

# How to Set Your Timing for Peak Performance (Non-HEI)

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Rev. B 4-18-01

This tech paper will discuss setting the timing on a Chevy V8. This procedure also applies to other GM V8s.

The procedure outlined here differs from the Service Manual, and is based on my years of experience doing this work in the quickest, least painful, most economical way while keeping the level of quality high. It is recognized that other people will have different methods of doing things, and may disagree with specific methods and procedures that I use.

## How to Set the Timing

When you think about it, setting the timing at idle speed makes no sense at all: You don't operate your car at idle, and timing changes as the rpm changes. Fact is, the timing spec at idle speed is provided as a simple way for most people to set the timing, and is not a good procedure for optimum performance.

Small block Chevys (and most other GM performance V8 engines) perform best when the total timing (full centrifugal advance plus the initial timing setting with vacuum advance disconnected) is all in by 2,500 – 2,800 rpm and is set to 36 – 38 degrees. If you have an adjustable timing light, this is very easy to check.

If you don't, you need to scribe a 36-degree mark on your harmonic balancer. Here's how:

Measure the circumference of your harmonic balancer using a sewing tape measure (or other flexible tape measure). Get it as accurate as you can. Take this measurement and divide by 10. The number you get is the distance to 36 degrees. Measure this distance **CLOCKWISE** from your existing harmonic balancer timing mark and place a clear mark on the balancer.

Remove your distributor cap and rotor. Remove the 2 centrifugal advance springs. Install the rotor and the cap (without the springs). Disconnect the vacuum advance.

**NOTE:** This procedure cannot be used on the HEI ignition systems. Removal of the springs will cause an artificially over-advanced condition that will never be achieved with the springs in place. You can use the basic technique described in this paper with the HEI units (setting timing up to 36 degrees), but to check total timing, you must install a set of soft springs. You cannot remove the springs altogether. With the soft springs in place, rev the engine until the centrifugal advance is pegged out. Adjust for 36 degrees total. Then re-install your original springs.

Start the engine. It may kick back a little due to the advance coming in immediately without the springs. If you're using an adjustable timing light, set the light to 36 degrees advanced. Now rev the engine just a little while observing the timing marks with the light. It shouldn't take much rpm to peg out

the advance without the springs installed. With an adjustable light set at 36 degrees, align the stock timing marks with “0” when the timing is “pegged out.” With the non-adjustable light, align your new 36-degree mark with “0.” Rev the engine a little to make sure the timing will not advance any further. Shut it down. Pop the cap and rotor and re-install the springs. Put everything back together, but leave the vacuum disconnected. Start it up. For future reference, make a note of the timing setting at idle. This is your new curb idle timing spec. Now give the engine a few quick rev’s past 3,000 rpm and verify that the full timing (36 degrees) is coming in. If it’s not, you need to change to a softer set of springs until you get full 36-degree advance before 3000 rpm. (**NOTE:** A stock set of springs will usually not allow full centrifugal advance to come in before redline rpm. If you have stock springs installed, don’t rev the engine beyond its limits to try to force full advance in.)

Shut it down and hook up the vacuum. Now do a road test.

The 36-degree 2500 rpm advance curve is optimum for performance, but may require premium fuel. Lug the car around, and punch the throttle at low rpm while listening for detonation (“engine knock”). If you’re getting any audible knock, you **MUST** retard the timing. Retard the timing in 2-degree increments until engine knock stops. Engine knock will seriously damage engine components if not corrected. If you get no knock, you may see slightly improved performance at 38 degrees total timing. This is particularly true if you’re running at high altitude.

If you have no engine knock under acceleration, but the car “chugs” or “jerks” at cruising speed (light throttle application), you are getting too much vacuum advance on top of the mechanical advance. You may need to change out the vacuum advance diaphragm with an adjustable unit available from aftermarket sources. Adjust these units so that you get the most vacuum advance possible without any “chugging” or “jerking” at cruise speed.

Your timing is now set for best possible performance. Make note of the new setting, and use this for your future tune-up work.

## Questions, Comments & Technical Assistance

If you have questions or comments regarding this article, or if you notice any errors that need to be corrected (which is quite possible since I’m writing this from memory...), please feel free to drop me an e-mail. Also, if you need any technical assistance or advice regarding this process, or other maintenance issues, feel free to contact me:

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