Camshaft Break-In Instructions

The most critical time in the life of a camshaft is the first 20 minutes of "break-in".

ZDDP or ZDTP should be either in the oil that you chose or added to the oil you chose when running any flat tappet camshaft.The level of ZDDP has been reduced in the API SM oil spec, along with the increased use of calcium detergents and dispersants resulting in failures for flat tappet camshaft applications. Many articles in all variety of magazines have been written on this subject.

NEW LIFTERS MUST BE INSTALLED WITH YOUR NEW CAMSHAFT

Never use old lifters on a new cam... EMPI recommends the use of EMPI or other high quality lifters to prevent premature cam or lifter wear. The lobes and lifter faces establish a wear pattern together. If the lifters are removed from the engine at a later time, they must go back on the same lobe from which they were removed.

Chose a premium petroleum-based oil. There are some oils with additive packages that are better for camshaft "break-in". We do not recommend the use of synthetic oils for "break-in".

Be certain to check that your oil includes Zinc Dialkyl Dithiophosphate (ZDDP). If it doesn't, you must use a ZDDP additive.

Prior to installation:

1. Check the compatibility of the camshaft with the other valve train and engine components:
   - ☐ Check Piston to Valve Clearance
   - ☐ Check Valve Spring Retainer to Valve Guide Clearance
   - ☐ Check Valve Springs for Coil Bind
   - ☐ Check Rocker Arms & Pushrods for Clearance at Stud and P/R Tube
   - ☐ Dual Spring applications - remove the inner spring for break-in.
2. Before installing the camshaft and lifters, wash them thoroughly in clean mineral spirits to remove any oil, dirt or rust preventative.
3. Liberally coat the face of the lifters and cam lobes with the supplied moly lube. Do not use on the body/sides of the lifter, pushrod tips or rocker arms.
4. Set your valve lash to factory specs. Try to minimize the number of times that you rotate the engine, as this can displace the moly lube from the lobes and lifters.
5. Preset the ignition timing. It is important that the static ignition timing is as close as possible and if the engine has a carburetor, it should be filled with fuel. The engine needs to start quickly without excessive cranking to insure immediate lubrication to the cam lobes.
6. Make sure that you have good ventilation. Open the garage door or push the car out of the garage. Having a fan to blow fresh air on the motor is a plus.
7. Use a muffled exhaust system. It makes it much easier to hear what is going on.
8. Don't take any short cuts or leave parts such as fan shrouds, generator, air cleaner, etc. off.
9. Double check that everything is ready to go. Clean up the area around and under your vehicle. Pick up your tools and wipe up the floor so you can easily spot even a minor leak.
10. Start the engine and immediately bring to 1,500 rpm. Timing should be adjusted, as closely as possible, to reduce excessive heat or load during break-in. Get the engine running fairly smoothly and vary the engine speed from 1,200 to 1,500 RPM in a slow to moderate acceleration/deceleration cycle. DO NOT LET IT IDLE – OR EXCEED 1,800RPM. During this time, be sure to check for any leaks and check for any unusual noises. If something doesn't sound right, shut the engine off, find and correct the source of the noise. Upon re-start, resume the 1,200 to 1,500 RPM speed cycling. Continue the varying break-in speed for 20 - 30 minutes. This is necessary to properly mate each lifter to its lobe. Should the engine need to be shut down for any reason, upon re-start it should be immediately brought back to 1,500 rpm and the break-in continued for a total run time of 20 - 30 minutes.
11. Let the engine cool, then drain the crankcase and properly dispose of the oil and oil strainer/filter. Refill the crankcase with a premium, petroleum-based oil - not synthetic oil. Re-check the valve adjustment.

At this point the initial break-in is complete. We recommend Checking/adjusting the valves at 300 miles and changing the oil and strainer/filter at 500 miles. We also recommend 5,000 miles on the cam before switching to synthetic oil, if that is your preference.

Cam Gear Installation