

## **ENGINE START-UP PROCEDURE AFTER REBUILD**

**By Tadeusz Malkiewicz**

1. Make sure your engine is properly grounded (no paint on the ground strap connection).
2. Fill the cooling system with water rather than antifreeze mixture. That way if you find a leak in anything, all you're losing is water. Proper antifreeze or coolant mixture can be added later.
3. Make sure the engine oil has an adequate amount of ZDDP additive for the important initial running in of the cam lobes and cam followers.
4. Make sure you filled/ primed your oil filter. Don't wait to pump it full.
5. Temporarily remove spark plugs and spin the engine on the starter motor until you have oil pressure showing at the gauge. That ensures the oil filter is full and oil has completely circulated throughout the engine. This may take 30 to 40 seconds of spinning until the gauge needle shows pressure.
6. Crack the oil pressure gauge line behind your gauge, and pack/ wrap some paper hand towel there. Then when you crank the engine for the first time, watch for when the oil hits the paper, stop it, tighten the line, and do it again. In other words: bleed the line.
7. Install spark plugs, pull out choke cable and ensure fuel is present.
8. Make sure you are in a well ventilated area with plenty of fresh air.
9. Start engine and watch closely for any leaks, oil or water.
10. If you do not get oil pressure in 40 seconds, stop and let the starter cool, and try another 40 second crank. Don't over heat your starter.
11. Bring the idle speed up to about 1500 to 1800 RPM and maintain this fast idle speed. This is very important to allow the initial bedding in of the cam lobes and cam followers.
12. Maintain this fast idle for at least 15-20 minutes, checking the top hose and the temperature gauge to make sure that the thermostat has opened at the correct temperature. I always use a 165 degree F thermostat. If all is well with your cooling system the temperature reading during this time shouldn't go much over the thermostat rating.
13. During this fast idle running, initial mixture settings and balances can be performed on the carbs, checks can be done for exhaust leaks as joints heat up and expand, engine paints will start initial burn off and cure, etc.
14. After the 15 minute run, bring the idle speed down to about 900 RPM and then gently shut off, again checking for leaks, etc.
15. THE MOST IMPORTANT: go celebrate your achievement!
16. Vary rpm range, do not stay at the same RPM for sustained periods of time. Try to make longer trips, varying the load on the engine.
17. Change the oil after 500 miles.
18. Celebrate again! ☺