

Chapter 2

JAVELIN F(AW) Mk. 7, 8 AND 9

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COMPOSITION OF THE ASSEMBLY

1. Two aircrew equipment assemblies are required for this aircraft, but as they are similar reference is made to one only throughout this Chapter. The assembly consists of the following items:-

Ejection seat	◀ Type 3JS ▶
Parachute assembly	Back type Mk. 33
Personal survival pack	Type R c/w seat cushion Ref. 27C/2428
Oxygen set emergency	Mk. 8 c/w valve RV51/2
▶ ▶	
Flying clothing	See Appendix 1

◀ Type 3JS ejection seat and associated equipment ▶

2. ◀ The Type 3JS seat is ejected from the aircraft by a cartridge-operated gun. During ejection, the seat slides on a guide rail attached to the airframe structure ▶.

3. A combined safety and parachute harness, which can be released from the seat by the action of the barostatic time-release unit or by a manual separation lever on the left-hand side of the seat pan, is used in conjunction with the seat, the harness being attached at three quick-release points. The 'go-forward' release lever is situated at the forward end of the left-hand side of the seat pan, the knob being pushed forward to allow the occupant to lean forward in the seat.

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4. ▶ ◀ An emergency supply of oxygen is carried in a cylinder clamped to the right-hand beam of the seat; the supply is turned on automatically during ejection and provision is made also for manual operation in case of failure of the main oxygen supply in the aircraft.

5. A personal equipment connector (P.E.C.), described in Sect. 1, Chap. 5, is fitted to the right-hand panel of the seat pan. It enables the main oxygen, emergency oxygen, air-ventilated suit, anti 'G' suit and Mic/Tel lead to be connected or disconnected in one action. The connector consists of three components :-

- (1) *Aircraft component.* Connected to the cockpit structure by a telescopic rod.
- (2) *Seat component.* Bolted to the seat pan.
- (3) *Personal component.* Attached to the flying clothing.

6. ◀ Two firing handles are fitted to the seat. The face screen handle, which has an integral face screen, projects from the front of the drogue container; the seat pan handle is partially recessed into the top front edge of the seat pan and is intended for use when the occupant is unable to reach the face screen firing handle, e.g., when subjected to high 'G' forces. Both firing handles are connected to the hood jettison mechanisms; when either handle is pulled, the hood of that particular cockpit is jettisoned and the seat is ejected one second later. A separate hood jettison handle is fitted in each cockpit for use when it is desired to jettison the hood without abandoning the aircraft ▶.

7. ◀ The personal survival pack is housed in the seat pan where, together with a slotted cushion, it forms a soft seat for the occupant. A negative-G restraint strap is routed through a slotted bracket, on the front of the seat pan and over the top of the personal survival pack. Rear loops on the strap are anchored to their respective lugs on the harness lower straps; front loops on the strap are anchored to the harness lap straps. Leg restraint cords are fitted through snubbing units on the front underside of the seat pan; the cords ensure that the occupant's legs are drawn back to the seat pan and restrained there during ejection. An interconnection between the leg restraint cords and the P.E.C. ensures that it is impossible to connect the cords correctly until the personal component is engaged with, and locked to, the seat component ▶.

8. The seat is adjusted for height by a lever at the right-hand side of the seat pan; the plunger in the end of the lever must be depressed before the seat can be moved.

9. As the seat ascends the guide rail during ejection, the aircraft component of the P.E.C. is detached from the seat component, severing and sealing off the connections between the seat and the aircraft. At the same time, the emergency oxygen supply is turned on automatically.

10. Fully automatic facilities are provided to withdraw the parachute and separate the occupant from the seat after ejection. A manual override control and manual separation lever are provided to disconnect the parachute automatic withdrawal device and the combined harness from the seat should the need arise to (a) make a manual bale-out or (b) make a manual separation from the seat after ejection.

11. ◀ A description of the Type 3JS ejection seat will be found in A.P.4288C, Vol. 1. Information concerning the Mk. 33 parachute assembly and the Type R personal survival pack will be found in A.P.1182A, Vol. 1, and A.P.1182C, Vol. 1, Book 2, respectively and the E.O. set is described in A.P.1275G, Vol. 1 ▶.

Connections to the aircraft

12. When the seat is installed in the aircraft and is properly equipped, the following items are connected to the aircraft :-

- (1) *Left-hand side of the seat :-*
 - (a) Static rod from drogue gun.
- (2) *Right-hand side of seat :-*
 - (a) Static rod from barostatic time-release unit.
 - (b) Static rod from aircraft component of P.E.C.
 - (c) Main oxygen supply hose.
 - (d) Anti-'G' suit air supply hose.
 - (e) Air-ventilated suit air supply hose.
 - (f) Mic/Tel lead.
 - (g) Static line from emergency oxygen cylinder operating head.

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- (3) *Front of seat*:-
 (a) Leg restraint cords.
- (4) *Top of seat*:-
 (a) Hood jettison unit operating cable.

EQUIPPING THE SEAT

13. ◀ Before equipping the seat, ensure that it is made safe for servicing in accordance with current instructions ▶.

14. The following procedure is to be used when equipping the seat; refer to fig. 1 to 4 for detail as necessary:-

- (1) Fit the emergency oxygen cylinder into its clamping brackets on the seat beam ensuring that the loop of the supply tube at the top of the cylinder faces forwards.

Note . . .

Fitting the emergency oxygen cylinder to the seat is easier if the seat is removed from the aircraft. ▶ ◀

- (2) ◀ Pass the emergency oxygen supply tube between the inward relief and excess pressure valve and the seat pan and connect it to the inlet port of the valve. Arrange the tube in an easy sweep and press it into the spring clips on the side of the seat pan. Wirelock the tube connector to the valve ▶.
- (3) Connect the emergency oxygen cylinder operating cable to the anchor section of the static line and engage the ferrule of the cable housing in the anchor socket. Connect the anchor hook to the static line-cum-manual operating cable.
- (4) Place the parachute pack on its support bracket and ensure that the harness is not twisted.
- (5) Check that the manual separation lever is fully down.
- (6) Operate the harness 'go-forward' lever and pull out the centre strap.

- (7) Lift the pack forward and pass the centre strap upwards through the harness D-shackle, ensuring that the harness straps are not twisted. Fit the O-rings of the parachute pack restraining straps over the lug and insert the lug into the harness upper lock. Pull sharply on the harness shoulder straps to check security of attachment.
- (8) Replace the pack on its support bracket.
- (9) Position the headrest cushion on the top of the parachute pack.
- (10) ◀ Pass the left-hand pack restraining strap over the drogue link line, through the buckle on the short strap at the side of the drogue container and then forward through the buckle on the left-hand side of the headrest cushion ▶.

Note . . .

When passing the strap through the buckle on the short strap at the side of the drogue container, ensure that the strap passes through the buckle from the outside inwards.

- (11) Pass the right-hand pack restraining strap through the buckle on the short strap at the side of the drogue container (see note to sub-para. (10)) and then forward through the buckle on the right-hand side of the headrest cushion.
- (12) Fully tighten both pack restraining straps, ensuring that the headrest cushion remains central on the top of the parachute pack.
- (13) Connect the two halves of the drogue link line coupling ensuring that the line passes under the left-hand restraint strap and UNDER THE DROGUE WITHDRAWAL LINE.
- (14) ◀ Place the personal survival pack in the seat pan and drape the lowering line over the left-hand side of the pan. The transverse strap connecting the two harness lower attachment lugs MUST lie across the top at the rear of

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the survival pack; it is a very tight fit and care must be taken to ensure that the strap does, in fact, pass over the pack and not behind it or diagonally across one corner ► .

- (15) ◀ Pass the negative-G restraint strap through the bracket at the front of the seat pan, with the short (blue) Y-section to the front. Ensure that the strap does NOT pass through the seat pan firing handle. Route the long (white) Y-section over the personal survival pack. With the harness straps free from twist, pass the lug of each harness lower attachment strap through its loop at the end of the negative-G white strap; insert each lug into its harness lock in the back of the seat pan. Pull sharply on each strap to check security of lug engagement ► .
- (16) Connect the personal survival pack side quick-release couplings to the harness and adjust their attachment straps sufficiently to allow the couplings to be tucked between the pack and the seat pan.
- (17) Pass the sticker straps upwards inboards of the personal survival pack side quick-release couplings; outboard over the couplings, and then insert them into the clips on the inside of the seat pan.
- (18) Remove and retain the safety pin from the emergency oxygen cylinder operating head.
- (19) ◀ Place the comfort cushion on the top of the personal survival pack and secure it to the harness straps. Route the harness leg loops upwards through the slot in the cushion ► .
- (20) Lengthen the shoulder and lap straps of the harness and then stow them and the leg restraining cords in the clips provided in the cockpit.
- (21) ◀ Leave the safety pins in position in the ejection gun firing unit sear, canopy jettison firing unit sear and time-delay unit trip lever pawl and

report the position of the pins to the N.C.O. i/c the Aircraft Servicing. ►



STRAPPING-IN PROCEDURE

15. Normally the anti-'G' and air ventilated suits will be connected to the personal component of the P.E.C. before entering the aircraft; similarly, it is usual to fasten and tighten the leg restraining garters before entering the aircraft (see Appendix 1, para. 9 (7)).

16. The strapping-in procedure is as follows:-

- (1) ◀ Check that the safety pins are in position in the face screen and seat pan firing handles and in the hood jettison handle. Check that the static rods from the drogue gun and the baro-static time-release unit are connected to the guide rail brackets ► .
- (2) Remove the dust cover from the seat component of the P.E.C. and place it in its stowage on the right-hand side of the seat pan.
- (3) Check the combined harness for security of attachment to the seat as follows:-
 - (a) Grasp each lap strap and pull smartly to ensure that the harness is secure in the lower locks.
 - (b) Grasp the shoulder straps and pull smartly to ensure that they are secure in the attachment point under the parachute pack support bracket.
- (4) Sit in the seat and raise and lower it fully; check that the aircraft component of the P.E.C. remains locked to the seat component. Adjust the seat height as necessary; ideally until the head is level with the centre of the headrest cushion.
- (5) Fit the personal component of the P.E.C. to the seat component and check that it is securely locked.
- (6) Connect the personal survival pack lowering line to the life jacket ensuring that the line passes outside the left leg.

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- (7) Pass the left-hand leg restraining cord through the right leg garter D-ring and plug it into the socket above the left-hand snubbing unit. Pass the right-hand leg restraining cord through the left leg garter D-ring and plug it into the socket above the right-hand snubbing unit, ensuring that the cord does not pass through the loop formed by the left-hand cord (fig. 5). Pull sharply on each cord to check that it is locked.

Note . . .

Unless the personal component of the P.E.C. is mating correctly with the seat component, the leg restraining cords will not lock into their sockets.

- (8) Adjust the leg restraining cords to achieve the desired freedom of leg movement.
- (9) ◀ Reach toward the face screen firing handle to adjust the clothing upwards. Bring the harness waist-belt around the body and slide the quick-release fitting along the belt until it is central against the body when the belt is in position ▶ .
- (10) ◀ Pass the loops of the short (blue) Y-section end of the negative-G strap over the lugs of their harness lap straps (ensuring that the negative-G strap does not interfere with the seat pan firing handle) and insert the lugs into the harness quick-release fitting. Sit well back in the seat and, while the ground crew member pulls upward on the back pad, adjust the lumbar pad to the most comfortable position ▶

◀ Note . . .

When connecting the first lug to the inertia-proof quick-release fitting, turn the disc knob anti-clockwise until the yellow line co-incides with the dots on the body and insert the lug. The remaining lugs are fitted without further manipulation of the disc knob ▶ .

- (11) ◀ Tighten the lap straps and the negative-G restraint strap, pulling several times alternately on each lap strap and working the buttocks well back in the seat. These straps provide vertical restraint and forward restraint respectively in the seat and they MUST be tight. Stow the free end of the negative-G restraint strap in the loop provided on the 'standing' end ▶ .

◀ Note . . .

To assist the tightening of the lap straps, it is recommended that as each lap strap is being tightened, the strap should be fed into the buckle with the 'spare' hand ▶ .

- (12) Pass the left leg loop through the D-ring on the left lap strap (from the inside outwards). Pass the lug of the left shoulder strap through the leg loop (from the outside inwards) and insert the lug into the harness quick-release fitting (fig. 7).
- (13) Repeat for the right leg loop and shoulder strap, ensuring that both straps pass outside the oxygen supply hose. ▶ ◀
- (14) Snug the leg loops over the shoulder strap lugs, NOT the webbing of the shoulder straps.
- (15) Sit upright and tighten the inner (blue) shoulder straps followed by the outer (khaki) straps ensuring that the shoulder straps pass under the folds of the life jacket stole. This will ruck the lift webs between the straps; these rucks should be removed by the ground-crew member pulling the surplus material to the back. If necessary, repeat the operation and wriggle the shoulders sufficiently for the straps to bed down into the clothing, etc. Do not tighten the shoulder straps excessively as this causes arching of the back which is an unsuitable position for ejection. The aim is to tighten the

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inner straps until there is no slack when sitting in an upright position; the outer straps are to be similarly adjusted to prevent forward movement.

- (16) Adjust the straps of the personal survival pack side quick-release couplings to give a firm fit without, at the same time, over-tightening.
- (17) Put on the flying and protective helmets and fasten the chin straps. If these straps are not fastened, the helmets and oxygen masks may be wrenched off during ejection with consequent loss of vital oxygen supply at high altitude.
- (18) Check the connections of the oxygen mask tube to the oxygen supply hose and the connection to the pressure jerkin, if worn.
- (19) Connect the Mic/Tel lead.
- (20) Operate the harness 'go-forward' lever and check that the harness locks in the rear position. The operation of the 'go-forward' lever is to be used as a further check to ensure that the harness is secured to the seat; failure of the harness to re-engage and lock back on release of the lever will indicate that the harness is not secure.
- (21) Apply pressure under the handle of the personal component of the P.E.C. (without touching the release catch) and check that it is securely locked to the seat component.
- (22) ◀ Remove the safety pin from the seat pan firing handle lock and place it in its stowage ▶.
- (23) ◀ The ground-crew member removes the safety pin from the face screen firing handle lock and hands it to the aircrew member who places it in its stowage ▶.

Note . . .

If no ground-crew member is available, the aircrew member MUST remove and stow the safety pin before strapping-in.

- (24) Remove the safety pin from the hood jettison handle and place it in its stowage.

EMERGENCIES

17. Instructions for dealing with emergencies are contained in A.P.4491G, H or J - P.N. as appropriate.

LEAVING THE AIRCRAFT AFTER LANDING

18. The following sequence should be used when leaving the aircraft after landing:-

- (1) Remove the hood jettison safety pin from its stowage and place through the jettison handle.
- (2) ◀ Remove the seat pan firing handle safety pin from its stowage and fit it through the safety lock ▶.
- (3) ◀ Remove the face screen firing handle safety pin from its stowage and hand it to the ground-crew member, who will fit it through the safety lock ▶.

Note . . .

If no ground-crew member is available, the aircrew MUST fit this safety pin before leaving the aircraft.

- (4) ◀ Unlock the harness quick-release fitting, free the harness and negative-G restraint strap and return the quick-release fitting to the locked position. Place the harness straps in their stowages in the cockpit ▶.
- (5) Detach the personal component of the personal equipment connector from the seat component; remove the dust cover from its stowage and fit to the seat component.
- (6) Fit the leg restraint cords into their stowage clips.
- (7) Disconnect the personal survival pack lowering line from the life jacket, or pressure jerkin.
- (8) Leave the aircraft.

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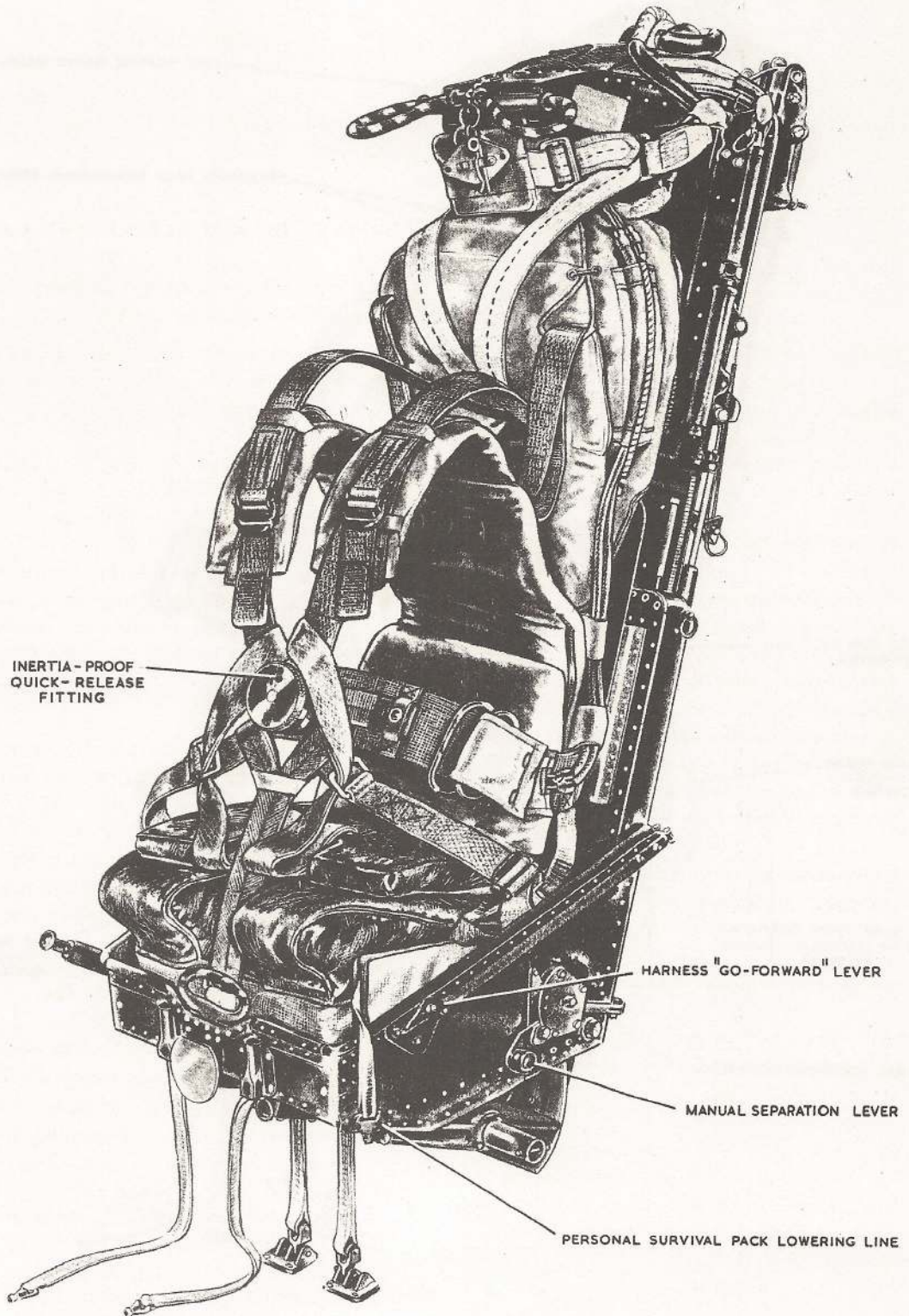


Fig. 1. The seat equipped (1)

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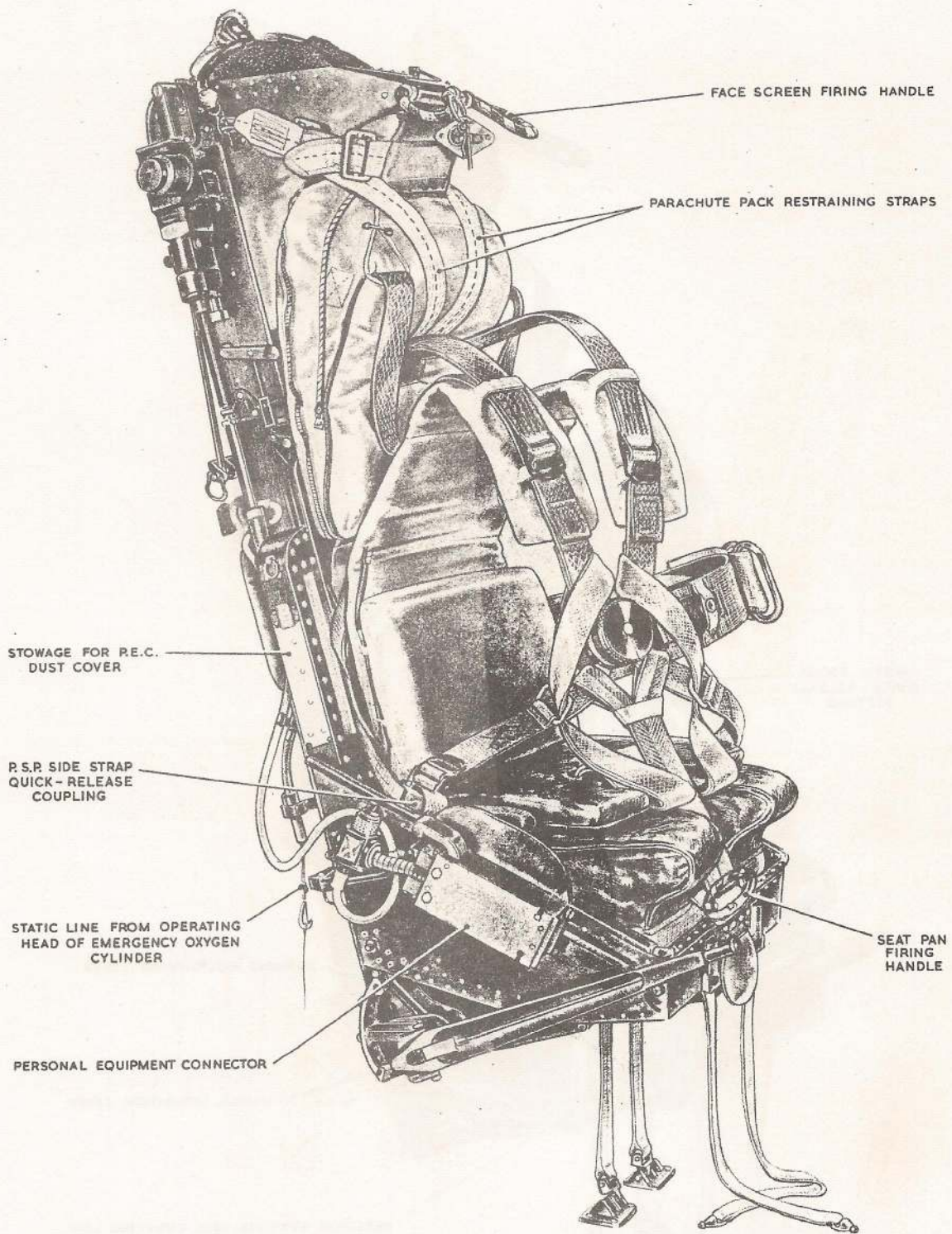
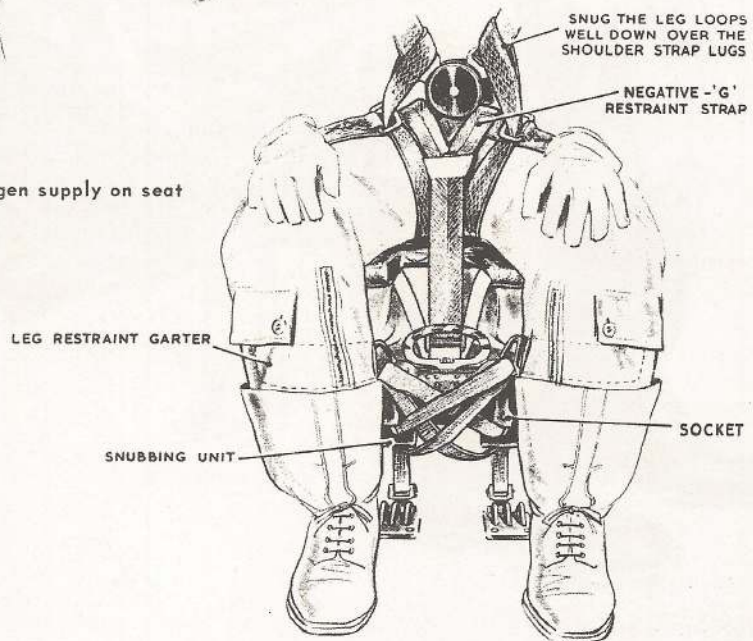
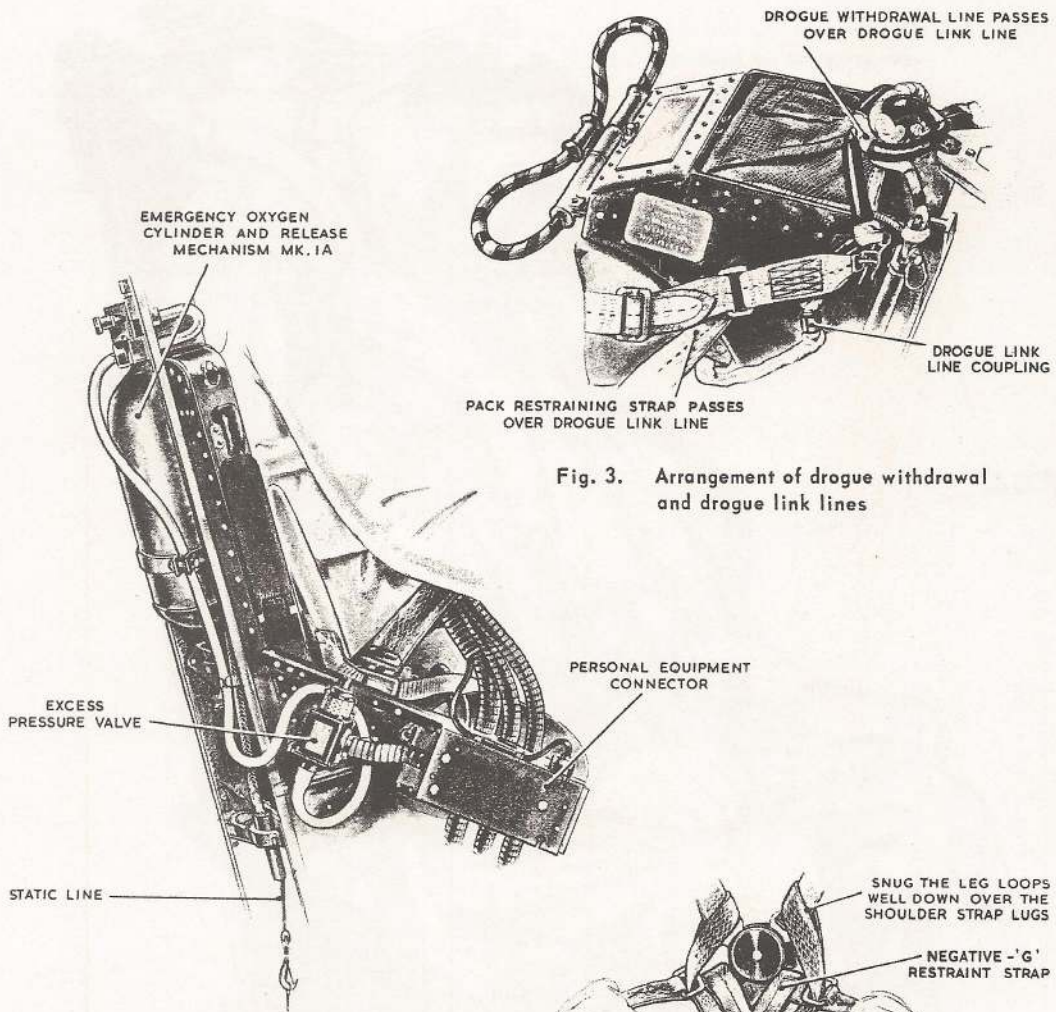


Fig. 2. The seat equipped (2)

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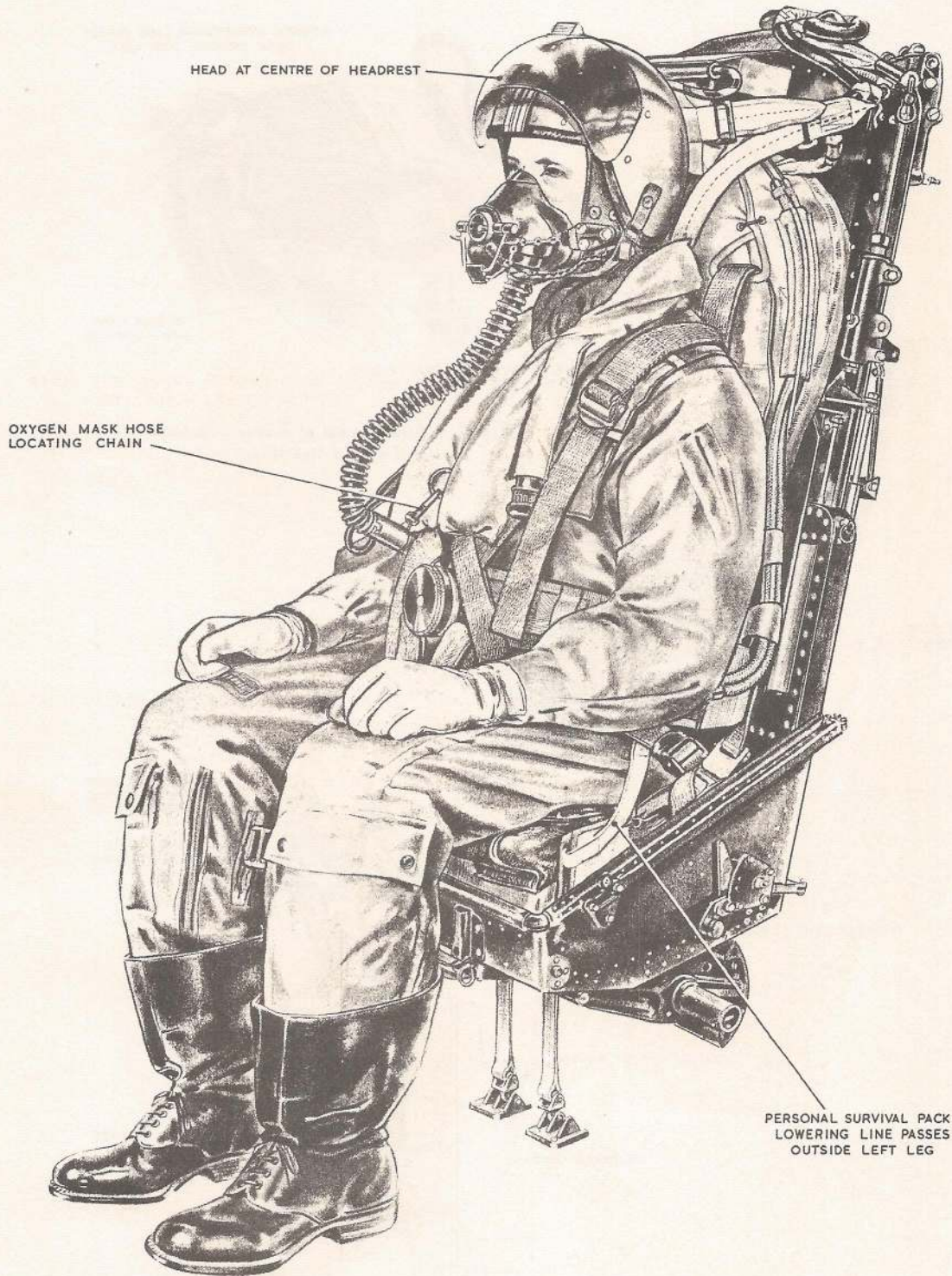


Fig. 6. The seat occupied (1)

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Fig. 7. The seat occupied (2)

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