

MULTIGOV

ADVANCED MULTIFUNCTION RC HELICOPTER GOVERNOR



Development continues in the world of aero-modeling in a relentless fashion – some products being revolutionary and some an evolution of existing ideas. The Aerospire **MULTIGOV** redefines model helicopter rotor speed control devices by evolution - combining a selectable governor and rev limiter in one device.

Aerospire was founded in 2006 by Bob Li, who has been a radio-controlled helicopter enthusiast for over 8 years. He started flying RC helicopters and planes at the Bayside R/C Club in Fremont, California. Currently, Bob's focus is improving his 3-D helicopter flying. By designing and developing MultiGov, Bob was able to combine his passions for RC helicopters and software/hardware. He has over 9 years of experience in software development and project management in Silicon Valley, California. Bob is a graduate of Cornell University with a degree in computer engineering.



From the instructions accompanying the MULTIGOV: The MULTIGOV has the capability to run in either full governor mode or overspeed limiter mode. In full governor mode, MULTIGOV attempts to keep the target rotor speed nearly constant with minimal overshoot. It also uses your existing throttle curve to predict throttle adjustments before they are needed (“feedforward”). This mode provides a smooth and powerful flight performance. The overspeed limiter is an alternative for flyers. This mode operates differently depending on the rotor speed. If the rotor is overspeeding, MULTIGOV will act as a full governor to bring the speed down. If it is underspeeding, your radio’s throttle curve will be quickly transmitted to the servo. If your throttle curve is set high enough to reach the target speed, there is minimal delay in reaching the target speed. The overspeed limiter can be set to be more aggressive during an underspeed condition compared to the full governor. This may give more power but note that the rotor speed can overshoot more than the full governor. Depending on your flying style, level and setup, you may not notice any difference between the two modes. Some people like the full governor while others prefer overspeed limiting. It is recommend you try both modes and decide for yourself which one you like better. There is no evidence showing that one mode is better than the other because it is a matter of pilot preferences. You can easily compare the two modes in flight. Set up two speeds with the same value but one running in full governor and the other in overspeed limiter. Flip your radio’s flight mode switch to toggle between the two while flying.

PACKAGE CONTENTS

- 1 **MULTIGOV** RC helicopter governor
- 1 Detachable LCD configuration module (if purchased)
- 2 Servo wire extensions
- 3 Carbon fiber sensor mounting brackets
- 2 Sensor Magnets
- 1 Adhesive heat shrink tubing
- 1 Cable tie
- 1 Jumper for disabling RPM Select function

INSTALLATION

The **MULTIGOV** uses the ‘standard’ (as used by Model Avionics on their TJP and RevMax) 6852 hall effect sensor. So if you are already running one of these devices it is a simple matter of mounting the **MULTIGOV** with the supplied double sided foam tape and plugging in the sensor. No worries if this is your first governor – the instructions document very well the assembly and installation of the sensor and magnet (all components provided).

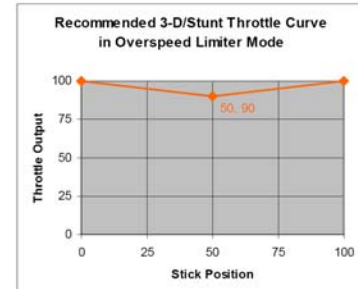
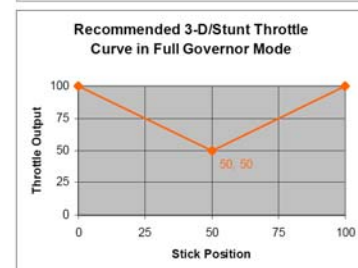
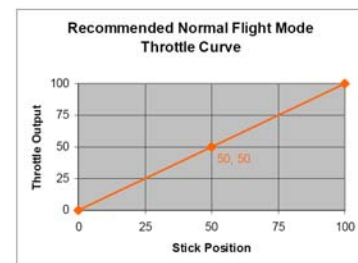
PROGRAMMING

The **MULTIGOV** requires some simple setup to get up and running. This is achieved using the Aerospire Multigov programmer. Only one programmer is required and can be used with several governors – a great idea. The instructions cover this process very well indeed. Up to three different modes can be set up and then accessed from your transmitter. Any or all of these modes can be set up as either full governor mode or rev limiter mode. And different rpm settings can be set for each mode. All rather nice and very functional.

Aerospire recommend simple curves set up in your radio as shown in the accompanying diagrams. The simple throttle curve in full govern or mode allows the **MULTIGOV** to ‘feedforward’ by seeing the direction of change in expected throttle input and presumably load. Although this is not true in all flight situations, it does provide a ‘best guess’ to allow the governor to start the throttle servo moving in (probably) the correct direction.

IN USE

I chose to initially use the **MULTIGOV** in my Raptor 50 running a Webra 55P5 engine and Webra MagicPipe. The **MULTIGOV** was compatible with my existing sensor so all that was required was using the supplied double sided foam tape to attach the unit to the helicopter and plugging in the few cables. I then used the programmer to set up three modes to experiment with – two modes were programmed to be in full governor mode with different rpm settings (1850 and 2000rpm) and the third mode was set up in limiter mode (2000rpm). The process only took a few minutes.



Note: Some flyers prefer to set the throttle curve to a flat 100% in overspeed limiter mode. Theoretically, this may improve 3-D performance. Fly at your own risk if you do this and be prepared to flip to throttle hold if anything goes wrong in flight!

At the field the engine was started and a hover was entered in governor mode and 1850rpm – confirmed by a telemetry from a Webra RDS4 downlink installed for testing purposes. Several climbouts and circuits were undertaken and rpm consistency was most impressive. Then it was time to try the programmed 2000rpm governor mode using a full 3D pitch curve. I started with some simple 3D moves, and then moved on to more complex and demanding maneuvers. I was very surprised with the power the helicopter had during these tests. Compared to the well known limiter I had been using, it was clear the MULTIGOV actually provided greater rpm consistency as well as more available power ‘at the head’.

I then proceeded to experiment with limiter mode. There are several parameters which can be set and even after some tinkering I really could not achieve the same performance and consistency as when in full governor mode. But perhaps I just have not quite had it optimized yet. As governor mode was so good, I very quickly was back in to that mode and into some more flying.

I also tried the MULTIGOV in my QuickUK V-Max (R90 eCCPM conversion) with Webra 91P5HX engine and MPII along with my Raptor 90SE running a OS 91SZ-H with MPII. Again the MULTIGOV performed very well with these differing equipment combinations.

SUMMARY

Despite some initial skepticism (‘not another governor’) the MULTIGOV has proven to be a great performer and addition to the equipment pool. With the easy programming and setup it scored well in ease of use. I guess the ever increasing box of now redundant components is the price of progress.

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