Chapter 3

EMERGENCY CONTROLS, EQUIPMENT AND EXITS METHOD OF OPERATION

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Indicates black when battery is on
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pre-Mod. 2457 only

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also throws handwheel forward

45 EMERGENCY LIGHTING BATTERY

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47 STARBOARD INSTRUMENT PANEL EMERGENCY LAMPS SWITCH

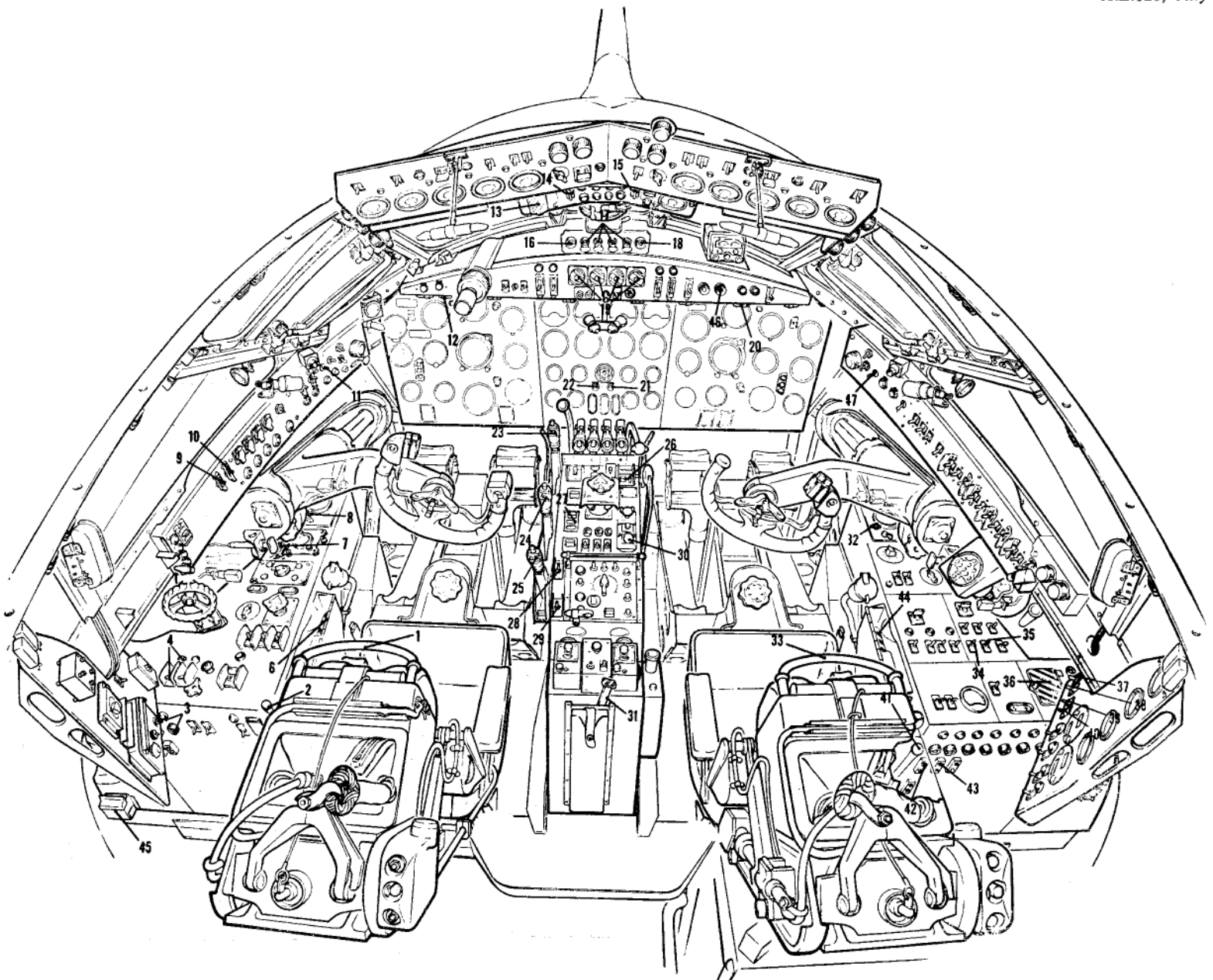

Fig. 1. Emergency controls in cockpit

EMERGENCY CONTROLS

Fuel isolation

1. To isolate the fuel from an engine in an emergency, the appropriate throttle control lever should be brought right back through the gate to close the H.P. cock.

Undercarriage emergency lowering

2. If the undercarriage fails to lower, the emergency motors can be operated by pressing the EMERGENCY DOWN button on the control pedestal panel and all three units will lower.

Undercarriage extreme emergency lowering

3. This system operates the main undercarriage units only. If a main undercarriage fails to lower after pressing the EMERGENCY DOWN button (*para.* 2) the EXTREME EMERGENCY system must be used. This system, operated by two covered switches on the starboard console panel, fires explosive bolts which detach the main undercarriage outer doors from their actuators and the uplocks from the aircraft structure; the outer doors will then open and the main undercarriage ◀units will be lowered. The systems for port and starboard are identical but independent (*Sect.* 5, *Chap.* 2, *Group* 6).▶

Stand-by braking

4. When moved to port, the stand-by brake lever mounted on the face of the control pedestal operates a valve to make available the pressure from Service No. 2.

Flap emergency operation

5. The flap gearbox is fitted with an emergency motor. In the event of the main motor failing the flaps can be raised or lowered by selecting the FLAP EMERGENCY CONTROL switch which is located on the control pedestal panel. When the flaps are in motion on emergency, a reversal of motion may only be carried out by stopping the flaps and re-setting.

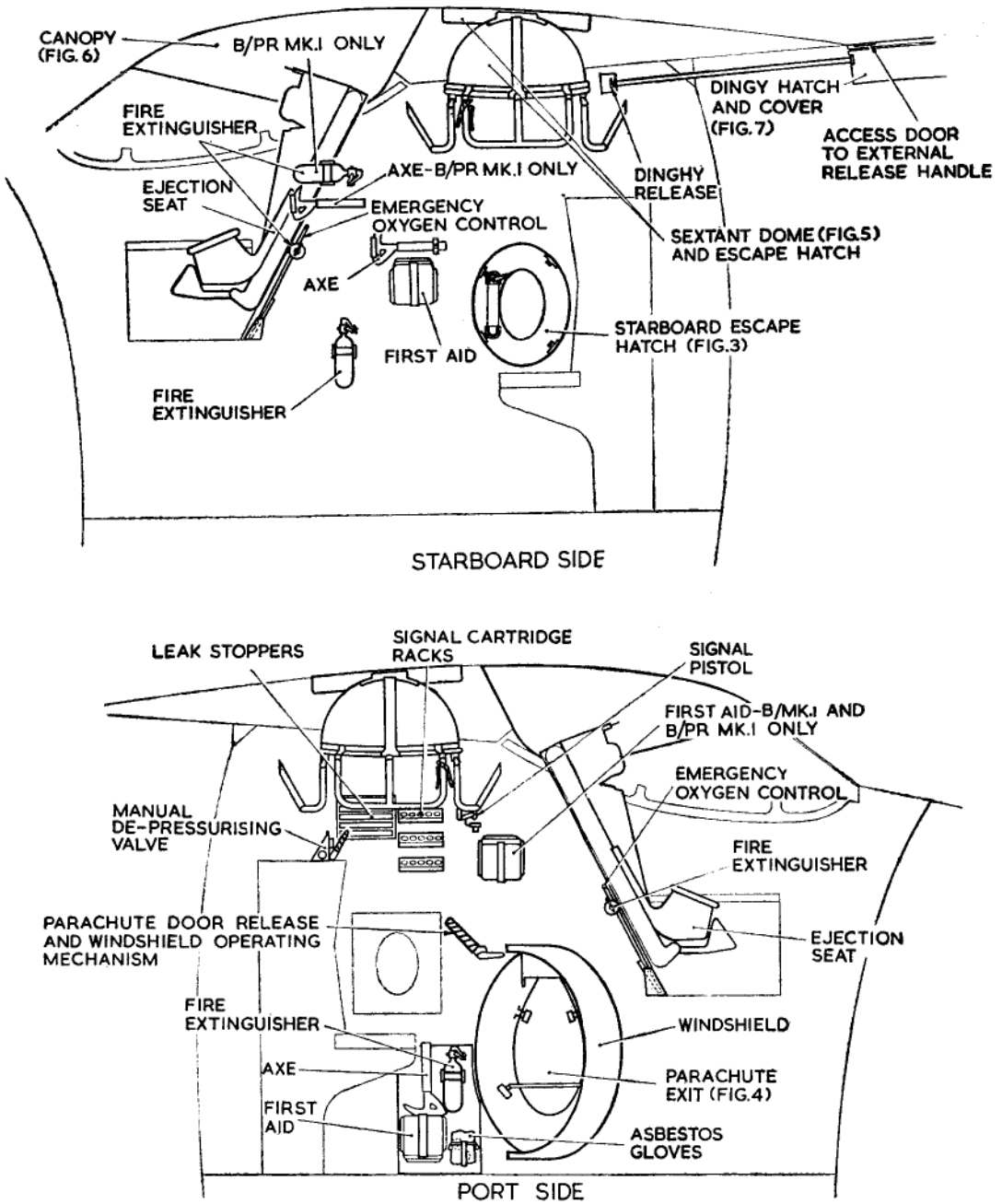

Fig. 2. Emergency equipment and exits

Bomb door emergency opening and bomb jettisoning

6. An EMERGENCY BOMB JETTISON switch is fitted on the control pedestal panel. When the switch is operated, the deflector rises, the bomb doors open, and the bombs are jettisoned; after thirty seconds the bomb doors and the deflectors close (*Sect.* 5, *Chap.* 2 *and* 3).

Artificial feel unit emergency release

7. In the event of failure of an artificial feel unit, it can be disconnected by pulling the appropriate lever on the port side of the control pedestal (*Sect.* 3, *Chap.* 4).

Emergency and extreme emergency wing clearing (pre-Mod. 2296)

8. *Pre-Mod.* 1185. The emergency and extreme emergency wing clearing covered switches are mounted side by side on the first pilot's fuel panel above the windscreen. *Post-Mod.* 1185. Aircraft incorporating Mod. 1185 are fitted with one double pole covered switch that operates emergency and extreme emergency.

Note . . .

When Mod. 1513 *is incorporated the above switching is rendered inoperative.*

Cabin pressure release

9. When the aircraft is to be abandoned, the cabin pressure must first be reduced to ambient by any member of the crew. Either pilot can, by operating the appropriate switch on his panel, cause two solenoid valves to operate; one will bleed the line from the pressure controller to the discharge valve and the other the line from the sylphon unit to the safety valve. The crew's control is a valve marked NORMAL/EMERGENCY DEPRESSURIZE in white letters on a black background (Mod. 1282) and is operated by a handle with a push button release, mounted centrally at the navigator's station; when the handle is turned clockwise, the lines mentioned above will be bled directly (*Sect.* 3, *Chap.* 8). Post-Mod. 2877 the emergency depressurization valve is repositioned, in the 1st navigator's table top, under a hinged cover marked with yellow stripes on a black background.

Flood flow emergency air supply

10. If a loss of cabin pressure occurs the flood flow system will automatically come into operation and keep the cabin altitude at 29,000 feet. If the cabin altitude rises above 29,000 feet the flow of air into the cabin is automatically controlled by the absolute pressure switch (*Sect.* 3, *Chap.* 8); once the cabin altitude drops below 29,000 feet the air flow can be controlled by two switches mounted on the second pilot's console marked EMERGENCY INCREASED AIR SUPPLY CUT-OUT, port and starboard. It should be noted that the flood flow valves are fully opened by the action of the absolute pressure switch and cannot be even partially closed by operation of these switches until the cabin altitude has been brought below 29,000 feet.

Emergency oxygen release

11. Should the normal oxygen system to the pilots fail, the emergency bottle in the dinghy pack can be brought into use by pulling upwards the yellow-painted manual release knob on the outboard side of each pilot's seat. Post-Mod. 1306, the release knobs 2 and 41 are moved from the locations illustrated to positions one on each side of the throttle box inboard of the pilots' seats, in which positions both controls can be seen and operated by each pilot. The control support brackets are in a lower position, post-Mod. 3083, to provide clearance for the fitting of other equipment. A stowage (Mod. 2799) for the emergency oxygen cylinder pin is attached by a bracket to the aft end of the centre signal-cartridge rack.

FIRE EXTINGUISHERS

Engine fire-extinguishing system

12. Each engine is fitted with an independent Graviner type fire-extinguishing system (*Sect.* 4, *Chap.* 5). Any one of sixteen resetting fire detector switches on each engine, five in the compressor bay, six in the combustion bay and five in each jet pipe bay will operate the appropriate warning lamp in the centre of each pushbutton on the dashboard top panel. On pre-Mod. 2457 aircraft, a seventeenth fire detector switch in the fifteenth stage compressor outlet of each engine operates the appropriate warning lamp on a panel above the dashboard top panel; when a lamp comes on the the H.P. cock to that engine must be closed.

Hand-operated extinguishers

13. Five hand-operated, trigger-controlled fire extinguishers are located in the pressure cabin (*fig.* 2). (Mod. 3135 provides for fire extinguishers Ref. No. 27H/299 in lieu of Ref. No. 27N/70). After use, all empty or partially empty extinguishers must be replaced by full ones at the earliest opportunity.

EMERGENCY EXITS

14. The entrance door, pilots' canopy-sextant dome and the elliptical hatch on the starboard side of the cabin can all be used as emergency exits. The entrance door and the canopy are also used as parachute exits.

Jettisoning the entrance door

15. The entrance door on the port side of the pressure cabin can be jettisoned in an emergency by pulling down the handle at the aft top corner of the door. This operation shears the locking rivet, breaks the joint in the door hinge block, and withdraws the windshield release bolt and the door bolts. The door is then jettisoned and the windshield released.

Canopy jettison and elevator control release

16. A canopy jettison and elevator control release lever is mounted in a box with a spring-loaded cover on both the port and starboard consoles, each lever releasing the control handwheel on that side from the elevator control system. To operate this

lever, lift the hinged cover and pull the lever upwards. The first part of lever travel fires the explosive charges in the canopy bolts and jettisons the canopy; the final travel disengages the control column from the elevator controls and throws the handwheel forward to its "parked" position (*Sect.* 3, *Chap.* 4). Once the handwheel has been disengaged by this means it cannot be re-engaged. If during the first part of the lever travel the canopy fails to eject, extra microswitches, fed from an emergency battery, come into operation and the explosive charges in the canopy bolts are fired during the final travel of the lever (*Sect.* 5, *Chap.* 2). Post-Mod. 3182, a master switch with a guard and safety pin (to which a warning flag is attached) is provided in the canopy detonation circuit. The switch is fitted to the canopy detonation resistance box, and a stowage for the safety pin and warning flag is provided on the box lid.

Sextant station

17. The sextant dome, in the centre of the pressure cabin roof, immediately aft of the pilot's canopy, can be removed to provide a ditching exit by squeezing together the two pairs of handles on the back rest tubes and pulling the dome inwards. Instructions for release are marked on the inside of the dome in white letters on a black background (Mod. 1282).

Starboard escape hatch

18. The hatch on the starboard side is for use in crash conditions only and cannot be used as a parachute exit. To remove the hatch from inside the aircraft, pull down the handle and pull the door inwards. To gain access from outside the aircraft, depress the forward part of the handle; this causes the handle to protrude from its housing sufficiently to enable it to be pulled and turned in a clockwise direction. Post-Mod. 3024, angular movement of the operating handle is limited by a stop arm (riveted to the shaft) within a stop plate attached to the upper support bracket. The inner handle LOCKED position is indicated by a witness line on the operating mechanism cover plate. Instructions for release are marked on the inside of the door in white letters on a black background (Mod. 1282).

Abandoning the aircraft in flight

10. The procedure for abandoning the aircraft in flight is described in Pilot's Notes. Post-Mod. 2828, ABANDON AIRCRAFT warning signs at the 1st navigator's and bomb-aimer's stations are controlled through a guarded switch on the pilot's port fuel panel.

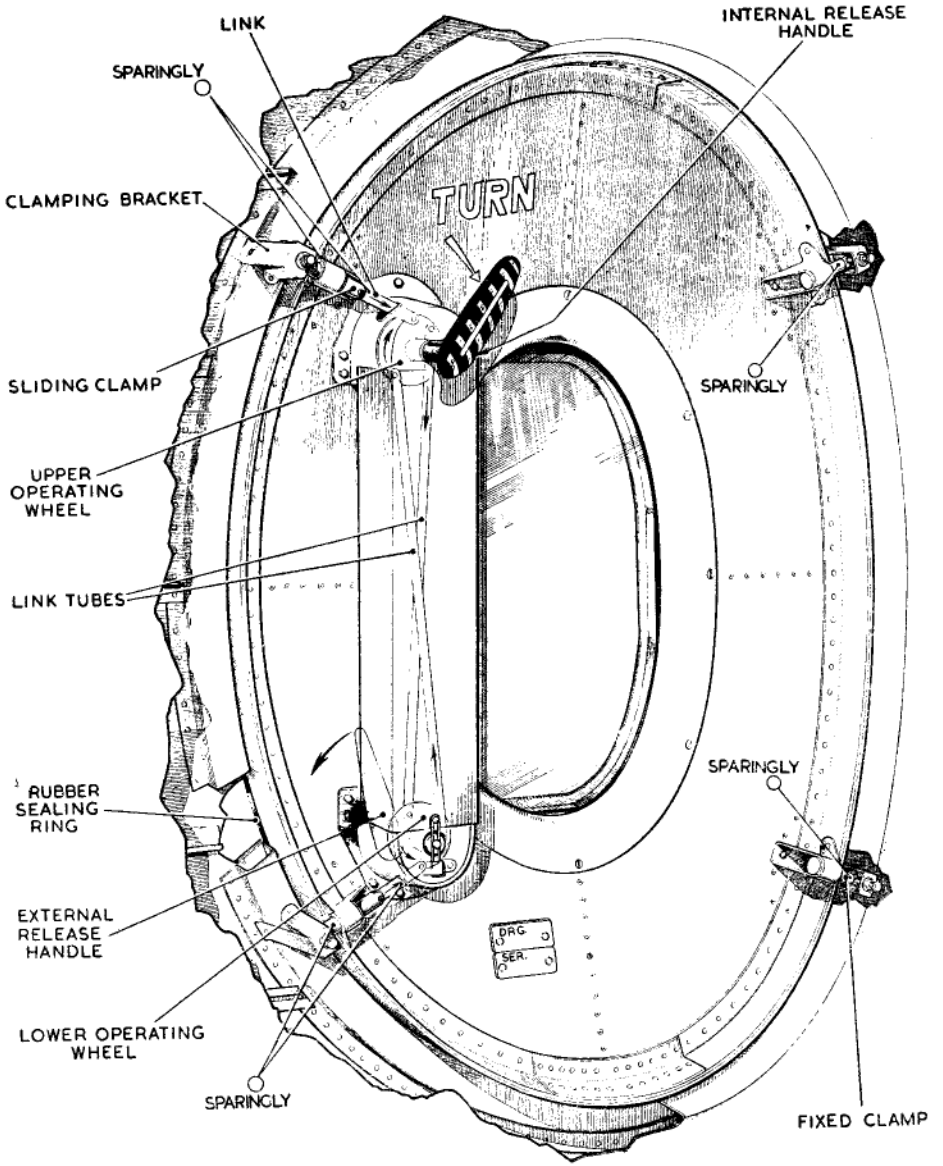

Fig. 3. Starboard escape hatch

Pilots' ejection seats

20. An ejection seat is fitted for each pilot. For methods of operation and safety precautions see A.P.4288, Vol. 1. To prevent the ejection seats being fired before the canopy is jettisoned a safety pin, to lock the firing handle of each seat, is attached by a lanyard to the canopy sill rail. The action of jettisoning the canopy will remove the safety pin from each seat firing mechanism, so enabling the seats to be ejected.

Parachutes

21. The two pilots and crew are equipped with suitable parachutes (A.P.1182, Vol. 1).

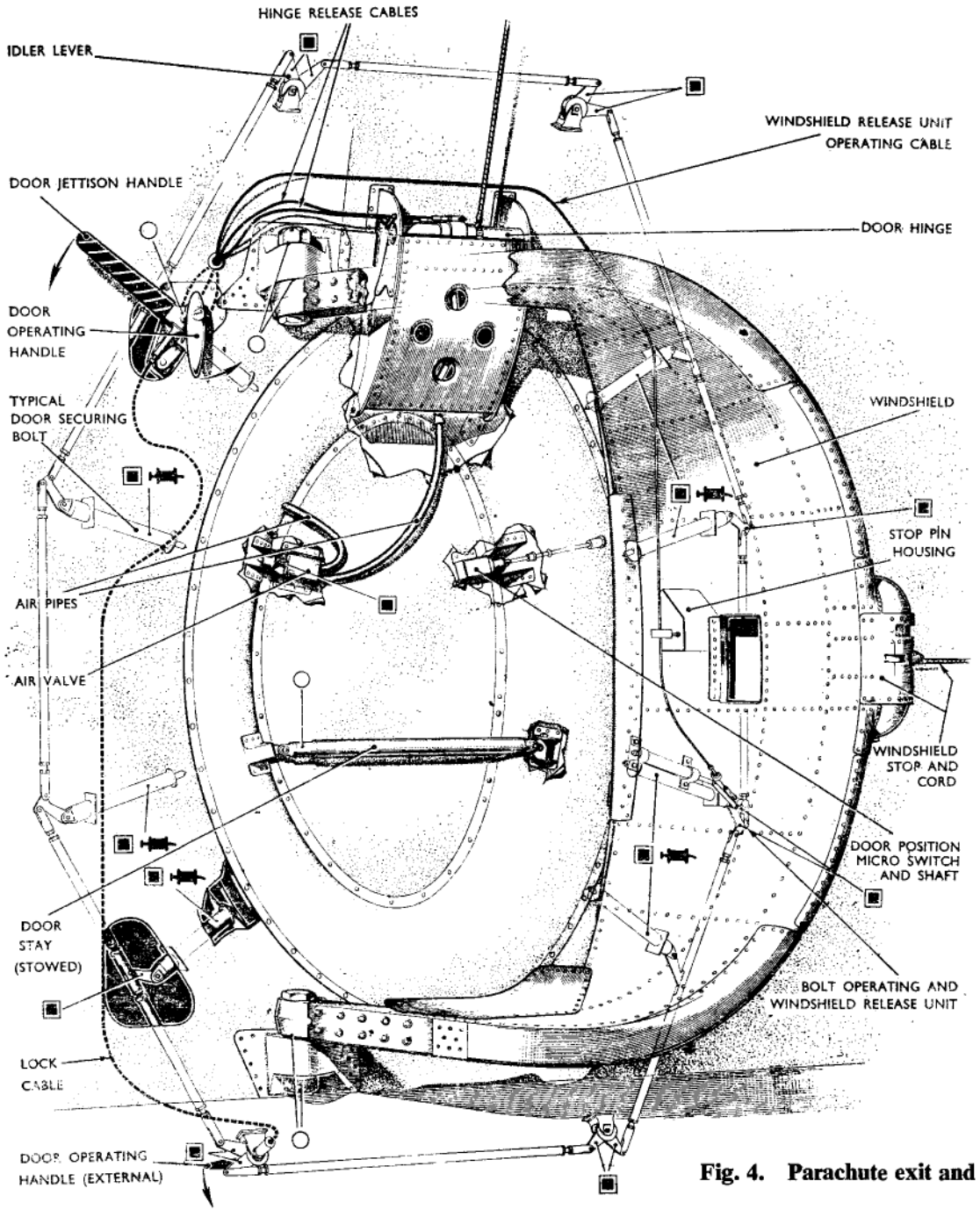

Fig. 4. Parachute exit and windshield, pre-Mod. 3193

Crew's parachute static lines (fig. 8)

22. Static lines are provided for the three crew members and the crew chief, the four lines and link rings being stowed on a panel at the back of the W/T operator's seat. Below this panel is a canvas mounting to which the static lines (in sleeves) are stowed. To install the assembly into the aircraft:—

(1) Bolt the static line link platform to the seat side members.

(2) Slide the retaining rod through the seat port side member, passing it through the canvas mounting and the other side member. Secure with a $\frac{1}{4}$ in. i/d washer and split pin at each end.

(3) Bolt the retaining strip to the bottom of the link platform, picking up with the holes in the canvas mounting.

(4) Place the anchorage bracket around the seat bottom rear rail at the right-hand side member, and secure in a horizontal position with two 2 B.A. bolts, distance piece and nuts.

(5) Taking in sequence the full ends of the static lines, with the D-rings fitted (the left-hand static line D-ring to be at the bottom) place the D-rings on top of each other, insert the distance piece through the four rings and place them into the anchorage bracket. Secure the assembly with a $\frac{3}{8}$ in. dia. bolt, slotted nut and split pin; always assemble with the nut uppermost for inspection purposes.

◀**22A.** When Mod. 3193 is embodied the type of parachute used carries its static line in the pack, no other static lines being provided. When about to abandon aircraft the crew member attaches his static line, either to the left-hand side of his seat adjacent to the seat-operating handle or to a specially provided static line bracket at the rear of the entrance door, near the door-operating handle (fig. 9).▶

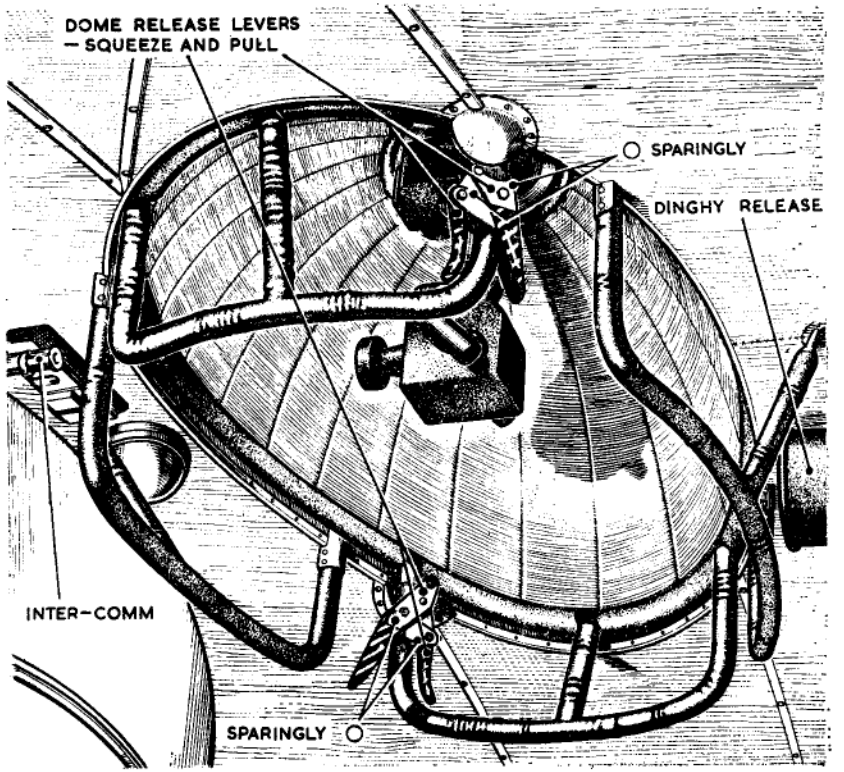

Fig. 5. Sextant station dome

DINGHY INSTALLATIONS

23. A Mk. 3, type H inflatable dinghy (Ref. No. 27C/1879), complete with auxiliary equipment, is stowed in a metal container mounted in the compartment aft of the pressure cabin. The CO^2 cylinder, together with a type H operating head and piston unit, is mounted at the forward end of the container.

Emergency pack

24. A special pack, containing emergency equipment, is stowed in a waterproof valise inside the folded dinghy, and is attached to the dinghy by a lanyard.

Dinghy release

25. The detachable cover of the container is held in position by four mechanically cocked hooks, which are connected for simultaneous operation by the release handle mounted in the cabin roof just aft of the sextant dome (see A.P.1182C, Vol. 1). ◀Post-Mod. 3148, the tie-rods in the cover release mechanism and to the hinged release lever are increased from 4 B.A. to 2 B.A. and guards are provided to protect them.▶

External release

26. A hook uncocking lever with a red-painted handle for releasing the dinghy in

an emergency is fitted in the dinghy container and is coupled direct to the release cable. Access to this handle is by opening a hinged door in the cover of the dinghy compartment.

Radio kit

27. A standard No. 1 radio kit, with an additional transmitter, is stowed in the aft end of the dinghy container.

MISCELLANEOUS

Axes

28. In addition to the axe stowed with the emergency equipment on a panel aft of the entrance door, a second axe is stowed alongside the fire extinguisher forward of the escape hatch in the starboard side of the cabin.

Signal pistol and cartridges

29. A signal pistol is mounted in the firing position in the port side of the cabin roof, aft of the pilot's canopy. Three stowage racks, each holding five cartridges, are mounted on the port side of the pressure cabin opposite the sextant dome.

Asbestos gloves and first-aid kits

30. The asbestos gloves and a first-aid kit are stowed on the port side of the cabin just aft of the entrance door. A second first-aid kit is stowed above the door.

Leak stoppers (Mod. 911)

31. The leak stoppers are stowed just aft of the signal pistol cartridge stowages and are for use if the cabin is punctured. The method of application is described in A.P.4340, Vol. 1, Sect. 1, Chap. 3.

Cabin window glazing

32. The pressure cabin windscreens are so designed that the window glasses are carried on a vinyl membrane which completely closes the window opening and supports the glass remote from all structural boundaries. By this form of construction the crew are protected from explosive collapse of the windows since with all glass fractured the vinyl membrane will continue to carry the cabin working pressure for some hours before collapsing, although considerable distention will take place.

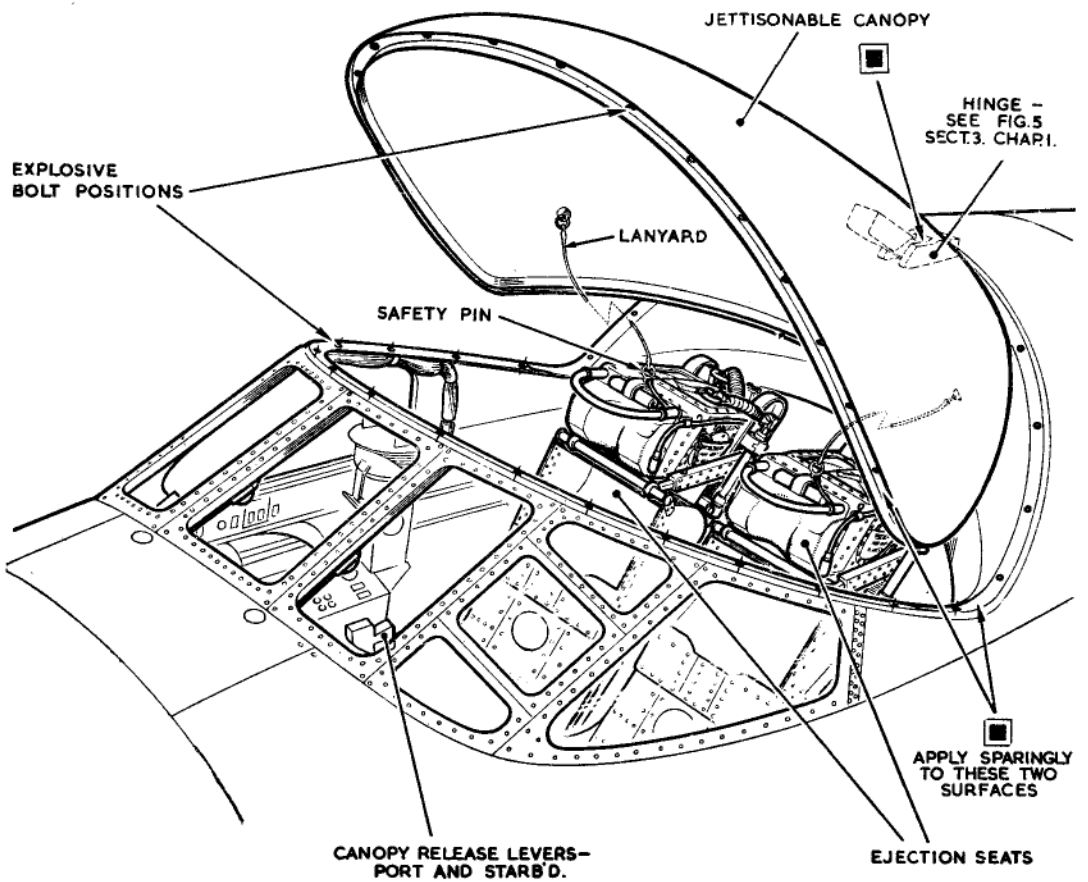

Fig. 6. Cockpit canopy

Rear cabin emergency lighting (post-Mod. 2876)

33. Four emergency lamps, controlled through two guarded switches on the forward edge of the 1st navigator's table, or through the ABANDON AIRCRAFT warning switch on the port fuel panel, are fitted to aid crew escape.

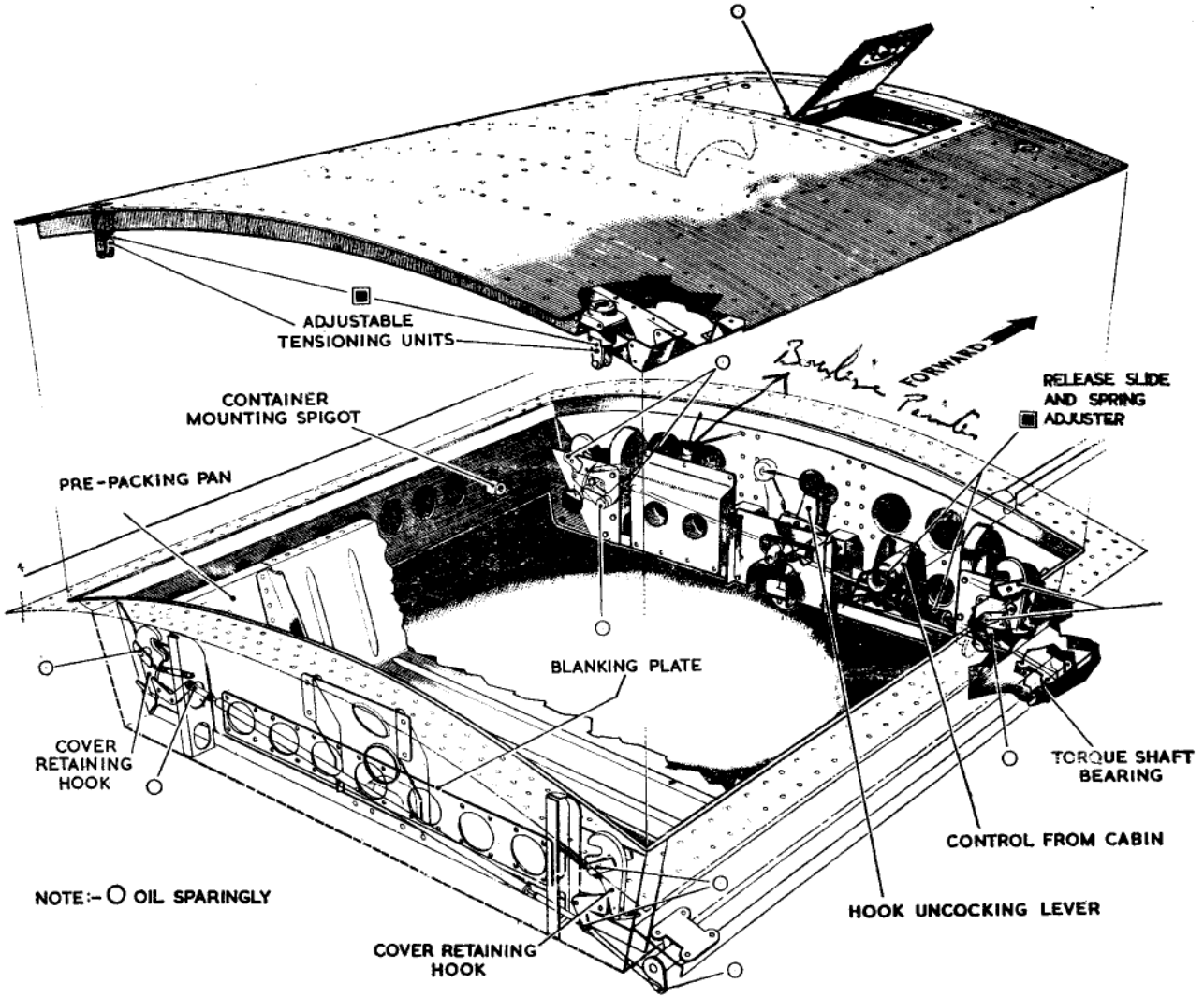

Fig. 7. Dinghy hatch cover and mechanism

◀ Tie-rod guards added ▶

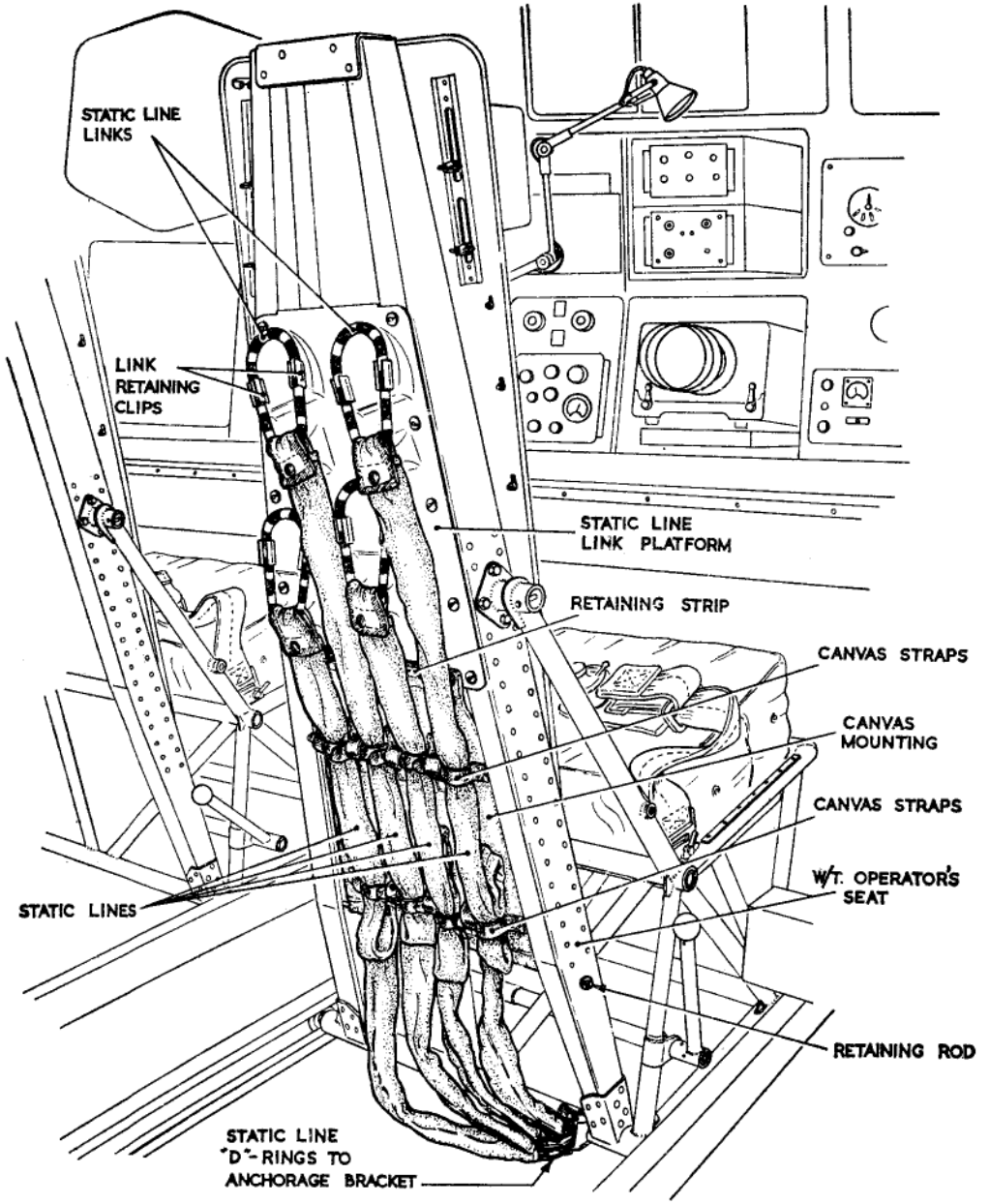

Fig. 8. Crew's parachute static lines installation, pre-Mod. 3193

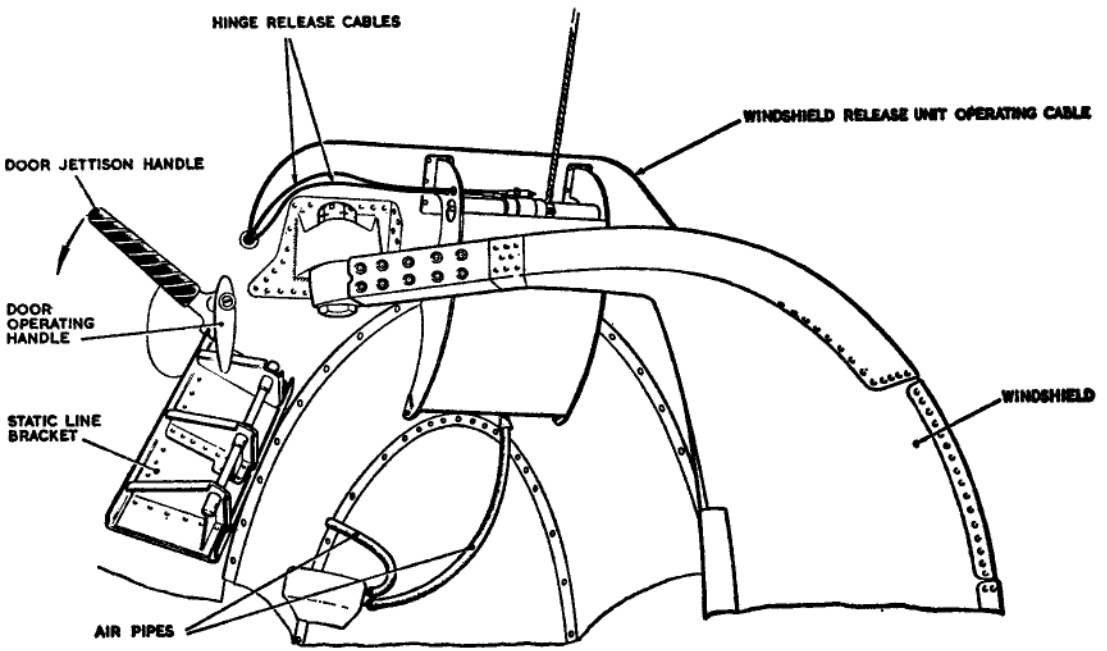

Fig. 9. Parachute exit and windshield, post-Mod. 3193