

Chapter 1

CONTROLS AND EQUIPMENT AT PILOTS' STATIONS

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Introduction

1. This chapter gives a general guide to the location of equipment, controls and instruments in the pilots' cockpit and briefly mentions their function and operation where necessary. Capital letters are used in the illustration keys to denote actual control instruction markings.

2. Accommodation is provided in the cockpit for two pilots. Duplication of their controls is provided with certain exceptions, reference to the illustrations in this chapter will denote which controls are not duplicated.

ENTRANCE TO COCKPIT

3. Normal entry to the pilots' cockpit is by way of the main entrance door in the

fuselage rear section or the parachute exit situated in the floor between the pilot's seat platforms. The method of opening the parachute exit is given in Section 3, Chapter 14.

PILOTS' SEATS

4. The pilots' seats, mounted one each side of the cockpit on a raised platform, are each fitted with a seat raising and lowering mechanism, adjustable armrests and a Type ZC harness (Ref.No.6F/246). The seat raising and lowering mechanism, located on the inboard side of each platform, is released by operation of the plunger on the end of the operating lever.

5. Each seat is fitted with two interconnected armrests which are adjustable

to three positions. The armrests are retained in each position by a spigot, operated by a plunger on the end of the left-hand armrest, locating in a slot in a quadrant on the left-hand side of each seat. To facilitate entry to the seats, the armrests are retained in the fully up position by a further slot at the top of the quadrant. An auto-pilot controller is located on the inboard armrest of the first pilot.

6. The shoulder straps of the harness on each seat are spring-loaded to and retained by a catch in the fully aft position. To allow forward movement by the pilot the retaining catch is released by the operation of a lever situated at the outboard bottom corner of each seat. Intercom. sockets are located on the side of the headrest of both seats.

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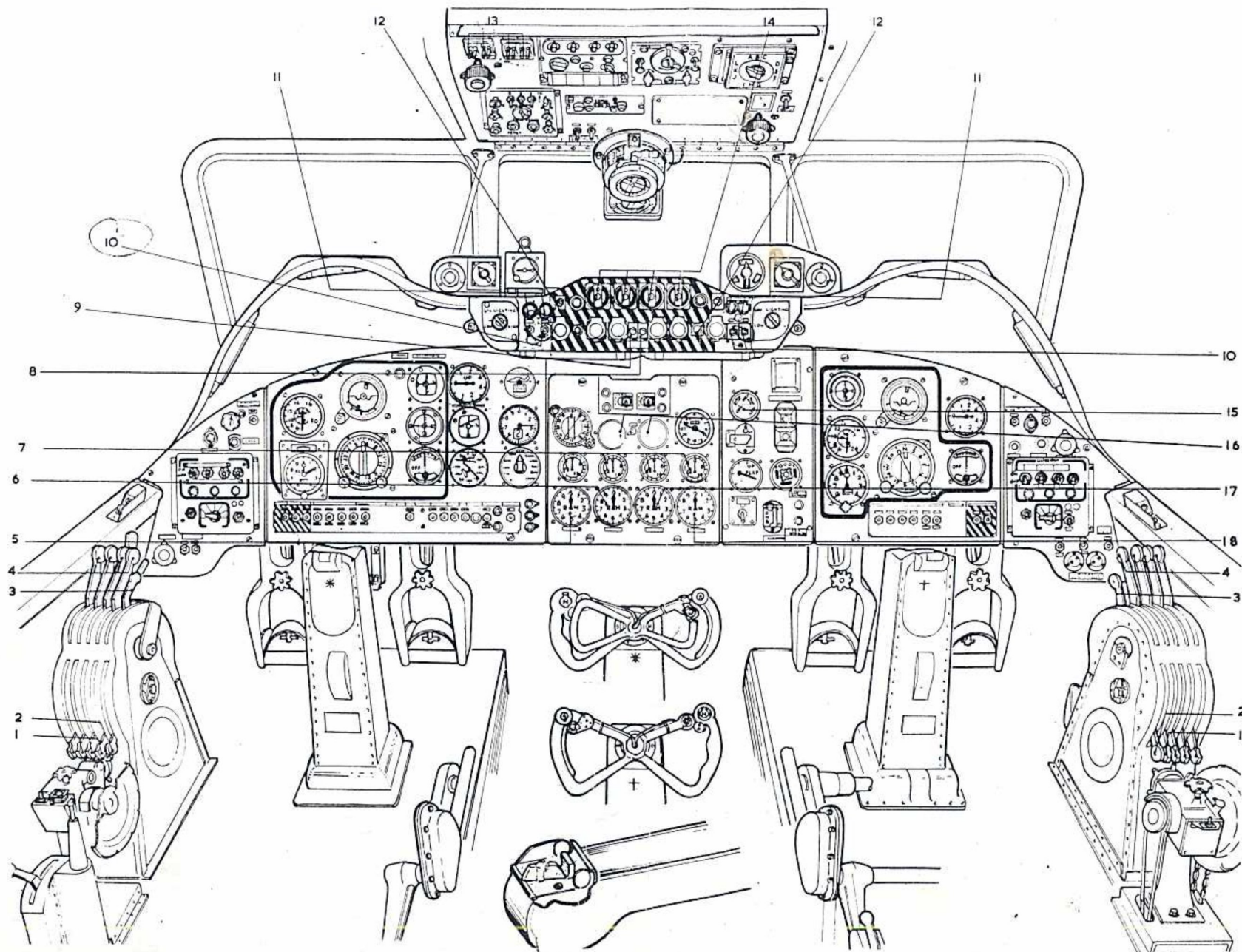


Fig. 1. Engine controls and instruments
(◀ Mod. 1461 & 1464 ▶)

KEY TO FIG.2

FLYING CONTROLS AND INSTRUMENTS

FLYING CONTROLS

1. PILOT'S AUTO-PILOT CONTROLLER
On first pilot's inboard arm rest.
2. AUTO-PILOT CUT-OUT LEVER
3. FIRST PILOT'S CONTROL COLUMN
4. STALL WARNING STICK SHAKER
5. RUDDER PEDALS
6. RUDDER PEDAL ADJUSTERS
7. ELEVATOR TRIM TAB CONTROL WHEEL.
Operate in natural sense. Indicator shows tab position.
8. AILERON TRIM TAB CONTROL WHEEL.
Operate in natural sense. Indicator shows tab position.
9. RUDDER TRIM TAB CONTROL WHEEL.
Operate in natural sense. Indicator shows tab position.
10. RUDDER CONTROL LOCKING HANDLE.
Pull back to operate.
11. STALL WARNING TEST SWITCHES, FLIGHT
Up - ON
12. STALL WARNING TEST SWITCHES, GROUND
Up - ON
24. AUTO-PILOT SWITCH UNIT.
29. I.L.S. CONTROL UNIT
30. I.L.S. MASTER SWITCH
Up - ON

31. FLAP SWITCH
Three positions - UP (guarded), TAKE-OFF, DOWN.
32. FLAP POSITION INDICATOR
33. SECOND PILOT'S CONTROL COLUMN

FLYING INSTRUMENTS

13. ALTIMETER
14. SLIP INDICATOR
15. AIR SPEED INDICATOR
16. ARTIFICIAL HORIZON
17. TURN-AND-SLIP INDICATOR
18. I.L.S. MARKER LIGHT
19. I.L.S. INDICATOR
20. RATE-OF-CLIMB INDICATOR
21. RADIO ALTIMETER SWITCH
22. RADIO ALTIMETER LIMIT SWITCH
23. RADIO ALTIMETER INDICATOR LAMP
25. ACCELEROMETER
26. REMOTE TRIM INDICATOR
27. RADIO ALTIMETER LIGHTS
Top - AMBER
bottom - RED
28. AUTO-PILOT

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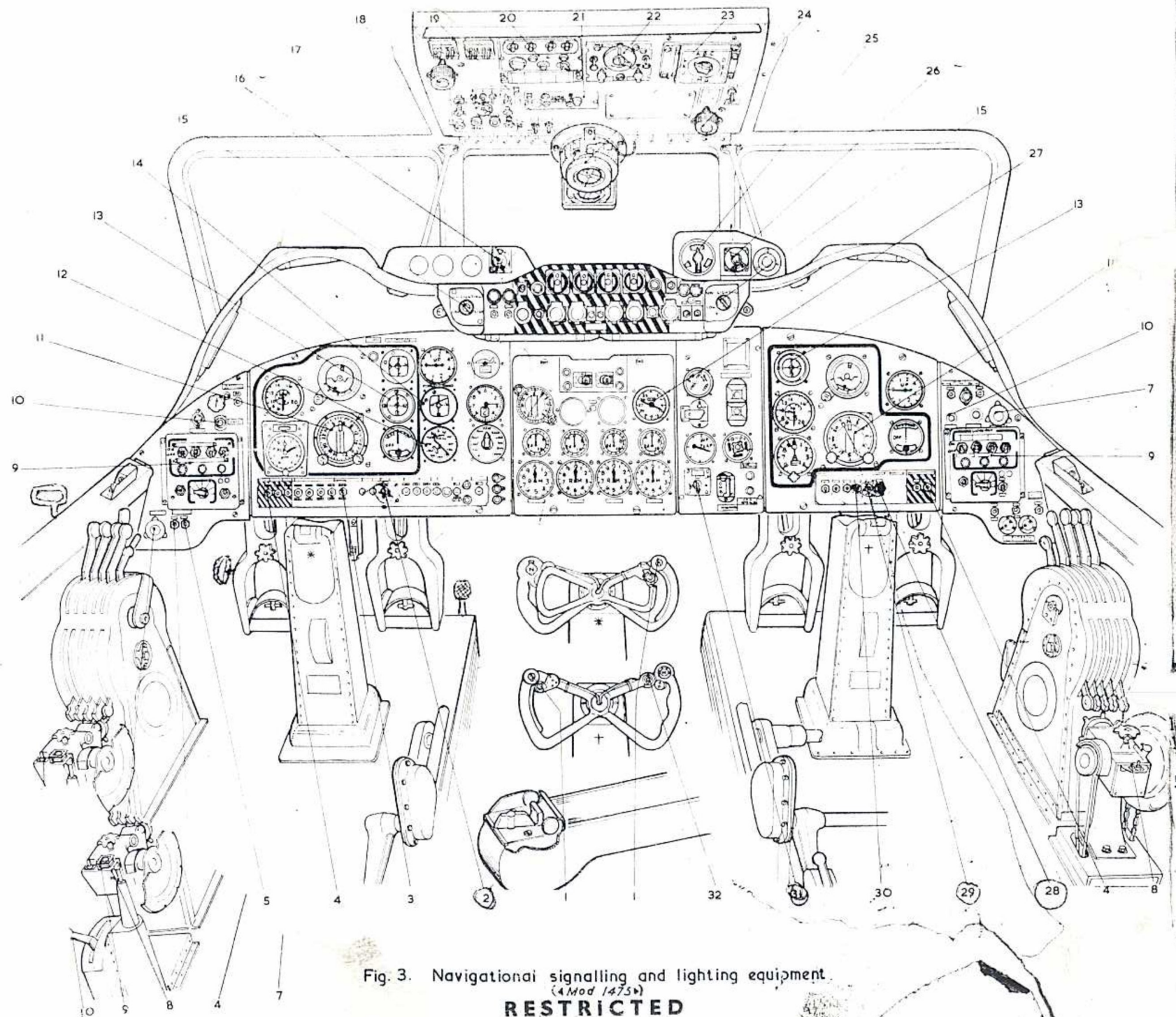


Fig. 3. Navigational signalling and lighting equipment.
(4 Mod 1473v)

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KEY TO FIG.4

OPERATIONAL AND MISCELLANEOUS CONTROLS AND INSTRUMENTS

OPERATIONAL CONTROLS

1. FIRST PILOT'S NORMAL BOMB RELEASE PUSH-BUTTON
2. FIRST PILOT'S A.S. BOMB RELEASE PUSH-BUTTON
4. TOE-OPERATED BRAKE CONTROLS
8. BRAKES PARKING LEVER
To park - PULL UP AND TURN
12. FLAME FLOAT RELEASE SWITCH
13. FLAME FLOAT RELEASE INDICATOR
17. ILLUMINATOR FLARE CONTROL START SWITCH
Up - START
18. ILLUMINATOR FLARE CONTROL STOP SWITCH
Up - STOP
19. BOMB BAY FLARE RELEASE SWITCH
Up - ON
20. FLARE CHUTE DOOR CONTROL SWITCH
Up - OPEN
21. FLARE CHUTE DOOR INDICATOR
22. FLARE RELEASE SWITCH
Up - CELL 'A' ON
Down - CELL 'B' ON
23. FLARE CHUTE RELEASE INDICATORS
Top - CELL 'A'
Bottom - CELL 'B'

26. NO.1 STORE RELEASE SAFETY LOCK INDICATORS
Unlock - AMBER
Lock - GREEN
27. NO.1 STORE RELEASE SAFETY LOCK SWITCH (Guarded)
Up - UNLOCK
Down - LOCK
36. NO.2 STORE RELEASE SAFETY LOCK SWITCH (Guarded)
Up - UNLOCK
Down - LOCK
37. NO.2 STORE RELEASE SAFETY LOCK INDICATORS
Unlock - AMBER
Lock - GREEN
40. LANDING GEAR SELECTOR PUSH-BUTTONS
Top - UP
Bottom - DOWN
41. LANDING GEAR POSITION INDICATOR
42. BOMB DOOR SWITCH
Up - CLOSED
Down - OPEN
43. BOMB DOOR POSITION INDICATOR
44. A.S.V. SCANNER RETRACTED INDICATOR
53. NOSE-WHEEL STEERING SELECTOR SWITCH
54. NOSE-WHEEL STEERING CONTROL WHEEL

55. SECOND PILOT'S A.S. BOMB RELEASE PUSH-BUTTON
56. SECOND PILOT'S NORMAL BOMB RELEASE PUSH-BUTTON

EMERGENCY CONTROLS

7. ABANDON AIRCRAFT WARNING HORN SWITCH
9. LANDING GEAR EMERGENCY UP SELECTOR
10. BRAKE EMERGENCY LEVER
Aft - NO.1 SYSTEM NORMAL
Forward - NO.2 SYSTEM EMERGENCY
11. EMERGENCY TURN-AND-SLIP SWITCH
Up - ON
28. GRIFFON ENGINE FIRE EXTINGUISHER PUSH-BUTTONS
29. PORT FUEL TANK FIRE EXTINGUISHER PUSH-BUTTON
30. BOMB JETTISON SWITCH (Guarded)
31. CABIN HEATER FIRE WARNING LIGHT
32. GRIFFON ENGINE FIRE WARNING LIGHT
33. BOMB BAY FIRE WARNING LIGHT
34. STARBOARD FUEL TANK FIRE EXTINGUISHER PUSH-BUTTON
35. BOMB BAY TANK JETTISON SWITCH (Guarded)
51. PARACHUTE EXIT LOWER DOOR CONTROL LEVER

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KEY TO FIG.4 (continued)

MISCELLANEOUS CONTROLS AND INSTRUMENTS

- 3. FIRST PILOT'S SEAT ADJUSTING LEVER
- 5. STALL WARNING A.D.D. TEST SWITCHES
- 6. ASH TRAY
- 14. WINDSCREEN WASHER PUSH-BUTTON
- 15. WINDSCREEN WIPER SPEED CONTROL

INSTRUMENT PANELS

7. The pilots' main instrument and control panel is divided into six sections identified as A to F from port to starboard. The flying instrument panels are incorporated in panels B and E. The emergency control panel, identified as panel G is positioned centrally over the main panel and secured to the coaming. A further control panel is secured to the front end of the canopy.

8. Normal illumination of the pilots' panel is provided by red flood lamps with ultra-violet lighting provided for use in conjunction with the fluorescent flying instruments. Dimmer switches are located as illustrated in fig.3.

CANOPY

9. The moulded transparent plastic canopy is in two sections, one on each side of two heavy section members, between which is fitted the pilots' escape hatch. Fitted in each canopy section is a direct vision window, hinged at its forward edge, and secured in the closed

- 16. WINDSCREEN WIPER CONTROL SWITCH
Up - ON
- 24. FIRST PILOT'S COLD AIR LOUVRE
- 25. A.D.D. ANGLE OF ATTACK INDICATOR
- 38. ICE DETECTOR LIGHT
- 39. SECOND PILOT'S COLD AIR LOUVRE
- 45. WINDSCREEN DE-ICING SWITCH
Up - ON
- 46. A.D.D. AND STALL WARNING HEATER SWITCH
Up - ON

position by a screwed handwheel locking in a bracket attached to the window. A sunblind is provided in each canopy section and on the escape hatch.

WINDSCREEN

10. The windscreen is divided into three panels, each panel being made up of two sheets of safety glass and a Vinyl interlayer with an air space between the glass layers. Each panel incorporates a self-sealing valve to which is connected a silica-gel air system, this system is described in Sect.3, Chap.8.

RUDDER PEDAL ADJUSTMENT

11. Rudder pedal reach is adjusted by a manually-operated knob on each rudder pedal.

BRAKE EMERGENCY AND PARKING CONTROLS

12. The brake emergency and parking controls are fitted in a box secured to the

- 47. STARBOARD PITOT HEAD HEATER SWITCH
Up - ON
Down - TEST
- 48. STARBOARD PITOT HEAD TEST SOCKET
- 49. PORT PITOT HEAD TEST SOCKET
- 50. PORT PITOT HEAD HEATER SWITCH
Up - ON
Down - TEST
- 52. SECOND PILOT'S SEAT ADJUSTING LEVER

platform, outboard and to the rear of the first pilot's seat. The emergency control is normally in the aft position which gives normal braking, to select emergency the lever must be moved to the fully forward position. Operation of the parking control will maintain application of the brakes when parking the aircraft.

STOWAGES

13. Stowages are provided on the forward face of the first pilot's bulkhead for binoculars, torch, C of G computer and the aileron and elevator locking pins. On the forward face of the second pilot's bulkhead stowages are provided for a torch and maps. In addition to the stowages a crash handle is fitted on both bulkheads.

RUDDER LOCKING

14. A single arm-type lever is located in a forward position on the first pilot's engine control pedestal. By pulling the lever rearward the pilot is able to effect two locking operations:

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1 At the forward end of the fuselage push-pull rod control system. This locks the rudder pedals.

2 At both rudders, where locking pins are inserted into corresponding sockets in the leading edge of each rudder. When the lever is moved fully forward the locking is removed and normal control of the rudder is obtained. As a safety precaution, to prevent a take-off being attempted with locked controls, the locking lever restricts the movement of the throttle levers allowing only sufficient throttle opening for taxiing and ground manoeuvring.

WARNING . . .

If the locking lever does not move forward easily after release from the catch at the locked position, do not use force, ensure that the aileron and elevator locking pins have been removed. If any force is still required, make a thorough check of the locking system for fouling. Use of force when applying the rudder lock will also cause damage to the system. The locking bolts at the fin post will not enter the sockets in the rudder leading edges unless the rudders are centralized.

3 To apply the rudder lock, place both feet on the rudder pedals and observe the locking bolt at the forward end of the rudder operating push-pull rod system. Move the rudder pedals until the hole for this bolt is directly under the bolt. To assist in this operation, gently pull the rudder locking control back until the bolt is nearly engaged. Further gentle application of the lock will then result in the lever moving right back easily. If, when completing the locking, an immediate increase of resistance to moving the locking control lever right back is felt, slowly oscillate the rudder pedals, keeping a gentle backward-pull on the lever until the rudder bolts are felt to enter.

4 The necessity for this final movement of the rudder pedals is due to the rudders being connected to the controls by torsion bars. These torsion bars can allow the rudders to be out of line with the controls when, for example, the aircraft is cross-wind. If it is found that the forward bolt enters the push-pull rod before the fin bolts enter the rudder sockets, the rudder pedals will be locked before movement can be effected. In this case the action of the

forward bolt must be retarded to permit the routine to be effected.

AILERON AND ELEVATOR LOCKS

15. These controls can only be locked after the rudders have been locked and the rudders cannot be unlocked until the manually inserted pins locking the ailerons and elevators have been removed. Consequently the aircraft cannot take-off with locked controls. A label, secured to the cross-bar of the rudder locking lever, is inscribed-CAUTION: CHECK THAT THE ELEVATOR AND AILERON LOCKING PINS ARE OUT BEFORE RELEASING RUDDER LOCK.

TAXYING WITH RUDDERS LOCKED

16. The previously described pilot-operated rudder locking provides for taxiing the aircraft in strong winds without the possibility of damage being caused to the rudders. Steering, during this operation, is effected by the nose-wheel steering system operated by a spade grip control on the first pilot's control column head.