COWAN SIMULATION
www.CowanSim.com

H125 (AS350B3e)

For X-Plane 12

Introduction

This project is the result of 1000s of hours of work and is focused on realism & immersion. Cowan Simulation was created in 2019 and became official in 2020. Since that time we have come a long way and work continues around the clock. A special thanks goes out to Julien Lebrun, the man responsible for all 100 H125 liveries. (paint schemes)

The H125 (AS350 B3e) is a single-engine light utility helicopter that outclasses all other single-engine helicopters for performance, versatility, low maintenance, and low acquisition costs, while excelling in high, hot and extreme environments.

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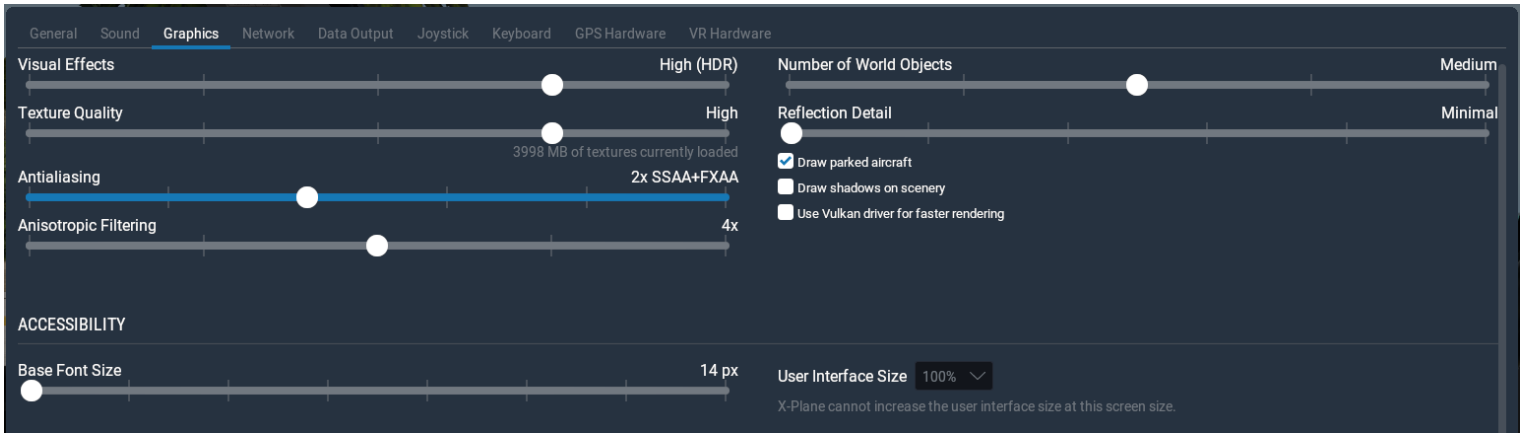
Installation & Settings

Installation is straight forward. Extract all of the contents of the zip you downloaded to your X-Plane aircraft folder. That is all you need to do. Please do not edit or move files unless know what you're doing. It's not recommended to rename the folder. To uninstall the software simply delete the H125 folder. To update the software please do NOT overwrite. Install the same as explained above. Nothing is installed anywhere but that aircraft folder. (example below)

In the "Graphics" settings section you will need to set everything to what your machine can handle. All of these settings are specifically reliant on your machines abilities. Please seek X-Plane documentation for advice. The H125 is highly optimized but does require a good GPU (Graphics Processing Unit) for the amount of textures and options available. Video card memory is important and 6GB+ is optimal.

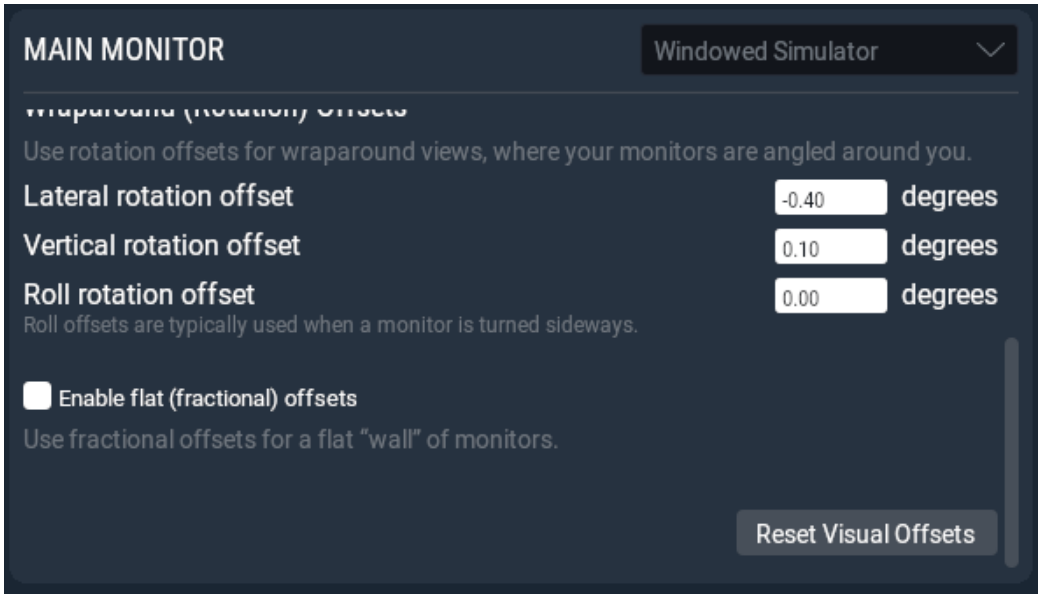
Note: External click spots are only available when using Vulkan driver. Using Vulkan is recommended.



Installation & Settings

The preferred lateral field of view for this model is about 95 degrees. This is more of a personal preference thing but 95 degrees gives optimal results.

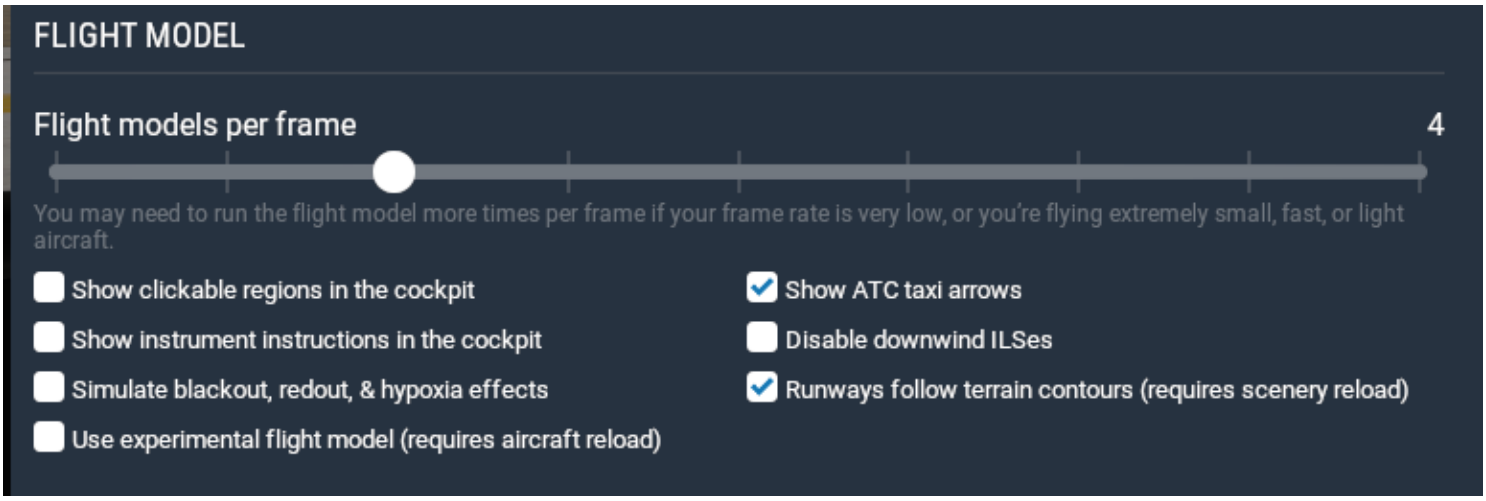
Sometimes the visual offsets can change, especially when using VR and then switching back to 2D mode. If this happens then scroll down to "Visual Offsets" for your monitor, then select "Reset Visual Offsets" to correct lateral, vertical and roll offsets.



Installation & Settings

In the "General" settings section you will see "Flight Model" settings. “Flight models per frame” was set at 4 when designing the flight model. This option tells the sim how many times per frame to calculate all of the math involved in the flight model. If you have yours set at 2 (default) then that is perfectly fine. If you use a higher setting then the sim will just use a bit more CPU resources. If you have issues with a “bouncing” model then set this higher until it stops.

If the "Use experimental flight model" box is selected then it does nothing. The H125 uses the experimental flight model whether this option is selected or not. So ignore that check box for the H125.



Mapping Hardware

The first and most important thing about mapping hardware is to make sure you create a new profile under "Active Profile" in the bottom left of joystick settings. The second thing is to make sure the aircraft is loaded. If the H125 is not loaded then you cannot see the commands that the software creates upon loading.

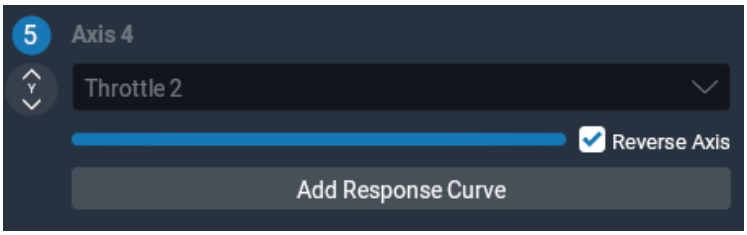
The H125 has plenty of commands. Commands are thing like switches, buttons or controls that can be mapped to physical hardware. The "throttle" in the H125 is not an actual throttle, it's a big rotating switch. Idle or flight with nothing in between. Just like the real thing.

There are two command for that twist grip. If you want to use custom commands in joystick settings then you can. Otherwise you can just map your hardware axis to "Throttle_2" in joystick settings. Please do not map to any other "Throttle" selections. It will spoil your day.

If you would like to use the custom commands then use these:

THROTTLE - THROTTLE UP: AS350/THROTTLE/throttle_up_cmd

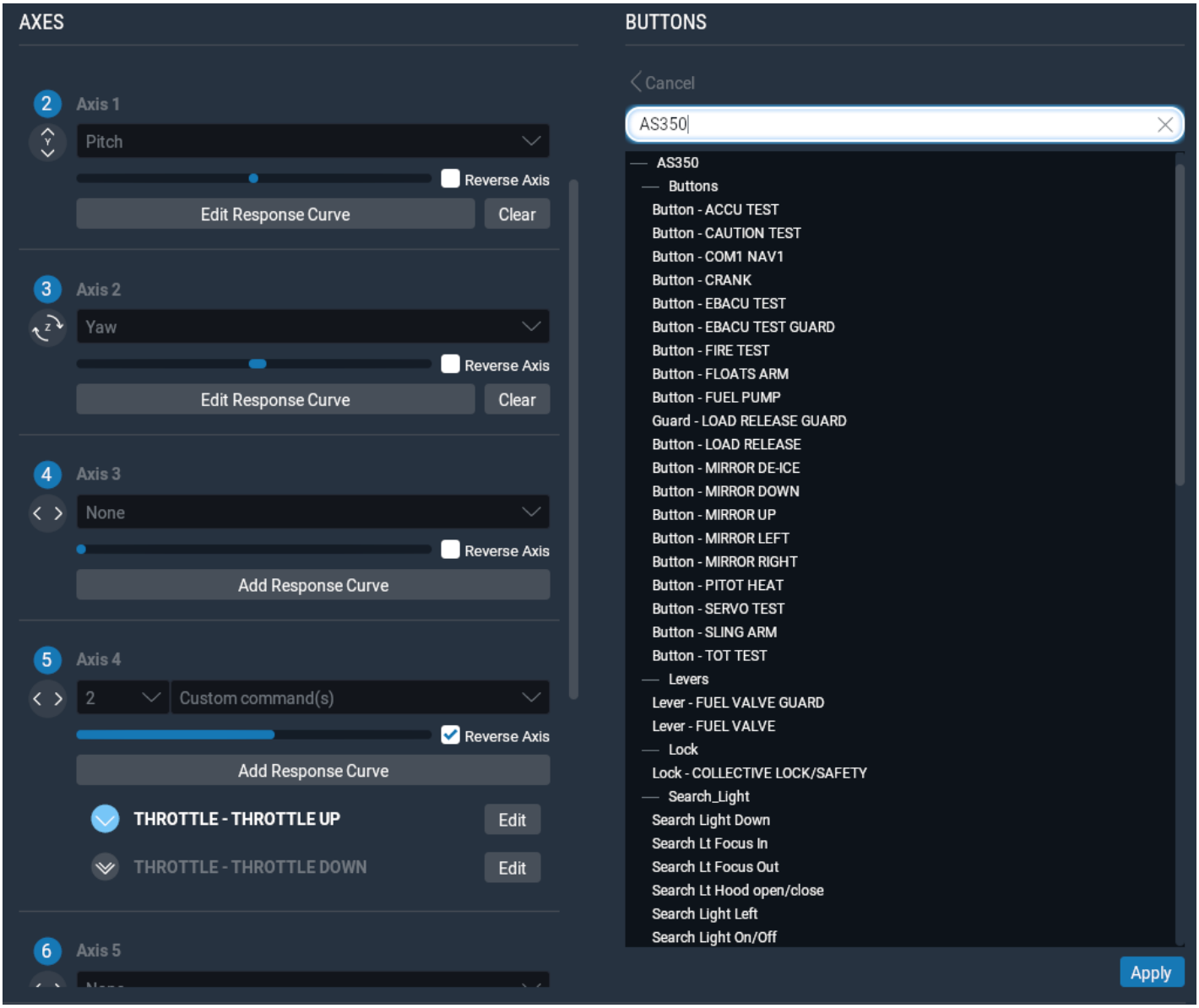
THROTTLE - THROTTLE DOWN: AS350/THROTTLE/throttle_dn_cmd



Mapping Hardware

For mapping buttons, navigate to joystick settings, select one of your buttons by clicking "Edit" then go to the search box on the top and type in "AS350". You will see the entire list of available custom commands for the H125 (AS350B3e).

X-Plane has a wide variety of default commands available as well. If you want to map things like trim then just search for "Trim".



Manipulators (Click Spots)

There are a lot of manipulators throughout the H125. If you want to get a good look at them all you can select “Show Instrument Click Regions” in the X-Plane “View” menu. This will show the invisible objects that are used to manipulate things and interact with the model as seen below. As noted earlier in this manual, the exterior click spots are only available when using Vulkan driver mode, not with OpenGl mode.

RealityXP Integration

The RealityXP GTN 650 & 750 are integrated. If you have these add-ons installed then you can access the GTN 650 or 750 by using the configuration menu. Activation of either device will replace the default Garmin 430 or 530 in the respective position. If you don't own RealityXP products then it's highly recommended you check them out!

Link: RealityXP

AviTab Integration

The AviTab/iPad is integrated. If you have this add-on installed then you can access the AviTab/iPad by using the configuration menu. Activation of the device will show the AviTab in the position seen below. If you don't have AviTab then it's highly recommended you check out this FREE plugin!

Link: AviTab

H125 Systems

This manual will not dive deep into systems. The information is provided for general knowledge of the H125. Two versions of the checklist are provided and they are located in the "MANUALS" folder. Those will get you up to speed.

The "H125 (AS350B3e) Checklist Full" PDF contains detailed procedures. Be sure to check out all of the manuals.

H125 VEMD

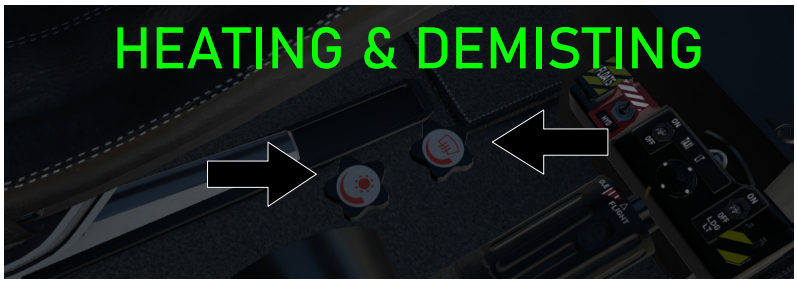
The VEMD (Vehicle & Engine Management Display) is installed on the instrument panel of the H125 helicopter and is designed to manage in function of essential and unessential vehicle and engine data.

- Display of engine parameters
- Computation and display of engine first limitation
- Computation and display of weight related to performance data
- Display of engine performance checks
- Display of FADEC data
- Computation and display of the number of engine cycles
- Includes built-in tests that help check its own operation and that of related avionic systems

VEMD Power Check

The "Engine Power Check" (EPC) function is activated by pressing on the "SCROLL" button. The "ENGINE POWER CHECK" page is then displayed.

- On this page, the VEMD shows the conditions to be respected for beginning an EPC.
- Each condition requires an action by the pilot. Once this action is performed, the line disappears.
- When all the conditions are satisfied, the EPC is conducted automatically.



VEMD Power Check

The "Engine Power Check" then shows an hourglass which fills as the EPC progresses. The altitude information Zp is calculated using static pressure Ps.

- The VEMD checks that the parameters required to calculate the EPC are stable for a period of 20 seconds, then orders the FADEC to execute the EPC.
- The FADEC performs the EPC and sends the results to the VEMD which adjusts the TOT and TRQ margins as a function of P0, T0 and IAS.

VEMD Power Check

The "ENGINE POWER CHECK RESULT" page displays on the screen.

- This page gives the TOT and TQ margins with a "BAD" or "GOOD" symbology depending on the circumstances.
- It also shows the values of the parameters which were used in the computation (NG, TOT, TQ, NF, Zp, OAT).
- Pressing the "RESET" button during the EPC procedure causes the procedure to stop and display the nominal configuration.
- Pressing the "SCROLL" button during the EPC procedure causes the procedure to stop and permits the equipment to go to the following page. (The Performance Page)

VEMD Performance

The "Performance Page" and calculation function is activated as the "SCROLL" push-button is pressed.

- As the "PERFORMANCE" page is displayed the status of adjustable fields corresponds to the data previously entered. The IGE or OGE values are displayed in yellow when they are lower than AUW.

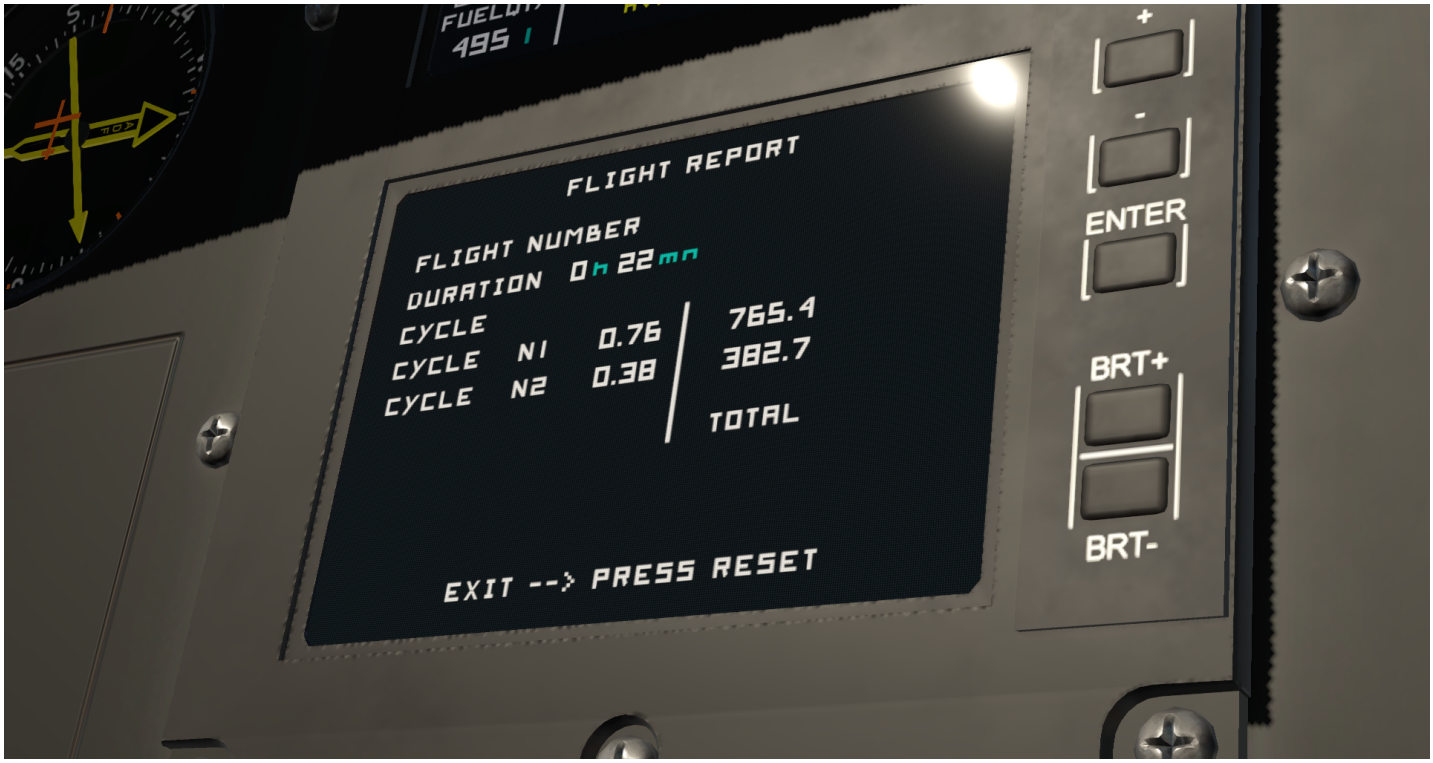
  The "performance calculation" calculates the following:

- Max take-off weight in ground effect IGE and the maximum weight out of ground effect OGE from the following parameters acquired by the VEMD: a. Pressure Altitude "Zp" (Hp) (calculated from the static pressure P0 measured by the VEMD. b. OAT

- The VEMD computes the maximum all-up weight (AUW) as a function of the following parameters entered by the pilot: a. Empty Equipped Weight (EEW) b. CREW weight c. PAY LOAD

VEMD Flight Report

The "Flight Report" page is displayed at the end of the flight when the VEMD detects the "engine stop" status.



- VEMD flight number which increments when, at the end of a "flight" status, the NG drops below 10 % and NR is lower than 70 rpm.
- VEMD flight duration (Starts when the NG value rises above 60 %, stops when the NG value decreases and drops below 50 %)
- Number of NG cycles recorded during the flight and the total number of NG cycles recorded by the VEMD.
- Number of free turbine (NF) cycles recorded during the flight and the total number of free turbine (NF) cycles) recorded by the VEMD.
- Message indicating the exceedance of one limitation or a failure detection during the flight.

Note: The engine and free turbine cycles integrators are to be considered as partial integrators. They are useful to the pilot for recording the engine cycles in the aircraft log book. But they provide no indication of the total number of cycles of the installed engine. These integrators return to zero after 999 cycles.

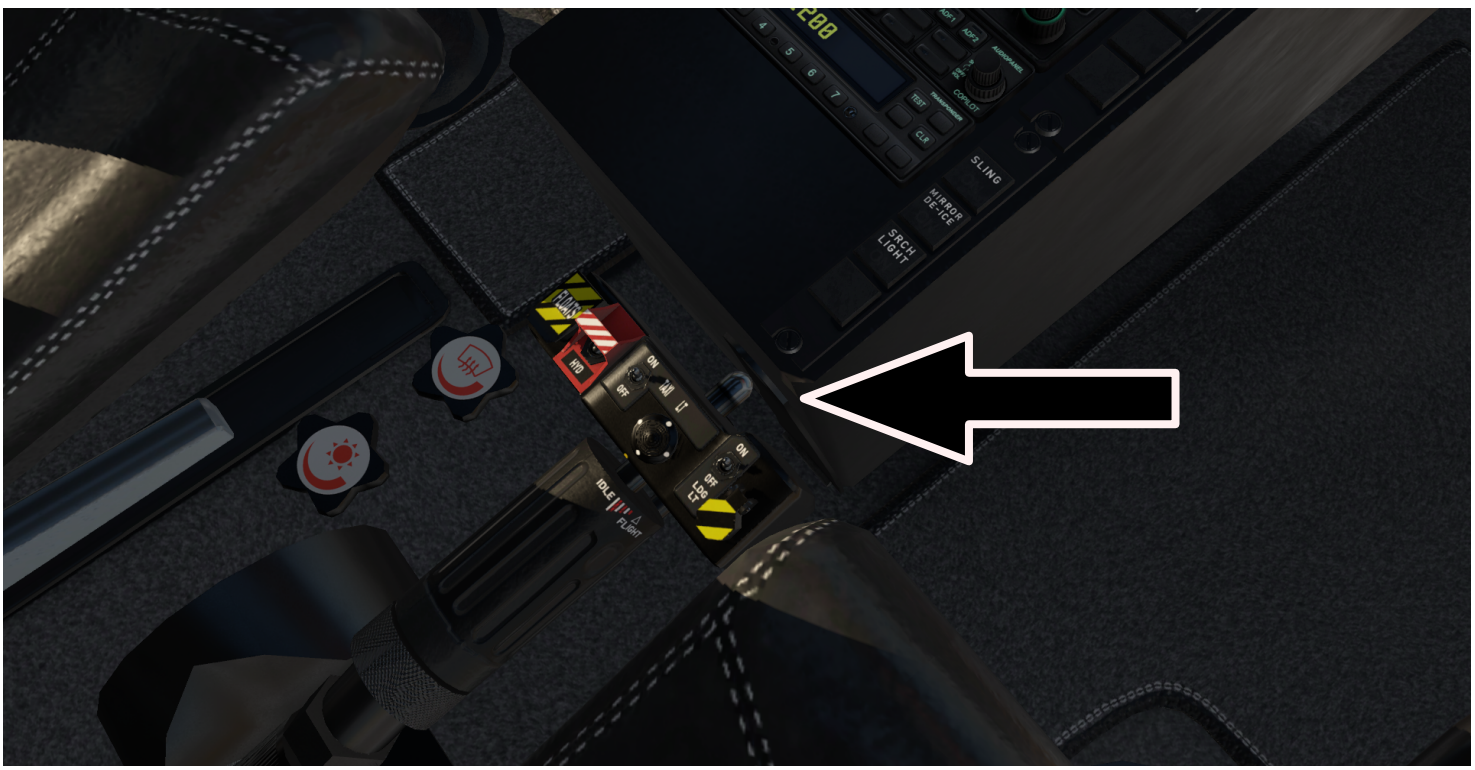
VEMD Notes

The VEMD screens can be "popped out" and moved to another monitor by clicking on either one.

The performance page calculations for IGE & OGE are not done. We need to get the formula correct so this was left in sync with the A.U.W. (maximum all-up weight) calculation. If anyone knows the math, specifically for the B3e, then please reach out. The functionality will be updated when the first update is released.

H125 Collective

The H125 has a collective pitch lock located in the front of the collective switch panel. To raise the collective click the lock to release.

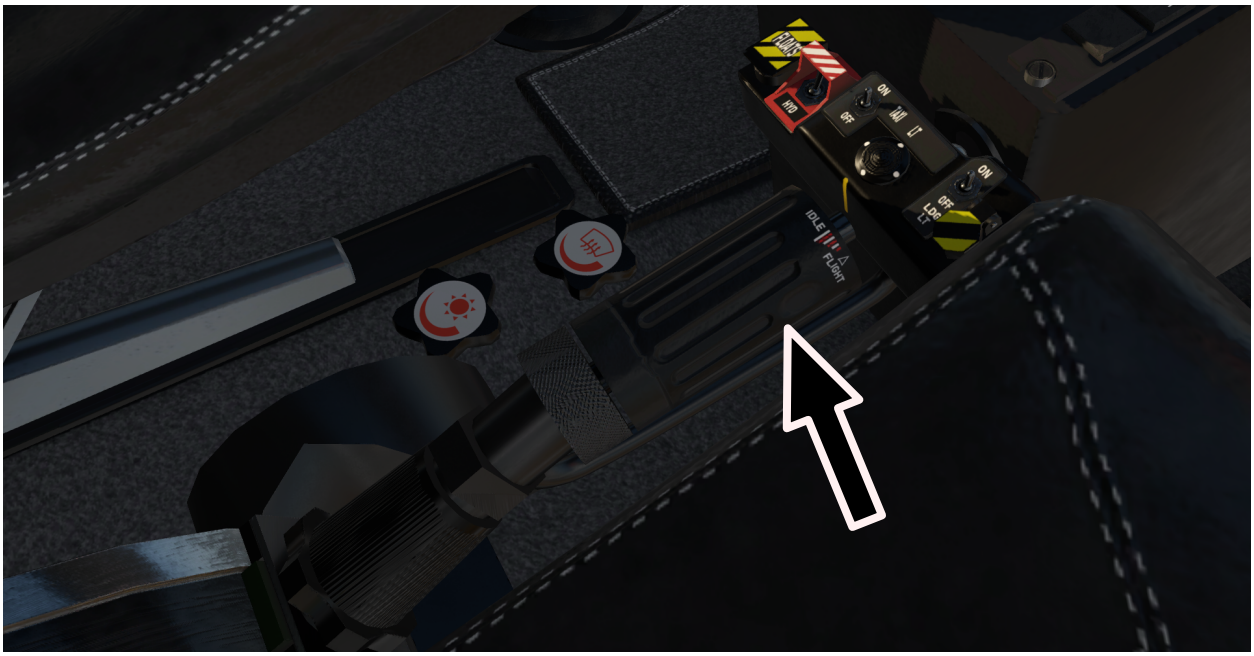


H125 Collective

The H125 collective twist grip "throttle" is not like a conventional twist throttle. It is essentially a rotating switch. All the way down (right) is the idle position and all the way up (left) is the flight position.

The floats switch will blow the floats (they have to be armed), the hydraulic switch will turn on/off the hydraulic system, the center hat switch is for moving the search light, the landing and taxi lights switch will turn on/off landing and taxi lights.

(see "H125 (AS350B3e) Checklist Full" for procedures)



H125 Cyclic

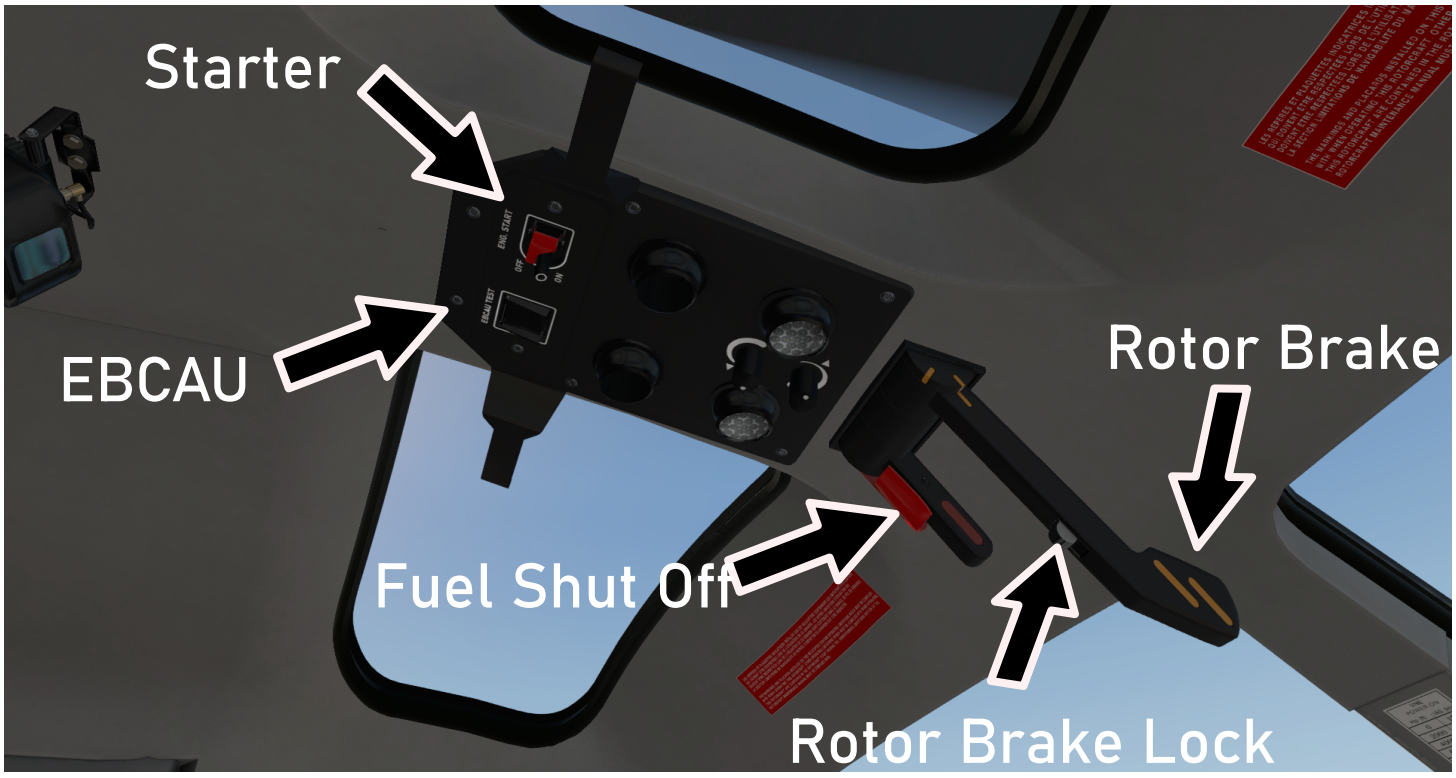
The H125 cyclic currently has five switches that are active. The trim hat, mirror adjustment hat, load release, force trim release and autopilot off. (see the "SAS Autopilot Manual")

H125 Overhead Panel

The H125 overhead panel consists of the starter switch, Engine Back-up Control Ancillary Unit (EBCAU) test button, overhead lighting, rotor brake and emergency fuel shut off lever.

The fuel lever is for only for emergency procedure. The rotor brake has a locking switch that must be depressed before use. When the rotor brake is pushed all the way forward then the safety lock will automatically lock into place preventing the rotor brake from being applied. The rotor brake has an internal switch that prevents starting the engine while it is not in the locked position.

(see "H125 (AS350B3e) Checklist Full" for procedures)



H125 Center Console

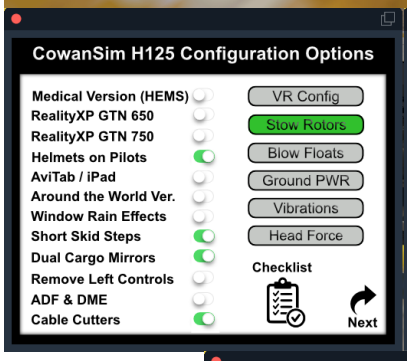
The H125 center console consists of most of the essential switches and buttons. Toggles: battery, generator, anti collision lights, horn on/off and avionics on/off. Buttons: fuel pump, pitot heat, servo test, warning lights test, fire test, crank engine, ACCU test, floats arm, Com 1 off, sling, mirror de-ice and search light.

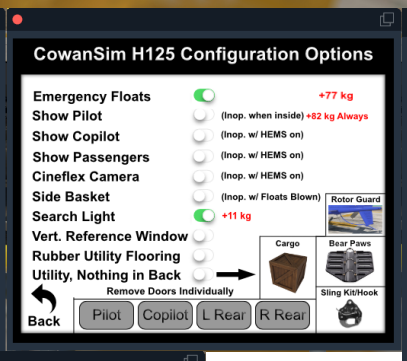
(see "SAS Autopilot Manual for HeliSAS" instructions)

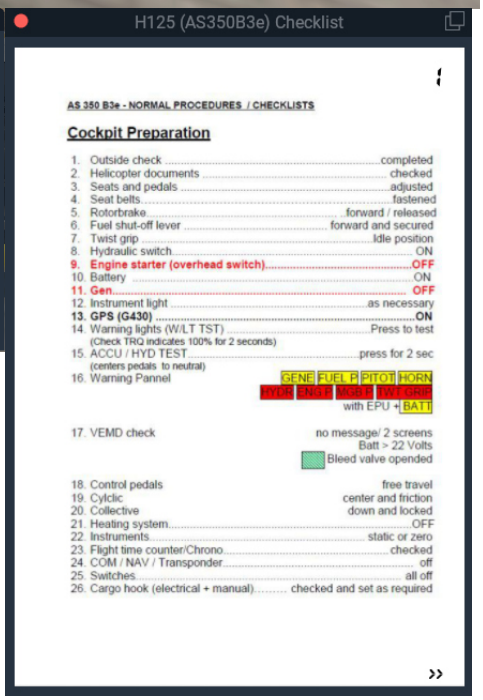
(see "H125 (AS350B3e) Checklist Full" for procedures)

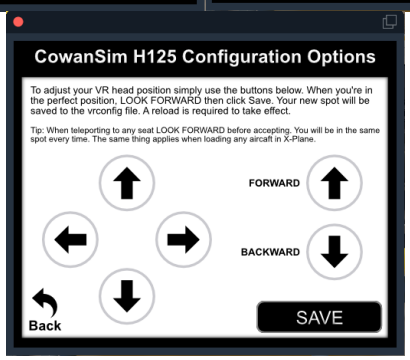
H125 Configuration Manager

The H125 menu can be accessed through the upper X-Plane menu under "CowanSim H125(AS350B3e)>Configuration Manager". It's self explanatory and there are instructions for the VR configuration. The menu & checklist can be "popped out" and moved to another monitor.









Contact Info

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