

ATG

Active Throttle Governor

Instruction Manual

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ATG

Active Throttle Governor

Notes and Warnings

- 1.) On initial setup and every time a change is made to the ATG or throttle servo you must reset the Throttle Low and Throttle High.
- 2.) Range check the radio after installing the ATG
- 3.) Do not use super servos or Futaba tail servos. Improper installation of these servos can burn out the unit.
- 4.) Set the radio failsafe with the throttle channel at low.
- 5.) When starting the helicopter keep the throttle below 25%
- 6.) Do all ATG setup with the engine off.
- 7.) Be careful plugging in the throttle servo and sensor. Some servos are close and it is easy to confuse the plug arrangement. The plugs are close and it is easy to confuse the plug arrangement. Some servos can damage the unit if plugged in incorrectly.

ATG stands for Active Throttle Governor. ATG is intended for use with Remote Controlled helicopters with two cycle glow engines. The function of ATG is to keep the helicopter rotor RPM constant through all elements of flight (3D, Contest and general fun-flying).

Features

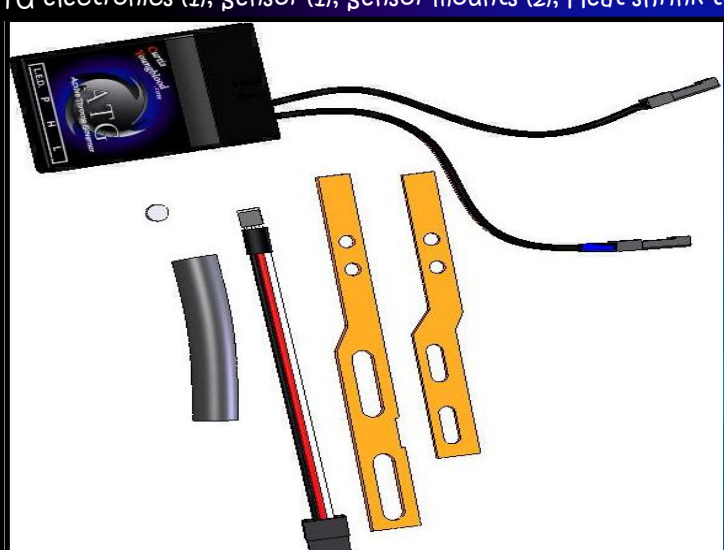
- A.) Two modes of operation: Basic mode or Active Throttle Mode
- B.) Quick set RPM check lights
- C.) Advanced programming makes very efficient use of engine power.
- D.) Small, thin case for easy installation/mounting
- E.) In-line plug/switch arrangement gives a slim profile when installed.

Modes of Operation

- 1.) Basic Governor- In this mode the ATG is installed and an RPM range chosen. The governor controls the throttle all the time.
- 2.) Active Throttle - In this mode the ATG passes through throttle curves and mixes involving throttle. You setup your curves and mixes in flight with the ATG off. Then turn on the ATG in Active Throttle mode and set your chosen RPM. The ATG monitors RPM and makes additional throttle changes only when needed. In Active Throttle Mode an experienced pilot can use throttle curves and mixes to optimized engine performance. This is especially good with tuned or partially tuned exhaust systems. This system is similar to "Throttle Limiters" except it prevents under speed as well as over speed.

Parts Included

ATG electronics (1), Sensor (1), Sensor mounts (2), Heat shrink tubing (1), Magnet (2)



Quick Setup

- Physical setup:**
- 1.) Mount sensor to appropriate engine bracket (Section A)
 - 2.) Install magnet in fan (Section B).
 - 3.) Plug throttle servo into ATG box (plug hole closest to wires)
 - 4.) Plug sensor into ATG box (plug hole farthest from wires)
 - 5.) Plug ATG throttle plug into receiver throttle channel
 - 6.) Plug ATG gain plug (Blue heat shrink) into receiver aux channel (or gear)
- Electronic Setup: (radio on)**
- 1.) Set aux channel travel adjust to 100%
 - 2.) Move throttle to engine kill position, push "L" button to set "Throttle low"
 - 3.) Move throttle to high, push "H" button to set "Throttle high"
 - 4.) While at high stick push "P" button to setup gear ratio. (See Section C).
 - 5.) Move throttle to mid stick and push "P" to see RPM lights. (See Section D)
 - 6.) Choose Basic or Active Throttle mode. (See Section E)

The ATG is now ready to use. To confirm, slowly raise the throttle (engine off). The ATG light should shine green above 35% throttle. For a more complete understanding of the functioning and use of the ATG please read the detailed instructions below.

Detailed Instructions

Section A

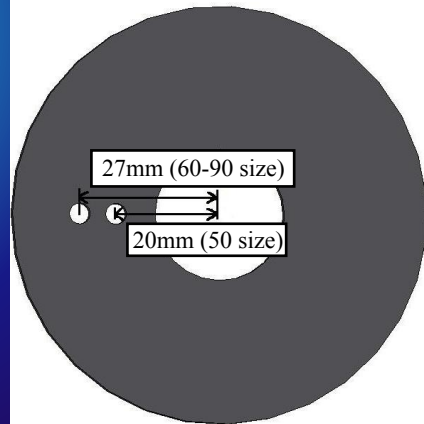
Mount Sensor to Engine Bracket

The longer G-10 bracket is for most 60 - 90 size machines. The short G-10 bracket will be used for most 30 and 50 size machines. Install the sensor as shown below. Install the heat shrink and heat with a hair drier. After shrinking the heat shrink, carefully bend the sensor over to a 90 degree angle. Do not bend more than once. Multiple bending could cause the sensor wires to fatigue. Then glue the sensor wires to the bracket top to support the wires and prevent fatigue.

Section B

Install Magnet

We suggest mounting the sensor to the engine first and checking where the sensor lines up on the fan. The magnet should be installed just above the sensor. Mark the fan and drill a 4mm hole in the fan. Most 90 size machines have the hole at 27mm (20mm for 50 size) from center. Also note the sensor is directional, so a specific side of the sensor "matches" a specific side of the magnet. Check the magnet direction with the sensor before installing (section D). Press the magnet into the hole and glue with slow set epoxy (do not use epoxy steel or other glues containing metal). It is not necessary to counter balance the magnet as this is a minor imbalance.



Section C

Aligning the sensor and magnet

The sensor mount should be bolted in place with the engine mount bolts. The sensor should be lined up directly below the magnet. The vertical gap between the Magnet and the sensor should be about 0.5 mm to 1mm. Larger gaps than this can degrade performance.

Section D

Testing sensor alignment

You can test sensor alignment with the radio on (engine off). With the throttle at low, turn the fan until the magnet is directly above the sensor. The ATG light will shine Red when it senses the magnet. The light should stay on for several degrees of fan turn. If the light does not shine, move the sensor closer to the magnet or turn the magnet upside down. (The sensor is directional)

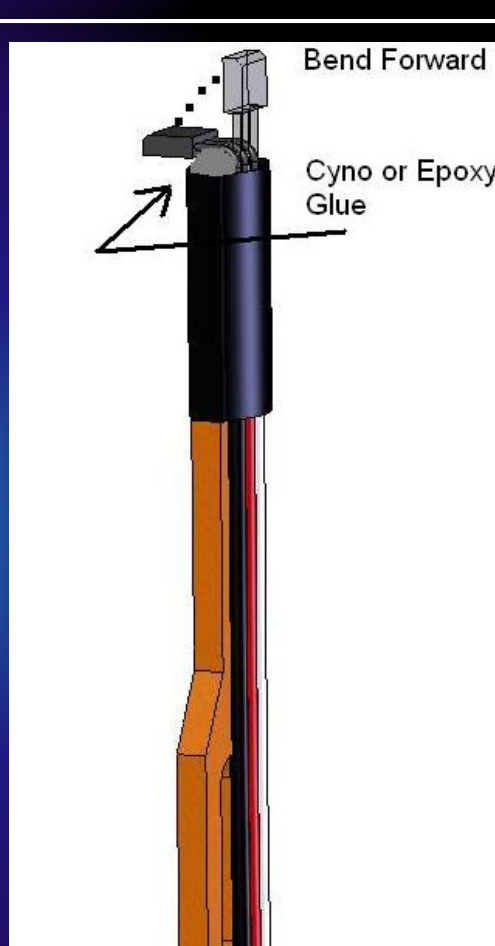
Section E

Gear ratio setup (engine off)

You need to set the gear ratio so the governor can properly indicate your rotor RPM (Section D) Move to full throttle and push the "P" button. This puts the governor in gear ratio set mode. The light should start flashing. List below shows the flashes relative to gear ratios. Push the "H" or "L" button to select your model gear ratio range.

Gear Ratio	Flashes	Lights
7.6	1 green	Fast flashing green
8.0, 8.2	1 green	1 green
8.45, 8.5	2 green	2 green
8.8, 9.0	1 red	1 red
9.3, 9.5	2 red	2 red
10	Fast flashing red	Fast flashing red

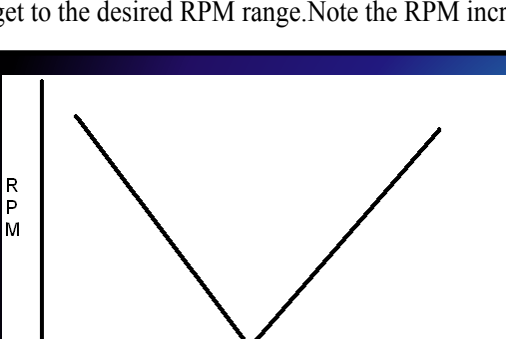
Note: The ATG can be used for gear ratios out of this range. But RPM lights will not correlate properly.



Section F

RPM setting (engine off)

RPM is set using the Aux channel (see F2 for non-Aux setting). To see the RPM lights, move throttle near mid stick and push the "P" button once. The light will start flashing indicating the RPM. See list below. Adjust the Aux channel up or down to get to the desired RPM range. Note the RPM increases from neutral on the Aux channel in both directions.



Section F2

RPM setting without Aux Channel plug

You can set the RPM without using the Aux Channel.

- 1.) Leave the ATG gain plug unplugged (the one with the blue heat shrink)
- 2.) Move Throttle near mid stick and push "P" button
- 3.) Lights will flash indicating RPM setting. (See chart in Section F)
- 4.) Push "H" and "L" buttons to raise or lower RPM accordingly.

Note: For the RPM to correlate you need to set the gear ratio as described in section E.

Section G

Switch between Basic and Active Throttle modes

Move throttle to low position. Push the "P" button. Then push "H" or "L" button to toggle between modes. Basic mode -no light on Active throttle mode -fast flashing red/green.

Section H

Reset

To reset to the default settings hold down L and H buttons while turning on the receiver switch.

Section I

Turning off

An RPM setting below 1200 will turn the ATG off. To check, raise throttle (w/engine off) above 1/4 stick and confirm the Aux light is NOT on. With some setups you may have to reverse the Aux channel to get to full low setting.

Section J

Fine Tuning

"Throttle Low" is automatically set at 35% above where you push the "L" button during setup. This "Throttle Low" is the lowest the ATG will pull the engine during flight. Altering the low throttle setting can change the ATG response. An example, If you are doing loops or low flips and the engine tends to slow down too much or you "cough" when you go inverted. The "throttle low" setting is probably too low (ATG is pulling the throttle too low in these maneuvers). If you do fast powered descents and the engine tends to over speed then the "throttle low" may be too high (the ATG cannot pull the engine low enough).

Checking Throttle Low position- Raise the throttle stick until the green light turns on. Then go into the throttle curve and check the throttle output position. This throttle (output) position is the lowest point the ATG will pull the throttle during flight.

Raising the throttle low- (engine off), raise the throttle trim slightly above engine kill (setting used in initial setup) and push the "L" button. This resets the low throttle to a slightly higher position than in the initial setup. This prevents the ATG from pulling the throttle s low during flight. If this helped but not enough, just reset the throttle low again at a higher trim setting. This helps the pilot fine tune the setup to their model for optimum performance.

Lowering the throttle low below 35%- (engine & radio off), hold down the "L" button while turning on the receiver. Let go of the "L" button once the radio is on. The light should be flashing red/green at a slow rate. The throttle servo moves to the "throttle low" set position (about 35% throttle). Push "H"/"L" buttons to raise/lower the throttle low. The throttle servo should move as the "Throttle low" setting changes. When you are finished setting the throttle low turn off the radio.