

## Chapter 1

## PILOTS' CONTROLS AND EQUIPMENT

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**WARNING . . .**

**AIRCRAFT 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 seat firing mechanism is operated while the aircraft is on the ground, a seat will be ejected, damage*

*will be caused to the aircraft and injury can be caused to any person in, or leaning into, the cabin.*

*Before any individual is allowed to enter the cabin, therefore, the N.C.O. i/c. airframe servicing is to ensure that the warnings detailed on the ejection seat marker card at the front of this book have been observed.*

**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 its purpose, four illustrations of the pilots' station are provided.

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## KEY TO FIG.1

### ENGINE AND FUEL SYSTEM CONTROLS

1. BOMB BAY TANKS system control panel.
2. FUEL SYSTEM control panel (Refer to Sect.4, Chap.2).
3. Jet pipe temperature limiter switch (guarded).
4. R.P.M. governor switch (guarded).
5. FUEL TANK CONTENTS panel. Houses four contents gauges (Refer to Sect.4, Chap.2).
6. Individual engine start press switches. PRESS AND RELEASE to start engine.
7. NORMAL/RAPID start selector (lift toggle to select).
8. ON/OFF MASTER switch.
9. Simultaneous RAPID start push button.
10. AIR CROSS-FEED indicator.
11. IGNITION ON/OFF switch.
12. GYRO HOLD-OFF press switch.
13. OIL PRESSURE gauges.
14. Engine R.P.M. indicators.
15. R.P.M. governor indicator - BLACK take-off - WHITE cruise.
16. AUTO-THROTTLE failure indicators. (inoperative).
17. ENGINE TEMPERATURE indicators.
18. L.P. fuel cock switches (guarded). forward - ON, rearward - OFF.
19. Engine FIRE indicator/operating switches. Illuminate RED when engine temperature becomes excessive; press to operate, pull to test filament.
20. FUEL FIRE warning indicator - BOMB BAY TANKS.
21. FUEL FIRE warning indicator - FUSELAGE AND WING TANKS.
22. FUEL LOW PRESSURE WARNING indicators.
23. TOTAL FUEL FLOW indicator.
24. FUEL FLOW indicator. Indicates rate of flow for any engine when relevant switch is selected on fuel control panel.
25. FUEL FLOW indicator switch.
26. TEST switch-flight idling detent, spring-loaded to OFF (Sect.4, Chap.1A).
27. FLIGHT REFUELLING PRESSURE gauge.
28. NITROGEN PURGE - flight refuelling.
29. TANK PRESSURISATION switch.
30. TANK PRESSURE indicators.
31. ENGINE ANTI-ICING system control switches (guarded)  
Forward switch - PORT ENGINE  
Aft switch - STARBOARD ENGINE.
32. MASTER SWITCHES (2), flight refuelling ON/OFF.
33. TANKS FULL INDICATOR - flight refuelling.
34. FUEL C. of G. indicator switch.
35. FUEL C. of G. indicator.
36. T.F.R. RESET switch PRESS to break.
37. Throttle friction adjuster.
38. Throttle control levers - Re-light press switch in handles.

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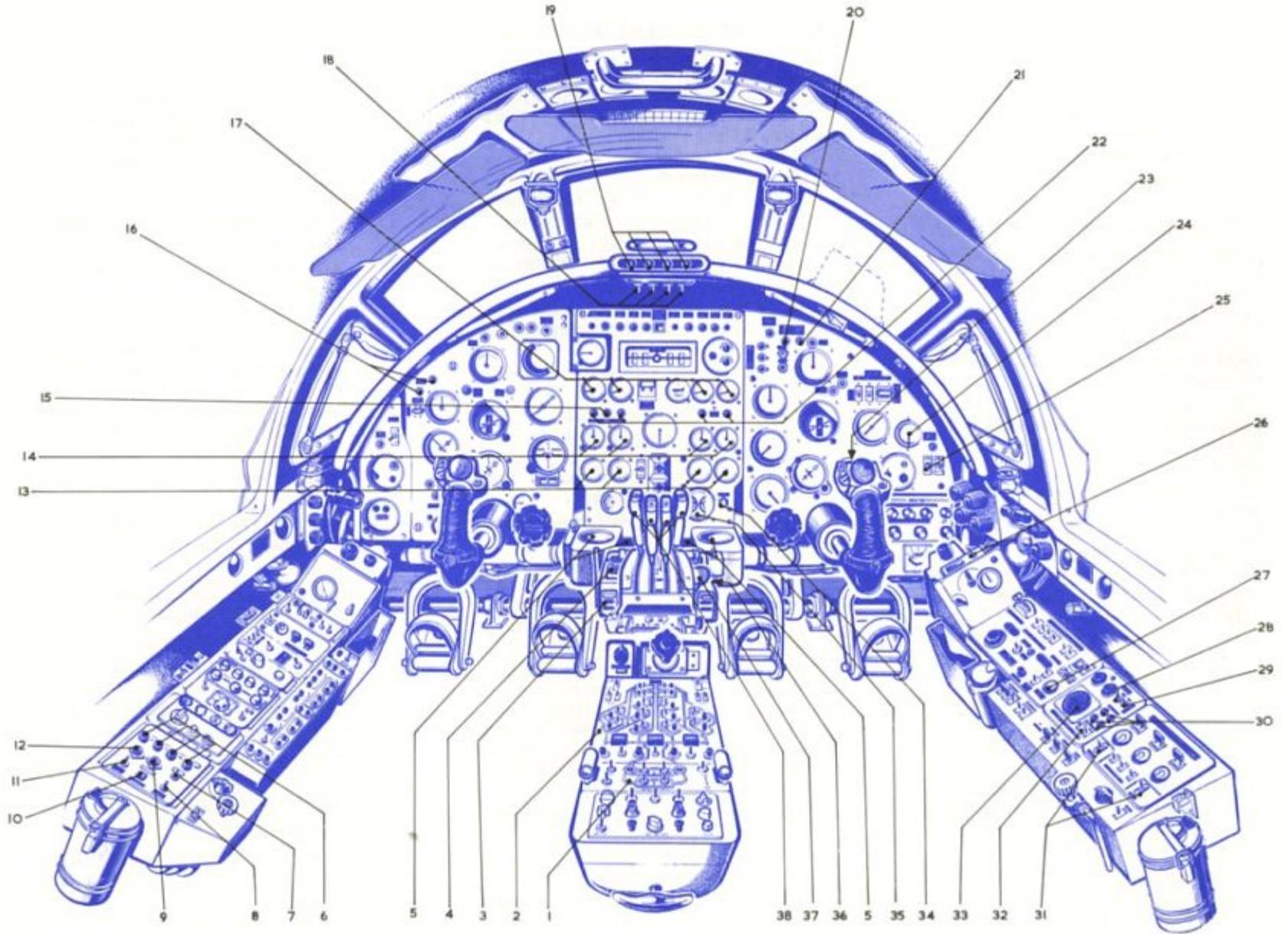


Fig.1 Engine and fuel system controls  
◀Mod. 2358 and 2382▶  
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## KEY TO FIG.2

### FLYING CONTROLS AND INSTRUMENTS

#### CONTROLS - MANUAL

4. Rudder pedals - incorporating brake master cylinders.
14. Adjuster - rudder pedals.
15. Control handle - elevons.

#### CONTROLS AND INDICATORS - ELECTRICAL

5. FEEL RELIEF system isolation lock-in switch and indicator. Switch labelled NORMAL-LOCK.
6. ARTIFICIAL FEEL Failure indicator/push switches. Illuminate AMBER when failure occurs. PRESS to isolate failed unit.
7. P.F.C. MOTOR - failure indicator/push switches. Illuminate AMBER for motor failure. PRESS to isolate failed motor.
8. YAW DAMPER - 2 position toggle switch.  
No.1 - rearward - No.1 system engaged.  
No.2 - forward - No.2 system engaged.
9. P.F.C. START - Groups start push switches.  
A. push to start outboard elevon units.  
R. push to start rudder main unit.  
E. push to start inboard elevon units.
10. COMPARATOR RESET - push to reset.
11. PITCH DAMPER - failure indicator push switches. Illuminate AMBER when failure occurs. PRESS to disengage failed system.
12. AUTO-mach - TRIM - individual channel indicators. Illuminate BLUE when failure occurs. PRESS to disengage.

13. AUTO-mach-TRIM - indicator push/pull switch. Illuminates AMBER when failure occurs. PUSH to disengage. PULL to engage.
16. Elevon trim - 4-way double-pole switch. Operate in natural sense.
17. ARTIFICIAL FEEL RELIEF cut-out switch (guarded). PRESS to disengage system.
24. MAIN WARNING system indicators. Illuminate AMBER for flying control system or unit failure.
25. P.F.C. UNIT failure - magnetic doll's eye indicator.  
BLACK - normal functioning.  
WHITE - displayed when faulty unit is disengaged. Remains white to remind pilot that fault exists after 24 (amber) is extinguished.
26. ARTIFICIAL FEEL failure - magnetic doll's eye indicator.  
BLACK - normal functioning.  
WHITE - displayed when fault occurs in system. Remains white to remind pilots that fault exists after 24 (amber) is extinguished.
27. AUTO-STABILISERS - system failure magnetic doll's eye indicator.  
BLACK - normal functioning.  
WHITE - displayed when fault occurs in system. Remains white to remind the pilots that fault exists when 24 (amber) is extinguished.
28. AIR BRAKES - magnetic doll's eye indicator.  
BLACK - airbrakes IN.  
WHITE - airbrakes OUT.
33. RUDDER FEEL RELIEF - push switch.  
Press to disengage system.

34. RUDDER FEEL TRIM switch.  
P - lift - trims rudder to port.  
S - right - trims rudder to starboard.
35. AIR BRAKES EMERGENCY switch (guarded)  
UP - NORMAL  
Down - EMERGENCY - energises stand-by motor.
36. AIR BRAKES selector switch (with locking bar).  
UP - IN - air brakes stowed in main plane.  
Centre - MEDIUM DRAG - partial extension of pillars with slats at 35 deg.  
Down - HIGH DRAG - full extension of pillars with slats at 80 deg.
37. EMERGENCY TRIM control  
Press to energise - operate in natural sense.
38. AUTO-PILOT RESET SWITCH (Mod. 2305,2306). Operate to reset d.c. supply.

#### INSTRUMENTS AND INDICATORS

1. AUTO-PILOT control panel
2. AUTO-PILOT control
3. SIDE SLIP indicator
18. ALTIMETER Mk.19
19. ARTIFICIAL HORIZON (stand-by)
20. AIR SPEED INDICATOR
21. DIRECTOR HORIZON (Beam and G.P.).
22. RATE OF CLIMB INDICATOR
23. MACHMETER
29. CONTROL SURFACE INDICATOR
30. AUTO PILOT TRIM INDICATOR
31. 100,000 ft. ALTIMETER
32. CLIMB AND DESCENT INDICATOR

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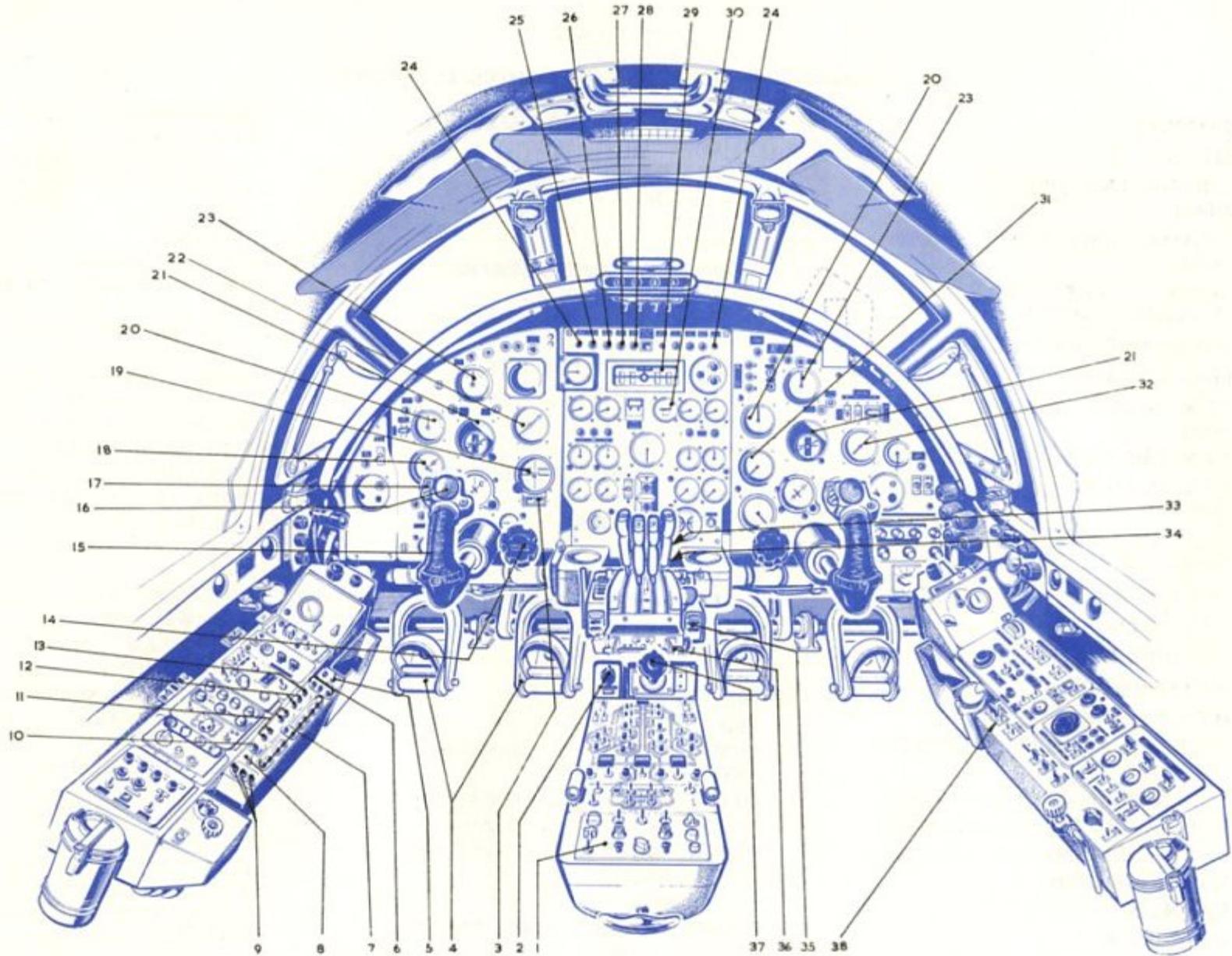


Fig. 2 Flying controls and instruments

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## KEY TO FIG.3

### NAVIGATIONAL, SIGNALLING AND LIGHTING EQUIPMENT

#### NAVIGATIONAL

- ▶ 5. DELETED ◀
8. CONTROL UNIT TYPE 10695 (A.R.I. 23061).
9. CONTROL UNIT PART NO.T6654 (A.R.I.5959).
14. AUDIO - I.L.S. TACAN A.D.F. CHANGEOVER SWITCH.
22. ANNUNCIATOR UNIT - M.F.S.
25. BEAM COMPASS.
27. T.F.R. VIDEO INDICATOR (A.R.I. 5959).
28. T.F.R. FAIL INDICATOR (A.R.I.5959).
29. T.F.R. WARNING INDICATOR (A.R.I. 5959).
30. ALTITUDE AND AUTO-LAND PHASE INDICATOR.
31. I.L.S. MARKER LAMP (A.R.I.18011).
32. E.2.B. COMPASS.
33. HEAD UP INDICATOR (A.R.I.5959).
34. ACCELEROMETER.
36. M.F.S. SELECTOR UNIT.
37. SELECTED ALTITUDE INDICATOR LAMPS.  
Top - AMBER - above selected altitude.  
Centre - GREEN - selected altitude.  
Bottom - RED - below selected altitude.
38. SELECTOR SWITCH.  
Up - M.F.S.  
Down - T.F.R.
39. TACAN INDICATOR.
54. A.D.F. BEARING COMPASS.

55. READ-OUT HEADING SELECTOR SWITCH.  
Forward - H.R.S.  
Rearward - M.F.S.

#### SIGNALLING

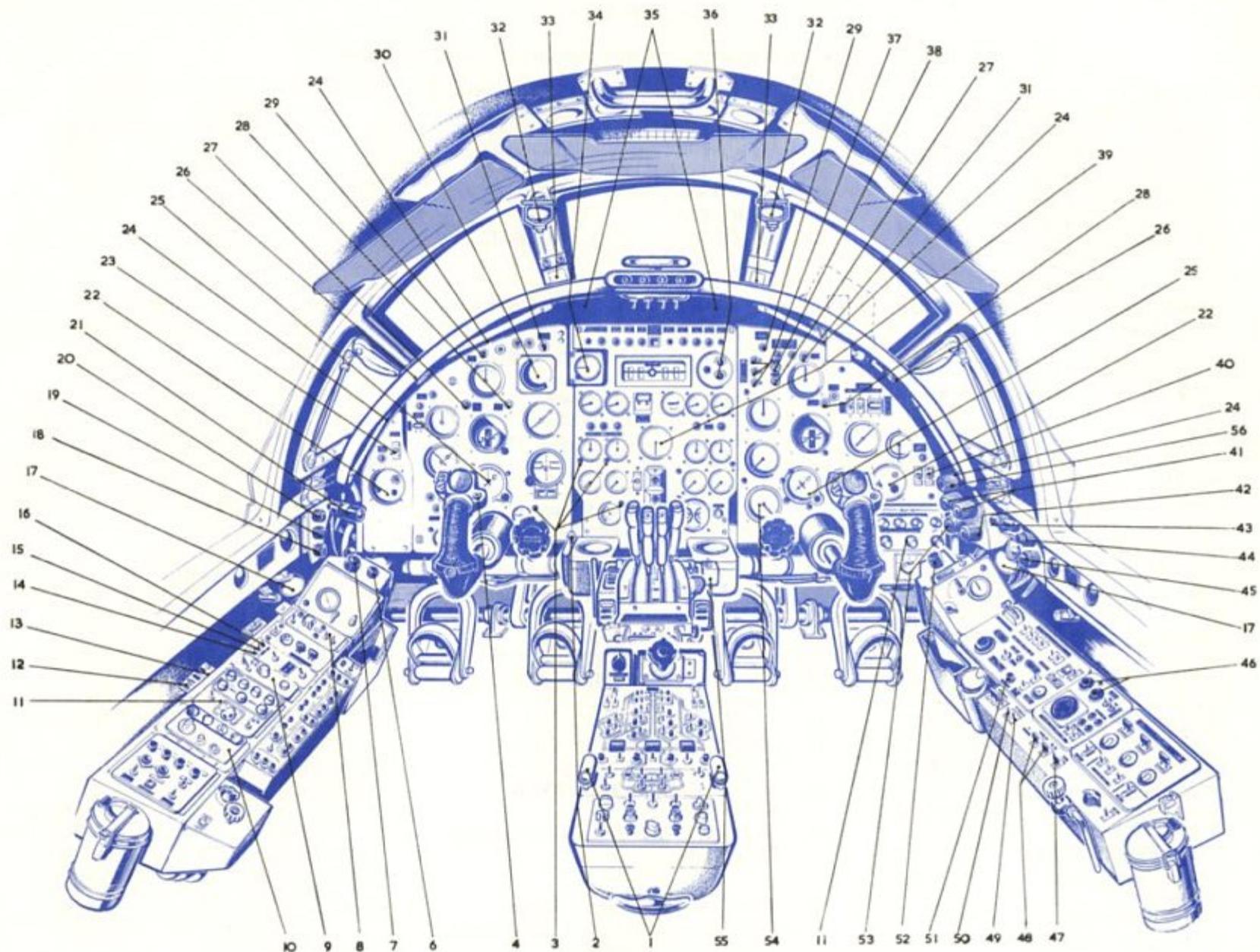
4. INTERCOMM. PRESS-TO-TRANSMIT SWITCH.
10. CONTROL UNIT 5821-99-942-8543 (A.R.I.18124).
11. INTERCOMM. CONTROL UNIT.
12. R./T.1 TONE SWITCH.  
Forward - ON.  
Rearward - OFF.
13. AUDIO WARNING PRESS-TO-TEST SWITCH.
15. R./T.2 TONE SWITCH.  
Outboard - ON  
Inboard - OFF.
16. AERIAL CHANGEOVER SWITCH.  
Outboard - R./T.1 UPPER.  
Inboard - R./T.2 UPPER.

#### LIGHTING

1. RED FLOOD LAMPS.
2. ON/OFF SWITCH - HIGH-INTENSITY ANTI-DAZZLE LAMPS.
3. PILLAR LAMPS (TYPICAL LOCATION)
6. DIMMER SWITCH - U./V. LAMPS.
7. DIMMER SWITCH - U./V. LAMPS FOR OXYGEN PANELS.
17. U./V. LAMP.
18. DIMMER SWITCH - FIRST PILOT'S KNEE PAD LAMP.
19. DIMMER SWITCH - E.2.B. COMPASS LIGHT.

20. DIMMER SWITCH - PILOTS' PANEL PILLAR LIGHTS.
21. FIRST PILOT'S KNEE PAD LAMP.
23. ON/OFF SWITCH - WHITE FLOOD LAMPS.
24. U./V. LAMPS.
26. RED FLOOD LAMPS.
35. HIGH INTENSITY ANTI-DAZZLE LAMPS.
40. ON/OFF SWITCH - WHITE FLOOD LAMPS.
41. DIMMER SWITCHES - RED FLOOD ON CENTRE CONSOLE.
42. DIMMER SWITCH - RED FLOOD ON STARBOARD CONSOLE.
43. SECOND PILOT'S KNEE PAD LAMP.
44. DIMMER SWITCH - SECOND PILOT'S KNEE PAD LAMP.
45. DIMMER SWITCH - E.2.B. COMPASS LIGHT.
46. DIMMER SWITCHES - PROBE ILLUMINATION LAMPS.
47. STEADY/FLASH SWITCH - NAVIGATION LIGHTS.
48. LANDING LIGHT SWITCHES - PORT AND STARBOARD - RETRACT, LANDING TAXI.
49. IDENT. LIGHT SWITCH - STEADY, MORSE.
50. EXTERNAL LIGHT SWITCH.
51. DIMMER SWITCH - U./V. LIGHTS.
52. DIMMER SWITCH - U./V. LIGHT-OXYGEN PANEL.
53. DIMMER SWITCH - RED FLOOD ON STARBOARD COAMING.
- ▶ 56. DIMMER SWITCH - S.F.O.M. GUN-SIGHT AND PILLAR LAMP. ◀

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Fig. 3 Navigational, signalling and lighting equipment

► Mod 226J, 236J and 251J ◀

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## KEY TO FIG.4

### OPERATIONAL AND MISCELLANEOUS CONTROLS AND EQUIPMENT

#### OPERATIONAL

- 2. PILOT'S BOMB RELEASE SWITCH
- 4. HYDRAULIC PRESSURE GAUGE
- 5. HYDRAULIC POWER PACK SWITCH
- 6. BOMBING INDICATOR
- 9. \*BOMB DOOR CONTROL PANEL
- 32. TAIL PARACHUTE CONTROL - TWO POSITION SPLIT TOGGLE SWITCH
  - Down - STREAM
  - Up - JETTISON/OFF
- 37. \*BOMB DOOR (AND FIN) POSITION INDICATOR

- ▶ 42. S.F.O.M. GUNSIGHT (MOD.2363) ◀
- 43. BOMB RELEASE SWITCH (MOD.2201)

#### EMERGENCY

- 10. EMERGENCY DECOMPRESSION SWITCH
  - Forward - NORMAL
  - Rearward - EMERGENCY
- 16. ABANDON AIRCRAFT SWITCH
  - Forward - NORMAL
  - Rearward - EMERGENCY

EMERGENCY selection illuminates warning sign in crew's compartment and decompresses the cabin
- 19. CANOPY JETTISON LEVER
  - Pull aft to jettison canopy
- 25. CREW ESCAPE INDICATORS
  - One for each member
- 29. \*H.T.P. TANK TEMPERATURE WARNING
  - Indicator/push switch - press to test filament
- 30. STORE FIRE WARNING
  - Indicator/push switch - press to test filament
- 31. TAIL BUMP WARNING LIGHTS
- 35. RAM AIR TURBINE RELEASE HANDLE
  - Pull to eject R.A.T.

- 38. ALTERNATOR FAILURE INDICATOR
  - Illuminates RED for alternator failure, steady when one alternator fails, flickering when more than one alternator fails
- 44. WINDSCREEN OVERHEAT INDICATOR
- 52. ALIGHTING GEAR EMERGENCY CONTROL
  - Pull to operate
  - \*See Sect.5, Chap.5 (Blue Steel Role)

#### MISCELLANEOUS

- 1. CENTRE CONSOLE ENGAGE HANDLE
  - Pull to raise or retract console
- 3. PARKING BRAKE LEVER
- 7. NOSE-WHEEL STEERING ENGAGE SWITCH
  - Press to engage
- 8. STOWAGE - maps, documents, pilot's notes etc, S.F.O.M. gunsight prism ◀
- ▶ 11. SANITARY CONTAINER
- 12. VENT SUIT TEMPERATURE CONTROL AUTO-MANUAL SELECTOR AND INCREASE CONTROL SWITCH
- 13. VENT SUIT FLOW REGULATOR
- 14. A.V.S. CHANGE-OVER SELECTOR SWITCH
- 15. RATION HEATERS
- 17. FIN FOLDING SWITCH - BLUE STEEL
  - Ground tests with T.S., A.M.I.
- 18. SAFETY LOCK KEY STOWAGE - BLUE STEEL
- 20. CANOPY LOCK MECHANISM INDICATOR
- 21. OXYGEN REGULATOR PANEL
- 22. CANOPY JETTISON MECHANISM LOCKING PIN STOWAGE
- 23. CUPHOLDER
- 24. CLOCK

- 26. OXYGEN FLOW INDICATOR
  - Magnetic doll's eye
- 27. WINDSCREEN WIPER SWITCHES
  - Up - OFF
  - Down - SLOW
  - Centre - FAST
- 28. ANTI-GLARE VISORS
- 33. COMPASS CORRECTION CARD HOLDER
- 34. PILOTS' HANDGRIP
- 36. FLIGHT LIMITATION DATA CHART
- 39. CANOPY UNLOCKED DOLL'S EYE INDICATOR
  - BLACK - canopy secure
  - WHITE - canopy insecure
- 40. ENTRANCE DOOR UNLOCKED DOLL'S EYE INDICATOR
  - BLACK - door closed and locked
  - WHITE - door insecure
- 41. PITOT HEATER DOLL'S EYE INDICATOR
  - BLACK - heater on
  - WHITE - heater off
- 45. WINDSCREEN DE-MIST CONTROL SWITCH
  - Up - ON
- 46. WINDSCREEN DE-ICE CONTROL SWITCH
  - Up - ON
- 47. AIR CONDITIONING CONTROL PANEL (Sect.3, Chap.8)
- 48. ANTI-ICING CONTROL PANEL (Sect.3, Chap.9)
- 49. AIR VENTILATED SUIT SYSTEM SWITCH
  - Outboard - ON
- 50. PITOT HEAD HEATER SWITCHES
  - Outboard - ON
- 51. ALIGHTING GEAR UP SELECTOR PUSH SWITCH
- 53. ALIGHTING GEAR DOWN SELECTOR PUSH SWITCH

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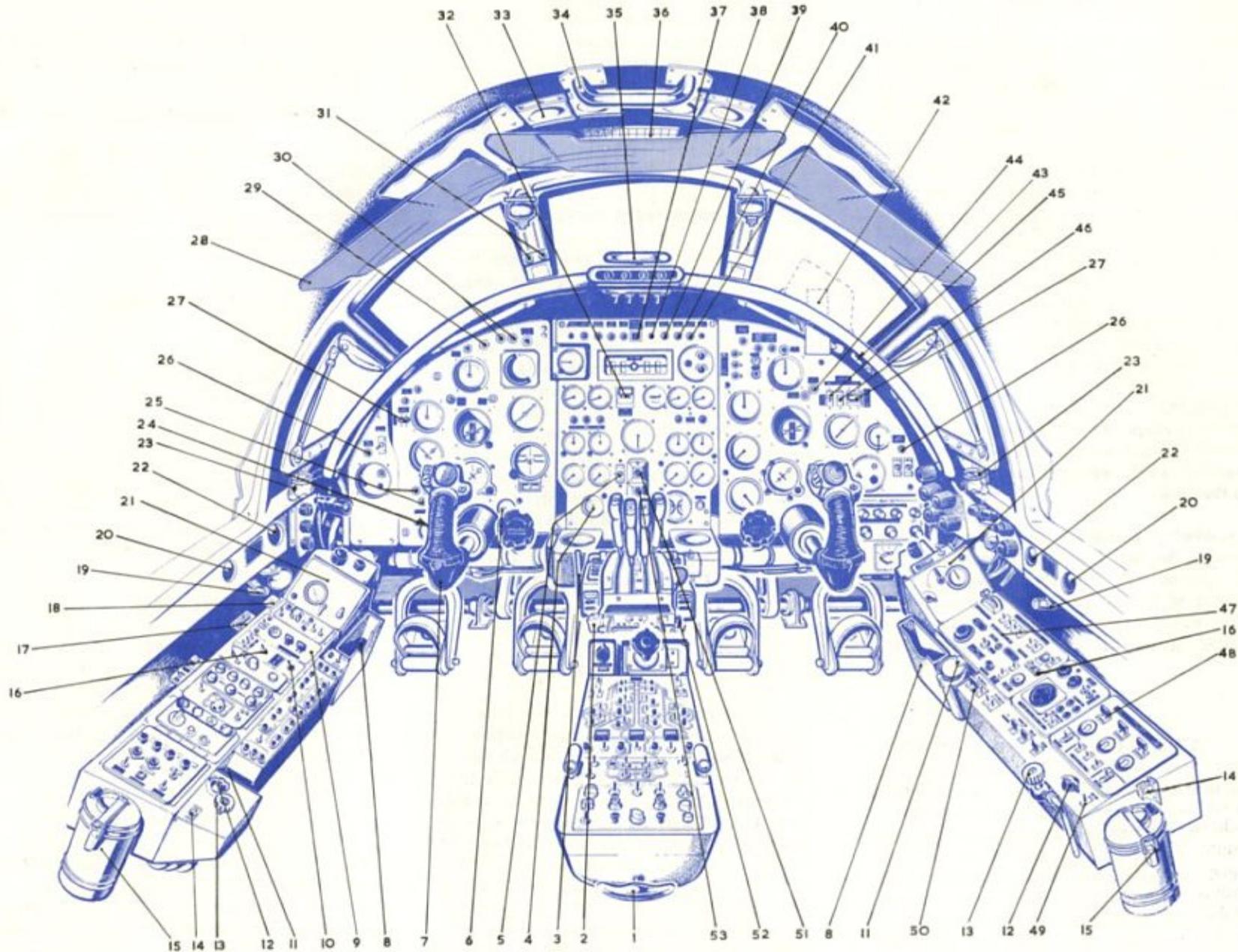


Fig. 4 Operational and miscellaneous controls and equipment

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### ENTRY TO CABIN

2. The only means of entry to the cabin is through the door below the nose section of the aircraft; it is hinged at its upper 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 rearward 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 handle on the starboard side of the crew's floor.

### 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. The aircraft to ground inter-comm-system should be utilised to eliminate this hazard.

### PILOTS' SEATS

3. A Martin-Baker ejection seat (Mk.3KS1-port side or Mk.3KS2-starboard side) is installed at each pilot's station; a description of the seats is contained in A.P.109A-0001-1. Multi-service connections, for intercommunication, ventilated suit system and oxygen supply 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 pedals can be adjusted by the operation of a starwheel in the centre of each rudder bar.

### INSTRUMENT PANELS

4. The pilots' panel is divided into three sections; in the centre is the engine instrument panel and at either 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 and the autopilot control switch unit. On the port side of the cockpit is a console housing engine starting, wireless, bomb door and radio altimeter switches and a panel inboard of the console contains the powered flying control 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

5. To release the centre console from the operative position for stowage purpose, 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

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

### ALIGHTING GEAR EMERGENCY LOWERING

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

### RATION HEATERS

8. Ration heaters Type 1WT/20835 are provided, one to each pilot, and are mounted at the rear end of the port and starboard consoles; the control switches are on the secondary supplies control panel, adjacent to the signaller's station. When using the heaters it is imperative that a hole is made in each food tin before they are placed in the heaters and that no tin is heated continuously for a period of more than two hours.

### STOWAGES

9. Stowages are provided in the canopy above the cockpit coaming at the forward end of the canopy for the compass deviation cards, anti-glare visors and Pilots' Notes. Adjacent to the stowages is the Flight Limitation Label.

### RAM AIR TURBINE

10. To lower the ram air turbine, a spade grip release handle is provided at the top forward centre portion of the pilots' cockpit coaming. The handle is attached by cable to the ram air turbine release mechanism and is pulled to operate.

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