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**AIRCREW
EQUIPMENT ASSEMBLIES
EJECTION SEATS
TYPE 4MSA 1 AND 2, Mk.3
(BUCCANEER S Mk.2 AIRCRAFT)**

GENERAL AND TECHNICAL INFORMATION

BY COMMAND OF THE DEFENCE COUNCIL

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ROYAL NAVY

LETHAL WARNING

1. Modern aircraft have many equipments, e.g. assisted escape systems, explosive release units, high energy igniter units, etc., which, if operated inadvertently or worked on without due care, can cause loss of life and/or damage to the aircraft. Before anyone enters a cockpit or starts work on an aircraft, the individual himself is responsible for ensuring that:-

- (1) All safety devices are correctly fitted.
- (2) No units or switches, with which the individual is not fully conversant, are touched.

2. Detailed safety precautions for each type of aircraft will be found in the relevant aircraft servicing schedules.

AIRCREW EQUIPMENT ASSEMBLIES

EJECTION SEAT TYPE 4MSA 1/2 Mk.3

(BUCCANEER S Mk.2 AIRCRAFT)

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Introduction

1. The type 4 MSA 1/2 Mk.3 ejection seats are fitted to the Buccaneer aircraft of the Royal Navy. The front and rear seats are basically similar, their minor variations being detailed in the ejection seat publication. This publication is primarily concerned with the installation of the aircrew equipment assembly (A.E.A.) in the seat, the strapping-in procedure and the drill to be used when leaving the seat after landing. A brief description of the various components of the A.E.A. and their function is included.

Composition of the assembly

2. The aircrew equipment assembly consists of the following items:-

Ejection seat	Type 4 MSA 1/2 Mk.3
Parachute assembly	Back Type B Mk.47A
Personal survival pack	Type R(N)
Emergency oxygen set	Mk.8C
Flying clothing	Refer to App.1.

DESCRIPTION

3. These assemblies are fully described in the following publications or their coded equivalent.

Ejection seat	A.P.109B-0132-1B
Parachute assembly	A.P.108C-0127-1G
Personal survival pack	A.P.108E-0527-1
Emergency oxygen set	A.P.1275G, Vol.1 (2nd Edit) Part 2

Parachute assembly

4. The horseshoe shaped parachute seats upon a support arch and is held in the parachute container by two restraining straps. The parachute is attached to a combined safety and parachute harness which is locked to the seat at three quick-release points; the 40G webbing strap is passed through the harness yoke and its lug locked into the top harness lock, and two lower harness lugs are inserted into the lower harness locks. A back pad and adjustable lumbar pad are included in the harness for comfort and support.

Go-forward mechanism

5. A go-forward mechanism is linked to the 40G beam permitting the occupant to lean forward when required. The mechanism is controlled by a spring-loaded lever situated on the starboard

side of the seat pan. If the lever is pushed fully forward the occupant can lean forward and backward at will. Release of the lever to return to the rearward position brings the snubbing unit, in the 40G beam, into action preventing further forward movement and automatically locking the harness in the rearward position as the occupant leans back.

Negative-g restraint strap

6. A negative-g restraint strap is fitted to restrain the occupant against vertical movement when subjected to negative-g forces. The strap passes through brackets in the floor of the seat pan, the rear ends being attached to the lower harness lugs before their insertion into the lower harness locks and the forward ends attached to the harness lap strap lugs which are retained in the quick-release fitting. Means are provided for tensioning the strap during the strapping-in procedure.

Leg restraint system

7. Leg restraint cords are provided to ensure that the legs are drawn back and held close to the seat pan during and after ejection. The cords pass through snubbing units in the front of the seat pan, then through rollers attached to the main beams before being finally anchored to the cockpit floor. The snubbing units allow the cords to pass freely downwards but prevent the cords passing upward except when released by the spring-loaded plunger beneath the unit. The free end of the cords, terminating in taper plugs, are passed through the rings on the leg garters before being inserted into the taper plug assemblies on the thigh guards of the seat pan. The taper plug assemblies are connected to the harness release mechanism and an interconnection with the P.E.C. makes it impossible to connect the cords to the sockets unless the man portion of the P.E.C. is correctly engaged with, and locked to, the seat portion. Removal of the man portion will release the leg cords. The leg restraint garters are strapped one to each leg below the knee.

Personal survival pack

8. The personal survival pack complete with cushion is housed in the seat pan. It is connected to the lifejacket by three quick-release connectors, one on each side, and one on the P.S.P. lanyard. The connections are made by the occupant when

strapping-in. The P.S.P. lanyard being connected to the lifejacket, enables the pack side connectors to be released without loss of the pack.

Emergency oxygen

9. An emergency oxygen supply is carried in a cylinder which is clamped to the starboard side at the rear of the seat pan. The supply is turned on automatically during ejection and provision is made for manual operation in the event of failure of the aircraft main oxygen supply. The emergency supply is passed through an excess pressure valve and a personal equipment connector. The excess pressure valve prevents excessive pressure building up in the oxygen mask. When the emergency oxygen supply is exhausted, the oxygen mask tube assembly must be disconnected from the oxygen supply hose assembly to enable the user to breathe ambient air.

Personal equipment connector

10. The personal equipment connector (P.E.C.) is fitted to the starboard side of the seat pan and enables the main oxygen, air-ventilated suit, anti-g suit, mic/tel lead and lifejacket automatic underwater (u/w) inflation pipe line to be disconnected in one action. It comprises three components:-

- (1) *Aircraft portion:-*
Connected to personal supply systems in the aircraft and to the cockpit floor by a static line.
- (2) *Seat portion:-*
Bolted to the seat pan and connected to the emergency oxygen supply.
- (3) *Man portion:-*
Attached to the flying clothing by supply pipes.

Manual separation

11. Fully automatic facilities are provided to withdraw the parachute and separate the occupant from the seat after ejection. In the event of failure of these automatic facilities a manual separation handle is fitted on the port side of the seat which, when operated, will free the occupant from the seat. The handle is provided

with a thumb operated trigger which must be depressed before the handle can be pulled. When the occupant separates from the seat after the operation of the manual separation handle, a static line, attached to the rear of the parachute pack, withdraws the sear from the guillotine fitted to the port side of the drogue container. This fires the guillotine which severs the parachute withdrawal line separating the parachute from the seat structure. The parachute is then deployed by pulling the D-handle on the harness waistbelt. The guillotine is also fired during automatic separation but the parachute withdrawal line is pulled out of the guillotine gate *before* the sear is withdrawn.

Underwater ejection system

12. In the event of the aircraft being forced to ditch, fully automatic facilities are provided to eject the seat from the aircraft, free the occupant from the seat and inflate his lifejacket so that he may float on the surface until rescue can be effected. The underwater (u/w) system in no way effects the standard procedure for airborne ejection.

13. The system has a main air bottle controlled by a hydrostatic valve open to water pressure. When the sinking aircraft reaches a depth of approximately thirteen feet, a cartridge in the head of the bottle is fired, releasing the air, which is then piped to two places, the drogue gun trip rod release unit and into the bottom of the ejection gun. The air entering the bottom of the ejection gun unlocks the seat and ejects it from the aircraft without firing the ejection gun.

14. The air to the drogue gun trip rod release unit releases the drogue gun trip rod preventing the gun from firing, operates the linkage to fire the guillotine, thus severing the link between the drogues and the parachute, and passes via the P.E.C. to actuate the operating head of the lifejacket CO₂ cylinder.

15. As the seat rises, the time-release unit is tripped releasing the harness locks and operating a CO₂ bottle which is mounted on the starboard side of the seat. Operation of the CO₂ bottle inflates two squabs, one behind the parachute

pack and the other underneath the personal survival pack, to push the occupant from the seat. He is then free to rise to the surface where he will be supported by his inflated lifejacket.

16. A handle situated on the starboard thigh guard operates a secondary manual firing mechanism. When the handle is pulled a cartridge is fired, the gases from which impinge on the diaphragm in the main bottle hydrostatic valve initiating the escape system. The system can be made inoperative by a handle on the port side which is attached to the main air bottle.

SEQUENCE OF EVENTS DURING AIRBORNE EJECTION

17. When either firing handle is pulled the ejection gun is fired and the seat is ejected. As the seat ascends the guide rails the following sequence occurs:-

- (1) The leg restraint cords tighten, drawing the legs back to the seat pan, until the rivets shear.
- (2) The time-delay mechanism of the drogue gun is actuated, the gun being fired after 0.50 seconds.
- (3) The time-delay mechanism for the barostatic time-release unit is tripped. The functioning of the mechanism is dependent upon aircraft height and speed at the time of ejection.
- (4) The electric supply leads to the seat adjusting actuator are disconnected.
- (5) The auto-tone transmission mechanism is tripped.
- (6) The aircraft portion of the personal equipment connector is separated from the seat portion, disconnecting the main oxygen, anti-g suit, air ventilated suit, mic/tel and lifejacket automatic u/w inflation supplies between the aircraft and the seat.
- (7) The emergency oxygen supply is turned on.
- (8) After 0.50 seconds the drogue gun fires and the two drogues stabilize and retard the seat. If the ejection occurs at high altitude the seat will eventually

fall nearly vertical with the occupant restrained from falling forward by the combined harness. At low altitudes there will not be time for the seat to attain the near vertical position. During this phase the occupant will be breathing emergency oxygen from the emergency oxygen system fitted to the seat.

- (9) After an appropriate delay the occupant is released from the seat and his parachute canopy opens automatically. Deployment of the parachute pulls the occupant from the seat, separating the sticker strap lugs from the clips on the seat pan. At the same time the man portion of the P.E.C. is released from the seat portion, detaching the personal services from the seat and enabling ambient air to be inhaled. At low or moderate aircraft speeds and height the delay is 1.25 seconds after ejection. At high altitude the 1.25 seconds delay does not start until the seat has descended below 10 000 ft. At high speeds, at 10 000 feet or below, the delay does not start until the seat has decelerated to a safe speed for the parachute to deploy.

Connection to the aircraft

18. On an installed ejection seat the following items are connected to the airframe or fixed portion of the seat:-

- (1) *Port side of seat:-*
 - (a) Static rod from the drogue gun to the cross beam.
- (2) *Starboard side of the seat:-*
 - (a) Static rod from the barostatic time-release unit to the cross beam.
 - (b) Electric supply lead to the seat adjusting actuator.
 - (c) Static line from the aircraft portion of the P.E.C.
 - (d) All P.E.C. services.
- (3) *Underside of the seat:-*
 - (a) Leg restraint cords.

EQUIPPING THE SEAT

19. The following procedure is to be used when installing the equipment in the seat; refer to figures 1 to 10 for details as necessary:-

(1) Ensure the seat has been made Safe for

Servicing in accordance with current instructions.

(2) Fit the emergency oxygen cylinder into its mounting bracket on the rear of the seat pan ensuring that the supply tube faces outboard. Press the supply tube into the spring clip on the side of the seat pan and connect the tube to the metal extension pipe of the excess

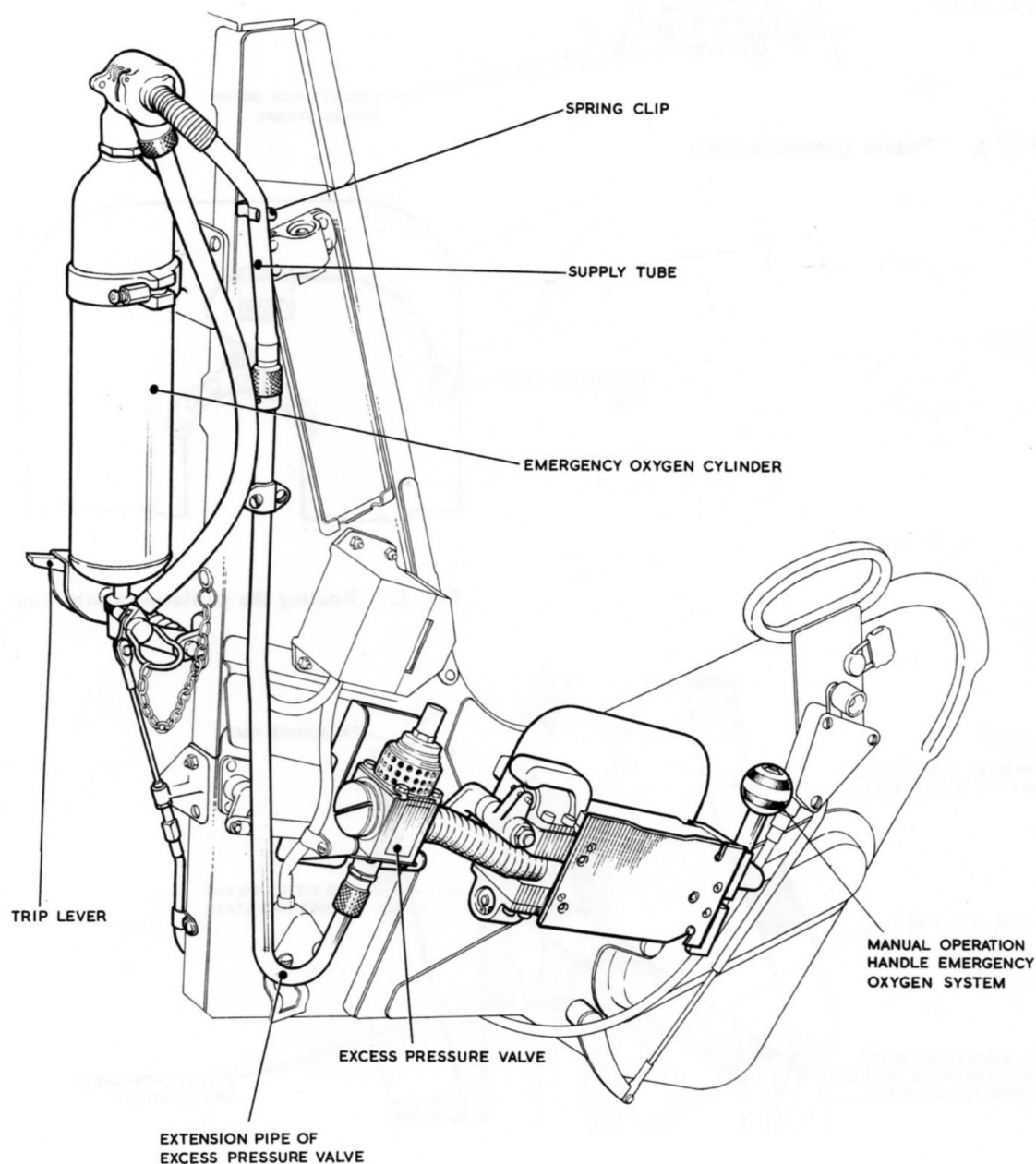


Fig. 1. Arrangement of emergency oxygen system

pressure valve. Ensure that the emergency oxygen manual control knob is pushed fully down and then connect the operating cable to the trip lever.

Note . . .

It is recommended that the emergency oxygen cylinder is fitted before the seat is installed in the aircraft.

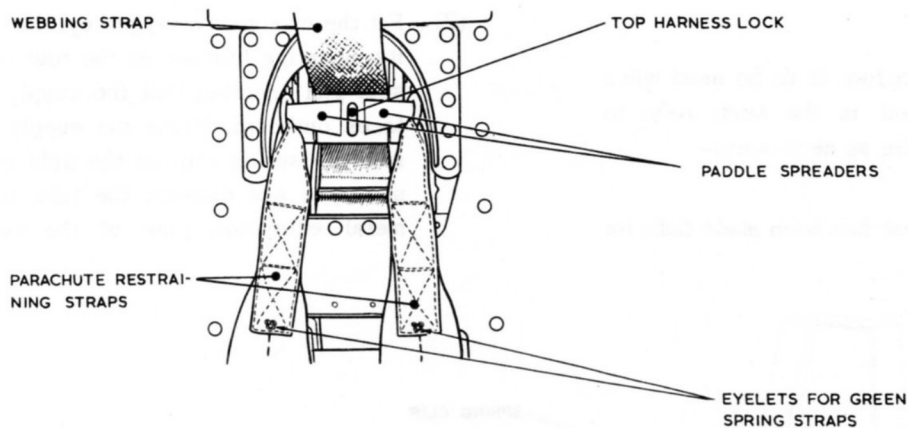


Fig. 2. Paddle spreader system

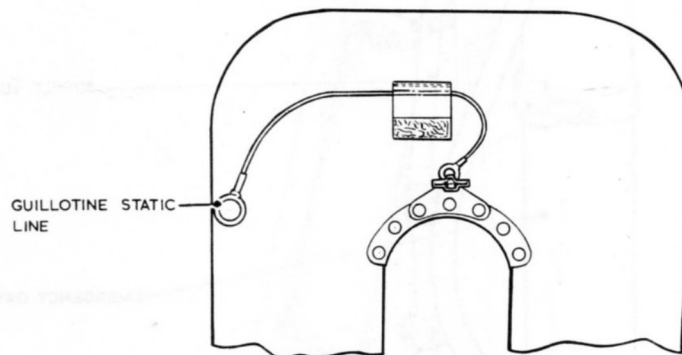


Fig. 3. Routing the guillotine static line

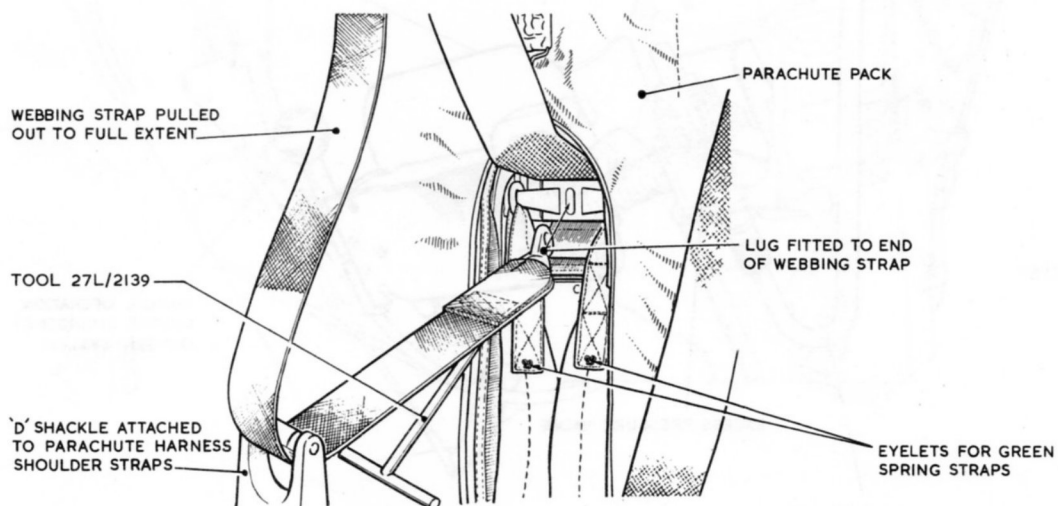


Fig. 4. Inserting the lug of the webbing strap into the top harness lock

- (3) Remove and retain the safety pin from the emergency oxygen cylinder operating head and ensure that the 'tell-tale' wire is intact.
- (4) Ensure that the seat pan is clean and that the leg restraint cords are clear of the pan.
- (5) Open the paddle spreaders, situated in front of the top harness lock and pass the O-rings of the two parachute restraining straps over the paddle spreaders, one over each spreader, ensuring that the eyelets for the green spring straps are correctly positioned as shown in fig.2. Ensure that each O-ring is pushed well back towards the pivot end of its paddle spreader and close the paddle spreaders inwards towards each other as far as they will go.
- (6) Place the parachute and harness in the seat pan. Carefully open the outer and intermediate flaps of the parachute pack and check that the rip cord cable pins are correctly positioned through the cones and that the scarlet locking thread tie securing the starboard pin is unbroken. Replace the intermediate flap, re-route the withdrawal line on top of the intermediate flap and close the outer flap.
- (7) Route the guillotine static line under the Velcro retention flap on the rear of the parachute pack (fig.3). Place the parachute pack in the parachute container, guiding the static line for the guillotine through its aperture in the back of the parachute container and ensuring that it passes outboard of the back squab. Push the pack well into the container so that it is supported on the support bracket. Restrain the paddle spreaders and bring the two parachute restraining straps forward through the arch of the pack, ensuring that they are not crossed.
- (8) Ensure that the manual separation

handle is in the locked position, i.e. fully down and with the thumb trigger engaged.

Note . . .

Before commencing the following operations, ensure that the CO₂ cylinder is not attached to the seat.

- (9) Hold the 'go-forward' lever fully forward, pull out the webbing strap from under the parachute support bracket and hold it against the spring tension.
- (10) Pass the webbing strap **DOWNWARDS** through the D-shackle attached to the harness shoulder straps and ensure that the harness straps are not twisted, engage tool 27L/2139 with the lug fitted to the end of the webbing strap and insert the lug between the inner extremities of the paddle spreaders into the top harness lock in the back of the seat (fig.4). Push the lug in until it locks into position. Check that it has locked correctly by pulling on the webbing strap, then allow the strap to wind back.
- (11) Draw the free ends of the parachute restraining straps forward through the arch of the parachute pack, over the pack and towards the rear of the seat on either side of the drogue container. Ensure the eyelets for the green spring straps are facing forward.
- (12) Pass the port restraining strap over the parachute withdrawal line and pass it through the buckle of the short strap on the port side of the drogue container from the outside inwards. Ensure that the drogue link line (*which is connected to the parachute withdrawal line*) is routed **OUTSIDE** the short restraining strap as shown in fig.5.
- (13) Pass the starboard restraining strap through the buckle of the short strap on the starboard side of the drogue container from the outside inwards.

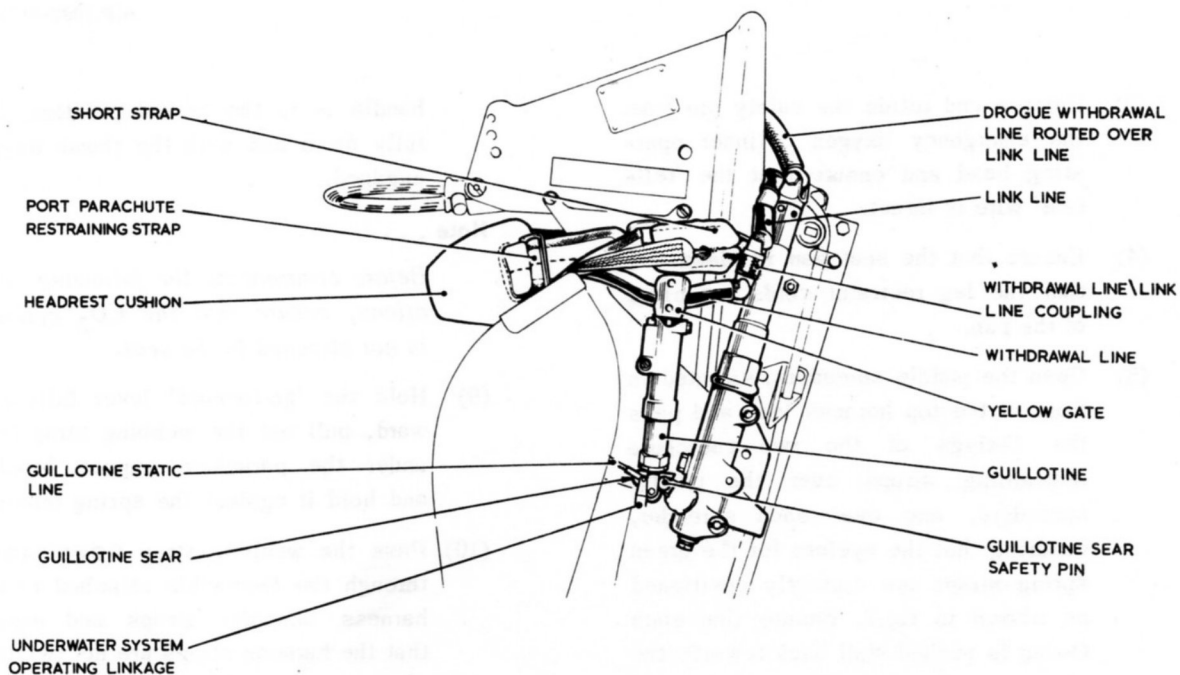


Fig. 5. Arrangement on port side of drogue container

- (14) Position the headrest cushion on the top of the parachute pack, between the pack and the drogue container. Pass the ends of the parachute restraining straps through the buckles on each side of the headrest cushion so that the ends emerge on the outside of the buckles.
- (15) Connect the two halves of the parachute withdrawal line/link line coupling. Open the yellow gate on the top of the guillotine and route the parachute withdrawal line through the aperture in the guillotine. Close the yellow gate and ensure that it correctly retains the parachute withdrawal line and that the coupling is aft of the guillotine (fig.5).
- (16) Work the straps back and forth in the self-locking buckles on the headrest cushion until the parachute pack and headrest cushion are strapped tightly to the seat. Stow the free ends neatly between the drogue container and the strap. Attach the green spring straps to the eyelets on the short restraining straps and the parachute restraining straps.
- (17) Check that the drogue withdrawal line has been routed **OVER ALL OTHER LINES** (fig.5).
- (18) With the safety pin fitted attach the guillotine static line to the sear of the guillotine. Attach the underwater system operating linkage to the sear (fig.5).
- (19) Lift the harness clear of the seat pan and fit the negative-g restraining straps as follows:-
 - (a) Thread the white straps through the front bracket on the floor of the seat pan from front to rear. The white straps are marked PORT and STARBOARD; it is essential that they are so positioned to ensure correct installation.
 - (b) Pass the straps rearwards under the seat squab and thread each strap through its rear bracket on the floor of the seat pan (fig.6).
 - (c) Engage the looped end of each strap over its respective lower harness lug and insert the lugs into their locks in the back of the seat pan (fig.7).

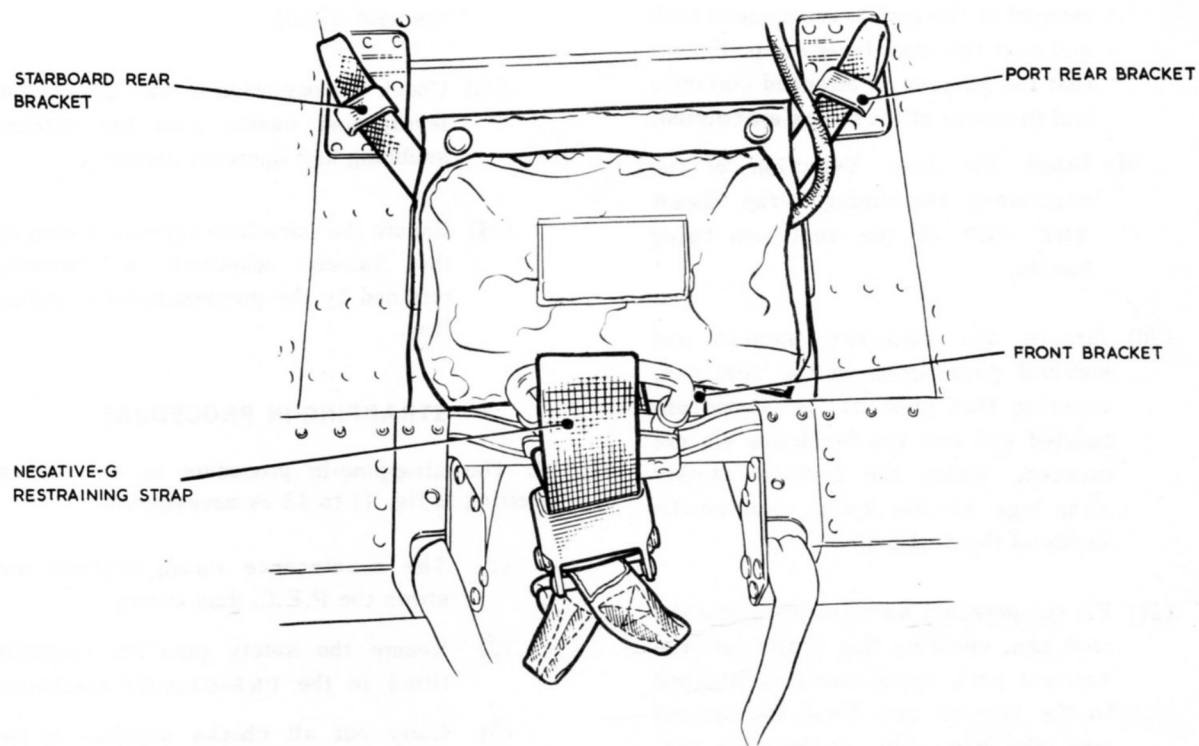


Fig. 6. Installation of negative-g restraint strap

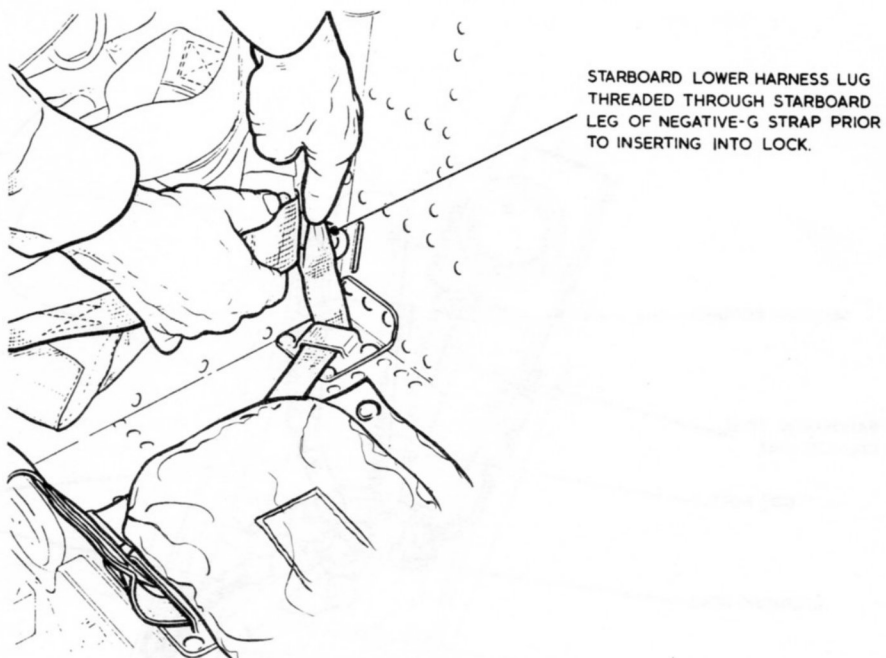


Fig. 7. Insertion of starboard lower harness lug (port similar)

Check that they have locked correctly by pulling on the lugs. Ensure that the pipe from the seat squab passes inboard of the port lower harness lock and over the negative-g strap. Ensure that the harness is arranged correctly and that none of the straps are twisted.

- (d) Drape the blue Y-section of the negative-g restraining strap **OVER THE TOP** of the seat pan firing handle.

- (20) Arrange the parachute harness and survival pack apron in the seat pan, ensuring that none of the straps are twisted and that the leg loops are not crossed. Insert the harness sticker strap lugs into the spring clips on the inside of the seat pan.

- (21) Fit the personal survival pack into the seat pan, ensuring that it fits into the survival pack apron which is attached to the harness and drape the lanyard over the port side of the seat pan. Place the cushion, securing straps to the rear, on top of the survival pack. Secure it to the rear of the pack with the press studs provided.

- (22) Fit the CO₂ cylinder by screwing it into the operating head and securing it in its bracket on the starboard side of the seat (fig.8).

- (23) Check the operation of the 'go-forward' lever, and ensure that the harness snubbing unit operates correctly.

- (24) Ensure the parachute rip-cord D-ring on the harness waistbelt is correctly retained by the press-studded retention flap.

STRAPPING-IN PROCEDURE

20. The strapping-in procedure is as follows, referring to fig. 11 to 13 as necessary:-

- (1) The maintenance rating removes and stows the P.E.C. dust cover.
- (2) Ensure the safety pins are correctly fitted in the PRE-FLIGHT condition.
- (3) Carry out all checks detailed in the Flight Reference cards.
- (4) Sit in the seat and adjust its height; ideally the head should be central against the head rest cushion.

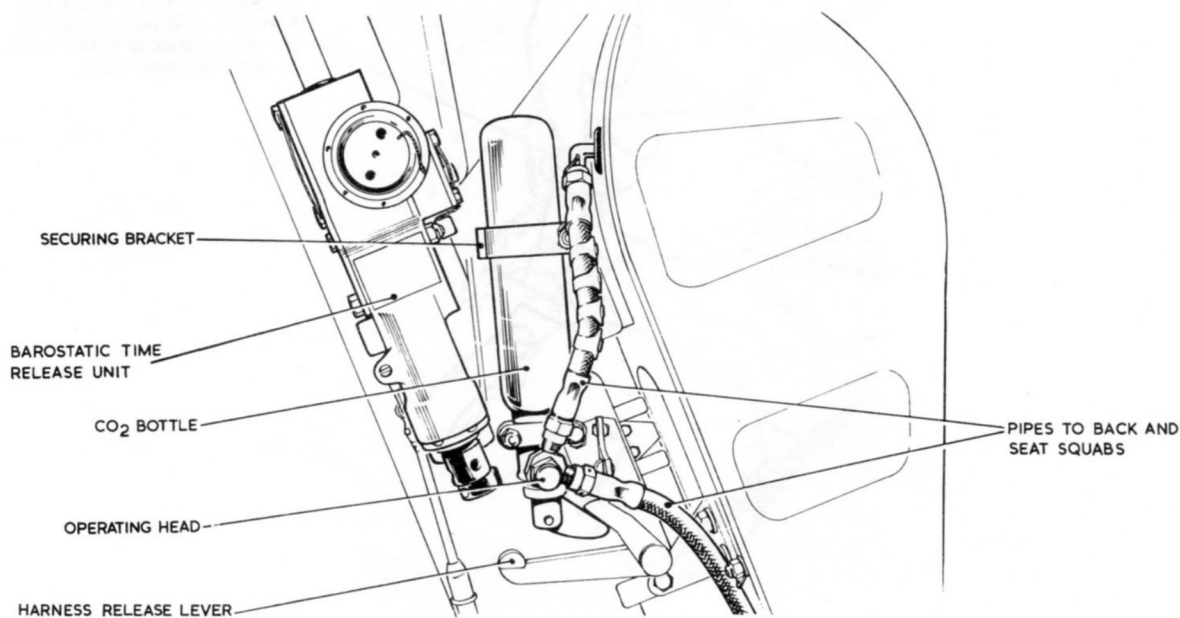


Fig. 8. Attachment of CO₂ bottle

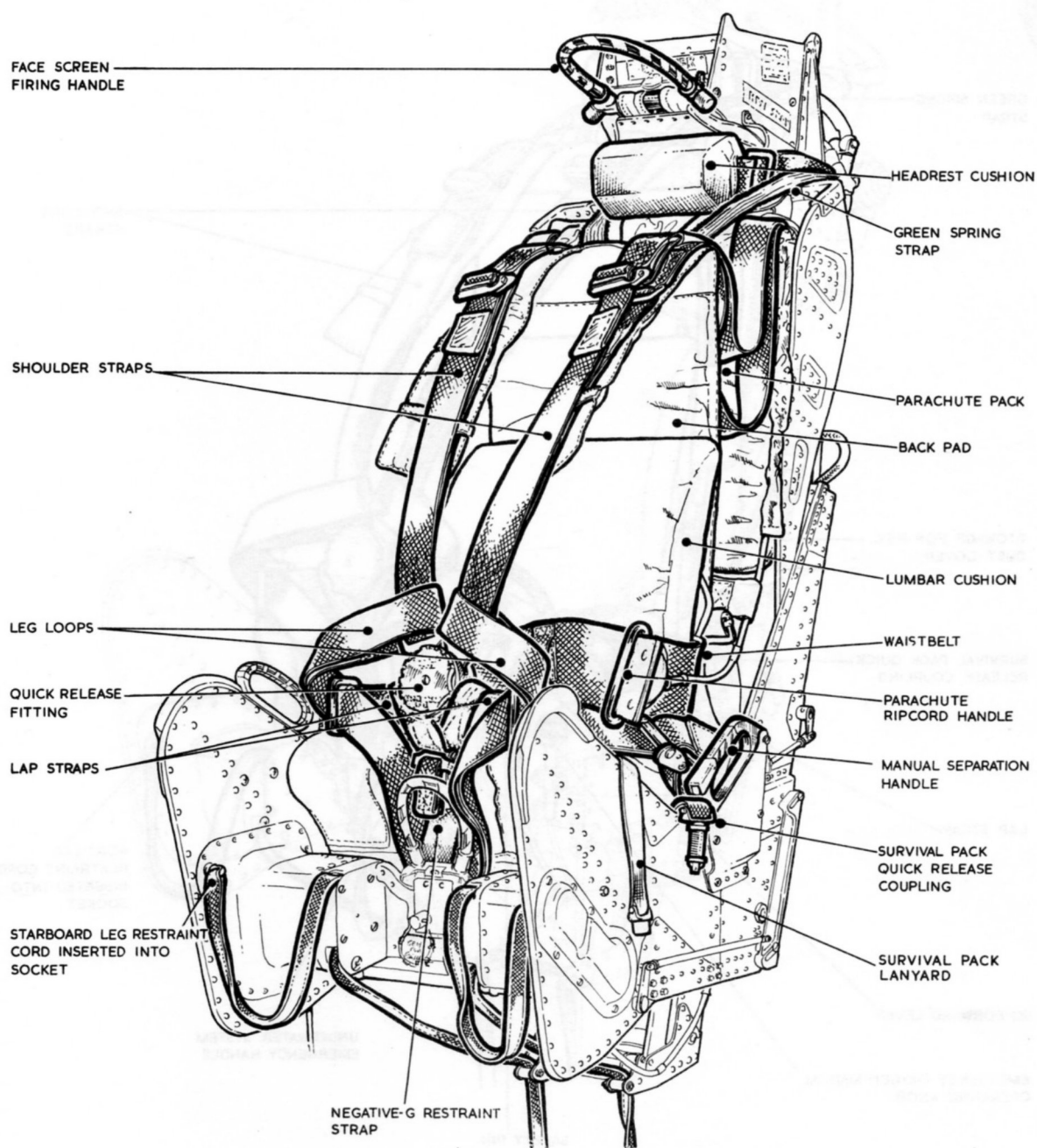


Fig. 9. The seat equipped (port)

- (5) Connect the personal survival pack lanyard and side quick-release connectors to the lifejacket, ensuring that the lanyard passes outside the left leg.
- (6) Connect the man portion of the P.E.C.

to the seat portion and check that it is locked.

- (7) Bring the left leg restraint cord from the inside, around the front of the leg, through both D-rings of the left leg

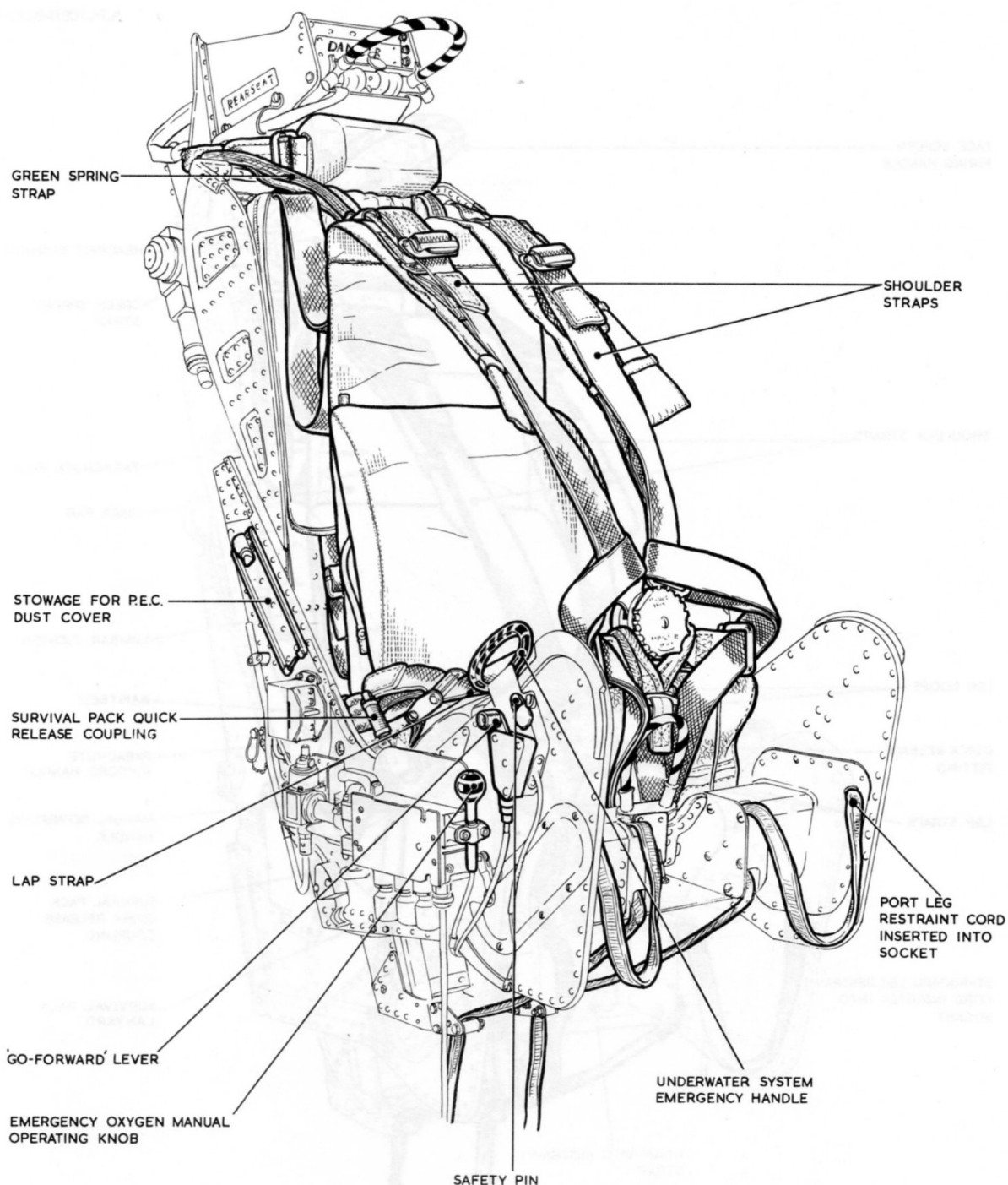


Fig. 10. The seat equipped (starboard)

garter and plug it into the socket in the left thigh guard. Bring the right leg restraint cord from the inside, around the front of the leg, through both D-rings of the right leg garter and plug it into the socket in the right thigh guard.

Pull sharply on each cord to ensure that it is locked (fig.11).

Note . . .

Unless the man portion of the P.E.C. is correctly engaged with the seat

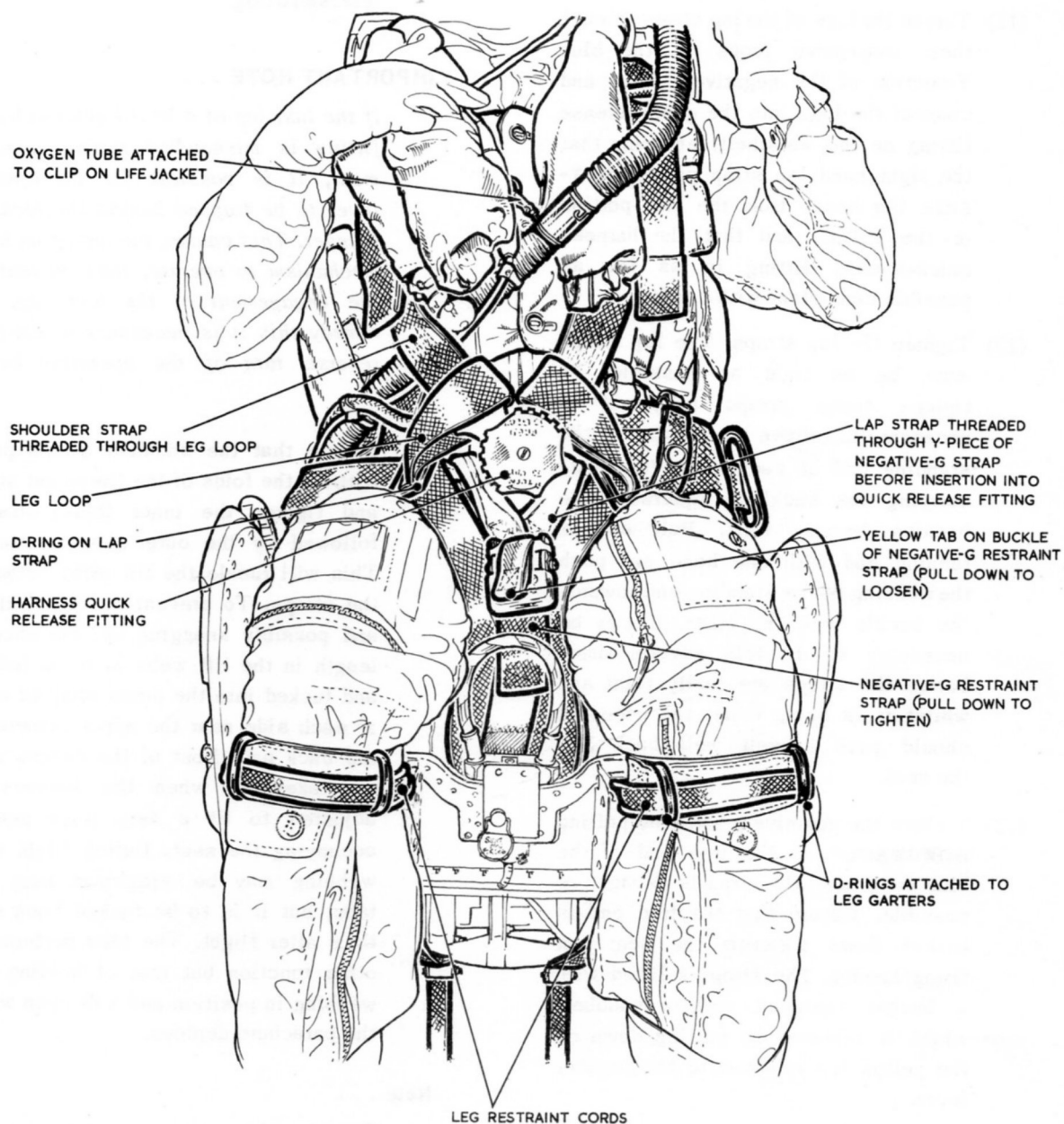


Fig. 11. Arrangement of leg restraint cords and negative-g restraint strap

portion, the leg restraint cords will not lock in their sockets.

- (8) Adjust the leg restraint cords in their snubbing units to achieve the desired freedom of leg movement.
- (9) Adjust the back pad and lumbar cushion

to the most comfortable position. Bring the harness waistbelt across the body and adjust the quick-release fitting so that it lies centrally, with the waistbelt close to the body.

- (10) Bring the negative-g restraining strap up between the legs, ensuring that it is

to the **REAR** of the seat pan firing handle and **NOT PASSED THROUGH IT**.

- (11) Thread the lugs of the lap straps through their respective loops in the blue Y-section of the negative-g strap and connect the lugs into the quick-release fitting on the waistbelt, ensuring that the right hand lap strap passes **OUT-SIDE** the hoses from the man portion of the P.E.C. and that the harness quick-release fitting is as low as possible consistent with comfort.
- (12) Tighten the lap straps. The lap straps must be as tight as possible. To tighten these straps fully, it is necessary to relieve the tension on the standing end of each strap (the ends carrying the buckles), otherwise the buckles become stiff. Pull on the running end with one hand and push the webbing of the standing end towards the buckle with the other, it may be necessary to do this several times before the straps are really tight and whilst it is being done, the occupant should push himself well back into the seat.
- (13) Tighten the negative-g strap by pulling **DOWNWARDS** on the free end of the blue strap until the strap is as tight as possible. Ensure that the free end is tucked down **BEHIND** the seat pan firing handle. The strap is fitted with a buckle equipped with a snubber, which is released by pulling down on the yellow tab attached to the snubber lever.
- (14) Pass the left leg loop upwards over the inside of the thigh and through the D-ring on the left lap strap (*from the inside of the ring towards the outside of the leg*) bring the end of the loop towards the quick-release fitting. Pass the lug of the left shoulder strap through the leg loop (*from the top downwards*) and insert the lug into its appropriate slot in the quick-release fitting; snug the loop down over the lug. Repeat for the right leg loop, and shoulder strap, passing the shoulder strap **OVER** the

oxygen supply hose. Ensure that the leg loops do not obstruct the quick-release fitting.

IMPORTANT NOTE . . .

If the last lug of a Mk.14 quick-release fitting is mishandled during engagement, it is possible for the ejector lever to be trapped behind the locking plunger. This causes the anti-g locking mechanism to operate, thus preventing the engagement of the last lug. To remedy this it is necessary to apply a reverse turn of the operating knob.

- (15) Ensure that the shoulder straps pass **UNDER** the folds of the lifejacket stole and tighten the inner (blue) straps, followed by the outer (khaki) straps. This will ruckle the lift webs between the straps. To prevent it from flailing and possibly snagging up, the excess length in the lift webs is to be folded and tucked into the press studded tabs at each side near the upper corners of the back pad. Most of the excess will be taken up when the harness is adjusted to fit a very large person occupying the seat. During flight this webbing may be withdrawn from the tabs, but it is to be tucked back into them after flight. The tabs perform no other function but that of holding the webbing in position and will open when the parachute deploys.

Note . . .

The shoulder straps are not to be over-tightened as this may give a poor posture for ejection.

- (16) Put on the protective helmet and fasten the chin strap. Fit the oxygen mask.

Note . . .

If the chin strap is not fastened, the helmet and oxygen mask may be wrenched off during ejection with the consequent loss of vital oxygen supply at high altitude.

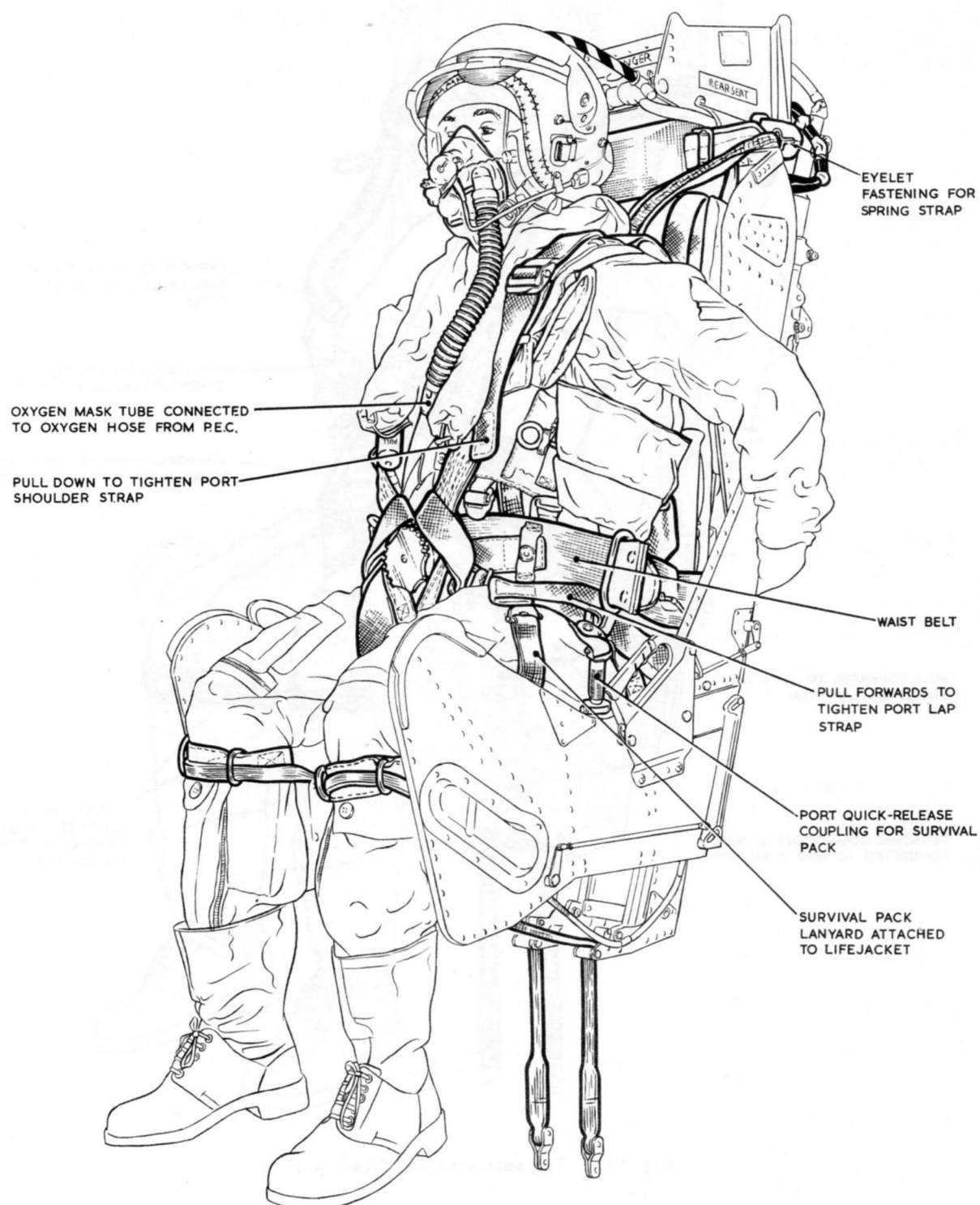


Fig. 12. The seat occupied (port)

(17) Check the connections of:-

- (a) The oxygen mask tube to the supply hose.

- (b) The air supply hose to the operating head of the lifejacket.

(18) Connect the mic/tel lead.

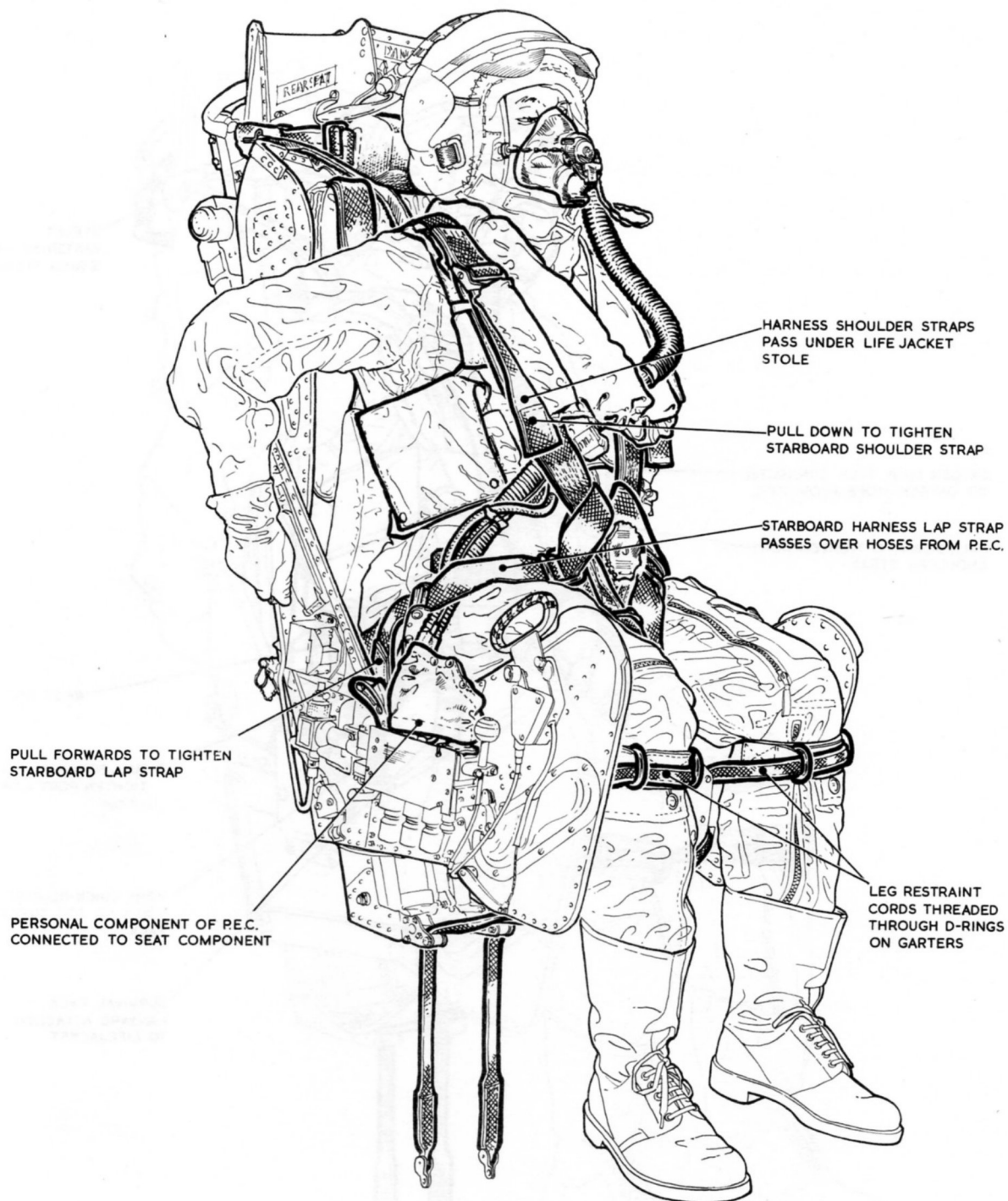


Fig. 13. The seat occupied (starboard)

21. After strapping-in proceed with the following functional checks:—

- (1) Check that the man portion of the P.E.C. is locked to the seat portion by applying pressure under the handle without touching the release trigger.
- (2) Check that the leg restraint cords are locked in their sockets.
- (3) Move to the maximum extent left and right and check that this movement does not place undue strain on the

hoses from the man portion of the P.E.C.

- (4) Set the oxygen mask harness lever to the low pressure position and adjust it until there is no leakage when the regulator is set to EMERGENCY.
- (5) Press the anti-g valve TEST button and check that the anti-g suit inflates.
- (6) Raise and lower the seat to its full extent, and check that the aircraft portion of the P.E.C. remains locked to the seat portion. Re-position the seat to the desired height.
- (7) Operate the harness 'go-forward' lever and check the functioning of the harness snubbing unit.
- (8) Check that the face screen handle can be reached with both hands simultaneously.

22. With assistance remove the safety pins from the PRE-FLIGHT positions. Stow the pins.

Note . . .

If assistance is not available the occupant must remove and stow all safety pins.

EMERGENCIES

23. Instructions dealing with emergencies are contained in Aircrew Notes.

LEAVING THE AIRCRAFT AFTER LANDING

24. When leaving the aircraft after landing, the following procedure is to be adopted:—

- (1) Remove the safety pins from the stowages and with assistance place them in the PRE-FLIGHT positions. Ensure the underwater escape system selector lever is in the safe position.

Note . . .

If assistance is not available the occupant must position all safety pins himself.

- (2) Operate the harness quick-release fitting, free the straps and return the fitting to the locked position.
- (3) Disconnect the oxygen mask tube assembly from the oxygen supply hose.
- (4) Remove the man portion of the P.E.C. from the seat portion and free the leg restraint cords from the garters.
- (5) Disconnect the personal survival pack lanyard and side quick-release connectors from the lifejacket.
- (6) Vacate the aircraft.
- (7) The maintenance rating fits the dust cover to the P.E.C.

Note

If a maintenance rating is not available, the aircrew member is to fit the dust cover to the P.E.C. before leaving the aircraft.

Appendix 1

FLYING CLOTHING

Introduction

1. The following information includes a list of items available (A.P.(N)377 and 378 also refers) and the dressing and functional tests which are to be conducted before leaving the cloakroom or crewroom. The items are also described in the A.P.108F-series or current Air Publication and their servicing is dealt with in A.P.1182 (Naval), Vol.4, Parts 2 and 6; reference is therefore, to be made to this information as necessary.

LIST OF CLOTHING ITEMS

2. The following items are available:—

<i>Vocab/ Ref. No.</i>	<i>Description</i>
47451-7	Vest, aircrew, fine, cotton ribbed
47881-5	Vest, raschel, knitted, sleeveless
47930-6	Vest, aircrew, wool/nylon
47441-7	Drawers, aircrew, fine, cotton ribbed, long
47940-6	Drawers, aircrew, wool/nylon
23408-15	Shirt, aircrew, action working dress
47952-59	Socks, woollen, knitted, plain
47990-97	Socks, teryloop
47372-75	Jersey, pullover, 1954 patt.
47700-3	Suit, anti-g, Mk.7B
47754-59	Suit, air ventilated, Mk.3A
47561-9	Suit, flying, Mk.12
47071-86	Boots, flying, 1965 patt.
47723-30	Boots, rubber, Mk.3 for immersion suit, Mk.7
47671-75	Trousers, immersion suit, Mk.7
47666-70	Blouse, immersion suit, Mk.7
47818	Braces, immersion suit, Mk.7 or
47771-80	Suit, immersion, Mk.10

47781-8	Socks, rubberised, Mk.1 for immersion suit, Mk.10
47220-3	Helmet, protective, Mk.2A
47214-19	Gloves, cape leather, water resistant
47204-09	Gloves, cape leather, Mk.2
47483	Jacket, lifesaving, Mk.8 or
47484	Jacket, lifesaving, Mk.8A
47409	Knife, aircrew, emergency, Mk.3
27L/2227	Garters, leg restraint. M.B.E.U. 19488
6D/2914	Oxygen mask, hose assembly, Mk.8. P.E.C.
6D/2307	Mask, oxygen, Type P2A or
6D/2358	Mask, oxygen, Type P2A (med) or
6D/3042	Mask, oxygen, Type P2B or
6D/3043	Mask, oxygen, Type P2B (med) or
6D/2309	Mask, oxygen, Type Q2A or
6D/2360	Mask, oxygen, Type Q2A (med)
6D/2682	Connector for A.V.S.
6D/2680	Connector for anti-g suit

3. A combination of this clothing, together with one of the Mk.17 series oxygen regulators (which is fitted to the aircraft system), comprises a low altitude assembly; the limitations imposed on the assembly are related to the type of oxygen regulator fitted to the aircraft system.

Limitations of the assembly

4. The assembly provides full protection up to a CABIN altitude of 50 000 ft. The loss of a

cockpit canopy in flight results in a lowering of cabin pressure; this may produce an equivalent cabin altitude of 5000 to 10000 ft. above the aircraft altitude.

5 If cabin pressure is lost for any reason, the aircraft must be brought down to a CABIN altitude of 40000 ft. at the maximum descent rate in a total time of 2 minutes followed by a gradual descent to below 30000 ft. It is essential that the emergency is appreciated and action taken within the first minute.

Dressing

6. Initial fitting of the anti-g suit, Mk.2A protective helmet and oxygen mask is to be under the supervision of a F.P.M.O.

7. The recommended order of dressing is as follows:-

- (1) Vest, drawers and socks.
- (2) Air ventilated suit.
- (3) Shirt and, if required, pullover.

(4) Anti-g suit.

(5) Flying suit or immersion suit.

Note . . .

If a flying suit is worn pass the hose of the anti-g suit through the slit provided. If an immersion suit is worn it will be necessary to pass the hose through the rubber seal of the adapter positioned on the immersion suit.

- (6) Leg restraint garters (these may be separate items and must be fitted just below the knee).
- (7) Lifejacket.
- (8) Protective helmet c/w screen anti-glare.
- (9) Fit the oxygen mask and conduct a functional test of the assembly in accordance with current instructions.
- (10) Don the gloves and proceed to the aircraft.