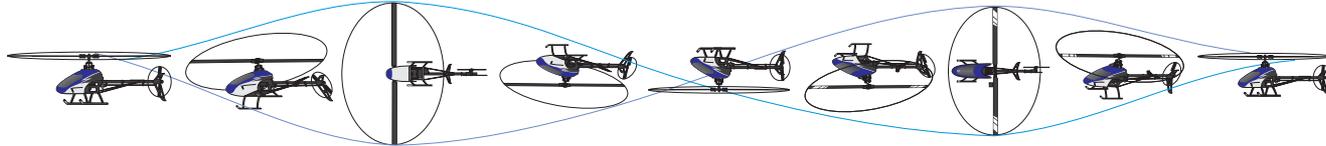
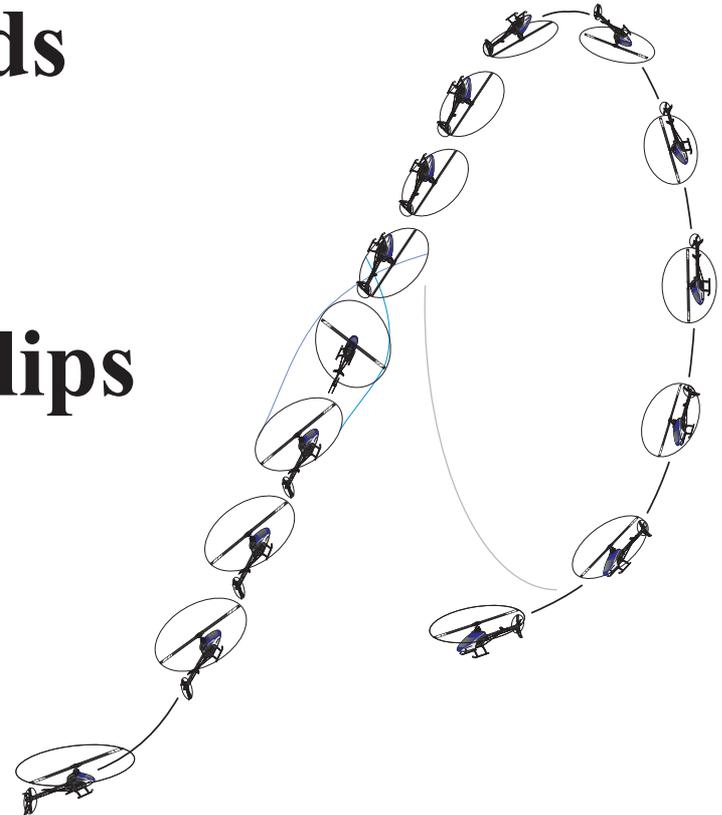


Basic Aerobatics



Hammerheads
Loops
Rolls
Back & Side Flips
Cuban 8's





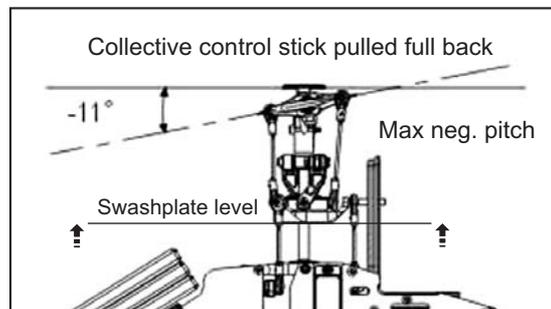
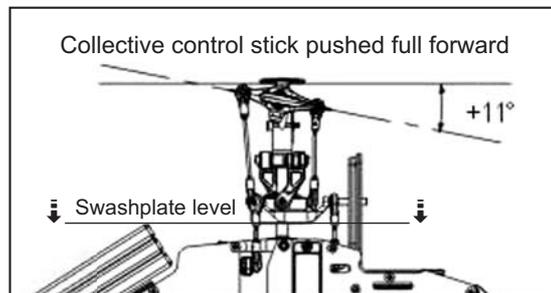
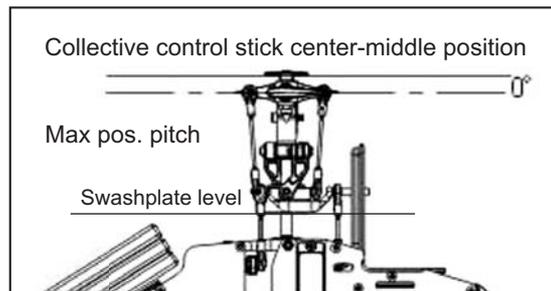
Preliminary Aerobatic / Stunt Mode Comments

Aerobatics test the quality of the helicopter setup and gyro performance like no other form of heli flying. Simply put, the more accurate the setup and gyro, the easier the maneuvers will be to perform. Consequently, one of the first steps a pilot can take to ensure greater aerobatic success is to invest in the best gyro available.

All the maneuvers featured in this section are performed with a collective pitch heli in the “stunt” or “idle up” mode. Stunt mode setups are basically universal, and therefore both radio and heli manufacturers provide very similar stunt mode instructions. All you then have to do to achieve an optimum setup is precisely follow the instructions and not settle for “close enough”, i.e., aim to make things perfect down to the last half millimeter or half turn on a linkage, and thereby help to ensure that learning to fly aerobatics won’t require any undue effort.

The rotor rpms remain high in the stunt mode, so the left stick is primarily used to control positive and negative pitch of the main rotor blades: Pulling the throttle stick or “collective” all the way back achieves full negative pitch on the rotor blades. Positioning the collective to the center results in zero blade pitch, and pushing the collective all the way forward achieves full positive pitch. It’s vitally important to make sure that the swashplate remains perfectly level throughout the full range of both positive and negative pitch settings. If not, you must do something to correct it or there will be appreciably more deviations to correct when performing aerobatics.

Note: If the swashplate is tilted from having to use several clicks of trim, the heli will exhibit additional tendencies that will make piro, rolls, and other maneuvers harder to perform. A common example of this is when a large elevator trim adjustment is needed to counter an improper center of gravity (C.G.). People often assume that the proper C.G. would be automatic, but C.G. can change depending on the type of battery used and where it’s mounted. The C.G. can also be effected when different materials are used for the body, tail boom, etc.. Thus, you’ll need to suspend the heli from the flybar or blade grips to check whether it balances perfectly level, and if necessary, move the battery to achieve level and thus a “neutral” C.G. better suited for aerobatics.

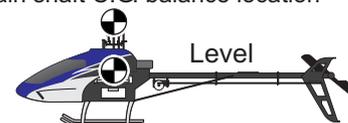


Images taken from T-Rex 450 manual

The most important aspect of a good stunt setup is that the swashplate remains perfectly level throughout the full range of travel.

Suspend the heli from the flybar or in-line with the main shaft and reposition the battery until the heli balances level.

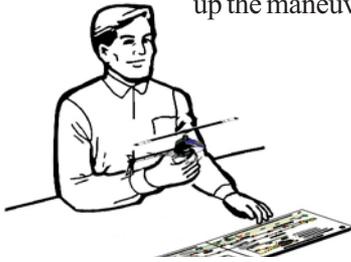
Main shaft C.G. balance location



Aerobatics Introduction



Nearly all aerobatic maneuvers are based on the basic maneuvers featured in this section, thus, long term success hinges on first learning these basic maneuvers. It's understandable when those who try to learn aerobatics watching experienced pilots fly are confused by what appears to be a blur of control inputs. Yet, if we exclude extreme 3D flying, most aerobatic maneuvers are actually made up of a series of predictable steps, and displays of aerobatic prowess are often not much more than a continual re-arranging of those steps/components. While it is true that over time the process of executing one step to the next becomes so fluid that it appears as though several things are being done all at once, there remains a consistent order or sequence to the events. Thus, an essential first step to becoming a proficient aerobatic pilot is to shift from looking at performing an entire maneuver, to thinking in terms of the sequence of steps that make up the maneuver.



Untold hours of practice can be saved by taking a few minutes to visualize the maneuvers beforehand with the aid of a small toy helicopter.

While one of the most important factors learning a physical skill is practice, pilots cannot simply go through the motions at this level and expect to improve. Advancement requires a solid grasp of the techniques required to fly the maneuvers beforehand. This is especially important during the initial learning phase, because without a proper understanding, pilots often develop incorrect techniques that can become increasingly difficult to change later on. An extremely effective way to cement a good initial understanding of how the maneuvers are flown is to visualize them beforehand using a small hand-held toy model helicopter. Of course, all the maneuvers should then be practiced on a simulator before attempting them in the real world.

Before attempting the first aerobatic maneuver, you'll need to switch to stunt mode while in a stationary hover and evaluate the heli's general handling in this mode. Make sure that you have enough altitude to switch back to normal mode if things become hectic or the gyro or battery proves not up to the task. Depending on the setup, the high rotor rpms in the stunt mode will tend to make the heli more responsive, so the first area to pay attention to are the expo settings. The goal is to arrive at enough expo to allow you to fly with the "feel" of normal rates during normal hover and basic upright maneuvering, i.e., when your control inputs are less than half. Thus, if any control feels overly sensitive, increase the expo on that channel. Keep in mind that too much expo will delay the control response and therefore make it harder to fly precisely. Thus, if you feel that the heli is lagging behind your control inputs, reduce the appropriate expo percentages (or possibly switch to faster servos). You should also be looking for a "balanced" response where all the controls are equally sensitive. Once achieved, you'll learn faster because returning to a well handling heli after each maneuver will make it easier devote more attention to thinking about how to improve your next maneuver attempt.