

# DIAGNOSING PLUG FAILURE

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If you are having plug-burning problems, this may help.

1. Plug failure does not occur because of plug quality, unless the weld breaks loose from the stem or the body. In this case the plug will not light. The other reason for failure is overheating in the combustion chamber. I can't think of another reason.

2. Nitro content. If you plan to use high nitro, then it is imperative that you test the fuel and observe what happens when you increase nitro content. If your engine is set up for a particular nitro content, it probably will not gain much if any RPM with an increase, but will cause overheating with plug failure. The solution is to lower compression if you are burning plugs and want to use high nitro.

3. Too high current going to plug. If you are using an adjustable glow driver, you could just be turning it up too high. Always use as low a current to the plug that will start the engine. I have seen cases where glow drivers fail and send too much juice to the plug. An external check will show if this is a problem.

Another glow-driver-related problem can come up when the battery voltage gets low and you are using the same battery to power the starter and the plug. When the starter is energized the voltage to the plug drops and the glow goes away. So you turn it up and when the starter is not running, it is glowing too hot, but it starts OK. Then after the engine starts, and the plug is still hooked up, it glows too hot and the wire breaks. This problem is made worse if you needle the engine with the glow driver hooked up and you go looking for RPM and over-lean it and then back out. Poof! The plug is melted. The engine will probably continue to run OK, but the-wire is broken.

4. Engine is too tight and/or over-compressed or both. Too-tight engines are common in the market today. Engine makers choose to leave then a little snug rather than risk leakage. Many top-of-the-line engines are notorious for burning plugs the cause they will run pretty good, but burn plugs while doing it. Usually, the operator has over-leaned the engine looking for the highest rpm.

5. High RPM engines are much more likely to burn their plugs than engines than run in the teens and low 20s. The reason is more heat is generated and there is less cooling time between combustion impulses. An engine turning 33,000 has 550 pops per second, and if you look into the exhaust you can see it is nearly bright white in there.

6. Cold weather exacerbates plug problems. It happens when engines do not want to start in the morning. The usual thing that happens is the flyer turns up the glow driver until it starts and the plug blows. The best answer to cold-weather starting is Ronson lighter fluid. About 4 or 5 drops in the venturi will make it start instantly, without turning up the driver.

My suggestion is that you do not use high nitro fuels to get performance. Thirty percent nitro is very friendly to 1/2A engines and their plugs. If you want more performance, then make a smaller model. If you do want to run high nitro, then be very careful not to ever over-lean the engine because to do so will burn the plug. High performance costs more, in fuel, plugs and engine life. If you want it - be prepared to pay the price.

I have run brand new Nelson Hummer engines at more than 33,000 and have gotten more than 15 runs per plug. These engines are turning in excess of 37,000 in the climb, but if they are too tight, over-compressed, or over leaned, they will eat the plug.

I have had people send me plugs that did not work with the story that some of them did not work at all and the others ran only once. Upon examination, I found a blob at the end of the broken wire. This can only occur if it melted with the glow driver.

If you are able to get access to a microscope, do so and look at your burned-out plugs. If you see a crazed, sort of frosty look on the wire surface, and/or distorted coils, then excess heat is the culprit. The failed coil will usually have a break in the wire.

Good Flyin'