Savoia Marchetti S.55 & S.55X

Pilot's Guide

for Microsoft Flight Simulator 2020 & 2024

Version 2.0.7

DO NOT USE IN REAL AIRCRAFT

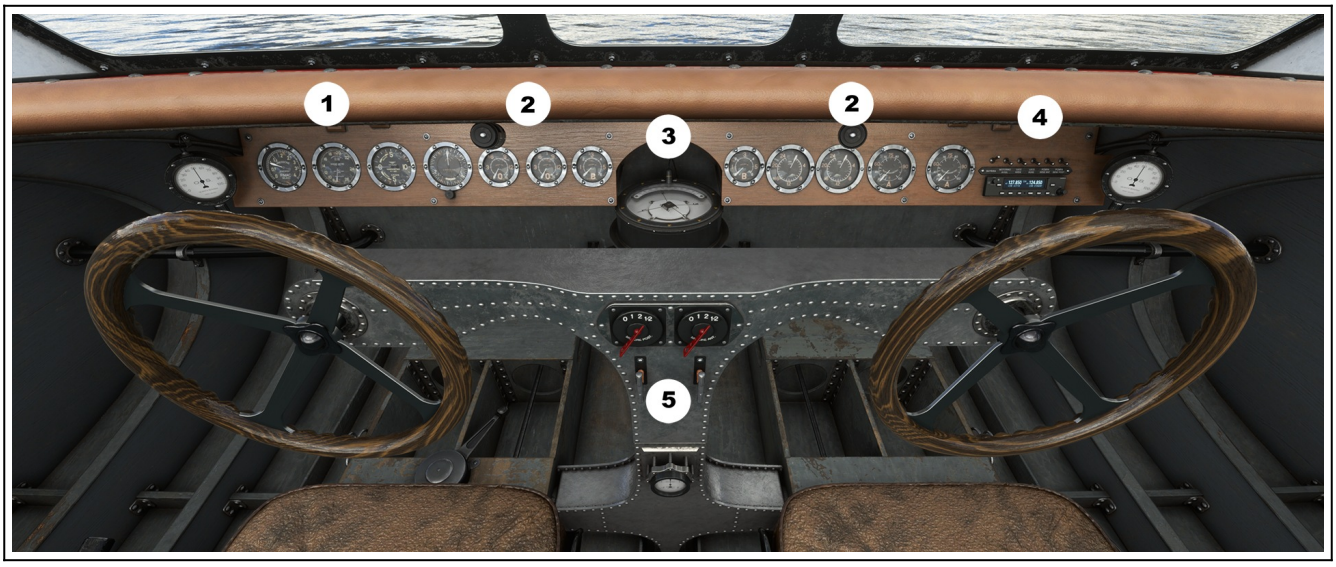
Introduction

Welcome to the Savoia Marchetti S.55 & S.55X for Microsoft Flight Simulator 2020 and 2024! This pilot's guide is intended to help orient you to the aircraft's systems and characteristics, and hopefully help you get the most satisfaction and enjoyment out of each flight in these pioneering aircraft.

Please note that this guide covers items common to both the 2020 and 2024 versions first, and new features that are unique to the MSFS 2024 version are covered at the end.

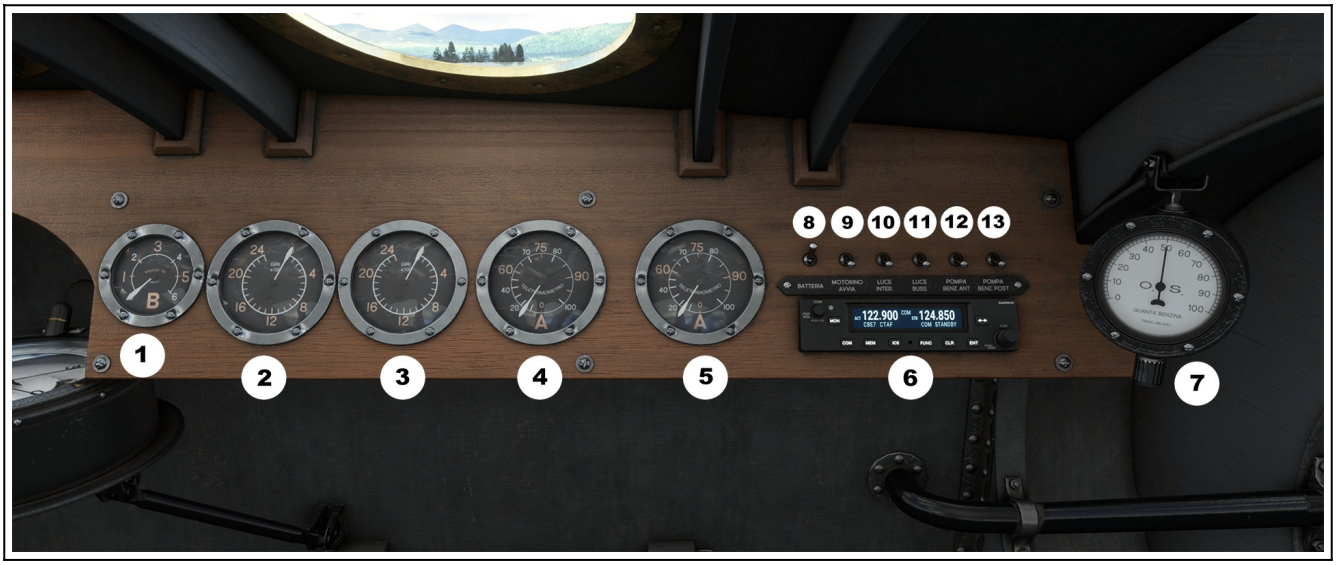
Version 2.0.7 – August 12th, 2026

COCKPIT OVERVIEW (S.55 Prototype ‘Jahu’ & S.55 ‘Santa Maria’)



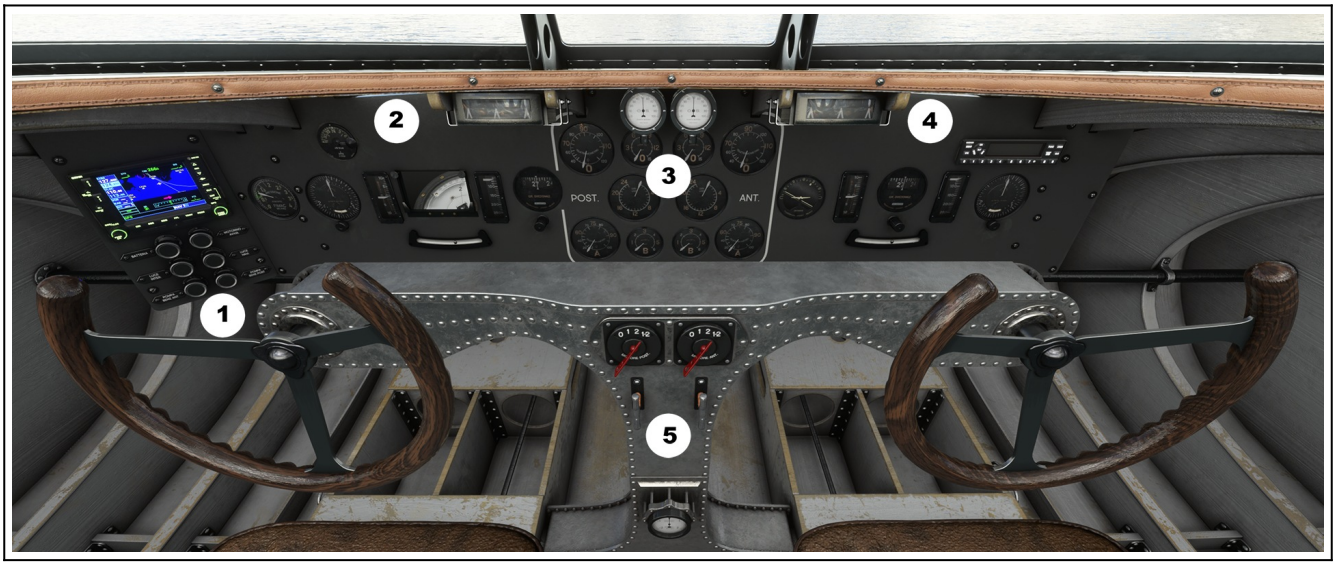
1. Flight Instruments
2. Engine Instruments
3. ‘Husun’ Aperodic Compass
4. Electrical switches and Comm Radio
5. Control Column with Engine Ignition controls

1. Port hull fuel tank capacity (% remaining of 450 gal maximum)
2. Auxiliary power unit compressed air capacity (in Atmospheres) (used for engine start)
3. Airspeed Indicator (in Kilometres per hour x10)
4. Vertical Speed Indicator (in metres per second)
5. Altimeter (in metres x1000)
6. Oil Pressure, Rear Engine (in Kilograms per centimetre squared)
7. Oil Pressure, Front Engine (in Kg/cm2)
8. Fuel Pressure, Rear Engine (in Kg/cm2)

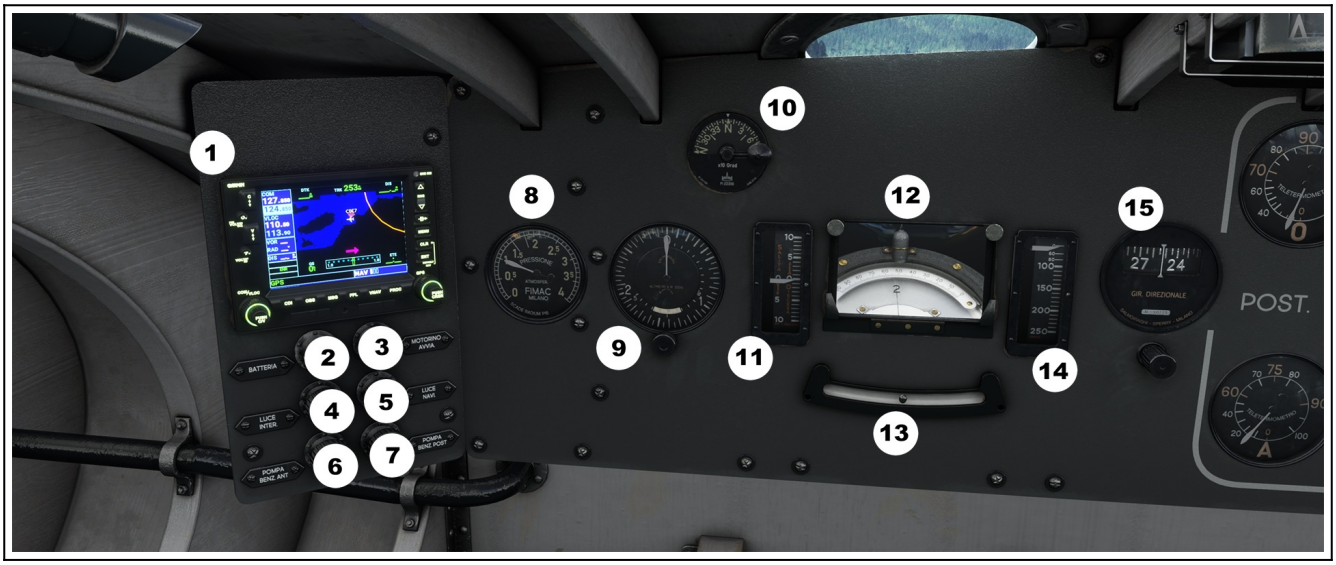


1. Fuel Pressure, Front Engine (in Kg/cm2)
2. Tachometer, Rear Engine (rpm)
3. Tachometer, Front Engine (rpm)
4. Water (Coolant) Temperature, Rear Engine (in degrees Celsius)
5. Water (Coolant) Temperature, Front Engine (in degrees Celsius)
6. Comm Radio
7. Starboard hull fuel tank capacity (% remaining of 450 gal maximum)
8. Battery Master switch (“Batteria”)
9. Auxiliary Power Unit start/stop switch (“Motorino Avviamento”)
10. Interior (panel) light switch (“Luce Interna”)
11. Compass light switch (“Luce Bussola”)
12. Fuel Pump switch, Front Engine (“Pompa Benzina Anteriore”)
13. Fuel Pump switch, Rear Engine (“Pompa Benzina Posteriore”)

COCKPIT OVERVIEW (S.55X)



1. Electrical switches and GPS/NavComm
2. Pilot’s Flight Instruments and ‘Husun’ Aperiodic Compass
3. Engine Instruments
4. Co-pilot’s Flight Instruments and Transponder
5. Control Column with Engine Ignition controls

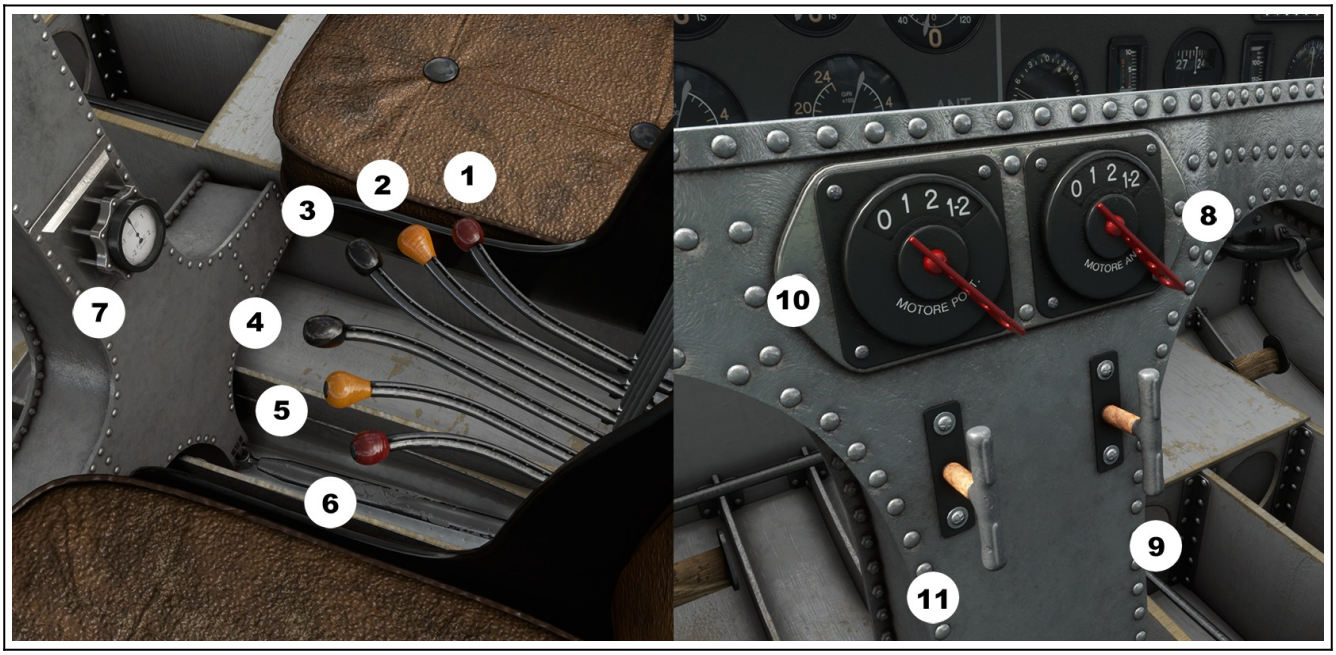


1. GNS 530 GPS/NavComm
2. Battery Master switch (“Batteria”)
3. Auxiliary Power Unit start/stop switch (“Motorino Avviamento”)
4. Interior (panel) light switch (“Luce Interna”)
5. Navigation lights switch (“Luce di Navigazione”)
6. Fuel Pump switch, Front Engine (“Pompa Benzina Anteriore”)
7. Fuel Pump switch, Rear Engine (“Pompa Benzina Posteriore”)
8. Auxiliary power unit compressed air capacity (in Atmospheres) (used for engine start)
9. Altimeter (in metres x1000)
10. Askania Compass Heading Selector (See Askania Compass operation section)
11. Vertical Speed Indicator (in metres per second)
12. ‘Husun’ Aperodic Compass
13. Slip indicator
14. Airspeed Indicator (in Kilometres per hour)
15. Directional Gyro / Heading Indicator

1. Port hull fuel tank capacity (% remaining of 670 gal maximum)
2. Starboard hull fuel tank capacity (% remaining of 670 gal maximum)
3. Oil Temperature, Rear Engine (degrees Celsius)
4. Oil Pressure, Rear Engine (in Kg/cm2)
5. Tachometer, Rear Engine (rpm)
6. Water (Coolant) Temperature, Rear Engine (in degrees Celsius)
7. Fuel Pressure, Rear Engine (in Kg/cm2)
8. Oil Pressure, Front Engine (in Kg/cm2)
9. Oil Temperature, Front Engine (degrees Celsius)
10. Tachometer, Front Engine (rpm)
11. Fuel Pressure, Front Engine (in Kg/cm2)
12. Water (Coolant) Temperature, Front Engine (in degrees Celsius)
13. Askania compass deviation indicator (Pilot’s)
14. Askania compass deviation indicator (Co-pilot’s)

1. Artificial Horizon
2. Vertical Speed Indicator (in metres per second)
3. Directional Gyro / Heading Indicator
4. Slip Indicator
5. Airspeed Indicator (in Kilometres per hour)
6. Altimeter (in metres x1000)
7. Transponder

COMMON CONTROLS (S.55 Prototype & S.55X)



1. Carburettor Heat lever, Front Engine
2. Mixture control lever, Front Engine
3. Throttle, Front Engine
4. Throttle, Rear Engine
5. Mixture control lever, Rear Engine
6. Carburettor Heat lever, Rear Engine
7. Pitch Trim indicator (Needle vertical = Neutral trim)
8. Magneto Control, Front Engine (Off – Left – Right – Both)
9. Engine Start switch, Front Engine (Pull to crank)
10. Magneto Control, Rear Engine (Off – Left – Right – Both)
11. Engine Start switch, Rear Engine (Pull to crank)

COMMON CONTROLS CONTINUED… (S.55 Prototype & S.55X)

1. Radiator Cowl Flap control location (S.55 Prototype ‘Jahu’)

2. Radiator Cowl Flap control location (S.55X)

COMMON CONTROLS CONTINUED... (S.55 Prototype & S.55X)

The Hughes & Sons ‘HUSUN’ Compass was a peculiar aviation and marine compass system that was in fashion for a brief period in the 1920s and early 1930s. Nearly every S.55 had one installed, so it is dutifully represented in this simulation. The compass’ layout is unique, but there is really nothing special about it other than the marking system, which at first glance can be confusing.

How to use the compass:

1. Note there are 4 needles on the compass spindle, marked 1, 2, 3, and 0. These needles indicate “hundreds” of degrees. The 1, 2, and 3 needles are spaced 100 degrees clockwise apart from each other, with the 0 needle spaced a further 60 degrees from the 3 needle.

2. The arc at the top of the compass indicates individual degrees between 0 and 100.

3. In the picture above you will see that the ‘2’ needle is pointed at 60 on the arc. This indicates a heading of 260 degrees (nearly West).

Example headings:

- To fly North (360 or 0 degrees) you would turn until the ‘3’ needle is pointed at 60 degrees on the arc. When his happens the ‘0’ needle will also point at 0 degrees on the arc, indicating 3 hundreds + 60 degrees.

- To fly South (180 degrees) turn until the ‘1’ needle points to 80 degrees on the arc, indicating 1 hundreds + 80 degrees.

- To fly at headings less than 100 degrees, say 80 degrees, you would turn until the ‘0’ needle points to 80 on the arc. Essentially this is read as 0 hundreds + 80 degrees.

ASKANIA MECHANICAL COMPASS (S.55X only)

The Askania mechanical compass is a navigation aid that was fitted to many European aircraft in the 1930s. It is spring based, not magnetic, and designed to show deviation from intended track over time. It is surprisingly accurate over long distances when used correctly.

Components of the compass system:

1. Selected heading wheel
2. Heading selector knob
3. Track deviation indicators (one for Pilot and Co-pilot each, both show same deviation)
4. Track deviation markings (right of track, on track, left of track)

How to use the Askania compass:

1. Establish the aircraft on your intended heading using the normal Husun compass and heading indicators.

2. Rotate the Askania compass heading selector knob (2) until your current and intended heading appears and aligns with the chevron marker at the top of the heading wheel (1). When you have finished selecting your heading the deviation marker (3) will move to the centre position, showing you are on course. Note: The selected heading is for visual reference only, it is not magnetically aligned.

3. As you fly, if you drift left of your intended course over time the deviation indicator (3) will slowly slide to the right, and vice versa.

4. To correct your course, change aircraft heading 30 degrees towards the deviation needle until the needle centres again, and then resume your intended heading, adjusting for wind.

5. If you change your heading selection on the Askania compass mid-flight, then the springs in the compass will reset and the track deviation needle will return to centre, and then resume calculating deviation from your new selected track.

ELECTRICAL SYSTEMS and APU NOTES (S.55 Prototype and S.55X)

Neither the S.55 prototype nor the S.55X had alternators/generators fitted to their engines, nor did they have electric starter motors for the engines. Electrical power for the prototype came purely from very substantial batteries located in the forward sections of the hulls. These batteries were able to provide electrical power for at least 20 hours of continuous flight.

The S.55X had much smaller batteries but was fitted with a ram air turbine generator on the upper surface of the port hull for charging the batteries in flight. This turbine becomes effective above 50 knots (90 km/h) airspeed.

Engine start on S.55s was achieved through a compressed air charge into the intake manifold, forcing the engine to turn.

APU:

All S.55s were fitted with an early form of APU (Auxiliary Power Unit) which provided both electricity for the aircraft's systems and charged a compressed air tank to be used during engine start. This came in the form of a Garelli two cylinder motorcycle engine. In the prototype this motor was mounted inside the wing, aft of the co-pilot's seat. In the S.55X it was mounted in the engine pod between the two engines. Upon ignition the APU will immediately provide electricity and begin charging the air tank.

Due to the S.55X's smaller batteries it is common practice to leave the APU running whilst taxiing on on the water, until just before takeoff, and to start it again immediately after landing.

Use of the APU on the prototype is generally not needed after engine start unless the batteries run unexpectedly low.

ENGINE START PROCEDURE (S.55 Prototype and S.55X)

NOTE: The front engine is always started first, to help ensure adequate airflow through the radiator for both engines.

1. Ensure aircraft is ready for engine start: Set magnetos off, all electrical switches off, both mixture levers at idle-cutoff setting.

2. Battery master switch on

3. Fuel pump switches on (both engines)

4. APU ("Motorino Avvia.") switch on. The APU will begin providing electrical power to recharge the batteries and begin compressing air for engine start.

5. Set radiator cowl flaps lever to "full open".

6. Set front engine Magnetos to "1-2" (both)

7. Set front engine Mixture lever to full rich.

8. Observe APU pressure gauge (far left on both panels) for at least 3.5 atmospheres of pressure. Waiting for the tank to completely fill is advised.

9. Pull and HOLD front engine start switch.

10. Observe RPM rise for front engine, and at ignition point (~450 rpm) release starter switch.

11. Lean mixture lever as required.

12. Repeat steps 6 – 11 for Rear Engine.

13. Once both engines are running, set APU switch to off (or as needed) and turn the electric fuel pumps off after takeoff in order to conserve battery power..

NOTES ON WEIGHT AND BALANCE:

You may notice that the S.55 can be configured to carry fuel loads far in excess of its published maximum takeoff weight. This was common practice during the long range flights the type achieved during its service, and is required for some of the longest journeys. Provided the seas are calm and sufficient water area is available for takeoff there is no danger in this. Note though that climb performance suffers greatly in an overloaded state and takeoffs in this condition from short lakes or towards rising terrain are not advised. If such a takeoff must be attempted then it is advised to perform a high-speed run-up first to determine the optimal mixture settings for best power. Also note that landings in an overloaded state are somewhat more dangerous. Extra care must be taken in ensuring a very smooth flare at as low an airspeed as possible. Note that the aircraft will also have a very long landing 'roll' with such weight.

NOTES ON OPTIMAL WATER HANDLING:

Most S.55s were not fitted with water rudders as they were generally not needed. The three air rudders were very effective at turning the aircraft on the water. To achieve the tightest turn radius on water first set the rudders fully in the direction of intended turn, and then use the rear engine throttle **only** (the left throttle lever) to apply moderate short 'blips' of power, returning to idle after each one. As the turn rate begins to slow down apply another moderate blip from the rear engine to accelerate it.

The effectiveness of the rudders though has a downside: the S.55 is very prone to weather-vaning. In any significant wind you may struggle to get the aircraft onto an intended heading on the water, and to maintain it. Taxiing in high winds is not advised in restricted spaces.

FLIGHT CHARACTERISTICS CONSIDERATIONS:

The S.55 has generally very benign and docile handling qualities. Control authority on all axes is very smooth and progressive, and drops off in effectiveness as speed approaches Vne (~150 knots / 280 km/h). The type does have one serious quirk though that pilots need to be aware of: significant pitch moment changes during engine power adjustments.

Due to the design's high mounted engines being so far above the aircraft's centre of gravity, any abrupt power change will result in a corresponding and immediate change in pitch. Reducing power quickly will result in a noticeable pitch up moment, and a pitch down moment will occur with every increase in power. Generally re-trimming is not required though, just a momentary adjustment of elevator deflection until the airspeed changes to match the new settings. The engines are canted at 9 degrees positive pitch to help alleviate this effect, but it is still very present and must be accounted for at all times, especially on approaches.

As an example, the pitch moment can be violent enough to cause the aircraft to lift off the water if a takeoff using full power is aborted with a quick pull to idle! This handling quirk thankfully does not take long to get used to.

FLIGHT SIMULATOR 2024 FEATURES

Walkaround / Preflight Function:

Due to the fact the S.55 is a pure seaplane the ‘normal’ FS2024 walkaround is implemented somewhat differently.

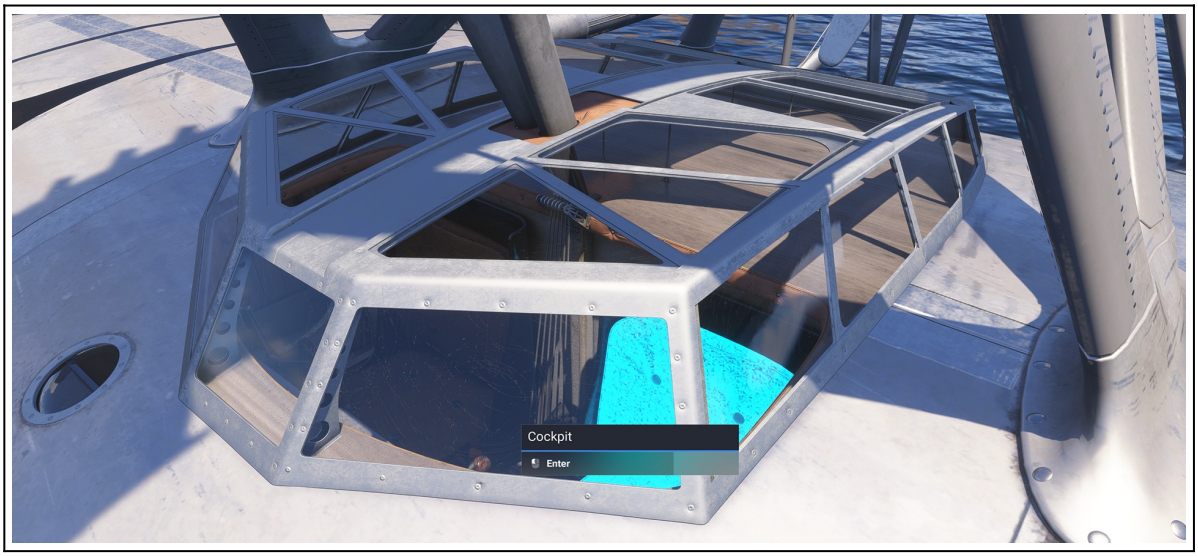
You can exit the cockpit of the aircraft by using the default “Take Control of Character” function via keyboard or controller, or by clicking on the upright back of the pilot’s seat, as shown below. Note that in order to exit the aircraft the engines must be off and the plane be nearly stationary.

Once you have exited the cockpit you should be situated on top of the left wing of the plane...

Note that on the S.55X you will need to fully open the pilot's side overhead canopy prior to clicking on the seat beack to exit the plane. You can open this canopy by clicking its handle (shown below) and dragging it aft.

At this point you can continue with a normal walkaround preflight check.

To re-enter the aircraft you can click on the pilot's seat while walking on top of the center fuselage span. On the S.55X, when entering the aircraft, the canopy will open automatically if it is closed.

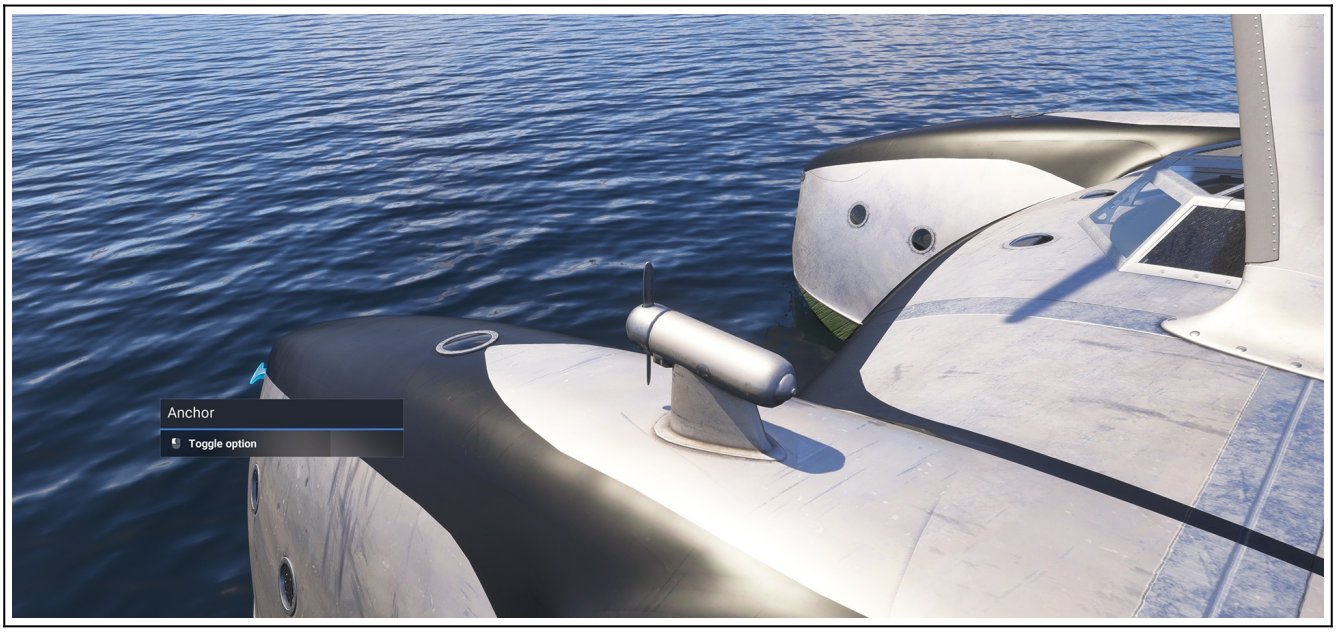


IMPORTANT NOTE: Due to current simulator limitations, when exiting the cockpit, you *may* very rarely be left standing on the water in front of the aircraft. The reason for this is unknown, but Asobo is aware of this issue and a fix may come in the future. If this happens you can click on the pilot's seat through the forward body of the aircraft to re-enter the cockpit, and then try again.

Anchor System:

The Savoia S55s are fitted with a lightweight aluminium “Danforth” style sea anchor, including tether lines, and a period appropriate marker buoy.

The anchor can be deployed or retracted by clicking on the cleats on the bow of either hull, as shown below. In order to access these click spots you must first exit the cockpit, onto the wing.



This sea anchor will hold the aircraft in position but will still allow it to weathervane into the wind.

Prior to deploying the anchor certain conditions must be met:

- The aircraft must be on water
- Ground speed must be less than 10 knots
- Both engines must be shut down

NOTE: If any of these conditions are broken then the anchor will not deploy, and if it has already been deployed it will immediately retract and stow again. The anchor will almost always automatically retract during engine start, so it is advised to stow the anchor prior to engaging the starter motors.

Options Clipboard:

An equipment options board has been added as a convenience to both aircraft in MSFS 2024, allowing you to set or stow the anchor, remove accumulated insects on the airframe, disable the glowing blue highlights on most controls, and to toggle the acrylic window refraction effects if desired. The options to disable control highlights and windshield refraction are persistent between flight sessions.

The options board also contains controls for reversing the aircraft, aka “Pushback”, and a basic autopilot. Details are in the next section.

The options board is tucked into the left edge of the copilot’s seat, and clicking on the top edge of the board will bring it up in front of your view in the pilot’s seat. You can click again at the top of the board to stow it when finished.

Pushback function and Autopilot use:

On the options clipboard are selections for “Pushback” and “Autopilot”.

As the S.55 has no reverse thrust capability, a simple pushback function is provided as an aid in reversing the aircraft out of tight spaces or away from docks, a function that line handlers and tugs would normally provide. The pushback can be activated via the clipboard selection or by binding a key or controller to the sim’s “Toggle Pushback” event (Alt-P by default).

Note that this pushback function will only work when the aircraft is on the water and stationary, or nearly stationary. If the pushback is active and you attempt to overpower it with forward thrust then it will automatically disengage.

Since the S.55 did not have any form of autopilot, a basic one is provided here to allow for the realities of flight simulation. This autopilot does not have any advanced capabilities or controls, it can simply hold heading and altitude. Turning on the autopilot on the clipboard will immediately set your current heading and altitude as its targets and it will try to maintain those values until it is turned off. When turning the autopilot off and on again it will forget the previous values and again lock on your new current heading and altitude.

Note that the autopilot heading tracking is magnetic, and so on long distance flights the true heading will change over time as the magnetic variation changes. It will be neccessary to periodically disengage the autopilot, adjust your heading, and re-engage it.

When using the autopilot on the S.55X, changing the heading selector on the Askania mechanical compass will update the current selected heading, and the autopilot will turn to follow this new heading.

Electronic Flight Bag:

Flight Simulator 2024's default EFB has been added to the cockpit of the "modernized" variant of the S.55X. It is located on the left side of that cockpit. Passenger loading, fuel management, and other standard functions can be accessed as usual through this EFB.

Note that it has not been added to the cockpits of the S.55 Jahu, S.55 Santa Maria, or the S.55X 1933 Decennial verions, in order to preserve their historical accuracy and navigation challenges. The "2D" EFB can still be accessed in these aircraft though.