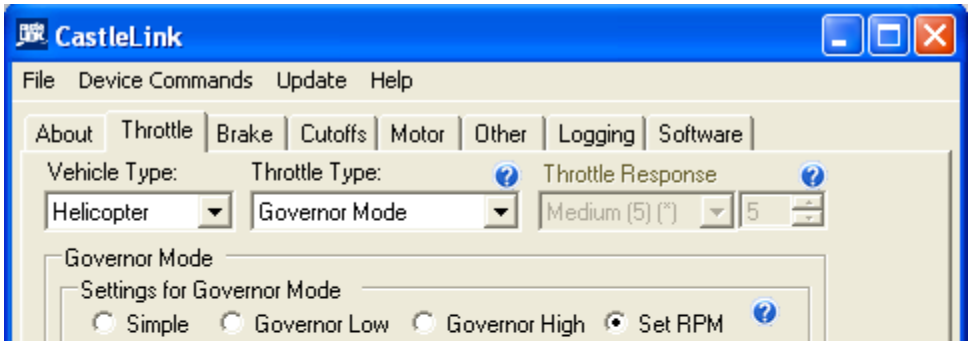
Setting Up Set RPM Governor Mode

By setting up this feature on your Castle Creations ESC you will be able to maintain a good constant head speed throughout the duration of your flight.

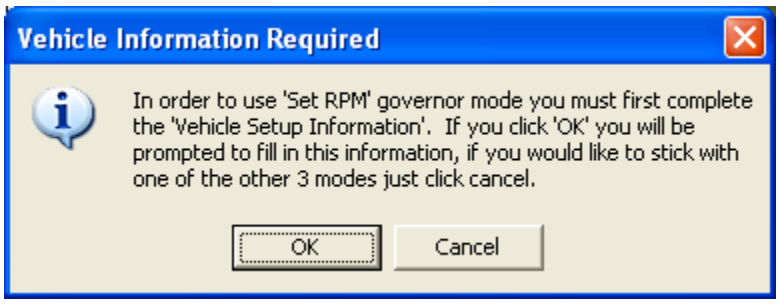
*For this function to work properly the throttle channel of you Tx must be calibrated in accordance to the "Setting Up Fixed Endpoint" Instructions.

With the Castle Link connected to the ESC go to the "Throttle" Tab. Choose the following options. "Vehicle Type" – Helicopter, "Throttle Type" – Governor Mode.

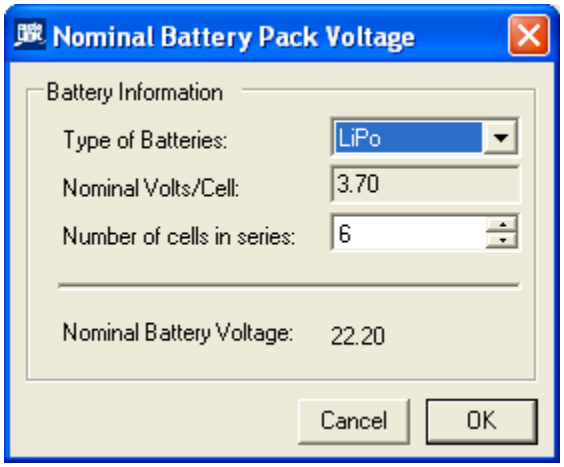


Then choose "Set RPM" in the "Governor Mode" Section of the Castle Link. This pop-up will appear.

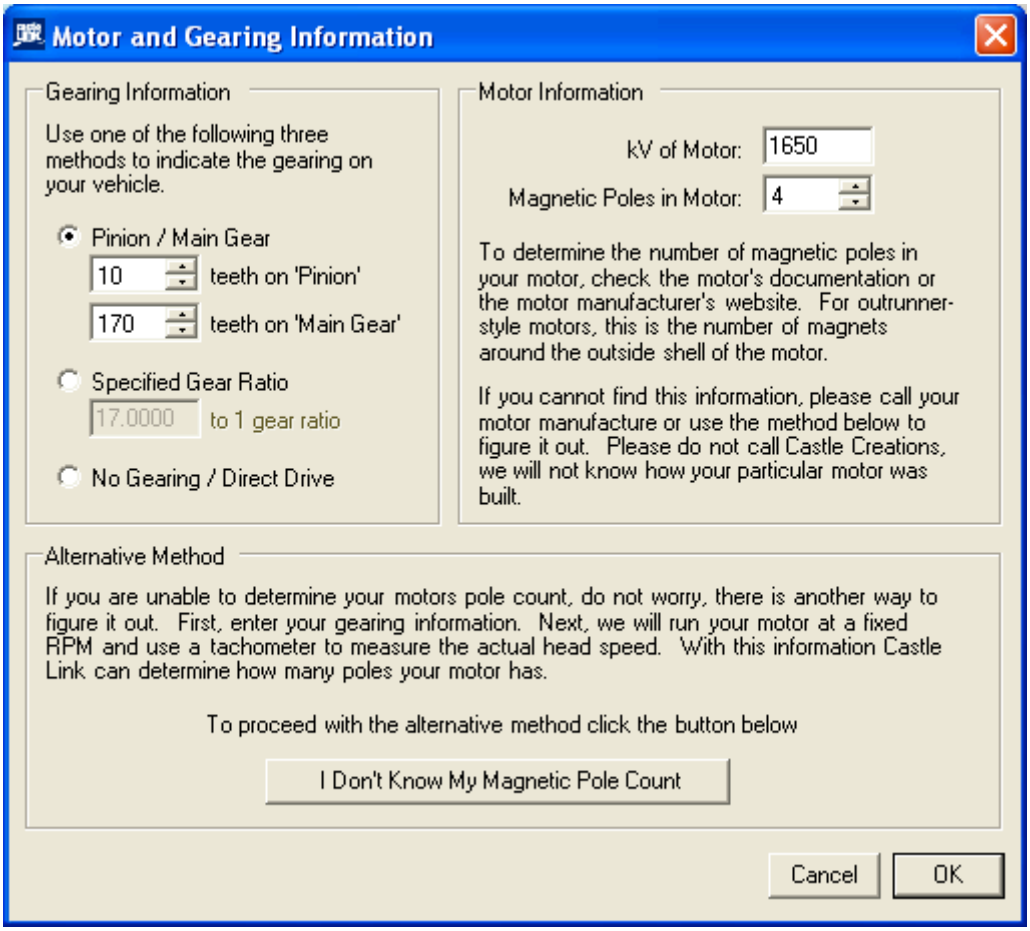
*If it does not appear return the controller to it's default setting's by selecting the "Defaults" tab at the bottom of the screen or go to the "Calculate Battery Voltage" & "Enter Motor/Gearing Information Tabs in the "Vehicle Setup Information Box". Information in both categories must be entered.



Choose OK to begin the Vehicle Setup. Battery Type & Voltage will be the first info to be entered.



Once that is entered select OK. You will then need to enter "Motor & Gearing Information".



*Entering the correct information is imparitive to maintaining the correct set head speed.

Once this is entered select OK & you will be taken back to the main “Throttle“ tab of the Castle Link to continue with the next settings.

For “Initial Spool Up Rate” a Medium setting of 5 will be proper for the initial start up of the Helicopter. A lower number will result in a slower spool up, a higher number – faster.

As each type of heli can be different according to the equipment used the next settings are suggestions but good starting points and should be tailored to your specific set-up & flying style.

*Auto-Rotation – This function will allow you to “Bail Out” of an auto with a faster spool up rate than set with the “Initial-Spool Up Rate” and must be set up in accordance to the “Setting Up The Auto-Rotation” Instructions.

“Governor Gain” – In the illustration below I have chosen the medium setting. This setting will have to be tailored to your model on the first few flights. There are a couple of ways to tune this setting in.

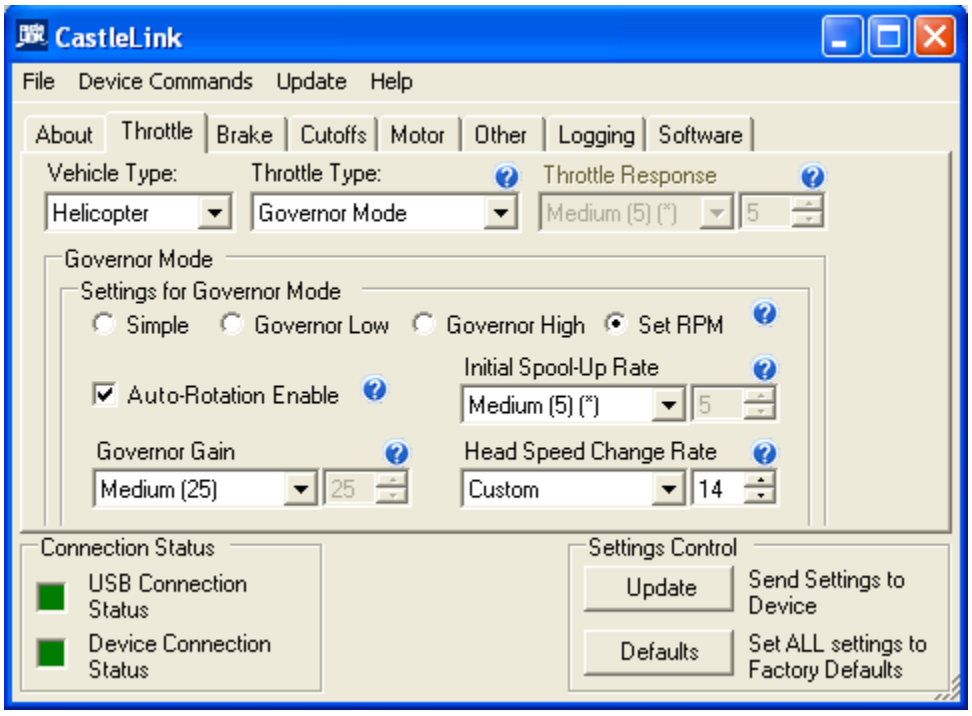
1) In a hover do a moderate climb out straight up. If the motor sags or the head speed reduces drastically then the gain is to low. Be careful with a setting that is to low as it could affect the performance of the tail rotor. If the head speed noticeably increases the gain may be to high. With a high setting you may get a tail kick in a hover or gear chatter from the motor speeding up & slowing down at an excessive rate.

2) The second & probably the easiest way to set the gain is to go ahead & set the Gain value high until you get the tail kick or the gear chatter & then back the setting down from there just until the tail holds solid with no gear chatter.

It will be imperative to get this setting correct for hard 3D flying!

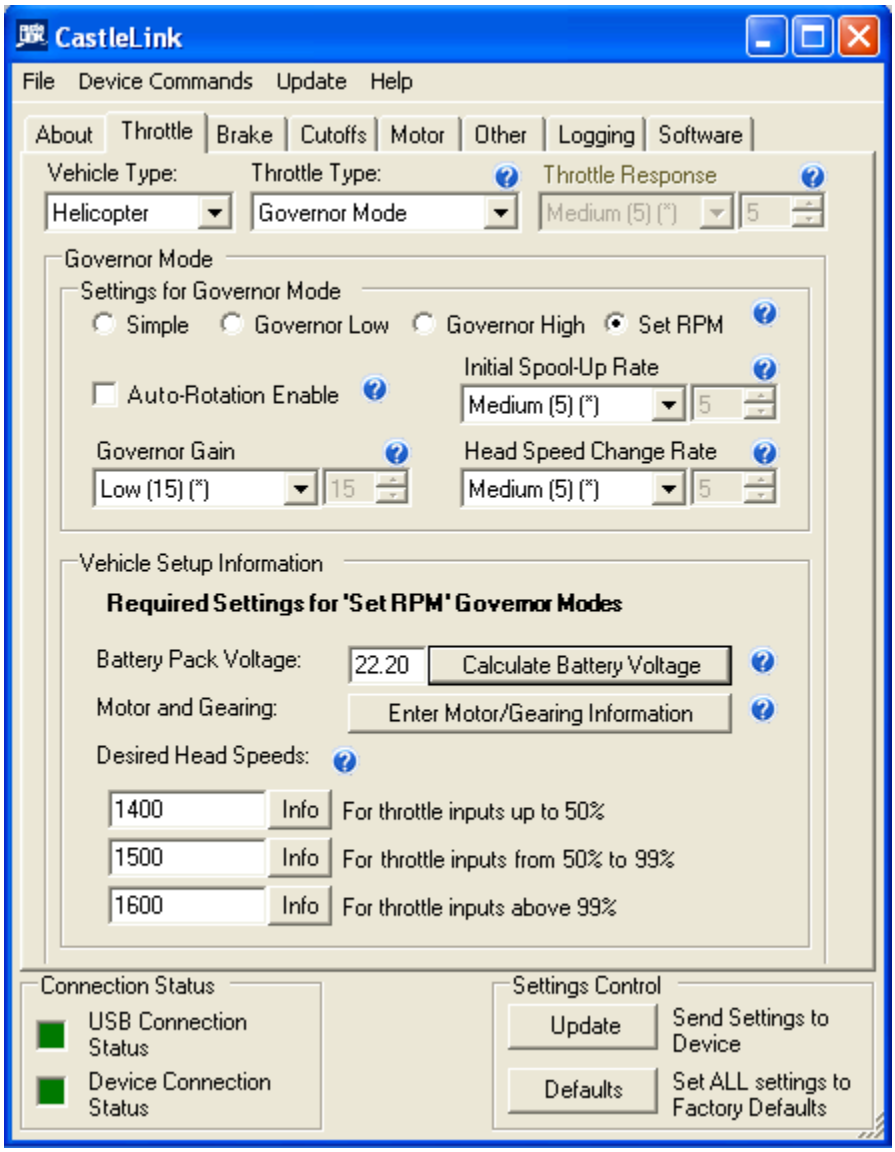
"Head Speed Change Rate" – This setting controls how quickly the head changes between set speeds and most importantly how quickly the head speed recovers when used in the "Auto-Rotation Enable" mode.

The setting shown below is only a suggestion. Recovery speed should be tested by switching in & out of throttle hold with 0 pitch in the blades on the ground and the first few recovery attempts at a safe altitude. A Custom of 10 – 14 will be a good starting point.



You will now set proper head speeds in accordance to your gearing.

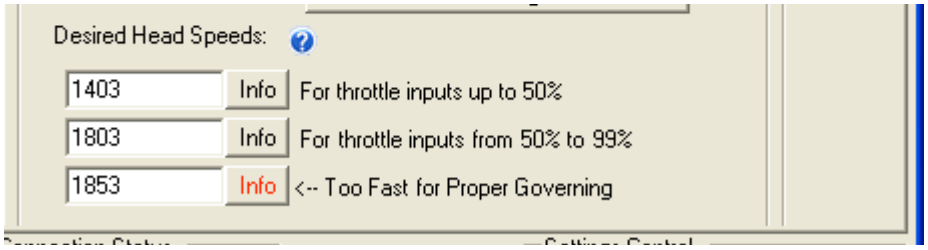
On the “Throttle” tab go to the “Desired Head Speeds” in the “Vehicle Setup Information” section (Battery & Motor/Gearing info tabs are located here as well so this information can be accessed at any time).



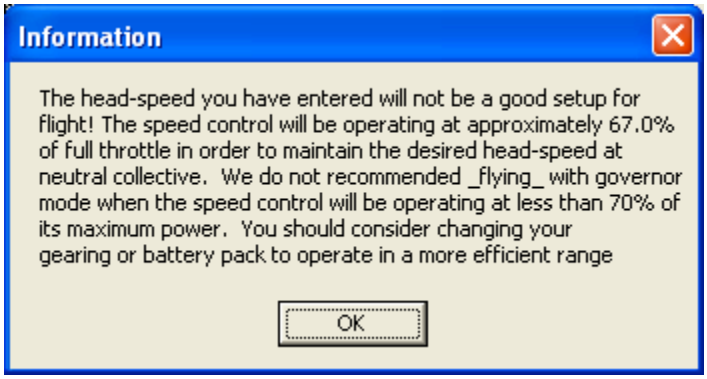
Enter the desired head speeds in the 3 designated boxes.

*In accordance to the gearing info you entered, proper governed head speeds will be between 70 & 95% of your

motor power output. Anything out side this range will resutlt in the “Info” tab turning red & the result beside it.



If you would like to know where you are at in this range, click on the “Info” tab beside the head speed.



The best efficency will be seen between 90 - 92%.

* You may have to change to a different pinion to get into the range of speeds you are looking for.

Once all head speeds are entered, make other changes on the available programming tabs & don’t forget to “Update” the controller!

Setting Up The Throttle Curves In The Tx

*For this function to work properly your throttle channel must be calibrated in accordance to the “Setting Up Fixed Endpoint” Instructions.

*If you are using the Auto-Rotation feature you will loose the ability to use the first selected head speed as ALL points on the Normal throttle curve will have to be set at 0 for the ESC to arm

or initiazalize on start-up. ANY OTHER SETTING BESIDES 0 ON AN POINT IN THE NORMAL THROTTLE CURVE COULD RESULT IN THE UNEXPECTED STARTUP OF THE MODEL! The ability to use this head speed can be regained if you have the a 3 position switch on the Tx for Throttle Hold where a 0 value can be programmed & used to show the ESC a 0 value for start up in addition to the value for the auto rotation calibration.

See the "Auto-Rotation Set-up Instructions to properly calibrate the Throttle Hold on your Tx.

Beside each "Desired Head Speed" box you will see what you need to enter in to the Tx throttle curves.

For our first head speed the instructions state "For throttle inputs up to 50%"

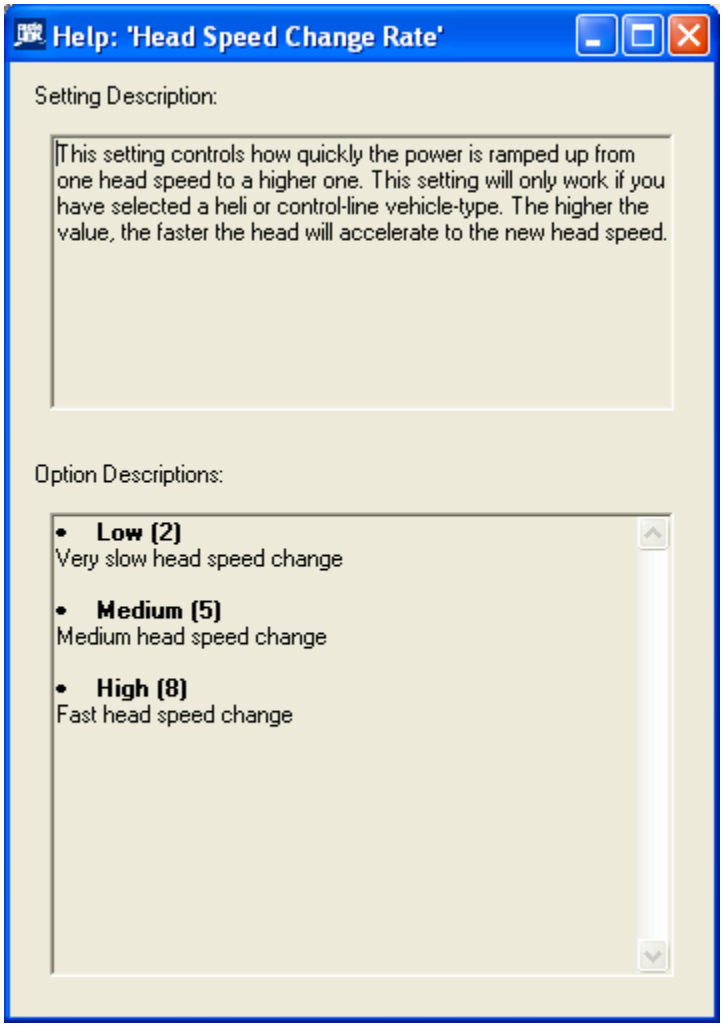
This means that we will need to set ALL points on our first throttle curve (usually known as Normal throttle curve) with a value lower than 50. A good medium here is to set ALL points from low to high at 30. 0's may have to be used here in accordance to the use of the "Auto-Rotation Enable" feature. When this is done you should have a straight line between low & high on the screen of the Tx.

The second box will be our head speed of Idle 1 or Stunt 1. The info box states "For throttle inputs from 50 – 99%". A good medium here is to set ALL points on your Idle/Stunt 1 throttle curve to 75%. You should have a straight line from the low point to the high point.

The third box or idle/stunt 2 states " For throttle inputs above 99%". Here you will need to set ALL points to 100%.

You should now be able to start “tuning” your “Governor Gain” and “Head Speed Change Rate” Settings!

If you need further instructions please try clicking on the BLUE dots with the ? in them next to the questionable setting. Once selected a pop-up containing info about that setting will appear.



Initial Spool Up

For the initial spool up the ESC will need to see the 0 value to arm or initizalize. With “Auto-Recovery Enabled” selected you will need to be in the Normal Mode where all 0’s were set on the throttle curve. If not using the Auto-Recovery Enable” throttle hold is used with the lowest possible setting for the value in the Tx.

By switching out of throttle hold or out of normal mode the model should start a smooth spool up. When finished select the setting you have for the 0 value (throttle hold or normal throttle curve depending on where you set it.).

Happy Flying!

Steve

Castle Creations