Flight Replicas

SPITFIRE Mk.XVI

FOR MICROSOFT FLIGHT SIMULATOR (MSFS)

TO GET FULL ENJOYMENT OF THE AIRCRAFT IN THIS PACKAGE, PLEASE READ THIS MANUAL THOROUGHLY AND CAREFULLY.

THE MANUAL AND MODELS IN THIS PACKAGE MUST NOT BE USED FOR REAL FLIGHT TRAINING PURPOSES.

BRIEF HISTORY:

The Supermarine Spitfire Mk XVI was the same as the Mk IX in nearly all respects except for the engine, a Merlin 266. The Merlin 266 was basically the Merlin 66 but was built under licence in the USA by the Packard Motor Company. The "2" was added as a prefix in order to avoid confusion with the engines, as they required different tooling.

All Mk XVI aircraft produced were of the Low-Altitude Fighter (LF) variety. This was not determined by the length of the wings (clipped wings were fitted to most LF Spitfires), but by the engine, which had been optimised for low-altitude operation.

Almost all production Mk XVIs had clipped wings for low altitude. Many XVIs featured cut-down rear fuselages with bubble canopies. Some but not all variants had built-in extra fuel tanks in the rear fuselage.

Because of a slightly taller intercooler and rearranged accessories on the Packard Merlins a new, bulged upper cowling was introduced (which also appeared on some late production IX's).

(Wikipedia)

Simulator Notes

1. The Spitfire may **load** with switches in the wrong position and some cockpit animations not working. This is a known MSFS bug. Re-loading the aircraft will solve this.

2. The Spitfire may also load with rudder trim set to +5 degrees. This should be set to +0 before take off.

3. There were other small changes in the cockpits as time progressed. All are self-evident in the models and functionality remains essentially identical.

4. As MSFS is not a combat sim, weapons-related switches etc. are not functional.

5. Fully functional **mirrors** are not presently available. The ones on the model will reflect accurately the sky and clouds, but that is all. Ground features, other aircraft and cockpit interior will not show.

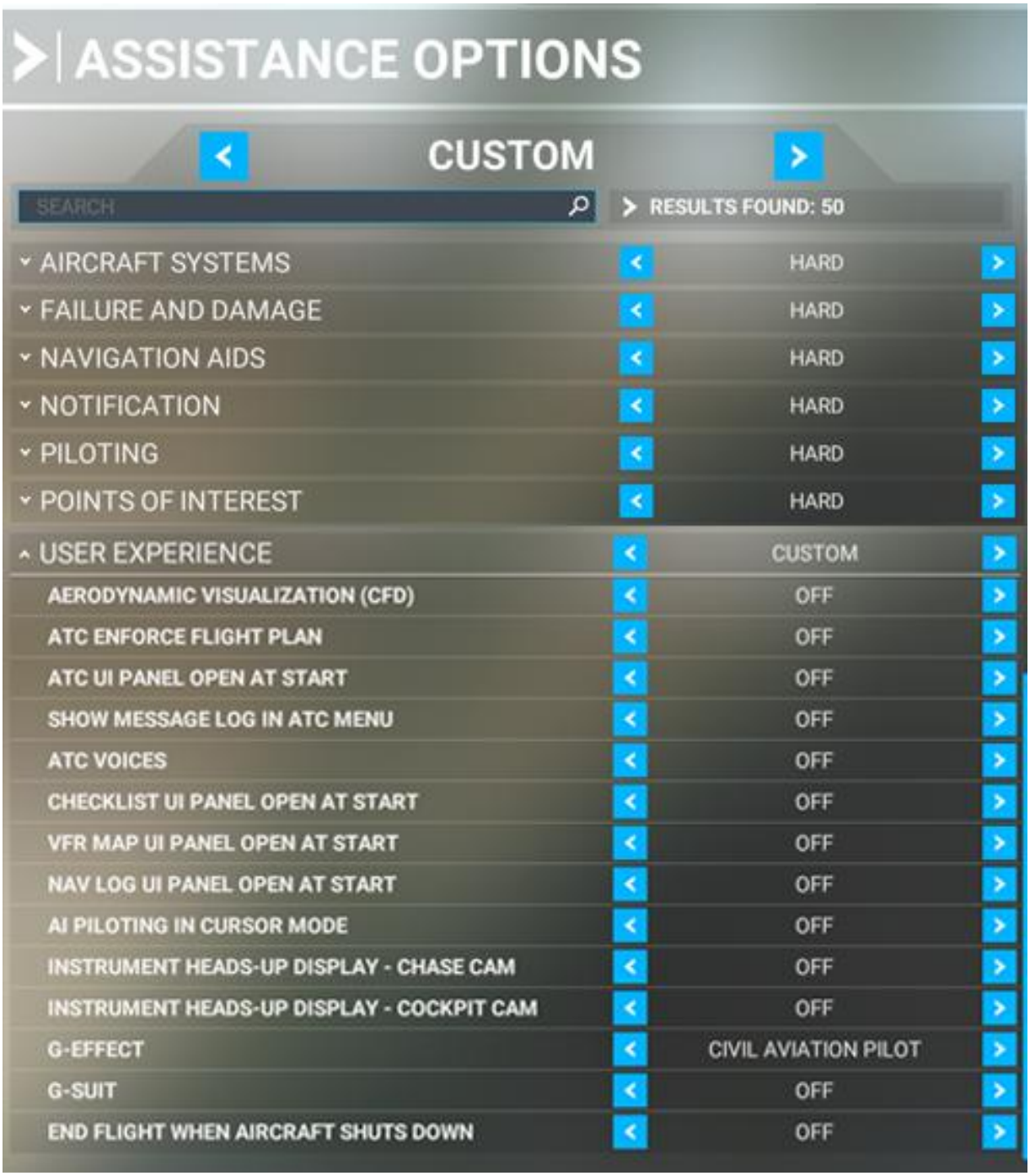
6. RADIOS **IN USE AT THE TIME AREN'T AVAILABLE (ALTHOUGH THE CONTROLS ARE LABELLED FOR INTEREST). USE THE MSFS DROP-DOWN ATC SCREEN FOR RADIO COMMUNICATIONS.**

7. Known issue: The **Alternator/Generator** switch will only move when the Master Battery switch is moved. This doesn't affect the functionality of the aircraft. We hope to have this solved in an update.

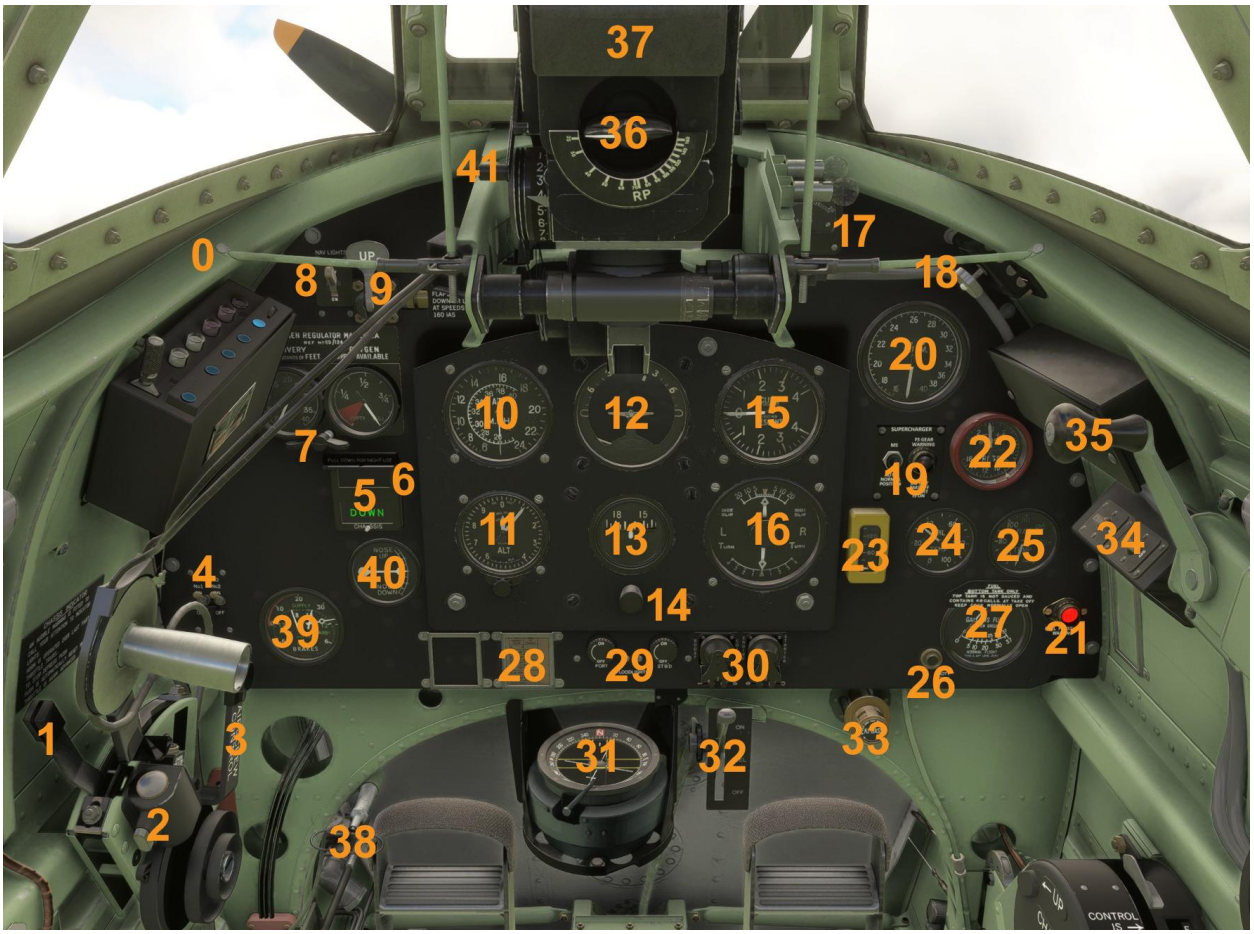
ASSISTANCE OPTIONS MENU

You can, of course, use any level of assistance in flying the Spitfire that you'd like. However, these are the recommended settings to get the most realistic performance out of the aircraft.

Using full assists will result in a limited flight dynamics profile, and slower handling. Also, some behaviour, such as take-off torque swing, will be mostly absent.



MAIN PANEL



CONTINUED NEXT PAGE

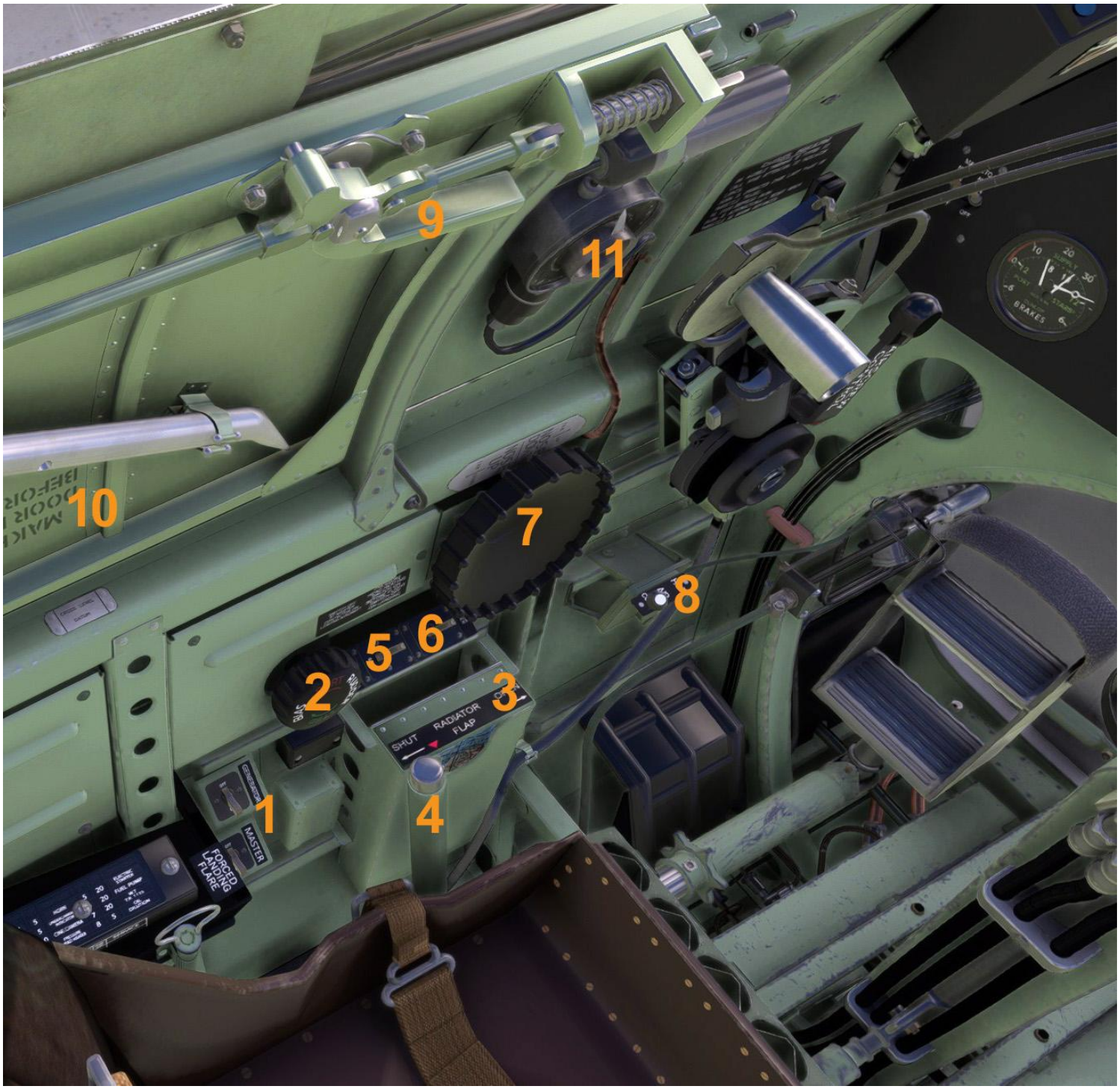
MAIN PANEL CONT'D

* = non-functional

Red = item visibility clickspot

0. Chocks on/off
1. Engine Cutoff (mixture)
2. Gear Warning Alarm off
3. Prop pitch lever
4. Magneto switches
5. Gear position indicator
6. Gear panel cover
7. Oxygen altitude
8. Navigation lights
9. Flaps up/down
10. Airspeed MPH
11. Altimeter
12. Artificial horizon
13. Gyro compass
14. Gyro compass adjuster
15. Vertical Speed (VSI)
16. Turn and slip
17. Voltmeter
18. Cockpit ventilation
19. Moderate Supercharger*
20. Propeller RPM
21. Low fuel pressure light
22. Boost
23. Oil pressure
24. Oil temperature
25. Coolant temperature
26. Fuel bottom tank needle on/off (in reality, the needle would only reveal tank contents as long as button was pressed. In the sim, for convenience the needle will remain enabled until buttons pressed again)
27. Fuel quantity bottom tank (Imperial gallons)
28. Joystick hide/reveal click spot
29. Cockpit lighting
30. Combined starter buttons
31. P8 Compass
32. Fuel tank valve
33. Priming lever
34. Gyro gunsight switches *
35. Canopy open/close
36. Gyro gunsight target wingspan*
37. Pilot visibility
38. Bomb jettison*
39. Pneumatic pressure
40. Elevator trim
41. Gyro gunsight tinted glass

COCKPIT LEFT

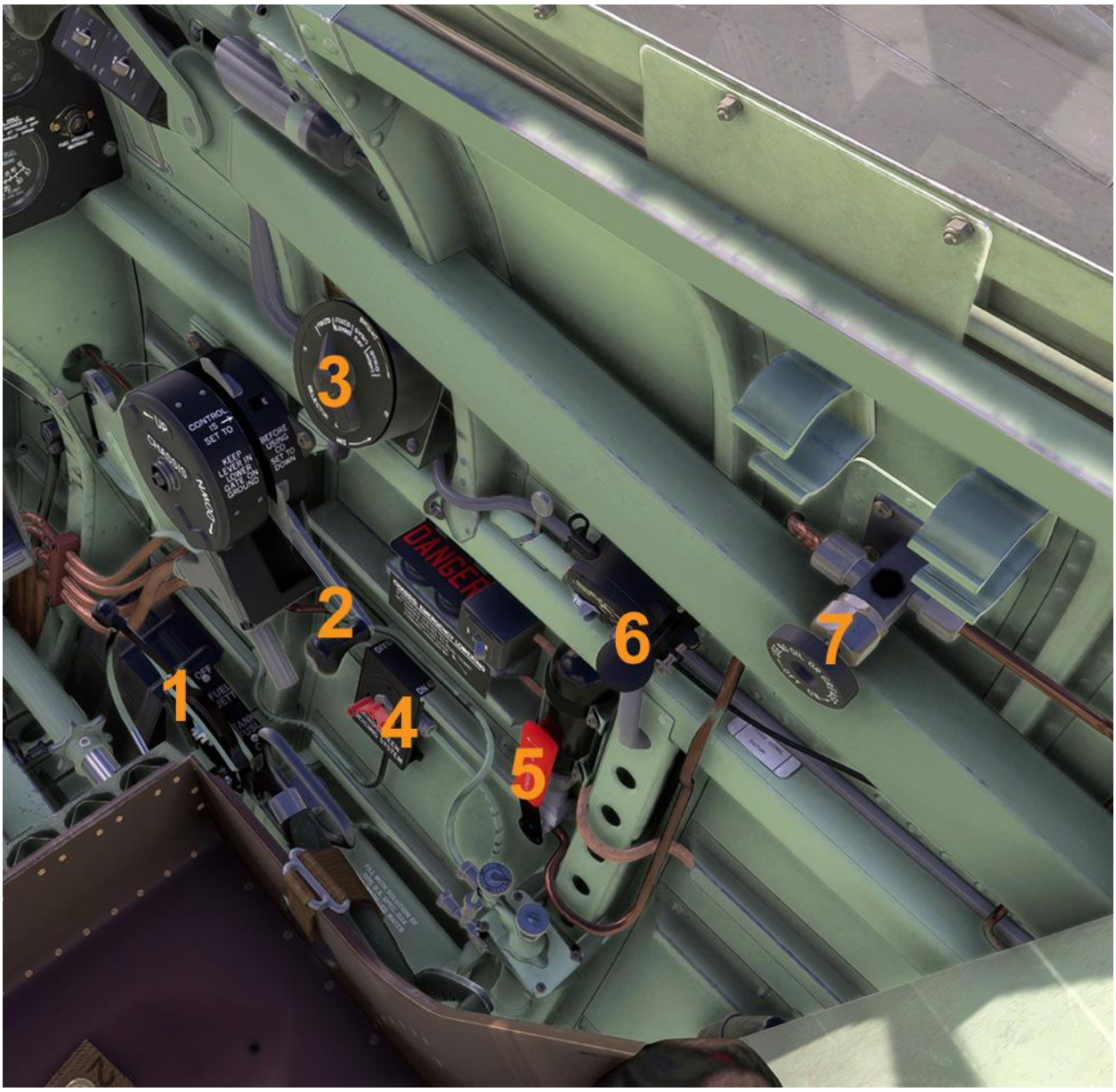


CONTINUED NEXT PAGE

COCKPIT LEFT CONT'D

1. Master and Generator switches
2. Rudder trim. Usually 0 degrees for take-off. May load at +5 degrees
3. Map case open/close
4. Radiator coolant flap lever
5. Pitot heat
6. Gun camera*
7. Elevator trim
8. Carb heat
9. When canopy is OPEN only: Door latch (clicked once, door will open to first position. Clicked again, door will fully open)
10. When canopy is OPEN only: To close door: click door itself. First click will bring up door to first position. Click again to close fully. Canopy can then be opened or closed as needed.
11. Gun camera counter*

COCKPIT RIGHT



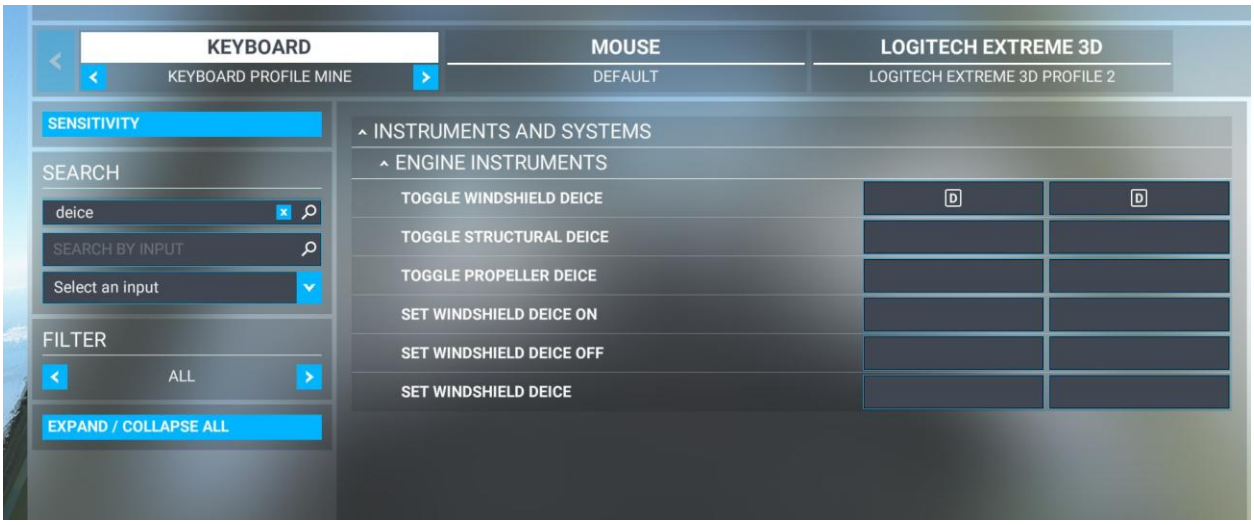
CONTINUED NEXT PAGE

COCKPIT RIGHT CONT'D

1. Auxiliary fuel tank jettison *
2. Gear up/down lever
3. Gyro gunsight mode *
4. Deice system
5. Emergency gear lowering *
6. Ident lights
7. Oxygen

WINDSCREEN DE-ICING

As MSFS may coat the canopy with ice when the weather is still flyable, the canopy can be made to de-ice quickly using the settings below.



FLYING THE SPITFIRE Mk.XVI

Spitfires were well known for excellent handling and controllability, and being an exceptionally nice aircraft to fly. Nonetheless, care needs to be taken, especially when taking-off or landing in a crosswind.

In flight, some may note that the elevator is more sensitive than in other aircraft.

This variant in this package does not have the aft fuselage fuel tank.

NOTE: Flight model settings in MSFS must be set to “Modern”.

Pilot's Notes

A. **PRELIMINARIES**

1. Master/battery switch: ON
2. Magneto switches: OFF
3. Undercarriage selector: DOWN
4. Check undercarriage light is GREEN
5. Flaps: UP
6. Landing lamps: UP
7. Lower fuel tank quantity

B. **STARTING ENGINE and WARMING UP**

1. Brakes: ON
2. Fuel valve levers: ON
3. Mixture (Fuel Cutoff) cutoff control: Fully forward
4. Magneto switches: ON (both)
5. Open starter buttons cover; press starter buttons until engine fires

Prime the engine, the number of strokes required being as follows:

Air temperature °C.:	+30	+20	+10	0	-10	-20
Normal fuel:	3	4	7	13		
High volatility fuel:				4	8	15

C. **TESTING ENGINE AND INSTALLATIONS**

1. While warming up, exercise the airscrew speed control (prop pitch lever) a few times. Also make the usual checks of temperatures, pressures and controls. Brake pressure should be at least 120 lb/sq.in
2. See that the cockpit canopy is open and that the door is set at the first open position.
3. Prop pitch lever: FULLY FORWARD
4. Magneto check: At maximum boost for cruise speeds, check each magneto in turn. Drop in RPM should not exceed 150.
5. Warming up must not be unduly prolonged because the radiator coolant temperature before taxiing must not exceed 100 degrees C.

D. **PREPARATION FOR TAKEOFF**

1. Drill to memorize is “T.M.P., Fuel, Flaps, and Radiator”
    a. Trim - Elevator about one division nose down from neutral. Rudder trim fully to starboard (+10 degrees)
    b. Mixture – RICH (fully forward)
    c. Pitch – Prop lever fully forward

d. Fuel – Both valve levers ON and check contents of lower tank

e. Flaps – UP

f. Radiator shutter – Fully open

E. **TAKEOFF**

1. Under normal loads, +7 to +9 Boost is sufficient. Increase to 12+ after becoming airborne. Aircraft should be airborne by 110 MPH IAS.

2. After takeoff, raise undercarriage, and check that the red indicator light – UP – comes on.

3. Do not start to climb before a speed of 140 MPH IAS is attained

F. **CLIMB**

1. Normal: 178 MPH IAS, 2850 RPM, keep Boost at 12+
2. Max rate: 160 MPH IAS, 2850 RPM, keep Boost at 12+
3. Max range: 170 Knots MPH IAS, 2650 RPM, keep Boost at 7+

G. **CRUISE**

1. The speed for maximum range at normal loads is 170 MPH IAS
2. Normal cruise speed is 236 MPH IAS.

I. Aerobatics

a. Roll: 230 – 255 MPH IAS

b. Loop: 300 – 322 MPH IAS

c. Half roll off loop: 322 – 345 MPH IAS

d. Upward roll: 345 MPH IAS or faster

J. APPROACH AND LANDING

1. See that the canopy is fully open, and that the emergency exit door is at the first position (slightly open)

2. Reduce speed to 140 MPH IAS and carry out the Drill of Vital Actions, which must be memorized: “U.M.P. and flaps”

    a. Undercarriage – DOWN (watch for green indicator)

    b. Mixture – RICH

    c. Pitch – Propeller lever fully forward

    d. Flaps - DOWN

3. Correct speeds for the approach (at max. landing weight):

    Initial approach:

    a. Power on (engine assisted): approximately 127 MPH IAS

b. Power off (glide): approximately 138 MPH IAS

At airfield boundary:

c. Power on (engine assisted): approximately 104 MPH IAS

d. Power off (glide): approximately 115 MPH IAS

e. Cross wind limit: maximum 20 MPH

J. **PARKING AND SHUTTING DOWN**

1. After stopping in parking spot, set brakes by pulling brake lever.

2. Allow the engine to idle for a few seconds, then shut down by turning off Fuel Valve (up) and switching off Magnetos.

3. Mixture lever (fuel cutoff) fully back.

4. Turn Alternator and Master switches to OFF.

A big “Thank you!" to everyone that helped with this aircraft for MSFS - especially to James Foster and Steve Mercer (beta team), plus Ron (DA40CGDFQ) and Bill (lionheart) over at the FS Think Tank discord forum.

Support:

support@flight-replicas.com

Flight Replicas