

Chapter 1

PILOTS' CONTROLS AND EQUIPMENT

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WARNING . . .

AIRCREW EJECTION SEATS ARE FITTED TO THIS AIRCRAFT. This equipment is a source of potential danger to personnel and of damage to the aircraft. If a firing mechanism is operated while the aircraft is on the ground, a seat will be ejected, damage will be done to the aircraft and injury could be caused to any person in, or leaning into, the cockpit.

Before any individual is allowed to enter the cabin, therefore, the N.C.O. i/c, air-frame servicing must ensure that the following safety precautions have been observed:-

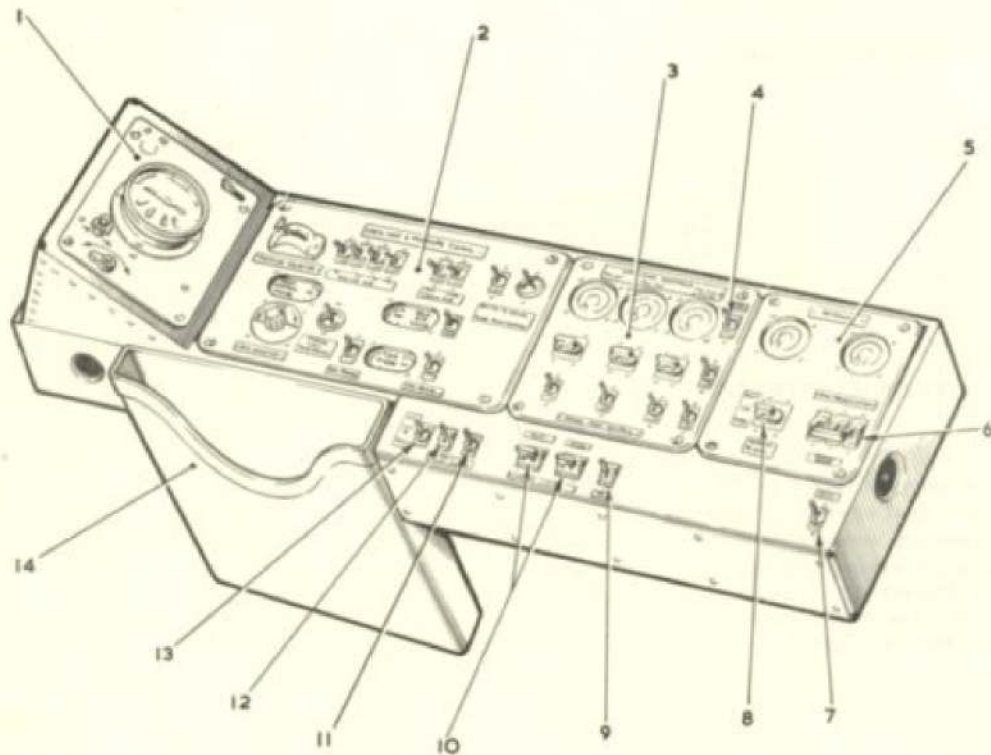
(1) The safety pins are fitted in the ejection gun sears.

(2) The safety straps are in position over the firing handles of the seats.

(3) The second safety pin attached to the safety pin disc is in the hole of the time delay unit on each seat.

(4) The safety pin is in the jettison gun sear.

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KEY

1. OXYGEN REGULATOR
2. AIR-CONDITIONING PANEL
(SECT. 3, CHAR 8)
3. THERMAL DE-ICING SYSTEM CONTROL PANEL
(SECT. 3, CHAR. 9)
4. WINDSCREEN DE-MISTING SWITCH
5. FUEL TANK PRESSURISATION CONTROL PANEL
6. NITROGEN SYSTEM CONTROL SWITCHES
7. RATION HEATER SWITCH
8. WINDSCREEN DE-ICING SWITCH
9. NAVIGATION LIGHTS SWITCH
10. LANDING LAMPS RETRACTION SWITCH
11. DOWNWARDS IDENTIFICATION LIGHTS SWITCH
12. EXTERNAL LIGHTS SWITCH
13. CALL SWITCH, SIGNALLER
14. STOWAGE, MAPS, ETC.

NOTE

FOR AIRCRAFT FITTED WITH MOD. 38
SEE FIG. 1, 2, 3, OR 4 OF THIS CHAPTER

Fig. 1. Starboard console (pre Mod. 38).

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Introduction

1. This chapter is intended to serve as a guide to the location of all the pilots' controls, equipment and instruments, and gives the method of operating various controls where this is not obvious. To simplify reference to any particular control, according to the purpose, four illustrations of the pilots' station are provided.

ENTRY TO CABIN

2. The only means of entry to the cabin is through the door below the front fuselage of the aircraft; it is hinged at its forward edge and opens downwards and forwards. A handle is provided adjacent to the door on the outside of the aircraft for external opening purposes. The door is opened from inside the aircraft by holding a spring-loaded gated lever, situated on the door port frame member, in the forward position; the lever is spring-loaded to the 'DOOR CLOSE' position. The door is closed pneumatically from outside the aircraft by depressing a push-button situated adjacent to the door handle, or from inside the aircraft by pulling a spade grip on the starboard side of the crew's floor.

3. The door lay shaft is operated by a pneumatic jack on emergency door opening. Compressed air is supplied to the jack, from the DOOR OPEN pneumatic system, through an unimatic valve situated on the port side of the door aperture, on the operation of the EMERGENCY DOOR OPEN switch on the centre navigator's panel.

WARNING . . .

When opening the door from outside the aircraft, ground personnel must ensure that no member of the crew is standing on, or adjacent to, the door.

Conversely, personnel must ensure, when opening the door from inside the aircraft, that the ground crew are so positioned that they cannot be injured when the door is opened.

PILOTS SEATS

4. A Martin-Baker ejection seat (Mk.3K1 - port side, or Mk.3K2 - starboard side) is installed at each pilot's station; a description of the seats is contained in A.P.4288C, Vol.1. An intercommunication socket and an oxygen supply socket are mounted on each seat together with harness quick release and seat raising mechanisms. In addition to the warning given at the head of this chapter, the following precaution must be observed:-

Although a guard is provided, care should be taken when passing between the seats that no item of personal equipment snags the drogue gun static line.

For leg reach the rudder can be adjusted by the operation of a starwheel adjacent to each aileron and elevator control handle.

INSTRUMENT PANELS

5. The pilots' panel is divided into three sections; in the centre is the engine instrument panel and at each side are the instrument flying panels. Below the centre panel is the throttle quadrant and, to the rear, a spring-loaded retractable console, housing the fuel system controls, artificial feel switches and auto-pilot control switch unit. On the port side of the cockpit is a console housing engine starting, wireless, bomb door and radio altimeter switches; on the starboard side, a console with three panels houses the

cabin conditioning system, anti-icing system and fuel tank pressurisation along with flight refuelling controls and indicators.

CENTRE CONSOLE

6. To release the centre console, from the operative position for stowage purposes, a T-shaped handle is provided on the aft side of the console. Normally, the console is held in the operating position by a spring-loaded, tapered spigot held by the spring loading in a recess in the damper mechanism within the console; the spigot is attached by Bowden cable to the T-handle. When the handle is pulled, the cable assembly lifts the spigot out of the recess and the console is free to be pushed forward into the stowed position where it is retained by the damper mechanism.

PARKING BRAKE

7. The parking brake, on the port side of the centre console, is turned and pulled to operate.

ALIGHTING GEAR EMERGENCY LOWERING

8. To lower the alighting gear in an emergency, a spade grip handle, marked EMERGENCY AIR U/C, provided on the starboard side of the centre console is pulled to operate.

RATION HEATERS

9. Ration heaters (Ref.No.5V/70) are mounted, one each, at the rear end of the port and starboard consoles; the control switches are on the generator control panel, adjacent to the A.E.O's station. When using the heaters it is imperative that a hole is made in each food tin before

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KEY TO FIG. 2

ENGINE AND FUEL SYSTEM CONTROLS

1. R.P.M. GOVERNOR SWITCH
Forward - TAKE OFF - indicator item (10) - black
Rearward - CRUISE - indicator item (10) - white
2. FUEL SYSTEM CONTROL PANEL
Refer to Sect.4, Chap.2 for details
3. ENGINE MASTER SWITCH
Forward - ON - starter button item (6) operative
Rearward - OFF
4. ENGINE STARTING ROTARY SELECTOR
5. IGNITION ISOLATION SWITCH (guarded)
Forward - ON - places ignition in circuit
Vertical - OFF - ignition system isolated
6. ENGINE STARTER BUTTON
Press to operate
7. OIL PRESSURE GAUGES
8. ENGINE R.P.M. TACHOMETERS
9. JET PIPE TEMPERATURE GAUGES
10. ENGINE CONTROL INDICATOR
Operated by item (1)
11. L.P. COCK SWITCHES (guarded)
Forward - ON
Rearward - OFF
12. ENGINE FIRE INDICATOR/OPERATING SWITCHES (guarded).
Illuminated red when engine bay temperature is excessive.
Press to operate, pull to test filament.
13. FUEL LOW PRESSURE INDICATORS
WHITE - pressure below 5 p.s.i.
BLACK - pressure above 5 p.s.i.
14. FUEL C.G. INDICATOR PUSH SWITCH
15. FUEL C.G. INDICATOR
16. FUEL FLOW INDICATOR
Indicates rate of flow for individual engines when the relevant switch on the fuel control panel is selected.
17. FUEL CONTENTS PANEL.
Refer to Sect.4, Chap.2 for details.
18. FLIGHT REFUELLING PRESSURE GAUGE.
19. FUEL TANK PRESSURISATION CONTROL SWITCH.
20. FUEL TANK NITROGEN (Pre Mod. Mod.171).
21. PROBE NITROGEN PURGE SWITCH (guarded).
22. MASTER SWITCH FLIGHT REFUELLING.
23. TANKS FULL INDICATOR - FLIGHT REFUELLING.
24. THROTTLE FRICTION ADJUSTER.
25. THROTTLE LEVERS.
Initial movement through gate operates engine H.P. cock switches.
26. FUEL TANK PRESSURE INDICATORS
Indicate that fuel tanks are depressurised when Item 22 is switched ON. ▶

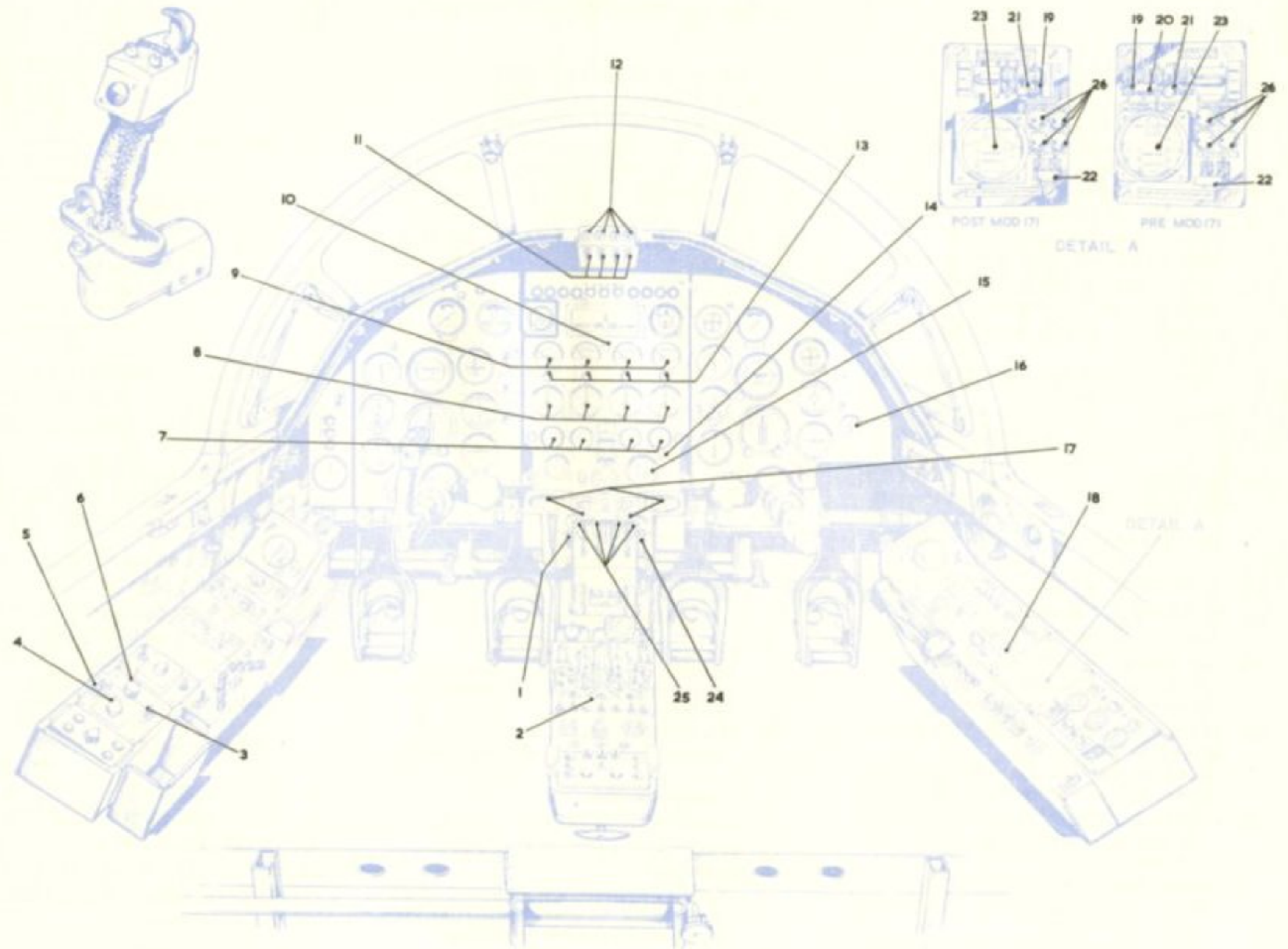


Fig.2. Engine and fuel system controls.

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KEY TO FIG.3
FLYING CONTROLS AND INSTRUMENTS

CONTROLS MANUAL

1. RUDDER PEDALS
2. RUDDER PEDALS LENGTH ADJUSTER
3. CONTROL HANDLE, AILERONS AND ELEVATORS

CONTROLS AND INDICATORS-ELECTRICAL

4. MAGNETIC INDICATOR
White - all power units are off
Black - any or all power units operative
5. P.F.C. UNITS STOP SWITCHES
Press to stop power units
12. ARTIFICIAL FEEL FAILURE INDICATOR
Black - artificial feel functioning correctly
White - artificial feel failure, item (24) indicates individual circuit failure.
14. EMERGENCY TURN AND SLIP SWITCH
Down - POWER - item (10) on aircraft supply.
Up - STANDBY - item (10) on standby battery.
17. MACH TRIM LOCK OUT INDICATOR
18. AUTO-PILOT TRIM INDICATOR
Used in conjunction with item (39)
20. AIR BRAKE POSITION INDICATOR
Black - air brakes closed
White - air brakes extended
21. PITOT HEATER - PORT AND STARBOARD INDICATORS
Black - heaters switches item (26) - OFF
White - heater switches item (26) - ON
22. POWER CONTROL WARNING LIGHTS
Indicate failure of any one P.F.C. unit in a group by illuminating red.
23. EMERGENCY TRIM INDICATOR
Black - normal trim circuit functioning correctly.
White - normal trim circuit to be reset on item (32).
24. ARTIFICIAL FEEL INDICATORS
Black - artificial feel - ON

- White - artificial feel - OFF
26. PITOT HEAD HEATER SWITCHES
 27. RUDDER FEEL TRIM SWITCH
Left - P - trims rudder to port
Right - S - trims rudder to starboard
 28. RUDDER FEEL RELIEF SWITCH
Press to operate
 29. AIR BRAKES EMERGENCY SWITCH (guarded)
Up - NORMAL
Down - EMERGENCY - energises standby motor to complete retraction from MEDIUM DRAG to IN or HIGH DRAG to IN should main motors fail.
 30. AIR BRAKE SWITCHES
Up - IN - air brakes closed
Centre - MEDIUM DRAG - air brakes partly extended.
Down - HIGH DRAG - air brakes fully extended.
 31. TRIM RESET SWITCH
Spring-loaded to centre - normal trim operative.
Forward - RESET - returns circuit to normal after operation of item 32.
 32. EMERGENCY TRIM CONTROL
PRESS to energise - operated in natural sense item 23 indicates when control is energised.
 33. YAW DAMPER SWITCH
Forward - ON - engages yaw damper servo motor.
Rearward - OFF
 34. AUTO-PILOT CONTROL PANEL
 35. START AND ART. FEEL RESET SWITCHES
Press to operate, when pressed starts power units or resets artificial feel when power units are operating.
 36. AUTO TRIM SWITCH
Forward - ON - engage auto-trim servo motor.

- Centre - OFF - disengages servo motor (also spring-loaded from RESET to OFF).
Rearward - RESET - returns servo motor actuator to normal position.

37. AUTO TRIM INDICATOR
Black - trim actuator fully retracted
White - actuator in system trimming
38. PITCH DAMPER SWITCH
Forward - ON - engages pitch damper servo motor
Rearward - OFF - disengages servo motor
39. AUTO-PILOT CONTROLLER
40. INSTINCTIVE AUTO-PILOT CUT-OUT
41. TRIM CONTROLLER, AILERONS AND ELEVATORS
Operated in natural sense
42. ARTIFICIAL FEEL CUT-OUT SWITCH
Press to cut-out aileron and elevator feel

INSTRUMENTS AND INDICATORS

6. RADIO ALTIMETER
7. CLIMB AND DESCENT INDICATOR
8. RADIO ALTIMETER INDICATOR
Upper lamp - AMBER - above altitude set on item 6.
Centre lamp - GREEN - at correct altitude.
Bottom lamp - RED - below altitude set on item 6.
9. ALTIMETERS
10. TURN AND SLIP INDICATOR
11. AIRSPEED INDICATOR
13. ARTIFICIAL HORIZONS
15. ZERO READER INDICATORS
16. MACHMETERS
19. ACCELEROMETER
25. CONTROL SURFACE POSITION INDICATOR

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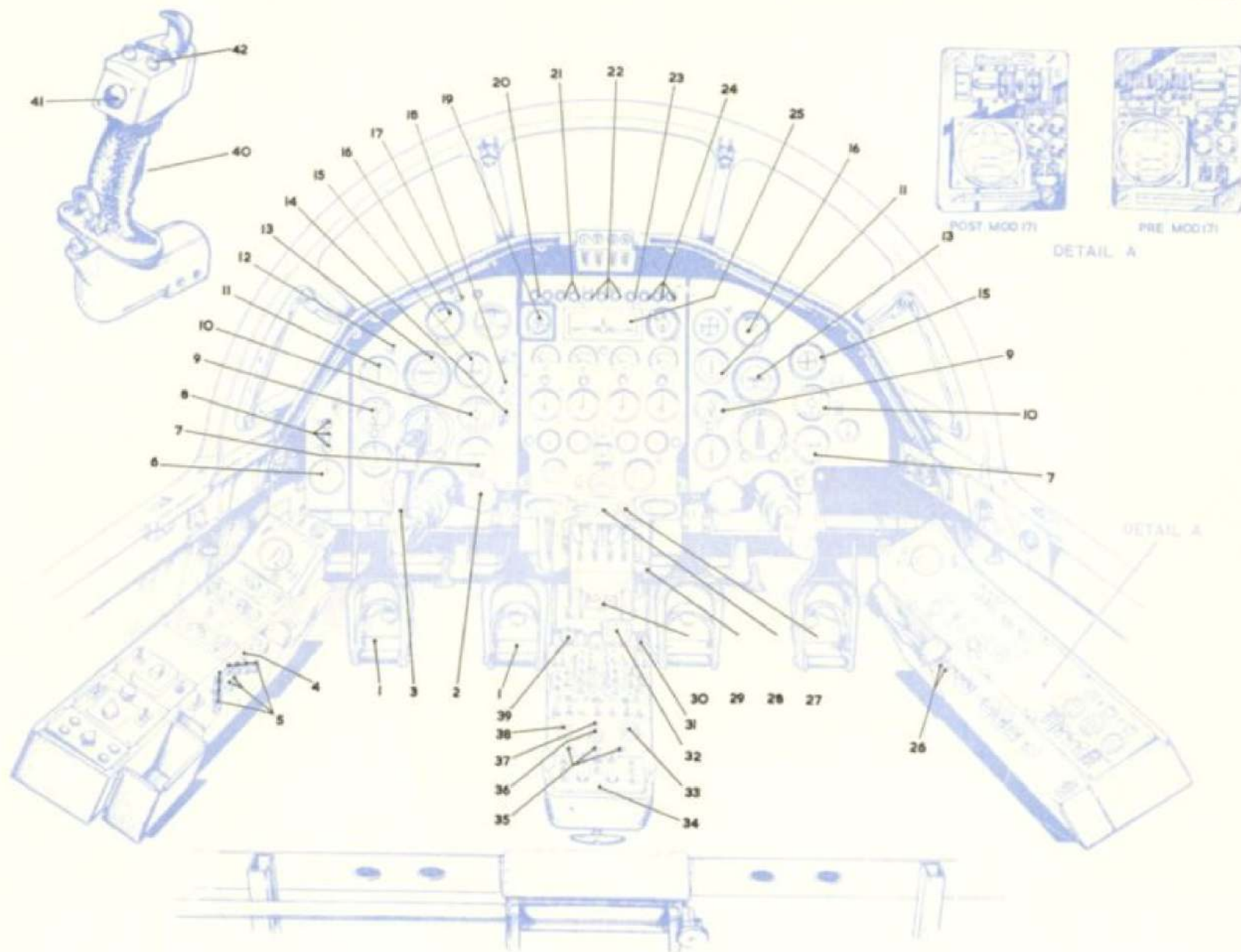


Fig.3. Flying controls and instruments.
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KEY TO FIG.4

NAVIGATIONAL, LIGHTING AND SIGNALLING EQUIPMENT

NAVIGATIONAL

1. COMPASS CONTROL UNIT
2. I.L.S. CONTROL PANEL
4. I.L.S. VOLUME CONTROL
5. I.L.S. SUPPLY SWITCH
6. LIMIT HEIGHT SELECTOR UNIT
12. COMPASS TYPE G.4B
13. COMBINED COURSE SELECTOR
15. COMPASS TYPE E.2B
16. RADIO HEADING SELECTOR
17. I.L.S. MARKER
18. I.L.S. INDICATOR
19. D.F. BEARING INDICATOR

LIGHTING

7. U/V. CONTROL, PORT OXYGEN PANEL
8. U/V. DIMMER CONTROL, PORT PANEL
9. RED FLOOD DIMMER, PORT CONSOLE
10. RED FLOOD DIMMER, PORT PANEL
11. WHITE FLOOD SWITCH, PORT PANEL
14. EMERGENCY LIGHT SWITCH

20. WHITE FLOOD SWITCH, STARBOARD PANEL
21. RED FLOOD DIMMER, STARBOARD PANEL
22. RED FLOOD DIMMER, STARBOARD CONSOLE
23. U/V. DIMMER CONTROL, STARBOARD PANEL
24. PROBE LIGHTING DIMMER SWITCHES
27. LANDING LIGHTS RETRACTION SWITCH
29. EXTERNAL LIGHT SWITCH

SIGNALLING

3. CONTROL UNIT, V.H.F. RADIO
25. INTERCOM. A.D.F. SWITCH
26. NAVIGATION LIGHT SWITCH
28. DOWNWARD IDENTIFICATION LIGHT SWITCH
30. CALL SWITCH, 3 POSITION II/F - V.H.F. INTERCOM. -CALL
Spring loaded from CALL to V.H.F. INTERCOM.

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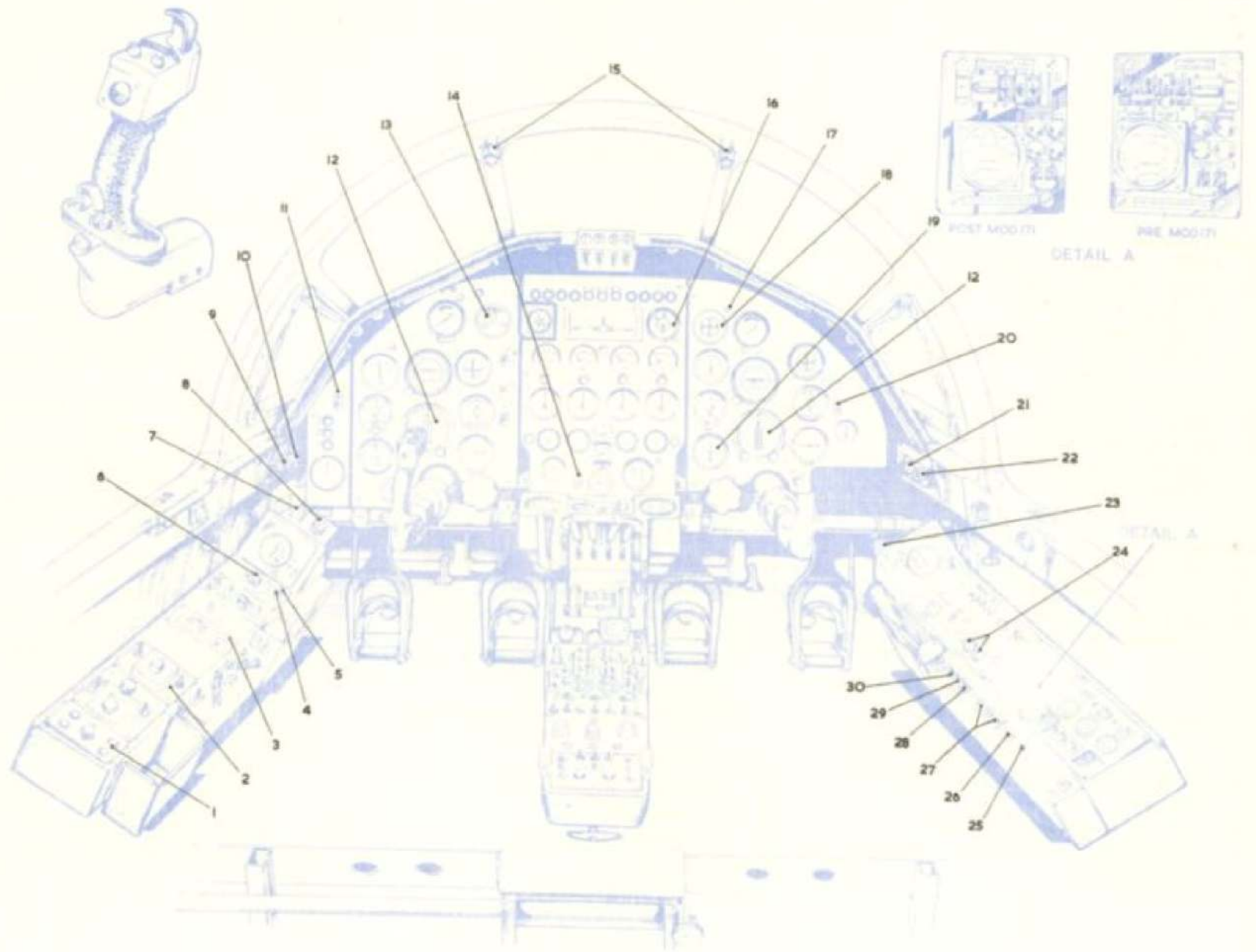


Fig.4. Navigational, signalling and lighting equipment.

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KEY TO FIG. 5

OPERATIONAL AND MISCELLANEOUS CONTROLS AND EQUIPMENT

OPERATIONAL

11. BOMB RELEASE SAFETY LOCK
12. BOMB DOORS NORMAL CONTROL
ROTARY SELECTOR
OPEN - doors normal control
AUTO - doors under automatic control
CLOSE - doors normal control
17. BOMB DIRECTION INDICATOR
21. BOMB DOOR INDICATOR
White - doors open
Black - doors closed

EMERGENCY

5. EMERGENCY DECOMPRESS SWITCH
6. ABANDON AIRCRAFT SWITCH
9. EMERGENCY BOMB JETTISON SWITCH
Rearward - JETTISON - opens bomb doors fully then jettisons bombs.
Forward - OVERRIDE - cancels jettison, closes bomb doors.
10. BOMB DOOR EMERGENCY CONTROL SWITCH
13. CANOPY JETTISON LEVERS
19. GENERATOR FAILURE WARNING INDICATOR

22. CANOPY WARNING INDICATOR
White - canopy not correctly closed
26. ENTRANCE DOOR WARNING INDICATOR
White - door not correctly closed
34. ALIGHTING GEAR EMERGENCY CONTROL
Pull to operate

MISCELLANEOUS

1. PARKING BRAKE LEVER
2. BRAKE CONTROLS
3. STOWAGES, MAPS AND DOCUMENTS
4. SANITARY CONTAINERS
7. HYDRAULIC POWER PACK SWITCH (guarded)
Forward - START - energises power pack
Spring-loaded to centre
Rearward - STOP - de-energises power pack
8. STOWAGE, FIRST AID
14. OXYGEN REGULATORS
15. D.V. WINDOWS
16. D.V. WINDOW HANDLES
18. CLOCK

20. BRAKE PARACHUTE SWITCH
Up - JETTISON - jettison parachute
Centre - OFF
Down - STREAM PARACHUTE
23. HYDRAULIC PRESSURE GAUGE
24. ALIGHTING GEAR SELECTOR SWITCH
25. ALIGHTING GEAR POSITION INDICATOR
27. WINDSCREEN WIPER SWITCH
28. CABIN ALTIMETER
29. AIR CONDITIONING SYSTEM PANEL
Sect.3, Chap.8 and 8A
30. WINDSCREEN DEMISTING SWITCH
31. WINDSCREEN DE-ICING SWITCH
Up - NORMAL
Centre - OFF
Down - EMERGENCY
32. VENTILATED SUIT SYSTEM SWITCH
33. ANTI-ICING CONTROL PANEL
Sect.3, Chap.9
35. HANDLE CENTRE CONSOLE
Pull to retract or raise centre console
36. NOSE -WHEEL STEERING SWITCH (port and starboard)
Energises electro-hydraulic circuit, with switch held pressed, aircraft is steered using rudder pedals.
37. PRESS TO TRANSMIT SWITCH

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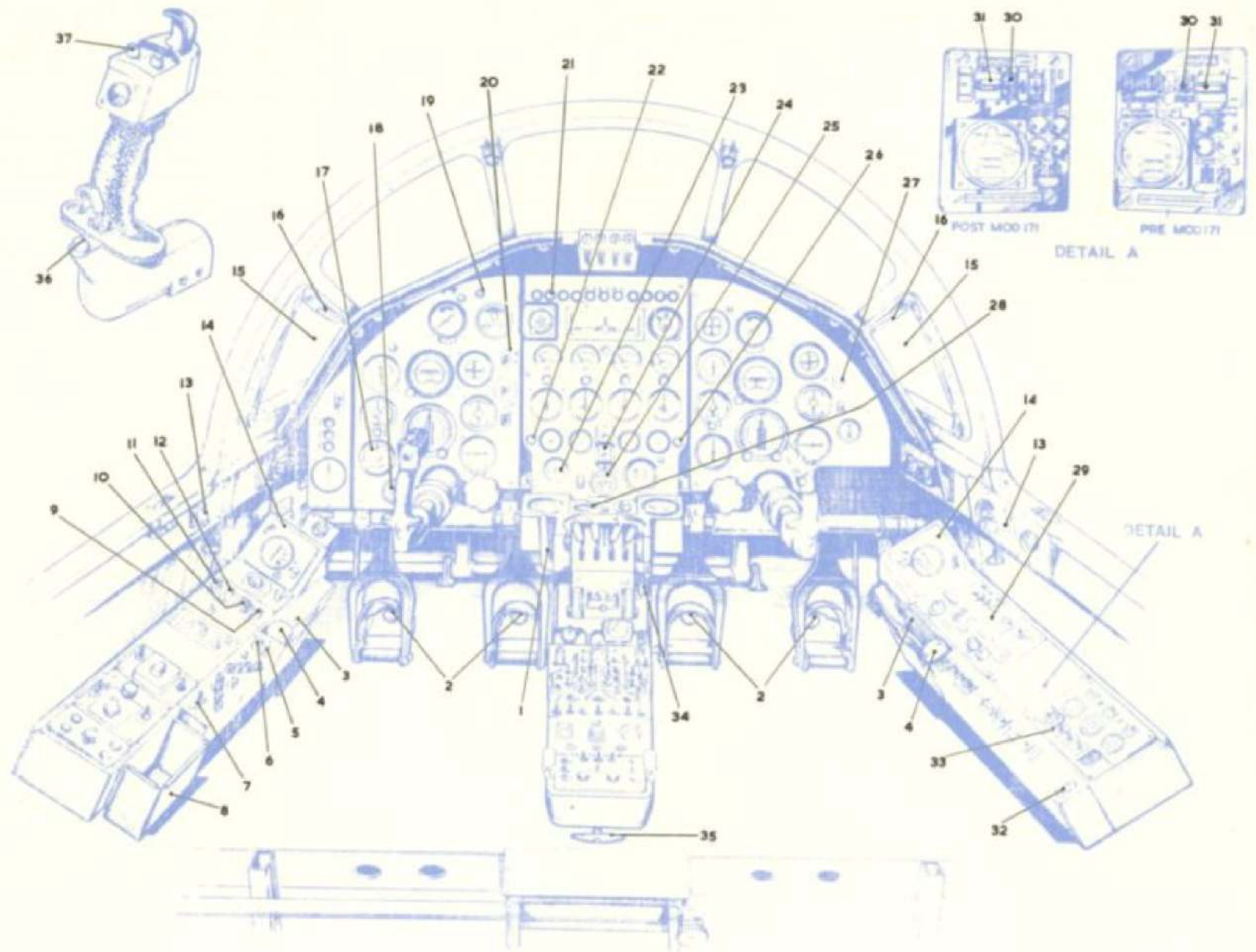


Fig. 5. Operational and miscellaneous controls and equipment.

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they are placed in the heaters and that no tin is heated continuously for a period of more than two hours.

STOWAGES

10. Stowages are provided in the canopy above the cockpit coaming at the forward end of the canopy for the G4B and E2B

compass deviation cards, anti-glare visors and Pilots Notes. Adjacent to the stowages is the Flight Limitation Label.

ANTI-FLASH SCREENS

11. The pilot's windscreen and canopy windows are fitted with anti-flash screens to protect the crew from nuclear flash. The

windscreen screens, made of silicone proofed glass cloth (pre Mod.1381) or silicone coated fibre glass fabric (post Mod.1381), are attached to the windscreen coaming and, when in use, are secured to the windscreen top frame by zip fasteners. The canopy window screens, of 24 s.w.g. L.72 sheet, are fitted in double slide rails and, when in use, are retained in position over the windows by the bottom window shroud acting as a stop.

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