



FlyInside Bell 47G-2A1 User Manual

By FlyInside Inc.

Programming - Dan C.

Flight Dynamics – Rick M.

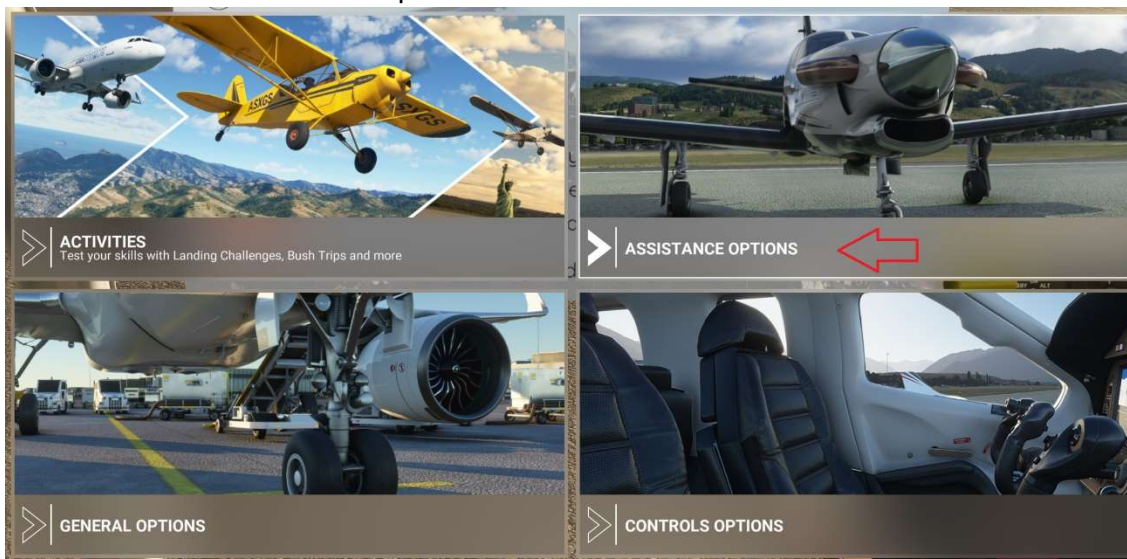
Modeling & Artwork – Tony F.

Quick Tips

Ensure that all flight assists are set to Off.

Flight assists interfere with the FlyInside Flight Dynamics Engine, and may cause various controls such as the anti-torque pedals not to function. To disable flight assists:

1. Load a flight
2. Press "Escape"
3. Click the "Assistance Options" button



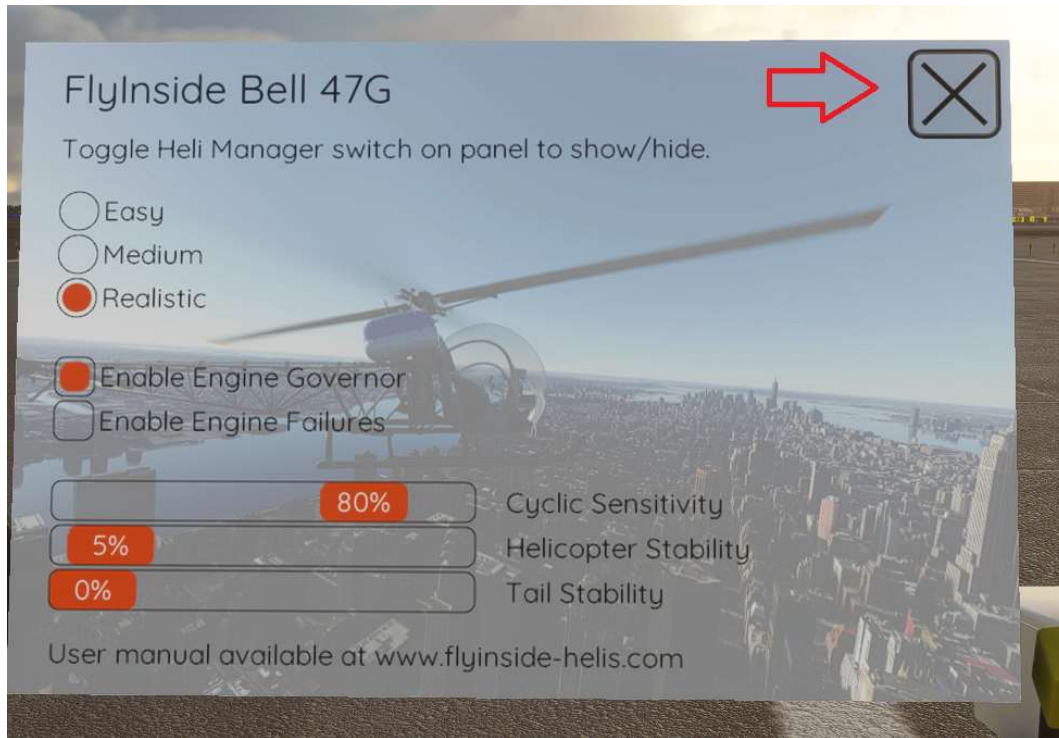
4. Ensure that all "PILOTING" options are set to "OFF"

^ PILOTING	<	HARD	>
TAKE-OFF AUTO-RUDDER	<	OFF	>
ASSISTED YOKE	<	OFF	>
ASSISTED CHECKLIST	<	OFF	>
ASSISTED LANDING	<	OFF	>
ASSISTED TAKEOFF	<	OFF	>
AI RADIO COMMUNICATIONS (ATC)	<	OFF	>
AI ANTI-STALL PROTECTION	<	OFF	>
AI AUTO-TRIM	<	OFF	>
ASSISTED CONTROLLER SENSITIVITY	<	OFF	>

Marketplace Version Heli Manager

The website and Marketplace versions of the Bell 47 are nearly identical. They contain the same artwork, systems, customizability, and flight dynamics. The only difference is the "Heli Manager."

In the marketplace version of the Bell 47, the Heli Manager is built right into the cockpit, instead of running as a separate program. To dismiss it, click the "X" on the upper right corner.



To open Heli Manager again, simply flip the Heli Manager switch on the bottom center of the helicopter panel.



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A Special Thanks to Our Beta Testers

We'd like to thank everyone who helped to test, debug, and shape this helicopter. We couldn't have done it without them.

Brandon Filer

Drew "Bel Geode" Bolton

FredOData (Youtube Channel)

John Hargreaves

Paul T

RotorSimPilot

Sérgio Costa

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1. Introduction

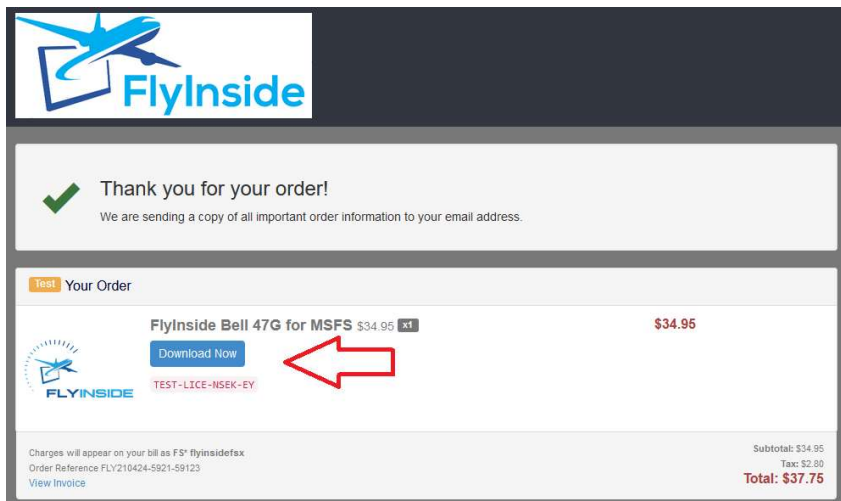
Welcome to the FlyInside Bell 47G-2A1. With this aircraft, we've attempted to authentically recreate the Bell 47G-2A1 for Microsoft Flight Simulator. The 47 ships with highly realistic flight dynamics, accurate systems, and beautiful artwork. We hope that you enjoy this experience!

2. Installation and Activation

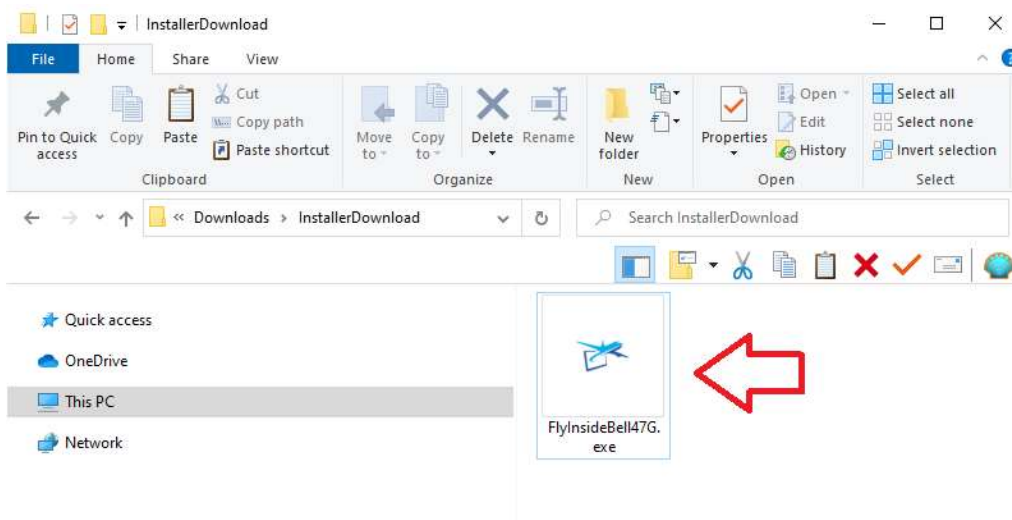
These instructions apply only to the website version of our software. The Marketplace version installs and activates via the MSFS Marketplace.

The FlyInside Bell 47G installs via an easy-to-use setup program. If you encounter any issues, cannot find your installer, or haven't received a license key, please contact support@flyinside-fsx.com

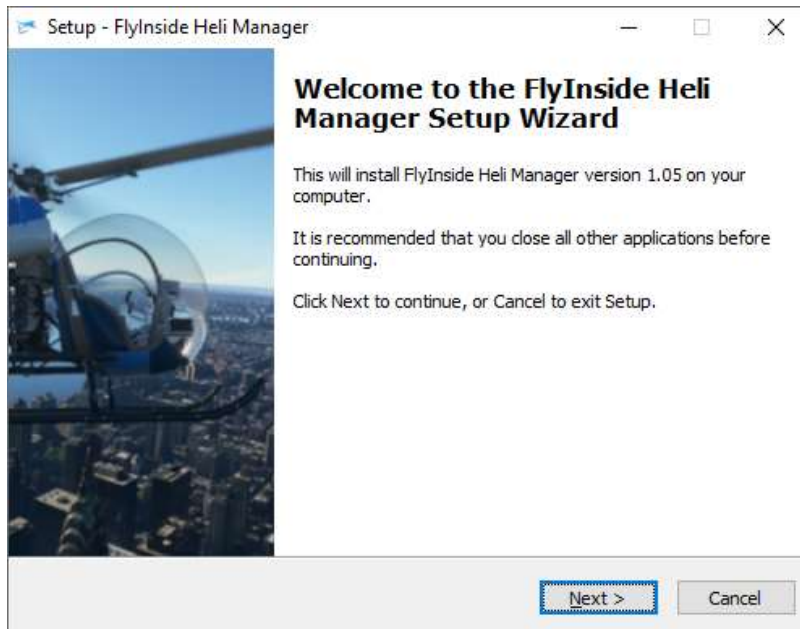
1. Download the installer via the link on your purchase receipt page



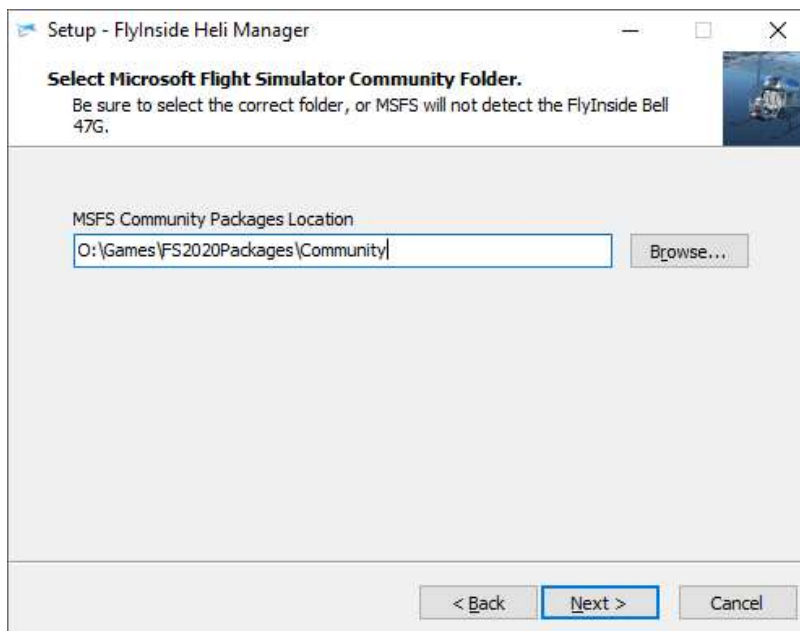
2. Double click the installer to run, and accept any prompts that appear.



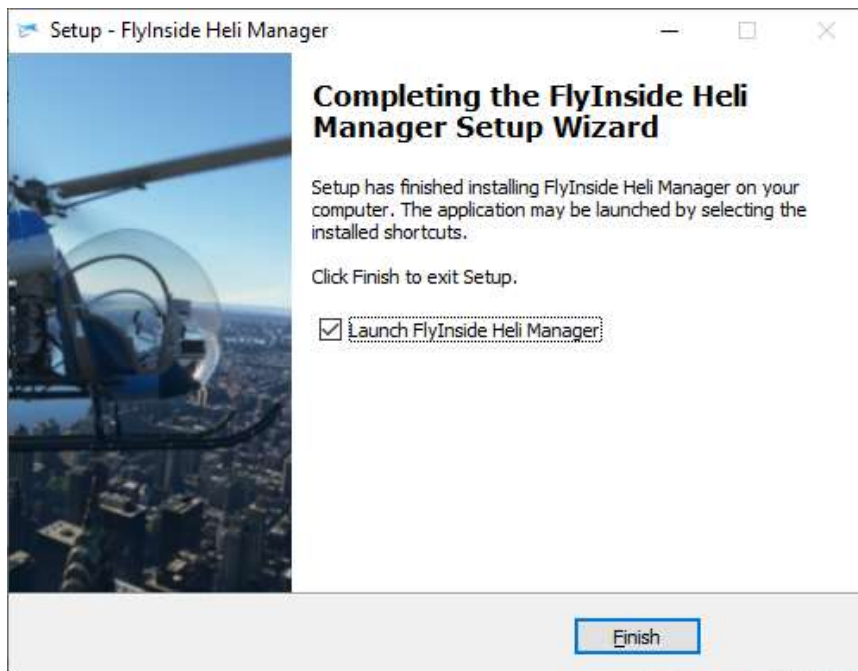
3. Click through the installer



4. Double check that the installer correctly locates your MSFS Community packages folder. If this location is not correct, MSFS will not detect the aircraft.



5. After the installer completes, allow it to launch FlyInside Heli Manager.



A Note on FlyInside Heli Manager

Marketplace Version Differences? *In the Marketplace version of the Bell 47, the Heli Manager is integrated into the helicopter itself, rather than running as a separate application. Heli Manager is used only to configure the flight model. Activation and copyright are handled by Marketplace. See the pictures on Page 3 of this document.*

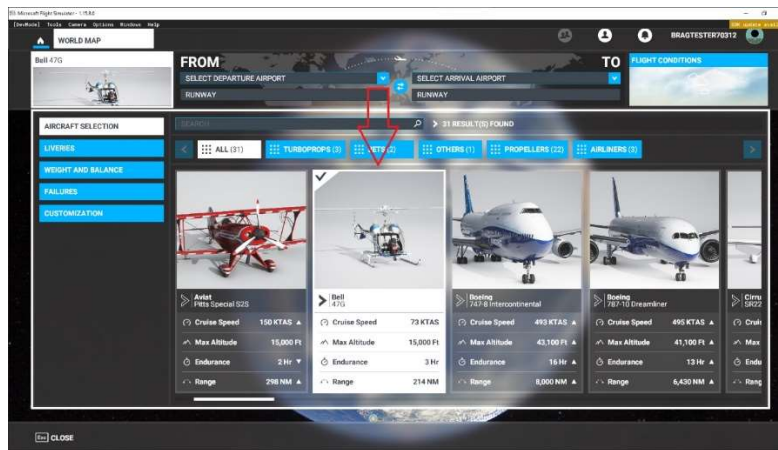
FlyInside Heli Manager handles copyright protection for the FlyInside Bell 47G, and allows you to customize the flight model. By default, FlyInside Heli Manager will run in the background when you turn on your computer.

FlyInside Heli Manager doesn't log any data, or call home randomly. It will communicate with our servers when you activate a license key, and occasionally to check for new versions. It's also designed to use

minimum system resources, it won't affect frame-rates or heat up your CPU while running in the background.

FlyInside Heli Manager runs in the background purely for convenience, so that you won't need to launch it manually when flying our helicopters. If you prefer though, you can turn off the System Start option (via Task Manager), and launch FlyInside Heli Manager manually as needed.

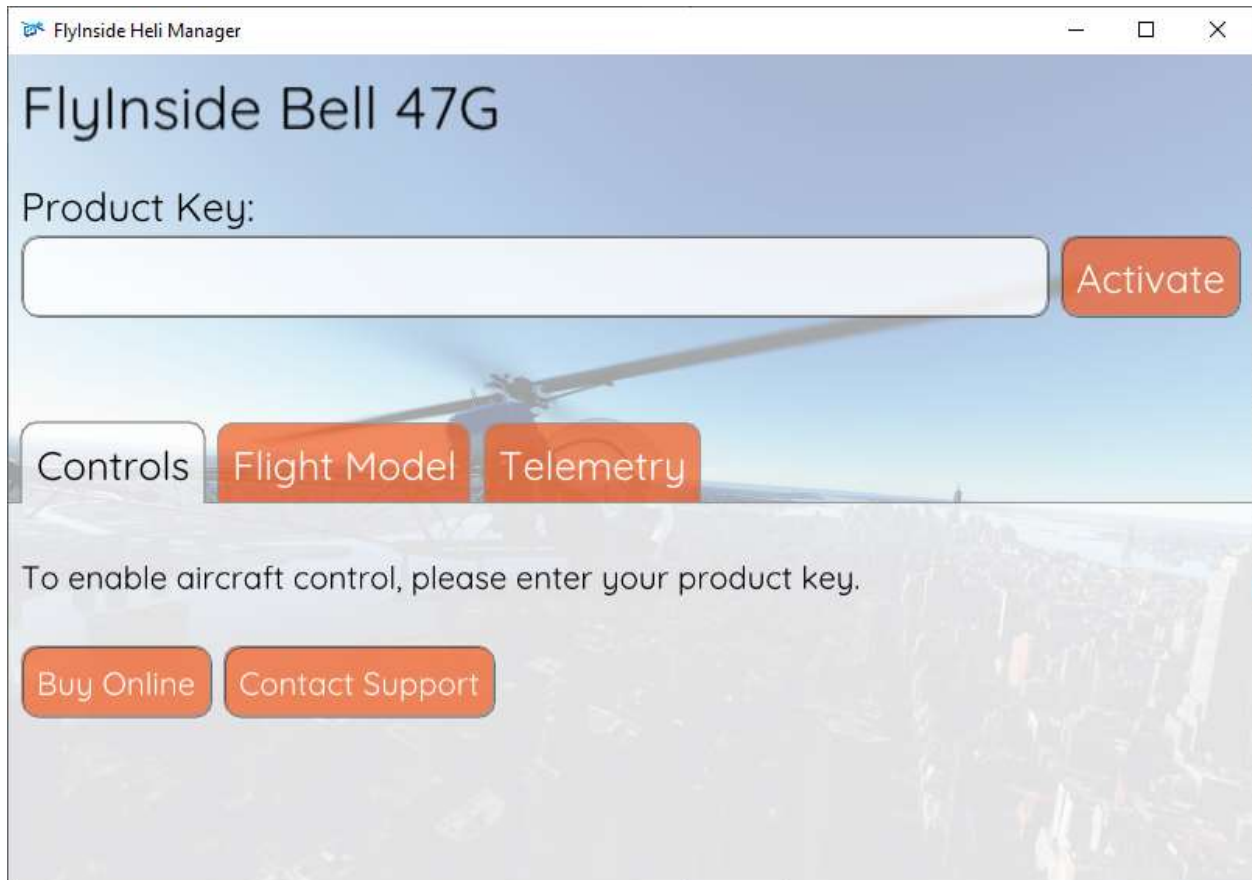
6. Open Microsoft Flight Simulator, and select the FlyInside Bell 47G as your aircraft. Note that the Bell 47G will appear in the Airplanes category, despite the fact that it is a helicopter.



7. Select a departure airport and load a flight. The first time you load the FlyInside Bell 47G may take several minutes as MSFS compiles our flight-model code for your PC. Once loaded, the Bell 47 will have an in-cockpit message prompting you to run FlyInside Heli Manager, or to enter an activation key.



8. FlyInside Heli Manager should appear on your desktop. If not, you can click on the system tray icon (if it is running), or run "FlyInside Heli Manager" from your Start Menu.



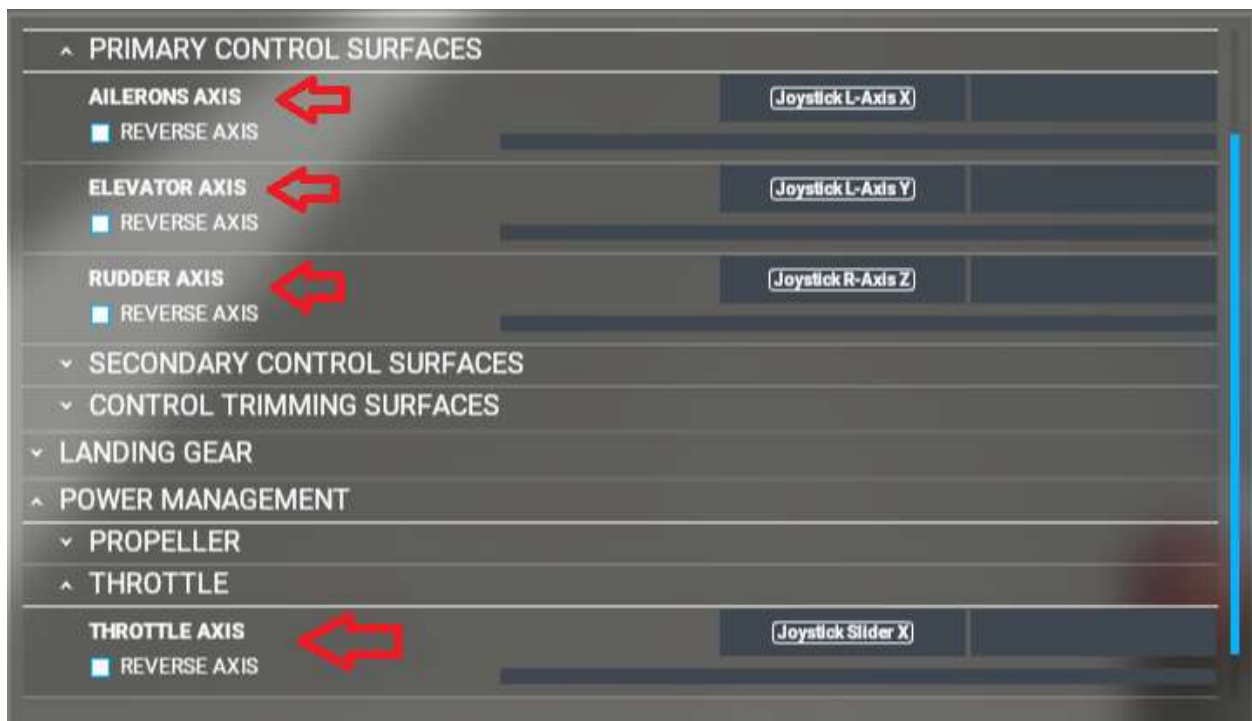
9. Enter your product key (you may use Ctrl+V to paste it), and press "Activate."

10. The rotors should start spinning up, you're ready to fly!

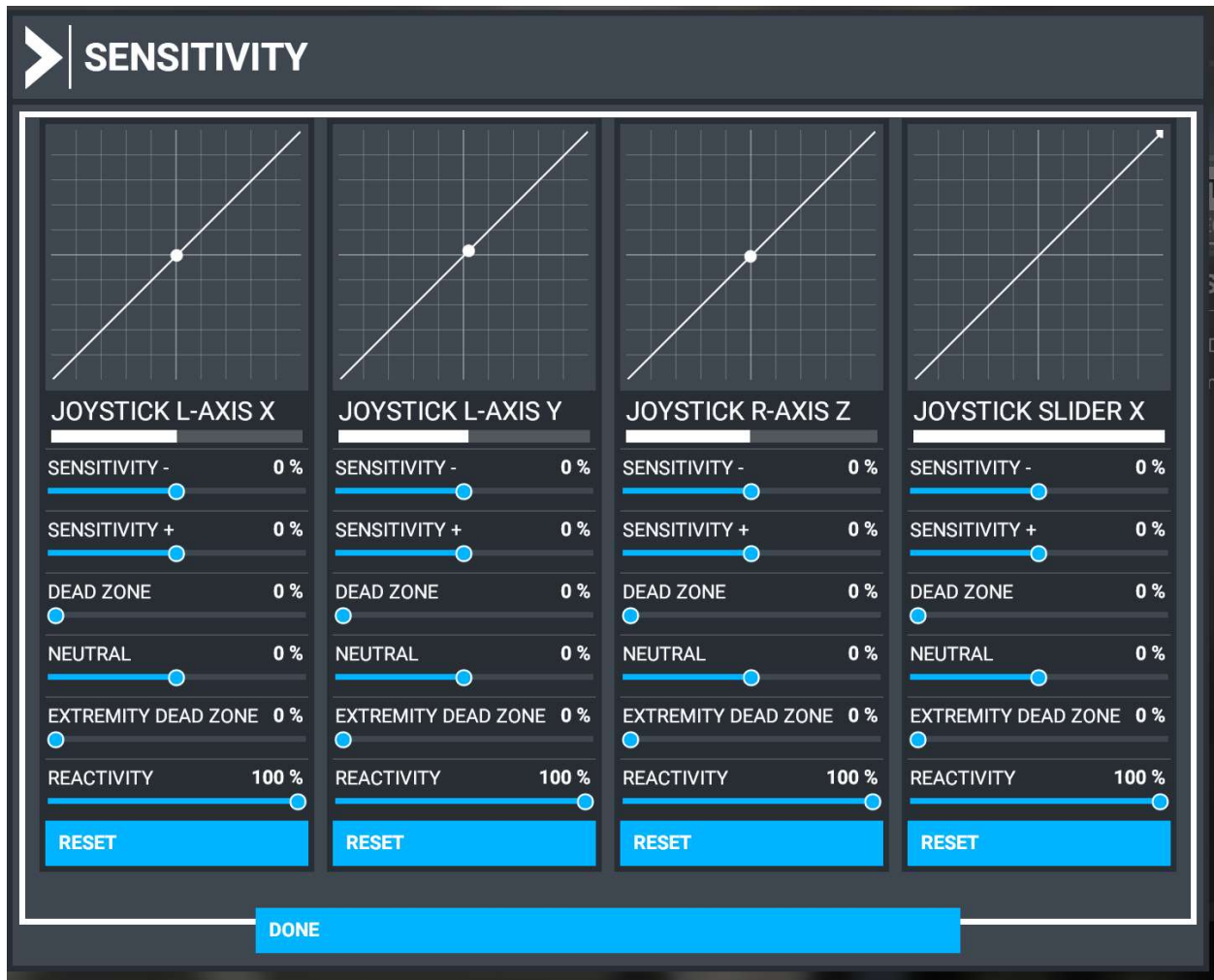
3. Flight Controls Setup

The FlyInside Bell 47G should work with your standard Microsoft Flight Simulator control bindings. At a minimum you'll need the following controls

1. Bind the joystick axis you'd like to use for cyclic roll (left/right) control to the MSFS "Ailerons Axis"
2. Bind your cyclic pitch (fore/aft) control to the MSFS "Elevator Axis"
3. Bind your pedals or yaw control to the MSFS "Rudder Axis"
4. Bind your collective control (or throttle paddle) to the MSFS "Throttle Axis"



For realistic control response, you'll want to ensure that MSFS "Sensitivity" is set to 0%, 'Dead Zone' 0%, 'Neutral' 0%, 'Extremity Dead Zone' 0%, and 'Reactivity' 100%, for all axis.



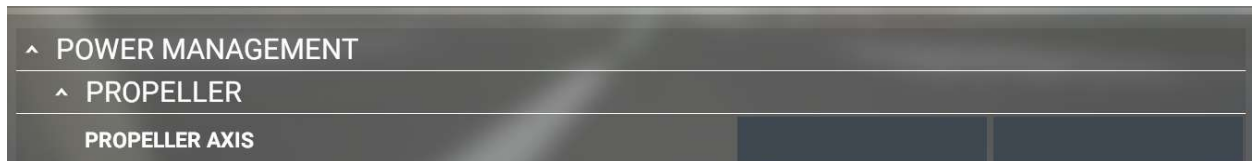
Manual Throttle Control

In real life, the Bell 47G doesn't have an engine governor. The pilot needs to manually control the engine's power level using a twist grip on their collective. As they pull more pitch on the collective, they'll need to feed in more power. It's an intricate dance, every control moved affects the others.

Unfortunately, PC helicopter controls can be prohibitively expensive. We understand that most users don't have a full USB helicopter collective, and instead many are flying with a HOTAS or joystick. As such, the FlyInside Bell 47G ships with an engine governor by default, meaning that you only need 4 axes of control, and the helicopter automatically keeps rotor RPM near 100% during flight.

For those of you with a full helicopter control-set, the FlyInside Bell 47G has a piston engine 47G with realistic power response. You can turn off the governor (either using the switch on the collective per chapter 7, or the Heli Manager setting in chapter 4), and manually manage the throttle while you fly.

In this case, you'll want to bind your twist throttle to the "Propeller Axis" in MSFS. Although it's a bit unintuitive to bind your collective to Throttle, and your throttle to Propeller, it means that those using a HOTAS can share one control between airplane throttle and helicopter collective. Depending upon your setup, you may need to reverse this axis.



Inside Flight Assistance settings, be sure to have all Piloting assist turned off, as they will not work properly with the helicopter.



4. Flight Model Options

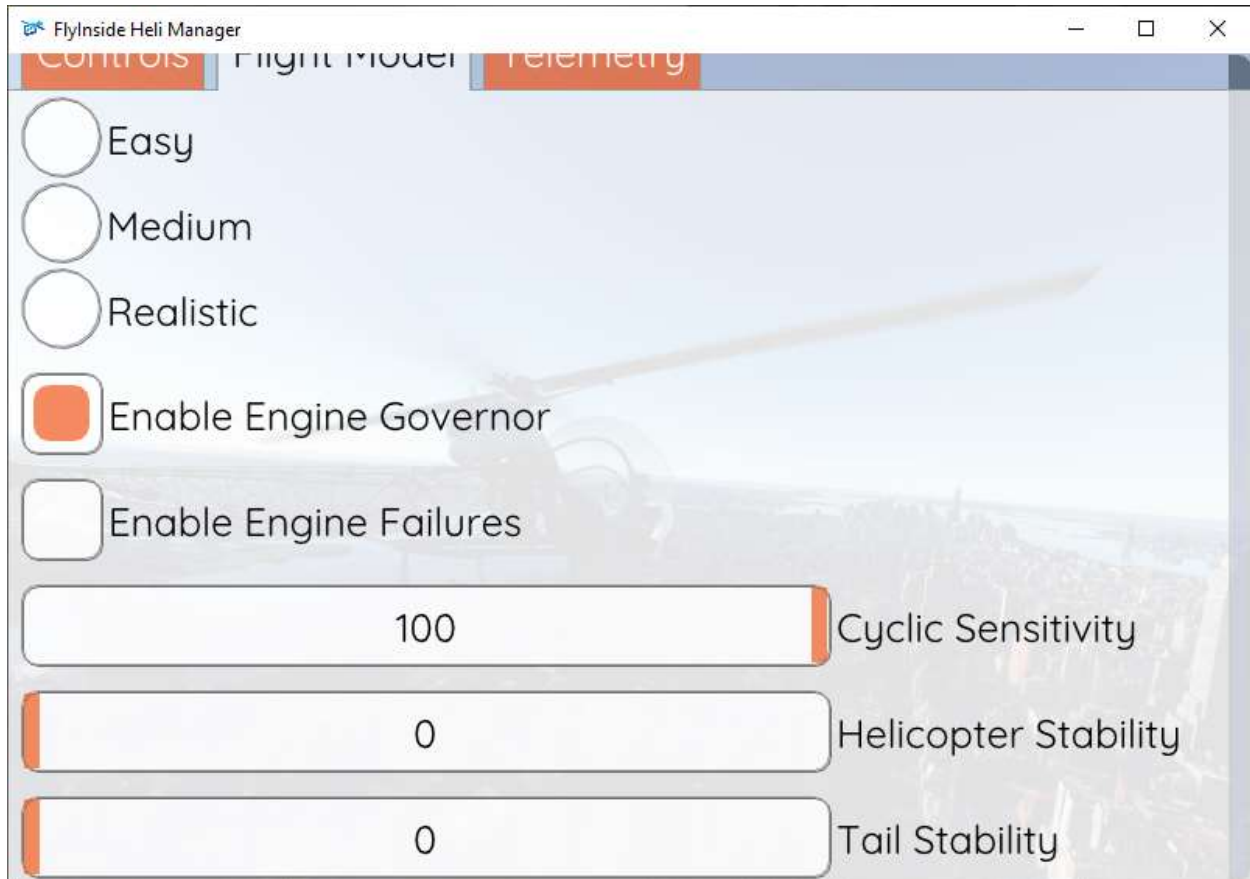
The FlyInside Bell 47G supports multiple realism levels and options to suit your control setup and skill level. To configure these, run FlyInside Heli Manager, and go to the Flight Model tab.



“Enable Engine Governor” allows you to switch the included engine governor on and off. When on, the helicopter automatically maintains 100% rotor RPM if able. If turned off, you’ll need to manually control the RPM via throttle, as described at the end of Chapter 3.

Easy, Medium, and Realistic allow you to change the flight difficulty. Realistic flies just like the real thing, requiring minute control inputs and a gentle touch. Easy is self-stabilizing, has little torque effect, and offers a gentle introduction to helicopter flight. Medium of course falls in-between.

In addition, you can scroll down to customize the difficulty level.



The Bell 47G engine has limited power, and if you pull full collective or abuse it, it can seize and fail. Turning off "Enable Engine Failures" will allow you to climb using your full control range without risking engine failure.

Cyclic Sensitivity adjusts how reactive your cyclic controls are. If you find yourself constantly overcorrecting, you may want to turn this down a little.

Helicopter Stability causes the helicopter to return to an upright hover on its own. In real life, (and on Realistic mode), a helicopter is not self-stable. If you don't constantly correct, it can eventually tip over one direction or the other. Stability prevents this, meaning you'll need to hold the joystick forward to keep the heli tilted forwards.

Tail Stability determines whether the helicopter is at the mercy of torque effects. In Realistic, if you pull in more collective, your heli will spin opposite the direction of rotation, and you'll need to compensate for this with the anti-torque pedals. As you turn up tail stability, this becomes less and less prominent.

If you'd like to enter a value outside of the 0-100 range (for a more sensitive cyclic, for example), you can hold the CTRL key and click on any of the sliders. The slider will then let you type any value you'd like into it. Note that crazy values will cause poor flight behavior.

5. Helicopter Flight

If you've only flown helicopters in video games before, you'll find the FlyInside Bell 47G a real challenge. You may want to start on Easy or Medium, and work your way up as you become more comfortable.

The first thing that may surprise you is the lack of power. Although piston helicopters can hover, they don't normally hover, except close to the ground during take-off and landing. You'll almost never see them climb straight up, and if they do it will be slow and laborious.

As such, be gentle on the collective, and once in a hover, gain a little speed. As you gain speed the efficiency of the rotor disk increases, and you'll be able to climb.

Keep an eye on the Manifold Pressure gauge. There's a redline, the maximum engine power you can safely operate at. If you're pulling more power than this, you can cook the engine and experience in-flight engine failure! If you see it getting too high, lower your collective and climb slower.

Another thing that may surprise you is the lack of pedal authority. The Bell 47 isn't designed to quickly yaw left and right in a hover. It has enough tail authority to hold a hover, and then gently pivot either direction. If you're climbing straight up, you'll find it doesn't even have enough strength to turn to the left!

If you want to turn left, and the helicopter won't let you, just lower the collective to reduce the power needed.

The last thing to keep in mind, is that helicopters aren't stable. If you tip the nose forward, it won't come back on its own. You'll need to pull back on the stick to pull the nose back up. In fact, different flight forces will tilt the helicopter in different directions as you speed up and slow down. You'll need to constantly correct for this. Unlike an airplane, a helicopter doesn't want to stay in there on its own. You need to keep it there.

6. Startup Procedure

To start the helicopter, you need fuel, air, and a spark. From cold and dark you'll want to do the following:

1. Turn on the BATT switch
2. Ensure the ALT switch is off
3. Set Magnetos to BOTH
4. Raise the mixture to the full-rich (upwards) position
5. Make sure your throttle is mostly closed (if you're using the engine governor, this will be handled for you)
6. Press the Starter button on your collective
7. Once the engine starts, you'll see the engine RPM jump up to a 1500 rpm idle, with rotor RPM at zero and slowly climbing
8. Gently add throttle to increase rotor RPM and join the needles
9. Using around 15 inches of manifold pressure, increase rotor RPM to 100%
10. Lower your throttle to ensure that the needles split, and your sprag clutch is functioning
11. Raise the throttle to join the needles again
12. Go fly!

Active Freq

Standby Freq

Freq Adjust

Transponder Mode

Com On/Off

Transponder Code

Carb Heat

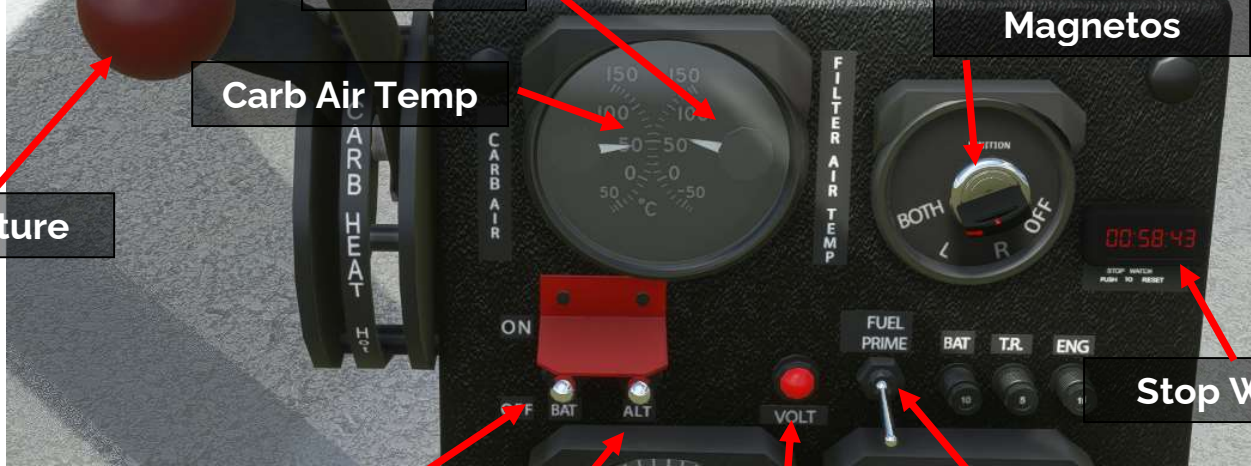


OAT

Magnetos

Carb Air Temp

Mixture



Stop Watch

Battery

Alternator

Low Voltage Indicator

Fuel Prime



RPM

Airspeed



Manifold Pressure

Altitude

Trans Or Oil Temp

Oil Pressure

VSI

Temp Display Control

Fuel Gauge

Cylinder Temp

Strobe Lights



Instrument Power

Nav Lights

Tail Beacon

Landing Lights

Engine Starter

Engine Governor



8. Common Issues

1. My engine quit in flight

The engine will unexpectedly quit in flight for two main reasons. First, if you are pulling too much power and keeping manifold pressure above red-line, the engine can fail and quit. Secondly, if you run out of fuel (check your fuel gauge), the engine will quit.

2. I was descending and suddenly fell out of the sky

You most likely encountered vortex ring state. VRS occurs when you sink into the downwash of your own turbulence. To avoid this, always keep some forward airspeed in descents. You can break out of VRS if you have enough altitude by going either forwards or sideways, and lowering the collective.

3. I can't turn left

The Bell 47 is a piston helicopter with limited overall power and tail authority. If you pull too much collective power, you won't be able to turn left at all (and may even slowly turn to the right despite best efforts). Lower your collective a bit, don't try to turn climb straight up. You will be able to turn left in a hover no problem.

Thank You

Thank you for reading, we hope you enjoy the FlyInside Bell 47G!

For questions you can contact us directly at support@flyinside-fsx.com

Be sure to check out our forums at <https://forum.flyinside-helis.com/>