

N - REMOVE/INSTALL/OVERHAUL - 4-CYL

Article Text

1993 Volkswagen Passat

For Volkswagen Technical Site: <http://vw.belcom.ru>

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Wednesday, March 22, 2000 10:19PM

ARTICLE BEGINNING

1993 ENGINE PERFORMANCE

Removal, Overhaul & Installation

Passat GL

CAUTION: When battery is disconnected, vehicle computer and memory systems may lose memory data. Driveability problems may exist until computer systems have completed a relearn cycle. See the COMPUTER RELEARN PROCEDURES article in GENERAL INFORMATION before disconnecting battery.

INTRODUCTION

Removal, overhaul and installation procedures are covered in this article. If component removal and installation is primarily an unbolt and bolt-on procedure, only a torque specification may be furnished.

CAUTION: When disconnecting battery, obtain and record radio anti-theft code. If wrong code is entered into radio after power is restored, radio will become inoperable.

IGNITION SYSTEM

DISTRIBUTOR

Removal (Passat GL)

1) Ensure cylinder No. 1 is at TDC of compression stroke. Ensure flywheel timing marks are aligned and distributor rotor points to cylinder No. 1 on cap.

2) Disconnect Hall Effect sensor wiring harness. Remove distributor hold-down bolts. Remove distributor and retrieve sealing washer from bottom of distributor.

Installation

Ensure cylinder No. 1 is at TDC of compression stroke. Install distributor and tighten hold-down bolts. Ensure distributor drive clutch (lug) is properly engaged with notch in camshaft. Connect Hall Effect sensor wiring harness. Check ignition timing.

FUEL SYSTEM

FUEL SYSTEM PRESSURE RELEASE

To relieve fuel system pressure, remove fuel pump fuse (No. 5, 13 or 18) or fuel pump relay to deactivate fuel pump. Place a clean shop rag around fuel line fitting and slowly loosen fitting.

WARNING: Fuel system pressure release procedure is not available

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from manufacturer. Fuel will discharge when disconnecting fuel system components. Disconnect ignition coil output stage wiring harness to deactivate ignition. DO NOT smoke or work near heaters or other fire hazards. Keep a fire extinguisher handy.

FUEL PUMP

Removal (Passat GL)

1) Disconnect battery negative cable. Working under vehicle, remove fuel pump bracket (if equipped). Disconnect wiring harness from fuel pump. Temporarily pinch shut supply line from pump to fuel tank.

2) With a large container under pump and reservoir, disconnect output fuel line to drain reservoir and relieve pressure. Remove fuel pump screws and retaining ring. Remove fuel pump from reservoir.

Installation

To install fuel pump, reverse removal procedure. Lubricate new "O" ring with fuel. Ensure fuel filter screen, inside fuel reservoir, is clean. Reconnect battery, start engine, and check for fuel leaks.

NOTE: On Passat GL, an in-tank (transfer) fuel pump is also used. Disconnect fuel lines and remove plastic retaining collar. Remove fuel pump from fuel tank. To install fuel pump, reverse removal procedure.

FUEL PUMP CHECK VALVE

Removal & Installation (Passat GL)

Clean and disconnect fuel line. With fuel line disconnected, check valve can be removed from main fuel pump. Use new sealing washers for both check valve and fuel line union.

NOTE: Fuel pump check valve maintains pressure in fuel system. This residual pressure aids in re-starting. If check valve fails to hold residual pressure, it should be replaced.

AIRFLOW SENSOR PLATE

NOTE: Airflow sensor plate removal and installation procedure is not available from manufacturer. Sensor plate adjustments should be performed ONLY if fuel distributor or airflow sensor have been replaced.

Airflow Sensor Plate Rest Position (Passat GL)

Upper edge of sensor plate must be 0.044-0.075" (1.1-1.9 mm) below lower edge of sensor cone. See Fig. 1. If rest position is incorrect, adjust sensor plate rest position by turning adjustment screw on underside of airflow sensor housing.

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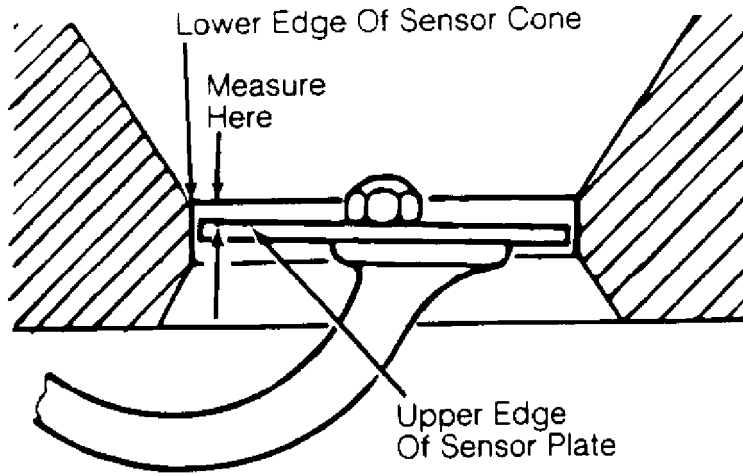
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Fig. 1: Adjusting Sensor Plate Rest Position (Passat GL)
Courtesy of Volkswagen United States, Inc.

Sensor Plate Lever (Passat GL)

1) Measure distance between fuel distributor mounting surface to sensor plate lever roller. See Fig. 2. Ensure sensor plate rest position is okay.

2) Remove plug from idle mixture screw hole. Using mixture adjustment wrench (3 mm), turn idle mixture screw until distance between fuel distributor mounting surface to sensor plate lever roller is 0.740-0.744" (18.70-18.90 mm).

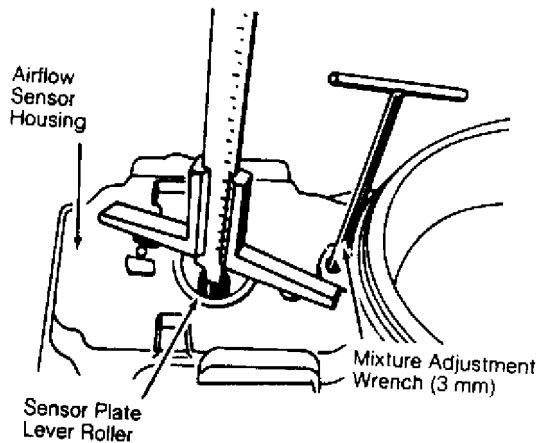


Fig. 2: Adjusting Sensor Plate Lever (Passat GL)
Courtesy of Volkswagen United States, Inc.

Sensor Plate Free Play (Passat GL)

1) Free play is measured between control piston and adjusting lever. Measure free play on side of sensor cone closest to fuel distributor. See Fig. 3.

2) Crank engine for 10 seconds to build up fuel pressure. Lift sensor plate slightly until resistance is felt. Minimum clearance is any noticeable free play. Maximum free play should be 0.02" (0.50 mm) at control plunger. Maximum free play at sensor plate to edge of

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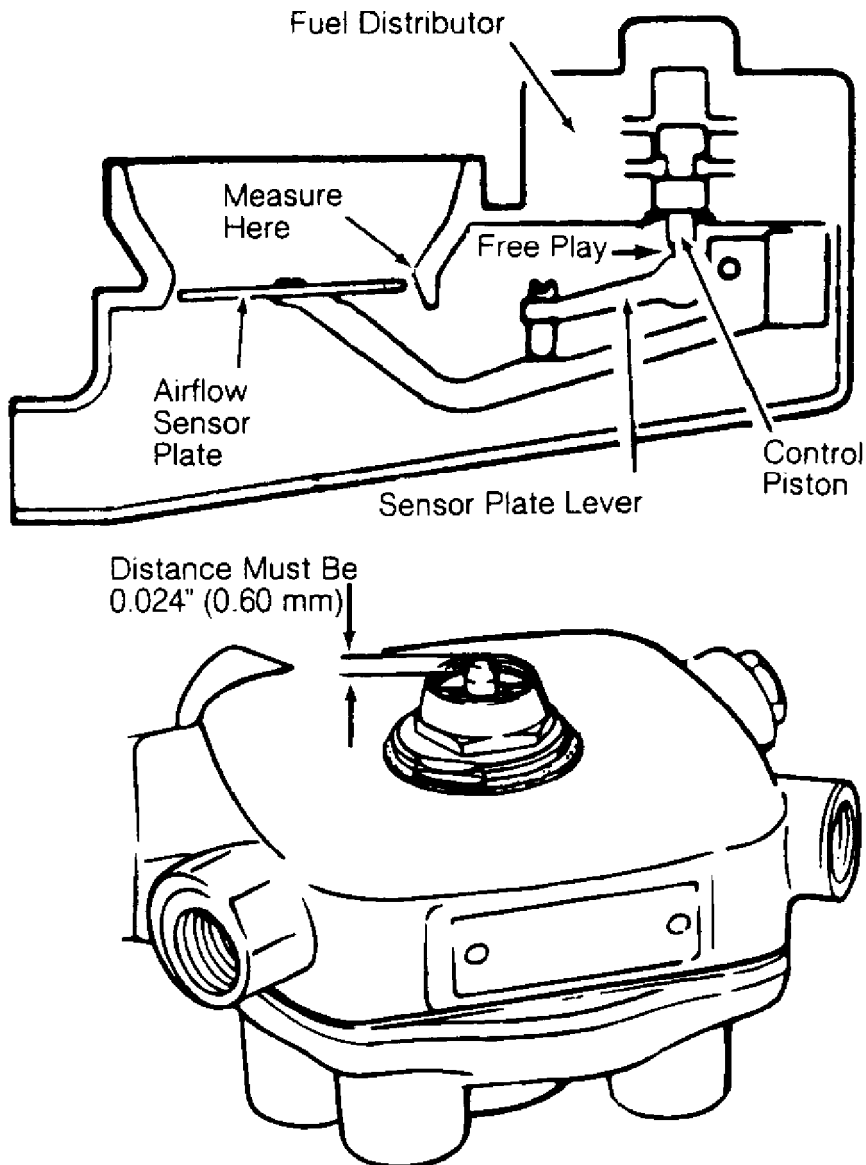
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venturi is 0.12" (3.0 mm).

3) If free play is incorrect, remove fuel distributor. Using Wrench (VW 674/2), adjust sensor plate free play by turning control piston stop screw. See Figs. 3 and 4.

4) Turning control piston stop screw inward increases free play, turning screw outward decreases free play. A 1/4 turn changes free play by 0.050" (1.30 mm). Distance from top of stop screw and hex nut collar must be 0.024" (0.60 mm).



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Fig. 3: Cutaway View of Airflow Sensor Plate (Passat GL)

Courtesy of Volkswagen United States, Inc.

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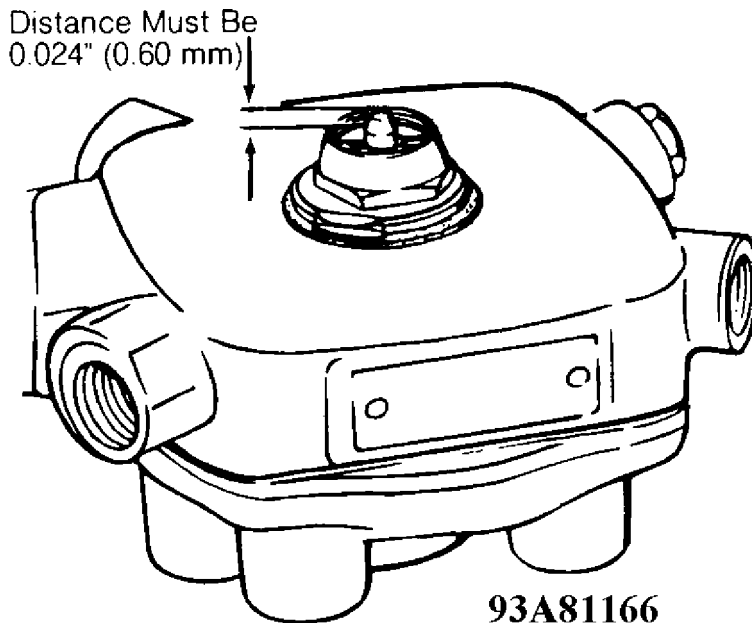
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Fig. 4: Adjusting Sensor Plate Free Play (Passat GL)
Courtesy of Volkswagen United States, Inc.

FUEL DISTRIBUTOR

Removal & Installation (Passat GL)

1) Disconnect negative battery cable. Remove air cleaner. Disconnect all fuel lines from fuel distributor and plug openings. Use a clean shop rag to catch any spilled fuel.

2) Disconnect differential pressure regulator. Remove bolts holding fuel distributor to airflow sensor housing. Remove fuel distributor by turning fuel distributor back and forth while lifting up. To install fuel distributor, reverse removal procedure.

FUEL RAIL & INJECTORS

Removal (Passat GL)

Disconnect fuel line(s) from injector(s). Remove injectors by pulling them straight out of inserts. The injectors are mounted in two-piece inserts that threads into intake manifold runners. Pull or pry **ONLY** on the injectors, not the fuel lines.

Installation

To install injectors, reverse removal procedure. Lubricate new "O" rings with fuel for several minutes before installing them.

NOTE: Fuel injector inserts normally do not require service. The sealing gasket beneath the lower insert should be replaced. When install-ing upper insert, clean its threads and apply thread locking compound.

TORQUE SPECIFICATIONS

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TORQUE SPECIFICATIONS (PASSAT GL)

AA

Application Ft. Lbs. (N.m)

Fuel Pump Check Valve-To-Fuel Pump 15 (20)
Fuel Distributor Fuel Line Banjo Bolts 15 (20)
Fuel Injector Inserts 15 (20)
Fuel Pump Outlet Line-To-Check Valve 15 (20)
Throttle Body Bolts 15 (20)
Oxygen Sensor 37 (50)

INCH Lbs. (N.m)

Distributor Hold-Down Bolts 84 (10)
EGR Valve Bolts 84 (10)
Fuel Distributor Bolts 31 (3.5)
Fuel Distributor Fuel Injector Fittings 84 (10)

AA

END OF ARTICLE