Chapter 3 EMERGENCY CONTROLS, EQUIPMENT AND EXIT

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WARNING

AN AIRCREW EJECTION SEAT IS FITTED TO THIS AIRCRAFT.

This equipment is a source of potential danger to personnel and of damage to the aircraft. If the firing mechanism is operated while the aircraft is on the ground, the seat will be ejected, damage will be done to the aircraft and injury may 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 safety strap is in position over the firing handle of the ejection seat and secured with the safety pin, or that the safety pin is fitted in the hole in the sear.

Introduction

1. This chapter describes the controls and equipment 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 interest of safety, therefore, personnel concerned with the handling of this aircraft should familiarise themselves with these controls. For further information on the operation and function of these controls and the circumstances in which they are to be used, reference may be made to A.P.4347D, Pilot's Notes.

Jettisoning sliding hood

2. The sliding hood must not be jettisoned with the cabin pressurized, as to do so will impose a great strain upon the pilot owing to the rapid change of pressure. Before jettisoning the hood, when cabin pressurization is in use, the cabin must be de-pressurized by setting the pressurization control switch to the OFF position, thus closing the pressurizing valve and opening the ventilation valve.

Note . . .

The hood must be fully closed before an attempt to jettison it is made.

3. The hood is jettisoned from inside the cabin by pulling a handle located at the forward inboard face of the cabin port shelf. Operation of this handle performs the following functions:—

(1) Deflates the hood seal.

(2) Retracts the gun sight.

Note . . .

The gun sight is also provided with an independent retraction control knob, located on the sight mounting, for manual use, should the electrical retraction mechanism fail.

(3) Releases the spring-loaded servo unit which opens the locks holding the hood side channel members, thus jettisoning the hood.

4. The jettison gear is not inter-connected with the ejection seat blind and it is, therefore, necessary to jettison the hood before operating the ejection seat (*para.* 6).

Extracting unconscious pilot

5. In the event of the pilot being physically unable to operate the hood control or becoming unconscious, while the aircraft is on the ground and the hood is closed, access to the cabin may be obtained by breaking a transparent panel in the port side of the fuselage and pulling the enclosed control ring, thus opening the locks holding the hood side

channel members and allowing the hood to be lifted off by hand. On aircraft in which Mod. 248 has been incorporated, pulling the control ring also de-clutches the hood motor. 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.

Note . . .

Before attempting to enter or lean over the cabin, ensure that the instructions given in the ejection seat warning at the beginning of this chapter have been carried out.

Ejection seat

6. For details of the operation of the Mk. 2H ejection seat installed in this aircraft, reference should be made to A.P.4288B, Vol. 1, and to A.P.4347D, Pilot's Notes.

Hydraulic system

General

7. All the hydraulic services are provided with an emergency means of operation, for use in the event of hydraulic failure; loss of hydraulic pressure is indicated by a red warning lamp located on the port instrument panel, which when illuminated warns the pilot that only a few power operations of the ailerons and elevators may be made before they go into manual operation only and that emergency action must be taken when lowering the alighting gear and landing flaps. An additional warning is provided which generates an aural note in the pilot's headphones. A silencing push-switch is provided which, when operated will retain the audio warning in the suppressed condition. For a detailed description of the hydraulic system, reference should be made to Section 3, Chapter 6 of this volume.

Note . . .

Should the hydraulic warning lamp illuminate when the aircraft is at a high Mach number, it is advisable to reduce speed immediately.

Alighting gear and landing flaps

8. In the event of a 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 emergency control for the alighting gear is mounted on the cockpit port shelf and that for the landing flaps projects through the port instrument panel. Gauges to indicate the pressure in the air bottles are located at the rear of the cockpit port shelf. To operate either control it is necessary to grasp the control between the fingers, depress the central button in the 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 and that the air release valves must be re-set, the system bled of air and the high-pressure air bottles re-charged before the next take-off. It must be pointed out that when the flaps emergency control is used, there is no pre-selector control and the flaps will extend to their full travel.

Note . . .

Once the emergencies have been operated, the positions of the controls and components cannot be changed, except by the ground crew.

Wheel brakes

9. Should the hydraulic system fail, the wheel brakes may be operated from accumulators in the circuit. These accumulators will give approximately 40 applications before they are exhausted, they come into operation automatically when failure occurs. They are also used when the aircraft is being towed and hydraulic power is not available.

Aileron and elevator power controls

10. If an emergency or any reason makes it necessary to cut-off the power to the aileron and elevator controls, this may be accomplished by the operation of two switches located on the port side of the centre instrument panel. In the event of hydraulic failure, an accumulator in each circuit will come into action automatically to give a few control column reversals. When the accumulators are exhausted the power controls are automatically disengaged and "dolls-eye" indicators located on the port instrument panel will indicate that this has occurred.

Emergency retraction of alighting gear

11. The alighting gear cannot normally be retracted while the oleo legs are compressed, due to the "up" switch solenoid lock (Sect. 5, Chap. 1, Group D.7). In an emergency

KEY TO FIG. 1 (EMERGENCY CONTROLS)

1 EMERGENCY AIR GAUGE, UNDERCARRIAGE

2 EMERGENCY AIR GAUGE, FLAPS

3 CROWBAR

4 EMERGENCY ENGINE FUEL PUMP ISOLATING SWITCH
(Inoperative pending introduction of modified engine fuel pump).

5 EMERGENCY ENGINE FUEL PUMP ISOLATED WARNING LIGHT

6 TAIL PLANE STANDBY CONTROL

7 EMERGENCY UNDERCARRIAGE CONTROL
Grasp the control between the fingers, press the centre button with the thumb and pull control to operate

8 HOOD JETTISON CONTROL

9 HYDRAULIC FAILURE WARNING LIGHT

10 EMERGENCY FLAPS CONTROL
Grasp the control between the fingers, press the centre button with the thumb and pull control to operate

11 EMERGENCY GYRO GUN SIGHT MANUAL RETRACTION CONTROL

12 FIRE WARNING LIGHT AND EXTINGUISHER PUSH SWITCH
Pull knob to test bulb before take-off. Light indicates when temperature in engine bay and accessories bay exceeds 300±30 deg. C. Pushing the knob will operate the fire extinguisher. The flame switches are of the re-setting type and indicate temporary surges of excessive heat, thus, flickering of the light in flight and during an engine run on the ground may occur. Refer to Sect. 4 Chap. 5

13 RED INSTRUMENT STANDBY LIGHT—Port and Starboard

14 RED STANDBY LIGHT SWITCH

15 FUEL TRANSFER FAILURE INDICATOR—PORT

16 FUEL TRANSFER FAILURE INDICATOR—STARBOARD

17 EMERGENCY OXYGEN RELEASE

18 FUEL TANK BOOSTER PUMP SWITCH—PORT
Used for manual balancing of fuel contents

19 FUEL TANK BOOSTER PUMP SWITCH—STARBOARD
Used for manual balancing of fuel contents

20 ACCUMULATOR, EMERGENCY CABIN LIGHTS

21 EXTERNAL HOOD RELEASE CONTROL

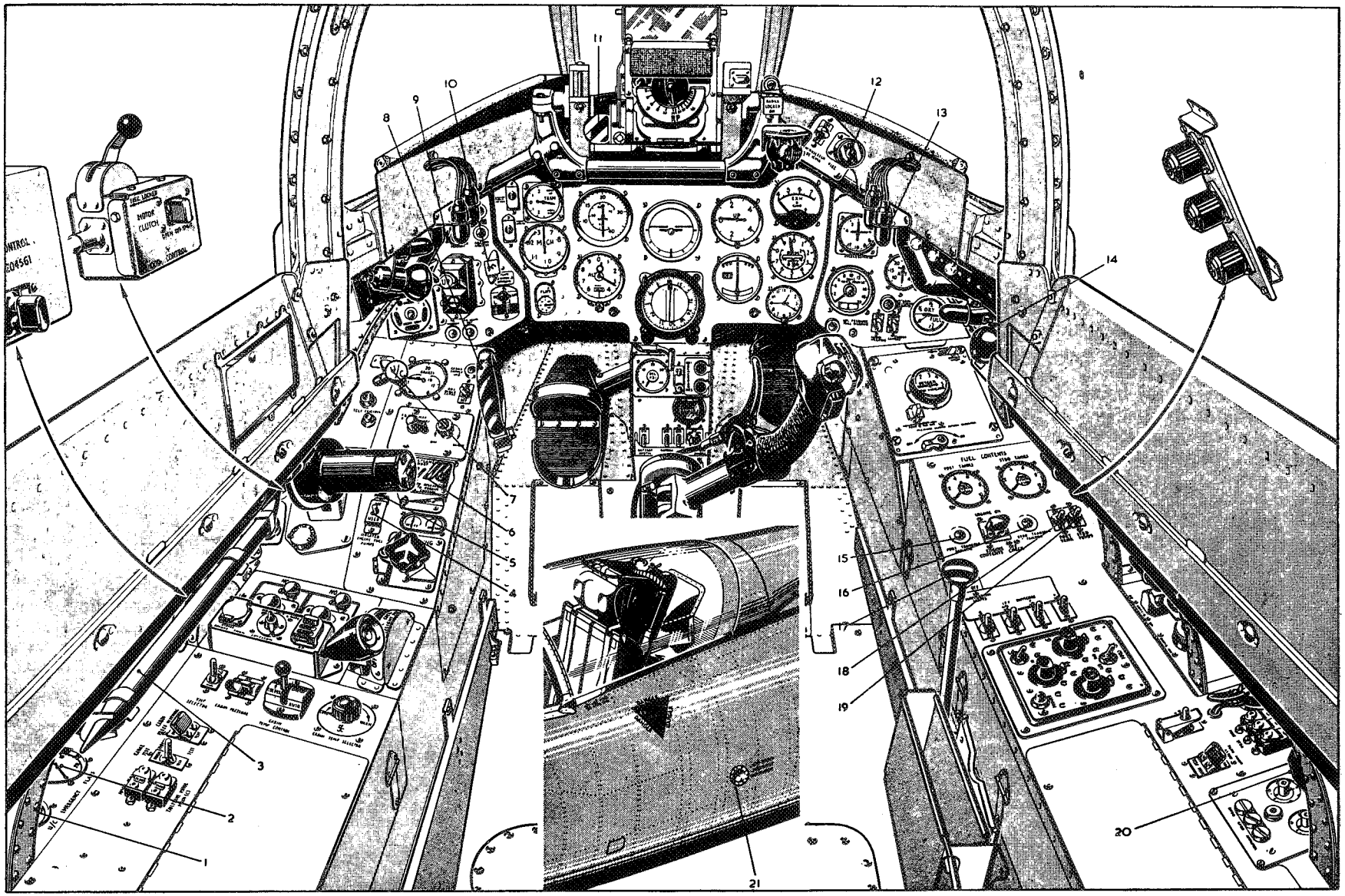

Fig. 1. Emergency controls

it is possible to override this lock by turning the "up" button clockwise and then depressing it. This method of retraction overrides 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 such as to bring about a belly-landing to avoid obstructions. The emergency retracting system should not be used because of a defect in the normal system. Should this occur the aircraft should be landed in the normal way for examination and rectification of the fault.

Engine

Fuel pump isolating switch

12. As a safeguard against failure of the servo side of the engine fuel system, which would result in the engine-driven fuel pumps going into no stroke owing to the fact that they are connected in parallel, a switch marked ISOLATE and NORMAL is located on the forward end of the cockpit port shelf. When placed in the ISOLATE position this switch isolates the pumps from each other and a warning lamp, located adjacent to the switch, will illuminate to indicate that this has occurred. The switch is locked in the NORMAL position with 26 s.w.g. copper locking wire, which, if broken, serves to indicate to the ground crew that the switch has been operated in flight, possibly in an emergency. (Only one strand of wire is to be used for locking.)

Emergency balancing of fuel contents

13. The booster pumps in the front fuel tanks, which feed all the fuel to the engine-driven pumps, are controlled by the engine master switch, located in the cabin on the leg panel and by individual switches, mounted side by side at the forward end of the starboard shelf. Normally the pumps are both running continuously throughout flight, but the individual switches are provided to enable the pilot to stop either pump, to balance the fuel levels if an emergency makes this necessary. Indicators to give warning of fuel transfer failure are located at the forward end of the starboard shelf adjacent to the booster pump switches.

Mechanical failure of engine

14. In the event of mechanical engine failure, the low-pressure and high-pressure fuel cocks must be turned off. The fuel tank booster pumps must also be switched off and no attempt must be made to re-light the engine.

Fire extinguisher and warning lamp

15. A combined fire extinguisher push-button switch and warning lamp is situated just above the starboard instrument panel. In the event of the engine catching fire in flight, the low-pressure and high-pressure fuel cocks must be turned off, the aircraft's speed reduced as much as possible and then the extinguisher push-button depressed.

Note . . .

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

Tail plane emergency circuit

16. The incidence of the tail plane is varied by 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 a switch on the port shelf. In the event of a breakdown in the normal control circuit the emergency low-speed circuit can be brought into use after raising the guard over the shelf switch and using this switch. The low-speed movement may also be used for low-speed trimming if desired.

Dinghy and emergency oxygen

17. The dinghy is housed in the pilot's seat pack, together with an emergency oxygen set, which is used either by pulling a knob fixed to the side of the starboard shelf or on ejection of the seat, when it is brought into operation automatically by a static line. When packing the dinghy, in accordance with the instructions contained in A.P.1182C, Vol. 1, Sect. 2, Chap. 8, it is important that the compressed thickness of the pack and water cushion does not exceed 6·5 in. to ensure satisfactory head clearance.

Crowbar

18. A 15 in. crowbar, for the pilot's use in extricating himself from the cabin in an emergency, is stowed in spring clips at frames 11 and 12 on the port shelf.

Jettisoning external stores

19. In an emergency the drop fuel tanks or external stores carried on the universal pylons may be jettisoned by depressing a push switch located on the port shelf just aft of the V.H.F. radio controllers. When operated this push switch jettisons the stores in a safe condition.

Emergency lighting

20. Should the normal lighting installation fail, an emergency system consisting of two red lamps mounted one on each side of the cabin, adjacent to frame 9, can be brought into operation by a switch located on the starboard side of frame 9 above the shelf. The emergency system is supplied with current from a small accumulator mounted on the starboard side of frame 12 also above the shelf.