Installing Modern Valves in a Model T Engine

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I use modern valves in the engines I rebuild. I do this for a number of reasons. For convenience and cost, I can buy them locally so I don't have to pay shipping charges. Because they are easy to install and my valve of choice comes 0.015" larger than the stock Model T valves, I like the 0.015" oversize because most engines come to me on death's door and all worn out. The valves don't close properly because the guide and the valve have been scraping on each other for who knows how long and are very sloppy. Running a reamer down each hole restores the guide to its original shape and gives the proper clearance for the new valve. Depending on the condition of the block, the valve seats are either re-ground or inserts are put in.

There are many schools of thought on inserts and it is the subject of many arguments; some people say you need them to run unleaded gas. I disagree, for the simple reason that lead was not added to gasoline until somewhere around WWII, well after the Model T's best days. I use them only to resolve issues. If the valve seats have been ground a million times and are just too big or deep to use, they get inserts. The other instance is when there is a crack. The crack would be "stitched" up and then an insert would be installed to give the valve a more stable surface to close down on. The engine in the photos got inserts installed end to end, because the valve seats were cut so deep, the valve heads were recessed down into the block.

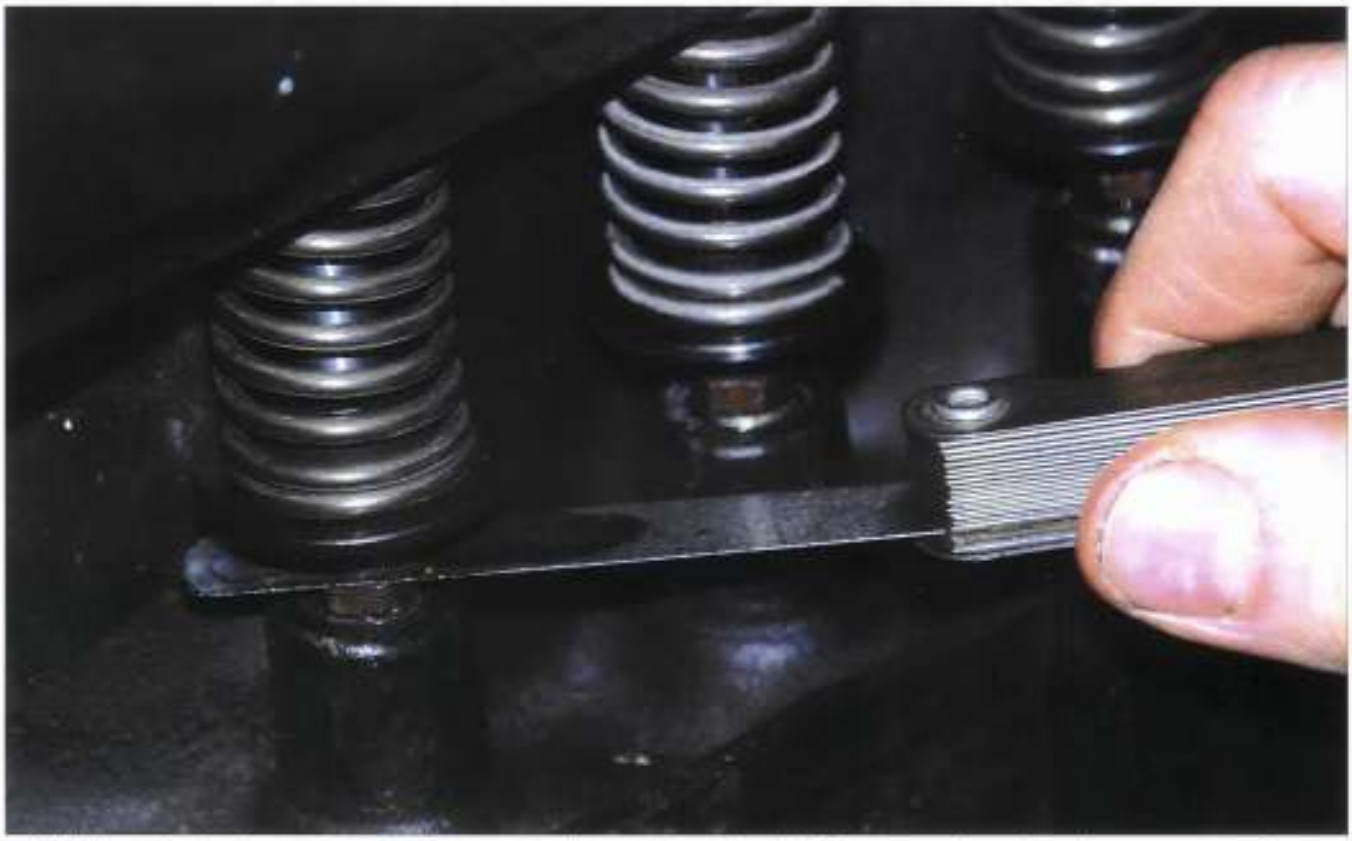
I decided to write this after the block was prepped and the cam and lifters were installed. I will focus only on the valve installation portion of the task. The seats were ground, guides were reamed, and 2-wrench or adjustable style lifters were installed.

This first photo has the valve in the block, and I am making sure it is close to the proper length. If it's too long, it will be shortened on the grindstone or belt sander. If you have to do this, make sure you keep the end cool and rotate the valve as you grind. This ensures that the end is even, and the case hardening is not removed. If it turns blue, you probably ruined it. Valves are hardened so they don't mushroom out. Every time that valve goes up it's taking a beating. If it mushrooms, the valve lash changes and you get more noise and less performance.
This test fit is done with the lifter positioned on the heel of the cam (pointy side down).

After you are sure the valve will fit properly, install the spring. I find it easier to place the retainer on the end of the spring, and then rest the whole assembly on the spring compressor. I use the tool for leverage, pushing up to get the retainer onto the top of the lifter.

Above Right: Add some grease to the modern keepers; it will hold them on the valve so you can get your fingers out of the way. You'll need two keepers for each valve.

Above Left: With everything in place and ready, compress the spring. Install the keepers. They rest in a little groove cut into the valve stem. Hold the spring compressor very still and don't let go of it! If it gets loose while your fingers are in there, you'll need a band-aid and some money for the swear jar. The next step is to release the compressor slowly so the retainer fits down over the keepers.



With the valve in place and ready, the next step is to set the valve lash. Test to see if you have the proper gap. I use the new Stipe cams, and with these cams you simply set the lash to 0.010". It's a lot easier than setting by piston position method, and with the new computer ground cam every lobe is the same. In the olden days you would have to compensate for flaws in the camshaft to get the most out of your engine.

Left: Here is where the wonderful adjustable lifters come in. Using the original solid lifter requires changing the length of the valve by grinding. Go too far and you ruined the valve.

Set the cam pointy side up, this places the lifter in the fully raised position so can get both wrenches on. One wrench holds the body of the lifter, and the other wrench turns the top part. Shorten or lengthen the lifter a little at a time, it's a guessing game.

Turn the cam again, back to the heel. Check your gap again, if your spot on, you're done. If not, you need to go back and change the height of the lifter some more.

All eight valves properly adjusted and ready to go. This is the time to go through and double-check your work. If you did it right, you should still have the proper gap. Make sure you turn the cam to the center of the heel before testing the gap on each valve.

If you have any comments or questions about this article, feel free to contact me. I can be reached by email: tim@Gen3AntiqueAuto.com, by phone 774-213-5440, or through the contact me page on my website: www.Gen3AntiqueAuto.com ❑