

TUNE-UP TROUBLE SHOOTING

CONDITION & POSSIBLE CAUSE	CONDITION & POSSIBLE CAUSE
<p style="text-align: center;">SPARK PLUG DIAGNOSIS</p> <p>Normal Spark Plug Condition</p> <ul style="list-style-type: none"> • Light tan or gray deposits on insulator. • Electrode not burned or fouled. • Gap tolerance not significantly changed. <p>Cold Fouling or Carbon Deposits</p> <ul style="list-style-type: none"> • Over rich air-fuel mixture, possibly from a faulty choke, clogged air cleaner, improper idle adjustment or dirty carburetor. • Faulty ignition wires. • Prolonged operation at idle. • Sticking valves or worn valve guide seals. <p>Wet Fouling or Oil Deposits</p> <ul style="list-style-type: none"> • Worn rings and pistons. • Excessive cylinder wear. • Excessive valve guide clearance. • Worn or loose bearings. <p>Gap Bridged</p> <ul style="list-style-type: none"> • Deposits in combustion chamber becoming fused to electrode under high heat. <p>Blistered Electrode or Overheating</p> <ul style="list-style-type: none"> • Engine overheating. • Wrong type of fuel. • Loose spark plugs. • Over-advanced ignition timing. <p>Pre-ignition or Melted Electrodes</p> <ul style="list-style-type: none"> • Incorrect type of gasoline. • Incorrect ignition timing. • Burned valves. • Engine overheating. • Wrong type of spark plug, too hot. <p>Chipped Insulators</p> <ul style="list-style-type: none"> • Severe detonation. • Improper gapping procedure. <p>Rust Colored Deposits</p> <ul style="list-style-type: none"> • Additives in unleaded fuel may create this condition. It may be misdiagnosed as water in the combustion chamber. These deposits do not affect plug performance. 	<p style="text-align: center;">ELECTRONIC IGNITION DIAGNOSIS</p> <p><i>Before diagnosing an electronic ignition system, ensure that all wiring is connected properly between distributor, wiring connector and spark plugs. Ignition problems will show up either as: engine will not start or engine runs rough.</i></p> <p>Engine Will Not Start</p> <ul style="list-style-type: none"> • Open circuit between distributor and bulkhead connector. • Open circuit between bulkhead connector and ignition switch. • Open circuit between ignition switch and starter solenoid. <p>Engine Runs Rough</p> <ul style="list-style-type: none"> • Fuel lines leaking or clogged. • Initial timing incorrect. • Centrifugal advance malfunction. • Worn or defective spark plugs. • Worn or defective secondary wiring. <p><i>If the above checks do not locate the problem, check the components listed below.</i></p> <p>Component Failure</p> <ul style="list-style-type: none"> • Spark arc-over on distributor cap, rotor or coil. • Defective pick-up coil. • Defective ignition coil. • Defective vacuum unit. • Defective control module. <p style="text-align: center;">ELECTRONIC IGNITION DIAGNOSIS BY OSCILLOSCOPE PATTERN</p> <p>Firing Voltage Lines are the Same, but Abnormally High</p> <ul style="list-style-type: none"> • Retarded ignition timing. • Too lean of a fuel mixture. • High resistance in coil wire. • Corrosion in coil tower terminal. • Corrosion in distributor coil terminal. <p>Firing Voltage Lines are the Same, but Abnormally Low</p> <ul style="list-style-type: none"> • Too rich of a fuel mixture. • Breaks in coil wire causing arcing. • Cracked coil tower causing arcing. • Low coil output. • Low engine compression.

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<p>One or More, but Not All Firing Voltage Lines are Higher Than the Others</p> <ul style="list-style-type: none"> • Carburetor idle mixture not balanced. • EGR valve stuck open. • High resistance in spark plug wire. • Cracked or broken spark plug insulator. • Intake vacuum leak. • Defective spark plugs. • Corroded spark plug terminals. <p>One or More, but Not All Firing Voltage Lines are Lower Than the Others</p> <ul style="list-style-type: none"> • Curb idle mixture not balanced. • Breaks in spark plug wires causing arcing. • Cracked coil tower causing arcing. • Low compression. • Defective spark plugs, or spark plugs fouled. <p>One or More Cylinders Not Firing</p> <ul style="list-style-type: none"> • Cracked distributor cap terminals. • Shorted spark plug wire. • Mechanical problem in engine. • Defective spark plugs. • Spark plugs fouled. <p style="text-align: center;">GENERAL DIAGNOSIS</p> <p>Hard Starting</p> <ul style="list-style-type: none"> • Binding carburetor linkage, choke linkage or choke piston. • Restricted choke vacuum. • Worn or dirty needle valve and seat. • Float sticking. • Incorrect choke adjustment. • Defective coil. • Improper spark plug gap. • Incorrect ignition timing. <p>Detonation</p> <ul style="list-style-type: none"> • Over-advanced ignition timing. • Defective spark plugs. • Fuel lines clogged. • EGR system malfunction. • PCV system malfunction. • Vacuum leaks. • Loose fan belts. • Restricted air flow. • Vacuum advance malfunction. 	<p>Dieseling</p> <ul style="list-style-type: none"> • Binding carburetor linkage, throttle linkage, choke linkage or fast idle cam. • Defective idle solenoid. • Improper base idle speed. • Incorrect ignition timing. • Incorrect idle mixture setting. <p>Faulty Acceleration</p> <ul style="list-style-type: none"> • Incorrect ignition timing. • Engine cold and choke too lean. • Defective spark plugs. • Defective coil. <p>Faulty Low Speed Operation</p> <ul style="list-style-type: none"> • Clogged idle transfer slots. • Restricted idle air bleeds and passages. • Clogged air cleaner. • Defective spark plugs. • Defective ignition cables. • Defective distributor cap. <p>Faulty High Speed Operation</p> <ul style="list-style-type: none"> • Incorrect ignition timing. • Defective distributor centrifugal advance. • Defective distributor vacuum advance. • Incorrect spark plugs or plug gap. • Faulty choke operation. • Clogged vacuum passages. • Improper size or clogged main jet. • Restricted air cleaner. • Defective distributor cap, rotor or coil. • Worn distributor shaft. <p>Misfire at All Speeds</p> <ul style="list-style-type: none"> • Defective spark plugs. • Defective spark plug wires. • Defective distributor cap, rotor or coil. • Cracked or broken vacuum hoses. • Vacuum leaks. • Fuel lines clogged. <p>Hesitation</p> <ul style="list-style-type: none"> • Cracked or broken vacuum hoses. • Vacuum leaks. • Binding carburetor linkage, throttle linkage, choke linkage or fast idle cam. • Improper float setting. • Cracked or broken ignition wires.

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<p>Rough Idle, Missing or Stalling</p> <ul style="list-style-type: none"> ● Incorrect curb idle or fast idle speed. ● Incorrect basic timing. ● Improper idle mixture adjustment. ● Improper feedback system operation. ● Incorrect spark plug gap. ● Moisture in ignition components. ● Loose or broken ignition wires. ● Damaged distributor cap or rotor. ● Faulty ignition coil. ● Fuel filter clogged or worn. ● Damaged idle mixture screw. ● Improper fast idle cam adjustment. ● Improper EGR valve operation. ● Faulty PCV valve air flow. ● Choke binding, or improper choke setting. ● Vacuum leak. ● Improper float bowl fuel level. ● Clogged air bleed or idle passages. ● Clogged or worn air cleaner. ● Faulty choke vacuum diaphragm. ● Exhaust manifold heat valve inoperative. ● Improper distributor spark advance. ● Leaking valves or valve components. ● Improper carburetor mounting. ● Excessive play in distributor shaft. ● Loose or corroded wiring connections. <p>Engine Surges</p> <ul style="list-style-type: none"> ● Improper PCV valve air flow. ● Vacuum leaks. ● Clogged main jets. ● Clogged air bleeds. ● EGR valve malfunction. ● Restricted air cleaner. ● Cracked or broken vacuum hoses. ● Cracked or broken ignition wires. ● Vacuum advance malfunction. ● Defective or fouled spark plugs. 	<p>Ping or Spark Knock</p> <ul style="list-style-type: none"> ● Incorrect ignition timing. ● Distributor centrifugal or vacuum advance malfunction. ● Carburetor setting too lean. ● Vacuum leak. ● EGR valve malfunction. <p>Poor Gasoline Mileage</p> <ul style="list-style-type: none"> ● Cracked or broken vacuum hoses. ● Vacuum leaks. ● Defective ignition wires. ● Incorrect choke setting. ● Defective vacuum advance. ● Defective spark plugs. ● Binding carburetor power piston. ● Dirt in carburetor jets. ● Incorrect float adjustment. ● Defective power valves. <p>Power Not Up to Normal</p> <ul style="list-style-type: none"> ● Incorrect ignition timing. ● Defective distributor cap, rotor, coil or ignition wires. ● Incorrect spark plug gap. ● Incorrect idle speeds. ● Improper float level. ● Leaking needle valve and seat. ● Choke sticking. <p>Engine Stalls</p> <ul style="list-style-type: none"> ● Incorrect idle speed. ● Improper float level. ● Leaking needle valve and seat. ● Sticking choke. ● Carburetor mounting gasket air leaks. ● Vacuum leaks. ● Defective ignition wires, distributor cap or rotor. ● Loose condensor. ● Shorted distributor wires. ● Defective spark plugs. ● Clogged fuel filter.