

H - TESTS W/O CODES - GASOLINE

Article Text

1991 Volkswagen Vanagon
For Volkswagen Technical Site
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Saturday, March 18, 2000 09:15PM

ARTICLE BEGINNING

1990-91 ENGINE PERFORMANCE
Volkswagen Trouble Shooting - No Codes

1990-91 Passat
1991 Cabriolet, Corrado, Fox, Golf GL, GTI,
Jetta, Jetta GLi, Vanagon

MODEL APPLICATION

NOTE: Information in this article applies to gasoline engine models only

INTRODUCTION

Before diagnosing symptoms or intermittent faults, perform steps in F - BASIC TESTING article in the ENGINE PERFORMANCE Section. Use this article to diagnose driveability problems existing when a hard fault code is not present or vehicle is not equipped with a self-diagnostic system.

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 an 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 specific testing procedures, see I - SYS/COMP TESTS article in the ENGINE PERFORMANCE Section. For specifications, see D - ADJUSTMENTS or C - SPECIFICATIONS article.

SYMPTOMS

SYMPTOM DIAGNOSIS

Symptom checks cannot be used properly unless the problem is actually happening while the vehicle is being tested. To reduce diagnostic time, ensure steps in F - BASIC TESTING article in the ENGINE PERFORMANCE Section have been performed before attempting to diagnose a symptom. Symptoms available for diagnosis include the following.

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- * Will Not Start Or Starts Hard Cold (Crank's Okay)
- * Will Not Start Or Starts Hard Hot (Crank's Okay)
- * Engine Stalls Or Idles Rough
- * Engine Misfires Or Hesitates
- * Excessive Fast Idle
- * Engine Hesitates On Acceleration
- * Engine Lacks Power
- * Poor Fuel Mileage
- * Engine Dieseling
- * Failed Emissions Test

WILL NOT START OR STARTS HARD COLD (CRANK'S OKAY)

- * Check ignition fuse (if equipped).
- * Check fuel pump fuse and fuel pump relay.
- * Verify air intake system is unrestricted.
- * Ensure fuel system pressure and volume are correct.
- * Check cold start valve and thermo time switch operation.
- * Ensure airflow sensor plate is in rest position. Adjust as necessary.
- * Test coolant temperature sensor and wiring. Repair or replace as required.
- * Check for poor ignition ground.
- * Check for poor quality or contaminated fuel.
- * Check condensation (water) in fuel tank causing fuel pump to freeze (cold climate).
- * Check exhaust system for restriction.
- * Test airflow meter. Replace if faulty.
- * Ensure sufficient secondary spark is available.
- * Check air induction system for cracks or restriction.
- * Ensure vacuum hoses are not disconnected or damaged.
- * Ensure fuel system residual pressure is correct.
- * Ensure fuel injector operation is correct.
- * Ensure EGR valve operation is correct and valve closes completely (if equipped).
- * Check for cracks or poor connections at throttle body.
- * Ensure ignition and valve timing are correct.
- * Check ignition coil primary connections and wiring harness.
- * Ensure ignition coil resistance is within specification.
- * Check air temperature sensor operation (if equipped).
- * Ensure electrical harness and connectors are not broken or loose.
- * Ensure ECU or ignition control unit has correct voltage supply and is properly grounded.
- * Ensure engine has sufficient compression.
- * Inspect intake air components for leaking hoses, connections or cracks. Repair as required.

WILL NOT START OR STARTS HARD HOT (CRANK'S OKAY)

- * Check ignition fuse (if equipped).

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- * Check fuel system fuse and fuel pump relay.
- * Check for poor quality or contaminated fuel.
- * Check condensation (water) in fuel tank causing fuel pump to freeze (cold climate).
- * Check exhaust system for restriction.
- * Check cold start valve and thermo time switch operation.
- * Check fuel system and control system pressure. Replace pressure regulator if necessary.
- * Check residual fuel pressure. Replace fuel pump check valve or fuel accumulator as necessary.
- * Check oxygen sensor system operation.
- * Ensure airflow sensor plate is in rest position. Adjust as necessary.
- * Ensure injector spray patterns and volume are correct. Replace faulty injectors.
- * Inspect fuel lines and connections for leaks.
- * Check carbon canister solenoid valves (if equipped).
- * Test airflow meter. Replace if faulty.
- * Ensure sufficient secondary spark is available.
- * Check air induction system for cracks or restriction.
- * Check airflow sensor plate rest position.
- * Ensure vacuum hoses are not disconnected or damaged.
- * Ensure EGR valve operation is correct and valve closes completely (if equipped).
- * Check for cracks or poor connections at throttle body.
- * Ensure ignition and valve timing are correct.
- * Check ignition coil primary connections and wiring harness.
- * Ensure ignition coil resistance is within specification.
- * Check air temperature sensor operation.
- * Check coolant temperature sensor operation.
- * Ensure electrical harness and connectors are not broken or loose.
- * Ensure ECU or ignition control unit has correct voltage supply and is properly grounded.
- * Ensure engine has sufficient compression.

ENGINE STALLS OR IDLES ROUGH

- * Check fuel system and control system pressure. Replace pressure regulator if necessary.
- * Check cold start valve for leaking (engine warm).
- * Ensure injector spray patterns and volume are correct. Replace faulty injectors.
- * Test coolant temperature sensor and wiring. Repair or replace as required.
- * Inspect intake air components for leaking hoses, connections or cracks. Repair as required.
- * Ensure airflow sensor plate movement and rest position. Adjust as necessary.
- * Test idle switch and idle air stabilizer valve.
- * Perform system electrical checks.
- * Check airflow meter. Replace if faulty.

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- * Ensure idle RPM is correct.
- * Check auxiliary air by-pass regulator.
- * Check fuel injector electrical connections.
- * Use stethoscope to verify fuel injectors are operating.
- * Ensure sufficient secondary spark is available in all cylinders.
- * Verify vacuum hose routing is correct and there are no vacuum leaks.
- * Check idle stabilizer operation.
- * Check for EGR system malfunction (if equipped).
- * Check O2 sensor operation.
- * Check for distortion or cracks in fuel injector(s) plastic connecting flange(s).
- * Check for use of poor quality fuel containing insufficient cleaning additives. Prolonged use of poor quality fuel can cause injector clogging and carbon build-up on intake system.

ENGINE MISFIRES OR HESITATES

CIS-E Motronic

- * Ensure injector spray patterns and volume are correct. Replace faulty injectors.
- * Check fuel system and control system pressure. Replace pressure regulator if necessary.
- * Check Oxygen (O2) sensor system operation.
- * Check fuel lines and connections for leaks.
- * Test coolant temperature sensor and wiring. Repair or replace as required.
- * Check airflow meter and throttle switch. Replace if faulty.
- * Ensure vacuum hoses are not disconnected or damaged.
- * Ensure electrical harness connectors and wires are not broken or loose.
- * Check cold start valve for leaking (engine warm).

Digifant

- * Check airflow sensor flap and sensor resistance. Replace if faulty.
- * Inspect intake air components for leaking hoses, connections or cracks. Repair as required.
- * Test intake air preheating system. Replace faulty components as required.
- * Check fuel system and control system pressure. Replace pressure regulator if necessary.
- * Ensure vacuum hoses are not disconnected or damaged.
- * Ensure electrical harness connectors and wires are not broken or loose.
- * Check cold start valve for leaking (engine warm).
- * Check coolant temperature sensor operation.
- * Check Oxygen (O2) sensor voltage output.

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EXCESSIVE FAST IDLE

- * Inspect accelerator pedal and cable for worn parts or binding.
- * Test idle switch (if equipped).
- * Test auxiliary air regulator and replace if necessary (if equipped).
- * Inspect throttle valve and adjust or replace as required.
- * Check carbon canister solenoid valves (if equipped).
- * Test idle boost valve system operation (if equipped). Replace faulty parts as necessary.
- * Test coolant temperature sensor and wiring. Repair or replace as required.
- * Check throttle cable adjustment.
- * Verify vacuum hose routing is correct.
- * Ensure there are no vacuum leaks.
- * Check idle stabilizer operation (if equipped).
- * Ensure fuel system pressure and volume are correct.
- * Check auxiliary air by-pass regulator.
- * Check cold start valve for leaking (engine warm).

ENGINE HESITATES ON ACCELERATION

- * Inspect intake air components for leaking hoses
- * Check injector spray pattern. Check for faulty injectors.
- * Check cold start valve for leaking (engine warm).
- * Check airflow sensor plate movement. Replace fuel distributor as necessary.
- * Check airflow sensor plate position. Adjust as necessary.
- * Check fuel system and control system pressure. Replace pressure regulator if necessary.
- * Test airflow sensor plate potentiometer. Adjust or replace as necessary.
- * Perform system electrical checks.
- * Check idle mixture CO adjustment. Adjust as necessary.

ENGINE LACKS POWER

- * Test coolant temperature sensor and wiring. Repair or replace as required.
- * Check fuel system and control system pressure. Replace pressure regulator if necessary.
- * Check throttle cable adjustment.
- * Check throttle switch. Adjust or replace as necessary.
- * Check airflow sensor screen for damage or incorrect installation (if equipped).
- * Check ignition timing and knock sensor control (if equipped). Adjust as necessary.
- * Check EGR system for correct operation (if equipped).
- * Ensure base timing is correct and timing advance system is functional.
- * Check transmission for correct downshift (auto. trans.)

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- * Check fuel tank filler tube for tampering of restrictor. If tampering has occurred, check catalytic converter for lead contamination and exhaust system restriction.
- * Check for use of poor quality fuel containing insufficient cleaning additives. Prolonged use of poor quality fuel can cause injector clogging and carbon build-up on intake system.
- * Inspect intake air element, housing, and preheating system.
- * Check airflow sensor plate movement. Replace if necessary.

POOR FUEL MILEAGE

- * Ensure idle speed, base timing and timing advance are set to specifications.
- * Check cold start valve for leaking (engine warm).
- * Check fuel system and control system pressure. Replace pressure regulator if necessary.
- * Check thermo time switch operation.
- * Check airflow sensor voltage output.
- * Check air induction system for leaks.
- * Check fuel injector operation.
- * Check coolant temperature sensor operation.
- * Check Oxygen (O2) sensor operation.

ENGINE DIESELING

- * Ensure ignition timing is set to specifications.
- * Check for engine overheating.
- * Check cold start valve for leaking (engine warm).
- * Check for leaking injectors.
- * Check airflow sensor plate/control plunger rest position (CIS-E Motronic). Adjust as necessary.
- * Check carbon canister solenoid valve.
- * Verify no leaks in exhaust system.

FAILED EMISSIONS TEST

- * Test lambda control system. Replace if faulty.
- * Check air/fuel mixture. Adjust if necessary.
- * Ensure air intake system is not restricted.
- * Ensure engine is at normal operating temperature.
- * Ensure fuel system pressure is correct.
- * Check cold start valve for leaking (engine warm).
- * Check thermo time switch operation.
- * Verify base timing is correct.
- * Check for correct PCV valve operation.
- * Check crankcase for gasoline contamination.
- * Check idle stabilizer operation.
- * Check EGR system for correct operation (if equipped).
- * Check vapor recovery system operation.
- * Check operation of coolant temperature sensor.
- * Check fuel tank filler tube for tampering of restrictor. If tampering has occurred, check catalytic converter for lead

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contamination and exhaust system restriction.

- * Check for use of poor quality fuel containing insufficient cleaning additives. Prolonged use of poor quality fuel can cause injector clogging and carbon build-up on intake system.

INTERMITTENTS

INTERMITTENT PROBLEM DIAGNOSIS

Intermittent fault testing requires duplicating circuit or component failure to identify the problem. If necessary, 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. 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.

TEST PROCEDURES

Intermittent Simulation

To reproduce the conditions creating an intermittent fault, use the following methods:

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

END OF ARTICLE