P6M-2 Seamaster

for MSFS

USER MANUAL

Virtavia P6M-2 Seamaster MSFS
Manual Version 1

Introduction

To meet a 1953 post-war US Navy requirement for a high-performance multi-role flying-boat, the Glenn L Martin Company offered its very advanced Model 275 design. This had an all-metal hull of high length/beam ratio, mounting a cantilever high-set sharply-swept wing incorporating so much anhedral that, unlike other seaplanes of the era such as the company's own SP-5B Marlin, the stabilising floats at the wingtips could be attached permanently. The all-moving tail unit was of T-configuration with highly swept surfaces. Above the wing, to minimise water spray ingestion, were mounted four Allison turbojet engines, and pressurised accommodation was provided for a crew of four. The first XP6M-1 prototype was flown on 14 July 1955, the second following on 18 May 1956, and Martin received orders for six pre-production YP6M-1 boats powered by Allison J71-A4 afterburning turbojets, each developing a maximum 13,000 lbs of thrust. Successful flight testing led to an order for 24 production P6M-2 aircraft named Seamaster, which differed primarily by having 17,000lbs of thrust from the newer non-afterburning Pratt & Whitney J75-P-2 turbojet engines. However, the contract was cancelled on 21 August 1959 after only three had been built and these, together with the YP6M-1s, were scrapped at a later date. They were the fastest flying-boats ever built.

(NOTE: image shows *fictional* 'in-service' livery c. early 1960's)

Some interesting facts about the P6M :

The cockpit glazing was modified on the P6M-2 models to give a much better overhead and side view.

Ejection seats were fitted to the second and subsequent aircraft. These proved useful when the second Seamaster pitched up, went into a loop and disintegrated. The crew of four was able to survive this accident.

The intakes were mounted above the wing to keep them clear of the water spray. Powered 'spray strips' on the nose also assisted in water management.

A mobile beaching cradle allowed the Seamaster to taxi in and out of the water under its own power.

The P6M used a rotary bomb bay (as used on Martin's licence-built Canberras and the XB-51). This permitted weapons release at high speeds without the drag of conventional bomb doors. The bay could also be loaded from above through a dorsal hatch.

The original straight orientation of the engine exhausts caused heat stress on the rear fuselage which resulted in structural damage. The angle of the engine nacelles was later adjusted so the exhausts pointed away from the fuselage.

The Seamaster was presented as a high-speed minelayer but was covertly designed to accomodate a free-fall nuclear weapon.

The P6M was the final aircraft constructed by the Glenn L. Martin Company.

Support

Should you experience difficulties or require extra information about the Virtavia Seamaster, please e-mail technical support on
tech.support@virtavia.com

Copyright Information

Quick Start

Starting from cold – Assuming the aircraft was left in the fully shut down state and all switches and levers are in their usual OFF position, then follow the quickstart procedure below or alternatively follow the more detailed in-game checklist, which is reproduced at the end of this manual. It assumed the Seamaster is parked on land.

Set the 2 Fuel Valve knobs to ON (overhead panel, co-pilot side). There is one fuel valve for the inner engines, the other is for the outer engines.

Set Master Battery switch to ON.

Press and hold the Engine 1 Starter Switch.

When the Starter sound stops playing (about 20% RPM), the Starter Switch can be released. The engine will now gradually pick up speed to idle, around 50% RPM. This will take a few seconds, so throttle input will not be available until the engine is idling properly.

Repeat above for the remaining engines.

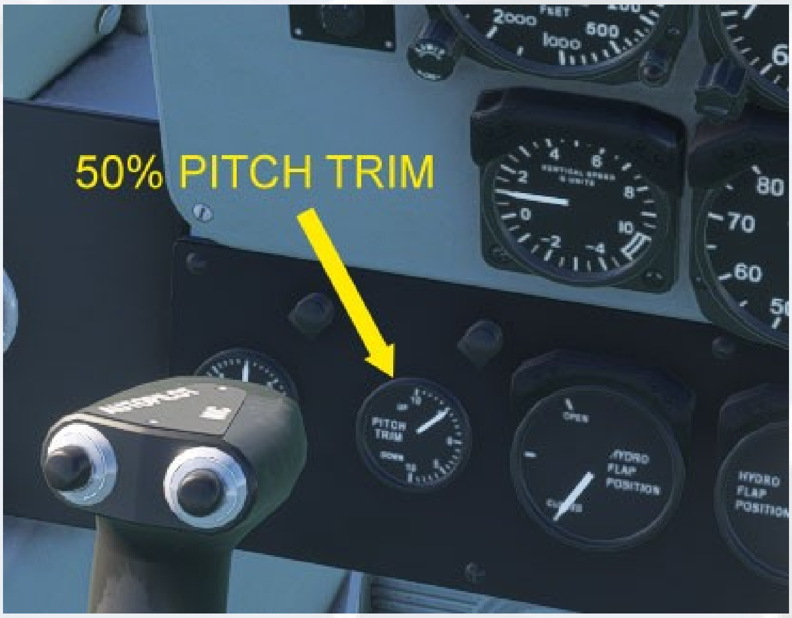
Getting in the water

Release Parking Brake and taxy to water (river, lake or ocean).

Accelerate a little to get out into the water. Press G or controller button to 'raise landing gear'. This will toggle the yellow Beaching Cradle off and the aircraft will drop into the water.

It is advisable to set the wind to around 4-5 kts (see image below). This not only looks better with the more agitated surface, it also gives some water motion to the aircraft and the waves provide a better visual indication of altitude when landing.

Take-Off - set Flaps to FULLY DOWN. This is important, the P6M will not get airborne unless the flaps are down. Set nose-up trim to 50% (joystick button or pitch trim handwheel left side of center console). The pilot's trim indicator is to the left side of the pilot's lower panel.



Advance throttles up to full power. On acceleration, some bouncing is to be expected, especially if wind speed as been set above 5 kts. It is not necessary to apply much pitch on the controls, the aircraft will eventually lift off the water at 120-150 knots, depending on weight. Excessive pitch input at take-off will cause a sudden upwards pitch once the hull 'unsticks' from the water surface, so it is best to allow things to progress automatically.

Maintain full flaps to 200 knots, then retract in intervals. The aircraft will accelerate quickly if full throttle is maintained, so be ready to adjust power if necessary. At 250 kts start the climbout, if required. Alternatively, throttle back and level off. Once climb rate and speed are stable, it is safe to turn on the Autopilot functions.

Approach & Landing –

Approach : Use the speedbrakes to reduce airspeed to 250 kts. Descend to 500 feet. Line up with the desired landing area.

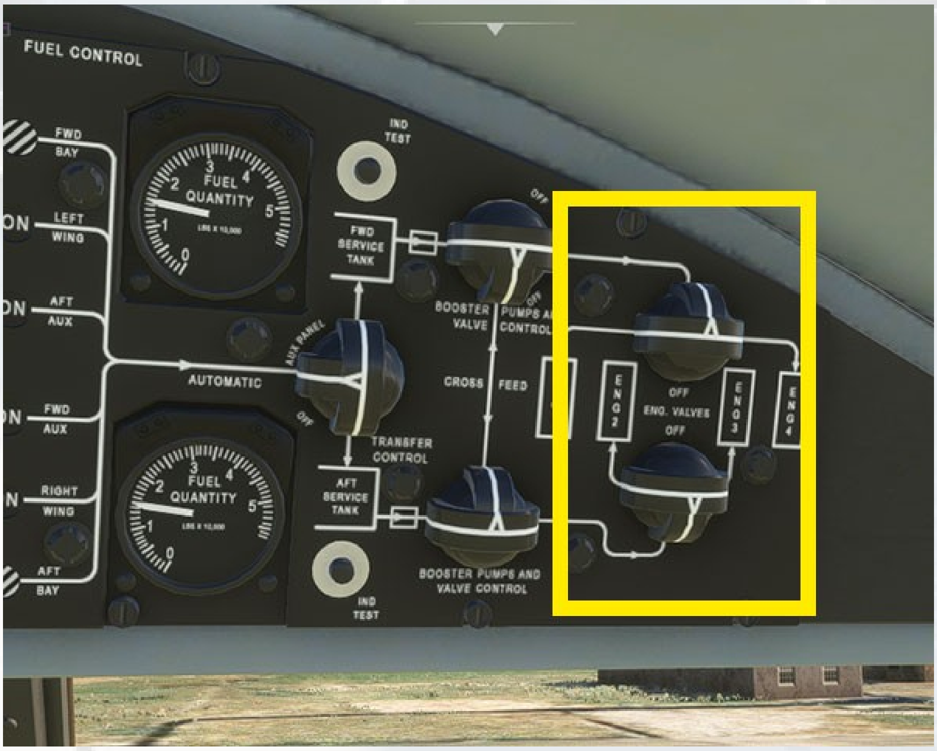
Final : At 200 kts, 250 feet, set flaps to position 1. Add plenty of pitch trim as the aircraft will become nose-heavy as you continue to lose speed.

Landing : At 150 kts set flaps to position 2, descend to 150 feet. Slow to 100 knots and lower flaps to fully down. Descend to 50 feet and at this point, speed can be bled off using a little pitch input. Aim to contact the water at 80-90 knots.

Getting out of the water

Water taxy directly at the shoreline at about 50 knots. Bring back the Beaching Cradle by extending 'landing gear' in the usual way. An upwards jump may be experienced, this is normal and is caused by the way MSFS handles ground tiles. The aircraft may slow once it mounts the shore, add full power to get off the beach to a suitable flat land area, then taxy as normal to the desired location.

Shut down



Shut down the engines by turning off the fuel using the two Fuel Valve knobs on the copilot's upper panel.

Speed Limitations

- Full Down Flaps: 110 knots
- 30 deg. Flaps Down: 150 kts
- 15 deg. Flaps Down: 225 kts
- Maximum indicated speed (diving): 600 kts
- Stall Speed, full flaps, max. weight : 130 kts
- Stall Speed, clean, max. weight : 140 kts
- Stall Speed, full flaps, low/min. weight : 90 kts
- Stall Speed, clean, low/min. weight : 110 kts
- Max. Speed 40,000 ft : 260 kts - Mach 0.84
- Max. Speed 20,000 ft : 415 kts - Mach 0.88
- Max. Speed 10,000 ft : 475 kts - Mach 0.87
- Max. Speed Sea Level : 555 kts - Mach 0.84

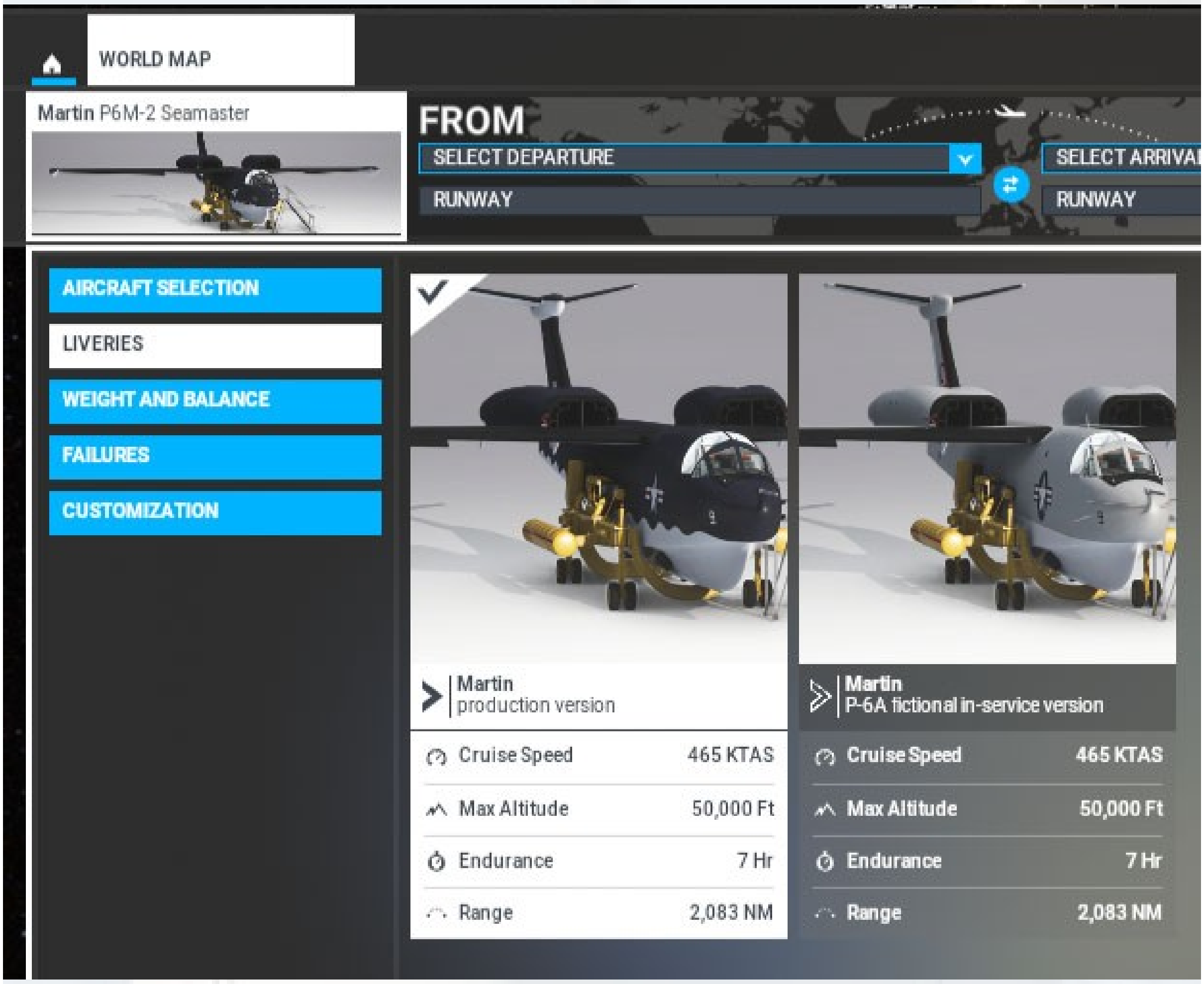
Maximum Recommended Gross Weights

- Design Gross Weight: 160,000 lbs

Exterior Model

About this model

The Virtavia P6M-2 Seamaster package for MSFS provides one model with two liveries; the authentic blue-over-white and a fictional gray-over-white scheme typical of the early 1960's US Navy aircraft such as the A-3B Skywarrior, AJ-2B Savage, A-5 Vigilante and others. The unit is VAH-1, a Navy bomber squadron which operated the A-3B and A-5 during the period when the P6M-2 (P-6A ?) could have been active.



Animations

The Seamaster exterior model has all the usual animations such as spoilerons, elevators, speed brakes (hydroflaps) and landing flaps. Additional animations and features on the exterior model are:

Crew Visibility Toggle

Flicking a cockpit switch will toggle the pilot figures.

Entry Door and Steps

The crew entry door opens automatically when the engines are all shut down. The steps appear only if the aircraft is on solid ground.

Mine Bay

The Mine Bay can be operated at any time using the Tail Hook function of MSFS (ctrl-h or use the designated cockpit switch on the pilot's side panel).

Spray Strips

The Spray Strips are short strake-like components mounted on each side of the nose. They are normally almost level when not in use. A switch on the pilot's side panel rotates them down diagonally, their purpose being to deflect water spray from the engine inlets on take-off and landing.

Cockpit

Main Instrument Panel

The panel is mostly self-explanatory There are also some custom features which are outlined below :

Radio Magnetic Compass

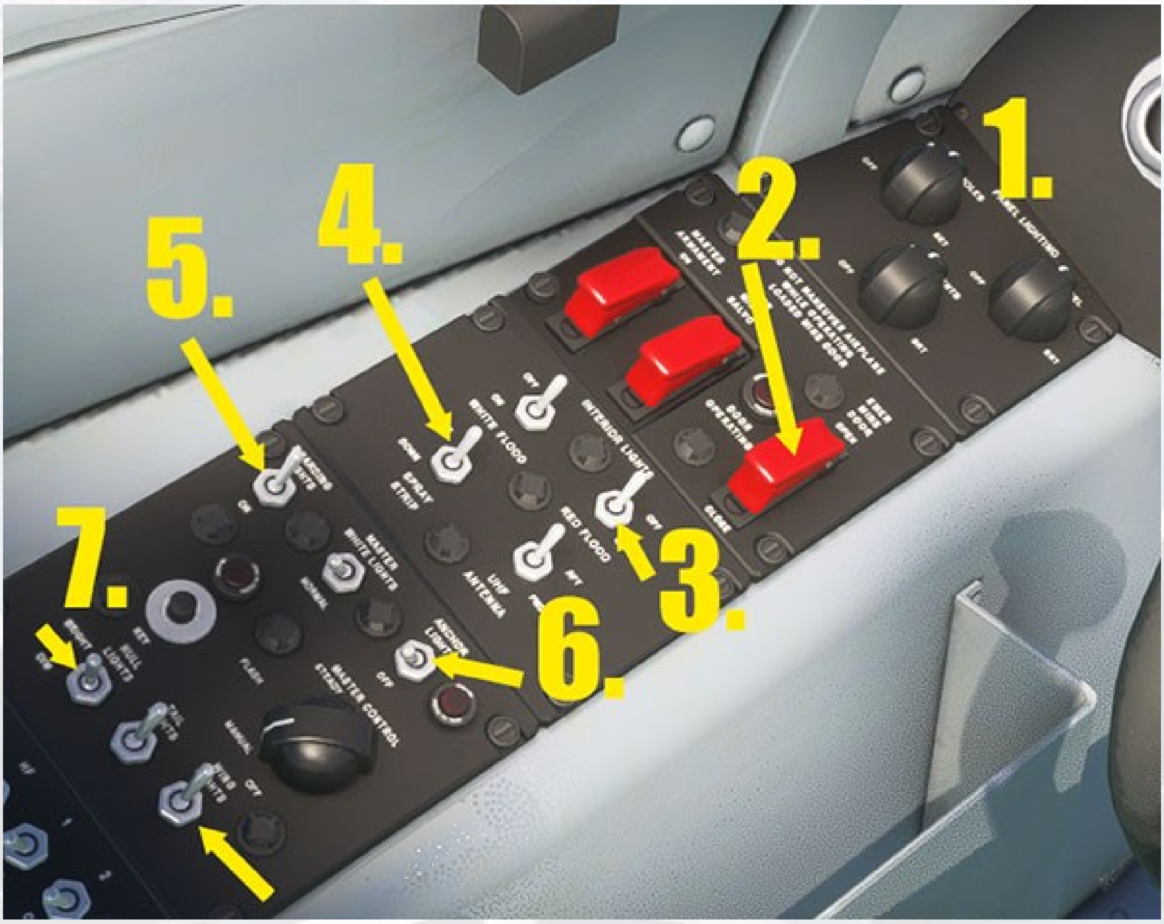
The compass (RMI) used in the Seamaster is typical for this era. The background numbered disc always points to the cardinal direction the aircraft is heading. The thin white needle indicates the relative direction of the currently tuned NAV1 station (use the MSFS moving map screen to find the station frequencies). The larger white needle indicates the currently tuned ADF station. The small knob to the lower left is used to set the small yellow triangular marker on the periphery of the dial, this is the autopilot heading (HDG) indicator. This is not an authentic part, it was added for the convenience of the user.

<u>Autopilot Switches</u>

This area of the lower panel has been used house a pair of toggle switches used to activate Altitude Hold (ALT) and Heading Hold (HDG) for the convenience of the user.

The autopilot heading can be set using the small knob below the radio magnetic indicator (RMI) on the pilot's main panel. There is no way to pre-set the autopilot altitude, the system will simply 'grab' the current altitude when the switch is operated. It is advisable to have the aircraft trimmed to approximate level flight before engaging the altitude hold function.

Left Side of Cockpit



1. **Lighting Rheostats**. The lighting level for the main panel and left and right panels can be independently adjusted by rotating these knobs. They are all pre-set to 50% intensity.

2. **Mine Bay Control**. The Mine Bay can be rotated using the ctrl-h key press or by using this guarded switch. The nearby lamp will illuminate when the Mine Bay is open.

3. **Interior Lighting Switches**. The left switch toggles the white cabin floodlight. The right switch toggles the red flood lighting on the main, overhead and side panels, as well as the text on these panels and the center console.

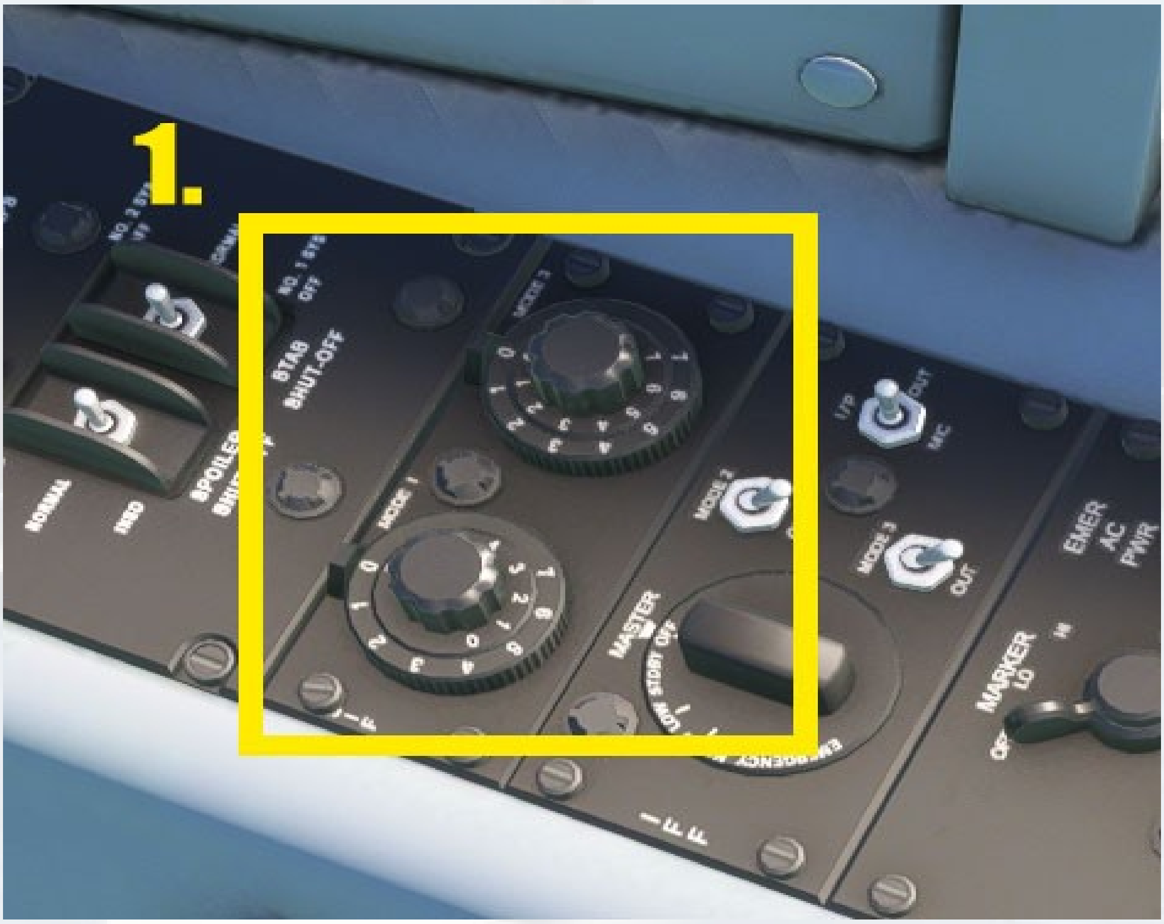
4. **Spray Strips Switch**. Toggles the rotation of the water spray shield strips each side of the nose.

5. **Boarding Light Switch**. Toggles the illumination at the crew entry hatch area.

6. **Anchor Lights Switch**. The Anchor Lights are small white lamps mounted on each end of the wingtip floats. These are used for safety at night when the aircraft is moored on the water.

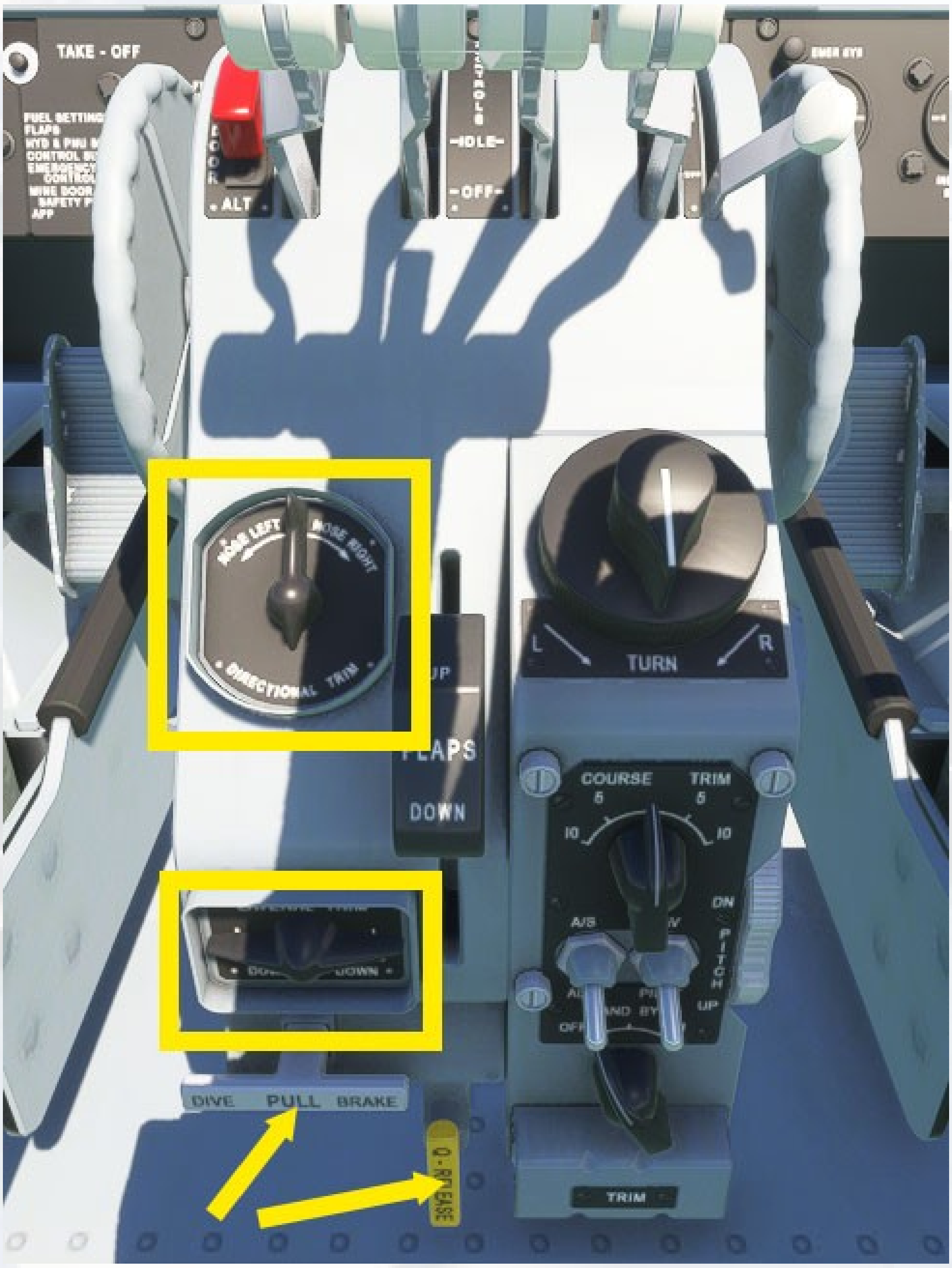
7. **Hull and Navigation Lights Switches**. The Hull Lights are the two retractable underwing lamps which can be used as landing and taxi lamps. The Navigation Lights are mounted on the outside of the wingtip floats.

<u>Right Side of Cockpit</u>



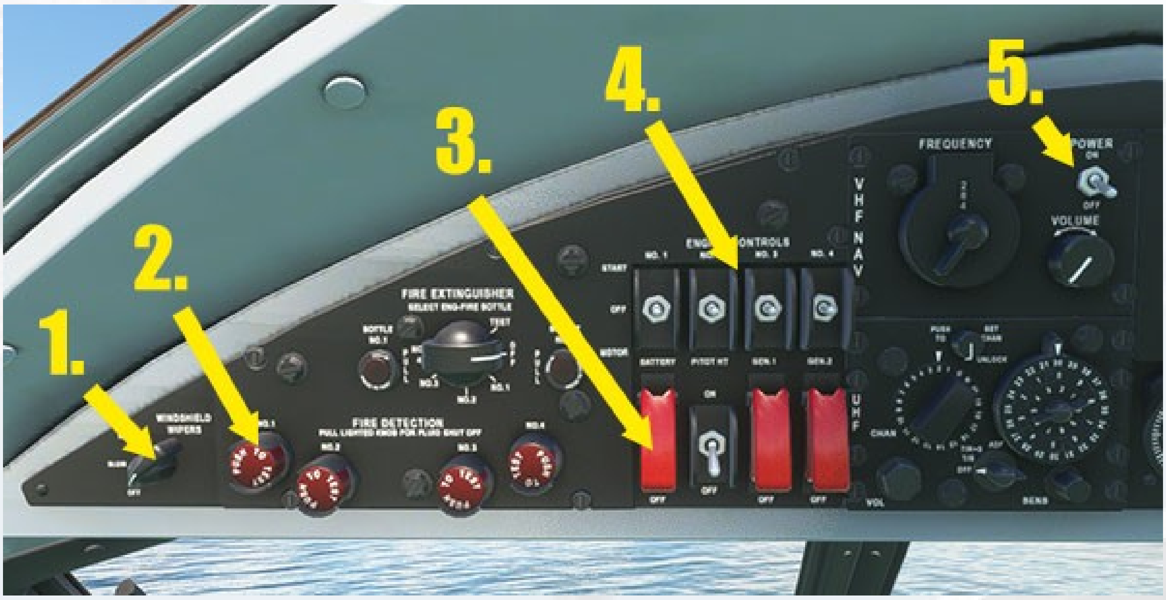
1. **Transponder**. The two knobs can be rotated to set the transponder frequency. The left knobs set the first two digits, the right knobs set the remaining two digits.

Center Pedestal



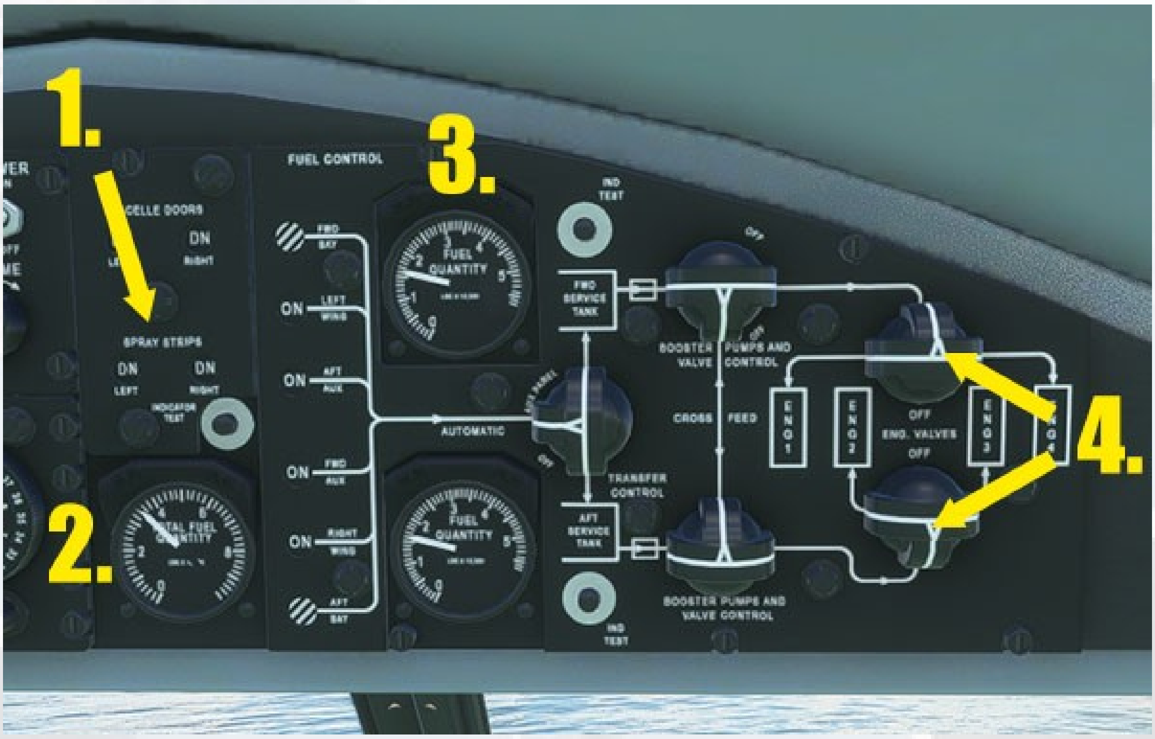
The pedestal houses the throttles and pitch trim controls which are self-explanatory. Lower down can be found the adjuster knobs for the rudder and aileron trim. Right at the bottom are two T-handles, one for the speedbrakes/hydroflaps, one for the Beaching Cradle Parking Brake (repurposed from the AP Quick Release function). There is also a second Autopilot Master Switch on the lower right side. All other switches are not supported in MSFS so are non-functional.

Upper Panel - Pilot's Side



1. **Windshield Wipers Switch**. Controls the two-speed wipers. The wipers are animated but do not clear water from the windshield as this function is presently not supported by MSFS.
2. **Fire Extinguisher Buttons**. The buttons can be pressed to test, but do not have any other function in the simulator.
3. **Electrical System Switches**. Left to right - Master Battery, Pitot Heat, Generator 1 and Generator 2 (this would be generator 3 on the real aircraft but MSFS does not permit out-of-sequence numbering). The P6M has generators only on engines 1 and 3.
4. **Starter Switches**. Press and hold to start engines.
5. **Modern Radios Toggle**. This switch will bring up some modern-type radios where NAV, COM and ADF can be easily set.

Upper Panel - Copilot's Side



1. **Spray Strip Status Indicators**. These show 'UP' when the Spray Strips are raised for flight and 'DN' when they are lowered for taxying and take-off. The Nacelle Doors indicators above these will respond to the position of the Nacelle Doors Switch on the Center Pedestal by the Engine 1 Throttle Lever, although there is no Nacelle Door component to the model due to the lack of information about these parts, which would be located inside the intakes of the inner engines. When there is no power to the panel, the indicators display diagonal stripes.

2. **Total Fuel Indicator**. The button above and to the right of the instrument will test the gauge function when pressed.

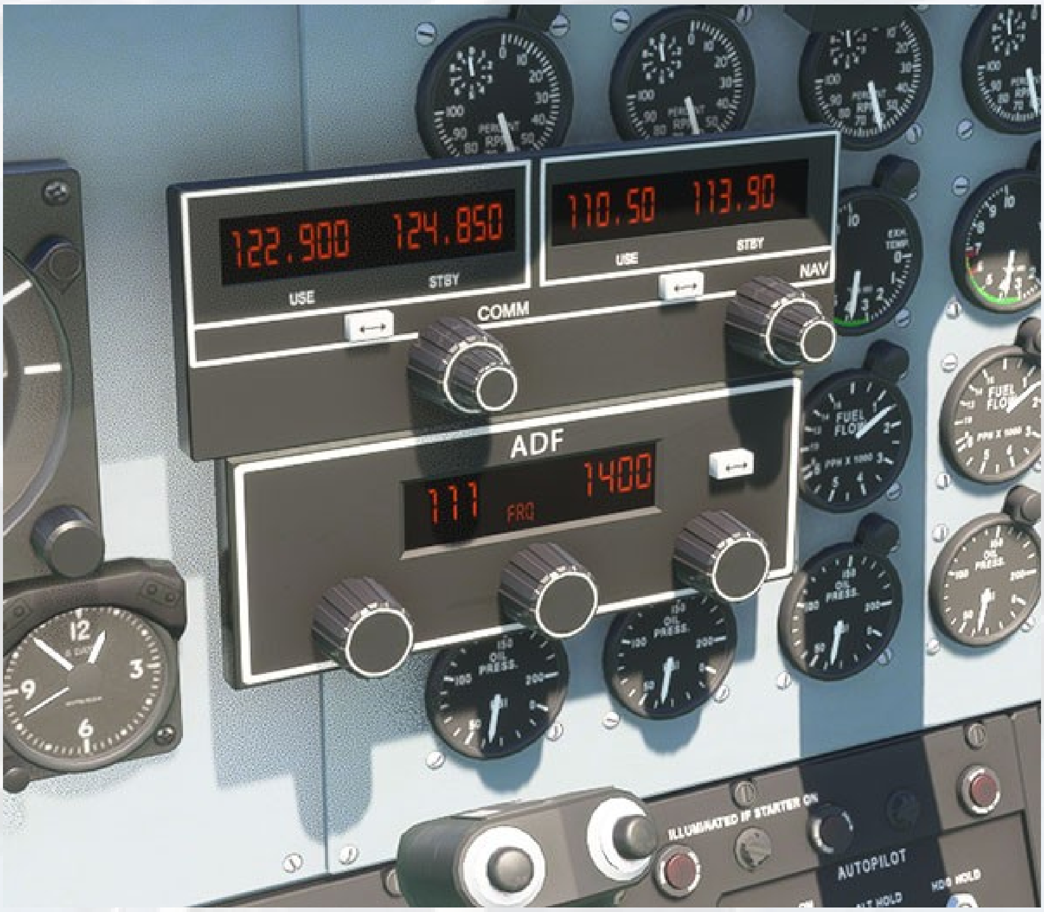
3. **Left Fuel Tank Quantity Indicator**. The button above and to the right of the instrument will test the gauge function when pressed.

4. **Right Fuel Tank Quantity Indicator**. The button below and to the right of the instrument will test the gauge function when pressed.

5. **Fuel Valve Control Switches**. These knobs simply toggle the fuel flow and are used to shut down the engines. The top knob controls the outer engines and the lower knob controls the inner engines.

Radios

A set of modern NAV, COM and ADF radios is provided as a pop-up feature. To display the modern radios, use the switch at the top of the upper instrument panel.



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Virtavia 2023

P6M-2 Procedures

Engine Start / Preliminaries

1. Panel / Cabin Lights Switches ON (as required).
2. Master Battery Switch ON.
3. Both Generator Switches ON.
4. Navigation Lights Switch ON.
5. Throttle Levers at IDLE.
6. Fuel Valve Knobs ON.
7. Fuel Quantity Status CHECK.
8. Gyro-Horizon CHECK UNCAGED.
9. Engine 1 Starter Switch ON (HOLD).
10. Engine 1 RPM over 20% CHECK.
11. Engine 1 Starter Switch RELEASE.
12. Engine 1 EGT, Pressure, FF Values Nominal CHECK.
13. Steps 9 - 12 for Engines 2-4 REPEAT.
14. Hull (Landing) Lights Switch ON (as required).
15. Pitot Heat Switch ON (as required).
16. Spray Strips Switch Set to DOWN.
17. Mine Bay CHECK CLOSED.

Taxying To and Entering The Water

1. Parking Brake OFF.
2. Taxy at 20-30 knots to water edge.
3. Accelerate to 50 kts, enter water.
4. Remove Cradle (ie. raise 'landing gear').
5. Taxy to take-off area, turn into wind if possible.

Taking Off

1. Landing Flaps FULLY DOWN.
2. Speedbrake/Hydroflaps CHECK CLOSED.
3. Trim Nose-Up Pitch 50% SET.
4. Advance Throttles to 100% power.
5. Lift off at 120 kts.

After Take- Off

1. At 200 kts Landing Flaps RAISE.
2. Trim Nose-Up Pitch ADJUST.
3. Accelerate to 250 kts before starting climbout.
4. Set Hull (Landing) Lights Switch OFF (as required).
5. Spray Strips Switch Set to UP.

Approach and Landing

1. Descend to 500 feet and align with landing zone.
2. Decelerate to 250 kts.
3. Hull (Landing) Lights Switch ON (as required).
4. Spray Strips Switch Set to DOWN.
5. Decelerate to 200 kts. Descend to 250 feet.
6. Trim Nose-Up Pitch 50% SET.
7. Landing Flaps Lever one notch SET.
8. Decelerate to 150 kts. Descend to 150 feet.
9. Landing Flaps Lever second notch SET.
10. Decelerate to 120 kts. Descend to 50 feet.
11. Landing Flaps Lever FULLY DOWN.
12. Retard Throttles to IDLE.
13. Decelerate to 100 kts, gently apply nose-up pitch.
14. Descend at approx. 50 ft/min to water surface.
15. Touchdown at 80-90 kts.

Exiting Water

1. Approach Beaching Area Perpendicular to Shoreline.
2. Apply Cradle (ie. lower 'landing gear').
3. Accelerate to 50 kts on Water Speed Gauge.
4. Apply more power as required to fully come ashore.
5. Taxy at 20-30 kts on land to desired parking area.
6. Parking Brake ON.
7. Boarding Light Switch ON (as required).

Shutdown

1. Hull (Landing) Lights Switch OFF (as required).
2. Pitot Heat Switch OFF (as required).
3. Set Landing Flaps FULLY UP.
4. Fuel Valve Knobs OFF.
5. Speedbrake/Hydroflaps CHECK CLOSED.
6. Gyro-Horizon CAGE.
7. Both Generator Switches OFF.
8. Anchor Lights Switch ON (as required).
9. Navigation Lights Switch OFF.
10. Boarding Light Switch OFF (as required).
11. Master Battery Switch OFF.
12. Panel / Cabin Lights Switches OFF (as required).