



## Instruction ! Read First !

Congratulations for your purchase of a Team Orion high-performance Nitro Engine. This engine was manufactured in Italy by one of the world's best manufacturer, using state of the art technology. Please read the following instructions carefully before using your engine.

### Fuel

High performance and reliability depend greatly on the fuel used with this engine. Use only fuel designed for RC car engines. Our Team Orion Black Demon fuel has been specifically designed for these engines and is highly recommended.

### Glow Plug

Start by using a medium temperature glow plug. Depending on the local conditions you might need to use a colder or warmer temperature glow plug to achieve a proper setting.

### Pull starter

Some engines are equipped with a pull starter. When using it do not pull it to it's whole length, but use quick short pulls.

### Air Filter

It is important to use a good quality air filter as this is critical for the engine's reliability and performance. Check it often and clean it if needed, also make sure it is properly secured to the carburettor at all times.

### Carburetor

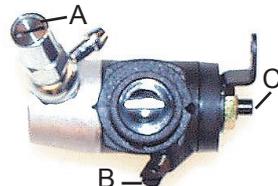
a) High speed needle valve. For a leaner mixture turn clockwise and for a richer mixture turn counter-clockwise.

b) Idle adjustment screw. Increase idle by turning the screw clockwise.

c) Low Speed Needle Valve. Turning this screw clockwise will make the mixture leaner.



Slide Carburetor



Rotary Carburetor

Needle valves are very sensitive and adjustments should be made in small increments, 2-3mm at a time. It is important that the engine is never run with a too lean setting, doing so will decrease the engine's life expectancy and can cause critical damage.

### High speed needle valve (A)

Adjusts the mixture at high revs

### Low speed needle valve (C)

Adjusts the mixture at low revs

### Idle adjustment screw (B)

Adjusts engine idle

### Starting your engine

The engine must be fitted to the car and connected to the transmission, it is not designed to rev freely. Fill the tank with proper fuel, connect a 1.5V glow plug starter to the glow plug and spin the engine either with a starter box or using the pull starter. Once the engine is running you can remove the glow plug starter.

### Breaking in your engine

Proper engine break-in is crucial. The first time the engine is started it should be used with a very rich mixture setting, basically as rich as the engine will run. Do not run the car with constant throttle, but change speed continuously. Refrain from using full throttle for the first couple of tanks. During this break-in period a lot of smoke and oil should come out of the muffler, indicating excessive lubrication. After 2-3 tanks of fuel you can start leaning the mixture gradually. It should take about 5-6 tanks of fuel for the engine to be broken-in properly and to start delivering good power.

### Engine set-up

After proper break-in has been achieved you can fine tune your engine for optimal performance.

### High speed needle valve

Proper setting should be between 1 and 1 ½ turns out (tighten needle all the way then unscrew). This needle should be adjusted to allow the engine to reach the highest top speed possible. However the mixture might become to lean, if the engine cuts-off while running at top speed, very little or no smoke is coming out of the muffler or if it is visibly running to hot, unscrew the high speed needle valve for a richer mixture.

### Low speed needle valve

Proper setting should be between 3 and 3 ½ turns out (tighten needle all the way then unscrew). With the engine running, close the throttle and let it idle for about 5 seconds, then fully open throttle. If a lot of smoke comes out and the engine accelerates slowly, the mixture is too rich, screw in the low speed needle valve. On the other hand if the engine starts of quickly and then tends to cut-off abruptly the mixture is too lean, unscrew the low speed needle valve.

### Idle adjustment

The engine idle should be adjusted so that the engine will not stall and that the clutch will not engage when no throttle is applied.

### Engine maintenance

To ensure the reliability and performance of your engine, a minimum of maintenance is required. After use the remaining fuel should be emptied and the engine should be lubricated with light oil, this is done by removing the glow plug and pouring a bit of oil in the cylinder. Then spin the engine a few times either with the starter box or the pull starter. The air filter should also be regularly checked and cleaned or replaced if necessary.