



DH.94 Moth Minor

For Microsoft Flight Simulator (MSFS 2020) and MSFS2024



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.

HISTORY:

The de Havilland DH.94 Moth Minor was a 1930s British two-seat tourer/trainer aircraft of wooden construction. A useful feature consisted of folding wings, which allowed owners to hangar the aircraft in much smaller spaces.

The Moth Minor was designed as a low-wing monoplane to replace the by-then outdated biplane Moth series. The prototype of the DH.94 was first flown by Geoffrey de Havilland on 22 June 1937.

The Moth Minor was a very successful design, and popular with flying clubs keen to acquire modern monoplanes. Further aircraft were specially built with enclosed hinged tops for greater comfort, instead of the normally open cockpit, and were known as Coupe versions.

Manufacturing had started and nearly 100 examples had been built by 1939, when production was unfortunately interrupted by the outbreak of the Second World War. The factory at Hatfield, UK, was needed for the war effort, and so the drawings, jigs, components and unfinished aircraft were shipped to the de Havilland factory at Bankstown, Sydney, Australia. More than 40 aircraft were produced in Australia.

Civil aircraft operating in the United Kingdom were taken for use by the Royal Air Force and Fleet Air Arm, and one example was used by the United States Army Air Corps in the Middle East. A large number of civil aircraft from the UK were sent to Australia, where they and a handful of locally built Australian civil aircraft were commandeered by the Royal Australian Air Force for use in training.

After the Second World War several Moth Minors continued to be flown by private owners in the United Kingdom, and today there are several known to be airworthy in the UK and Australia.

CONTROLS

DH.94 Moth Minors did not come equipped with a starter, and were 'hand-propped' to start. Use Ctrl-E to start the engine once all else is correctly set. The aircraft in this package essentially represent "restored" modern versions, and so they come equipped with electrics and avionics switches in order to use the modern radio, transponder and 2-axis autopilot.



- | | |
|---|---|
| 1. RPM | 11. Flap lever |
| 2. Altitude | 12. Fuel valves (left handle operates both tank valves) |
| 3. Airspeed | 13. Mixture lever |
| 4. Turn and slip | 14. Throttle lever |
| 5. Clock | 15. Trim lever |
| 6. Oil Pressure | 16. Parking brake |
| 7. Magnetos (DH94 had only 1 mag) | 17. Compass |
| 8. Inclinometer | 18. Click spot to remove control stick |
| 9. Knob to open Radio Compartment | 19. Click spot for chocks |
| 10. Autopilot (see Autopilot section below for use) | |

RADIOS

Radio and transponder are default MSFS. They are hidden behind a panel to keep the appearance of the cockpit as authentic as possible.



1. Radio
2. Alternator button
3. Avionics switch
4. Battery switch
5. Transponder
6. Click spot to close door

Autopilot

The DH.94 models in MSFS come equipped with a simple 2-axis autopilot, as is available for most real-world modern aircraft.

When you are at your desired altitude and heading, simply press the “ALT HOLD” and “HDG HOLD” buttons. Keep the Moth steady, and don’t be surprised if the AP takes a few seconds to acquire the inputs. For example, it may climb gently before settling on the altitude.



1. Display: On startup, will read “PFT” as the unit warms up.
2. Once up, the display will read “ALT” ”OFF” ”HDG”.
3. “OFF” indicates that the AP is not feeding input into the controls. It will also read “OFF” when you turn off the AP manually via the “AP” button.
4. When “ALT” and “HDG” are selected via the “ALT HOLD” and “HDG HOLD” buttons, the display will indicate that these systems are now on and controlling these outputs to the aircraft.
5. Heading can be automatically adjusted and fine-tuned via the compass. See below.

Compass and AP Heading Selector

To use the P8 compass as a normal compass, select your desired heading via the compass ring digits, lining the desired course up with the heading indicator marker. Then turn the aircraft until the section of the white cross that has the small additional part is lined up with North (“N”).

With the AP “HDG HOLD” on, turn the ring to your desired heading, and the aircraft will automatically turn to that heading.

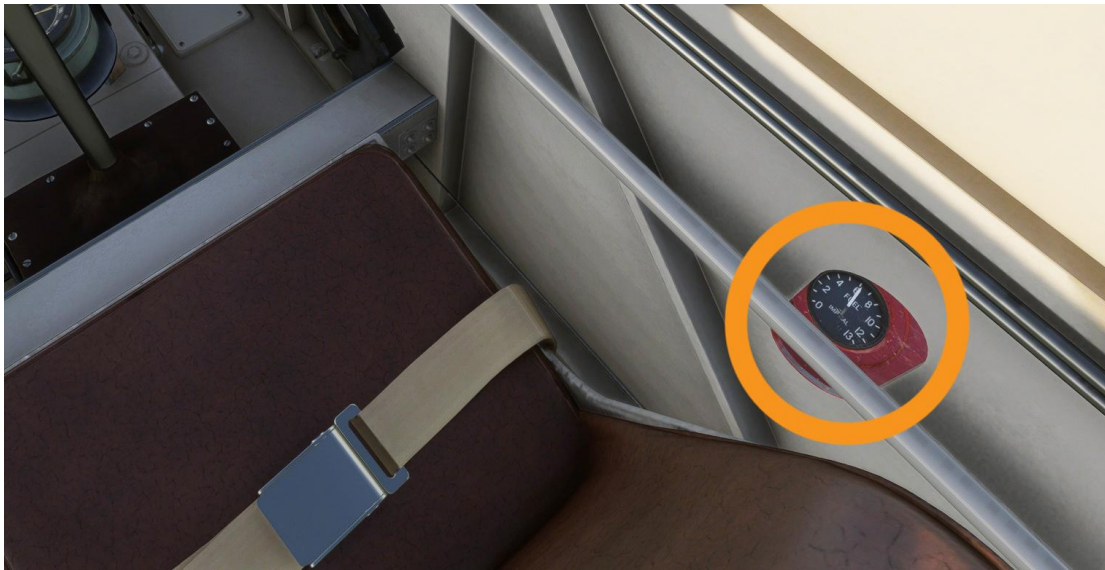


1. Use what is normally the locking pin to drag the compass ring to the desired heading.
2. Heading indicator marker.

Fuel Gauges

Fuel gauges are difficult to see in the simulator, as they are situated outside the cockpit, on the wing roots. The fuel valve handles are also awkwardly placed for sim operation. As such, the sim fuel has been unified into one single tank, for ease of operation. 26 Imperial Gallons total.

In the Coupe version, the right-hand tank gauge is easily visible through a small window, to the right of the forward seat. Open cockpit, you will have to look over the sides.



CLICK SPOTS

Click spots are fairly self-explanatory. “MOVE TO FRONT/REAR SEAT” is to enable you to move rapidly between the seats, at anytime. “WING FOLD” will work only when you are on the ground and not moving.

Front cockpit:



Rear cockpit:



FLYING THE MOTH MINOR

The Moth has minimal instrumentation, and therefore requires a high level of "feel" and thorough knowledge of hands-on piloting.

There is no carburetor heat, as the design of the Gipsy Minor engine did not normally require this (although beware in MSFS). There is no pitot heat. As such, the pilot will have to pay special attention to weather, and the aircraft's environment and attitude, by observing not just the instruments but looking outside of the cockpit as well.

Special Note: At all times when flying, the controlling factor must be the speed of the engine (RPM).

A. BEFORE STARTING ENGINE

1. Check fuel quantity..
2. Check freedom of movement of flight and engine controls.
3. Check that the canopy is fully closed (Coupe version).

B. STARTING ENGINE

1. Set chocks.
2. Set parking brake to ON
3. Set throttle approximately 1/10 open.
4. Push fuel shut-off lever to ON.
5. Ensure magneto switch ON.
6. Battery switch to ON
7. Alternator switch to ON
8. Start engine by using Ctrl-E.
9. Avionics switch to ON

C. ENGINE WARM-UP

1. After engine starts, warm up engine for 4 minutes at approx. 800 R.P.M. If oil pressure gauge does not indicate pressure within 30 seconds, stop engine immediately, check and correct trouble before any further operation.
2. Then for not more than 10 seconds run full throttle to test full RPM. Oil pressure should not fall below 35 PSI. 40-45 PSI is normal range.
3. Magneto test: Rev engine up to 2100 R.P.M. on both magnetos. Switch to LEFT and RIGHT magnetos. R.P.M. drop should not be over 75 R.P.M.

CAUTION—Do not operate engine on either single magneto for more than 30 seconds at a time, as this tends to foul the non-operating spark plugs in the ignition circuit of the magneto that is switched off.

D. TAXIING

1. Remove chocks.
2. Parking brake to OFF
3. Open throttle to start airplane in motion; then close throttle to a setting sufficient to keep 'airplane rolling.
4. Taxi slowly (speed of a fast walk) controlling direction with rudder. There is no steerable tail wheel, so remain vigilant in a crosswind.
5. Taxi upwind with stick back, downwind with stick forward. When ground winds are in excess of 15 M.P.H., turn into wind using ailerons in direction of turn; apply ailerons away from the turn when turning down wind. This procedure helps to prevent the wind "picking up" a wing during windy, gusty conditions. Always make ground turns slowly.

E. GENERAL FLYING

1. For takeoff use full throttle, headed into wind. Airplane at max take-off weight will become air-borne at approximately 45 M.P.H. Tail will rise before then, but hold on ground until then. Do not fly at full throttle over 3 minutes
2. Best climb speed is at an indicated 65M.P.H., but check placard for your particular aircraft.
3. Indicated R.P.M. for cruising speed of 100-105 M.P.H. is 2250 RPM depending on conditions.
4. At all times when flying, the controlling factor must be the speed of the engine (RPM).
5. If engine runs "rough" and tachometer shows drop in R.P.M., this may be due to ice forming in carburetor
6. Maximum permissible diving RPM is 2600 RPM.

7. Propellers may have very slight and unavoidable differences due to manufacture or climatic conditions which can cause the RPM to vary above or below standard.

F. APPROACH AND LANDING

1. Glide between 60-70 M.P.H. depending upon loading of airplane and gust conditions.
2. Flap may be used as required, below 80 M.P.H. only
3. "Clear" engine by opening throttle gently, every 200-250 feet of descent during a long glide so that engine temperature will be maintained. Throttle action on the part of the pilot should be smooth and gentle at all times.
4. The aircraft will have a tendency to float in ground effect before touching down.

G. PARKING AND SHUTTING DOWN

1. After stopping, idle engine, especially in high temperature operating conditions, for several minutes
2. Mixture to OFF.
3. Turn magneto and fuel OFF.
4. Turn Alternator, Avionics and Master switches to OFF.
5. Install chocks
6. Fold wings as required.

For Safe Flying:

DO NOT BECOME AIRBORNE WITHOUT CHECKING THE FUEL SUPPLY: It only takes a few minutes to fuel up. It may save you a forced landing.

DO NOT TAXI WITH CARELESSNESS: Taxi slowly and make turns to clear the area in front of the nose. Know the proper use of the controls for taxiing in a strong wind.

OBEY AIR TRAFFIC RULES: Keep a constant lookout for other aircraft. Follow the rules so that pilots of other planes will know what you are going to do.

DO NOT MAKE FLAT TURNS: This is particularly important when making power-off turns. The Moth Minor will require rudder.

MAINTAIN SPEED: Don't be fooled by the increase in ground speed resulting from a down wind turn. Keep sufficient airspeed.

DO NOT LET YOUR CONFIDENCE EXCEED YOUR ABILITY: Don't attempt instrument flying in adverse weather conditions unless you have the proper training and the necessary instruments. Instrument flying is a highly developed science. Don't pioneer.

DO NOT PERFORM AEROBATICS AT LOW ALTITUDES: Aerobatics started near the ground may be completed six feet under the ground. There's safety in altitude.

DO NOT ALLOW INDECISION IN YOUR JUDGMENT: Be certain! You can't afford to make errors of judgment. "I think I can make it" is on the list of famous last words.

THE GOOD PILOT IS THE SAFE PILOT: It's better to be an old pilot than a bold pilot.

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