

TRA 2023 Tech Session – Electrical Hacks Reference - Pertronix Static Timing

John Coutant – Miami Valley Triumphs

First of all, I have not yet tried to install my Pertronix in the TR3A in this manner. A long story but it took 18 months to get a replacement for a Pertronix that had a manufacturing error. The replacement came just before TRA 2023 so I decided to wait for the workshop and install after. You can set timing with a timing light and there are several approaches to do this, search the forums and you will find all sort of approaches. I have included a section from Macy's Garage on the method to do static timing with points and condenser as reference. Then two excerpts from online forums about static timing with Pertronix. Search the forums and you may find more.

One point to note, static timing only is applicable to the original Pertronix Ignitor I.

Static timing procedure for classic points/condenser

Macy's Garage <https://macysgarage.com/ign-timing.htm> Static timing section

Once the points are correctly adjusted, you're ready to set the initial timing. There are two ways to manually change the initial timing on your distributor. One is by turning the external thumbscrew, and the other is by loosening the distributor clamp and rotating the distributor body itself. We'll use a combination of both to get the correct setting. Because we'll be using the external thumbscrew later in the process, it's helpful to make sure it is resting in the middle of the adjustment range. Begin by turning the thumbscrew as far as it will go in either direction, then count the number of turns as you move it to the opposite stop. Divide that number in half, and return the screw to the middle of its range. Now you'll have adequate adjustment in either direction should you need it for fine tuning later. We've finally reached the point where we can set the initial timing, and the next thing we must do is determine when the #1 piston is at Top Dead Center (TDC). Turn the engine clockwise (when viewed from the front of the car) until the timing mark on the crankshaft pulley lines up with the pointer on the engine's timing cover. As long as someone has not assembled the hub and pulley incorrectly (see the factory workshop manual for more on this), the #1 and #4 pistons should both be at TDC. You can set the distributor cap loosely in place and if the rotor points to the #1 or #4 terminal locations, you can proceed with the timing adjustment. If you go past the place where the two marks line up, don't just back it up a small amount to align them. Back it up well past the correct location, and approach the spot again with a clockwise rotation of the crankshaft (to take up any possible "slop" due to a worn timing chain or gears inside the engine) or rotate the crankshaft another full revolution in the clockwise direction and try it again. Now all that's needed is to position the distributor so that the points have opened just enough to stop the

flow of electricity through the coil with the piston at TDC. To determine where this place is, you'll need a 12-volt test light (which can be purchased inexpensively from any automotive parts or tool store or home-made). Because electricity is somewhat 'lazy', it will always take the easiest path as it tries to return to the battery. The current will flow through the points when they are closed as opposed to flowing through a test light where it would have to do some 'work' on the way back to the battery. When the points open however, the only option left for the electricity to get back to the battery is through the light and it immediately takes this new return path, lighting the test bulb along the way! Therefore, with the ignition switch "ON", if you touch one side of your test light to the distributor side of the coil, and attach the other side to a ground, the light will come on at the very instant that the points "open" and the spark plug would fire. Simply loosen the clamp at the base of the distributor, and rotate the distributor until you find the spot where the light just blinks on with any movement of the distributor. Remember that the square lobe rotates counter-clockwise, so you're looking for the spot where the points will just open, not the closing point on the "back side" of the lobe's rotation. Turn off the ignition switch, and tighten the distributor clamp. Add a tiny amount of lubrication to the rubbing block to reduce wear, and you're almost done. You've just set the ignition timing to fire the spark plugs when each piston has reached TDC, but Triumph has specified that this setting should actually be 4 degrees Before TDC. How are we going to do this? This is the easy part. Just turn the external thumbscrew in the "A" direction (advance) as indicated by the arrow. There is a reference line through the middle the thumbscrew, and one complete turn is equal to 8 degrees of adjustment. Therefore, note the position of the reference line and turn the screw ½ turn in the "A" direction to set your ignition timing at the factory recommended 4 degrees BTDC

Static Timing Procedure for Pertronix

From the British Car forum <https://www.britishcarforum.com/community/threads/tr3-static-timing-with-pertronix-ignition.47894/>

MG1250Dave (Dave)

I checked my ignition timing after I recently installed a Pertronix Ignitor ignition system using the static method. I found the following information on the forum written by TR3 Driver (Randall) and DKLawson (Doug Lawson).

"You should be able to check it with the engine not running : Fully connect the Pertronix module, coil, etc.; then connect a test light from the negative side of the coil to ground. With the key on (power to the coil & Pertronix), the test light will come on when the virtual points open.

FWIW, I'm reasonably certain that only applies if the coil is wired up, and the "points" are closed. It's the main power transistor that overheats and burns out, due to the current through

it and the coil. Pertronix is distressingly vague about this" ... (TR3Driver)

"You are correct. The issue is that when the coil is in the circuit and the Pertronix is powered, around 4 Amps is flowing continuously through the module and it overheats. In normal running the duty cycle is reduced so overheating is not a problem.

You can indeed static time Pertronix. My method is to have the system hooked up "as normal" and put the test lamp between coil (-) and an earth point. When Pertronix "opens" the light will come on, just like when you are using points. Rather than running back and forth to the ignition switch to limit the "on" time of the Pertronix module... I simply unplug its red wire which is connected to my coil (+) terminal since I do not have a ballasted ignition system." (Doug Lawson)

I used the same procedure to get started as if the stock contact breaker point system was installed and set up the test light as Randall and Doug instructed. I used my installed battery cut out switch to keep the Pertronix module from over heating, limiting power to it to about 5 seconds. I'm not sure how long is too long so I tried to make it as short as possible. I would then rotate the distributor CCW until the light came on to find the point of ignition. With points you would do this and then go CW until the light went out to set the distributor. My experience was that once the test light came on it would stay on even after rotating the distributor CW back to the starting point. Only after I disconnected the battery would the light go out, the ignition switch was on to power the coil and Pertronix during the test/adjustment. So, I decided to just rotate the distributor CCW until the light came on and lock down the distributor there. It seems to have work fine.

So the good news is I got good advice from the forum, I didn't burn up my Pertronix setting ignition timing, and the car runs fine.

Safety Fast,
Dave

'54 MGTF (1250)
'58 TR3A

TR3 Driver (Randall)

I think this may have gotten lost in the discussion and quotes above. I'm reasonably certain that you can safely leave the ignition on as long as you want while setting the static timing, IF you use your test lamp as a dummy load instead of the coil. IOW, leave the black wire off the coil, and connect your test lamp from the black wire to the red wire (or between the black wire and

coil terminal, if that's easier). That also means the light will go off when the "points" open, so now the procedure is to rotate the dizzy CCW until the light comes on, then back CW until the light just goes off.

dklawson (Dave)

I agree with Randall. If you connect your test lamp between the Pertronix black wire (negative ground cars) and a 12V source, the light will be on when the Pertronix is "on" (equivalent to points closed) and the light will be off when the Pertronix is "off" (equivalent to points open). The test lamp will only require about 90 mA to power and shouldn't cause significant heating of the module.

I have been told by those who have called Pertronix tech support that "too long" is 5 minutes. To be safe, I make sure I limit myself to 3 minutes and always pull the Pertronix red wire when I don't need the module powered.