

Computers and Control Systems: Symptom Related Diagnostic Procedures

Hard Starting

SYMPTOM DESCRIPTION

Engine cranks OK, but does not start immediately. Will eventually start and run, but may die shortly after.

POSSIBLE CAUSE

ACTION

STARTING SYSTEM MALFUNCTION

- Check Battery voltage.
- Check Alternator output voltage.
- Check Starter current draw.

IGNITION SYSTEM MALFUNCTION

- Scope check Ignition System
- Check IGNITION COIL for proper output voltage.
- Check SPARK PLUGS for proper spark duration. Remove spark plugs, check for fuel fouled plugs, cracks, wear, improper gap, burned electrodes, or heavy deposits. Replace as necessary.
- Check SECONDARY CIRCUIT for abnormal firing Kv, crossfire between spark plugs (distributor cap, spark plug wires), and proper plug wire routing.
- Check IGNITION TIMING for excessive spark advance or retard.

ENGINE MECHANICAL MALFUNCTION

- Check COMPRESSION Perform a compression check, and cylinder leakage test, look for sticking or leaking valves.
- Check for VACUUM LEAKS inspect Intake manifold, gasket(s), and hoses.
- Check exhaust system for leaks, restriction, or damage.

FUEL SYSTEM MALFUNCTION

- Check for lean Air-Fuel mixture, O2 Sensor, perform injector balance test, inspect regulator operation (check vacuum line and return hose), check fuel pressure.
- Check Fuel Pump for defective check valve.
- Check for defective Fuel Pump Ballast Bypass Relay.