



Ballistic Motor Timing Information Update

To help answer some of the questions and misconceptions about motor timing, we have compiled the top three questions that our Customer Service Department has received concerning Novak's Ballistic Motor Series' static motor timing.

When using an ESC that features electronic timing advance (boost or power setting) and a Ballistic motor, the timing setting should be left at the factory set "N" position to decrease the likelihood of a failure caused by overheating, over timing or over gearing the motor.

Damage incurred to the motor due to overheating, over timing and/or over gearing will not be covered under Novak's warranty.

1.) How many degrees of timing are there in a Ballistic motor?

Novak's Ballistic motors come with pre-calibrated timing that is set from the factory. Using custom-built and calibrated electronic equipment, each motor is set to 30 degrees of timing. This timing is 100 percent electrical and not based on an arbitrary reference pre-built into the motor. After calibration, the timing label is added, which corresponds to the set timing N on the side of the motor.

Each line on the label indicates a 5 degree change.

+	I	I	N	I	I	-
45	40	35	30	25	20	15

SPECIAL NOTE: *The Ballistic motor timing is the genuine electrical timing in the motor, not an arbitrary reference pre-built into the motor. Without the proper equipment, comparing timing settings among different brands of motors can be difficult.*

2.) What does adjusting the timing do?

Novak sets the Ballistic motor timing to an optimized point for most general applications. Adjusting the timing should only be done in small increments – at most, one notch, or 5 degrees at a time – and with great care to observe the changes in system performance and temperatures.

THE SYSTEM TEMPERATURE SHOULD NEVER EXCEED 160° F.

When increasing the timing to a more positive number (from N to +1), your Ballistic motor will produce more no-load RPM and, generally, experience a slight reduction in torque. To combat the excessive heat produced from the loss of torque, we recommend gearing down the pinion gear by one tooth for each increased notch (5 degree increment).

When decreasing the timing to a more negative number (from N to -1), your Ballistic motor will produce less no-load RPM and, generally, experience an increase in torque. To combat the loss of top-end speed from the declination of RPM, we recommend gearing up the pinion gear by one tooth for each decreased notch (5 degree increment).

3.) How do I set my Ballistic motor to zero degrees of timing?

The factory timing for the Ballistic motors is 30 degrees, which corresponds to the N on the timing label.

Novak does not recommend running zero degrees of timing for most applications and suggests running, at least, 5 degrees of timing to ensure proper operation of the motor.

NOTE: *If you adjust the timing to lower than the pre-set factory setting of 30 degrees, the reversing function of your Novak ESC may not work properly. This 30 degrees of timing is accounted for in the speed control's commutation sequence.*

To adjust the Ballistic motor to this recommended 5 degree timing setting:

1. Loosen the three 1.5 mm hex-head screws on the back timing cap of the motor.
2. Turn the end cap clockwise until the stationary notch on the end bell lines up to the edge of the label.
3. Re-tighten the three 1.5 mm hex-head screws in a circular pattern to ensure that they are evenly tightened.