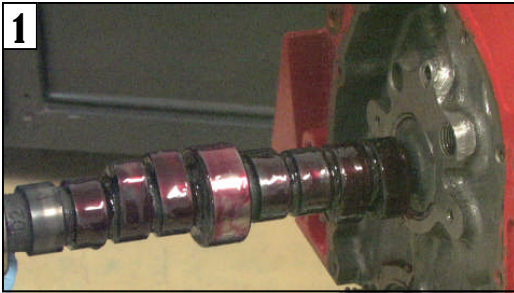


Cheat Sheet: How to Break In a Flat Tappet Camshaft



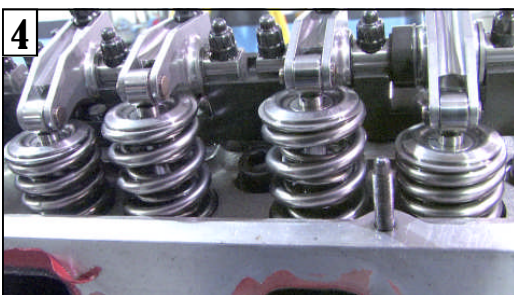
Use the Right Lube: The first—and probably most important—step is to make sure you use the right lubricants. Use a thick assembly lube on the cam lobes that won't wipe off the first time the cam is rotated with the lifters in place. Many assembly lubes made specifically for flat tappet cams will say so on the label. Also, since most modern oils lack the ZDDP additives that help protect against the sliding friction unique to flat tappet cams, use an oil additive in your motor oil that contains ZDDP or an equivalent protectant. A good example is Comp Cams' Engine Oil Break In Additive (PN 159).



Prep the Cam: Modern cams have more aggressive lobes and are designed to be matched with stronger valvesprings, so the threat of grinding off the nose of a lobe is greater than in the days of classic muscle cars when these cams were standard issue. But there have been other advancements, too. One is to have your cam nitrided, which is a process that injects nitrogen atoms into the material of the camshaft to make the surface stronger and more slippery. Also, before applying assembly lube, coat the lobes with a graphite spray for a little extra insurance.

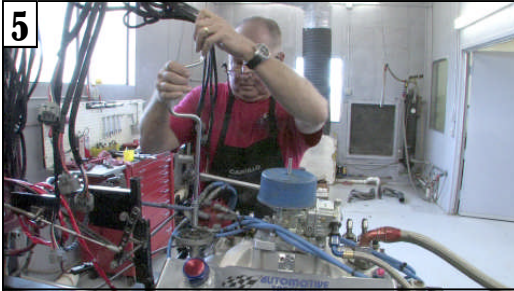


Lifters: In the good old days you had to pay to have your machine shop groove the lifter bores to help get more oil to the face of the lifter. But now you can purchase lifters like these that have a small oil passage that injects oil directly between the face of the lifter and the cam lobe to help eliminate the possibility of metal-on-metal contact. It's also a good idea to spray the tappets with graphite spray and liberally apply assembly lube before inserting them into the bores.

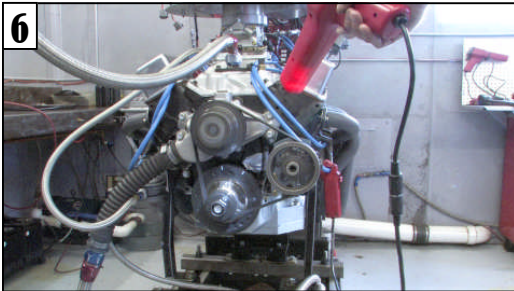


Excessive Pressure: During the break-in process, the engine rpm is limited so you often don't need full valvespring pressure. If the springs' open pressure (when the valves are at full lift) is greater than 250-280 pounds, the chance of destroying a few lobes is greatly increased. You can reduce the pressure by removing the inner springs if you are running nested double springs, switching to a lighter valvespring, or running a set of low-ratio break-in rocker arms.

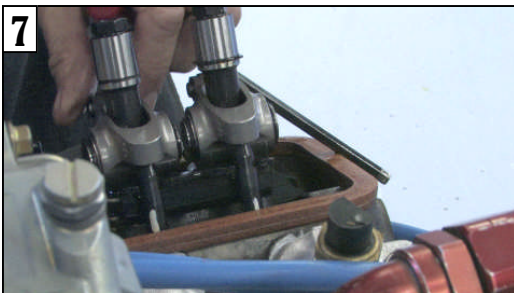
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5 **Prep the Motor:** The last thing you want is to spin the engine over with the starter without it cranking, because the oil pressure won't be high enough to protect the cam. Before cranking the engine spin the oil pump manually to fully prime the galleries. Pull a valve cover and spin the pump until you see oil coming out of the rocker arms. Next, give the engine a complete going-over to make sure it fires up immediately. Verify everything is hooked up on the ignition (and as close to correct timing as possible), the carburetor has fuel in the bowls and the plug wires are all tight.



6 **Break In:** As soon as the engine fires, bring the rpm's up to between 2,000 and 2,500 so that the oil pump is proving plenty of pressure to the bearings and lifters. Now check the timing and adjust if necessary, check your oil pressure and look the engine over to make sure there are no leaks or other signs of trouble. Run the engine for 30 minutes this way, varying the engine speed occasionally while staying within the 2,000 to 2,500 rpm range.



7 **Test for Trouble:** If you worry that you may have killed a lobe, there is an easy test to see if the cam is still good without tearing the engine down. Pull the valve covers and mark the pushrods with a paint pen. Now, with the ignition disabled so the engine won't fire, spin it over a few times—either with the starter or by hand—and watch the pushrods. A healthy lobe will spin the lifter and pushrod, and you will see the mark rotate. A wiped lobe, however, won't spin the lifter. If one of the marks you've made on the pushrods doesn't move, you will know you have a problem.