



Tech-Time

Tuning up your Pontiac

Keep it running at peak performance with these tips

By Tom Locke

Editor's note: Tom Locke is a Board member of the Valley of the Sun Pontiacs club and drives a 1971 GTO. Read the other Tech Time articles by Tom on motor oil selection, auto security systems and headlight upgrades on our Valley of the Sun Pontiacs website (valleysunpontiacs.com.) You can contact Tom at gtolockes1@msn.com.

Most of us can recall the standard tune up for our Pontiacs. New points, condenser, rotor and cap and a set of spark plugs. With today's technology, a lot has changed and how we tune up our cars has changed, too.

Ignition - Although some of our club's Pontiac owners are still running ignition points and condensers, many have transitioned to electronic ignition. With easy installation, ignition kits such as Pertronics/Accel/AC Delco can greatly improve your spark and remove the need for frequent point/dwell adjustment.

Spark plugs - The most important point I need to make when it comes to spark plugs is that there are a ton of fakes out there. Older cars are less affected, but newer cars can suffer because these counterfeit plugs made outside the U.S. use regular metals instead of precious ones like Iridium or Platinum. The cheap metal deteriorates and has caused catastrophic engine failure in newer cars. Newer cars run a hotter spark and are engineered to run up to 100k miles before replacing the plugs.

In the past you could verify the originality of the plugs by contacting the manufacturer. They would advise if the batch code on the plug verified that the plugs were made by them. However, the counterfeit manufacturers are now using the same batch code as the original manufacturer, making it almost impossible to tell the difference. The best way to ensure you are getting genuine plugs is to buy them from a reputable seller such as Auto Zone, JEGS, O'Reilly's, or Summit Racing, to name a few. Buying plugs from Amazon is questionable; some are legit and others not. If Summit is selling your spark plug for \$9, and you see the same plug on Amazon for \$3, that should be a red flag. Pay extra from a reputable source.

Spark Plug Gap Setting - The typical setting for spark plugs on older points- type ignitions is .035. With electronic ignitions, it is recommended to set the gap around .04 as the system produces a hotter spark which burns more efficiently with the wider gap. A lot of the new plugs are already preset to .04 - .042.

Special Spark Plugs - Spark plugs with multiple ground electrodes are available from Autolite, Champion and NGK, and were mostly created to reduce fouling of older engines ([here](#) is a pro-con debate on the plugs from Autolite).

The manufacturers originally thought that there would be multiple sparks produced to increase efficiency, but this was found to be incorrect as the spark will find the path of least resistance. As plugs foul, or the electrode gap increases, the spark will then start sparking on the other ground.

One disadvantage for these plugs is you are unable to have the gap size adjusted or changed.

Ignition timing – There is a lot that goes into setting your timing. What type of advance are you using: mechanical/vacuum, or a combination? A lot of race engines don't need or use any as they go from idle to wide open throttle till the end. If you have a vacuum advance canister, both mechanical (use of weights) and vacuum can be adjusted to suit your needs.

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Now there are disagreements over how your vacuum advance should be set up. Should it be ported (source supplied above the throttle plates) or manifold vacuum (below the throttle plates)? Before emission standards started arriving in the late 1960s, most engines used manifold vacuum. However once standards were set, most started using ported vacuum. What's right for your car?

Questions you might ask are, "What is my engine and distributor set up for? What did the manufacturer use when the engine was produced?" Also, are there other parts to your system such as a TCS (Transmission-controlled Spark)?

Lastly, consider your application. Do you race? Do you have a modified engine? How modified is it and how do you drive? Manufacturers set their specifications to meet drivability and any emission standard, which may not produce the best running engine.

Carburetion – Although we might not think about our carburetors when tuning our cars, they play an important role in a good running engine. Inspecting our plugs after driving our cars may let you know if it's running too rich or too lean. My GTO has never ran better than when I had my carb built specifically for my engine and cam set up. There are good carburetor shops here in the Valley.

Tools and resources for tuning engines

There are several good tools out there which enable the DIY owners to tune their cars effectively.

Timing lights - Some of the better digital lights allow you to tune in the amount of advance desired and show your RPMs at the same time. A good dwell gauge is helpful for those still running points. Pay about \$50-\$150 for a good light.

Vacuum gauge – A quality gauge is helpful in tuning and can also be used in diagnosing engine problems. Pay about \$20-\$40 for a good gauge.

Dyno tuning - One of the ultimate tune ups can be done though dyno tuning. Some shops will adjust your timing and run another pull to find that sweet spot. A great shop will be able to connect a tail pipe sensor for reading your air to fuel settings. By doing this they can determine if your car is running lean or rich, impacting one of the various circuits within the carburetor. Many times the owner never knew. With this diagnostic

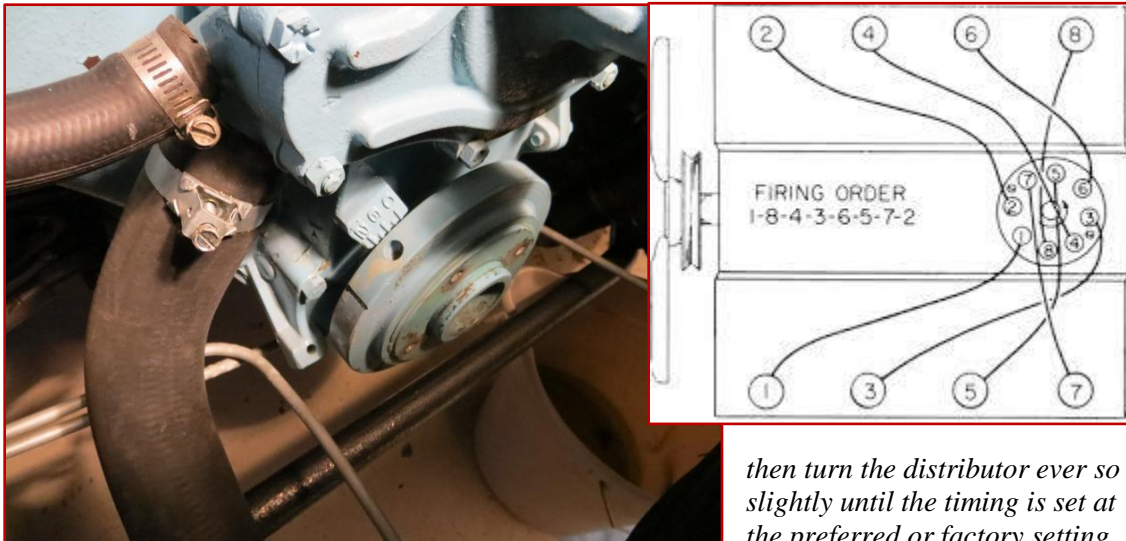
test, you can change out your jets, adjust float level and other things to find the best set up for your circumstances.

Lopers Performance Center (<https://www.lopersperformancecenter.com>) has a dyno and does air to fuel testing. They charge \$350 for the initial hook up and a couple runs setting/changing ignition. Additional work can be done at \$210 per hour to include spark plug changes, changing jets and adjusting carb settings. Lopers was kind enough to donate a \$350 dyno tune to the drawing at the BOPC car show and some lucky person got that prize.

As you look into what would be best for your specific set up or want to learn more about ignition advance, spark plug types and settings, there is a lot of information on YouTube.

How to set the timing on your car

Using a timing light you can set the timing on your car. The timing light is connected to the positive and negative terminal at the battery and the additional connector clipped over the spark plug wire for cylinder number one. Follow the specifications as to what vacuum lines need to be disconnected and plugged. Start your engine and pull the trigger on the timing light as you aim it at the timing marks, located on the cover at the front crankshaft. If you need to adjust the timing, loosen slightly the bolt holding the distributor to the point it will rotate with a little resistance



then turn the distributor ever so slightly until the timing is set at the preferred or factory setting.

Don't forget to tighten down the distributor bolt. Keep in mind that Pontiac distributors rotate counterclockwise.