

# H - TESTS W/O CODES

1994 Volvo 960

1994 ENGINE PERFORMANCE  
Volvo Trouble Shooting - No Codes

Volvo; 850, 940, 960

## INTRODUCTION

Before diagnosing symptoms or intermittent faults, perform steps in appropriate F - BASIC TESTING and G - TESTS W/ CODES articles in the ENGINE PERFORMANCE Section, see below. Use this article to diagnose driveability problems existing when a hard fault code is not present or if vehicle is not equipped with a self-diagnostic system.

- \* G - TESTS W/CODES - NON-TURBO
- \* G - TESTS W/CODES - TURBO
- \* G - TESTS W/CODES
- \* G - TESTS W/CODES

NOTE: Some driveability problems may have been corrected by manufacturer with a revised computer calibration chip or computer control unit. Check with manufacturer for latest chip or computer application.

Symptom checks can direct the technician to malfunctioning component(s) for further diagnosis. A symptom should lead to a specific component, system test or adjustment.

Use intermittent test procedures to locate driveability problems that do not occur when the vehicle is being tested. These test procedures should also be used if a soft (intermittent) trouble code was present but no problem was found during self-diagnostic testing.

NOTE: For testing procedures, see I - SYSTEM/COMPONENT TESTS article in the ENGINE PERFORMANCE Section. For specifications, see D - ADJUSTMENTS article or C - SPECIFICATIONS article in the ENGINE PERFORMANCE Section.

## SYMPTOMS

### SYMPTOM DIAGNOSIS

Symptom checks cannot be used properly unless problem occurs while vehicle is being tested. To reduce diagnostic time, ensure steps in appropriate F - BASIC TESTING and G - TESTS W/ CODES articles in the ENGINE PERFORMANCE Section, see below were performed before diagnosing a symptom. Symptoms available for diagnosis include:

- \* G - TESTS W/CODES - NON-TURBO
- \* G - TESTS W/CODES - TURBO
- \* G - TESTS W/CODES
- \* G - TESTS W/CODES
  
- \* No Start - Cold Engine
- \* Starts But Stalls - Cold Engine
- \* Hard To Start - Cold Engine
- \* No Start - Warm Engine

- \* Erratic Idle - Warm-Up
- \* Backfiring
- \* Incorrect Idle Speed
- \* Hesitation - Acceleration
- \* Hesitation - Coasting
- \* Knocking
- \* Engine Misfire
- \* Insufficient Engine Power
- \* Poor Fuel Economy
- \* Excessive HC and NOx

### **NO START - COLD ENGINE**

- \* Ensure battery is fully charged.
- \* Ensure spark plugs fire strong Blue/White spark.
- \* Check fuel pump fuse(s).
- \* Check in-line fuse to control unit (if applicable).
- \* Ensure ignition timing and fuel pressure are correct.
- \* Check fuel injectors.
- \* Ensure timing belt is not broken (if applicable).
- \* Check ground connections on intake manifold for control unit and power stage.
- \* Ensure ignition coil resistance is correct.
- \* Ensure rotor, distributor and plug wires are okay.
- \* Check ignition control unit.
- \* Check coolant temperature sensor and connector.
- \* Check throttle switch and connector.
- \* Check fuel control unit.
- \* Check engine speed sensor or Hall Effect sensor (turbo).
- \* Ensure power stage receives signal from ignition control unit.
- \* Check airflow sensor (if applicable).

### **STARTS BUT STALLS - COLD ENGINE**

- \* Check cold start injector (if applicable).
- \* Check coolant temperature sensor.
- \* Check ignition and sensor wires for proper connection.
- \* Check fuel injectors.
- \* Check throttle switch and connector.
- \* Check engine speed sensor or Hall Effect sensor (turbo).

### **HARD TO START - COLD ENGINE**

- \* Ensure spark plugs fire strong Blue/White spark.
- \* Check distributor.
- \* Ensure fuel pressure is correct.
- \* Check ignition timing.
- \* Check throttle switch and connector.

### **NO START - WARM ENGINE**

- \* Ensure fuel pressure is correct.
- \* Check for gasoline in oil.
- \* Ensure fuel injectors are not leaking.
- \* Check ignition and sensor wires for proper connection.
- \* Ensure spark plugs are not fouled.
- \* Check ignition and coil circuit.
- \* Check engine speed sensor or Hall Effect sensor (turbo).
- \* Check throttle switch and connector.
- \* Check idle valve. Ensure airflow arrow points in correct direction.

## ERRATIC IDLE - WARM-UP

- \* Check throttle switch and connection.
- \* Check coolant temperature sensor and connection.
- \* Check idle (air) valve.
- \* Check air temperature sensor and mass airflow meter.
- \* Check coolant temperature sensor.
- \* Ensure spark plugs are not fouled.
- \* Check ignition and sensor wires for proper connection.
- \* Check idle valve. Ensure airflow arrow points in correct direction.
- \* Check distributor.
- \* Check ignition and coil circuit.
- \* Check intake system.
- \* Check engine speed sensor or Hall Effect sensor (turbo).
- \* Check throttle switch and connector.
- \* Check MAP sensor (if applicable).

## BACKFIRING

- \* Ensure ignition timing is correct.
- \* Ensure timing belt has not jumped.
- \* Check distributor.
- \* Check for gasoline in oil.
- \* Ensure fuel injectors are not leaking.
- \* Ensure spark plugs fire strong Blue/White spark.
- \* Check ignition and coil circuit.
- \* Check engine speed sensor.
- \* Check throttle switch and connector.
- \* Check exhaust system.

## INCORRECT IDLE SPEED

- \* Check fuel injectors.
- \* Check intake system for leaks.
- \* Check coolant temperature sensor.
- \* Check throttle switch and connector.
- \* Check idle valve. Ensure airflow arrow points in correct direction.
- \* Check distributor.

## HESITATION - ACCELERATION

- \* Check fuel injectors.
- \* Check ignition and sensor wires for proper connection.
- \* Check distributor cap for moisture and carbon tracking.
- \* Ensure spark plug wires are okay.
- \* Ensure spark plugs are not fouled.
- \* Check MAP sensor (if applicable).
- \* Check throttle switch and connector.
- \* Check ignition and coil circuit.
- \* Check engine speed sensor or Hall Effect sensor (turbo).
- \* Check idle valve. Ensure airflow arrow points in correct direction.

## HESITATION - COASTING

- \* Check fuel injectors.
- \* Check ignition and sensor wires for proper connection.
- \* Check throttle switch and connector.
- \* Check engine speed sensor or Hall Effect sensor (turbo).

- \* Check for gasoline in oil.
- \* Check idle valve. Ensure airflow arrow points in correct direction.

## **KNOCKING**

- \* Check ignition and coil circuit.
- \* Ensure spark plugs fire strong Blue/White spark.
- \* Check knock sensor.
- \* Check throttle switch and connector.
- \* Check ignition and coil circuit.
- \* Check engine speed sensor or Hall Effect sensor (turbo).
- \* Check MAP sensor (if applicable).

## **ENGINE MISFIRE**

- \* Check fuel injectors.
- \* Check ignition and sensor wires for proper connection.
- \* Check ignition and coil circuit.
- \* Check for gasoline in oil.
- \* Check intake and exhaust system.
- \* Check throttle switch and connector.
- \* Check for vacuum leaks.
- \* Check engine speed sensor or Hall Effect sensor (turbo).
- \* Check MAP sensor (if applicable).

## **INSUFFICIENT ENGINE POWER**

- \* Check fuel injectors.
- \* Ensure fuel pressure is correct.
- \* Check airflow sensor (if applicable).
- \* Check for restricted exhaust.
- \* Check coolant temperature sensor.
- \* Check air temperature sensor.
- \* Check engine speed sensor.
- \* Check throttle switch and connector.
- \* Check ignition and coil circuit.
- \* Check MAP sensor (if applicable).
- \* Check engine speed sensor or Hall Effect sensor (turbo).
- \* Check intake and exhaust system.

## **POOR FUEL ECONOMY**

- \* Check for leaky fuel injectors.
- \* Ensure spark plugs are not fouled.
- \* Check for faulty oxygen sensor.
- \* Check throttle switch and connector.
- \* Check for poor wire connections and fouled spark plugs.
- \* Check engine speed sensor or Hall Effect sensor (turbo).
- \* Check for gasoline in oil.
- \* Check MAP sensor (if applicable).
- \* Check for malfunctioning intake system.

## **EXCESSIVE HC & NOx**

- \* Check for gasoline in oil.
- \* Check for leaky fuel injectors.
- \* Check for faulty oxygen sensor.
- \* Check ignition and sensor wires for proper connection.
- \* Check engine speed sensor.
- \* Check throttle switch and connector.
- \* Check intake system.

- \* Check MAP sensor (if applicable).

## **INTERMITTENTS**

### **INTERMITTENT PROBLEM DIAGNOSIS**

Intermittent fault testing requires duplicating circuit or component failure to identify the problem. These procedures may lead to the computer setting a fault code (on some systems) which may help in diagnosis.

If problem vehicle does not produce fault codes, monitor voltage or resistance values using a DVOM while attempting to reproduce conditions causing intermittent fault. A status change on DVOM indicates a fault has been located.

Use a DVOM to pinpoint faults. When monitoring voltage, ensure ignition switch is in ON position or engine is running. Ensure ignition switch is in OFF position or negative battery cable is disconnected when monitoring circuit resistance. Status changes on DVOM during test procedures indicate area of fault.

### **TEST PROCEDURES**

#### Intermittent Simulation

To reproduce conditions creating an intermittent fault:

- \* Lightly vibrate component.
- \* Heat component.
- \* Wiggle or bend wiring harnesses.
- \* Spray component with water mist.
- \* Remove/apply vacuum source.

Monitor circuit/component voltage or resistance while simulating intermittent. If engine is running, monitor for self-diagnostic codes. Use test results to identify a faulty component or circuit.