

Engine Trouble Shooting

GASOLINE ENGINE TROUBLE SHOOTING

CONDITION	POSSIBLE CAUSE	CORRECTION
Engine Lopes At Idle	Intake manifold-to-head leaks Blown head gasket Worn timing gears, chain or sprocket Worn camshaft lobes Overheated engine Blocked crankcase vent valve Leaking EGR valve Faulty fuel pump	Replace manifold gasket, see ENGINES Replace head gasket, see ENGINES Replace gears, chain or sprocket Replace camshaft, see ENGINES Check cooling system, see COOLING Remove restriction Repair leak and/or replace valve Replace fuel pump
Engine Has Low Power	Leaking fuel pump Excessive piston-to-bore clearance Sticking valves or weak valve springs Incorrect valve timing Worn camshaft lobes Blown head gasket Clutch slipping Engine overheating Auto. trans. pressure regulator valve faulty Auto. trans. fluid level too low Improper vacuum diverter valve operation Vacuum leaks Leaking piston rings	Repair leak and/or replace fuel pump Install larger pistons, see ENGINES Check valve train components, see ENGINES Reset valve timing, see ENGINES Replace camshaft, see ENGINES Replace head gasket, see ENGINES Adjust pedal and/or replace components, see CLUTCHES Check cooling system, see COOLING Replace pressure regulator valve Add fluid, see TRANS. SERVICING Replace vacuum diverter valve Inspect vacuum system and repair as required Replace piston rings, see ENGINES
Faulty High Speed Operation	Low fuel pump volume Leaking valves or worn valve springs Incorrect valve timing Intake manifold restricted Worn distributor shaft	Replace fuel pump Replace valves and/or springs, see ENGINES Reset valve timing, see ENGINES Remove restriction Replace distributor
Faulty Acceleration	Improper fuel pump stroke Incorrect ignition timing Leaking valves Worn fuel pump diaphragm or piston	Remove pump and reset pump stroke Reset ignition timing, see TUNE-UP Replace valves, see ENGINES Replace diaphragm or piston
Intake Backfire	Improper ignition timing Faulty accelerator pump discharge Improper choke operation Defective EGR valve Fuel mixture too lean Choke valve initial clearance too large	Reset ignition timing, see TUNE-UP Replace accelerator pump Check choke and adjust as required Replace EGR valve Reset air/fuel mixture, see TUNE-UP Reset choke valve initial clearance
Exhaust Backfire	Vacuum leak Faulty vacuum diverter valve Faulty choke operation Exhaust system leak	Inspect and repair vacuum system Replace vacuum diverter valve Check choke and adjust as required Repair exhaust system leak
Engine Detonation	Ignition timing too far advanced Faulty ignition system Spark plugs loose or faulty Fuel delivery system clogged EGR valve inoperative PCV system inoperative Vacuum leaks Excessive combustion chamber deposits Leaking, sticking or broken valves	Reset ignition timing, see TUNE-UP Check ignition system, see ELECTRICAL Retighten or replace plugs Inspect lines, pump and filter for clog Replace EGR valve Inspect and/or replace hoses or valve Check vacuum system and repair leaks Remove built-up deposits Inspect and/or replace valves
External Oil Leakage	Fuel pump improperly seated or worn gasket Valve cover gasket broken Oil filter gasket broken	Remove pump, replace gasket and seat properly Replace valve cover gasket Replace oil filter and gasket

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GASOLINE ENGINE TROUBLE SHOOTING (Cont.)

CONDITION	POSSIBLE CAUSE	CORRECTION
External Oil Leakage (Cont.)	<ul style="list-style-type: none"> Oil pan gasket broken or pan bent Timing chain cover gasket broken Rear main oil seal worn Oil pan drain plug not seated properly Camshaft bearing drain hole blocked Oil pressure sending switch leaking 	<ul style="list-style-type: none"> Straighten pan and replace gasket Replace timing chain cover gasket Replace rear main oil seal Remove and reinstall drain plug Remove restriction Remove and reinstall sending switch
Excessive Oil Consumption	<ul style="list-style-type: none"> Worn valve stems or guides Valve "O" ring seals damaged Plugged oil drain back holes Improper PCV valve operation Engine oil level too high Engine oil too thin Valve stem oil defectors damaged Incorrect piston rings Piston ring gaps not staggered Insufficient piston ring tension Piston ring grooves or oil return slots clogged Piston rings sticking in grooves Piston ring grooves excessively worn Compression rings installed upside down Worn or scored cylinder walls Mismatched oil ring expander and rail Intake gasket dowels too long Excessive main or connecting rod bearing clearance 	<ul style="list-style-type: none"> Replace stems or guides, see ENGINES Replace "O" ring seals, see ENGINES Remove restrictions Replace PCV valve Remove excess oil Replace with thicker oil Replace oil defelctors Replace piston rings, see ENGINES Reinstall piston rings, see ENGINES Replace rings, see ENGINES Replace piston rings, see ENGINES Replace piston rings, see ENGINES Replace piston and rings, see ENGINES Replace compression rings correctly, see ENGINES Rebore cylinders or replace block Replace oil ring expander and rail, see ENGINES Replace intake gasket dowels Replace main or connecting rod bearings, see ENGINES
No Oil Pressure	<ul style="list-style-type: none"> Low oil level Oil pressure sender or gauge broken Oil pump malfunction Oil pressure relief valve sticking Oil pump passages blocked Oil pickup screen or tube blocked Loose oil inlet tube Loose camshaft bearings Internal leakage at oil passages 	<ul style="list-style-type: none"> Add oil to proper level Replace sender or gauge Remove and overhaul oil pump, see ENGINES Remove and reinstall valve Overhaul oil pump, see ENGINES Remove restriction Tighten oil inlet tube Replace camshaft bearings, see ENGINES Replace block or cylinder head
Low Oil Pressure	<ul style="list-style-type: none"> Low engine oil level Engine oil too thin Excessive oil pump clearance Oil pickup tube or screen blocked Oil pressure relief spring weak or stuck Main, rod or cam bearing clearance excessive 	<ul style="list-style-type: none"> Add oil to proper level Remove and replace with thicker oil Reduce oil pump clearance, see ENGINES Remove restrictions Eliminate binding or replace spring Replace bearing to reduce clearance, see ENGINES
High Oil Pressure	<ul style="list-style-type: none"> Improper grade of oil Oil pressure relief valve stuck closed Oil pressure sender or gauge faulty 	<ul style="list-style-type: none"> Replace with proper oil Eliminate binding Replace sender or gauge
Noisy Main Bearings	<ul style="list-style-type: none"> Inadequate oil supply Excessive main bearing clearance Excessive crankshaft end play Loose flywheel or torque converter Loose or damaged vibration damper Crankshaft journals out-of-round Excessive belt tension 	<ul style="list-style-type: none"> Check oil delivery to main bearings Replace main bearings, see ENGINES Replace crankshaft, see ENGINES Tighten attaching bolts Tighten or replace vibration damper Re-grind crankshaft journals Loosen belt tension

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CONDITION	POSSIBLE CAUSE	CORRECTION
Noisy Connecting Rods	Excessive bearing clearance or missing bearing Crankshaft rod journal out-of-round Misaligned connecting rod or cap Incorrectly tighten rod bolts	Replace bearing, see ENGINES Re-grind crankshaft journal Remove rod or cap and re-align Remove and re-tighten rod bolts
Noisy Pistons and Rings	Excessive piston-to-bore clearance Bore tapered or out-of-round Piston ring broken Piston pin loose or seized Connecting rods misaligned Ring side clearance too loose or tight Carbon build-up on piston	Install larger pistons, see ENGINES Rebore block Replace piston rings, see ENGINES Replace piston pin, see ENGINES Re-align connecting rods Replace with larger or smaller rings Remove carbon
Noisy Valve Train	Worn or bent push rods Worn rocker arms or bridged pivots Dirt or chips in valve lifters Excessive valve lifter leak-down Valve lifter face worn Broken or cocked valve springs Too much valve stem-to-guide clearance Valve bent Loose rocker arms Excessive valve seat run-out Missing valve lock Push rod contacting cylinder head Excessively worn camshaft lobes Plugged valve lifter oil holes Faulty valve lifter check ball Rocker arm nut installed upside down Valve lifter incorrect for engine Faulty push rod seat or lifter plunger	Replace push rods, see ENGINES Replace rocker arms or pivots, see ENGINES Remove lifters and remove dirt/chips Replace valve lifters, see ENGINES Replace valve lifters, see ENGINES Replace or reposition springs Replace valve guides, see ENGINES Replace valve, see ENGINES Retighten rocker arms, see ENGINES Re-face valve seats, see ENGINES Install new valve lock Replace with shorter push rod Replace camshaft, see ENGINES Eliminate restriction or replace lifter Replace lifter check ball, see ENGINES Remove and reinstall correctly Remove and replace valve lifters Replace plunger or push rod
Noisy Valves	Improper valve lash Worn or dirty valve lifters Worn valve guides Excessive valve seat or face run-out Worn camshaft lobes Loose rocker arm studs Bent push rods Broken valve springs	Re-adjust valve lash, see ENGINES Clean and/or replace lifters Replace valve guides, see ENGINES Re-face seats or valve face Replace camshaft, see ENGINES Re-tighten rocker arm studs, see ENGINES Replace push rods, see ENGINES Replace valve springs, see ENGINES
Burned, Sticking or Broken Valves	Weak valve springs or warped valves Improper lifter clearance Worn guides or improper guide clearance Out-of-round valve seats or improper seat width Gum deposits on valve stems, seats or guides Improper sprak timing	Replace valves and/or springs, see ENGINES Re-adjust clearance or replace lifters Replace valve guides, see ENGINES Re-grind valve seats Remove deposits Readjust spark timing
Broken Pistons/Rings	Undersize pistons Wrong piston rings Out-of-round cylinder bore Improper connecting rod alignment Excessively worn ring grooves Improperly assembled piston pins Insufficient ring gap clearance Engine overheating Incorrect ignition timing	Replace with larger pistons, see ENGINES Replace with correct rings, see ENGINES Re-bore cylinder bore Remove and re-align connecting rods Replace pistons, see ENGINES Re-assemble pin-to-piston, see ENGINES Install new rings, see ENGINES Check cooling system Re-adjust ignition timing, see TUNE-UP
Excessive Exhaust Noise	Leaks at manifold to head, or to pipe Exhaust manifold cracked or broken	Replace manifold or pipe gasket Replace exhaust manifold, see ENGINES