

11/14/2018

MEMO

Subject: Ocean Speedway New Midget Series for 2019

Chevrolet Ecotec 2.4 liter production engines

The test mule engine that we've been running produced a little over 190 HP and about 188 lb/ft of torque on the *wheel* dyno. With estimated corrections this works out to somewhere around 225 + flywheel HP and 215 # of torque. This is about 40 more HP than a Focus. The torque curve is quite flat and pulls hard in the lower RPM range. The drivers who've tested the engine have confirmed that the performance falls between that of a national midget and a Focus midget. Right where we hoped it would be. We will be doing a series of engine and wheel dyno tests over the next month or so and will have more detailed horsepower and torque numbers after that.

Electronic Fuel injection

- a. Easy starting. Flip the ignition switch, press the starter and it runs.
- b. No more fuel or spark system adjustments. That's all handled by the computer.
- c. OBDII port allows for trouble code scanning. If a problem occurs the computer helps you find the cause.
- d. Electronic engine control provides an easy and inexpensive way to insure performance parity. Every computer will have the same program so engine performance is the same from one engine to another. There are multiple levels of security built into the ECU so tampering with the program is virtually impossible.

Fixed control over fuel, air, and spark timing makes attempts to modify the engines unproductive because the engine will only do what the computer lets it do. We will also have a built in rev limiter further limiting the ability to make performance gains by cheating the rules.

Starters / Clutches

We will require on-board starters and cars will be required to be able to self start. Clutches will be optional. Cars without clutches will "bump" start in gear. This is a self starting method used in some divisions of spec sprints. We tested the method with this engine and it works fine. We will allow push starting but cars must be able to self start if needed.

Engines are available both new and rebuilt directly from GM. You may also source them easily in wrecking yards and run them as is or rebuild them yourself to stock specs only. Rules for this will be very specific and performance modifications will not be allowed. Cam profile, displacement, compression ratio, etc will be closely monitored and checked regularly. The ECU, wiring harness, throttle pedal actuator, and possibly engine control sensors, however, will be single sourced from series designated vendors.

Cost

Engines from GM run around \$3000.00. The other items like headers, fuel system parts, alternator, power steering pump, drives, etc will run another \$2000.00 to \$3000.00 depending on what parts you use. As an example, the complete engine package we tested with this summer cost \$8500 and that was with a clutch. The clutch parts accounted for about \$1900 of that price. A low mileage used engine can be picked up at a wrecking yard for \$700.00 and use the bump start option. I expect that total package to come in at, or under, \$5000.00.

spreadsheet list of all the parts and part numbers are available to anyone interested.

Chassis and tire rules

Standard midget chassis rules will apply. We will limit the use of titanium and possibly carbon fiber but basically any midget built to USAC or BCRA rules will be accepted. We will use the Focus wheel, tire, and shock specs.

Where will these cars be running

Ocean Speedway and Ventura Speedway will be running these cars in 2019

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