

## Chapter 3

## HUNTER T MK. 7

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## COMPOSITION OF THE ASSEMBLY

1. Two aircrew equipment assemblies are fitted to this aircraft, the sole difference between them being that the port seat is a Type 4H/1 and the starboard seat is a Type 4H/2. As these seats are similar except for the brackets on the ejection gun, reference will be made to one assembly only throughout this chapter.

2. The assembly comprises the following items:-

Ejection seat	Type 4H/1 or Type 4H/2
Parachute assembly	Back type Mk. 30
Personal survival pack	Type R c/w comfort cushion

Emergency oxygen set

Mk. 7B

An emergency oxygen upper tube assembly is needed to complete the system

Flying clothing

See App. 1.

## Type 4H ejection seat

3. The Type 4H seat is ejected by a cartridge-operated gun. During ejection, it slides in two guide rails attached to the cylinder tube of the ejection gun, the rails being fitted with brackets which enable the gun to be bolted to the aircraft structure. Low level ejection may be made with either seat, if necessary.

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4. A combined safety and parachute harness is used in conjunction with the seat; it is a component of the parachute assembly and is attached to the seat at three quick-release points. A personal survival pack is housed in the seat pan where it forms a cushion for the occupant; in addition a comfort cushion is fitted to the seat strap of the combined harness and rests on the survival pack. An emergency oxygen supply is carried in a cylinder clamped to the right-hand side of the seat pan; the end-fitting of the supply tube from this cylinder is fitted into a clamp on the right-hand side of the seat pan and an emergency oxygen upper tube assembly is fitted to the supply tube to convey the oxygen to the user's mask. A stirrup quick-release fitting disconnects the upper tube assembly from the supply tube as the occupant is separated from the seat after ejection. Operation of the emergency oxygen supply is automatic during ejection; a manual control enables the supply to be turned on during flight if desired.

5. A negative-G restraint strap, routed over the top of the personal survival pack, passes through brackets on the seat pan. The long Y ends of the strap loop over the lugs of the harness lower straps; the short Y ends of the strap loop over the lugs of the harness lap straps. When tightened, the restraint strap prevents forward movement of the pack, cushion and occupant. Leg restraining cords are fitted through snubbing units on the front of the seat pan to ensure that the legs are drawn back to the seat pan and restrained there during ejection, thereby preventing injury due to the legs being blown apart by air blast. These cords are fitted and crossed before the occupant enters the seat; see para. 13 (13) and 13 (14).

6. Seat height is adjusted 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 raised or lowered. The harness 'go-forward' lever is fitted to the forward end of the left-hand side of the seat pan, the lever being pulled rearwards to disengage the harness snubbing unit and allow the occupant of the seat to bend forward.

7. Two firing handles are fitted to each seat. The face screen handle projects from the front of the drogue container and has an integral face screen which protects the face from air

blast during ejection. 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 handle, e.g. when subjected to high 'g' forces.

8. As the seat is ejected, all connections to the aircraft are broken and the emergency oxygen supply is turned on.

9. Fully automatic facilities are provided to withdraw the parachute canopy and separate the occupant from the seat after ejection. Two manual override controls are provided; one on the harness waistbelt disconnects the parachute canopy automatic withdrawal device from the seat and the other, a lever on the left-hand side of the seat pan, disconnects the harness attachments on the seat structure. Both override controls must be operated if the occupant is forced to make (a) a manual bale-out or (b) a manual separation from the seat after ejection.

10. A full description of the Type 4H seat will be found in A.P.4288, Vol. 1. Detailed information concerning the back type Mk. 30 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.

#### Connections to the aircraft

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

(1) *Left-hand side of the seat:-*

- (a) Mic/Tel lead.
- (b) Static rod from drogue gun.
- (c) Anti-G suit air supply hose.

(2) *Right-hand side of the seat:-*

- (a) Main oxygen supply hose.
- (b) Static rod from barostatic time-release unit.

(3) *Front of the seat:-*

- (a) Leg restraint cords.

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(4) *Top of the seat :-*

- (a) Hood jettison unit operating cable.

**EQUIPPING THE SEAT**

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

13. The following procedure is to be used when installing the equipment in the seat, reference being made to fig. 1, 2, 3, 4, 5 and 6 for detail, as necessary :-

- (1) Fit the emergency oxygen cylinder into its clamping brackets on the rear of the seat pan. Secure the supply tube end fitting in the clamp on the right-hand side of the seat pan and fit the tube into the spring clip on the rear of the seat pan.
- (2) Ensure that the emergency oxygen supply manual control is pushed down fully; connect the operating cable from the cylinder head to the actuating arm on the rear of the seat pan.
- (3) Place the personal survival pack in the seat pan and drape the lowering line over the left-hand side of the pan.
- (4) ◀ Pass the negative-G restraint strap through the bracket at the front of the seat pan, with the short Y-section to the front. Route the long Y-section over the personal survival pack to the back of the seat pan, under the two roller brackets (one at each side) and rest the loop ends on the pack. ▶
- (5) Place the parachute pack on its support bracket on the seat structure and ensure that the harness straps are not twisted.
- (6) Operate the harness 'go-forward' lever and pull out the centre strap. Pass the strap through the roller fitting on the shoulder straps; ensure that the fitting is in its natural position and that the

straps are not twisted. Pass the O-rings of the pack restraint straps over the lug of the centre strap, lift the parachute pack forward and fit the lug into the attachment point on the seat.

- (7) Replace the parachute pack on its support bracket.
- (8) Position the headrest cushion on the parachute pack and ensure that it fits correctly under the drogue container.
- (9) Pass the left-hand pack restraint strap over the withdrawal line, through the buckle on the short strap at the left-hand 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 it passes through the buckle from the outside inwards.*

- (10) Pass the right-hand pack restraint strap over the top of the parachute pack, through the buckle on the short strap at the right-hand side of the drogue container and then forward through the buckle at the right-hand side of the headrest cushion. Refer to the note following sub-para. ◀ (9) ▶ .
- (11) Fully tighten the left-hand pack restraint strap and then the right-hand strap, so that the pack and headrest cushion are held firmly on the seat.
- (12) Connect the two halves of the link line coupling and ensure that the line passes UNDER the left-hand pack restraint strap and UNDER the drogue ◀ withdrawal ▶ line.
- (13) Pass the left leg restraint cord through the D-ring of the detachable component

of the garter quick-release coupling; route the cord over the personal survival pack to the right rear of the seat pan, pass the lug of the right-hand lower harness attachment strap through the loop in the end of the cord ◀ and the loop at the end of the negative-G strap ▶ and insert the lug in its attachment point.

- (14) Pass the right leg restraint cord through the D-ring of the detachable component of the garter quick-release coupling; route the cord over the personal survival pack to the left rear of the seat pan, pass the lug of the left-hand lower harness attachment strap through the loop in the end of the cord ◀ and the loop at the end of the negative-G strap ▶ and insert the lug in its attachment point.

◀ Note . . .

(1) When fitting the negative-G restraint strap, ensure that it does not pass through the seat pan firing handle.

(2) Slack in the negative-G restraint strap is to be taken up by drawing the strap forward through the bracket at the front of the seat pan. ▶

- (15) Arrange the leg restraint cords so that they cross behind the ◀ seat pan ▶ firing handle.
- (16) Connect the personal survival pack quick-release couplings to the combined harness of the parachute assembly. A different type of coupling from that illustrated has been introduced and may be in use.
- (17) Insert the harness sticker straps into the clips on the inside of the seat pan; ensure that the straps pass outside the personal survival pack side quick-release couplings.
- (18) Arrange the harness and auxiliary cushion on the personal survival pack ◀ , with the harness leg loops routed upwards through the cushion slot.

Ensure that the straps are not twisted ▶ .

- (19) Pass the end fitting of the emergency oxygen upper tube assembly through the stirrup quick-release fitting and connect it to the supply tube end fitting. Check the connection for security of attachment.

- (20) Remove and retain the safety pin from the emergency oxygen cylinder operating head.

- (21) Tuck the Mic/Tel lead under the left-hand pack restraint strap.

14. After the seat has been equipped, it is to be restored to the ◀ safe for parking condition in accordance with current instructions ▶ .

#### STRAPPING-IN PROCEDURE

15. ◀ Prior to seat occupation, the following checks are to be made :-

- (1) Ensure that the seat has been made safe for parking in accordance with current instructions.
- (2) Ensure that the drogue withdrawal line is routed over all other lines and connected to the top of the drogue gun piston by the shackle pin.
- (3) Ensure that the drogue gun and the time delay mechanism trip rods are connected to their brackets and that the drogue gun safety lock pin has been removed.
- (4) On seats embodying Mod. No. ES.2016, ensure that the centre pin of the top latch plunger is flush with the latch housing.
- (5) Ensure that the parachute/safety harness is securely attached to the seat by pulling sharply on the straps, individually, at each attachment point.
- (6) Ensure that the leg restraint cords and negative-G strap are securely connected to the lugs of the parachute/safety harness at the lower harness locks.

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- (7) Ensure that the leg restraint cords cross on top of the personal survival pack and behind the leg loops of the parachute/safety harness. ►

16. ◀ Strapping-in procedure is as follows; refer to fig. 7 and 8 for detail, as necessary:—

- (1) Draw the negative-G restraint strap forward through its anchor bracket at the front of the seat pan to remove any slack.
- (2) Sit in the seat and adjust its height so that the head is central against the headrest cushion.
- (3) Connect the D-ring on the left leg restraint cord to the left leg garter and connect the D-ring on the right leg restraint cord to the right leg garter. Adjust the leg restraint cords in the snubbing units to obtain the required freedom of leg movement; any slack in the cords is to be taken up by pulling forward the cords beneath the buttocks and then downwards through the snubbing units so that the slack is located between the bottom of the seat pan and the anchorages.
- (4) Connect the personal survival pack lowering line to the life jacket; ensure that the line passes OUTSIDE the left leg before being routed upwards to the quick-release coupling.
- (5) Connect the anti-G air supply hose to the suit.
- (6) Pull up the parachute assembly back pad and adjust the height of the lumbar cushion.
- (7) Position the parachute/safety harness waist belt across the front of the body, pass the negative-G strap looped ends over the lugs of the lap straps (ensuring that the negative-G strap does not pass through the seat pan firing handle) and connect the lugs to the quick-release fitting. Tighten the lap straps and the negative-G strap; ensure that the lap straps are as tight as possible and stow the free end of the negative-G strap in the elastic loop on the standing end.
- (8) If a negative-G strap is not fitted, connect and tighten the lap straps after positioning the waist belt.
- (9) Route the left leg loop of the parachute/safety harness upwards over the inside of the leg and through the D-ring on the left lap strap (from the inside of the D-ring towards the outside of the leg). Turn the leg loop over the ring towards the quick-release fitting, pass the lug of the left shoulder strap through the leg loop (from the top downwards) and connect the lug to the quick-release fitting; snug the loop down over the lug.
- (10) Arrange the right leg loop and shoulder strap as described in operation (9).
- (11) Fit the spring safety clip to the quick-release fitting (behind the disc knob and over the operating plunger). If an inertia proof quick-release fitting is embodied, the safety clip is not required and will have been removed from the harness.
- (12) Ensure that the shoulder straps pass UNDER the life jacket stole, then tighten the inner (blue) straps and the outer (khaki) straps in that order. The straps are to be tightened sufficiently to take up slack, but it is undesirable to tighten them excessively since this may arch the back and in so doing present conditions which could lead to severe injury if ejection became necessary; the object is to restrain forward movement of the shoulders and not to hold the body down in the seat.
- (13) Operate the harness 'go-forward' lever and lean forward. Failure of the harness to lock against forward movement

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indicates that it is not secure.

- (14) Put on the appropriate helmets and fasten the chin straps. Fit and tighten the oxygen mask.

**Note . . .**

*If the chin straps are not fastened, the helmets and oxygen mask may be wrenched off during ejection. At high altitude, this would result in the loss of vital oxygen supply.*

- (15) Connect the oxygen mask tube to the main oxygen hose and adjust the hose in the retaining strap on the right harness lap strap (if provided) to obtain unrestricted head movement.
- (16) Connect the upper oxygen tube assembly to the oxygen mask tube, ensuring that it passes between the body and the main oxygen supply hose.
- (17) Connect the oxygen mask tube locating chain clip to the D-ring on the front of the life jacket.
- (18) Connect the Mic/Tel lead.
- (19) Stretch the arms upwards and check that the face screen firing handle can be reached.
- (20) Ensure that the face screen firing handle safety pin is removed and remove the seat pan firing handle safety pin; make sure that the pins are placed in their stowages. ►

## EMERGENCIES

17. Instructions for dealing with emergencies are contained in A.P.4347G - P.N.

### LEAVING THE AIRCRAFT AFTER LANDING

18. When leaving the aircraft after landing, the following procedure should be used:-

- (1) Before opening the cockpit hood, remove the safety pins from their stowages and fit them into the ◀ face screen ▶ and ◀ seat pan ▶ firing handles of each seat. The occupant of the port seat fits the pin into the starboard seat ◀ face screen ▶ firing handle and vice versa. The occupant of each seat fits the pin in his own ◀ seat pan ▶ firing handle.
- (2) Disconnect the main and emergency oxygen supply from the oxygen mask tube.
- (3) Operate the harness quick-release fitting, free the straps and return the quick-release fitting to the locked position.
- (4) Disconnect the leg restraint cords from the garters.
- (5) Disconnect the personal survival pack lowering line from the life jacket.
- (6) Disconnect the anti-G suit air supply hose from the suit and fit the blanking plug in the end of the hose.
- (7) Leave the aircraft.

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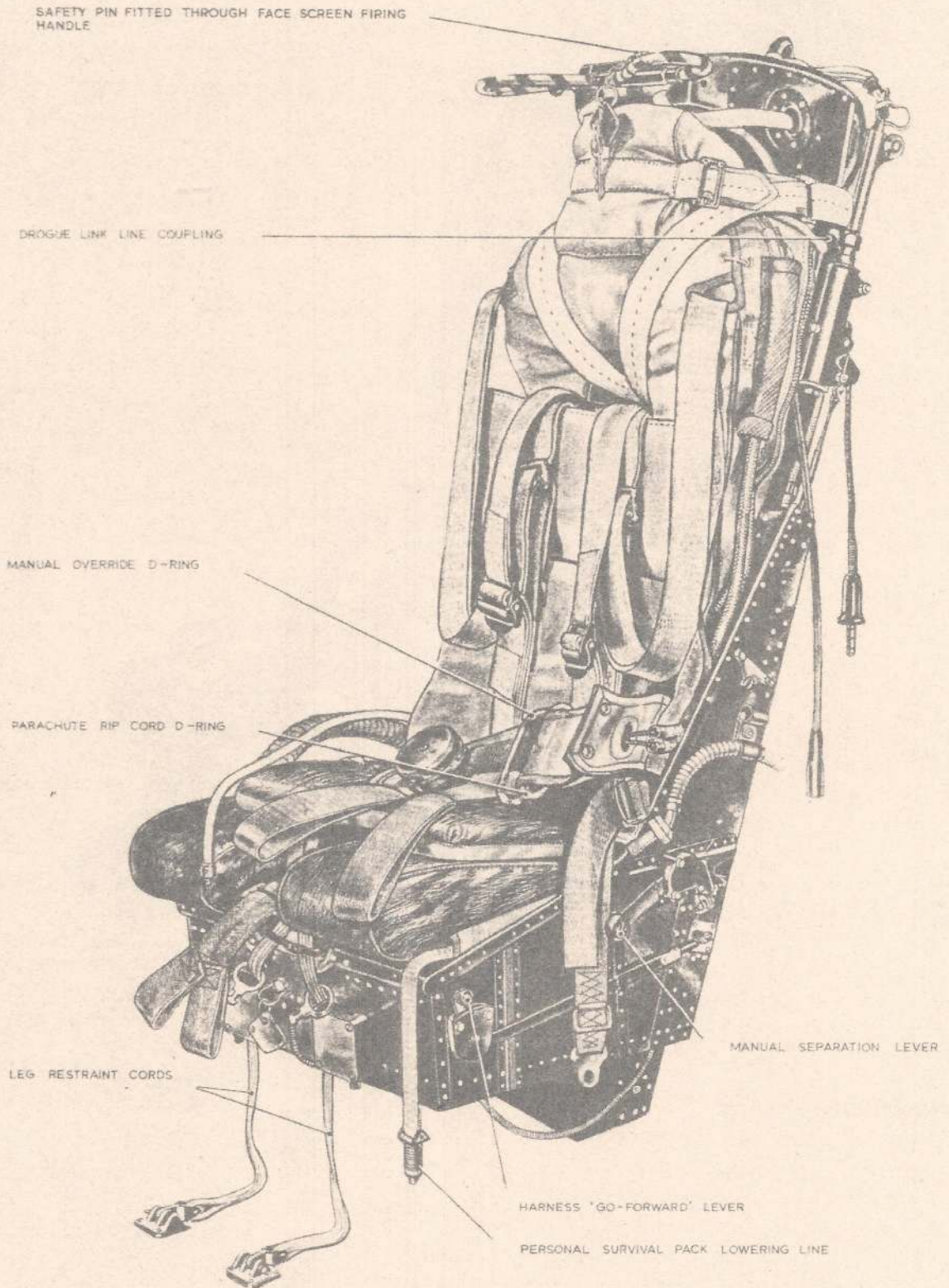


Fig. 1. The seat equipped (1)

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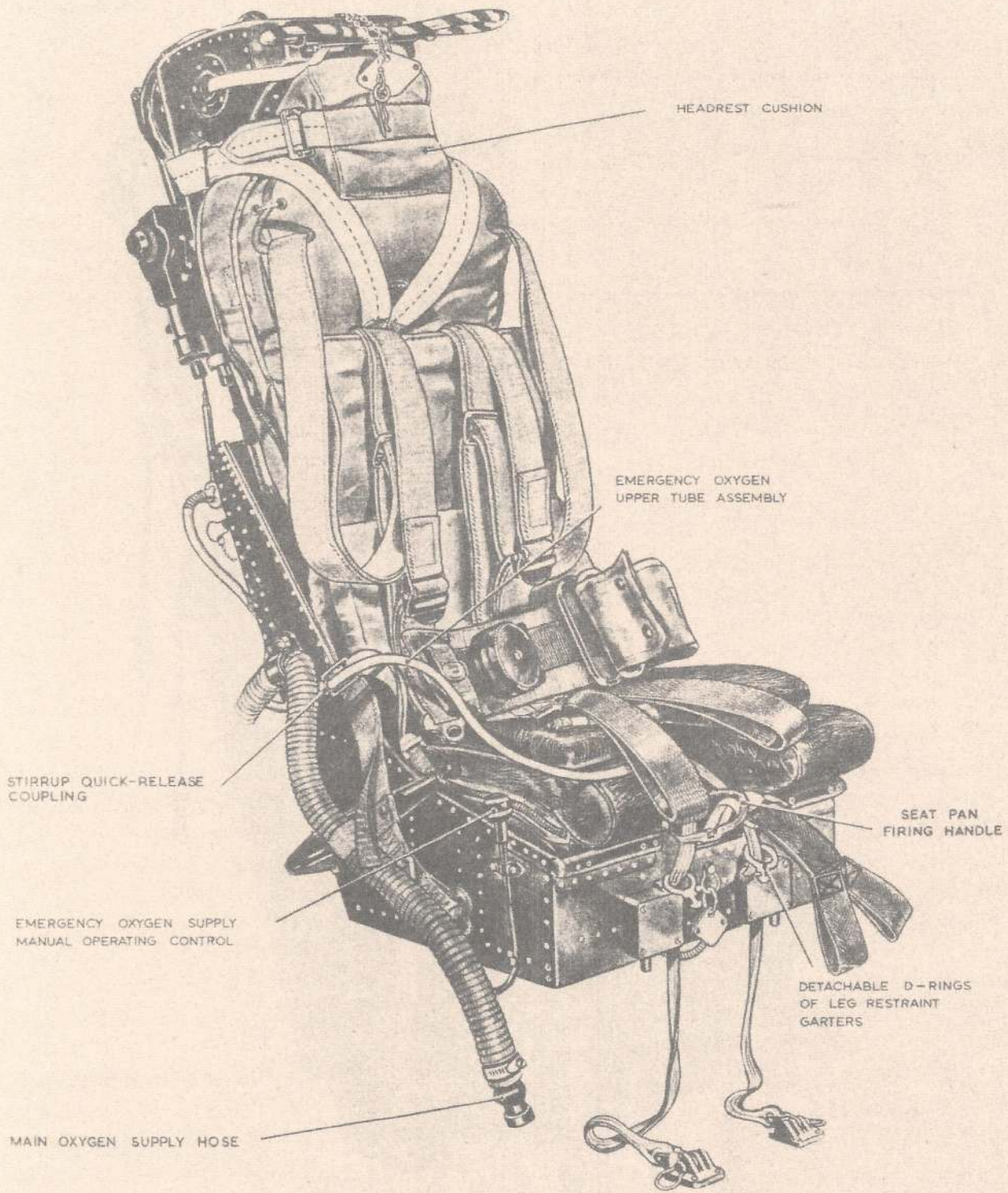


Fig. 2. The seat equipped (2)

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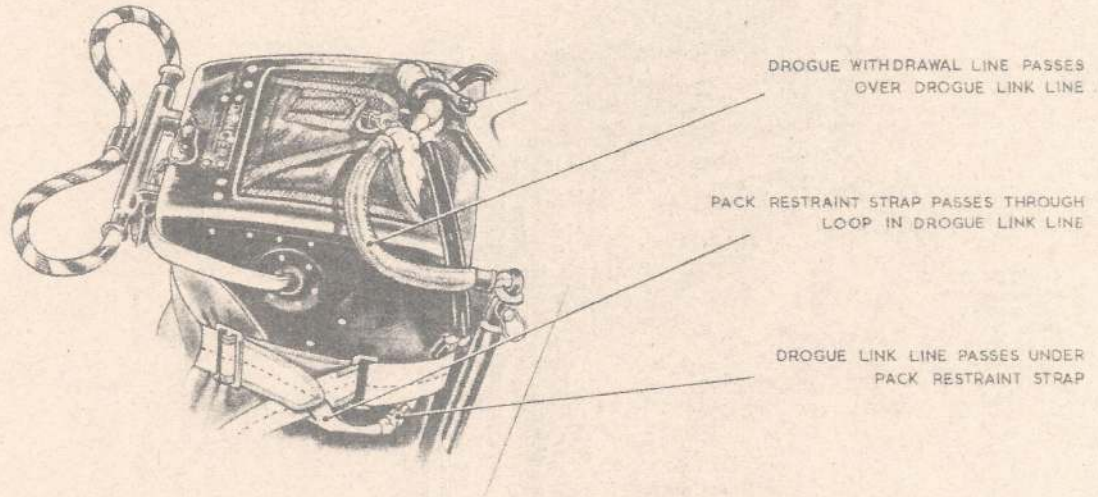


Fig. 3. Arrangement of drogue withdrawal and link lines

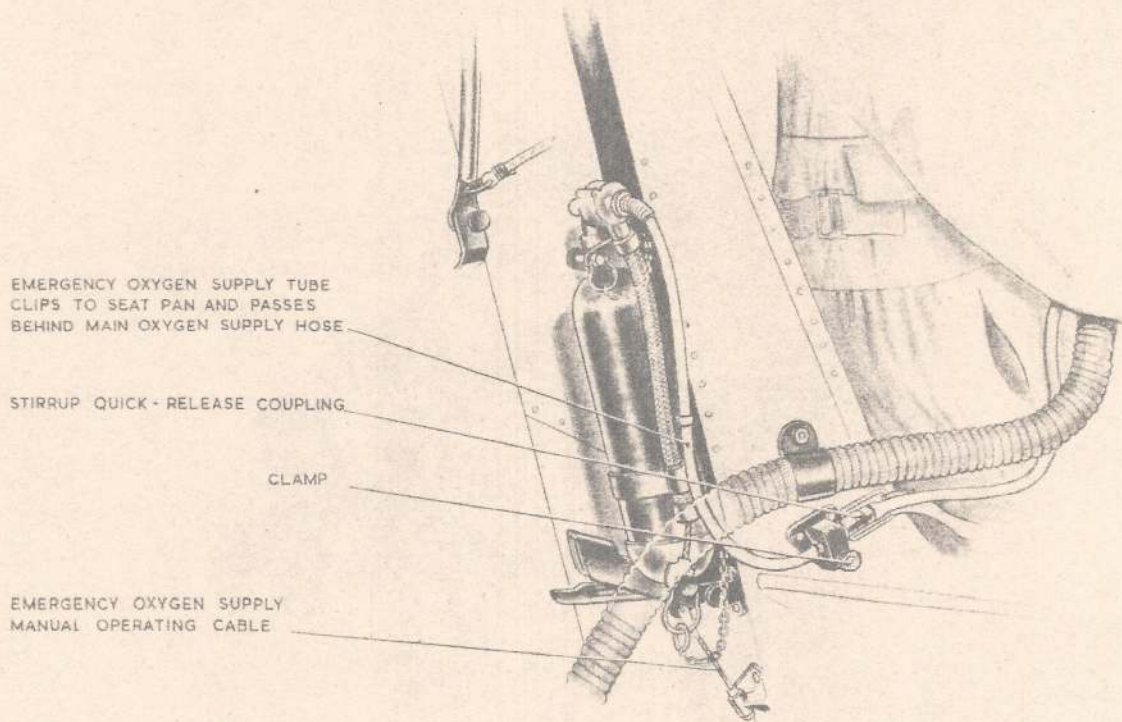


Fig. 4. Arrangement of oxygen supply on seat

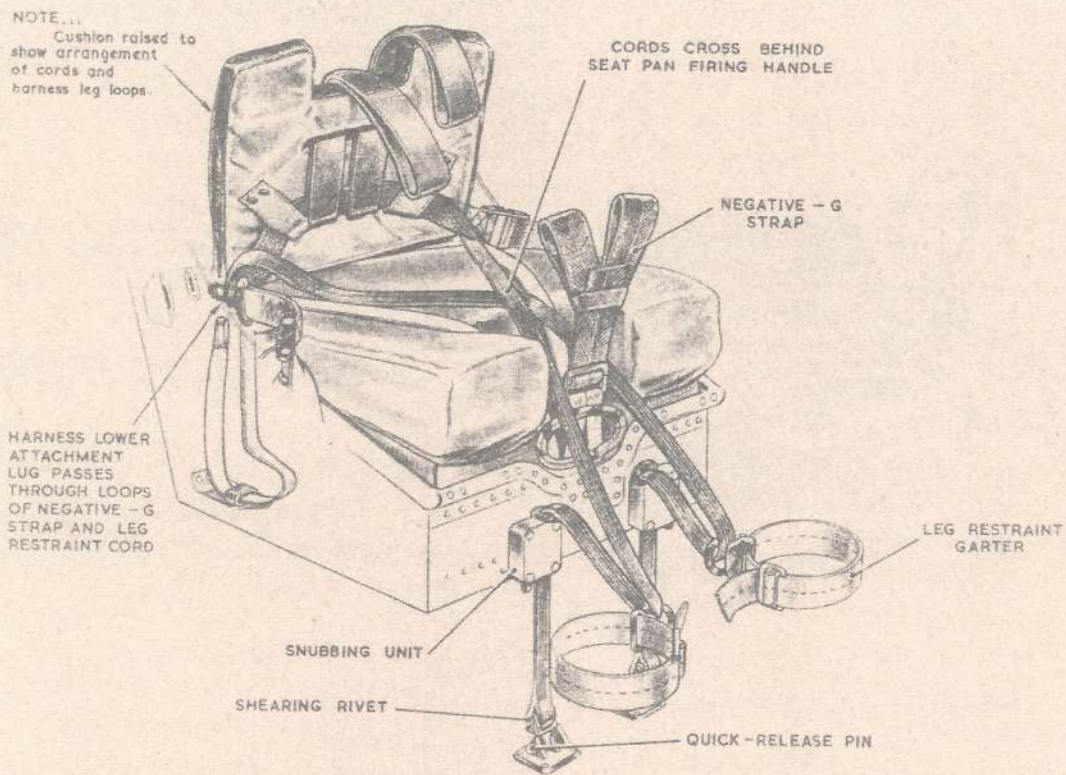


Fig. 5. Arrangement of leg restraint cords ◀ and negative-G restraint strap ▶

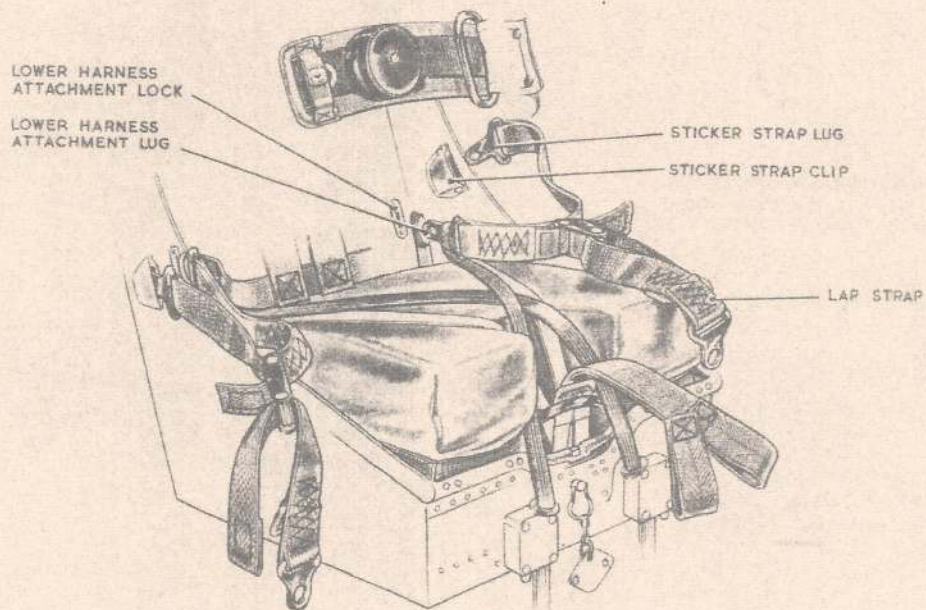


Fig. 6. Installing the parachute assembly

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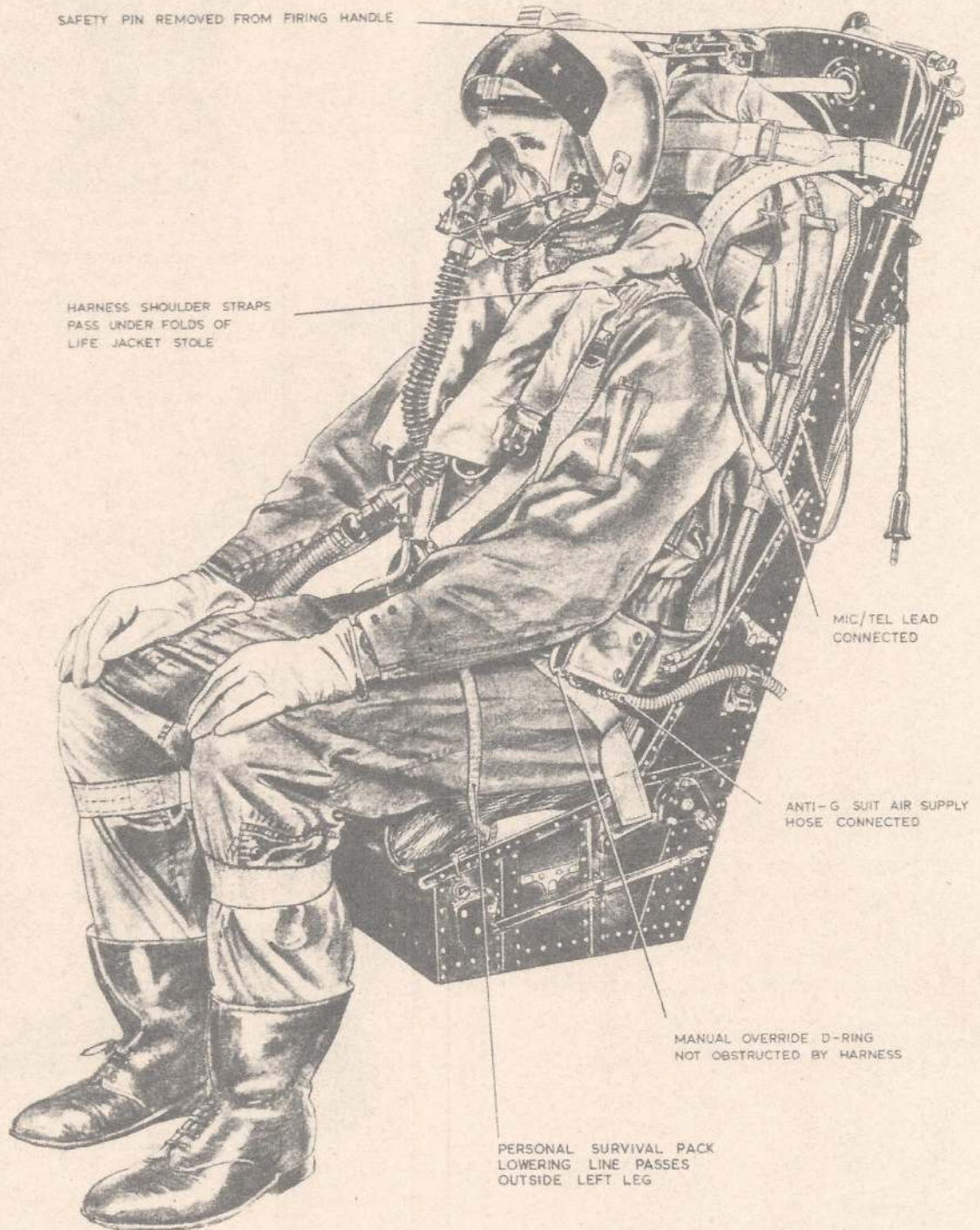


Fig. 7. The seat occupied (1)

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HEAD AT CENTRE OF HEADREST



Fig. 8. The seat occupied (2)

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