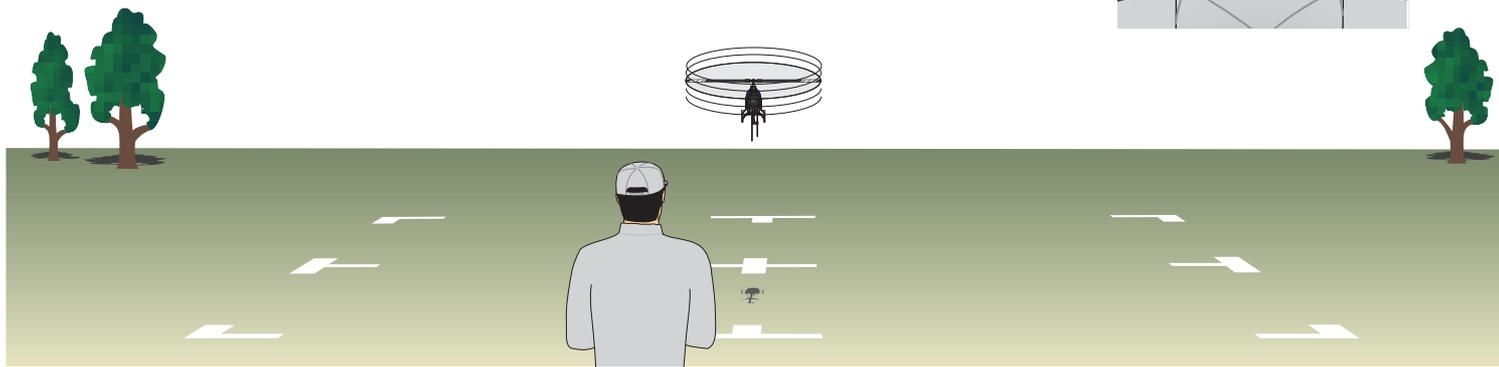
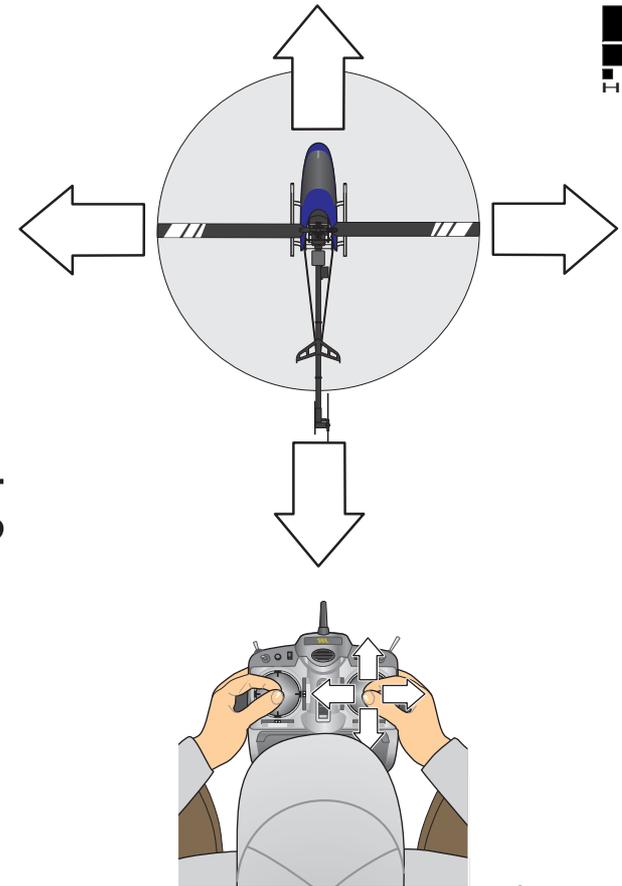


Pre-Flight Ground School

Transmitter Handling
Basic Flight Control
Hover Basics

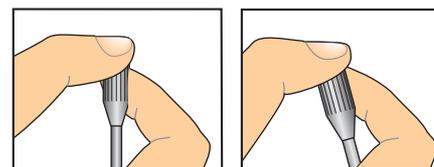
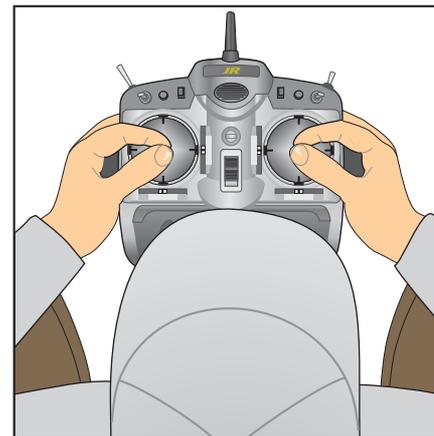


Preliminary Transmitter Handling Tips

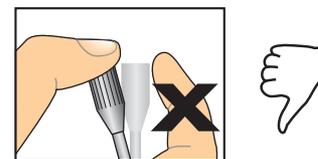
Successfully flying helicopters hinges on being able to consistently make precise small inputs. In the same way that two hands on a steering wheel improves control, placing your thumb on top of the stick and the tip of your index finger on the side for additional support will improve your ability to apply precise control inputs and avoid over-controlling, especially when excited! In addition to greater consistency, pilots using the 2-finger-technique also feel more connected to the heli and therefore enjoy more confidence, i.e., rather than the heli just responding to inputs, there's a sense that the heli is responding in ways that more closely match your intentions. When it's an option, increasing the control stick tension in the radio also helps to improve consistency and reduce over-controlling by improving your feel for the size and type of control inputs you make as well as the neutral stick position.

FYI. Using only thumbs and lack of stick tension are big reasons why many pilots resort to using gross amounts of expo to dampen the consequences of their inherently jerkier inputs. While large amounts of expo can reduce the consequences of being jerky, it sacrifices the 1-to-1 correlation between the inputs and heli response that promotes optimum learning. So, while many people fly using only thumbs, the 2-finger-technique is all about accelerating proficiency.

Even though they look cool, using a transmitter strap or tray can also contribute to over-controlling. Explained: When the transmitter is supported by a strap or tray, there's nothing preventing a pilot from transferring the weight of his hand and any tension he's feeling directly to the control stick and overpowering the spring tension of the radio. Over-controlling occurs more often when using a tray because a pilot is more prone to putting the weight of his hands on the sticks. Without a strap or tray, a pilot has to maintain a solid grip on the transmitter, which has the effect of steadying his inputs, reduces over-controlling, and helps keep him from inadvertently applying unintended inputs. When a strap is necessary due to the size of the transmitter or switch locations make it hard to hold onto, make sure that you maintain a stable grip on the box rather than letting the strap carry all the weight of the transmitter.



Placing your thumb on top of the stick and the tip of your index finger on the side for additional support naturally improves precision and reduces over-controlling. Guard against taking your index finger off the stick and using only your unsupported thumbs as this tends to produce jerky inputs, especially when excited. Note that letting go of the control stick is prone to occurring when casually practicing on a simulator and not paying attention to how the transmitter is being handled.



Hover Intro



Experienced heli pilots like to put a lot of emphasis on the left control stick because they use it as much as the right while maneuvering and performing aerobatics. However, 90% of the control inputs made during a stationary hover are brief aileron and elevator “bumps” using the right stick.

Bump analogy: When most people learn to drive a car, it takes considerable effort just to keep the car going straight mostly due to holding in corrections too long. After awhile, driving requires a lot less effort because we learn that most deviations can be corrected with a simple nudge (bump) applied to the wheel, and we’re confident that if one nudge isn’t enough, we can always apply another. Finally, we become so comfortable that we’re able to detect deviations at the instant they start and therefore our bumps become so small that they’re hardly noticeable. Similarly, bumping is how really good pilots make hovering look so easy and never struggle with over-controlling.

Note: While wind sometimes makes it necessary to hold in inputs and some entry level fixed pitch helis will allow you to hold in certain inputs without going out of control, as a rule, holding in inputs is a habit to avoid for those who aspire to fly collective pitch helicopters in the future. Thus, whether hovering a fixed pitch heli or a more agile collective pitch heli, the control approach should be the same; continuous small brief bumps/nudges.

The effective difference flying fixed pitch helis such as a Blade 120 SR is that they are designed to return to upright flight when the pilot neutralizes the controls. The tradeoff for the increased agility of collective pitch helis is that they are less stable and thus will not return to upright on their own, rather, deviations will tend to grow worse unless immediately corrected by the pilot. Consequently, collective pitch helicopters require more control inputs to fly and there’s less margin for error if over-controlled. Entry level fixed pitch helis on the other hand don’t require as many corrections and consequently allow more time to react, thereby making them the better choice for rookie pilots to start with in the real world.



Small brief aileron & elevator bumps are the primary type of control input used to correct deviations during a stationary hover.

Entry level Blade 120 SR
fixed pitch single rotor



An entry level fixed pitch heli is inherently stable and returns to upright when the controls are neutralized. The more forgiving characteristics of fixed pitch helis translates to needing fewer aileron and elevator bump corrections to maintain a stationary hover.

Intermediate-Advanced Blade 450 X
collective (adjustable) pitch



A collective pitch heli requires small brief aileron and elevator bumps during hover similar to those used to fly a fixed pitch heli, but because it’s less stable, constant corrections are required and there’s less margin for error if the right control stick is held in.