

BASIC MECHANICAL TROUBLESHOOTING

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**

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