Chapter 3

EMERGENCY CONTROLS, EQUIPMENT AND EXIT

LIST OF CONTENTS

ILLUSTRATION

WARNING

AN AIRCREW EJECTION SEAT IS FITTED TO THIS AIRCRAFT.

Before attempting to enter the cabin ensure that the instructions detailed on the LETHAL WARNING marker card at the front of this Handbook have been complied with.

THIS IS VERY IMPORTANT

Introduction

1. This chapter describes the controls and equipment which are provided for use in an emergency, together with the precautions necessary before and after their use. In an emergency, it is essential that the appropriate control be operated without delay. In the interests of safety, therefore, personnel concerned with the handling of this aircraft should familiarize themselves with all these controls. For further information on the operation and function of these controls, and the circumstances in which they are to be used, reference should be made to the Pilot's Notes for this aircraft.

Jettisoning hood

2. The hood jettison gear is interconnected with the seat jettison mechanism and operates as follows:—

(1) Pulling the ejection seat blind handle fires the hood jettison gun and starts the seat clock. The hood gun operates the hood cylinders which unlock the hood locks and push the hood and hood rails upwards to jettison the hood. The seat gun fires after one second delay and ejects the seat.

(2) Pulling the alternative firing handle, located on the seat pan *(if handle is fitted)* duplicates the function of the ejection seat blind handle, but the pilot is ejected without the protection of the face blind.

3. Should it be desired to jettison the hood only, this can be done by pulling a handle located at the forward inboard face of the cabin port shelf. Pulling this handle operates the hood jettison gun and the release unit. The hood jettison gun operates the hood cylinders to unlock the hood locks and jettison the hood; the release unit duplicates the operation of unlocking the hood locks, thereby ensuring that the hood is unlocked even though the jettison gun may have failed to fire. (It does not operate the time delay mechanism and seat gun).

Note . . .

When the hood gun has been fired the firing components and piping must be replaced.

Emergency access to cabin

4. In the event of the pilot or occupant being physically unable to operate the hood control while the aircraft is on the ground and the hood is closed, access to the cabin may be obtained by breaking a transparent panel on the port side of the fuselage and pulling the enclosed ring operating the release unit, thus opening the locks securing the hood side channel members, deflating the hood seal, de-clutching the hood motor and allowing the hood to be lifted off by hand. Finger holes between the hood and windscreen are provided to facilitate the removal of the hood. If, however, the pilot is able to move the lever, integral with the hood control box, to the FREE position, this will release the clutch of the hood winding motor and deflate the hood seal, thus allowing the hood to be pushed open by hand.

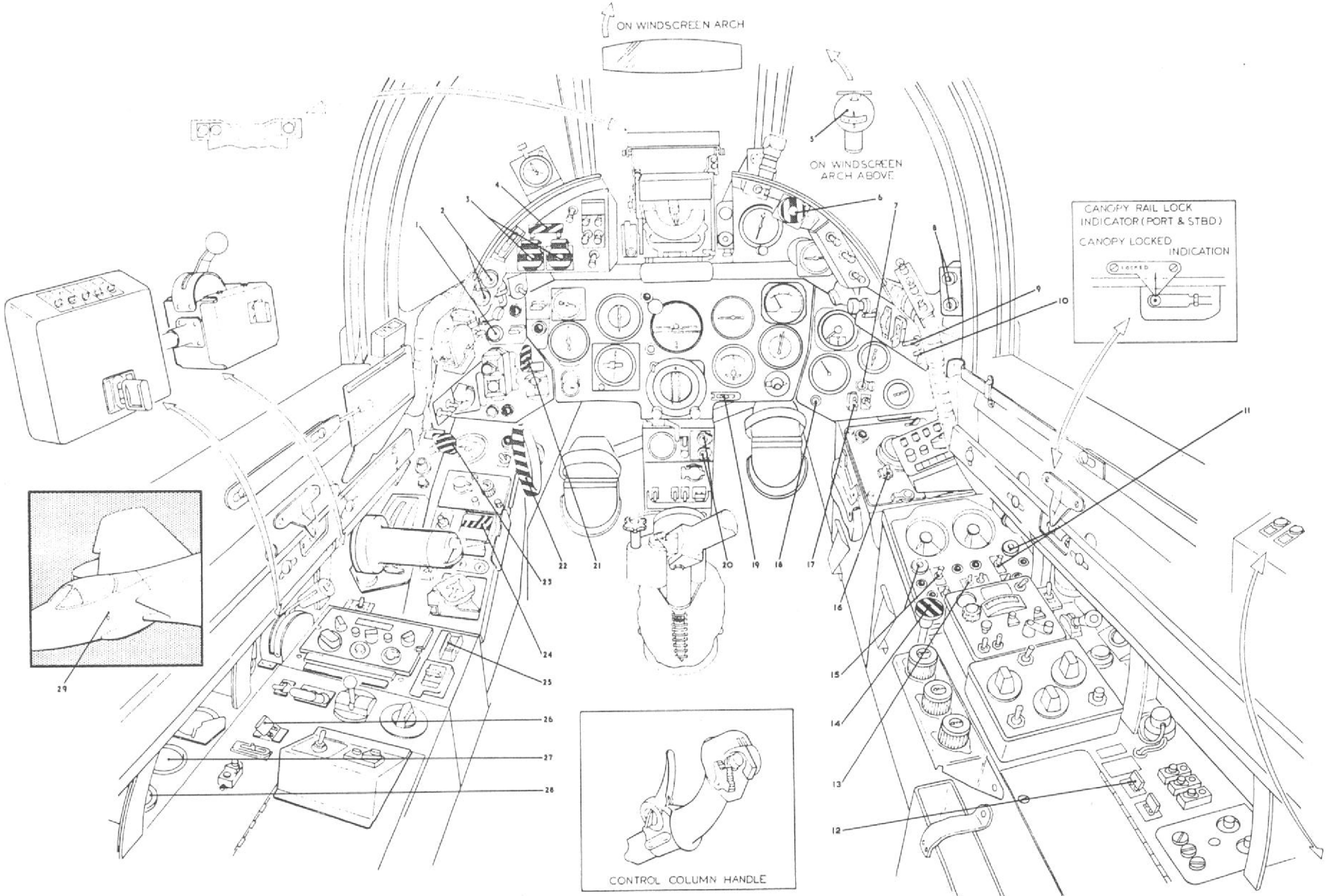

Fig. 1 Emergency controls and instruments

◀ (Completely revised) ▶

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KEY TO FIG. 1

(Emergency controls and instruments)

◀ (Completely revised) ▶

1 HYDRAULIC FAILURE WARNING LAMP
2 FUEL LOW LEVEL WARNING LAMPS
3 PYLON STORES JETTISON SWITCHES
4 'CLEAR AIRCRAFT' JETTISON SWITCH BAR
5 STANDBY COMPASS
6 FIRE WARNING LAMP AND EXTINGUISHER PUSH SWITCH
7 CABIN PRESSURE WARNING LAMP
8 FUEL BOOSTER PUMP FAILURE WARNING LAMPS
9 STANDBY COMPASS LIGHTING SWITCH
10 EMERGENCY LIGHTING SWITCH
11 FUEL BOOSTER PUMP SWITCH AND PUMP FAILURE WARNING LAMP - STARBOARD
12 FIRE WARNING LAMP TEST SWITCH
13 FUEL LOW LEVEL WARNING LAMPS TEST SWITCH
14 EMERGENCY OXYGEN RELEASE
Pull to operate
15 FUEL BOOSTER PUMP SWITCH AND PUMP FAILURE WARNING LAMP - PORT
16 EMERGENCY 100% OXYGEN SUPPLY SWITCH
17 HYDRAULIC FAILURE AUDIO WARNING CUT-OUT SWITCH
18 FUEL LOW PRESSURE WARNING LAMP
19 TURN AND SLIP INDICATOR NORMAL/ EMERGENCY SUPPLY SWITCH
20 GENERATOR POWER FAILURE WARNING LAMPS
21 FLAP EMERGENCY CONTROL
To operate, grasp control between fingers, depress centre button with thumb and pull
22 HOOD JETTISON CONTROL HANDLE
Pull to jettison hood
23 UNDERCARRIAGE EMERGENCY CONTROL
To operate, grasp control between fingers, depress centre button with thumb and pull
24 TAIL PLANE TRIM STANDBY CONTROL SWITCH
25 ENGINE RELIGHT SWITCH
26 CABIN PRESSURE WARNING LAMP TEST SWITCH
Ground use only
27 FLAP EMERGENCY AIR PRESSURE GAUGE
28 UNDERCARRIAGE EMERGENCY AIR PRESSURE GAUGE
29 HOOD EXTERNAL RELEASE CONTROL
To operate, break perspex and pull cable ring

Ejection seat

5. For details of the ejection seat installed in this aircraft, reference should be made to the relative equipment publication and to Topic 15 for this aircraft.

HYDRAULIC SYSTEM

General

6. Essential hydraulic services are provided with an emergency means of operation for use in the event of hydraulic failure, and loss of hydraulic main pressure is indicated by an aural note in the pilot's headphones, as well as by means of a red warning lamp on the port instrument panel. The aural warning, and the red lamp when illuminated, warn the pilot that only a few power operations of the ailerons and elevators may be made before they go into manual, and that emergency action must be taken when lowering the alighting gear and landing flaps. For a description of the hydraulic system, reference should be made to Sect. 3, Chap. 6.

Alighting gear and landing flaps

7. In the event of hydraulic failure, the alighting gear and landing flaps may be lowered by the introduction of high-pressure air into the hydraulic jacks which operate them, the high-pressure air being obtained from a pair of high-pressure air bottles which are mounted, adjacent to the anti-G air bottles, behind the seat . Gauges to indicate the pressure in the air bottles are located in the cabin. The emergency control for the alighting gear is mounted on the cabin port shelf, and that for the landing flaps projects through the port instrument panel.

8. To operate the controls, it is first necessary to grasp the control between the fingers, depress the central button in the control knob with the thumb, and then pull out the control which will remain in the operated position as a warning to the ground crew that the emergencies have been used, that the valves must be re-set, the system bled of air, and the high-pressure air bottles recharged before the next take-off. It should be noted that :—

(1) The use of the emergencies does not render the aileron and elevator power controls inoperative.

(2) When the landing flaps emergency control is used, there is no pre-selector control in operation and the flaps will, in consequence, be extended to their full travel.

(3) Once the undercarriage and flap emergencies have been operated, the position of the controls cannot be changed except by the ground crew.

Wheel brakes

9. In the event of hydraulic failure, the wheel brakes may be operated by means of energy stored in hydraulic accumulators in the circuit. These accumulators come into operation automatically when hydraulic failure occurs and will give approximately 40 applications of the brakes before the accumulators are exhausted. The accumulators are also used when the aircraft is being towed and hydraulic power is not available.

Aileron and elevator power controls

10. In the event of hydraulic failure, warning will be given as in para. 6 and an accumulator in each circuit will come into operation automatically to give a few control column reversals before the accumulators are exhausted. When once these accumulators are exhausted, the power controls are automatically disengaged and revert to manual. Magnetic indicators, located on the instrument panels, will show white to indicate that this has occurred.

Emergency retraction of alighting gear

11. Under normal circumstances the alighting gear cannot be retracted while the aircraft is on the ground because of the UP switch solenoid lock. It is possible, however, to retract the alighting gear and belly land the aircraft to avoid an obstruction during take-off by turning the UP button of the undercarriage control in a clockwise direction and then depressing it. This method of retraction over-rides all sequence valves and may damage the leg fairings should these not be fully extended, it should therefore only be used in an absolute emergency. Should the normal control fail to retract the undercarriage in flight, the aircraft should be brought into land for examination.

Note . . .

To re-set the solenoid lock over-ride, after emergency use, insert the Dowty re-setting tool (Ref. 27Q/12407) into the small hole in the face of the UP button, press lightly and turn the knurled ring back to its original position.

ENGINE

Emergency balancing of fuel contents

12. The electrically-driven fuel booster pumps in the front tanks, which feed all the fuel to the engine-driven fuel pumps via a fuel flow proportioner, are controlled by the engine master switch on the leg panel in the cabin and by individual switches mounted on the fuel control panel. Normally, the two pumps are running continuously throughout flight, but the provision of the individual switches enables either pump to be stopped to balance the fuel levels should an emergency render such action necessary. Indicators to give indication of fuel transfer failure and warning lamps to indicate tank pump failure, fuel low level and fuel low pressure, are provided in the cabin.

Mechanical failure of engine

13. In the event of mechanical failure of the engine, the low-pressure fuel cock must be turned OFF and the throttle closed. (*Closing of the throttle also closes the high pressure fuel cock*). The fuel tank booster pump switches must also be turned OFF *and no attempt must be made to relight the engine.*

Fire extinguisher and warning lamp

14. A combined fire extinguisher push-button switch and warning lamp is located just above the starboard instrument panel. In the event of an engine fire in flight, the low-pressure fuel cock and fuel booster pumps must be turned off, the throttle closed and the aircraft speed reduced as much as possible, the fire extinguisher push-button is then depressed. The extinguisher is automatically operated by the inertia switch if a crash landing occurs.

Note . . .

The engine must not be restarted after operating the fire extinguishing system owing to the possible risk of the fire re-commencing after the fire fighting resources are exhausted.

Tail plane emergency circuit

15. The incidence of the tail plane is varied by means of a two-speed electric actuator, the normal high speed movement being controlled by a switch on the control column and the emergency low-speed movement by means of a guarded switch on the cabin port shelf. In the event of a breakdown of the normal control circuit, the emergency low speed circuit can be brought into use by fully raising the guard and operating the shelf switch.

Survival equipment

16. The dinghy is housed in the pilot's personal survival pack, additional survival packs are accomodated in the cabin, one on the forward face of frame 14 and the other on the starboard side between frames 11 and 12.

Emergency oxygen

17. An emergency oxygen set is mounted under the seat pan and is brought into action by a static line when ejection action is taken or may be operated by pulling the manual control handle, which is located on the right hand side of the seat pan.

Jettisoning external stores

18. The drop fuel tanks, or other external stores carried on the pylons under the wings may be jettisoned by first placing the fuzing selector switch to the DEFUZE position and then depressing the jettison push switches, after lifting the guard plates. In an emergency, on aircraft Post Mod. 378, simultaneous jettisoning of stores can be effected by pulling down a bar from above the switches, but as in the case of normal jettisoning, the fuzing selector switch must first be placed in the DEFUZE position. On aircraft Pre. Mod. 378, stores on both inboard and outboard pylons may be jettisoned by operation of the CLEAR AIRCRAFT switch on the panel to the port of the gunsight.

Emergency lighting

19. *Cabin* – should the normal cabin lighting fail, an emergency system can be brought into operation by a switch located on the starboard side of frame 9 above the cabin shelf. The emergency lighting system is supplied with current from a small battery mounted in the radio bay.

Standby compass – the switch for the emergency light for the standby compass is adjacent to the cabin emergency lights switch.

First aid kit

20. A first aid kit is contained in the survival pack located on the forward face of frame 14.