

Engine Rebuilders Checklist

(approved by the Automotive Engine Rebuilders Association)
you found it at www.speedprint.com/Deves50

Following these few basic operations will help save time and provide you with a well installed, trouble free dependable engine assembly. Please check off each item as required.

PRE-ASSEMBLY CHECKLIST

- Thoroughly clean any parts which are to be re-used. Be sure no vacuum or EGR passages are restricted with carbon. Clean out any carbon build-up in throttle body areas.
- Thoroughly clean the threads of any bolts to be re-used.
- Check all gasket and seal mating surfaces for warpage and bent or damaged areas which could result in sealing failures. Clean all gasket surfaces of oil, paint, etc.
- Prime the oil pump with engine oil or assembly lube before installing it on the new engine.
- Replace and/or clean the oil pickup tube and screen.
- Read and follow all gasket set instructions. Only use gasket adhesives/sealers where required by the gasket manufacturer.
- Inspect the radiator for any signs of leakage or clogged/corroded tubes. Have the radiator repaired or replaced if it isn't in perfect condition.
- Clean the air conditioning condenser fins to provide plenty of air flow to the radiator.
- Visually inspect the new engine to be certain it is an equivalent match to the engine being replaced. Inspect the new engine for any obvious defects.
- Determine and correct the cause of engine failure prior to installing the new engine. (overheating, transmission slippage, fuel in oil, etc.)

ASSEMBLY CHECKLIST

- Use your torque wrench. Torque all bolts in sequence where specifications are available. Lightly lube bolt threads.
- Use a thread sealer where bolts enter any fluid areas, (coolant or oil) to prevent leakage around threads.
- Pre-lube the lifters, push rods and rockers with assembly lube prior to installing.
- Install a new cooling system thermostat.
- Install new cooling system hoses and clamps. (radiator, heater, bypass, etc.)
- Install a new water pump and fan clutch.
- Install new belt drives.
- Install new timing belts and any idler/tensioner pulleys that the timing belt contacts.
- Overhaul or replace the carburetor. Replace the carburetor and EGR base gaskets. Check EGR operation, replace if needed.
- Install a new fuel pump (if mechanical, engine mounted type.)
- Inspect motor and transmission mounts. Replace if needed.
- Inspect the clutch, flywheel, flex plate, etc. and replace as needed. If the thrust bearing was bad, check for swelling of the torque converter.
- Fill the new oil filter with motor oil before installing.
- Fill the engine with break-in oil recommended by the engine rebuilder.

- Prime the oiling system by manually operating the oil pump.
- Install new spark plugs (recommended OEM type spark plugs).
- Install new Distributor cap, rotor and spark plug wires.
- Install new air filter, fuel filter, crankcase filter and PCV valve.
- Fill the cooling system with a 50/50 mixture of new antifreeze/coolant and distilled water.

After rebuilding your engine, the first few minutes of engine operation are the most critical. Be sure that you do not allow your engine to run under 1500 RPM's for the first five minutes to one hour! Research tests have shown that if there is no metal pickup (or spalling) during this period, your camshaft will wear as long or longer than the engine's other components.

INITIAL START-UP CHECKLIST

- Monitor oil pressure gauge/light. Oil pressure should be present immediately after start-up. Stop the engine immediately if no oil pressure is observed.
- Visually check for fluid leaks. If leaks are present, stop the engine immediately and repair leaks before starting.
- Listen for any unusual noises, (knocking, tapping, scraping, etc.) Stop the engine if any unusual noises are present.
- Monitor the engine temperature gauge as the engine warms up. Don't allow the engine to over-heat before completing the cooling system fill procedure.
- Adjust the ignition timing to the manufacturers specifications using the approved method.
- After engine warm-up, turn off engine and check for cool spots in the radiator core. Cool core spots would indicate a restricted core.
- Check upper and lower radiator hoses and heater hoses for even temperatures.

BREAK-IN CHECKLIST

- Constantly monitor gauges/warning lights. If any unusual indications are observed, stop the engine immediately.
 - Check the fluid levels daily, correct as needed and repair if excessive fluid loss is observed.
 - Check for fluid leaks daily and if any leakage is observed do not operate the engine until correcting the problem.
 - Have a complete engine analysis performed (starting, charging, ignition, fuel and on-board computer systems).
 - Change the oil and filter at 200 miles, 1000 miles, 2000 miles and every 3000 miles or three months thereafter. Any warranty will be voided without proof of these oil changes.
 - If the engine begins running poorly do not operate the engine.
 - On mechanical lifter engines, adjust valves at 200 miles and again at 3000 miles.
- The first 200 miles of the engines life should be ran at mostly highway and varying speeds.**

Most engines aren't replaced due to old age. Most are replaced because one or more of it's support systems have failed or been neglected. Not everything in this checklist will apply to your engine. Some of the new parts recommended above may have been replaced recently on your vehicle. If the recommended parts above (hoses, belts, water and fuel pumps, spark plugs, etc.) are fairly new and still in "like new" condition, then it will probably be OK to re-use them. Remember that the installer is responsible for the proper installation of the engine. Failure of any of these parts or improper installation procedures could result in engine damage not covered by the re-builders warranty.