

# How to programme your transmitter for CCPM helicopters

Setting up CCPM helicopters can be a bit confusing as each swash plate servo has to do two or three jobs at the same time. Until the transmitter is correctly programmed the servos will appear to move in random directions, fortunately the simple procedure below will get you started.

*Be prepared to spend some time on this, as setting up a helicopter is not a quick job. You will find the transmitter settings and the mechanical settings will interact with each other. Adjusting one will affect the other, so you will need to go around this procedure a least a couple of times. In addition when you come to fly the helicopter you may want the change how the helicopter behaves, again more adjustments will be needed. It's often said that learning to fly RC helicopters is half about the piloting and half about your ability to set-up the machine. This is one of the reasons that I find helicopters so intriguing.*

Firstly, how do you tell if your helicopter is ECCPM, Electronic, Cyclic, Collective Pitch, Mixed? Generally the servos will be connected to the swash plate at 120 degree intervals. The servos may be connected directly via a single push rod and of course it may say so on the box or instructions of the helicopter.

## **How to set up the transmitter.**

The easiest way to get everything right is to work at one thing at a time.

First we need to get all three swash plate servos to travel in the same direction with the collective/left hand transmitter stick.

- To achieve this use the *SERVO REVERSING* option in the transmitter.
- Often, only one servo will need to be reversed to match the other two.
- Don't worry that at this point the servos may all be going the wrong way.

So, now you have all the servos working together with the collective/left stick you can leave the servo reversing option and move to the *SWASH* Mix option.

The *SWASH MIX* option is the heart of the CCPM mix and has three key features:

- Pitch
- Elevator - Fore/Aft
- Roll – Left/Right

This option also has a number of different mixes. You need to set the mix type to the one that best matches the layout of your helicopter's swash plate. You will need to refer to the transmitter's instructions. Generally there are diagrams illustrating the swash plate layouts.

Note: Changing this option will often clear all the settings for this model memory, so you need to do this first.

Each of the swash values has two features, a **percentage value** and a **positive or negative** attached to it. The swash mix converts the pilot's stick movements into the servo commands necessary to achieve the correct swash plate movement on the helicopter.

To set up the *SWASH* mix, pick one option.

Let's start with ROLL. When the right hand transmitter stick is moved to the right, the swash plate should also dip on the right and rise on the left side. If the swash plate does the opposite, you need to change the ROLL mix from a positive value (+50%) to negative value (-50%). This will reverse how the mix works and you should find the swash plate now correctly follows the right hand transmitter stick.

The value of the mix determines how much the swash plate moves relative to the stick movement. If the swash plate moves too much then reduce the percentage value. Reducing the percentage from 50% to 40% will reduce the amount of movement seen on the swash plate.

The same procedure is used for the other options, Elevator and Pitch.

- Set the correct direction with Positive or Negative.
- Set the amount of movement desired with the percentage value.

The pitch option is set-up slightly differently as the mix value is used to control the amount of collective pitch available. By using a pitch gauge on the main blades, set the PITCH mix value to give the desired pitch range. For most helicopters these days this is around plus and minus 10 degrees. Now you may not want a lot of negative pitch to start with but this is modified via the pitch curve mix. Please see the other set up routine.

Now you should have the swash servos all working in the correct directions and roughly the right amount of travel. You will probably need to recheck and adjust the servo arms and linkages so they all conform to the mechanical set up recommended in the helicopter instructions.

Other help

<http://www.rhelimag.com/pages/howto.php?howto=6>