

GM Recommended Crate Engine Start-Up Procedure

1. SAFETY FIRST! If the car is on the ground, be sure the emergency brake is set, the wheels are chocked, and the transmission cannot fall into gear.
2. Be sure to check the oil level in the engine and prime the oil system with an engine priming tool! This is the most important step! Your crate engine has most likely sat for a while and most of its lubrication has drained back to the pan!
3. Quality 10W-30 or 10W-40 Oil is recommended for GM's Performance Crate Engines. Most Stock Factory replacement engines use either 5W-30 or 10W-30 oil. If you plan on running synthetic oils, we recommend that a new engine is first broken in with regular mineral type engine oil.
4. Adjust the distributor timing roughly by hand for quick start up and smoothest idle possible.
5. Set the ignition timing after engine starts.- Starting point for most carbureted crate engines is 10 degrees Before top dead center with vacuum advance disconnected. Computer controlled engines with a distributor are generally set at 0 degrees before top dead center with the set timing connector disconnected (refer to your vehicles service manual for details)
6. Flat tappet hydraulic cams only- (Such as the 250 hp-350, 290hp-350 & 330hp-350 Run the engine between 2,000 and 2,500 RPM's, with no-load on the engine for the first 30 minutes. This is critical to break in the camshaft.
7. Roller Cammed engines (such as the ZZ4, F.B. 385, 383's and big blocks) do not need to follow the procedure in step 6 because roller cams do not need to be broken in.
8. Remember that the cooling system on a fresh engine swap will have a lot of trapped air, which will lead to wild temperature gauge readings and possible water pump cavitation (water pump not moving coolant due to trapped air) To help avoid trapped air in the cooling system, try to fill the cooling system up with a 50/50 mix of quality coolant and water a few hours before you plan on starting the engine. Leave the radiator cap off during this time. This will tend to help purge a fair amount of trapped air before you start the engine. Specialty fill funnels can also be purchased from Lisle tools and Snap-On dealers that help alleviate this problem. Also helpful during break-in is to use a Lever-Vent type radiator cap on your radiator in so that you can manually purge trapped air while engine is running- (use extreme caution to avoid being burned by hot coolant) Your normal cap can then be re-installed after engine cools off.
9. Drive the vehicle with varying speeds and loads on the engine for the first 30 miles. Be sure not to use a lot of throttle or high RPM.

The following 2 steps generally are not necessary due to our advanced piston ring sealing technology, but can be performed to help ring break in.

10. Run five or six medium-throttle accelerations to about 3000 RPM (40 to 50 MPH), then letting off in gear and coasting back down to 20 MPH.

11. Run a couple hard throttle accelerations up to about 5000 RPM (55 to 60 MPH), then letting off in gear and coasting back down to 20 MPH.

12. Let engine cool and change the oil and filter and check coolant level, top off if necessary.

13. Drive the next 500 miles normally, without high RPM's (below 5000 RPM), hard use, or extended periods of high loading. 14. Change the oil and oil filter again.- Keep an eye on oil level during the first thousand or so miles. 15. Your engine is now ready for many happy cruising miles!