

PART IV EMERGENCY HANDLING

83. Engine failure in flight

- (i) If the engine fails in flight, the reverse torque circuit will automatically cause the propellers to be coarsened off to a near feathered position. To fully feather the propellers, the H.P. cock must be closed and the starting pitch button pressed until rotation ceases.
- (ii) It is recommended that, as soon as any possibility of engine failure is suspected, MANOEUVRE flap be selected while the engine is still turning.
- (iii) In the case of suspected mechanical failure in the engine, the engine should be stopped by closing the H.P. cock and pressing the starting pitch button.

84. P.C.U. failures in flight

- (i) *Suspected failure*
 - (a) Should a P.C.U. failure be suspected in flight, reduce airspeed and select power to maintain 140 knots. Select EMERGENCY on the fine pitch stop switch.
 - (b) The approach and landing should be made with EMERGENCY still selected. As speed is reduced on the approach, the r.p.m. should not be allowed to fall below 7,800.
 - (c) After touchdown the H.P. cock must be closed to prevent engine stalling.
- (ii) *Actual failure*
 - (a) Throttle back immediately to the Flight Idle gate.

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- (b) Reduce airspeed and select power to maintain 7,800 to 8,000 r.p.m.
- (c) Select EMERGENCY on the fine pitch stop switch and carry out the procedure as in (i) (b) (c).

NOTE.—(1) Should flame extinction follow P.C.U. failure, carry out the normal relighting drill.

- (2) If it is impossible to feather the propeller before a relight is initiated, the ignition switch must be held at START until the engine is relit.

85. Restarting the engine in flight

NOTE.—(a) Normally only one attempt to relight should be made. Should this be unsuccessful there is a risk of fire if a further relight is attempted.

(b) Restarting the engine in flight is by windmilling only.

- (i) If the engine failure is due to flame extinction close the H.P. cock immediately, and close the throttle to the GROUND IDLE gate.
- (ii) Switch off all non-essential electrically-operated services.

Then:—

- (a) Trip on the ignition switch and see that the green light is showing.
- (b) Maintain an airspeed of 150 knots, open the H.P. cock and press the starting pitch button. (During engine acceleration and before a relight has occurred the reverse torque light will remain on).
- (c) Release the starting pitch button directly the engine speed has risen above 4,000 r.p.m.
- (d) When the engine has relit and is running satisfactorily the throttle may be opened *slowly* to the Flight Idle gate. (The reverse torque light may blink on and off while the throttle is at the Ground Idle gate.)
- (e) Evidence that a relight has occurred will be slight and no indication of this will be forthcoming from

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the J.P.T. gauge at present fitted. However, cautious movements of the throttle may be made provided the r.p.m. are above 4,000; if the r.p.m. follow the throttle movement, a relight has taken place. Drag will normally be high before the relight, but should decrease once a relight has occurred and the reverse torque warning light has gone out. White vapour from either jet pipe may mean that the engine has not relit.

- (iii) If a relight has not occurred by the time the engine speed has reached about 4,200 r.p.m., the H.P. cock must be closed and the propeller feathered.
- (iv) A relight should not be attempted above 15,000 ft.

86. Action in the event of fire

Should fire occur in flight, the appropriate red warning light will come on and the adjacent pushbutton should be pressed, the H.P. cock closed and a decision made whether to force land or abandon the aircraft by ejector seat.

87. Electrical system failure

Trimmer controls, booster pumps and most of the instruments will become inoperative. Electrical selection of the undercarriage will not be possible, and the emergency system should be used.

88. Hood jettisoning

Before jettisoning the hood, the seat should be lowered fully and the pilot should keep his head well down.

89. Gyro gunsight emergency lowering

The sight may be lowered manually by striking the knob to the right of the sight a blow with the hand. The sight is automatically retracted on jettisoning the hood, but only if electrical power is available.

90. **Abandoning the aircraft**

- (i) Reduce speed as much as possible.
- (ii) Jettison the hood, retract the gunsight and fold the control column.
- (iii) Place the feet in their footrests and at the same time grasp the handle of the blind.
- (iv) Press the head hard against the headrest and draw the handle and face screen firmly over the face. It is not necessary to jerk the handle and in no circumstances should the blind be pulled outwards away from the face as it may not be possible to fire the cartridge.
- (v) After ejection, the static line will automatically fire the drogue gun.
- (vi) When falling freely, and if below 20,000 feet, the pilot should disconnect his safety harness and when clear of the seat should open his parachute in the normal way.

91. **Undercarriage and flaps emergency operation**

In the event of a hydraulic failure the undercarriage and flaps may be lowered by operating the emergency controls irrespective of the position of the normal controls. The flaps may be selected fully DOWN only; no intermediate position is available.

92. **Arrester hook emergency operation**

When no hydraulic power is available, the normal control will operate the system down and up once only. There is no separate emergency control.

93. **Flapless landing**

A speed of 160 knots minimum should be maintained while manoeuvring in the circuit. The final approach should be begun at 130 knots. Little power is required, and the approach is flat. The airfield boundary should

be crossed at 120 knots, at which speed the aircraft will be in the three point attitude. The landing run will be approximately 50 per cent. longer than a landing with flaps down.

94. **Forced landing**

NOTE.—(a) A forced landing must not be attempted with the propellers windmilling unless it is impossible to feather them.

(b) When the propellers are feathered, drag is considerably less than that expected and the gliding angle, particularly with the flaps up, is remarkably flat.

(c) Should a landing be attempted with the propeller *windmilling*, the propeller drag and the rate of descent will be high.

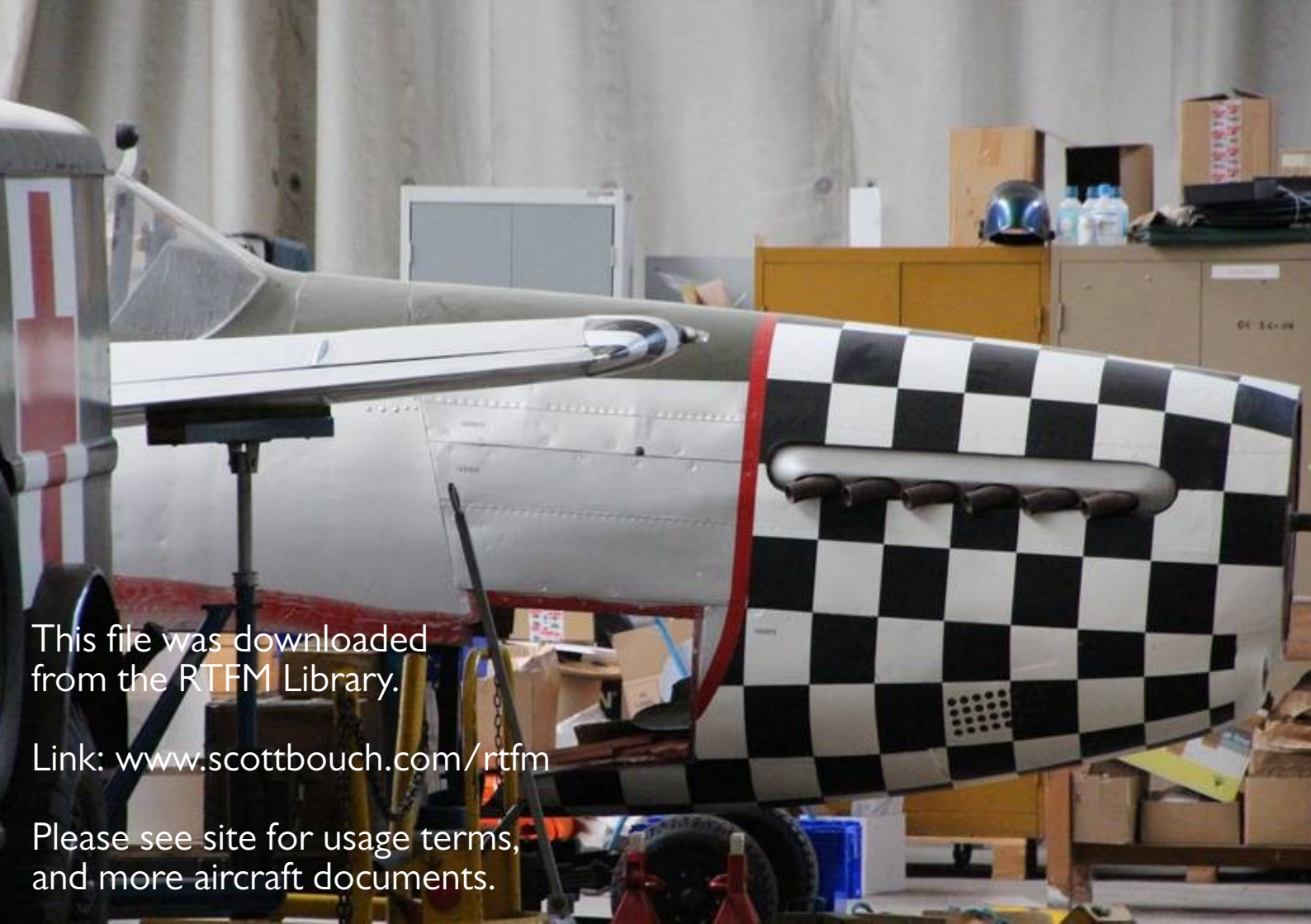
- (i) If no engine power is available the propellers must be feathered by closing the H.P. cock and pressing the starting pitch button.
- (ii) Initiate distress procedure.
- (iii) Jettison the cockpit hood and all external stores and fuel.
- (iv) Tighten and lock the harness in the rear position and lower the seat fully.
- (v) Maintain a speed of 160 knots while manoeuvring.
- (vi) Lower the flaps on the emergency system when a landing is certain.
- (vii) Once full flap has been lowered, carry out a normal glide landing, rounding out at a speed of not less than 130 knots.

95. **Ditching**

NOTE.—Model tests indicate that the ditching characteristics are very poor. Whenever possible therefore, the aircraft should be abandoned rather than ditched.

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- (i) If ditching is inevitable the following procedure should be adopted:—
- (a) Feather the propeller.
 - (b) Initiate distress procedure.
 - (c) Lower the seat fully and jettison the hood, all external stores and drop tanks. (There is no evidence to prove that the drop tanks will improve the ditching characteristics.)
 - (d) Release the parachute harness and check the dinghy attachments.
 - (e) Tighten the harness and lock in the rear position.
 - (f) Lower the flaps fully, and maintain an airspeed of 130 knots.
 - (g) Flatten out near the water and endeavour to touchdown on the water at as slow a speed as possible. The rate of descent at the moment of touchdown should be kept to a minimum.
 - (h) Ditching should be along the swell, or into wind if the swell is not steep.
- (ii) Model tests indicate that in landing at water speeds in excess of 100 knots, the tail bounces off the water with a resultant serious nose dive tendency.



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