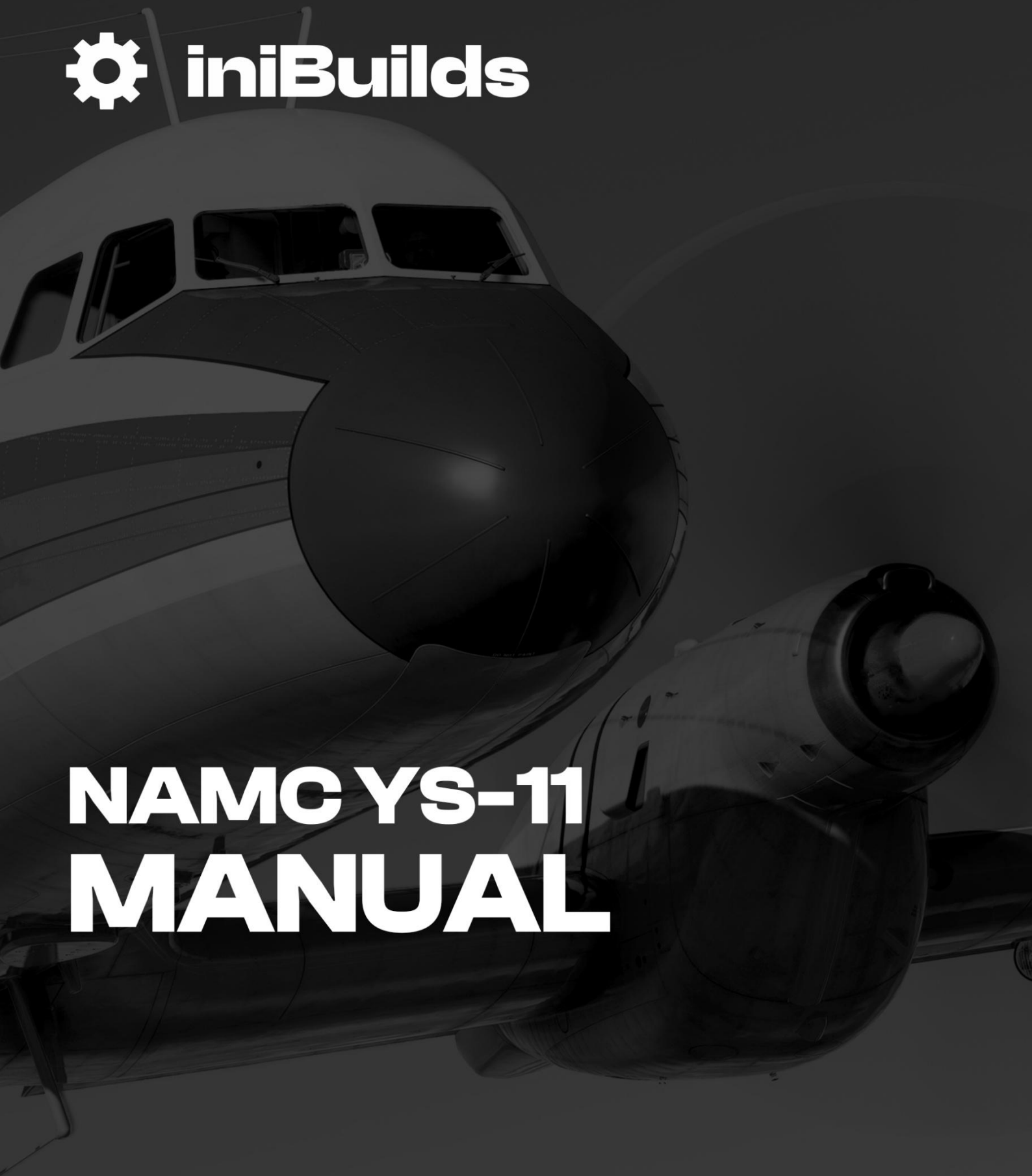
iniBuilds



NAMC YS-11 MANUAL

Preface

FOR SIMULATION USE ONLY - DESIGNED FOR SINGLE-PILOT OPERATIONS

This guide is designed to help provide a straightforward set of instructions to aid in operating the NAMC YS-11. It has been produced using multiple real-world YS-11 Operator manuals from various dates, with modifications to various procedures to make them more manageable in-game.

PHOTOSENSITIVE SEIZURE WARNING

A very small percentage of people may experience a seizure when exposed to certain visual images, including flashing lights or patterns that may appear in video games. Even people who have no history of seizures or epilepsy may have an undiagnosed condition that can cause these “photosensitive epileptic seizures” while playing video games.

Immediately stop playing and consult a doctor if you experience any symptoms.

These seizures may have a variety of symptoms, including light-headedness, altered vision, eye or face twitching, jerking, or shaking of arms or legs, disorientation, confusion, or momentary loss of awareness. Seizures may also cause loss of consciousness or convulsions that can lead to injury from falling down or striking nearby objects.

Parents should watch for or ask their children about the above symptoms. Children and teenagers are more likely than adults to experience these seizures.

You may reduce risk of photosensitive epileptic seizures by taking the following precautions:

- Play in a well-lit room.
- Do not play if you are drowsy or fatigued.

If you or any of your relatives have a history of seizures or epilepsy, consult a doctor before playing video games.

Copyright

Version 1.0.7 – September 14th, 2025

Table of Contents

About the NAMC YS-11

The YS-11 is a twin-turboprop regional airliner that was developed and produced by Japanese aviation consortium Nihon Aircraft Manufacturing Corporation (NAMC). The aircraft took its maiden flight in 1962 and NAMC manufactured 182 in several iterations from 1962 to 1974. The airframe served both civil and military users throughout the world for decades and several remain in limited service. Piloted by two, the YS-11 can carry up to 64 passengers or 10,000 pounds of cargo.

The story of the YS-11 began in the mid-1950s in the wake of World War II. The Japanese government sought to engender development of an airliner wholly created by Japanese companies and in so doing spark the rise of a domestic commercial aerospace industry. Several major industrial firms coalesced to form the Nihon Aircraft Manufacturing Corporation; company engineers began work on what would become the YS-11 in 1959.

Powered by two turboprop engines, the aircraft incorporates a low-mounted main wing, a pressurized cabin, and retractable tricycle landing gear. NAMC created two ground static test aircraft and two flyable prototypes, the first of which took the airframe's maiden flight on August 30, 1962. After several pre-production improvements, the YS-11 was certified for flight on September 9, 1965.

The aircraft quickly showed itself to be rugged, stable, efficient, and reliable. Due to its powerful engines and aerodynamically efficient wing design, the YS-11 proved an excellent choice for short field operation. Airliners from dozens of countries adopted the airframe for both passenger service and for freight. The militaries of Japan and Greece used the model for several mission types, including general airlift, surveillance, and electronic warfare.

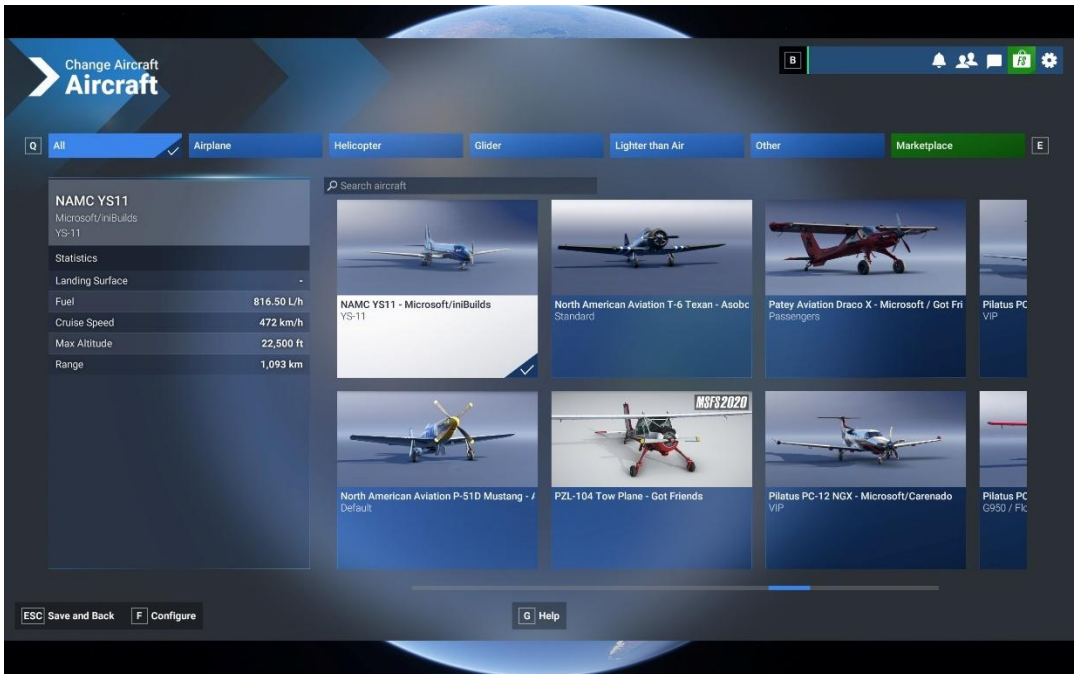
The YS-11 measures 86 feet, 4 inches in length, stands 29 feet, 6 inches tall, and has a wingspan of 105 feet. It is powered by two wing-mounted Rolls-Royce Dart Mk.542-12K turboprop engines that each deliver up to 3,060 horsepower. Each engine turns a 4-blade, constant-speed, fully reversible Dowty Rotol propeller. The YS-11 has a maximum range of 1,485 miles, a service ceiling of 23,000 feet above sea level, and a maximum climb rate of 1,220 feet per minute. The aircraft can take-off with a ground roll of 3,642 feet and land in 2,165 feet. It has a stall speed of 86 miles per hour, a cruising speed of 294 mph, and a top speed of 340 mph.

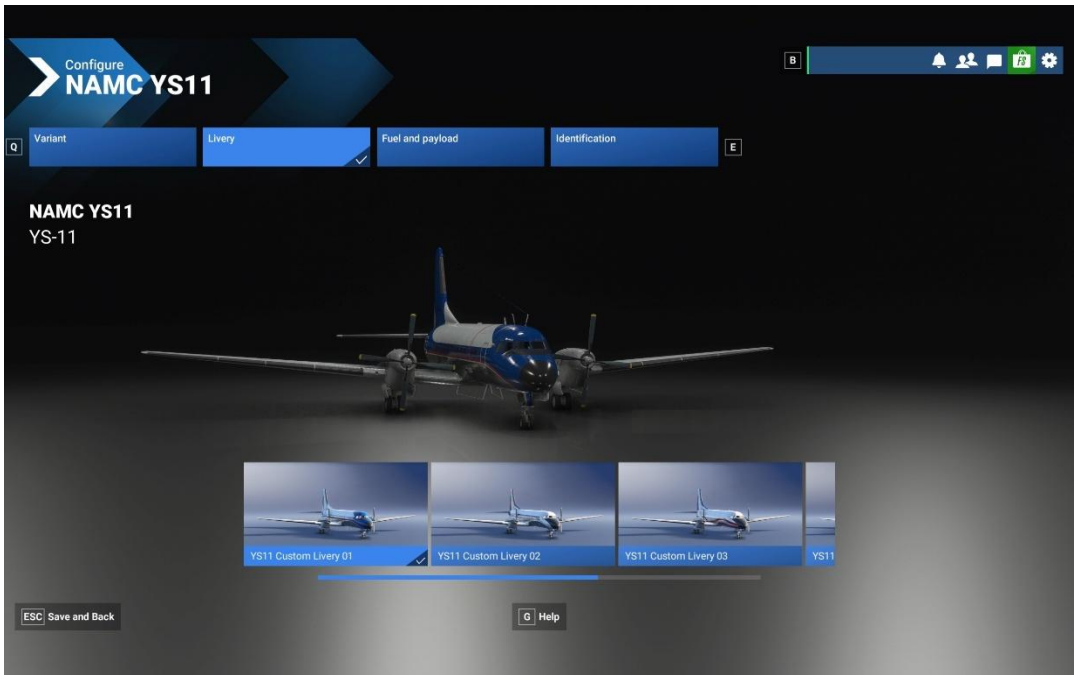
Aircraft Selection and Liveries

To fly the NAMC YS-11, you will need to select it from the Aircraft Selection menu.
Click on FREE FLIGHT in the Main Menu and click the AIRCRAFT SELECTION icon on the top left.

Scroll until you see the NAMC YS-11 or type in the search bar "YS-11" and the aircraft will show.

Once you have selected it, click on Configure to select any of the various designs available.





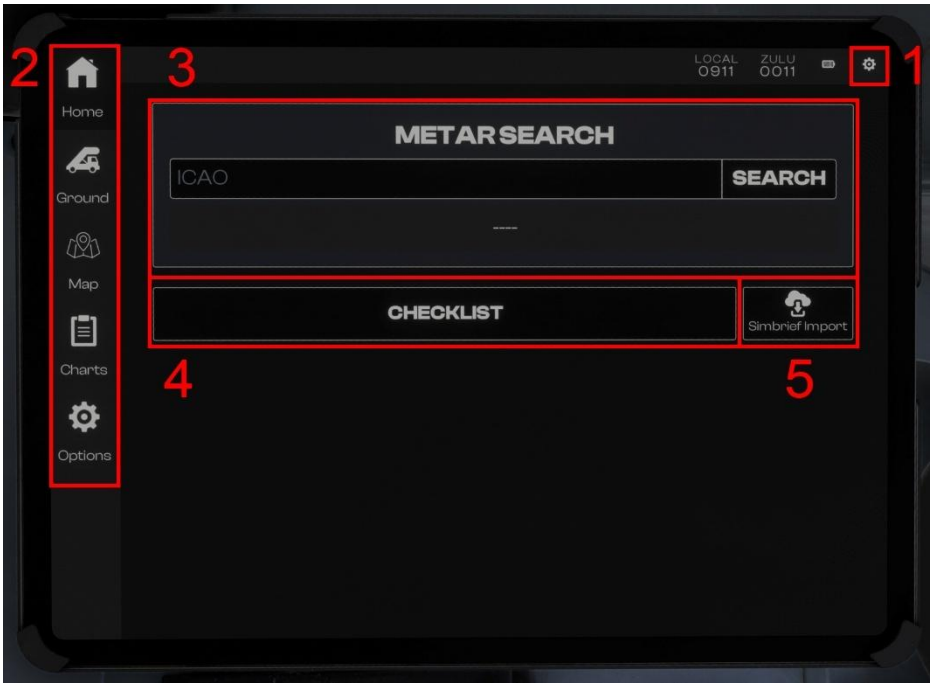
Cockpit Interaction

Some switches, levers and knobs within the cockpit have interaction where you can push, pull, or scroll them for certain functions.
On the PC, left click the knob and push the mouse for “push” interaction and pull the mouse for “pull” interaction whilst holding the mouse button down. Some functions also may have middle-mouse button “scroll” or right-mouse click “set” functions.

On the Xbox, press A to interact with the knob and use A to “push”, X to “pull”, Right Stick to “scroll” and B to finish the interaction.

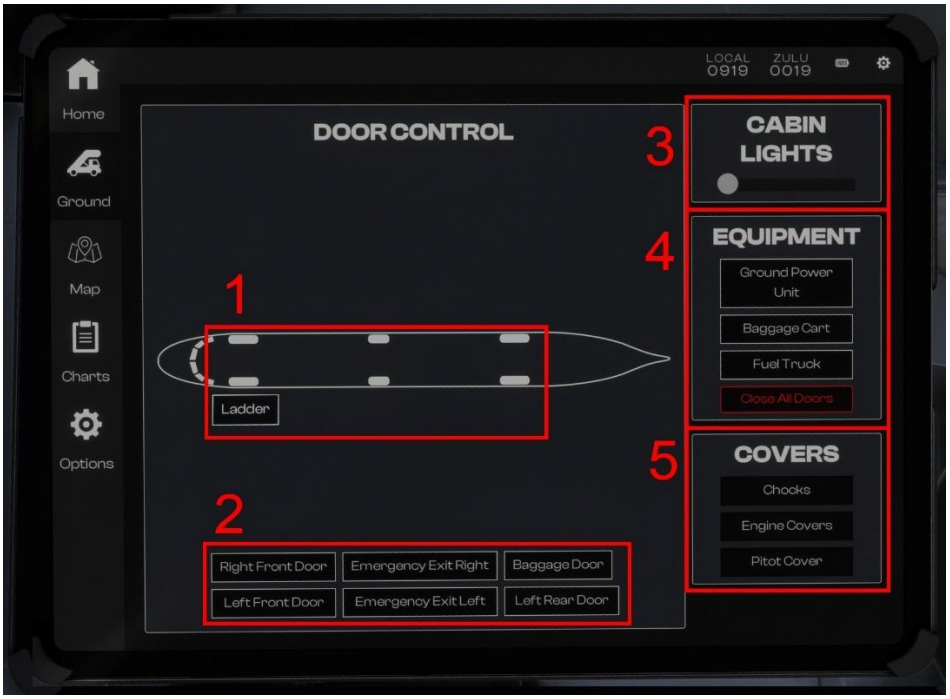
Electronic Flight Bag (EFB)

There is an Electronic Flight Bag (EFB) located on the left-side console.



Home

1) Settings button: opens the brightness slider and power off button. Tap anywhere in the screen to turn the EFB on.
2) EFB Navigation bar.
3) Real time Metar search.
4) Checklist access.
5) Simbrief plan import.



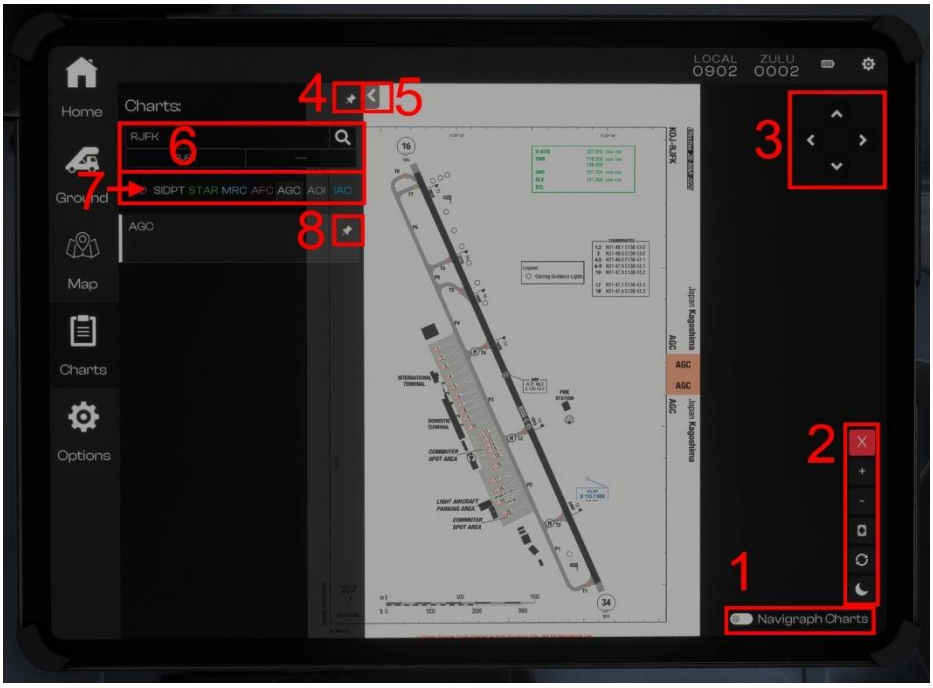
Ground

1) Door and access ladder control buttons.
2) Door control buttons.
3) Cabin light slider.
4) Ground equipment and close all doors buttons.
5) Cover removal.

Map

Scroll the map by left clicking and holding as you displace your mouse.

1) Zoom buttons and re-centre button.
2) Toggle between default map and Navigraph map.



Charts

1) Toggle between default and Navigraph Charts.
2) Other controls: Zoom, Zoom to Fit, Rotate, Day/Night toggle.
3) Scroll chart. Note: you can also click and drag to scroll using your mouse.
4) Pin chart. Pin symbol turns yellow if the chart is pinned.
5) Hid/Display chart menu.
6) Airport search box.
7) Airport chart category selector.
8) Pin chart. Pin symbol turns yellow if the chart is pinned.

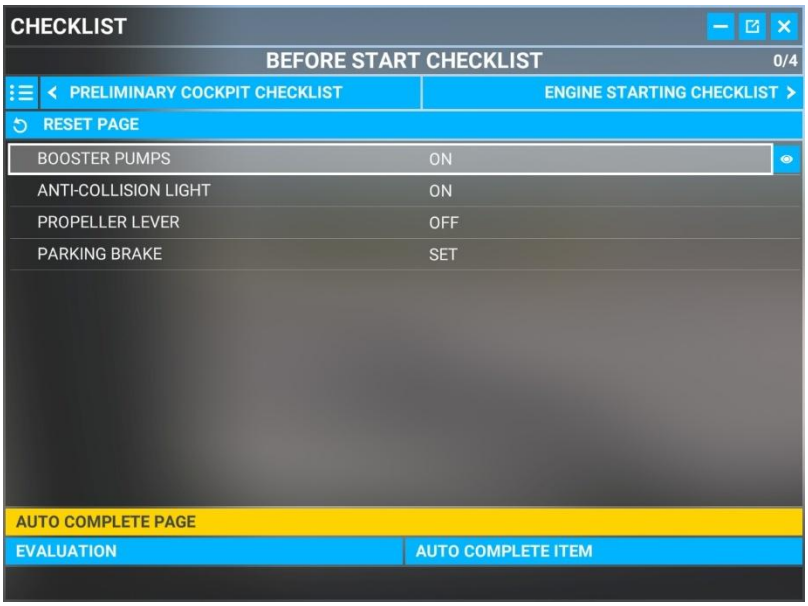
Options

1) GNS Selector.
2) SimBrief user ID.
3) Streamer Mode: hide SimBrief user ID and Navigraph Username.
4) Navigraph linker, required to display Navigraph charts. Note, a Navigraph subscription is required.

Checklists (Microsoft Flight Simulator)

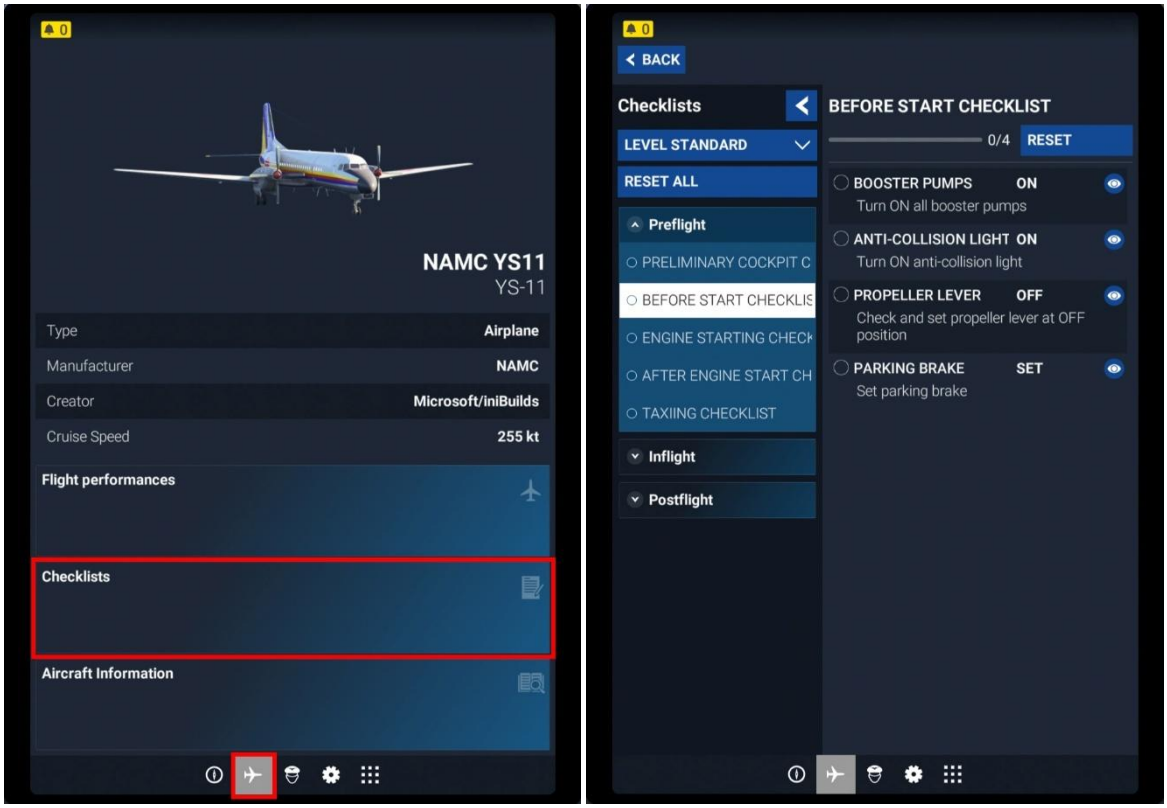
While this guide offers comprehensive operational instructions that are functionally complemented by the Quick Reference Card (QRC), iniBuilds has incorporated expedient procedural checklists within the simulator. These can be accessed via the top-of-screen drop-down menu by selecting the Checklist option.

Clicking the blue eye icon to the right of the checklist item will switch your view to the required panel where the item is located. You can use the AUTO COMPLETE option to expediently tick off the items from the checklist.



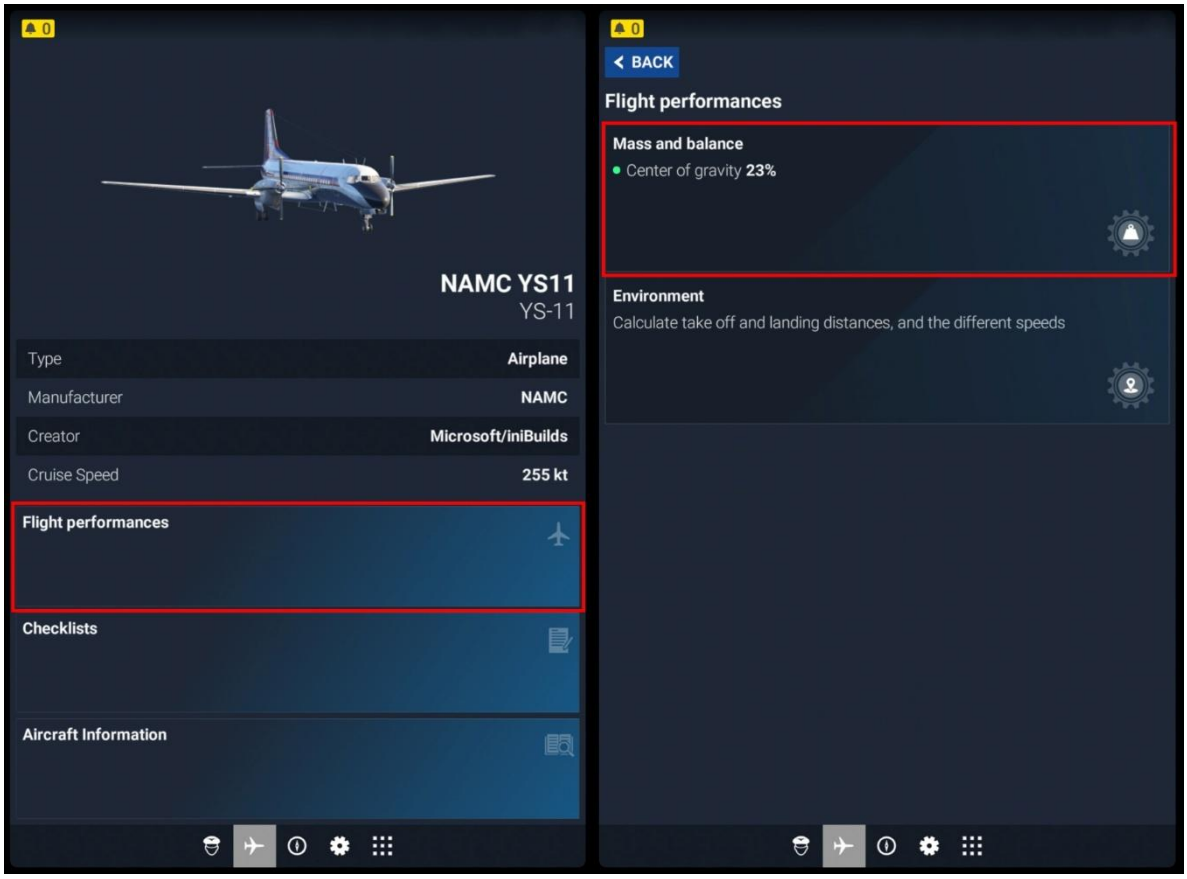
Checklists (Microsoft Flight Simulator 2024)

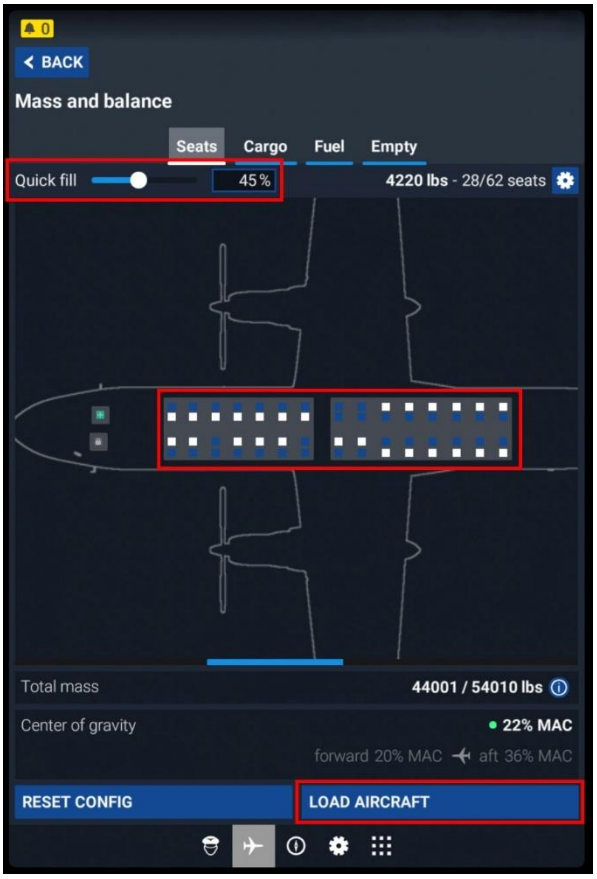
While this guide offers comprehensive operational instructions that are functionally complemented by the Quick Reference Card (QRC), iniBuilds has incorporated expedient procedural checklists within the simulator. These can be accessed via the Electronic Flight Bag.



Mass and Balance (Microsoft Flight Simulator 2024)

Passengers can be loaded in the aircraft by using the Mass and Balance tab in the Electronic Flight Bag.
There are two ways to add passengers to the aircraft once the Seats tab is open.
1) Using the Quick fill slider at the top.
2) Select the Front or Aft passenger zone in the aircraft outline and then enter the desired number of passengers.
Click "Load Aircraft" once the passenger count has been entered.

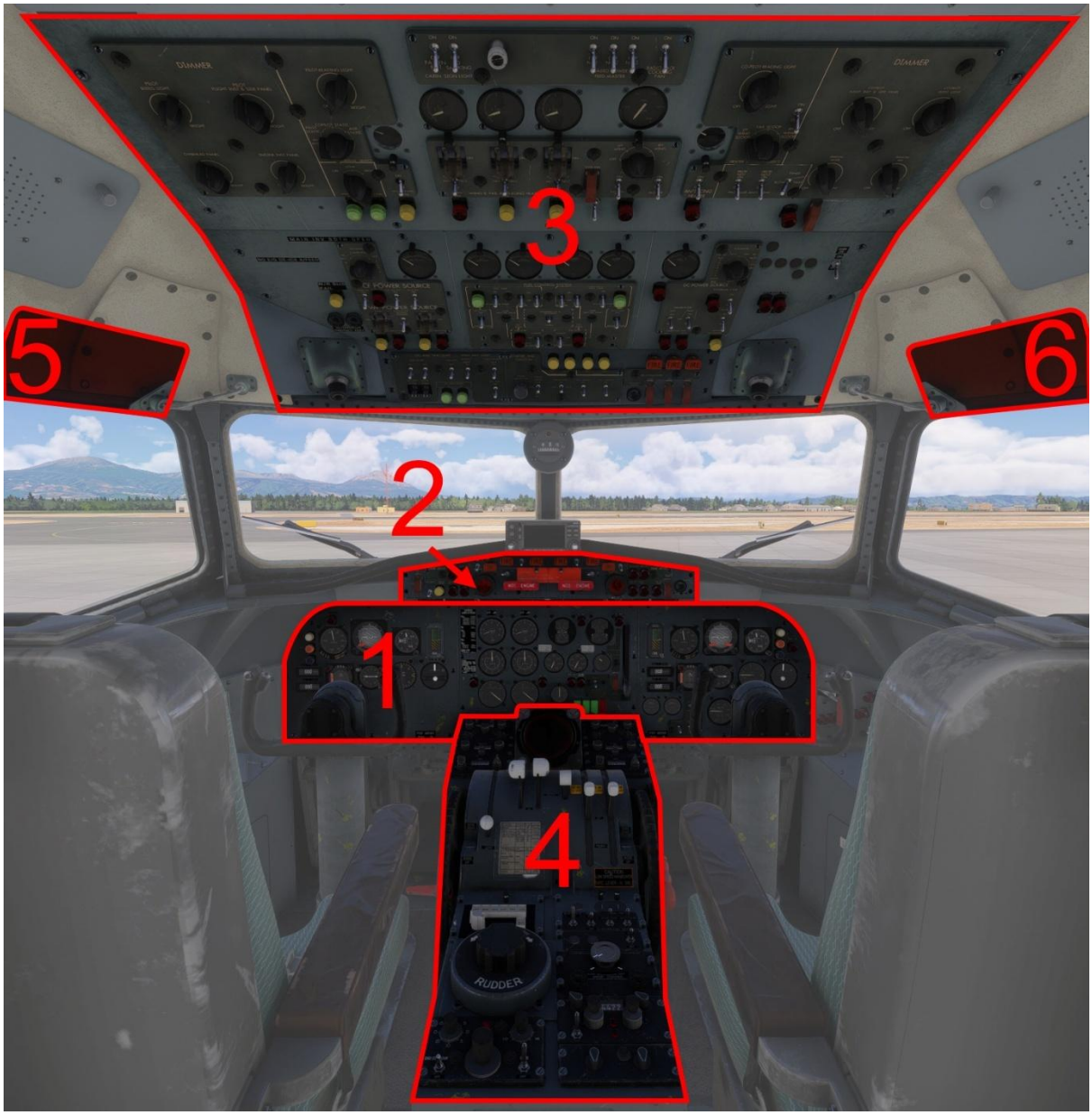



0
BACK
Mass and balance
Seats
Cargo
Fuel
Empty
Quick fill
45 %
4220 lbs - 28/62 seats
Total mass
44001 / 54010 lbs
Center of gravity
22% MAC
forward 20% MAC
aft 36% MAC
RESET CONFIG
LOAD AIRCRAFT

NAMC YS-11 Specifications

Cruise Speed: 253 KTAS at 15,000 ft
Maximum Take Off Weight: 54,010 lb (24,500 kg)
Maximum Landing Weight: 52,910 lb (24,000 kg)
Fuel Capacity (Usable): 1,160 USG (4,387 L)
Maximum Range: 1,140 NM (2,110 km)
Engines: Rolls Royce Dart MK542-10
Length: 26.3 m (86 ft 3.4 in)
Wingspan: 32.0 m (104 ft 11.8 in)

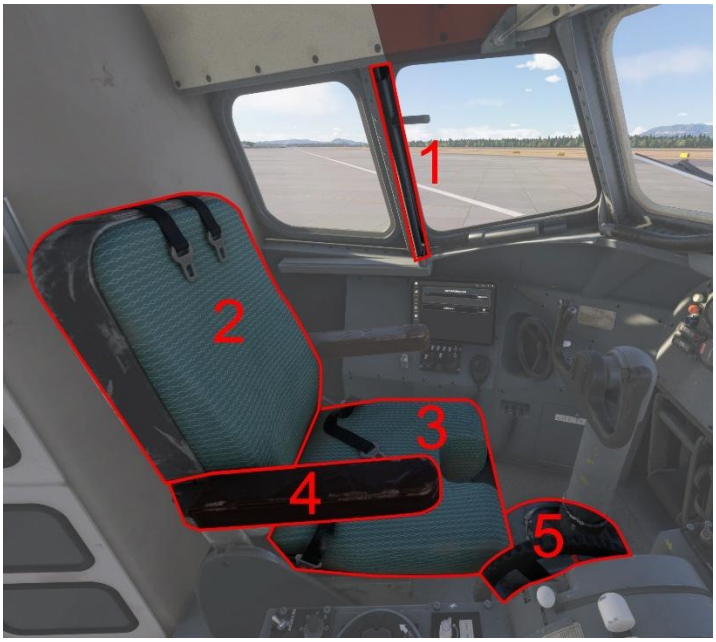
Cockpit Layout



1) Main Instrument Panel.
2) Auxiliary Panel.
3) Overhead Panel.
4) Centre Pedestal.
5) Captain Sunshade.
6) First Officer Sunshade.

Other Controls

1) Captain Window.
2) First Officer Window
3) Left Side Panel.
4) Right Side Panel.

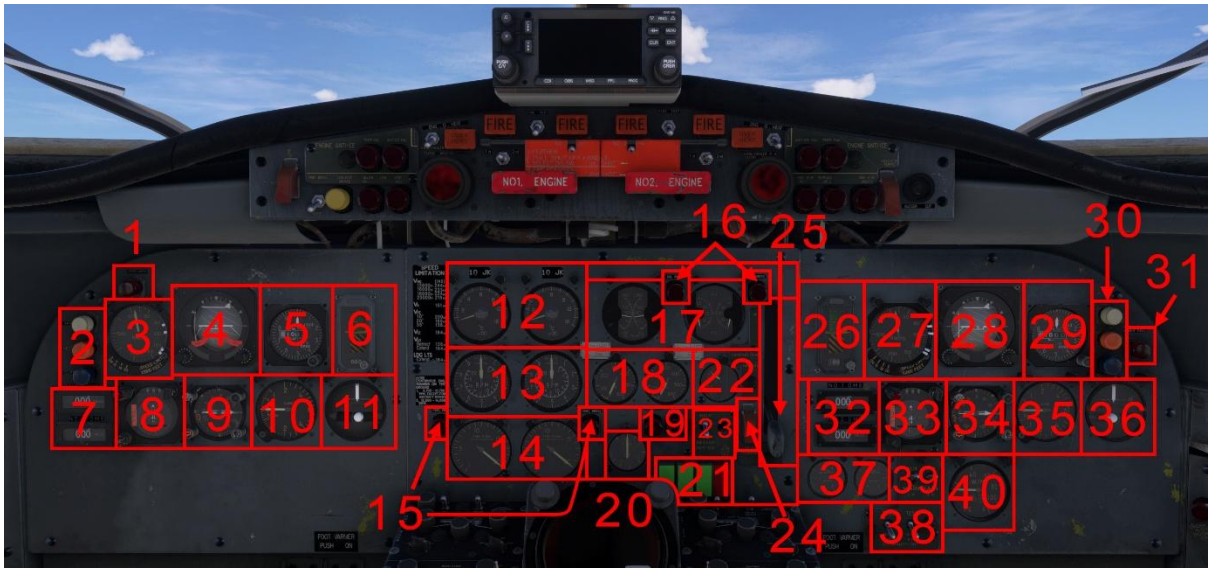


1) Open Window Click spot.
2) Backrest Adjustment.
3) Forward/Aft Seat Adjustment.
4) Retract/Extend Armrests.
5) Yoke Display/Hide Click spot.

Circuit Breaker Panel

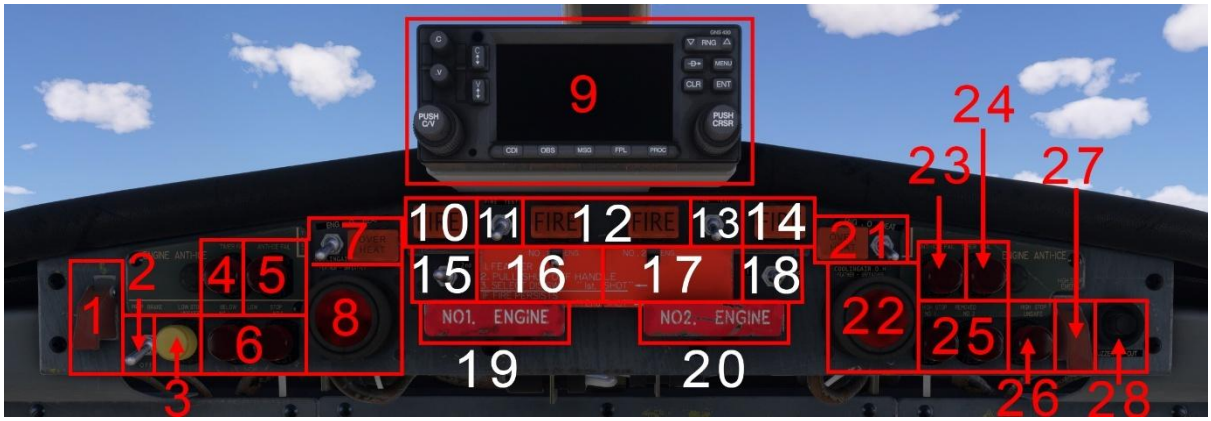
Cabin window shade click spot. Click and drag or use your mouse wheel to operate.

Main Instrument Panel



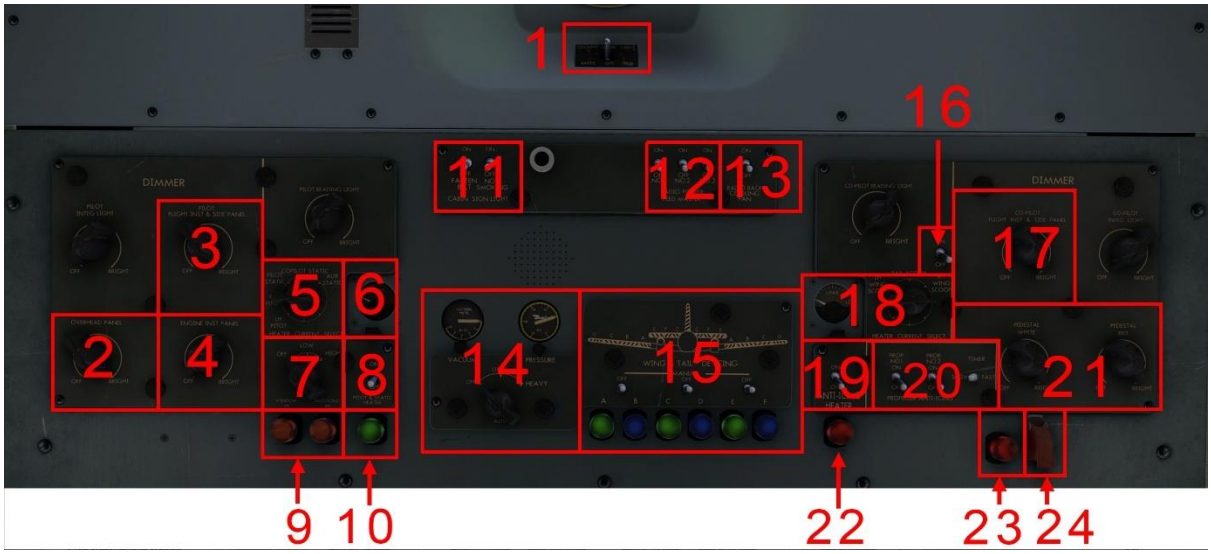
1) Overspeed Warning.
2) Marker Lights.
3) Airspeed Indicator.
4) Attitude Indicator.
5) Altimeter.
6) Radio Altimeter.
7) DME1 & DME2.
8) Course Deviation Indicator.
9) Directional Gyro.
10) Vertical Speed Indicator.
11) Turn Coordinator.
12) Turbine Gas Temperatures.
13) RPM Indicators.
14) Fuel Flow Indicators.
15) Fuel Pressure Warnings.
16) Oil Pressure Warnings.
17) Oil Pressure & Oil Temperatures.
18) Torque Pressure Indicators.
19) Flap Overtravel Warning.
20) Flap Position.
21) Landing Gear Position Lights.
22) Outside Air Temperature.
23) Flap Asymmetry Warning.
24) Panel Bright/Dim Selector.
25) Landing Gear Lever.
26) Radio Altimeter.
27) Airspeed Indicator.
28) Attitude Indicator.
29) Altimeter.
30) Marker Lights.
31) Power Failure Warning.
32) DME1 & DME2.
33) Course Deviation Indicator.
34) Directional Gyro.
35) Vertical Speed Indicator.
36) Turn Coordinator.
37) Fuel Quantity Indicator.
38) Fuel Quantity Test Switches.
39) Fuel Main/Aux Indicator Toggle.
40) Water/Methanol Quantity Indicator.

Auxiliary Panel



1) Propeller Brake Override (INOP).
2) Propeller Brake (INOP).
3) Propeller Low Stop Unsafe.
4) Engine 1 Anti Ice Timer Fail.
5) Engine 1 Anti Ice Fail.
6) Propeller 1 and 2 Below Low Stop Warning.
7) Engine 1 Overheat Test and Indicator.
8) Engine 1 Feather Button.
9) GNS.
10) LH Gear Bay Fire Warning.
11) Engine 1 Fire Test.
12) Engine 1 & 2 Fire Warning.
13) Engine 2 Fire Test.
14) RH Gear Bay Fire Warning.
15) LH Gear Bay Fire Extinguisher Discharge Switch.
16) Engine 1 Fire Extinguisher Discharge Switch.
17) Engine 2 Fire Extinguisher Discharge Switch.
18) RH Gear Bay Fire Extinguisher Discharge Switch.
19) Engine 1 Fire Shutoff Handle.
20) Engine 2 Fire Shutoff Handle.
21) Engine 2 Overheat Test and Indicator.
22) Engine 2 Feather Button.
23) Engine 2 Anti Ice Timer Fail.
24) Engine 2 Anti Ice Fail.
25) Engine 1 & 2 High Stop Removed Warning.
26) High Stop Unsafe Warning.
27) Emergency High Stop Removal Switch.
28) Buzzer Cutout Switch.

Upper Overhead Panel

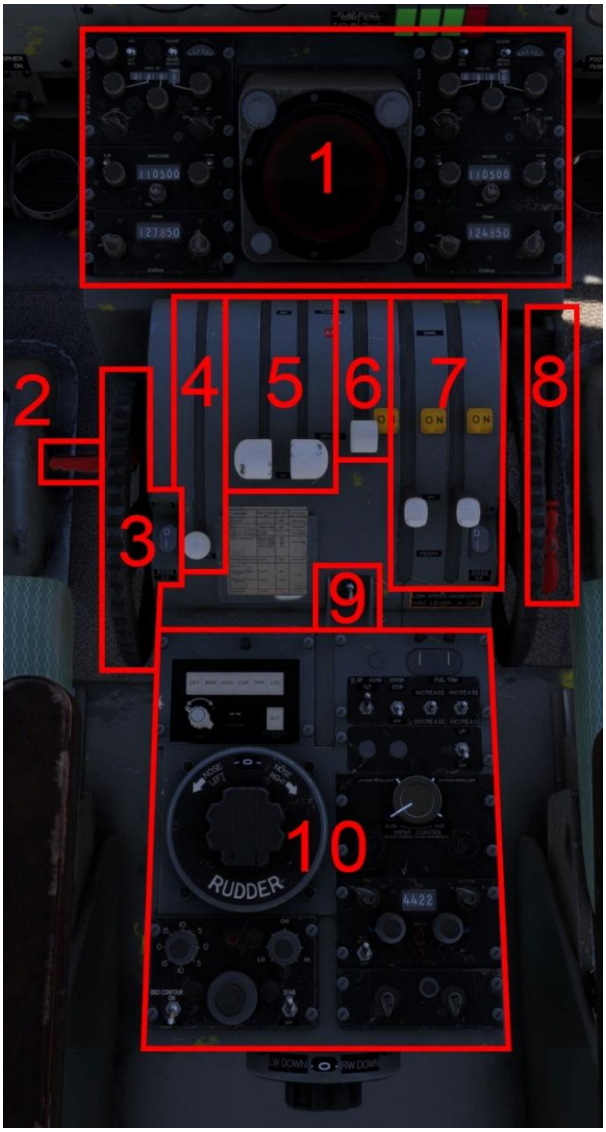


1) Dome Light.
2) Overhead Panel Flood Light.
3) Captain Instruments and Side Panel Lights.
4) Engine Instruments Lights.
5) Pitot/Static Load Selector.
6) Pitot/Static Load Indicator.
7) Windshield Heat Selector
8) Pitot & Static Heater.
9) Windshield Heat Indicator.
10) Pitot/Static Warning Light.
11) Cabin Signs.
12) Radio Master Switches.
13) Radio Cooling Fan Switch.
14) Pneumatic De-Icing Vacuum Selector.
15) De-Icing Manual Boot Selector.
16) De-Ice Load Meter Test.
17) First Officer Instruments and Side Panel Lights.
18) De-Ice Load Selector and Indicator
19) Master Anti-Ice Heater Switch.
20) Propeller Anti-Ice Switches and Timer.
21) Pedestal White and Red Lights.
22) Windshield Heat Fail Warning.
23) Propeller Anti-Ice Fail Warning.
24) Propeller Anti-Ice Cutoff.

Lower Overhead Panel

1) AC Voltmeter Selector.
2) AC Voltmeter.
3) Warning/Relay Bus Fail Warning.
4) Constant Frequency Emergency Inverter.
5) Constant Frequency Inverter 1 & 2.
6) Alternator Protection Test Buttons.
7) Wild Frequency Alternator 1.
8) Alternator Transfer Switch.
9) Wild Frequency Alternator 2.
10) Left Power Leak and Alternator Fail Warning Lights.
11) Right Power Leak and Alternator Fail Warning Lights.
12) Left AC Ammeter.
13) Right AC Ammeter.
14) Left DC Ammeter.
15) Right DC Ammeter.
16) Tank 2 to Tank 1 Transfer Switch.
17) Emergency Shutoff Valve Position.
18) Cross feed Switch and Indicators.
19) Emergency Shutoff Valve Position.
20) Tank 3 to Tank 4 Transfer Switch.
21) DC Voltmeter.
22) DC Voltmeter Selector.
23) DC Power Fail Warning.
24) External Power Avail Light and Switch.
25) Generator 1 & 2 Switches.
26) Battery Switch.
27) Generator Fail Warning.
28) Battery Discharge Warning.
29) Left/Right Battery Overheat Warning.
30) Emergency Exit Lights.
31) Landing Light.
32) Taxi Lights.
33) Wing Lights.
34) Anti-Collision Lights.
35) Starter Push Button & Starter/Blowout Switch.
36) Engine 1/2 Starter Indicator.
37) Ignition 1/2 Indicator.
38) Extend/Retract Landing Lights.
39) Landing Light Extended Indicators.
40) Navigation Lights.
41) Engine Start Selector Switch.
42) Engine 1/2 Ignition Switch.
43) De-Icing Extinguisher Discharge Button.
44) De-Icing Extinguisher Selectors.
45) Magnetic Compass.
a) Tank 1 Low Fuel Level Warning.
b) Tank 1 Scavenge Pump.
c) Tank 1 Main and Emergency Pumps.
d) Tank 4 Main and Emergency Pumps.
e) Tank 4 Scavenge Pump.
f) Tank 4 Low Fuel Level Warning.
g) Engine 1 Fuel Filter Blocked Warning.
h) Engine 1/2 Fuel De-Icing
i) Engine 2 Fuel Filter Blocked Warning.

Centre Pedestal



1) Forward Pedestal Radios.
2) Parking Brake Handle.
3) Pitch Trim Wheel and Indicator.
4) Power Lever Friction Handle.
5) Power Levers.
6) Low Stop Lever.
7) HPC Levers.
8) Gust Lock Lever.
9) Flap Switch.
10) Aft Pedestal.

Forward Pedestal Radios

1) ADF Frequency and Selector Knobs.
2) ADF Power Switch.
3) NAV Frequency and Selector Knobs.
4) NAV Power Switch.
5) NAV Ident Volume Knob.
6) COMM Power Switch.
7) COMM Frequency Selector Knobs.

Note: Left and Right-side radios are identical in their operation. Left- side radios control ADF1, NAV1 and COMM1. Right-side radios control ADF2, NAV2, COMM2.

Aft Pedestal

1) Autopilot Control Panel.
2) Rudder Trim Knob and Indicator.
3) Landing Gear Warning cancel button.
4) Fuel Trim Indicators.
5) Flap Asymmetry Switch.
6) INOP.
7) Fuel Trim Switches.
8) INOP.
9) Windshield Wipers Knob.
10) Transponder Mode Selector.
11) Transponder Code Selector Knobs.
12) Transponder Selector.
13) Transponder Altitude Reporting Switch.
14) Aileron Trim Knob and Indicator.

Left Side Panel

1) EFB.
2) Ground Steering Wheel.
3) Audio Panel.

Right Side Panel

1) Landing Gear Extension Emergency Handle.
2) Left and Right Cooling Fan Warning.
3) Door Indicator Lights.
4) Left and Right High Cabin Altitude Warning.
5) Cooling Fan Spill Valve Switch and Indicator.
6) Left and Right Cooling Fan Switches.
7) Foot Warmer Switch.
8) Pressurisation Indicators: Cabin Altitude, Cabin Vertical Speed, Cabin Differential Pressure.
9) Emergency Manually Depressurisation Handle.
10) Cockpit Temperature Selector Knob.
11) Cockpit Temperature Mode Controller Knob.
12) Audio Panel.

Autopilot

The NAMC YS-11 is equipped with the Brittain B-5C, three-axis Automatic Flight Control System—a robust, low-power autopilot designed to enhance stability and reduce pilot workload across roll, pitch, and yaw axes. The B-5C integrates seamlessly with the aircraft's navigation system to provide smooth course tracking and altitude hold. Its simplicity, reliability, and minimal electrical draw make it especially well-suited for regional turboprops like the NAMC YS-11, where operational efficiency and mechanical resilience are paramount.

1) Autopilot Disengage.
2) Heading Hold.
3) NAV Hold.
4) Localizer and Glide Slope Hold (Approach).
5) Turn Knob.
6) Vertical Speed Selector.
7) Altitude Hold.

Engaging the Autopilot

The B-5C autopilot system lacks a dedicated master switch for activation. Instead, engagement occurs through the selection of a lateral mode—such as Heading Hold, Nav Hold, or Localizer Hold. **Activating any of these modes automatically engages the Vertical Speed mode, maintaining the aircraft's vertical speed at the moment of engagement.**

An alternative method of engaging the autopilot is through the Altitude Hold function. However, this activates only the altitude control—lateral guidance must be selected separately via Heading Hold, Nav Hold, or Approach Hold to achieve full autopilot functionality.

Note: this autopilot is not fitted with an altitude preselector. The pilot must gradually reduce the vertical speed as the desired altitude is reached and engage the Altitude Hold mode to level off.

Engaging Heading Hold

Select the desired heading in the Directional Gyro using the Heading Knob.

The knob can also be pushed to synchronize the bug to the current heading.

Press HDG in the Autopilot Control Panel.

Note: this will engage the Vertical Speed mode as well and maintain the vertical speed present at the moment of engaging Heading Hold.

Engaging Altitude Hold

Press ALT, this will command an immediate level off at the current altitude.

Note: if the autopilot was not previously engaged only the ALT mode will engage. A lateral mode must be subsequently engaged if desired.

Using the Turn Knob

If the autopilot was not previously engaged, engage it by first selecting Heading Hold.

Turn the knob to the left or right to initiate a turn in the desired direction.

When the desired heading is reached, turn the knob back to the middle (neutral position).

Note: The turn will continue as long as the knob is not neutral.

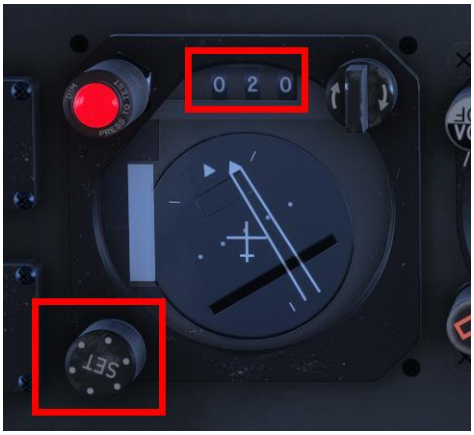
Capturing and tracking a VOR Radial

Tune the desired VOR in the NAV/DME radio.

Note: ensure the unit is turned on. This is controlled by the top left switch.

If using a GPS unit, VLOC must be displayed.

If GPS is displayed, press the CDI button to change the guidance to VLOC.



Select the desired course in the Course Deviation Indicator by using the lower left knob.

The course is displayed at the top of the instrument (020 in this case).

The top right knob reverses the set course by 180°.

Press TRK to engage the mode.

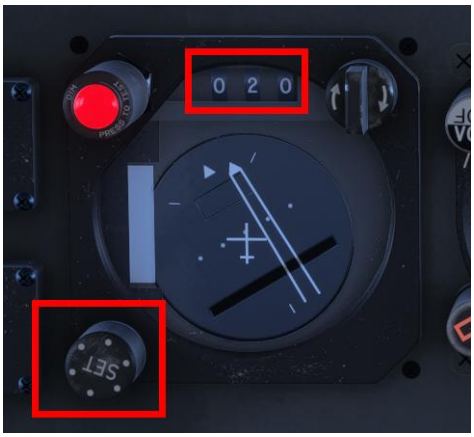
Executing an ILS approach

Tune the desired ILS in the NAV/DME radio.

Note: ensure the unit is turned on. This is controlled by the top left switch.

If using a GPS unit, VLOC must be displayed.

If GPS is displayed, press the CDI button to change the guidance to VLOC.



Select the desired course in the Course Deviation Indicator by using the lower left knob.

The course is displayed at the top of the instrument (020 in this case).

The top right knob reverses the set course by 180°.

Press LOC to engage the Approach mode.

Note: the real autopilot was capable to only track the Localizer, hence the LOC text in the button. For ease of use it was decided to simulate the Approach mode (Localizer and Glide Slope tracking).

The Glide Slope indication is shown in this image.

The aircraft is on the Glide Slope when the horizontal white line is in the middle of the instrument.

Capturing and tracking the GPS Route

In your desired GPS unit, select GPS.

If VLOC is displayed, press the CDI button to change the guidance to GPS.

Press TRK to engage the mode.

The autopilot will now follow the GPS guidance.

Commencing a Climb/Descend

Disengage the Altitude Hold mode if it was previously engaged.

Turn the Vertical Speed Selector to select the desired vertical speed target.

The target will be displayed as a tooltip and can be seen by placing your cursor over the selector.

Propeller Controls

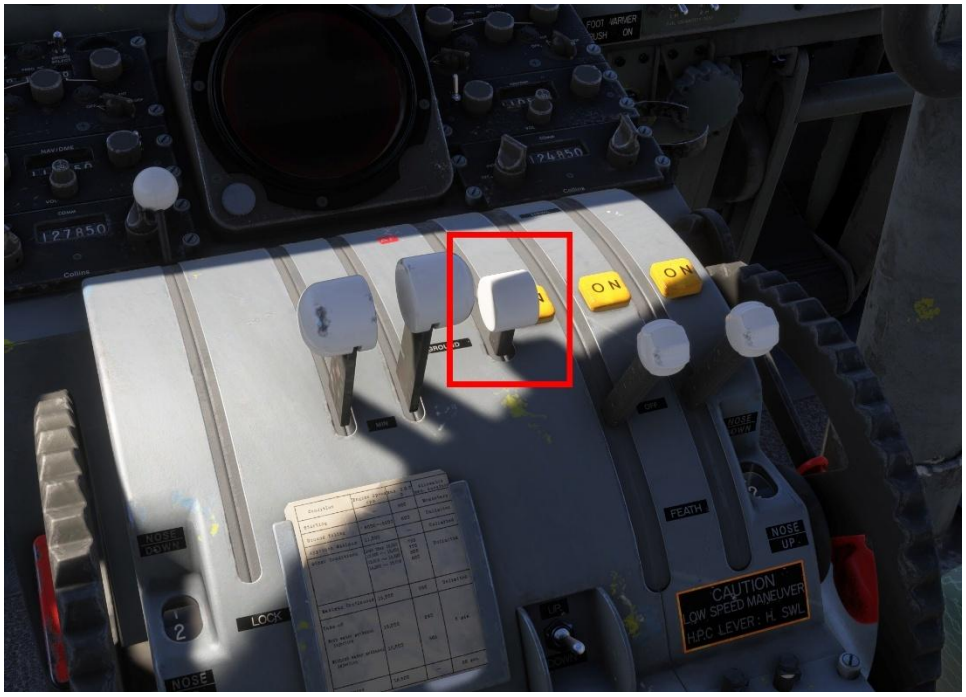
The NAMC YS-11 is equipped with two, four-bladed propellers measuring 14 feet 6 inches in diameter, capable of operating across a pitch range from 0 ° (ground fine pitch) to 84 ° 15' (feather position).

To prevent excessive aerodynamic drag in the event of an engine malfunction, the system incorporates two dedicated mechanical pitch stops:

- Low Pitch Stop: 14° (Flight fine pitch stop)
- High Pitch Stop: 27.5 ° (Cruise fine pitch stop)

The operation of these pitch stops is controlled by three levers, a single Low Stop Lever and two High Pressure Cock levers.

Low Stop Lever

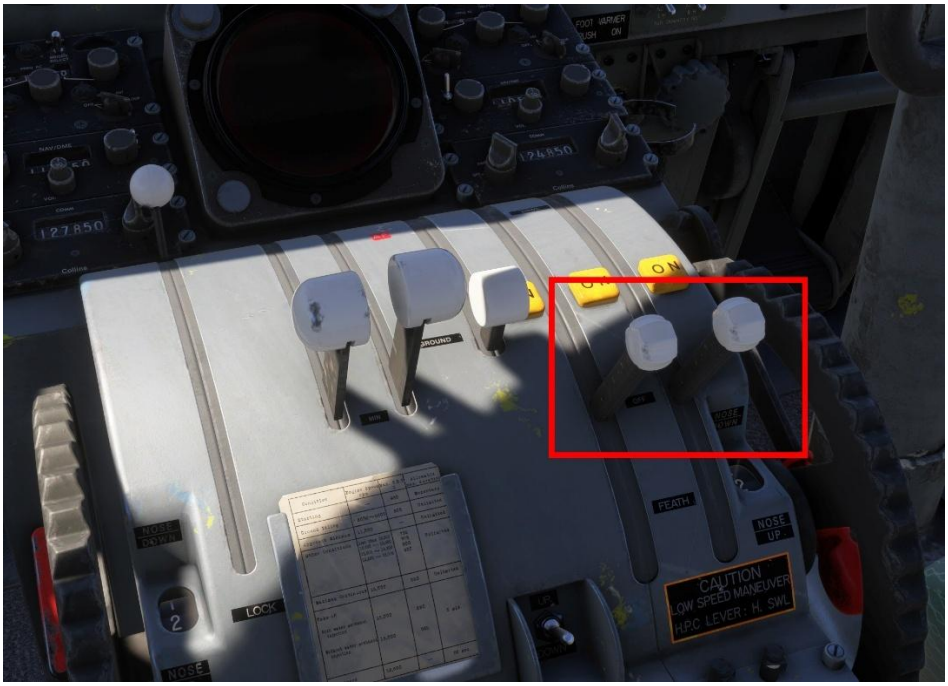


The Low Stop Lever operates in two distinct positions: Ground and Flight:

- Ground Position: Disengages the low pitch stop, permitting the propeller blades to reduce pitch down to 0°, enabling maximum drag for ground operations.
- Flight Position: Engages the low pitch stop, restricting blade pitch to no less than 14°, thereby preventing excessive aerodynamic drag during flight.

The lever is mechanically linked to the power levers—advancing them beyond a preset threshold automatically shifts the Low Stop Lever to the Flight position.
Upon landing, the Pilot Monitoring repositions the lever to the Ground position, removing the pitch stop. This allows the blades to enter ground fine range, substantially increasing drag and aiding in aircraft deceleration.
Note: the "Toggle Spoilers" key is assigned to this lever and can be used to toggle it after landing.

High Pressure Cock (HPC) Levers



The High Pressure Cock levers have four positions:

- High Stop Withdrawal
- Fuel ON
- Fuel OFF
- Feather

- **High Stop Withdrawal:** The high pitch stop of 27.5° is removed. This position is set whenever maximum acceleration is required or anticipated such as during take-off, or during approach (in case a go around must be performed). This will enable the propeller blade pitch to reduce as required to provide maximum acceleration, allowing the lowest blade pitch angle of 14° (flight fine pitch stop).

- **Fuel ON:** Upon power reduction for climb following take-off, the high pitch stop is established at 27.5°. This configuration ensures that the propeller blade pitch does not drop below the cruise fine pitch stop in the event of an engine failure. By limiting blade pitch reduction, it prevents the excessive aerodynamic drag that would otherwise result from a windmilling propeller operating at a very fine pitch.

- **Fuel OFF:** Fuel is cutoff from the engine, shutting it down.

- **Feather:** Feathers the propeller.

Propeller Control Indications

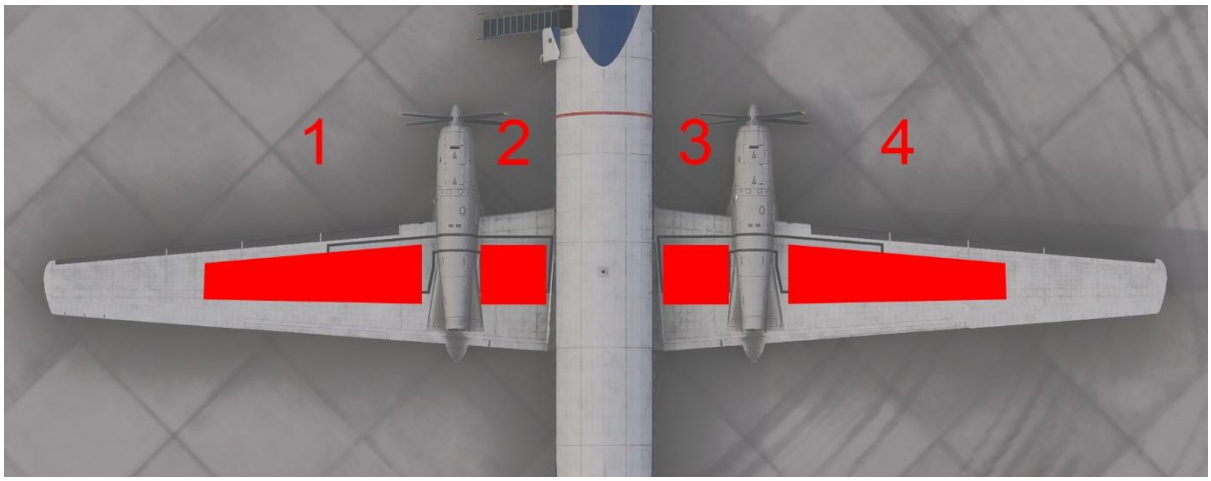
The auxiliary panel contains six lights indicating the status of the pitch stops.

1) Propeller Low Stop Unsafe: Illuminates when the low pitch stop is removed. This will occur when the Low Stop Lever is in the Ground position.
2) Propeller 1 and 2 Below Low Stop Warning: Propellers are operating below the low pitch stop of 14˚.
3) Propeller 1 and 2 High Stop Removed Warning: The high pitch stop is removed.
4) High Stop Unsafe Warning: Illuminates as the pitch reduces if the high stop is not in place, indicating that the blade pitch can continue decreasing past the cruise fine pitch of 27.5˚ down to the flight fine pitch stop of 14˚.

Fuel System

The aircraft is fitted with 4 fuel tanks: two main tanks and two auxiliary tanks.

Main Tank Number 1: located in the left wing, outboard of the left engine.
Auxiliary Tank Number 2: located in the left wing, inboard of the left engine.
Auxiliary Tank Number 3: located in the right wing, inboard of the right engine.
Main Tank Number 4: located in the right wing, outboard of the right engine.



Fuel levels for each tank can be checked visually during the pre-flight inspection. There are Fuel Quantity Gauges installed on the underside of each wing.

Tank	Capacity (USG)	Capacity (lbs)
Main Tank Number 1	700	4690
Auxiliary Tank Number 2	230	1541
Auxiliary Tank Number 3	359	2405
Main Tank Number 4	700	4690

Note: Auxiliary Tanks **do not** have the same fuel capacity.

Note: when selecting the desired amount of fuel pay close attention to the **fuel distribution.** Fuel will be distributed equally between all tanks if using the main fuel slider/setting.

Normal practice is to first fully fill up the Main Tanks and then continue with the Auxiliary Tanks. The user will have to do this by selecting the desired amount of fuel per tank.

Fuel feed is only possible from the Main Tanks to the engines. Engine 1 is fed from Main Tank Number 1 and Engine 2 is fed from Main Tank Number 4.

Warning: Fuel in the Auxiliary Tanks must be transferred into the Main Tanks to be used. Engine feed directly from the Auxiliary Tanks is not possible. This can lead to fuel starvation if fuel tank management is not carried out accordingly.

Controls (Overhead Panel)

1. Main Tank 1 Main and Emergency Booster Pumps.
2. Auxiliary Tank 2 Transfer Pump.
3. Auxiliary Tank 3 Transfer Pump.
4. Main Tank 4 Main and Emergency Booster Pumps.

Indications (Fuel Panel, First Officer panel)

1. Main Tank 1 or Auxiliary Tank 2 Fuel Quantity gauge.
2. Main Tank 4 or Auxiliary Tank 3 Fuel Quantity gauge.
3. Toggle between Main Tank 1 and Auxiliary Tank 2 indication.
4. Toggle between Main Tank 4 and Auxiliary Tank 3 indication.
5. Fuel Quantity Test switches.

Gear unsafe configuration warning

The aircraft is equipped with both audible and a visual alert to indicate a potentially unsafe landing gear configuration. When the power levers are set to idle and the landing gear remains retracted:

- A warning bell will activate.
- A red light will illuminate within the landing gear control lever.

These warnings will continue if the condition persists (idle power with gear up). To silence the alert, the pilot can press the landing gear warning cancel button, located in the aft pedestal.

Airspeeds for Normal Operations

V1:	90-110 KIAS	V_{MO} (13,600 ft):	244 KIAS
V_R:	90-120 KIAS	V_{MO} (20,000 ft):	215 KIAS
V2:	110-120 KIAS	V_A:	151 KIAS
Climb Speed:	150 KIAS	$V_{FE}10$:	200 KIAS
Approach Speed:	120 KIAS	V_{FE} 20:	165 KIAS
Max Speed Landing Lights Extended:	164 KIAS	V_{FE} 35:	136 KIAS
V_{LE}:	164 KIAS	V_{LO} (Retract):	135 KIAS
		V_{LO} (Extend):	164 KIAS

Operating Procedures

The following section is intended to supplement the Simplified Procedures or in-simulator Checklist. General operating guidelines are provided along with speeds and power settings to be applied per flight phase.

Engine Start

Ensure the Low Stop Lever is in the Ground position.
Engine 2 is started first, followed by Engine 1.

1) Engine 2 HPC lever: ON.
2) Starter and Ignition panel: Engine Select No. 2.
3) Starter Master: Start.
4) Starter Push Button: Push and hold for 4 seconds, the button should remain in.
5) When the RPM reaches 1200 to 1500 RPM: Engine 2 HPC lever to HSWL position.

Repeat the procedure for Engine 1.

After Start

Starter and Ignition panel:

1) Engine Select OFF.
2) Starter Master SAFE (middle position).

Set Flap 15, this is the normal Take Off Flap setting.

Take Off

Gently apply full power, note that the Low Stop Lever will automatically move to the Flight position as the power levers are advanced. Full power will be approximately 15,000 RPM.
V1 and Vr speed is 90-110 KIAS depending on weight.
Rotate gently, especially at high weights. Allow the aircraft to get airborne on its own and avoid the temptation to increase the pitch further if the aircraft does not become airborne immediately.
Once airborne, adjust your pitch accordingly to maintain a V2 speed of 110-120 KIAS.
Retract the gear, turn the Landing and Taxi Lights OFF and retract both Landing Lights.
At 1,000 ft AGL lower the pitch of the aircraft to accelerate.
Set 14,200 RPM, retract the flaps and set the HPC levers to the ON position.
Establish a climb speed of 150 KIAS, this will correlate to approximately 1,000 FPM at Maximum Take Off Weight.

Climb

Throughout the climb monitor the speed and adjust the vertical speed accordingly to maintain 150 KIAS.
If using the autopilot remember that there is no altitude preselector in this aircraft. Gently reduce the vertical speed and press ALT to engage altitude hold when your desired altitude is reached.

Cruise

Cruise RPM is the same as climb, 14,200 RPM.
Note that VMO reduces with altitude, being as low as 215 KIAS at 20,000 ft. Adjust power accordingly to remain below VMO, this might require less than 14,200 RPM.
Monitor your fuel consumption and transfer fuel from the auxiliary tanks to the main tanks as required. Engine 1 is fed from Main Tank 1 and Engine 2 is fed from Main Tank 4. Using the transfer pumps, transfer fuel from Auxiliary Tank 2 into Main Tank 1 and from Auxiliary Tank 3 into Main Tank 4.

Descent

Set power as required to maintain a speed of 200 KIAS. This will correspond to approximately idle power, and a vertical speed of -1,000 to -1,500 FPM.

Approach and Landing

Reduce speed from 200 KIAS to 150 KIAS for the approach. Select Flaps 10 when the speed is below VFE.
When appropriate (and below VLO of 164 KIAS), extend the landing gear. Extend the Landing Lights and turn them on as well as the Taxi Lights. Set the HPC levers to HSWL.
Select Flaps 20 and continue to decelerate to the approach speed of 120 KIAS.
Select Flaps 35 on final approach whilst maintaining 120 KIAS.
At touchdown move the Low Stop Lever to the Ground position. Note that this lever can be operated using the "Toggle Spoilers" control assignment.
Apply brakes as required, remember that the YS-11 does not have reverse.

Go Around

Apply full power and select Flaps 15 while selecting an initial pitch attitude of 10 degrees. Note that when heavy, the YS-11 will take time to accelerate. Monitor the pitch attitude and carefully adjust it to accelerate and prevent altitude loss as the flaps are retracted.
Retract the gear when a positive rate of climb is achieved. Continue as per the Take Off section, accelerating at 1,000 ft AGL.

Fuel Planning

In this section an abbreviated method is provided to calculate the fuel required for your flight. Note that the values mentioned below are for total fuel required for both engines assuming Maximum Take Off Weight.
An example calculation is provided for reference.

Taxi Fuel

30 lbs / minute.

Take Off Fuel

200 lbs required until reaching 1,000 ft.

Climb Fuel

2,800 lbs per hour at a climb speed of 150 KIAS, approximately 1,000 FPM.

Equivalent True Airspeed for 150 kt Indicated Airspeed:

Altitude (ft)	IAS (kt)	TAS (kt)
20,000	150	210
15,000	150	195
10,000	150	180
5,000	150	165

Cruise Fuel

Cruise power setting 14,200 RPM. The fuel flow remains approximately stable at 2,600 lbs/hr.

Altitude (ft)	IAS (kt)	TAS (kt)	Fuel Flow (lbs/hr)
20,000	190	265	2,600
15,000	190	250	2,600
10,000	190	230	2,700
5,000	190	210	2,700

Descent Fuel

1,800 lbs per hour. Speed of 200 KIAS, approximately 1,000 FPM at 12,500 RPM.

Equivalent True Airspeed for 200 kt Indicated Airspeed:

Altitude (ft)	IAS (kt)	TAS (kt)
20,000	200	280
15,000	200	260
10,000	200	240
5,000	200	220

Approach Fuel

200 lbs fuel required from 2,000 ft AGL at 200 KIAS, execute the approach and a Go Around until reaching 1,000 ft AGL in clean configuration.

Holding/Reserve Fuel

2,800 lbs per hour, holding at 1,000 ft AGL at 200 KIAS.

Example Calculation

For this example, we will consider a 200 NM flight.

- Departure airport elevation: Sea Level.
- Departure airport taxi time: 10 minutes.
- Arrival airport elevation: 2,000 ft.
- Cruise level: FL150.
- Average climb wind: 20 kt headwind.
- Average cruise wind: 30 kt headwind.
- Average descend wind: 10 kt headwind.

Taxi Fuel

10 minutes taxi at 30 lbs per minute: **300 lbs.**

Take Off Fuel

Fuel required to reach 1,000 ft AGL: **200 lbs.**

Climb Fuel

150 KIAS will be maintained throughout the climb, leading to an increasing TAS as the altitude increases. For climbing it is common practice to consider the TAS at a point two thirds of the desired cruise altitude.
In our case climbing from sea level to 15,000 ft, 2/3 would equal 10,000 ft.
Extracting the TAS from the Climb table at 10,000 ft gives 240 KTAS.
An average climb rate of 1,000 FPM will be assumed for calculation purposes.
Take Off fuel accounts for fuel up to 1,000 ft AGL, therefore we will take 14 minutes to climb the remaining 14,000 ft to reach our cruise level of 15,000 ft.
In this example we are assuming a climb headwind component of 20 kt, obtaining a resulting Ground Speed of 220 kt (240 KIAS – 20 kt).
We will now compute the distance taken on the climb: 14 minutes at 220 kt = 51 NM.
During the climb the average fuel flow is 2,800 lbs per hour. The climb will take 14 minutes, therefore requiring **654 lbs.**

Cruise Fuel

Using the table provided we extract at 15,000 ft a cruise TAS of 250 kt and a fuel flow of 2,600 lbs per hour.
Before we can compute our cruise fuel, we need to know the length of our cruise segment. The distance required to climb was calculated previously (51 NM), we now need to calculate the descent distance in order to compute the remaining cruise distance.

Our arrival airport is at an elevation of 1,000 ft. From 15,000 ft we will need to descend 14,000 ft. Assuming a rate of descent of 1,000 FPM this equates to 14 minutes. Our TAS is required and this can be extracted from the table located in the Descent Fuel section.

When descending we will consider the TAS at the halfway point throughout the descent. We will be descending 14,000 ft, half equates to 7,000 ft and we add the arrival elevation to this figure giving an altitude of 8,000 ft for our TAS. At a descent speed of 200 KIAS this corresponds to approximately 230 KTAS.
The average descend wind is 10 kt headwind, giving a resulting Ground Speed of 220 kt.
14 minutes descending at 220 kt Ground Speed will cover 51 NM.

Total flight distance of 200 NM, minus climb distance (51 NM), minus descent distance (51 NM) = 98 NM cruise distance.

At our cruise level the expected headwind component is 30 kt. TAS 250 kt – 30 kt = 220 kt Ground Speed.
98 NM at a Ground Speed of 220 kt takes 27 minutes.
23 minutes at a fuel flow of 2,600 lbs per hour requires **997 lbs.**

Descent Fuel

The descent distance and time was computed in the Cruise Fuel section: 14 minutes and 51 NM covered.
Average descent fuel flow is 1,800 lbs per hour. On a 14 minute descent the fuel required is **420 lbs.**

Approach Fuel

200 lbs.

Reserve Fuel

30 minutes reserve fuel: **1,400 lbs.**

Total Fuel Required

Taxi: 300 lbs.
Take Off: 200 lbs.
Climb: 654 lbs.
Cruise: 997 lbs.
Descent: 420 lbs
Approach fuel: 200 lbs.
Reserve Fuel: 1,400 lbs
Contingency Fuel (5% of Take Off + Climb + Cruise + Descent + Approach): 124 lbs.

Total: 4,295 lbs.

Simplified Procedures

PRELIMINARY COCKPIT PREPARATION	
LOG & DOCUMENT	CHECK
EMERGENCY LIGHT	OFF
BATTERY & EXTERNAL POWER	ON
RADIO MASTER	ON
CABIN SIGNS	ON
NAV LIGHTS	ON
HPC LEVERS	CHECK AND SET
FLIGHT INSTRUMENTS	CHECK
FUEL QUANTITY	CHECK
WEIGHT/PAYLOAD QUANTITY	CHECK
PRESSURIZATION	ON
NAV RADIO	ON
TRIM TAB	NEUTRAL
TRANSPONDER	STAND BY
FLIGHT CONTROLS	CHECK AND FREE
PARKING BRAKE	SET

BEFORE START	
BOOSTER PUMPS ALL	ON
ANTI-COLLISION LIGHT	ON
HPC LEVER	OFF
PARKING BRAKE	SET

ENGINE START	
THROTTLE LEVERS	MIN
HPC LEVERS	OFF
ENGINE 1 HPC LEVER	ON
ENGINE SELECTOR	No.1 (LEFT)
STARTER MASTER	START
STARTER BUTTON	PRESS AND HOLD
STARTER MASTER	SAFE
ENGINE 2 HPC LEVER	ON
ENGINE SELECTOR	No.2 (RIGHT)
STARTER MASTER	START
STARTER BUTTON	PRESS AND HOLD
STARTER MASTER	SAFE
HPC LEVERS	FULLY IN

AFTER ENGINE START	
DEICING SYSTEM	AS REQUIRED
GENERATOR & BATTERY	ON
INVERTERS	BOTH ON
EXTERNAL POWER	OFF
STARTER MASTER & ENGINE SELECT	SAFE & OFF
HPC LEVER	FULLY IN
FUEL TRIMMER	SET FOR TAKEOFF
RADAR	STBY
GROUND EQUIPMENT	DISCONNECT

TAXI	
PITOT HEATER	ON
FLAPS	SET FOR TAKEOFF
RADIO PANEL	ON
TAKEOFF BRIEFING	PERFORM
TRANSPONDER	ON
FLIGHT CONTROLS	CHECK
CONDITION LEVER	GROUND
EXTERNAL LIGHTS	ON
PARKING BRAKE	RELEASE
TAXI	PERFORM

TAKE OFF	
TAXI LIGHTS	OFF
TRANSPONDER	ALT
LANDING LIGHTS	ON
BRAKES	PRESS AND HOLD
THROTTLE	50%
ENGINE INSTRUMENTS	CHECK
THROTTLE	100%
BRAKES	RELEASE
RUDDER	AS REQUIRED
ROTATE	90 KNOTS
LANDING GEAR	RETRACT

CLIMB	
LANDING LIGHTS	OFF
CABIN SIGNS	AS REQUIRED
FLAPS	RETRACTED
PRESSURIZATION	NORMAL
FUEL TRIMMER	50%

CRUISE	
FUEL TRIMMER	AS REQUIRED
ENGINES PARAMETERS	CHECK
FUEL	CHECK

APPROACH	
BOOSTER PUMP	CHECK
CABIN SIGNS	BOTH ON
RADIO & NAV INSTRUMENTS	CHECK
GEAR LEVER	NEUTRAL
PRESSURIZATION	CHECK

LANDING	
HPC LEVER	CHECK
FLAPS	AS REQUIRED
LANDING CLEARANCE	OBTAIN
LANDING GEAR	EXTEND
RADAR	OFF
FUEL TRIMMER	100%
FLAPS	35 DEGREES

AFTER LANDING	
FLAPS	RETRACTED
TRANSPONDER	OFF
CONDITION LEVER	GROUND
TAXI LIGHTS	ON
TAXI	PERFORM
RUDDER	AS REQUIRED

PARKING	
PARKING BRAKE	SET
TAXI LIGHT	OFF
ENGINES COOLDOWN	WAIT
HPC LEVER & ENGINES	OFF
DE-ICE	OFF
BOOSTER PUMPS	OFF
INVERTERS	OFF
ALTERNATORS	OFF
EXTERNAL LIGHTS	OFF
CABIN SIGNS	OFF
FLAPS	UP
TRANSPONDER	OFF
RADAR	OFF
EMERGENCY LIGHT	OFF
RADIO MASTER	OFF
BATTERY & EXTERNAL POWER	OFF