

**SECTION 1**

**CONTROLS AND EXITS**

**LIST OF CHAPTERS**

*Note.— A list of contents appears at the beginning of each chapter.*

- 1 Pilot's controls and equipment**
- 2 Crew's controls and equipment**
- 3 Emergency controls, equipment and exits — method of operation**

## Chapter 1 PILOT'S CONTROLS AND EQUIPMENT

## LIST OF CONTENTS

	<i>Para.</i>
<i>Entry to cabin</i> .....	1
<i>Pilot's seat</i> .....	2
<i>Instrument and control panels</i> .....	3
<i>Electrical control panel</i> .....	4
<i>Curtains</i> .....	5
<i>Lighting</i> .....	6
<i>Stowages</i> .....	7

## LIST OF ILLUSTRATIONS

	<i>Fig.</i>		<i>Fig.</i>
<i>Flying controls and instruments</i> .....	1	<i>Operational equipment</i> .....	3
<i>Engine controls and instruments</i> .....	2	<i>Miscellaneous equipment</i> .....	4

**WARNING**

The relevant safety precautions detailed on the **LETIHAL WARNING** marker card must always be observed before entering the cabin or performing any operations upon the aircraft.

**Entry to cabin**

1. Normal entry to the cabin is through a door, hinged at its upper edge, in the starboard side of the fuselage aft of the nose radome. The door is opened by pressing the red-painted knob adjacent to the latching handle and turning the handle in a counter-clockwise direction from the outside, clockwise from the inside. The door is supported in the open position by a hinged strut which is attached to the door structure and locates in a socket in the door aperture framing.

**Pilot's seat**

2. A Martin Baker Type 2CA. 1 Mk. 2 ejection seat with, single-lever ejection facilities is installed. The seat is described in A.P.109B-0107-1. The rudder pedals can be adjusted for leg-reach by rotating a starwheel located in the centre of the rudder bar.

**Instrument and control panels**

3. The pilot's instrument panel is divided into four sections; the take-off panel, the flight instrument panel, the engine instrument panel and the miscellaneous instruments panel. The take-off panel is situated on the port wall of the station; the switches on it must be selected to the UP position prior to flight. The three instrument panels are located in front of the pilot. A controls console is fitted at the port side below

the take-off panel, and an inclined panel forward of the controls console, has fitted to it, controls for the flaps and alighting-gear mechanisms. A panel containing the engine-starting controls is located immediately below the flight instrument panel. A coaming panel positioned above the engine instrument panel contains numerous switches, No. 1 and No. 2 engine fire extinguisher switch indicators, a voltmeter and accelerometer.

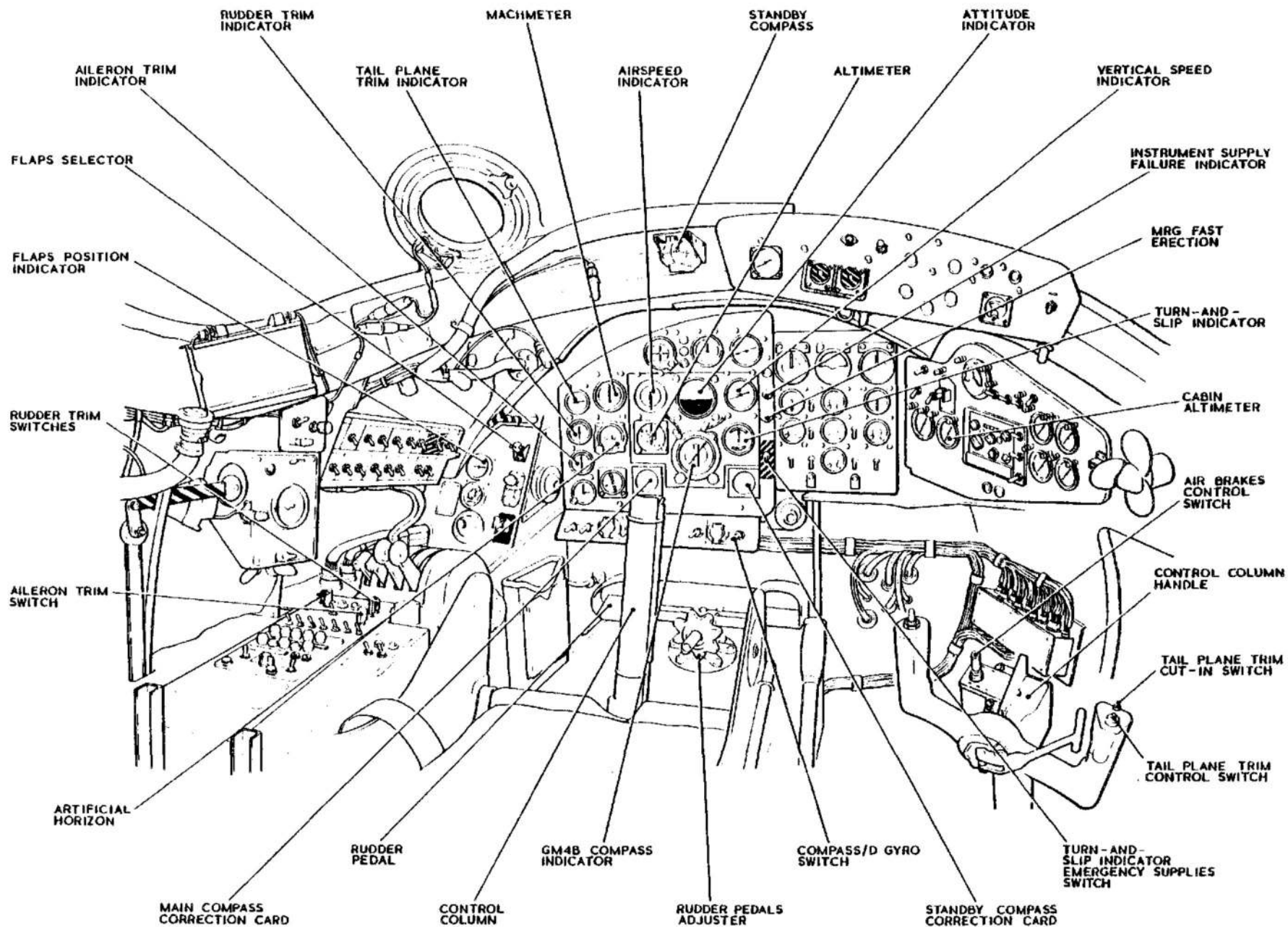
**Electrical control panel**

4. The electrical control panel is located to starboard and slightly aft of the pilot's seat.

**Curtains**

5. A curtain, fitted to the canopy coaming

RESTRICTED



EKS. NO. 3-155. 6

FIG. I. FLYING CONTROLS AND INSTRUMENTS

◀ FLAPS SWITCH AMENDED ▶

RESTRICTED

cross-tube, when lowered, divides ►◄ the pilot's station from the crew station.

#### Lighting

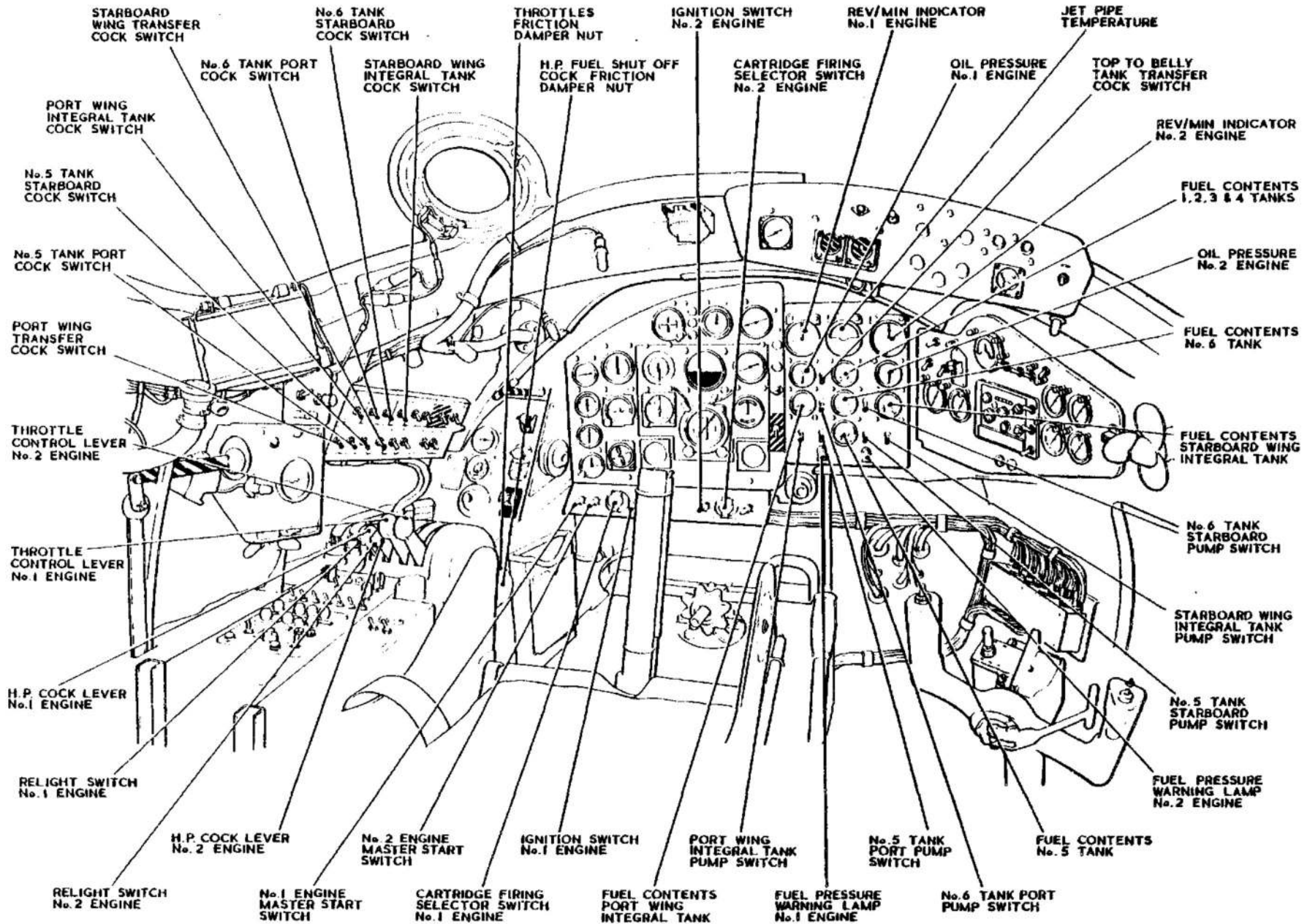
6. Dimmer switches located on the coaming panel control the lighting on the following panels:— flight instrument, miscellaneous instruments, engine instrument and coaming panel. A switch mounted at the starboard side of the coaming panel controls two red emergency lamps positioned on the coaming tube one each side of

the flight instrument panel and the lamp in the stand-by compass. A further switch on the coaming panel marked ANTI-DAZZLE, controls two lamps attached to the coaming tube, one adjacent the de-mist control, the other near to the engine instrument panel. Lamp identification is marked below each switch. Switches located on the port console control the aircraft external lighting. Two switches mounted on a panel immediately above the pilot's oxygen regulator control the frequency card holder lighting and

the red lamps on the port side of the cabin. For detailed information of cabin lighting refer to  
◄ A.P.101B-0422-1B, Sect.5, Chap.1, Group L. ►

#### Stowages

7. The flap selector lock pin is stowed in a small bag attached to the floor structure facing the entrance door. A divided container situated at the forward end of the console on the inboard side, provides stowage for the pilot's maps and notes.



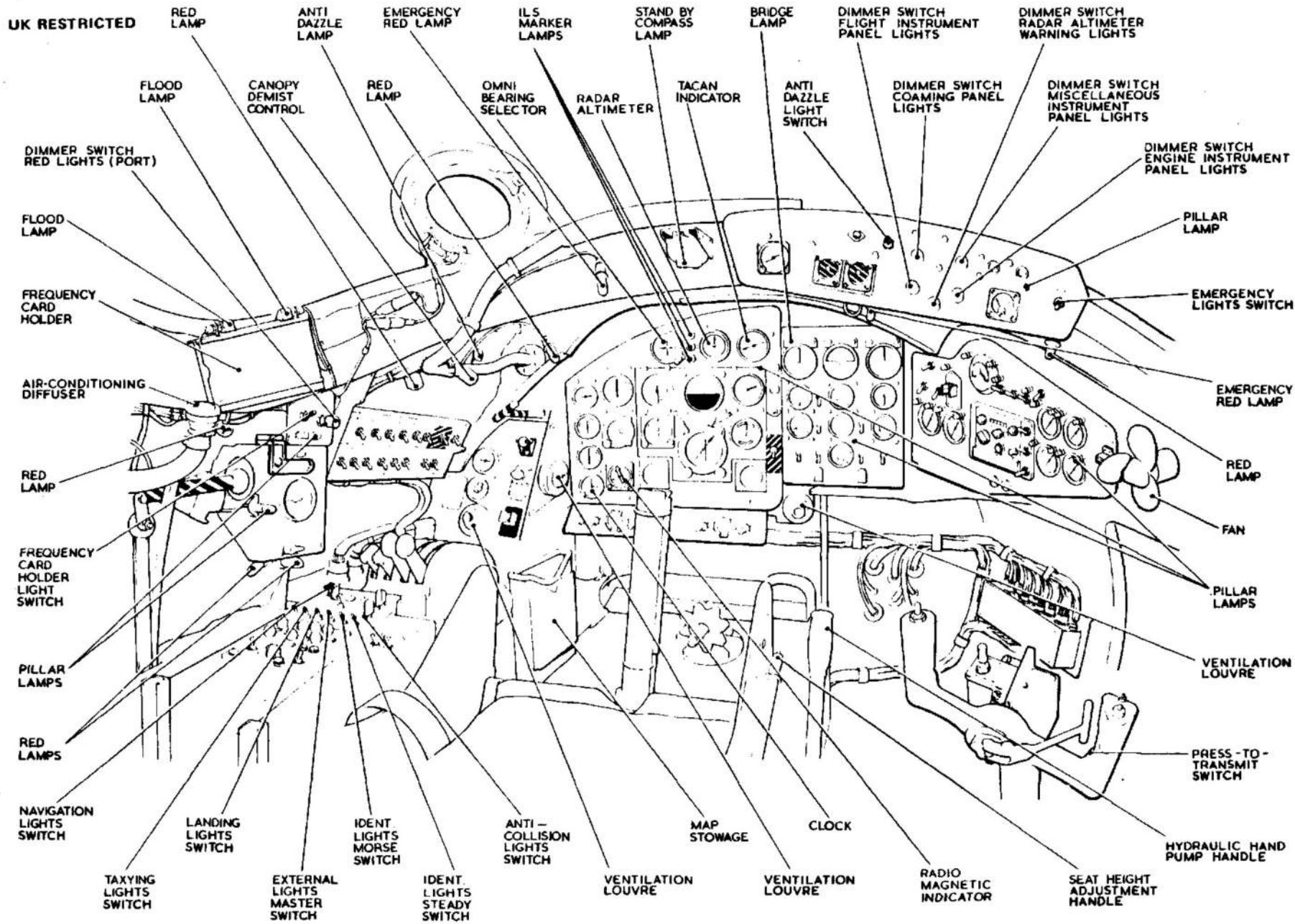
EKS. 80. 3-155 6

FIG.2. ENGINE CONTROLS AND INSTRUMENTS

< FLAPS SWITCH AMENDED >



UK RESTRICTED



EKS 80 3-155 6

FIG. 4. MISCELLANEOUS EQUIPMENT

◀ OXYGEN REGULATOR AMENDED ▶

UK RESTRICTED

## Chapter 2 CREW'S CONTROLS AND EQUIPMENT

## LIST OF CONTENTS

	<i>Para.</i>
<i>Introduction</i> .....	1
<i>Entrance to station</i> .....	2
<i>Seating</i> .....	3
<i>Navigator's station</i> .....	4
<i>Lighting, navigator's station</i> .....	5
<i>Inspection lamp</i> .....	6
<i>Electrical control panel</i> .....	7

## LIST OF ILLUSTRATIONS

	<i>Fig.</i>
<i>Navigator's station (front and port side)</i> ..	1
<i>Navigator's station (starboard side)</i> .....	2

**WARNING**

The relevant safety precautions detailed on the LETHAL WARNING marker card must always be observed before entering the cabin or performing any operations upon the aircraft.

**Introduction**

1. This chapter provides information regarding the disposition, function and operation of controls and equipment at the crew stations. The general equipment is illustrated in fig. 1 and 2.

**Entrance to station**

2. Entry to the station is through the

doorway in the starboard side of the fuselage, aft of the nose radome (*Chap. 1*).

**Seating**

3. The navigator's seat is a Martin Baker Type 2CA.2, Mk.4 ejection seat with single-lever ejection facilities. The seat is described in detail in A.P.109B-0107-1. A folding seat for occasional use, hinged to the cabin wall at the pilot's station, can be folded upwards against the cabin wall when not in use.

**Navigator's station (fig. 1 and 2)**

4. The navigator's seat is at the rear of the

cabin on the port side. A chart table is positioned forward of the seat, the top of which is hinged along its forward edge allowing it to be raised to a vertical position and held there by a retaining catch, thus facilitating ease of entry and exit. A panel carrying the navigator's instruments is located forward and above the chart table. Various controls are conveniently located around the station.

**Lighting, navigator's station**

5. A Mk. 1A dome lamp, incorporating a switch and two-pin socket in the lamp base, is

RESTRICTED

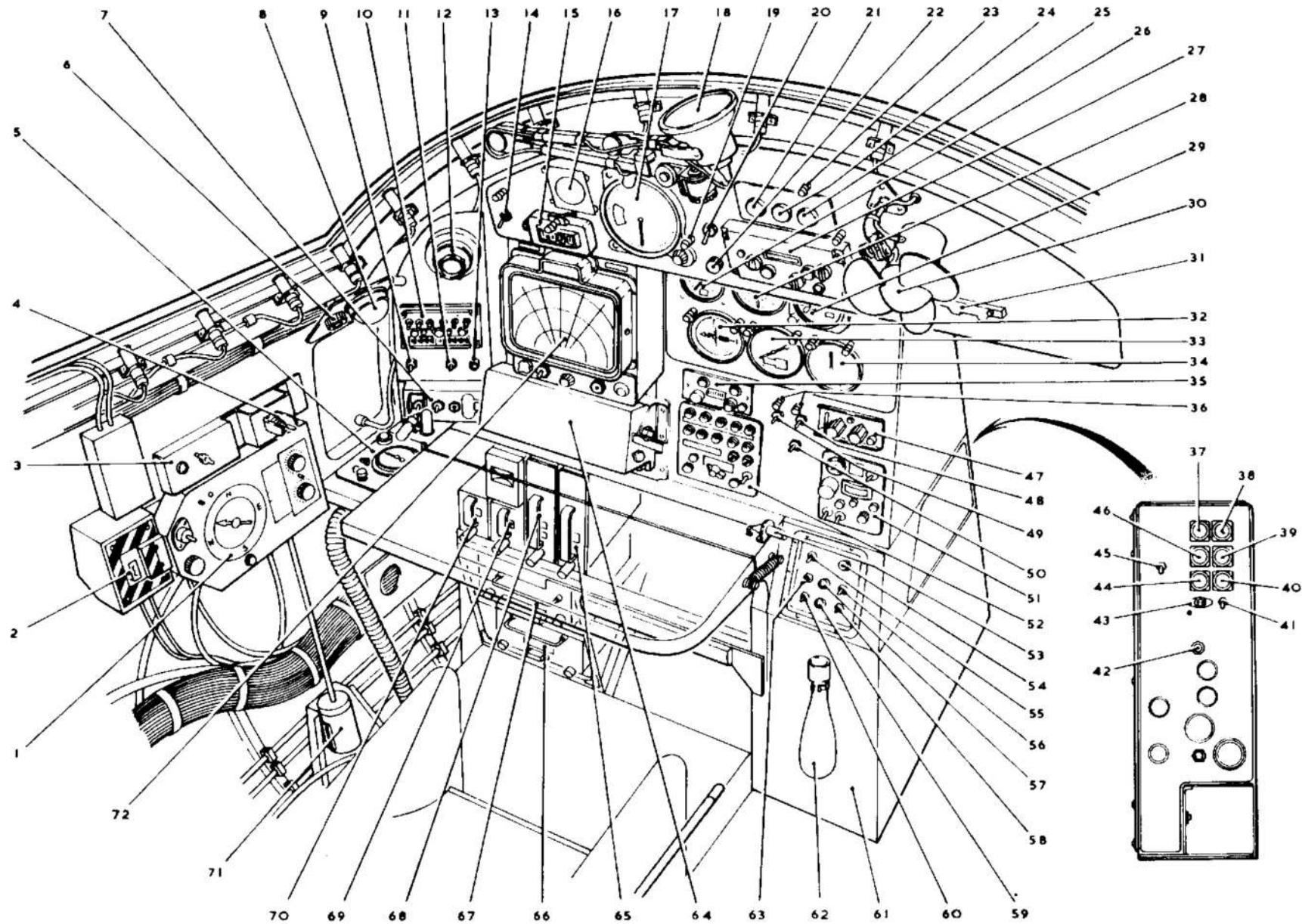


FIG. I. NAVIGATOR'S STATION ( FRONT AND PORT SIDE )

◀ E. C. PANEL CORRECTED ▶

RESTRICTED

## Key to fig. 1 — Navigator's station (front and port side)

- |       |   |     |  |
|-------|---|-----|--|
| 1.    | Air position indicator and control panel            | 37. | No. 6, (Belly) tank, STBD fuel pump ammeter test switch  |
| 2.    | Hatch safety and jettison switches                  | 38. | No. 6, (Belly) tank, PORT fuel pump ammeter test switch  |
| 3.    | Radio compass, voice/range filter                   | 39. | No. 5, (Rear) tank, PORT fuel pump ammeter test switch   |
| 4.    | VOR/ILS, voice/range filter switch                  | 40. | PORT integral tank fuel pump ammeter test switch         |
| 5.    | Oxygen regulator                                    | 41. | E.C.P. lights switch                                     |
| 6.    | Wander lamp dimmer switch                           | 42. | I.L.S test socket  |
| 7.    | Air mileage unit control panel                      | 43. | Ammeter test socket                                      |
| 8.    | Dome lamp   | 44. | STBD., integral tank fuel pump ammeter test switch       |
| 9.    | U/VHF transmit switch                               | 45. | Flare bay doors OPEN/CLOSED switch                       |
| 10.   | IFF/SSR control unit                                | 46. | No. 5, (Rear) tank, STBD., fuel pump ammeter test switch |
| ◀ 11. | IFF/SSR NORMAL/Emergency supply switch ▶            | 47. | Tacan control unit                                       |
| 12.   | Ventilation louvre                                  | 48. | ILS marker ON/OFF switch                                 |
| 13.   | IFF/SSR failure warning and PRESS-TO-TEST switch    | 49. | ILS marker HIGH/LOW switch                               |
| 14.   | Anti-dazzle lights switch                           | 50. | ILS/VOR receiver switch                                  |
| 15.   | Air-mileage indicator                               | 51. | Radio compass control unit                               |
| 16.   | Compass deviation card holder                       | 52. | Intercomm. control panel                                 |
| 17.   | GM4B master indicator                               | 53. | Red lamp   |
| 18.   | Angle poise lamp                                    | 54. | Panel lights dimmer switch                               |
| 19.   | Pillar lamp   | 55. | Intercomm. master switch                                 |
| 20.   | Fan switch  | 56. | No. 3 inverter START switch                              |
| 21.   | Pilot's oxygen warning indicator                    | 57. | No. 3 inverter indicator                                 |
| 22.   | Red lamps dimmer switch                             | 58. | No. 4 inverter flight test switch                        |
| 23.   | Pillar lamp   | 59. | No. 4 inverter indicator                                 |
| 24.   | Navigator's oxygen warning indicator                | 60. | No. 4 inverter ON/OFF switch                             |
| 25.   | Occasional seat occupant's oxygen warning indicator | 61. | Electrical control panel (E.C.P.)                        |
| 26.   | Air temperature gauge                               | 62. | Urine container  |
| 27.   | U/VHF control unit                                  | 63. | No. 3 inverter ON/OFF switch                             |
| 28.   | Airspeed indicator                                  | 64. | Azimuth range indicator control unit                     |
| 29.   | Altimeter   | 65. | VHF receiver   |
| 30.   | Fan   | 66. | ADF - RF amplifier                                       |
| 31.   | Navigator's seat safety pins stowage                | 67. | ADF - IF amplifier                                       |
| 32.   | Radio magnetic indicator                            | 68. | Glide slope/ILS  |
| 33.   | Tacan indicator                                     | 69. | Navigation unit  |
| 34.   | Radio compass bearing indicator                     | 70. | ILS marker receiver                                      |
| 35.   | ILS control unit                                    | 71. | Air position indicator repeater unit                     |
| 36.   | Pillar lamps  | 72. | Azimuth range indicator                                  |

mounted in the roof at the port side of the station to provide general lighting. An angle-poise lamp, used in conjunction with a dimmer switch, is provided for illuminating individual items of equipment; the lamp bracket is mounted centrally on the coaming panel. For detailed information refer to Sect. 5, Chap. 1, Group L.

**Inspection lamp**

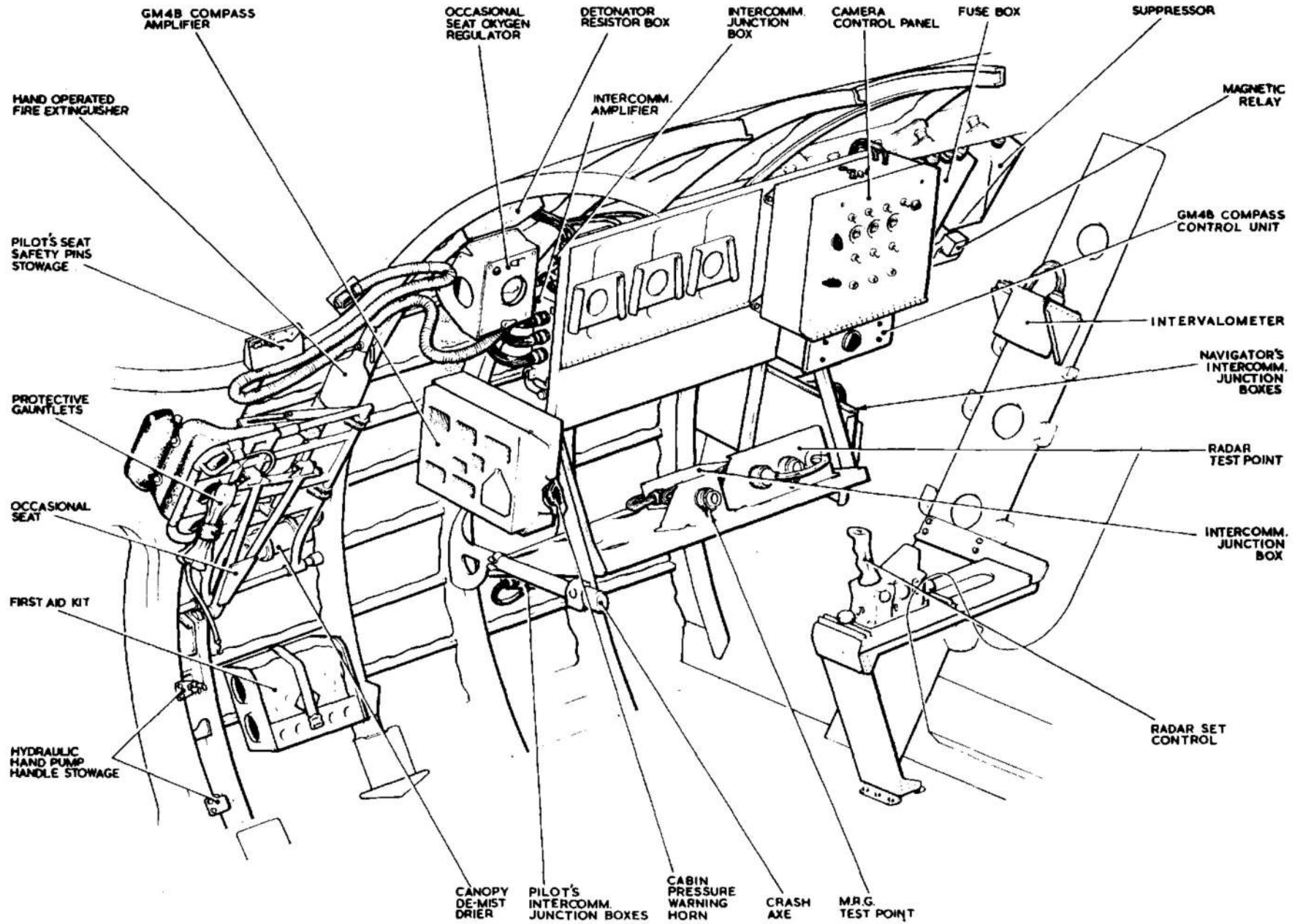
6. In addition to the normal lighting at the navigator's station an inspection lamp is carried in a stowage on the starboard wall immediately aft of the entrance door; the lamp may be plugged into the two-pin sockets in the bases of the Mk. 1A dome lamps.

**Electrical control panel**

7. The electrical control panel, mounted to starboard and slightly aft of the pilot's seat, carries on its forward face various control switches and a test socket. For detailed information refer to Sect. 5, Chap. 1 General Information.

RESTRICTED

A.P.101B-0422-1A, Sect.1, Chap.2  
A.L.6, Dec.74



EKS.80.123-155.6

FIG.2. NAVIGATOR'S STATION (STARBOARD SIDE)

◀GM4B COMPASS CONTROL UNIT POSITION CORRECTED▶

RESTRICTED

## Chapter 3 EMERGENCY CONTROLS, EQUIPMENT AND EXITS – METHOD OF OPERATION

## LIST OF CONTENTS

	<i>Para.</i>		<i>Para.</i>		<i>Para.</i>	
<i>Introduction</i> .....	1	<i>Leg-restraining straps</i> .....	8	<i>Emergency batteries</i> .....	19	
<b>EMERGENCY CONTROLS</b>			<i>Hydraulic system hand pump</i> .....	9	<i>Turn-and-slip indicator</i> .....	20
<i>Alighting gear</i>		<i>Fire warning and extinguishers</i>		<i>Emergency compass</i> .....	21	
<i>Lowering</i> .....	2	<i>Engine fire warning lamps and</i>		<i>Aircraft destructor</i> .....	22	
<i>Raising</i> .....	3	<i>extinguishers</i> .....	10	<b>EMERGENCY EXITS</b>		
<i>Master safety switch</i> .....	4	<i>Fuel bay fire extinguisher</i> .....	11	<i>Entrance door jettisoning</i> .....	23	
<i>Flare bay doors</i> .....	5	<i>Hand fire extinguisher</i> .....	12	<i>Canopy jettisoning</i> .....	24	
<i>Emergency lighting (Pilot's station)</i> .....	6	<i>Crash axe</i> .....	13	<i>Pilot's single-lever ejection</i> .....	26	
<b>EMERGENCY EQUIPMENT</b>			<i>First-aid kit</i> .....	14	<i>Crew escape hatch</i> .....	27
<i>Ejection seats</i> .....	7	<i>Asbestos gloves</i> .....	15	<i>Hatch jettisoning</i> .....	28	
		<i>Emergency oxygen</i> .....	16	<i>Cocking lever and safety pin stowages</i> .....	29	
		<i>Survival packs</i> .....	17			
		<i>Inertia crash switches</i> .....	18			

## LIST OF ILLUSTRATIONS

	<i>Fig.</i>
<i>Emergency controls, equipment and exits (1)</i> .....	1
<i>Emergency controls, equipment and exits (2)</i> .....	2

RESTRICTED

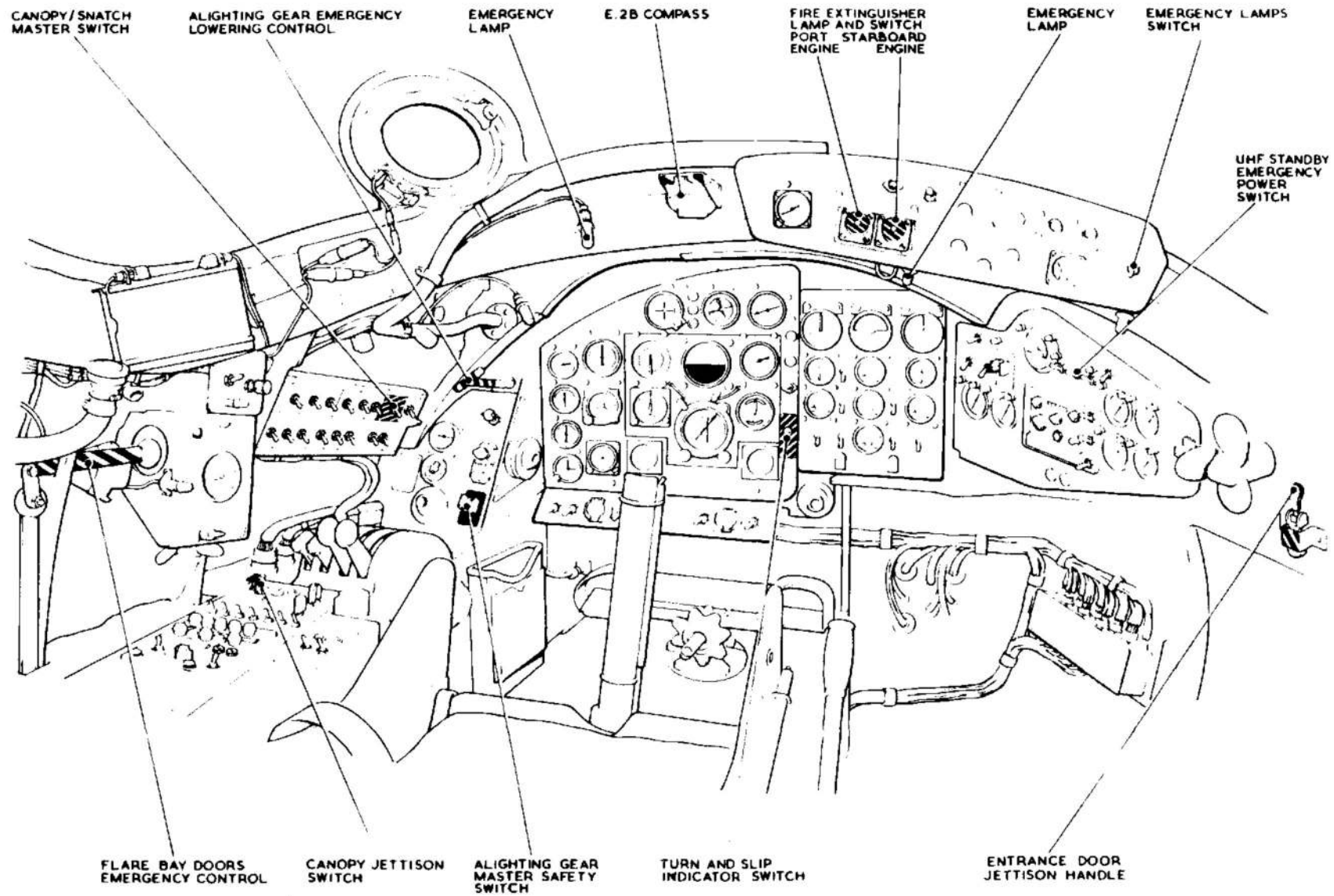


FIG.1 EMERGENCY CONTROLS, EQUIPMENT AND EXITS (1)

◀ALIGHTING GEAR MASTER SAFETY SWITCH AMENDED▶

RESTRICTED

**WARNING**

The relevant safety precautions detailed on the LETHAL WARNING marker card must always be observed before entering the cabin or performing any operations upon the aircraft.

**Introduction**

1. This chapter describes the location of the emergency controls, equipment and exits, and indicates methods of operation where this is not obvious. A description of the emergency facilities, together with the servicing and resetting procedures, is given in Sect.3, Chap.11.

**EMERGENCY CONTROLS****Alighting gear***Lowering*

2. A mechanical selector for lowering the alighting gear in an emergency is situated above the alighting gear control panel at the port side of the main instrument panel. It consists of a T-shaped handle painted black-and-yellow and marked U/C EMERGENCY. The handle is secured in the unoperated position by a sealed aluminium wire loop. To operate the emergency service the handle should be pulled to its full extent, where it is retained in that position by a spring-loaded lock incorporated in the handle. This control is used in the event of an electrical fault rendering the normal alighting gear control inoperative, and it functions irrespective of the position of the normal alighting gear control.

*Raising*

3. To raise the alighting gear in an emergency, which may arise during a take-off run with the wheels still on the ground, an interlock override is incorporated in the UNDERCARRIAGE UP pushbutton. To operate the override selection, a knobbed ring around the UP button is turned clockwise through 60, or 90 deg. according to type, and depressed in the normal manner. Once this emergency selection has been made, UP and DOWN selections may be carried out normally, but until the switch is reset (Sect. 3, Chap.11) there is no protection against accidental retraction on the ground other than the U/C MASTER switch (para.4) being set to SAFE. ▶

**WARNING**

Under no circumstances must the knobbed ring be turned past its relevant stop as such action will damage the switch and may result in inadvertent retraction of the alighting gear.

*Master safety switch*

4. A switch, marked U/C MASTER - LIVE-SAFE, is situated on the alighting gear panel. The switch prevents inadvertent retraction of the alighting gear on the ground by isolating the electrical supply. On the ground the switch must be at SAFE at all times except when retraction tests are being made with the aircraft jacked and trestled.

*Flare bay doors*

5. A control for opening the flare bay doors in an emergency is situated on the port wall at the pilot's station, and is held in the unoperated position by a sealed aluminium wire loop. The control lever, painted black-and-yellow and labelled FLARE DOOR EMERGENCY CONTROL, is moved down to operate, and is retained in that position by a spring lock. This control is used in the event of an electrical fault rendering the normal control inoperative, and operates irrespective of the position selected on that control.

*Emergency lighting (pilot's station)*

6. Two emergency amber lamps are installed above the pilot's instrument panels. The control switch, indicated in the dark by a luminous dot on the switch plate, is mounted on the coaming panel.

**EMERGENCY EQUIPMENT***Ejection seats*

7. Martin Baker ejection seats are installed at the pilot's and crew's stations (Chap. 1 and 2). The seats are described in detail in A.P.109B-0107-1. Servicing of the seats is detailed in A.P.109B-0107-5.

*Leg-restraining straps*

8. To prevent leg injury to crew members during ejection, leg-restraining straps are provided on each seat. These are anchored to brackets on the cabin floor, the straps then pass through snubbing units on the front of the seat pan and are connected to the safety harness straps. During ejection, the restraining straps are pulled down through the snubbing units to move the occupant's legs close to the seat pan. At a predetermined force the rivets anchoring the brackets secured to the cabin floor shear, freeing the straps from the brackets.

*Hydraulic system hand pump*

9. The hydraulic system hand pump is situated on the starboard side of

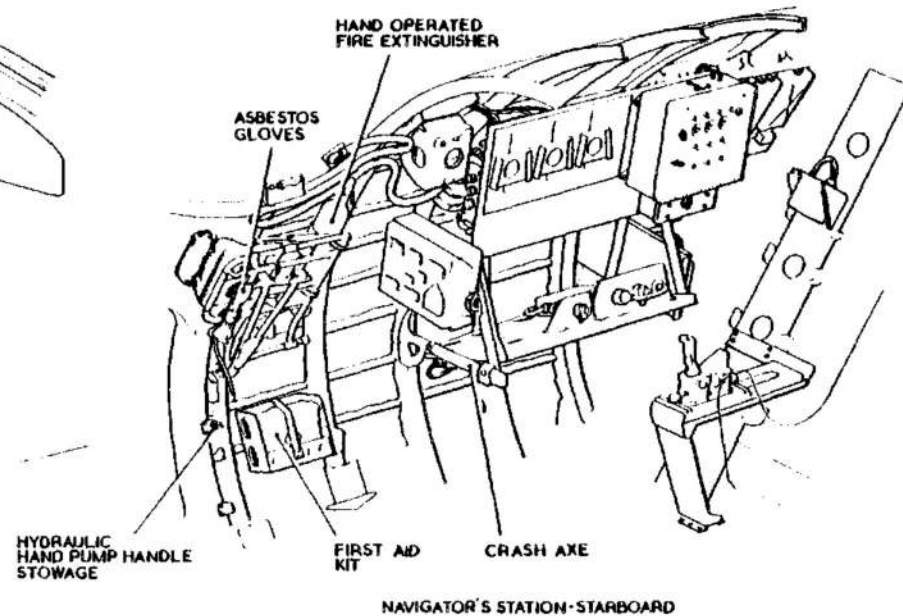
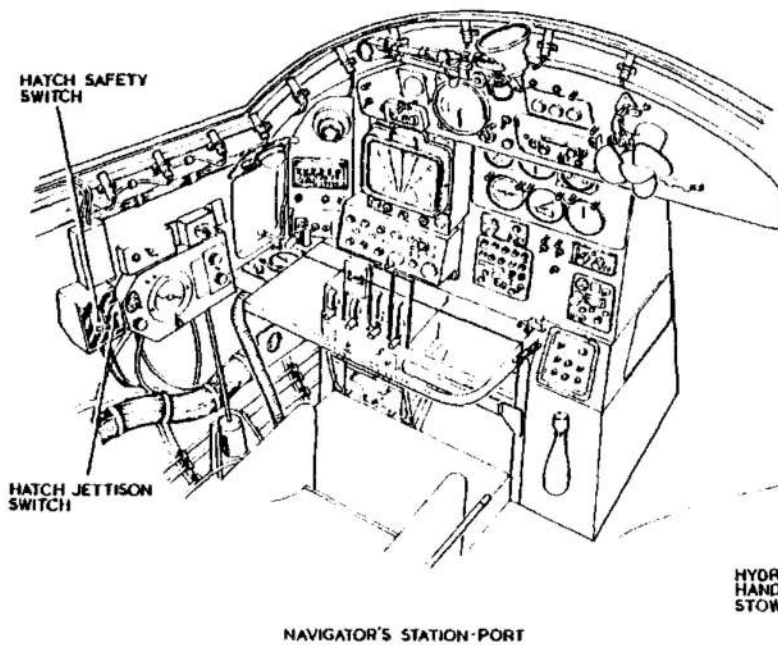
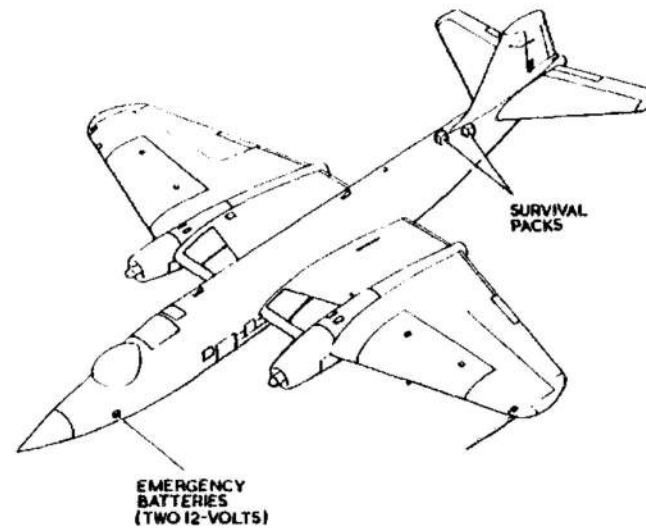
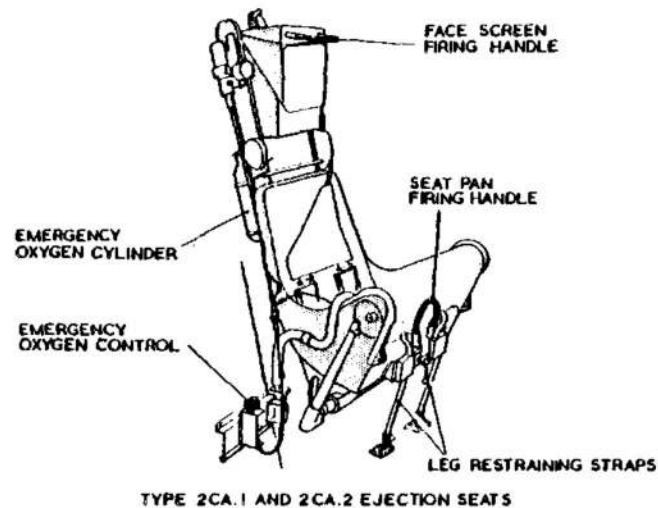


FIG.2. EMERGENCY CONTROLS, EQUIPMENT AND EXITS (2)

the pilot's seat, its detachable handle being stowed on the starboard wall of the fuselage aft of the entrance door. In the event of a failure of the engine driven pumps or of the associated supply circuit, the hand pump will operate the alighting gear, flare bay doors and wheel brakes circuits after the appropriate selection has been made. Before resorting to the use of the hand pump, operate the associated emergency control; if the fault is electrical this will operate the system and render recourse to the hand pump unnecessary.

#### **Firewarning and extinguishers**

##### *Engine fire warning lamps and extinguishers*

**10.** Warning of engine fire is given by two lamps, one for each engine, which are incorporated in the fire extinguisher push-switches located on the coaming instrument panel. Illumination of either warning lamp indicates a fire in the associated engine nacelle, and depression of the push-switch will initiate fire-extinguishing action. Before pressing the push-switch the pilot must ensure that the associated cabin air gate-valve switch is set to OFF. In the event of a crash landing the fire

*continued*

extinguishers are automatically discharged by the inertia crash switches (*para. 18*).

#### *Fuel bay fire extinguisher*

11. A fire extinguisher is mounted on frame 27A in the fuselage and will discharge its contents into the fuel bay when the inertia switches (*para. 18*) have tripped; no indicator or manual control is provided for this extinguisher.

#### *Hand fire extinguisher*

12. A hand operated bromochlorodifluoromethene (B.C.F.) fire extinguisher is secured to a mounting bracket on the starboard side of the fuselage aft of the entrance door. The items are described in A.P.107E-0400-1A.

#### **Crash axe**

13. The crash axe is secured by spring clips to the forward end of the equipment tray on the starboard side of the cabin.

#### **First-aid kit**

14. A first-aid kit is accommodated in a fire resistant stowage on the starboard side of the fuselage, aft of the entrance door.

#### **Asbestos gloves**

15. Asbestos gloves are secured to the underside of the occasional seat.

#### **Emergency oxygen**

16. Each member of the crew has an emergency supply of oxygen, for use when abandoning the aircraft in flight by ejection seat. An oxygen cylinder is mounted on the starboard side of each seat and connected to the main oxygen supply tube by a quick-release fitting; it is operated, on seat ejection, by a cable attached to the seat structure. In the event of main oxygen supply failure, the emergency oxygen supply may be made available to a crew member

by pulling up on the emergency control at the starboard side of the respective seat pan (*fig. 2*).

#### **Survival packs**

17. Survival packs, one for each crew member, are located in stowage crates secured to the roof in the rear fuselage. The position of the stowage is suitably marked on the outer surface of the rear fuselage.

#### **Inertia crash switches**

18. During a crash landing, the inertia switches, situated one in the port equipment bay and the other in the starboard equipment bay, are automatically operated. This results in the automatic operation of the engine and fuel bay extinguishers, and the isolation of the power supplies to all electrical services except those to the No. 6 fuel tank explosion suppression, and the detonator circuits of the canopy, elevator control, and navigator's hatch.

#### **Emergency batteries**

19. Two 12-volt batteries, connected in series, are fitted on a tray below the pilot's console and provide emergency power for the detonator circuits, the turn-and-slip indicator, the emergency red lamps and the E 2B compass lamp.

#### **Turn-and-slip indicator**

20. A switch, positioned adjacent to the turn-and-slip indicator on the pilot's main instrument panel and labelled TURN-AND-SLIP EMERGENCY SUPPLIES, will, when selected to EMERGENCY, direct a supply from the emergency batteries to the turn-and-slip indicator.

#### **Emergency compass**

21. A Type E2B emergency compass is fitted to the canopy coaming tube above the flight

instrument panel. The compass is fully described in A.P.1275B, Vol. 1, Sect. 10, Chap. 8.

#### **Aircraft destructor**

22. Provision is made to carry an aircraft destructor unit on the inside face of the starboard equipment bay door.

## EMERGENCY EXITS

### WARNING

**The relevant safety precautions detailed on the LETHAL WARNING marker card must be observed before attempting to carry out any operation or inspection on the control column release and canopy and hatch jettison controls.**

#### **Entrance door jettisoning**

23. The entrance door may be jettisoned by turning the cranked handle, situated on the coaming above the entrance door, in a clockwise direction as far as possible and striking the top of the door. The handle, which is marked DOOR EMERGENCY RELEASE, is normally secured against inadvertent operation by a strap. It is not necessary to operate the normal door-locking mechanism when preparing to jettison the door.

#### **Canopy jettisoning**

24. To abandon the aircraft when ditching or during a crash landing the canopy is freed by the fracturing of 32 attachment bolts which contain explosive detonators. The system is controlled by a CANOPY/SNATCH MASTER SWITCH on the pilot's take-off panel, and a CANOPY JETTISON switch located at the port side of the throttle box below a hinged flap which is painted black-and-yellow.

25. The CANOPY/SNATCH master switch is

selected ON before the commencement of flight. This completes the electrical circuit to the control column release (*para. 26*) and the CANOPY JETTISON switch.

#### **Pilot's single-lever ejection**

26. To abandon the aircraft during flight using single-lever ejection the pilot ejects through the canopy by pulling the face-screen firing handle, or seat-pan firing handle, on his ejection seat. This results in gas from a time-release and breech unit operating a switch which fractures the elevator control tube by firing an explosive charge clamped to the tube, whereupon the control column is pulled forward and held against the instrument panel clear of the pilot's knees by a snatch unit mounted on the port side of the cabin (*Sect. 3, Chap. 11*). Approximately one second later the main ejection gun is fired to eject the pilot in his seat through the canopy.

#### **Crew escape hatch**

27. The hatch is secured to the fuselage in a manner similar to that of the pilot's canopy. The hatch detonator circuit is controlled by a SAFETY switch a JETTISON switch, and a hatch jettisoning mechanism (*Sect. 3, Chap. 11*), which operates in conjunction with the ejection system. The hatch SAFETY and JETTISON switches are mounted on a panel on the port wall of the cabin at the navigator's station: the panel is identified by black-and-yellow stripes. To prevent accidental operation, the SAFETY switch is secured by a guard and the JETTISON switch is covered by a hinged guard. The hatch jettisoning SAFETY switch must be ON to render the JETTISON switch and the ejection system operative.

#### **Hatch jettisoning**

28. The hatch is automatically jettisoned when

the navigator operates either the face-screen firing handle or the seat-pan firing handle of his ejection seat. A safety-catch, positioned in the restrictor of the breech type time-delayed firing unit of the ejection gun, ensures that seat ejection is delayed until the hatch has been jettisoned (*Sect. 3, Chap. 11*). The hatch jettisoning SAFETY switch must be ON to render the JETTISON switch operative for jettisoning the hatch without ejecting the seat, e.g. in ditching or in a crash landing.

#### **Cocking lever and safety pin stowages**

29. A lever, for cocking the hatch jettison mechanism, is accommodated in a stowage located on the front face of the aft pressure bulkhead. Two stowages are provided for ejection seat safety pins, one on the coaming tube on the starboard side of the cabin and the other on the coaming instrument panel at the navigator's station.



This file was downloaded from the RTFM Library.

Link: [www.scottbouch.com/rtfm](http://www.scottbouch.com/rtfm)

Please see site for usage terms, and more aircraft documents.

