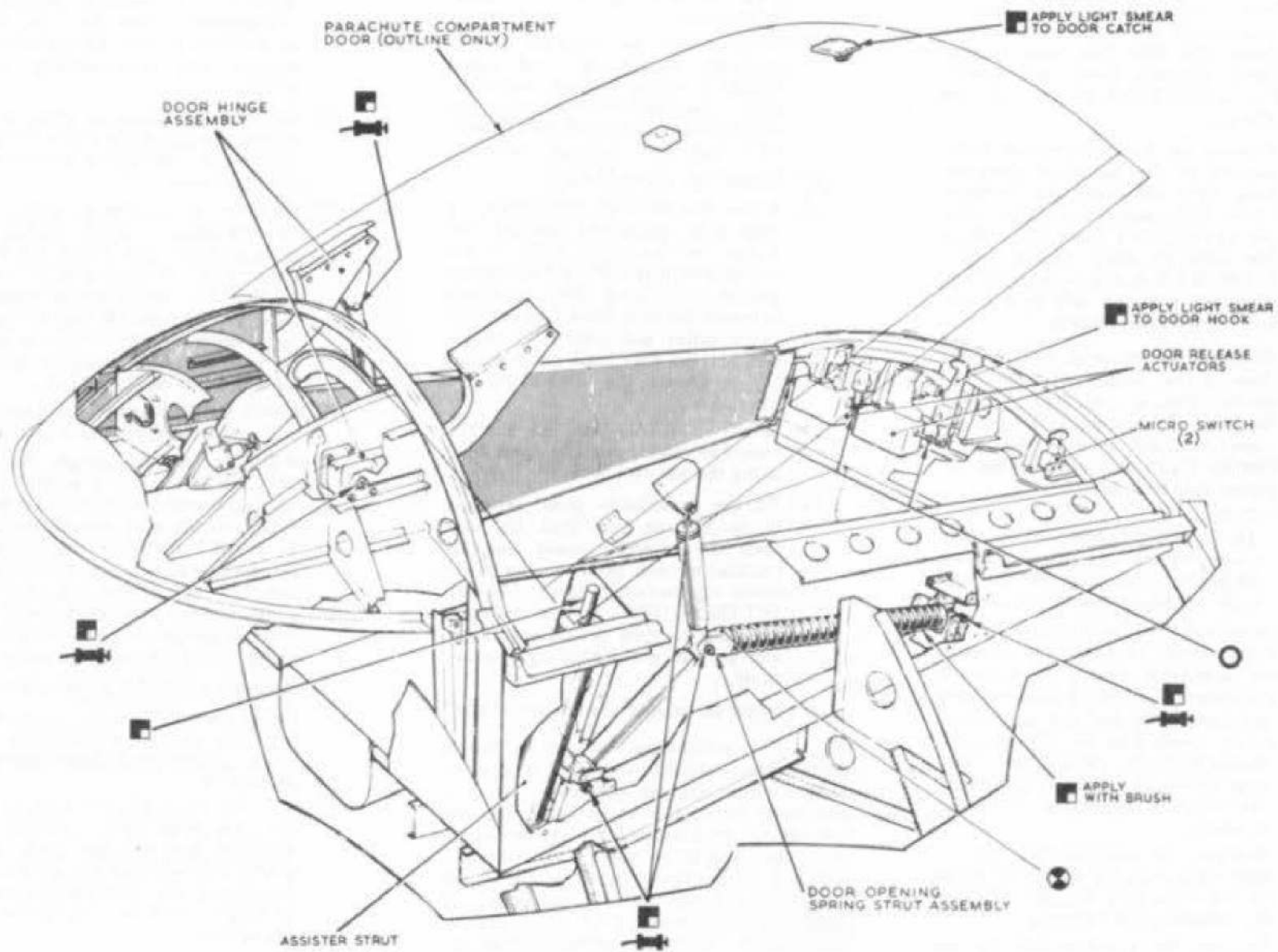
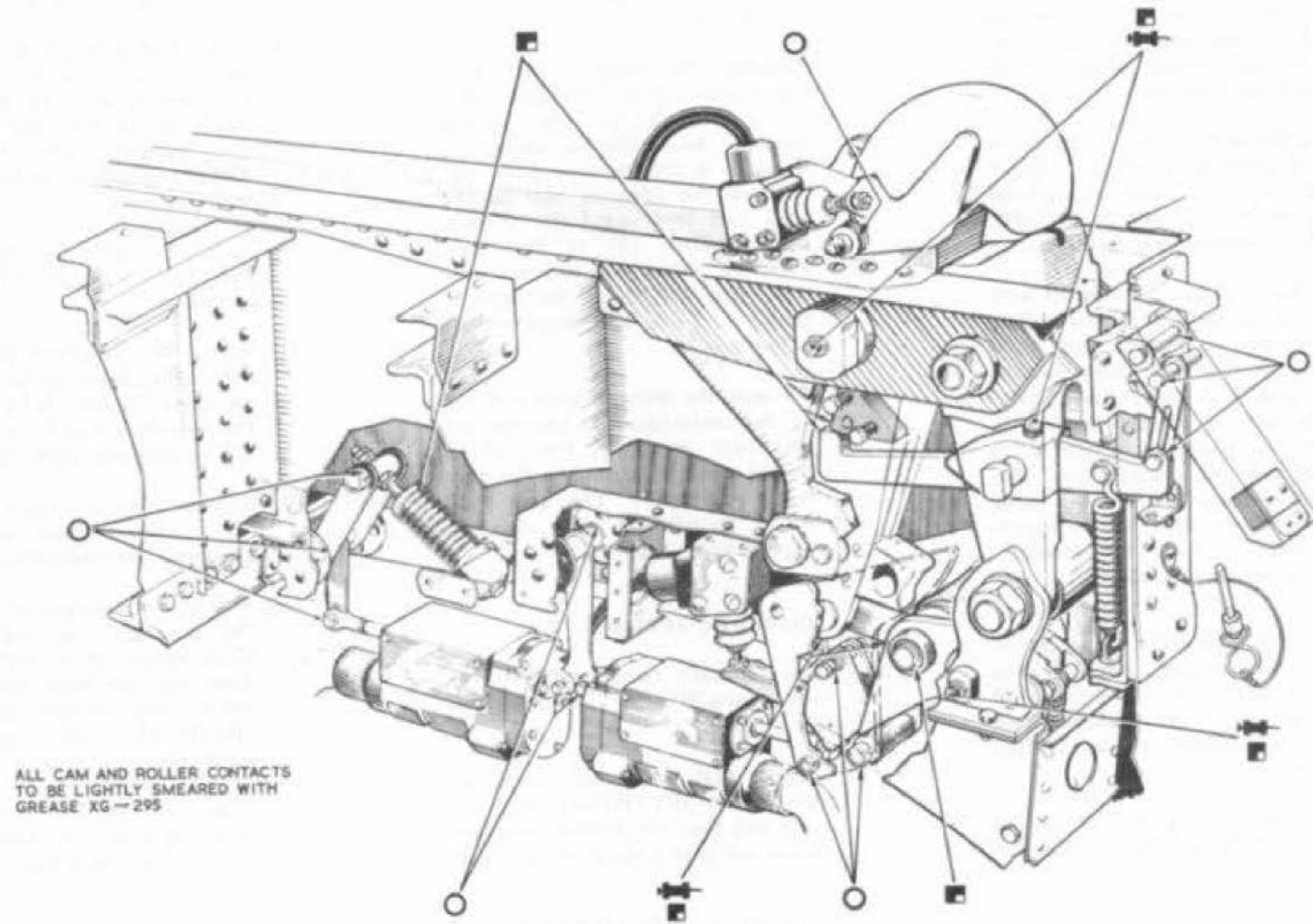


Fig. 4. Brake parachute stowage-lubrication  
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ALL CAM AND ROLLER CONTACTS  
 TO BE LIGHTLY SMEARED WITH  
 GREASE XG-295

Fig. 5 Jettison-hook mechanism—lubrication  
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- (8) Release the jettison hook from the release catch lever and select PARA.HOOK on the cocking switch. Depress the plunger on the shackle micro switch (3) to close the jettison hook.
- (9) Using the setting gauge, check the setting given in item (5). Minor adjustments, if required, can be made on the fork-ends on the jettison hook actuator rod ends.
- (10) With the stop link in contact with the top of the cam lever roller, rotate the eccentric stop until contact is just made with the forward profile of the jettison hook. During this adjustment check with the setting gauge as in item (5) to ensure that the setting is not disturbed by excessive pressure being exerted on the hook by the eccentric stop. Lock the eccentric stop by the locking plate.

**NOTE...**

*If, after adjustment, it is found that the locking plate locking screw hole does not line up with the anchor nut an additional hole can be drilled in the locking plate.*

- (11) With the cocking switch in the DOOR HOOK position, open the

**REMOVAL OF PARACHUTE ASSEMBLY**

39. To remove the parachute assembly from the aircraft the following procedure should be adopted:-

- (1) Secure the special tool. (Ref. No.26DC/95567), in position (para.34, 35 and fig.6).

jettison hook electrically by depressing the door hook micro switch (4).

- (12) Release the jettison hook from the release catch lever and select PARA. HOOK on the cocking switch. Insert the parachute ring shackle in the jettison hook and unscrew the adjuster bolt on the hook cam lever until the shackle micro switch (3) is depressed 0.125 in. passed the tripped position, this will close the jettison hook. Lock the micro switch adjuster bolt.
- (13) To open the jettison hook and set up the installation to receive the parachute assembly, the cocking switch must be placed in the door hook position. The door hook micro switch (4) must then be depressed by hand.

**AUTOMATIC JETTISON TEST**

38. The automatic opening of the jettison hook (para.25) can be tested as follows:-

- (1) Ensure that the cockpit switches are in the JETTISON/OFF position and that the jettison hook release catch is disengaged (para.36

**REMOVAL AND ASSEMBLY**

- (2) With an external power supply connected to the aircraft select STREAM on the cockpit switches.
- (3) On aircraft pre Mod.2049 remove the access panel from the stowage door and disconnect the rip-pin cable from the snap-hooks on the underside of the door.

(3)), then connect an external power supply to the aircraft.

- (2) Select PARA.HOOK on the cocking switch. Move the hook cam lever by hand to depress the shackle micro switch (3); this will close the jettison hook, to keep it closed insert a suitable wedge under the cam lever.
- (3) When the hook has fully closed select DOOR HOOK on the cocking switch.
- (4) With the parachute-compartment door open, depress the door micro switches (1) and (2) by hand until the door hook has fully closed and the dolls-eye is energised black.
- (5) Release micro switches (1) and (2). The jettison hook should now open automatically.
- (6) To set the mechanisms to receive the parachute assembly, select STREAM on the cockpit switches. When the door hook has moved to the release position, select JETTISON/OFF on the cockpit switches.
- (7) Stow the release catch cocking lever against the bulkhead and lock in position using the Pip-pin.

- (4) Open the door sufficiently to release the beaver tail from the spigot, on the underside of the door, by withdrawing the securing pin. At the same time on aircraft post Mod.2049, insert a hand to hold the flaps of the extractor parachute pack closed.

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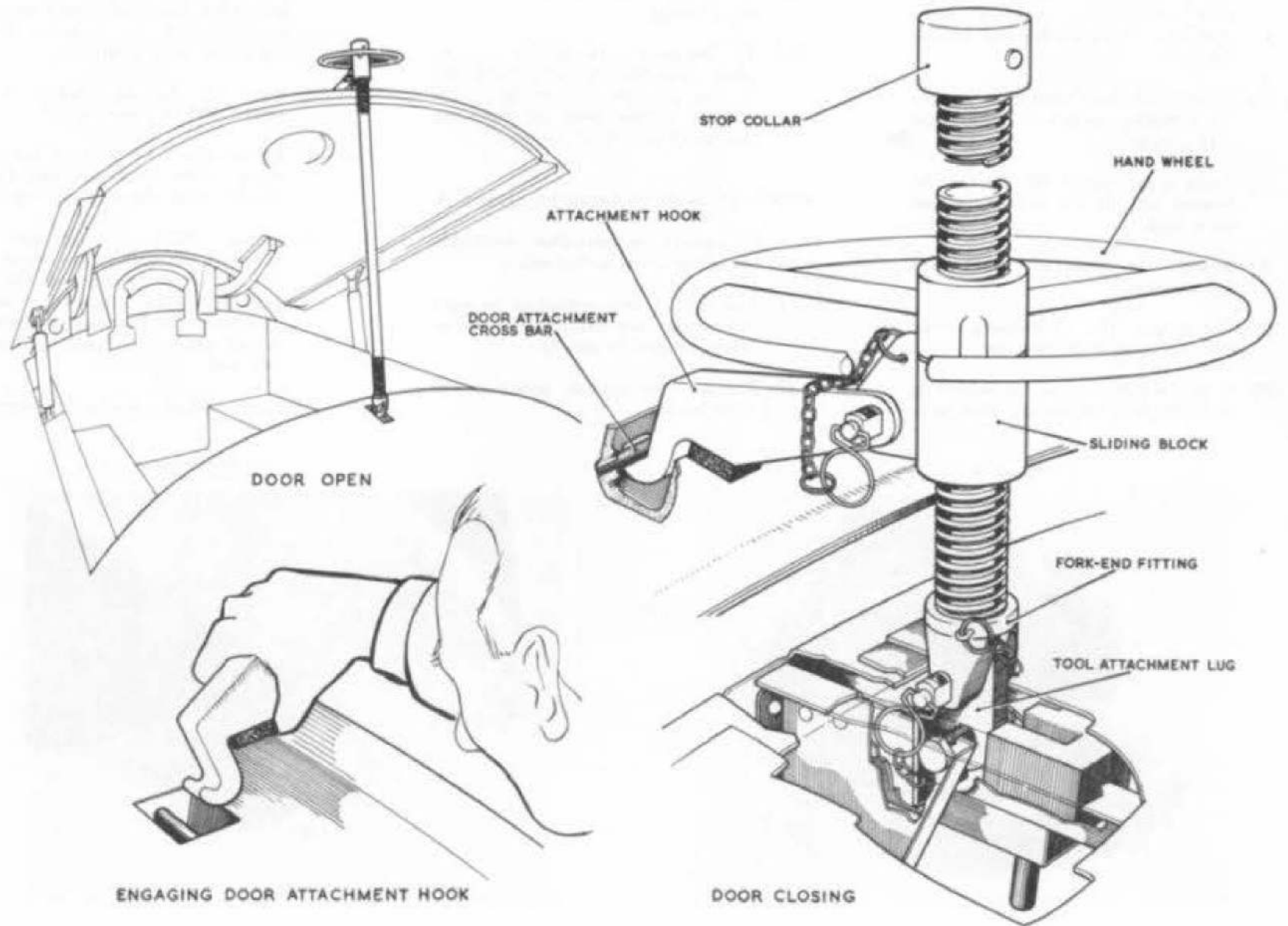


Fig. 6. Door manipulation — closing tool

**RESTRICTED**

- (5) Using the special tool, allow the door to rise to its fully open position. Disconnect and remove the tool.
- (6) On aircraft post Mod.2049 secure the extractor parachute pack flaps with a transit tie.
- (7) Using a red transit tie, secure the beaver tail to the becket on the main pack.
- (8) Remove the parachute packs from the stowage.
- (9) Disconnect the restraining stop from the woggle on the riser.
- (10) Open the jettison hook by selecting JETTISON on the cockpit switches.

- (11) Remove the shackle and riser from the stowage.
- (12) Tie the pack in the folded position using two 700 lb. red transit ties to link the becket at the bottom corners of the pack to those on the pack directly above them.

#### INSTALLATION OF PARACHUTE ASSEMBLY

40. To install the parachute assembly in the aircraft proceed as follows:-

- (1) Check that both actuators in each mechanism are serviceable as detailed in para.32 and 33.
- (2) Remove the access panel in the front fairing.

- (3) Ensure that the cockpit switches are in the JETTISON/OFF position and connect an external power supply to the aircraft.
- (4) Move the cocking switch to the PARA. HOOK position.
- (5) Ensure that the jettison hook release catch is disengaged (para. 36 (3)) with the Pip pin inserted.
- (6) Ensure that the line and ring shackles pivot about the shear pin. Adjust, if necessary, on the bolt passing through the line shackle to ensure that excessive pressure is not exerted on the ring shackle fork end.
- (7) Place the ball end of the restrain-

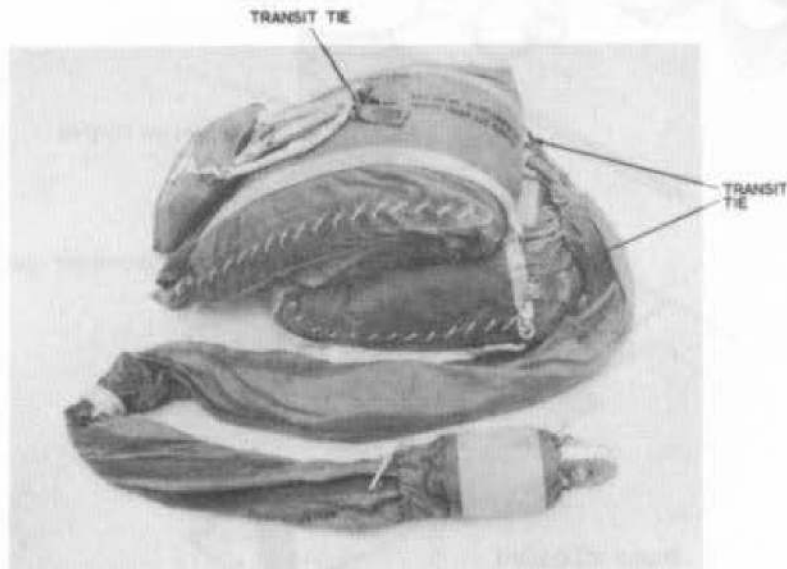


Fig.7. Parachute assembly

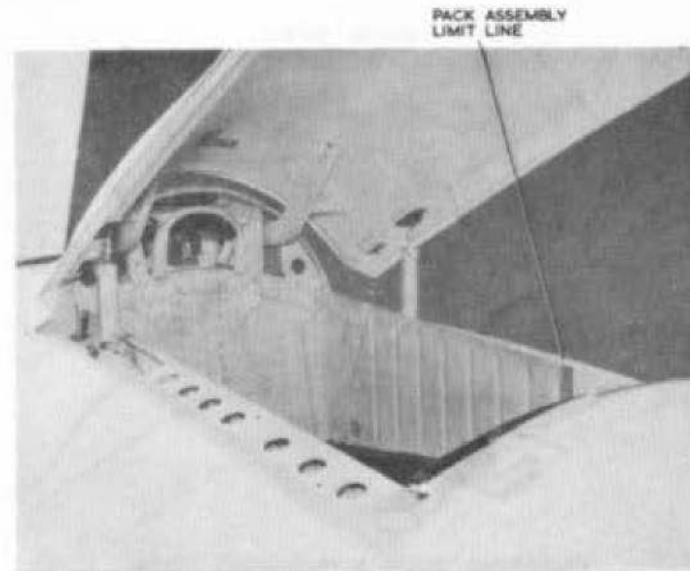


Fig.8. Stowage ready to receive parachute assembly

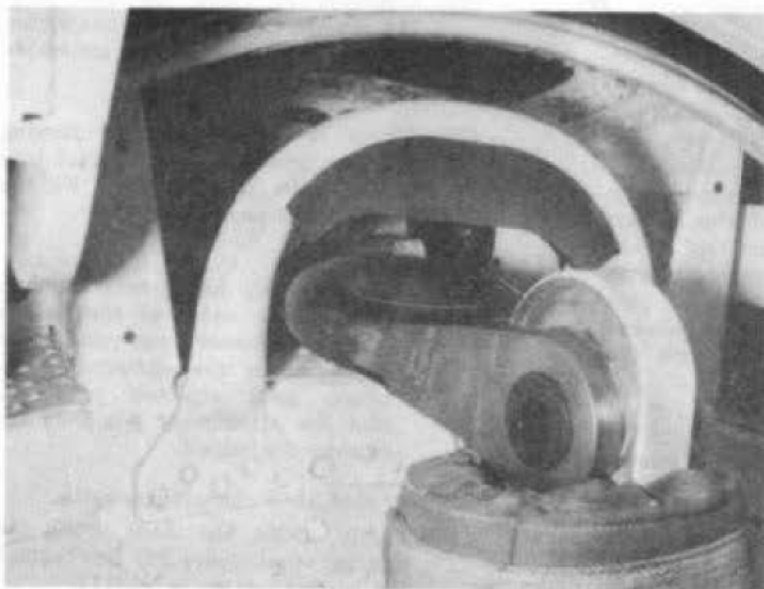


Fig. 9. Insertion of shackle and stop in jettison hook



Fig. 10. Attachment of restraining stop to riser

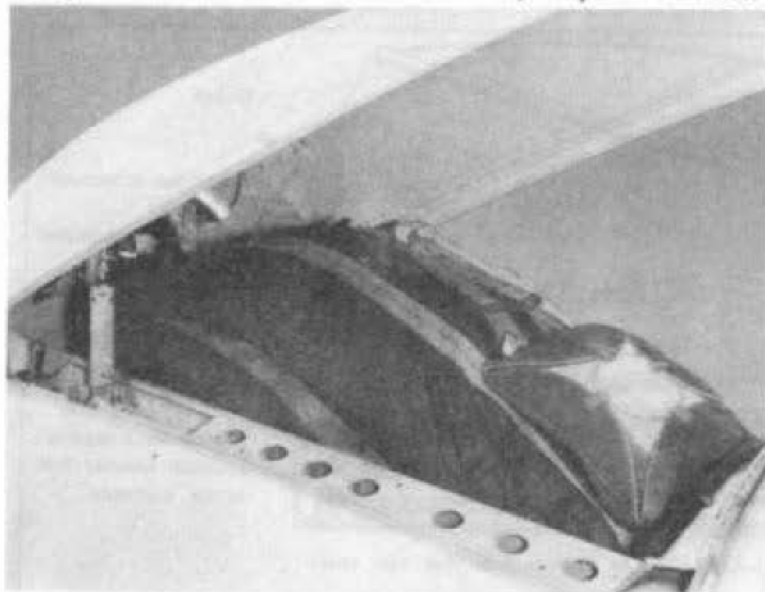


Fig.11. Parachute assembly correctly stowed  
(◀ Mod. No. 2049 ▶)

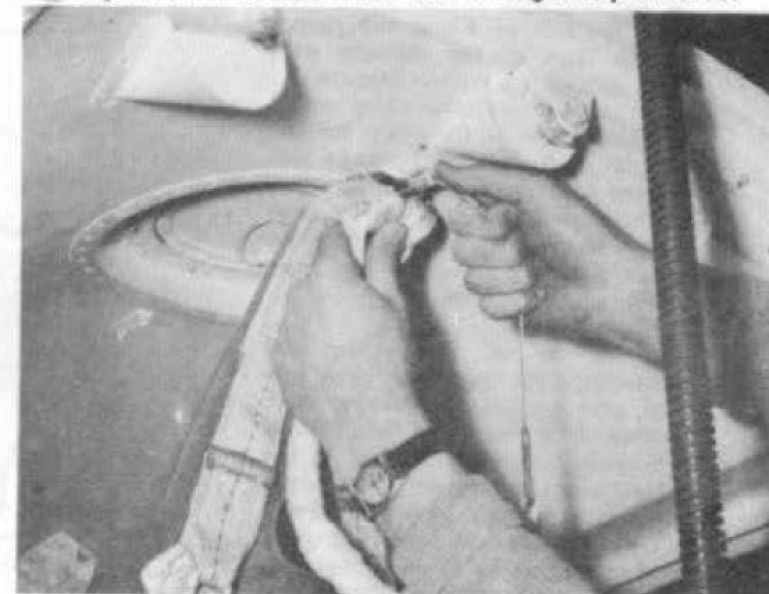


Fig.12. Attachment of beaver tail to spigot  
(◀ Mod. No. 2049 ▶)

ing strop in the jettison hook and fit the strop locating block into the slot in the hook retaining block. Place the parachute ring shackle in the jettison hook. This action will cause the hook to close.

**NOTE...**

*The ring shackle must be positioned carefully to ensure that it is not fouled by the jettison hook as it closes. Care must also be taken to ensure that the strop locating block remains in its correct position.*

- (8) Release the catch lever and stow the cocking lever flat to the bulkhead, secure the lever with the Pip pin.
- (9) Pivot the line shackle about the shear pin until the riser lies vertically down the front bulkhead of the stowage. The riser must then be stowed along the trough in the base of the stowage with the restraining strop beneath it. Pass the restraining strop round the steel tube in the strop bracket at the rear of the stowage and secure its thimble end to the snap-on clip of the woggle on the riser and lead the remainder of the riser forward in the trough to the front bulkhead of the stowage.
- (10) Remove the red transit ties and manoeuvre the parachute pack into the stowage in the shape of a flattened 'S', with the first fold of the pack assembly forward of the red line on the sides of the stowage. The pack is in its correct shape for stowage when supplied and care must be taken to maintain the downward slope at the rear of the pack assembly so that the end of the main pack is located on the floor of the compartment and against the rear bulkhead.

◀ On pre Mod.2049 aircraft proceed:- ▶

- (11) Ensure that the branched rip-pin cable passes through the beaver tail then partly close the parachute compartment door using the special tool (para.34). When the door is sufficiently lowered, place the flat metal ring of the beaver tail over the spigot on the inside of the door and secure it in position with the attachment pin. This pin, attached to the release cable, must be inserted from the rear side of the spigot.

**NOTE...**

*During insertion of the pin ensure that the spring clip is engaged correctly around the spigot and that it has not been distorted by catching the exposed loops of the extension strop.*

- (12) Continue to close the door until the rip-pin cable can be connected to the snap hooks on the underside of the door.

- (13) Close the door fully by turning the handwheel of the special tool firmly down (para.34 (6)). Fit the door access panel.

**NOTE...**

*Ensure that, during door closing, the release cable of the beaver tail attachment pin does not catch under the extractor parachute pack rip-cord pins and that the attachment pin does not become dislodged.*

◀ On post Mod.2049 aircraft proceed:- ▶

- (14) Partly close the door using the special tool (para.34) and attach the beaver tail as in op.(11).

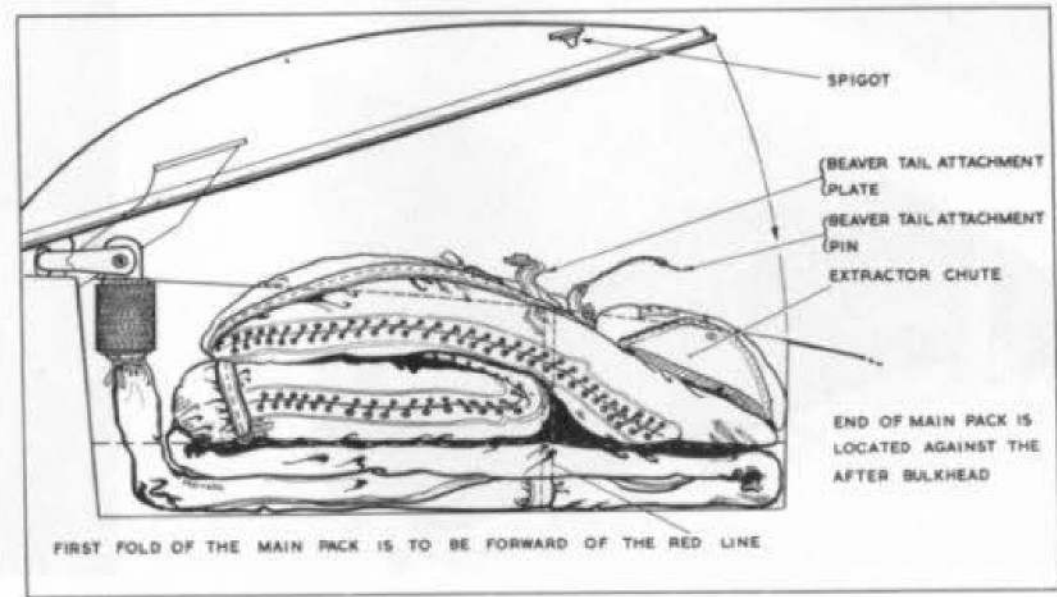


Fig.13. Brake parachute before door closing (◀ Mod.2049 ▶)

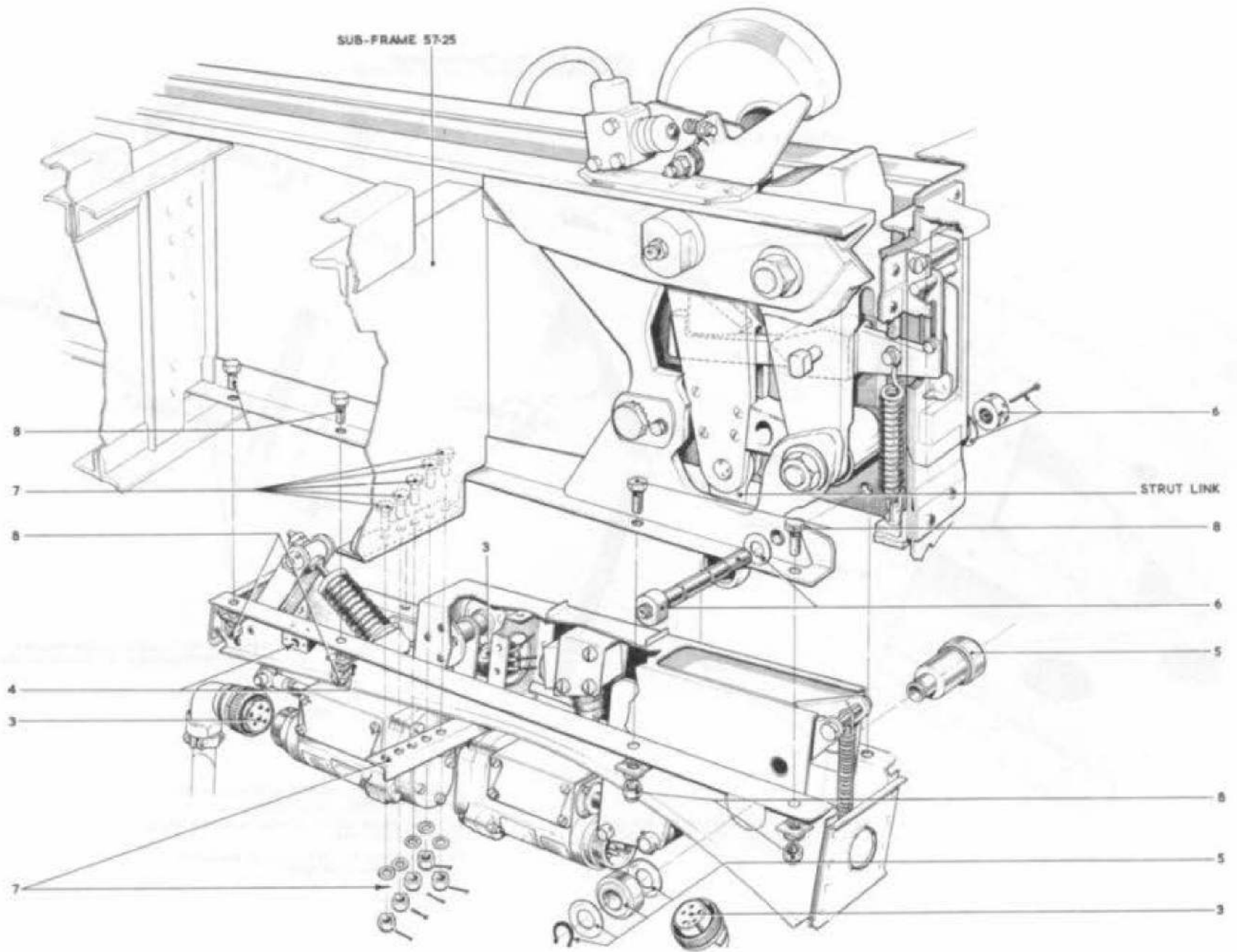


Fig. 14. Removal of release mechanism sub-assembly

(Mod. 1898)

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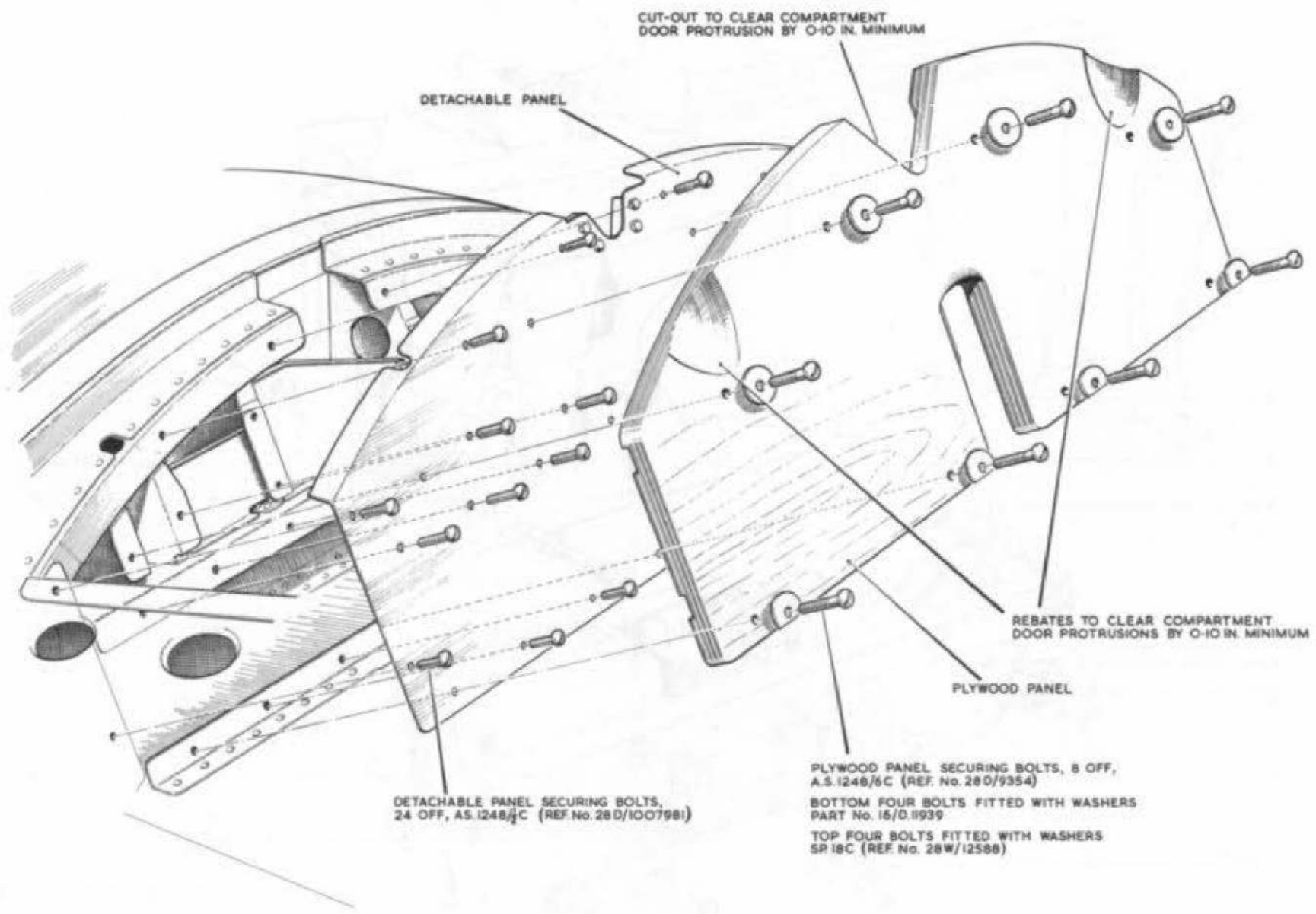


Fig. 15. Rear bulkhead removable panels.

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- ◀ (15) Continue closing the door until just before closing fully and remove the ties securing the extractor parachute pack flaps. Close the door as in op.(13).

On both pre and post Mod.2049 aircraft proceed:- ▶

- (16) Select DOOR HOOK on the cocking switch and check that the dolls-eye shows black. Fit the access panel in the fixed fairing.
- (17) Remove the special tool. The installation is now complete and ready for stream operation.

#### REMOVAL OF RELEASE MECHANISM SUB-ASSEMBLY

41. To remove the jettison hook release mechanism sub-assembly from the drag beam refer to fig.14 and proceed as follows:-

- (1) Place the cocking switch in the DOOR HOOK position and open the jettison hook by depressing the door hook micro switch (4).
- (2) Isolate, electrically, the brake parachute jettison hook and door hook mechanisms by removing the fuses 31 and 1044 from panels 3P and 4P respectively.
- (3) Disconnect the electrical leads from the jettison hook actuators and the jettison hook micro switch (5).
- (4) Remove the Helvyn strapping securing the electrical leads to the actuators and remove the clips securing the leads to the release mechanism sub-assembly.
- (5) Gain access to the strut-link to

stop-link connecting pin, with the jettison hook in the open position, this is through access holes in the release mechanism sub-assembly side plates. Remove the external circlip from one end of the pin and remove the roller and the two thrust washers. The pin, complete with the second roller and its associated thrust washers, can be removed through the hole in the side plate.

- (6) Remove the split pin, nut and washer from the stop-link pivot bolt and remove the bolt.
- (7) Remove the split pins, nuts and washers from the ten 2 B.A. bolts securing the joint boom to the bottom centre of sub frame 57-25. Remove the ten bolts and the joint boom.
- (8) Remove the nuts, washers and clamping blocks from the four 2 B.A. bolts securing each release mechanism sub-assembly side plate to the drag beam assembly. Remove the eight bolts and remove the sub-assembly from the drag beam.

#### FITTING THE RELEASE MECHANISM SUB-ASSEMBLY

42. To fit the jettison hook release mechanism sub-assembly to the drag beam, after setting the release mechanism as detailed in para.37 (1) to (6) proceed as follows:-

- (1) Ensure that the release mechanism actuators are in the fully retracted position.
- (2) Position the release mechanism to the drag beam and fit the eight 2 B.A. attachment bolts. Fit a clamping block, a washer and a

stiffnut to each bolt and fully tighten.

- (3) Fit the stop-link pivot bolt, fully tighten the nut and lock it by a split pin. Ensure that a washer is fitted under the bolt head and the nut.
- (4) Connect the strut-link to the stop-link using the attachment pin. Ensure that the rollers are fitted with a thrust washer on each side. Secure the attachment pin in position using the external circlip.
- (5) Fit the joint boom on the bottom centre of sub-frame 57-25 and secure it in position using the ten 2 B.A. attachment bolts fitted with washers and nuts. Lock the nuts using split pins.
- (6) Connect the electrical leads to the release mechanism actuators and the jettison hook micro switch (5). Secure the leads, by clips, to the release mechanism sub-assembly.

#### NOTE...

*Sufficient slack must be allowed on the leads to allow for 1-4 in. movement of the forward jettison actuator.*

- (7) Secure the leads to the jettison actuators using Helvyn strapping and fit fuses 31 and 1044 to panels 3P and 4P respectively.
- (8) After fitting the sub-assembly, set the release mechanism as detailed in para.37 (8) to (13).

#### REAR BULKHEAD REMOVABLE PANELS

##### Removal

43. On aircraft with Mod.1837 embodied

the plywood panel must be removed first to gain access to the detachable panel retaining bolts. The eight retaining bolts for the plywood panel are positioned as shown on fig.15.

#### Assembly

44. When fitting a new plywood panel, the cut-out at the top centre of the panel and the two rebates, one to port and one

to starboard at the top of the panel, must be trimmed, if necessary, to give a minimum clearance of 0.10 in. between the panel and compartment door protrusions.

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