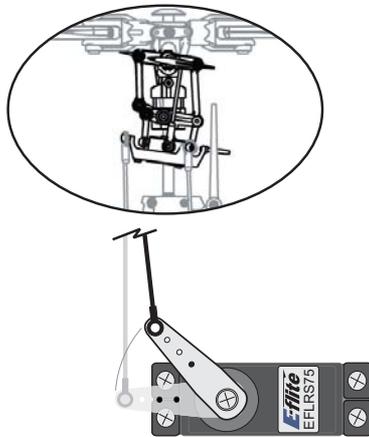


# SECTION I

## Setup and Ground School

Dual Rate / Flight Modes  
 Exponential  
 Trimming  
 Throttle Curve  
 Mixing



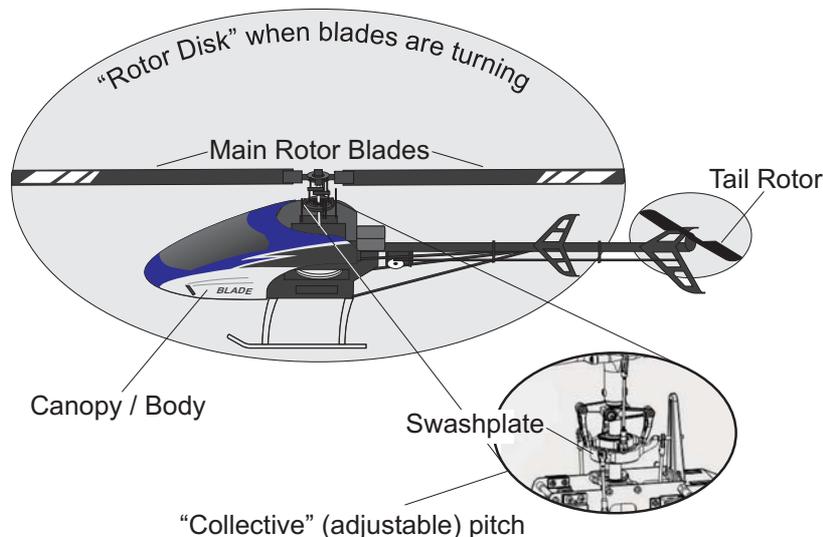
# Setup Introduction



Primary control of a helicopter is accomplished by varying the tail rotor and by raising, lowering, and tilting the “swashplate” that controls the main rotor. The major heli manufacturers typically do an excellent job illustrating swashplate and tail rotor setup. This chapter offers some additional setup tips intended to help optimize your heli’s handling and thereby enhance pilot performance. Note: Depending on your specific heli and skill level, the control percentages you end up with will vary somewhat from the stock examples provided in this chapter. The examples provided here are intended to give you additional points of reference to make better assessments of your own setup. Of course, brand new helicopter pilots may find this information beyond their present scope of learning, therefore newcomers will need to return to this chapter after acquiring some flying experience with the stock setup to then start taking advantage of the information.

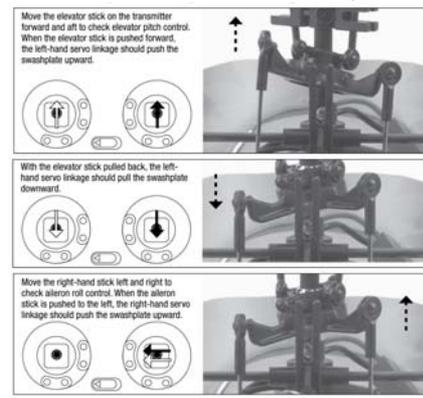
Technically speaking, tilting the swashplate is referred to as “cyclic” control. Throttle/rotor rpms along with raising and lowering the swashplate to change the angle/pitch of the rotor blades is referred to as the “collective”. Rather than referring to “cyclic” and “collective” control, it is customary to use the airplane terms “aileron” to describe bank/roll control and “elevator” to describe tilting the heli forward and backward. “Throttle” is used to describe altitude control and “rudder” is used instead of tail rotor to describe yaw control (where the nose is pointed). This is also how the controls are listed in a programmable transmitter’s menus.

## Basic Terminology Primer



### Blade 120 SR manual sample

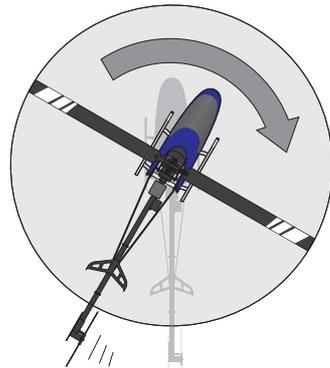
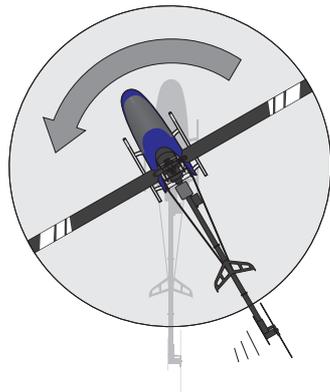
All the major radio and helicopter manufacturers provide good instructions on how to set up the helicopter and radio. To better understand the setup instructions, make sure that the heli is sitting in front of you with the switches on in order to see things in action and make sense of the instructions.



# General Helicopter Control Definitions and Responses



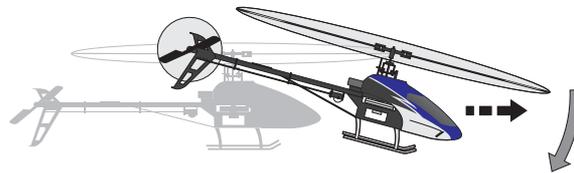
Unlike an airplane that moves in the direction it's pointed, a helicopter's movement is determined by which way the main rotor disk is tilted irrespective of where it's pointing: Using the right control stick to tilt the heli's nose up causes the heli to move backward and tilting the nose down causes it to move forward. Tilting the rotor disk to the right causes the heli to move to the right, and vice-versa. The amount of tilt is determined by the size and duration of the control inputs and how aggressive the setup is. The steeper the tilt, the more rapidly the heli will move in that direction and the more prone it also is to dropping. The left stick is used to control height and to point the nose or tail in whatever direction the situation calls for. When the rudder stick is neutral, a good heading-hold tail rotor gyro will continue to keep the nose pointing in the same direction.



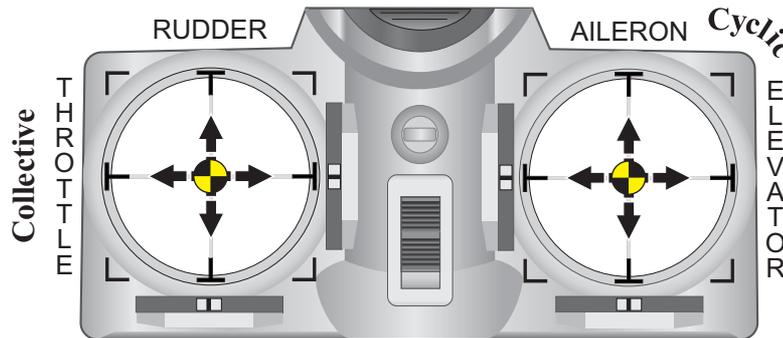
Rudder / Tailrotor: Yaw Left & Right



Elevator: Tilt Nose Up & Down  
= Move Forward & Backward



Aileron: Bank / Roll  
= Move Left & Right



The right "cyclic" control stick tilts the swashplate right and left, forward and backward. The left "collective" stick controls throttle/rpms and the angle of the rotor blades to increase and decrease lift. Moving the left stick left and right controls yaw, a.k.a., "pirouette" response.

It is customary to use the airplane term "aileron" to describe bank and roll control, "elevator" to tilt the heli forward and rearward, and "rudder" to yaw left and right.

KPTR: A heli reacts slower to small inputs and faster to larger inputs and a more aggressive setup.