

BOULTON PAUL BALLIOL T2 RAF- FS9

Extracts from 'PILOTS NOTES' and other material - from real-world sources with comments ref. FS9 use where applicable. * **(Not all the flight values will be achieved in FS9)** * Speeds are I.A.S. There are some minor differences in the 2-D panel as described in the '*readme installation & cockpit notes.txt*'.

FUEL SYSTEM

Fuel Tanks

1. (a) Fuel is supplied from three tanks - one central tank of 24 gall and two wing tanks each of 49 gall. These are Imperial gallons.

Fuel Cock

2. (a) The fuel select lever is situated on the central console next to the throttle lever. Markings are for 'left' 'centre' 'right' and 'off' .

(b) A fuel cut-off is down on the floor at the rear of the centre console - pull to switch off.

Fuel Gauges

3. (a) The fuel gauges are to the right of the main panel. The top gauge reads the combined contents of the wing tanks; the lower reads the contents of the central tank.

Readings are accurate when the aircraft is flying straight & level.

AIRCRAFT CONTROLS

(some of these are duplicated on the side-wall console for student use)

Flying Controls

5 (a) Split trailing edge flaps are fitted which can be opened to two positions:30 deg (take-off), and 60 deg (landing). The operating lever is on the central console below the switches.

(b) A tail wheel lock lever is next to the flaps lever. This should be locked for take-offs and landings.

(c) Airbrakes are fitted. These may be deployed as required by the lever on the central console.

(d) Undercarriage - Raised / lowered by the red/green push-buttons to the left of the indicator. A manual black/yellow emergency lowering knob is below the panel.

A red warning light will show if the aircraft is below 500 ft. above the ground, the throttle is closed and the undercarriage is not down.

Trimming

6 (a) Elevator trimming is effected by a trimming tab fitted in the trailing edges of the elevators. This is operated by a hand-wheel mounted on the central console.

(b) A trimming tab is fitted to the rudder, adjusted by a hand wheel between the seats.

(c) No aileron trimming device is fitted on this FS9 model.

Brakes

7.(a) Heel operated brakes are provided.

(b) A parking brake is operated by a lever on the control column hand grip.

ENGINE STARTING AND PRE-FLIGHT RUNNING

Starting Cold

8. (a) Apply parking brake full on. See that the switches are OFF. Turn on the petrol (check the stop-valve between the seats)
- (b) With Throttle closed, central column held back, Ignition switches OFF, the propeller should be turned over two or three compressions to 'suck-in'
- (c) With the throttle set approx. half an inch open, the starboard magneto switch should be switched ON (UP). and the starter switch thrown.
- (d) As soon as the engine is firing normally, check the oil pressure is rising – if not, switch off and consult an engineer.

Running Up

9. (a) Unless the engine is already warm, run for at least 3 minutes at 1000 to 1500 r.p.m. to warm up ensuring that the oil pressure reaches 45 lb/sq. in.
- (b) Check magnetos for dead cut at idling r.p.m by switching off one at a time.
- (c) Test each magneto separately at 1200 r.p.m. (maximum drop permitted is 150 r.p.m.)

HANDLING

Taxying

10. (a) The wheel brakes and castoring tail wheel make taxying relatively easy, using the brakes for steering on a hard smooth surface and the rudder on a soft or rough surface.
- (b) Brake and flight instruments should be checked during taxying to position for take-off.

Taking Off and Landing

11. (a) Always apply the tailwheel lock during take-off and landing.
- (b) Select the flaps Take-off position.
- (c) Set the boost to +7 to +9 lb /sq in. and select full power. The tail should be held down until a speed of 45 - 50 knots is reached.
- (d) The natural swing of the aircraft is easily counteracted by the use of the rudder.
- (e) The aircraft will unstick cleanly at about 75 knots: power can be reduced and a steady climb made whilst the flaps and undercarriage are retracted.
- (f) Some patience is needed to trim the aircraft accurately, but once achieved it is quite stable.

** Climbing and general flying*

- 12.(a) The recommended normal climbing speed is 120 knots with +7 lb./sq. in. boost and 2400 r.p.m.
- (b) The maximum rate of climb is obtained at +7 lb./sq in. and 2650 r.p.m.

13. (a) Flying for range - set the throttle to give +4 lb/sq. in boost and 2100 r.p.m.

On full tanks and at 220 knots the approx. range is 570 nm

- (b) For endurance - set r.p.m. for an airspeed of 220 knots.
- (c) Trim changes - undercarriage up - slight nose down
- flaps from up to take-off - moderate nose up
 - from up to fully down - strong nose up
- (d) – **WARNING** –Flight with both throttle and propeller pitch at 100% will risk an engine fire. Reduce settings accordingly.

Stalling

14. A fully stalled state cannot always be achieved on some aircraft thus the power-off stall speed may vary from aircraft to aircraft.

The indicated stalling speeds (knots) are as follows :-

Flaps up power off - 65 - 70

Flaps fully down, power off - 60 - 70

Power on, typical approach - 55 - 60

Flaps

15. (a) The first position of the flaps (30 deg) is the normal take-off setting.
(b) The second position of the flaps (60 deg) is the landing setting.

Aerobatics

16. The aircraft is approved for aerobatic manoeuvres. The following minimum speeds (knots) are recommended -

Roll - 160

Loop - 220

Half roll of a loop - 250

Climbing roll - 270

Normally +7 lb./sq. in boost and 2400 r.p.m. are sufficient although maximum throttle may be used for short periods.

Approach & Landing

17. (a) Recommended 'over the boundary' speeds (knots) are –
- power-assisted - flaps down - 85 - 90 , flaps up 95.
- glide - flaps down - 95 - 100, flaps up 100 - 105
(b) Touch down- flaps down - 80 , flaps up - 85

Operating Limitations

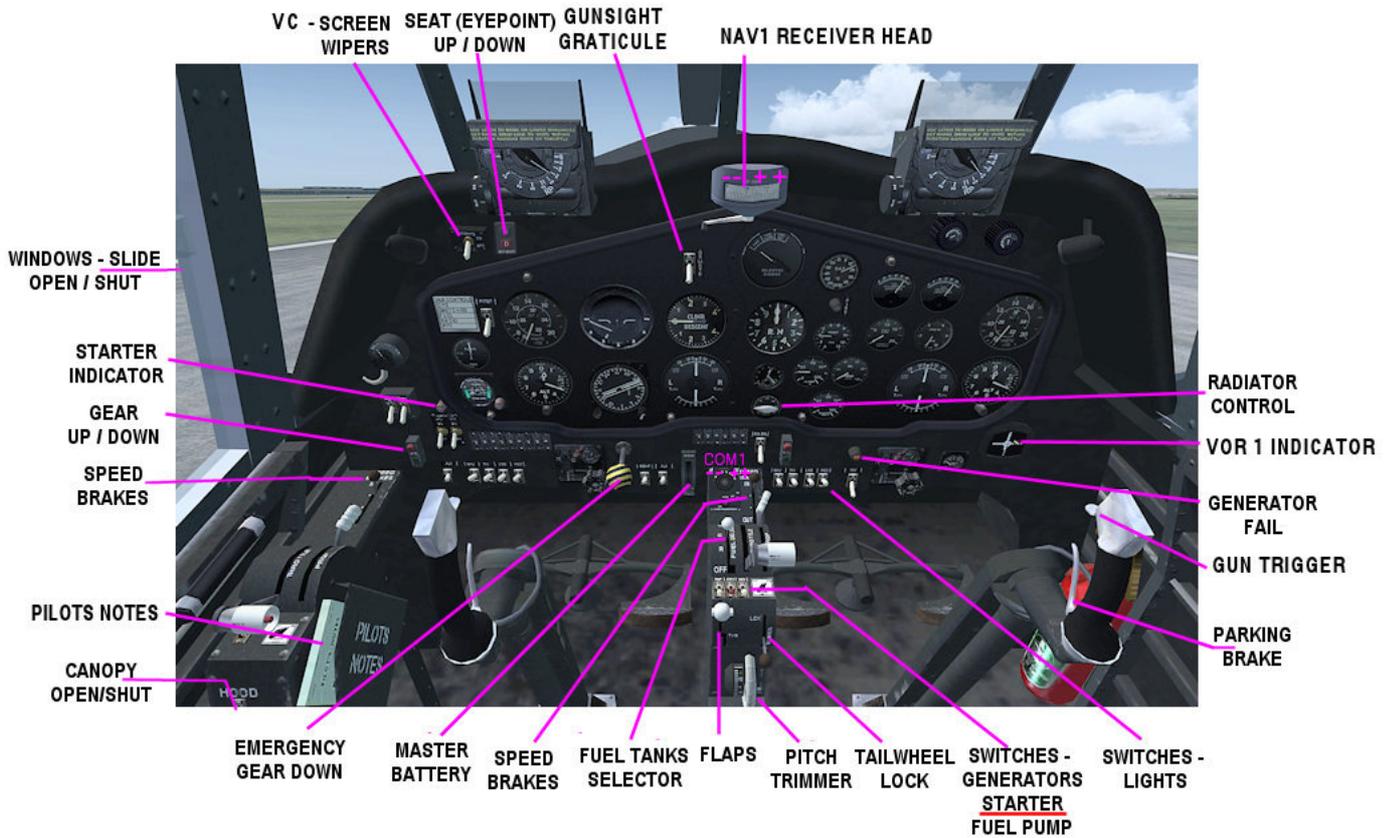
18. (a) The maximum permissible weight for take-off and landings is 8950 lb.
(b) Maximum speed (knots) 320; undercarriage down - 140, flaps down - 140.
(c) In severe turbulence the airspeed should be kept below 150 knots.
(d) The minimum oil pressure is 30 lb per sq in during flight.
(e) minimum permissible oil temperature is 15 deg. C.
(f) The maximum permissible engine rotational speed is 3000 r.p.m.
(g) The maximum continuous engine rotational speed is 2100 r.p.m.

Note - mixture control is automatic.

- (d) The natural swing of the aircraft is easily counteracted by the use of the rudder.
(e) The aircraft will unstick cleanly at about 75 knots: power can be reduced and a steady climb made whilst the flaps and undercarriage are retracted.

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MAJOR CONTROLS



Compiled by David Molyneux 2013

