Engine Speed Oscillates at Idle

When the engine idle speed will not remain constant, check for the following, as necessary:

- A faulty fuel pump
- A leaky Exhaust Gas Recirculation (EGR) valve
- A blown head gasket
- A worn camshaft
- Worn timing gears, chain or sprockets
- Leaking intake manifold-to-engine gasket
- A blocked Positive Crankcase Ventilation (PCV) valve
- Overheating of the cooling system
- Fault with the computerized engine control system

Low Power Output of Engine

When the engine power output is below normal, check for the following, as necessary:

- Overheating of the cooling system
- Leaks in the vacuum system
- Leaking of the fuel pump or hoses
- Unadjusted valve timing
- A blown head gasket
- A slipping clutch disc or unadjusted pedal
- Excessive piston-to-bore clearance
- Worn piston rings
- A worn camshaft
- Sticking valve(s) or weak valve spring(s)
- A poorly operating diverter valve
- A faulty pressure regulator valve (Automatic Transaxle)
- Low fluid level (Automatic Transaxle)
- Fault with the computerized engine control system

Poor High Speed Operation
When the engine cannot maintain high speed operations, check for the following, as necessary:

- A faulty fuel pump producing low fuel volume
- A restriction in the intake manifold
- A worn distributor shaft
- Unadjusted valve timing
- Leaking valves or worn valve springs
- Fault with the computerized engine control system

**Poor Acceleration**

When the engine experiences poor acceleration characteristics, check for the following, as necessary:

- Incorrect ignition timing
- Poorly seated valves
- Fault with the computerized engine control system

**Backfire-Intake Manifold**

When the engine backfires through the intake manifold, check for the following, as necessary:

- Incorrect ignition timing
- Defective Exhaust Gas Recirculation (EGR) valve
- A very lean air/fuel mixture (carburetor equipped)
- Fault with the computerized engine control system

**Backfire-Exhaust Manifold**

When the engine backfires through the exhaust manifold, check for the following, as necessary:

- Leaks in the vacuum hose system
- Leaks in the exhaust system
- Faulty vacuum diverter valve
- Fault with the computerized engine control system

**Engine Detonation (Dieseling)**

When the engine operates beyond the controlled limits, check for the following, as necessary:

- Faulty ignition electrical system components
- Ignition timing that is too far advanced
- Inoperative Exhaust Gas Recirculation (EGR) valve
- Inoperative Positive Crankcase Ventilation (PCV) valve
- Faulty or loose spark plugs
- Clogged fuel delivery system
- Sticking, leaking or broken valves
- Excessive deposits in the combustion chambers
- Leaks in the vacuum system
- Fault with the computerized engine control system

### Excessive Oil Leakage

When large amounts of oil are noticed under the engine after each operation, check for the following, as necessary:

- Damaged or broken oil filter gasket
- Leaking oil pressure sending switch
- Worn rear main oil seal gasket
- Worn front main oil seal gasket
- Damaged or broken fuel pump gasket (mechanical pump)
- Damaged or loose valve cover gasket
- Damaged oil pan gasket or bent oil pan
- Improperly seated oil pan drain plug
- Broken timing chain cover gasket
- Blocked camshaft bearing drain hole

### Heavy Oil Consumption

When the engine is burning large amounts of oil, check for the following, as necessary:

- Engine oil level that is too high
- Engine oil that is too thin
- Wrong size of piston rings.
- Clogged piston ring grooves or oil return slots
- Insufficient tension of the piston rings
- Piston rings that are sticking in the grooves
- Excessively worn piston ring grooves
- Reversed (up-side-down) compression rings
- Non-staggered piston ring gaps
- Improper Positive Crankcase Ventilation (PCV) valve operation
- Damaged valve O-ring seals
- Restricted oil drain back holes
- Worn valve stem or guides
• Damaged valve stem oil deflectors
• Too long intake gasket dowels
• Mismatched rail and expander of the oil ring
• Excessive clearance of the main and connecting rods
• Scored or worn cylinder walls

**Negative Oil Pressure**

When the engine presents no oil pressure, check for the following, as necessary:

• Low oil level in the crankcase
• Broken oil pressure gauge or sender
• Blocked oil pump passages
• Blocked oil pickup screen or tube
• Malfunctioning oil pump
• Sticking oil pressure relief valve
• Leakage of the internal oil passages
• Worn (loose) camshaft bearings

**Low Oil Pressure**

When the engine presents low oil pressure, check for the following, as necessary:

• Low oil level in the crankcase
• Blocked oil pickup screen or tube
• Malfunctioning or excessive clearance of the oil pump
• Sticking oil pressure relief valve
• Very thin engine oil
• Worn (loose) main, rod or camshaft bearings

**High Oil Pressure**

When the engine presents high oil pressure, check for the following, as necessary:

• Sticking (closed) oil pressure relief valve
• Wrong grade of oil
• Faulty oil pressure gauge or sender

**Knocking Main Bearings**

When the main bearings are constantly making noise, check for the following, as necessary:

• Oval shaped crankshaft journals
• Loose torque converter or flywheel mounting bolts
• Loose damper pulley hub
• Excessive clearance of the main bearings
• Excessive belt tension
• Low oil supply to the main bearings
• Extreme crankshaft end play

Knocking Connecting Rods

When the connecting rod bearings are constantly making noise, check for the following, as necessary:

• Misaligned connecting rod or cap
• Missing bearing shell or excessive bearing clearance
• Incorrectly torqued connecting rod bolts
• Connecting rod journal of the crankshaft is out-of-round

Knocking Pistons and Rings

When the pistons and rings are constantly making noise, check for the following, as necessary:

• Misaligned connecting rods
• Out-of-round or tapered cylinder bore
• Loose or tight ring side clearance
• Build-up of carbon on the piston(s)
• Piston-to-cylinder bore clearance is excessive
• Broken piston rings
• Loose or seized piston pin(s)

Knocking Valve Train

When the valve train is constantly making noise, check for the following, as necessary:

• Loose rocker arms
• Dirt or chips in the valve lifters
• Excessive valve stem-to-guide clearance
• Restrictions in valve lifter oil holes
• Incorrect valve lifter(s)
• Missing valve lock(s)
• Faulty valve lifter check ball
• Excessive valve lifter leak down
• Reversed rocker arm nut (installed up-side-down)
- Excessively worn camshaft lobes
- Bent or worn pushrods
- Excessively worn bridged pivots or rocker arms
- Cocked or broken valve springs
- Bent valve(s)
- Worn valve lifter face(s)
- Damaged lifter plunger or pushrod seat

### Knocking Valves

When the valves are constantly noisy, check for the following, as necessary:

- Unadjusted valve lash
- Broken valve springs
- Bent pushrods
- Excessively worn camshaft lobes
- Dirty or worn valve lifters
- Worn valve guides
- Excessive valve seat or face run-out
- Loose rocker arm studs