

# **\* ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES \***

## **Article Text**

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Thursday, August 19, 1999 11:33PM

### **ARTICLE BEGINNING**

#### **GENERAL INFORMATION**

Engine Maintenance & Performance  
Uniform Inspection Guidelines

All Makes & Models

Last Updated: December, 1994

### **MAP UNIFORM INSPECTION GENERAL GUIDELINES**

#### **OVERVIEW OF MOTORIST ASSURANCE PROGRAM**

The Motorist Assurance Program (MAP) is the consumer outreach effort of the Automotive Maintenance and Repair Association, Inc. (AMRA). Participation in the Motorist Assurance Program is drawn from retailers, suppliers, independent repair facilities, vehicle manufacturers and industry associations.

The Motorist Assurance Program was established as an industry-wide effort to address concerns raised by regulators, the media and consumers questioning our ethics and methods of doing business. The automotive repair industry had been bombarded by months of negative stories in the media and scrutiny from state and federal regulators who focused on how the need for repairs is determined. MAP was formed as an industry response to this issue.

Our mission is to strengthen the relationship between the consumer and the auto repair industry. We produce materials that give motorists the information and encouragement to take responsibility for their vehicles - through proper, manufacturer-recommended, maintenance. We encourage participating service and repair shops (including franchisees and dealers) to adopt a Pledge to their Customers and the Motorist Assurance Program developed Standards of Service. All participating service providers have agreed to subscribe to this Pledge and to adhere to the promulgated Standards of Service which demonstrates to their customers that they are serious about customer satisfaction.

These Standards of Service require that an inspection of the vehicle's (problem) system be made according to industry guidelines. After learning that neither the car manufacturers nor any other source had complete guidelines, leading industry organizations, along with other industry participants banded together to address this challenging task. During the past two and a half years, they successfully developed industry inspection guidelines for the following systems: Exhaust, Brakes, ABS, Steering and Suspension, Engine Maintenance and Performance, HVAC, and Electrical systems. Guidelines for Drive Train and Transmission are currently being promulgated. Revisions to the inspection guidelines for Exhaust, Brakes/ABS and Steering and Suspension Systems, which were issued two years ago, are now being published for implementation beginning spring 1997. Participating shops utilize these Uniform Inspection Guidelines

# **\* ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES \***

## **Article Text (p. 2)**

1996 Volkswagen Golf

For Volkswagen Technical Site

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Thursday, August 19, 1999 11:33PM

as part of the inspection process and for communicating their findings to their customers.

The Motorist Assurance Program continues to work cooperatively and proactively with government agencies and consumer groups toward solutions that both benefit the customer and are mutually acceptable to both regulators and industry. We maintain the belief that industry must retain control over how we conduct our business, and we must be viewed as part of the solution and not part of the problem. Meetings with state and other government officials concerned with auto repair and/or consumer protection are conducted. Feedback from these representatives are brought back to members, and the program adjusted as needed.

To assure auto repair customers recourse if they were not satisfied with a repair transaction, the Motorist Assurance Program offers arbitration through MAP/BBB-CARE in cooperation with the Council of Better Business Bureaus and individual participating Bureaus. MAP "piloted" in Indianapolis and Pittsburgh during spring, 1996 - and publicized "roll-outs" in New Jersey, Detroit (MI), Chicago (IL) and Richmond (VA) were conducted. To put some "teeth" in the program, and accreditation requirement for shops was initiated. The requirements are stringent and a self-policing method has been incorporated which includes the "mystery shopping" of outlets. In addition, a committee of service providers had been working diligently developing standards for newspaper, television and Internet advertising.

We welcome you to join us as we continue our outreach ... with your support, both the automotive repair industry and your customers will reap the benefits. Please visit MAP at our Internet site: [www.hunter.com/map.htm](http://www.hunter.com/map.htm) or contact us at:

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Washington, D. C. 20006

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## **OVERVIEW OF SERVICE REQUIREMENTS & SUGGESTIONS**

It is MAP policy that all exhaust, brake, ABS, steering and suspension, wheel alignment, tires and wheels, driveline, engine performance and maintenance and heating, ventilation and air conditioning services be offered and performed under the guidelines and procedures specified in these sections.

Before any service is performed on a vehicle, an inspection of the appropriate system must be performed. The results of this inspection must be explained to the customer and documented on an inspection form. The condition of the vehicle and its components will indicate what services/part replacements may be required or suggested. In addition, suggestions may be made to satisfy the needs expressed by the customer.

This section lists the various parts and conditions that indicate required or suggested service or part replacement. Although this list is extensive, it is not inclusive. In addition to this list, a technician may make a suggestion. This suggestion must be based on

# **\* ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES \***

## **Article Text (p. 3)**

1996 Volkswagen Golf

For Volkswagen Technical Site

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Thursday, August 19, 1999 11:33PM

substantial and informed experience or the vehicle manufacturer's recommended service interval.

Some conditions indicate that service or part replacement is required because the part in question is no longer providing the function for which it is intended, does not meet a vehicle manufacturer's design specification or is missing.

- \* Example: An exhaust pipe has corroded severely and has a hole in it through which exhaust gases are leaking. Replacement of the exhaust pipe in this case is required due to functional failure.
- \* Example: A brake rotor has been worn to the point where it measures less than the vehicle manufacturer's specifications. Replacement of the rotor is required because it does not meet design specifications.

Some conditions indicate that a service or part replacement is suggested because the part is close to the end of its useful life or to address a customer's need, convenience or request. If a customer's vehicle has one of these conditions, the procedure may only be to suggest service.

- \* Example: An exhaust pipe is rusted, corroded or weak, but no leaks are present. In this case, the exhaust pipe has not failed. However, there is evidence that the pipe may need replacement in the near future. Replacement of the pipe may be suggested for the customer's convenience in avoiding a future problem.
- \* Example: The customer desires improved ride and/or handling, but the vehicle's shocks or struts have not failed. In this case, replacement may be suggested to satisfy the customer's wishes. In this case, replacement of the shocks or struts may not be sold as a requirement.

A customer, of course, has the choice of whether or not a shop will service his or her vehicle. He or she may decide not to follow some of your suggestions. When a customer declines to authorize a service or repair indicated in the MAP Uniform Inspection Guidelines as "required," a MAP shop may refuse service on that system, if proceeding with the work could create or continue an unsafe or unsatisfactory condition.

The following reasons may be used for required and suggested services. These codes are shown in the "Code" column of the Uniform Inspection Guidelines that follow.

## **ENGINE PERFORMANCE & MAINTENANCE**

### **ENGINE: MISCELLANEOUS**

### **ENGINE OIL**

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**Article Text (p. 4)**

1996 Volkswagen Golf

For Volkswagen Technical Site

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Thursday, August 19, 1999 11:33PM

AA	
Condition	<sup>3</sup> Procedure
AA	
Contaminated	<sup>3</sup> Require replacement of oil and filter.
	<sup>3</sup> See NOTE: (1) below.
AA	
High level	<sup>3</sup> Determine source of incorrect level and
	suggest correction.
AA	
Low level	<sup>3</sup>
AA	
Maintenance intervals	<sup>3</sup> Suggest replacement to comply with vehicles
	<sup>3</sup> OEM recommended service intervals.
AA	
NOTE: (1) Determine source of contamination, i.e., engine coolant,	
fuel, metal particles, when changing oil.	
AA	

**ENGINE OIL FILTER/CANISTER**

AA	
Condition	<sup>3</sup> Procedure
AA	
Contaminated	<sup>3</sup> Require replacement of oil and filter.
	<sup>3</sup> See NOTE: (1) below.
AA	
Damaged	<sup>3</sup> Suggest replacement. Further inspection
	required. See NOTE: (2) below.
AA	
Leaking	<sup>3</sup> Require repair or replacement.
AA	
Maintenance intervals	<sup>3</sup> Suggest replacement to comply with vehicles
	<sup>3</sup> OEM recommended service intervals.
AA	
NOTE: (1) Determine cause of contamination, i.e., engine coolant,	
fuel, metal particles, when changing oil.	
(2) Determine cause, i.e., broken motor mount.	
AA	

**ENGINE GASKETS/SEALS**

AA	
Condition	<sup>3</sup> Procedure
AA	
Leaking	<sup>3</sup> Tighten or suggest replacement as necessary.
AA	

**ENGINE OIL DRAIN PLUG/GASKET**

AA	
Condition	<sup>3</sup> Procedure
AA	
Leaking	<sup>3</sup> Require repair or replacement.
AA	
Damaged threads	<sup>3</sup> Require repair or replacement.
AA	

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**Article Text (p. 5)**

1996 Volkswagen Golf

For Volkswagen Technical Site

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Thursday, August 19, 1999 11:33PM

NOTE: Some OEMs require replacement of drain plug gasket. Inspect threads in oil pan for damage.

**ENGINE OIL WARNING LIGHTS**

Condition	3	Procedure
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Light not on during bulb check	3	Further inspection required. See NOTE: below.
--------------------------------	---	---

Light stays on or intermittent while engine is running	3	Further inspection required. See NOTE: below.
--	---	---

NOTE: Light may indicate problem with contaminated oil, level, pressure, temperature or problem with circuit.

**ENGINE OIL PRESSURE GAUGE**

Condition	3	Procedure
-----------	---	-----------

Inoperative	3	Further inspection required. See note.
-------------	---	--

Indicates out of range	3	Further inspection required. See note.
------------------------	---	--

NOTE: Gauge may indicate problem with contaminated oil, level, pressure, temperature or problem with gauge.

**OIL PRESSURE SENDING UNIT**

Condition	3	Procedure
-----------	---	-----------

Leaking	3	Require replacement.
---------	---	----------------------

Connector or terminal bent, broken, or loose	3	Require repair or replacement.
--	---	--------------------------------

Inoperative/inaccurate	3	Require repair or replacement.
------------------------	---	--------------------------------

**POWER STEERING FLUID**

Condition	3	Procedure
-----------	---	-----------

See Steering and Suspension Uniform Inspection Guidelines

**TIMING BELT**

Condition	3	Procedure
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**Article Text (p. 6)**

1996 Volkswagen Golf

For Volkswagen Technical Site

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Thursday, August 19, 1999 11:33PM

Missing<sup>3</sup> Require replacement. See note.

Damaged<sup>3</sup> Suggest replacement. See note.

Maintenance intervals<sup>3</sup> Suggest replacement to comply with vehicle OEM  
<sup>3</sup> recommended service intervals.

Oil soaked<sup>3</sup> Suggest replacement. Further inspection  
<sup>3</sup> required.

Improper adjustment/  
noisy<sup>3</sup> Suggest adjustment. See note.  
<sup>3</sup>

NOTE: Inspect belt tensioners, pulleys and cover.

**TIMING BELT TENSIONERS**

Condition <sup>3</sup>	Procedure
Missing <sup>3</sup>	Require replacement.
Noisy <sup>3</sup>	Suggest replacement.
Damaged <sup>3</sup>	Require replacement.
Improper adjustment <sup>3</sup>	Adjust to OEM specifications.

**MOTOR MOUNTS**

Condition <sup>3</sup>	Procedure
Broken <sup>3</sup>	Require replacement.
Oil soaked (rubber mount) <sup>3</sup>	Suggest replacement.
Leaking (hydraulic mount) <sup>3</sup>	Require replacement.
Missing or broken fasteners <sup>3</sup>	Require repair or replacement of <sup>3</sup> fasteners

**TORQUE STRUT**

Condition <sup>3</sup>	Procedure
Worn or damaged bushings <sup>3</sup>	Requirement replacement.
Damaged or missing fasteners <sup>3</sup>	Require repair or replacement of <sup>3</sup> fasteners.



## \* ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES \*

## Article Text (p. 8)

## 1996 Volkswagen Golf

For Volkswagen Technical Site

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Thursday, August 19, 1999 11:33PM

Internal restrictions	3	Require repair or replacement.
Missing/by-passed	3	Further inspection required.
Air flow restriction	3	Suggest repair.
Missing, damaged, deteriorated mounting hardware and bushings	3	Require repair or replacement of hardware and/or bushings.

## ENGINE COOLING SYSTEM

## RADIATOR & RADIATOR CAP

Condition - Radiator		3	Procedure
Leaking	3	Require repair or replacement.	
Damaged fins, tubes or fittings	3	Suggest repair or replacement.	
Internal restrictions	3	Require repair or replacement.	
Air flow restriction	3	Suggest repair.	
Missing, damaged, deteriorated mounting hardware and bushings	3	Require repair or replacement of hardware and/or bushings.	
Leaking internal trans cooler	3	Require repair or replacement.	
Corroded	3	Suggest repair or replacement.	
Condition - Radiator Cap		3	Procedure
Missing	3	Require replacement.	
Fails to maintain proper pressure	3	Require replacement.	
Damaged/bent or corroded	3	Suggest replacement.	
Missing gaskets/seals	3	Require replacement.	
Coolant recovery check valve inoperative	3	Require replacement.	
Improper application	3	Require replacement.	

## THERMOSTAT/HOUSING

Condition	Procedure
Improper installation	Require repair or replacement.

## \* ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES \*

## Article Text (p. 9)

1996 Volkswagen Golf

For Volkswagen Technical Site

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Thursday, August 19, 1999 11:33PM

Missing/damaged/corroded thermostat	3	Require replacement of thermostat
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Improper application	<sup>3</sup> Require replacement.
Inoperative	<sup>3</sup> Require replacement.
Damaged/corroded housing	<sup>3</sup> Suggest replacement of housing.

### COOLANT HOSES/TUBES (RADIATOR, BY-PASS, HEATER, RECOVERY TANK)

Condition	3	Procedure
Leaking	3	Require repair or replacement.
Brittle, hard, cracked, corroded, spongy, soft, oil soaked, collapsed, swollen, non-automotive	3	Suggest repair or replacement.
Improper routing	3	Suggest repair or replacement.
Restricted	3	Suggest repair or replacement.
Missing/damaged protective sleeves	3	Suggest replacement of sleeves.
Maintenance intervals	3	Suggest replacement to comply with vehicle's OEM recommended service intervals.

## CLAMPS

Condition	Procedure
Missing/damaged	<sup>3</sup> Require replacement.
Loose	<sup>3</sup> Require repair or replacement.
Corroded	<sup>3</sup> Suggest replacement.

**NOTE:** Be sure to inspect hoses for deterioration.

## COOLANT RECOVERY TANK/CAP

Condition			3	Procedure
Missing			3	Require replacement.
Leaking			3	Require repair or replacement.

Thursday, August 19, 1999 11:33PM

<sup>3</sup> Suggest repair or replacement.

<sup>3</sup> hardware.

## 3

## Procedure

<sup>3</sup> required. See NOTE: (1).

<sup>3</sup> NOTE: (2).

<sup>3</sup> Require correction or replacement.

<sup>3</sup> Suggest correction or replacement.

<sup>3</sup> Suggest replacement. See NOTE: (3).

(2) Determine source of incorrect level and suggest repair.

(3) The system should be drained and/or flushed and refilled

### Interval and procedure.

## 3

## Procedure

<sup>3</sup> Require replacement.

<sup>3</sup> Suggest replacement.

<sup>3</sup> Require replacement.

<sup>3</sup> Require replacement of fasteners.

## (c)

## Procedure

<sup>3</sup> Require replacement.

<sup>3</sup> Require replacement of hardware.

**\* ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES \***

**Article Text (p. 11)**

1996 Volkswagen Golf

For Volkswagen Technical Site

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Thursday, August 19, 1999 11:33PM

**RADIATOR FAN BLADE & FAN CLUTCH**

AA

Condition - Fan Blade <sup>3</sup> Procedure

AA

Damaged <sup>3</sup> Require replacement.

AA

Loose <sup>3</sup> Require repair or replacement.

AA

Condition - Fan Clutch <sup>3</sup> Procedure

AA

Seized <sup>3</sup> Require replacement.

AA

Noisy/worn bearing <sup>3</sup> Suggest replacement.

AA

Leaking <sup>3</sup> Suggest replacement.

AA

Slips (insufficient fan speed) <sup>3</sup> Require replacement.

AA

Damaged <sup>3</sup> Suggest replacement.

AA

Loose fasteners <sup>3</sup> Require repair or replacement of  
<sup>3</sup> fasteners.

AA

NOTE: Some lateral movement, measured at the fan blade tip, is normal.

AA

**RADIATOR FAN MOTOR**

AA

Condition <sup>3</sup> Procedure

AA

Vibration/noisy <sup>3</sup> Suggest replacement.

AA

Intermittent/inoperative <sup>3</sup> Require replacement. See note.

AA

Missing <sup>3</sup> Require replacement.

AA

Missing, damaged mounting hardware <sup>3</sup> Require replacement of hardware.

AA

NOTE: Check fan motor/controls.

AA

**RADIATOR FAN MOTOR RELAY/MODULE & FAN MOTOR RESISTOR**

AA

Condition - Fan Motor Relay/Module <sup>3</sup> Procedure

AA

Missing <sup>3</sup> Require replacement.

AA

Damaged <sup>3</sup> Suggest replacement.

AA

Intermittent/inoperative <sup>3</sup> Require replacement.

AA

Missing, damaged mounting hardware <sup>3</sup> Require replacement of hardware.

## \* ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES \*

## Article Text (p. 12)

## 1996 Volkswagen Golf

For Volkswagen Technical Site

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Thursday, August 19, 1999 11:34PM

Condition - Fan Motor Resistor			3	Procedure
Leaking	3	Require repair or replacement.		
Contaminated/corroded	3	Suggest repair or replacement.		
Intermittent/inoperative	3	Require replacement.		
Damaged	3	Suggest replacement.		

## ACCESSORY BELTS

Condition	Procedure
Missing	<sup>3</sup> Require replacement.
Improper tension	<sup>3</sup> Require adjustment or repair.
Improper alignment	<sup>3</sup> Further inspection required. See note.
Damaged	<sup>3</sup> Require replacement.
Noisy	<sup>3</sup> Suggest replacement.

NOTE: Check alignment of pulleys and proper belt installation.

## ACCESSORY PULLEYS & TENSIONERS

Condition - Pulleys		Procedure
Damaged	3	Require replacement.
Improper alignment	3	Require repair.
Missing, damaged mounting hardware	3	Require repair or replacement of hardware.
Condition - Tensioners		Procedure
Missing	3	Require replacement
Noisy	3	Suggest replacement.
Damaged	3	Suggest replacement.
Improper adjustment	3	Require adjustment or repair.

## GASKETS

Thursday, August 19, 1999 11:34PM

Condition	3	Procedure
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## \* ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES \*

## Article Text (p. 14)

## 1996 Volkswagen Golf

For Volkswagen Technical Site

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Thursday, August 19, 1999 11:34PM

Leaking <sup>3</sup> Require replacement.

Improper type <sup>3</sup> Suggest replacement.

## AIR INDUCTION SYSTEM

## AIR DUCT/TUBES

Condi ti on			3	Procedure		
-------------	--	--	---	-----------	--	--

Missing <sup>3</sup> Require replacement.

AA  
 Damaged <sup>3</sup> Suggest repair or replacement.

Leaking <sup>3</sup> Require repair or replacement.

## AIR FILTER HOUSING/GASKETS

Condi ti on <sup>3</sup> Procedure

Missing <sup>3</sup> Require replacement.

AA  
 Damaged <sup>3</sup> Suggest repair or replacement.

Leaking <sup>3</sup> Require repair or replacement.

Missing/damaged mounting hardware <sup>3</sup> Require repair or replacement of

## AIR FILTER ELEMENT

Condition		Procedure	
3			

Missing <sup>3</sup> Require replacement.

AA

Damaged <sup>3</sup> Suggest replacement.

.....

Restricted <sup>3</sup> Suggest replacement.

Maintenance intervals <sup>3</sup> Suggest replacement to comply with vehicle's

## PCV BREATHER ELEMENT

Condi ti on 3 Procedure

Missing <sup>3</sup> Require replacement.

Thursday, August 19, 1999 11:34PM

Condition - Control <sup>3</sup>		
Mechanism		Procedure
Inoperative	<sup>3</sup>	Require repair or replacement. Further inspection required. See NOTE: below.
Leaking	<sup>3</sup>	Require repair or replacement.

Thursday, August 19, 1999 11:34PM

[illegible]

Condition 1

Refer to Early Fuel Evaporation Heater/Grid.

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**Article Text (p. 19)**

1996 Volkswagen Golf

For Volkswagen Technical Site

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Thursday, August 19, 1999 11:34PM

**POWERTRAIN CONTROL MODULE (PCM)**

AA		
Condition	<sup>3</sup>	Procedure
AA		
Inoperative	<sup>3</sup>	Require repair or replacement.
AA		
Damaged	<sup>3</sup>	Suggest repair or replacement.
AA		

**SENSORS/ACTUATORS DEFINITIONS**

**NOTE:** The conditions and procedures apply to, but are not limited to the following list of components (SAE J1930 Terminology).

**SENSORS/ACTUATORS DEFINITIONS**

AA	
Sensor	Abbreviation

02 Sensor .....	02S
Intake Air Temperature Sensor .....	IAT
Manifold Absolute Pressure Sensor .....	MAP
Engine Coolant Temperature Sensor .....	ECT
Barometric Pressure Sensor .....	BARO
Crankshaft Position Sensor .....	CKP
Throttle Position Sensor .....	TPS
Camshaft Position Sensor .....	CMP
Park Neutral Position .....	PNP
Clutch Pedal Position Switch .....	CPP
Wide Open Throttle Switch .....	WOT Switch
Exhaust Gas Recirculation Valve Position Sensor .....	EGR Valve Position Sensor
Mass Air Flow Sensor .....	MAF
Volume Air Flow Sensor .....	VAF
Power Steering Pressure Sensor .....	PSP
Vehicle Speed Sensor .....	VSS
Fan Control Sensor .....	FS
Knock Sensor .....	KS
Air Conditioning Cycling Switch .....	AC
Exhaust Gas Recirculating Temperature Sensor .....	EGRT
Transmission Range Switch .....	TR Switch

Actuators	Abbreviation
-----------	--------------

Idle Speed Control Actuator .....	ISC
Idle Air Control .....	IAC
Exhaust Gas Recirculation Solenoid .....	EGR Solenoid
Vacuum Regulator Solenoid .....	...
Mix Control Solenoid .....	MC Solenoid
Torque Converter Clutch .....	TCC

[illegible]

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**Article Text (p. 21)**

1996 Volkswagen Golf

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Thursday, August 19, 1999 11:34PM

**TUBES, HOSES, CLAMPS & GROMMETS**

AA		
Condition	<sup>3</sup>	Procedure
AA		
Missing	<sup>3</sup>	Require replacement.
AA		
Damaged	<sup>3</sup>	Require repair or replacement.
AA		
Leaking	<sup>3</sup>	Require repair or replacement.
AA		
Restricted	<sup>3</sup>	Require repair or replacement.
AA		

**ORIFICE**

AA		
Condition	<sup>3</sup>	Procedure
AA		
Missing	<sup>3</sup>	Require replacement.
AA		
Restricted	<sup>3</sup>	Require repair or replacement.
AA		
Maintenance intervals	<sup>3</sup>	Suggest replacement to comply with vehicle's
	<sup>3</sup>	OEM recommended service intervals.
AA		

**OIL SEPARATOR/FILTER**

AA		
Condition	<sup>3</sup>	Procedure
AA		
Missing	<sup>3</sup>	Require replacement.
AA		
Restricted	<sup>3</sup>	Require repair or replacement.
AA		
Damaged	<sup>3</sup>	Suggest repair or replacement.
AA		
Maintenance intervals	<sup>3</sup>	Suggest replacement to comply with vehicle's
	<sup>3</sup>	OEM recommended service intervals.
AA		

**IGNITION SYSTEM**

**BATTERY**

AA		
Condition	<sup>3</sup>	Procedure
AA		
Refer to Starting/Charging System information.		
AA		

**BATTERY CABLES/WIRES/CONNECTORS (SEE NOTE: )**

AA		
Condition	<sup>3</sup>	Procedure

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**Article Text (p. 22)**

1996 Volkswagen Golf

For Volkswagen Technical Site

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Thursday, August 19, 1999 11:34PM

AA  
Damaged<sup>3</sup> Suggest repair or replacement.  
AA  
Corroded<sup>3</sup> Suggest repair or replacement.  
AA  
High resistance<sup>3</sup> Require repair or replacement.  
AA  
Loose<sup>3</sup> Require repair or replacement.  
AA  
Missing, damaged, deteriorated<sup>3</sup> Require repair or replacement.  
mounting hardware<sup>3</sup>  
AA  
NOTE: Cable/wires includes all wires and terminals connected to the  
battery.  
AA

**BATTERY TRAY/HOLD DOWN HARDWARE**

AA  
Condition<sup>3</sup> Procedure  
AA  
Missing<sup>3</sup> Require replacement.  
AA  
Damaged/corroded<sup>3</sup> Suggest repair or replacement. See NOTE:  
<sup>3</sup> below.  
AA  
NOTE: If battery tray/hold down hardware no longer performs  
intended purpose, require repair or replacement.  
AA

**FUSIBLE LINK**

AA  
Condition<sup>3</sup> Procedure  
AA  
Damaged<sup>3</sup> Suggest repair or replacement.  
AA  
Open<sup>3</sup> Require replacement.  
AA

**IGNITION SWITCH**

AA  
Condition<sup>3</sup> Procedure  
AA  
Damaged<sup>3</sup> Suggest replacement.  
AA  
Inoperable/intermittent<sup>3</sup> Require replacement.  
AA

**PARK NEUTRAL SWITCH (PNP)**

AA  
Condition<sup>3</sup> Procedure  
AA  
Inoperable/intermittent<sup>3</sup> Require replacement.

Condition	3	Procedure
-----------	---	-----------

Thursday, August 19, 1999 11:34PM

Condition		Procedure
Missing	3	Require replacement.
Inoperative	3	Require repair or replacement. Further inspection required. See NOTE: below.
Damaged	3	Suggest replacement.
Missing/damaged mounting hardware	3	Require repair or replacement of hardware.

Condition	Procedure
Damaged	Suggest replacement.

**\* ENGINE SYSTEMS UNIFORM INSPECTION GUIDELINES \***

**Article Text (p. 26)**

1996 Volkswagen Golf

For Volkswagen Technical Site

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Thursday, August 19, 1999 11:34PM

Corroded/eroded terminals <sup>3</sup> Suggest replacement.

AA

Burned/carbon tracked/arcing <sup>3</sup> Require replacement.

AA

Missing carbon button <sup>3</sup> Require replacement.

AA

AA

Loose <sup>3</sup> Suggest repair or replacement.

AA

**DISTRIBUTOR ROTOR**

AA

Condition	<sup>3</sup>	Procedure
-----------	--------------	-----------

AA

Damaged <sup>3</sup> Suggest replacement.

AA

Corroded/eroded <sup>3</sup> Require replacement.

AA

Loose <sup>3</sup> Suggest repair or replacement.

AA

Missing, damaged hold down fastener <sup>3</sup> Require repair or replacement of fastener

AA

Burned/carbon tracked <sup>3</sup> Require replacement.

AA

**IGNITION WIRES/BOOTS/TERMINAL (SECONDARY - SEE NOTE: (1))**

AA

Condition	<sup>3</sup>	Procedure
-----------	--------------	-----------

AA

Damaged <sup>3</sup> Suggest repair or replacement.

AA

Oil soaked <sup>3</sup> Suggest replacement.

AA

Open/shorted <sup>3</sup> Require repair or replacement.

AA

Mis-routed <sup>3</sup> Suggest repair. See NOTE: (2).

AA

Missing/damaged mounting <sup>3</sup> Suggest repair or replacement of hardware.

<sup>3</sup> See NOTE: (2).

AA

Loose terminal <sup>3</sup> Suggest repair or replacement.

AA

Corroded <sup>3</sup> Suggest repair or replacement.

AA

High/Low resistance <sup>3</sup> Require repair or replacement.

AA

NOTE: (1) It is not required to replace ignition wires in sets.

However, you may suggest replacement of the entire secondary wire set for preventive maintenance.

(2) Proper routing, hardware, heat shields, etc. are intended to prevent premature failure of secondary ignition components.

[illegible]

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**Article Text (p. 28)**

1996 Volkswagen Golf

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Condition	<sup>3</sup>	Procedure
Missing	<sup>3</sup>	Require replacement.
Leaking	<sup>3</sup>	Require replacement.
Damaged	<sup>3</sup>	Suggest replacement.

**FUEL FILLER NECK/HOSES/CLAMPS/RESTRICTOR**

Condition	<sup>3</sup>	Procedure
Missing	<sup>3</sup>	Require replacement.
Leaking	<sup>3</sup>	Require repair or replacement.
Damaged	<sup>3</sup>	Suggest repair or replacement.
Missing, damaged mounting hardware	<sup>3</sup>	Require repair or replacement of hardware.

**FUEL TANK/CELL**

Condition	<sup>3</sup>	Procedure
Leaking	<sup>3</sup>	Require repair or replacement.
Loose baffles	<sup>3</sup>	Require repair or replacement.
Damaged	<sup>3</sup>	Suggest repair or replacement.
Missing, damaged mounting hardware	<sup>3</sup>	Require repair or replacement of hardware.
Contaminated	<sup>3</sup>	Suggest repair. Further inspection required. See NOTE: below.

NOTE: Some components may be serviceable; check for accepted cleaning procedure.

**FUEL LEVEL SENDER**

Condition	<sup>3</sup>	Procedure
Inoperative	<sup>3</sup>	Suggest repair or replacement.
Leaking	<sup>3</sup>	Require repair or replacement.
Damaged	<sup>3</sup>	Suggest repair or replacement.

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**Article Text (p. 29)**

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AA

**FUEL PUMP (IN TANK/EXTERNAL - ELECTRICAL OR MECHANICAL)**

AA

Condition <sup>3</sup> Procedure

AA

Inoperative <sup>3</sup> Require repair or replacement.

AA

Noisy <sup>3</sup> Suggest replacement.

AA

Leaking <sup>3</sup> Require repair or replacement.

AA

Damaged <sup>3</sup> Suggest repair or replacement.

AA

Missing, damaged mounting <sup>3</sup> Requires repair or replacement of hardware  
hardware <sup>3</sup>

AA

**ELECTRIC FUEL PUMP CONTROL CIRCUIT**

AA

Condition <sup>3</sup> Procedure

AA

See Electrical Uniform Inspection Guidelines.

AA

**LIQUID VAPOR SEPARATOR**

AA

Condition <sup>3</sup> Procedure

AA

Missing <sup>3</sup> Require replacement.

AA

Leaking <sup>3</sup> Require replacement.

AA

Damaged <sup>3</sup> Suggest repair or replacement.

AA

Inoperative <sup>3</sup> Require repair or replacement

AA

**ROLL-OVER VALVE**

AA

Condition <sup>3</sup> Procedure

AA

Missing <sup>3</sup> Require replacement.

AA

Damaged <sup>3</sup> Suggest repair or replacement.

AA

Inoperative <sup>3</sup> Require replacement.

AA

Leaking <sup>3</sup> Require replacement.

AA

**INERTIA FUEL SHUT OFF SWITCH**

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**Article Text (p. 30)**

1996 Volkswagen Golf

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AA		
Condition	<sup>3</sup>	Procedure
AA		
Inoperative	<sup>3</sup>	Require repair or replacement.
AA		
Missing	<sup>3</sup>	Require replacement.
AA		
Damaged	<sup>3</sup>	Suggest replacement.
AA		

**FUEL LINES/CLAMPS/O-RINGS/CONNECTORS (SEE NOTE)**

AA		
Condition	<sup>3</sup>	Procedure
AA		
Missing	<sup>3</sup>	Require replacement.
AA		
Leaking	<sup>3</sup>	Require repair or replacement.
AA		
Restricted	<sup>3</sup>	Require repair or replacement.
AA		
Routed incorrectly	<sup>3</sup>	Suggest repair.
AA		
Damaged	<sup>3</sup>	Suggest repair or replacement.
AA		

NOTE: When replacing fuel lines/hoses, replace with products that meet(s) or exceed(s) OEM design specifications.

**FUEL FILTER & IN-TANK FUEL STRAINER**

AA		
Condition - External Filter	<sup>3</sup>	Procedure
AA		
Missing	<sup>3</sup>	Require replacement.
AA		
Restricted/contaminated	<sup>3</sup>	Require replacement.
AA		
Leaking	<sup>3</sup>	Require repair or replacement.
AA		
Damaged	<sup>3</sup>	Suggest replacement.
AA		
Maintenance interval	<sup>3</sup>	Suggest replacement to comply with OEM recommended service interval.
AA		
Missing, damaged mounting hardware	<sup>3</sup>	Suggest repair. Further inspection required.
AA		
Condition - In-Tank	<sup>3</sup>	Procedure
AA		
Missing	<sup>3</sup>	Require replacement.
AA		
Damaged	<sup>3</sup>	Require replacement.
AA		

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**Article Text (p. 31)**

1996 Volkswagen Golf

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Restricted<sup>3</sup> Require repair or replacement.

AA

**FUEL ACCUMULATOR/DAMPENER**

AA

Condition<sup>3</sup> Procedure

AA

Inoperative<sup>3</sup> Require replacement.

AA

Leaking<sup>3</sup> Require replacement.

AA

Damaged<sup>3</sup> Suggest replacement.

AA

**FUEL PRESSURE REGULATOR**

AA

Condition<sup>3</sup> Procedure

AA

Inoperative<sup>3</sup> Require repair or replacement.

AA

Leaking<sup>3</sup> Require repair or replacement.

AA

Damaged<sup>3</sup> Suggest replacement.

AA

Restricted/contaminated<sup>3</sup> Suggest repair. Further inspection required.

<sup>3</sup> See NOTE: below.

AA

NOTE: Some components may be serviceable; check for accepted  
cleaning procedure.

AA

**FUEL RAIL**

AA

Condition<sup>3</sup> Procedure

AA

Restricted<sup>3</sup> Require repair or replacement.

AA

Leaking<sup>3</sup> Require repair or replacement.

AA

Damaged<sup>3</sup> Suggest replacement.

AA

**FUEL DISTRIBUTOR**

AA

Condition<sup>3</sup> Procedure

AA

Inoperative<sup>3</sup> Require repair or replacement. Further

<sup>3</sup> inspection required. See NOTE: below.

AA

Out of specification<sup>3</sup> Require repair or replacement.

AA

Leaking<sup>3</sup> Requires repair or replacement.



\_\_\_\_\_ Suggests repair or replacement.

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**Article Text (p. 34)**

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Maintenance interval   <sup>3</sup> Suggest repair or replacement to comply with  
                                  <sup>3</sup> OEM recommended service intervals.

AA

**EGR PIPE/PLATE/COOLER**

AA

Condition	<sup>3</sup>	Procedure
-----------	--------------	-----------

AA

Missing	<sup>3</sup> Require replacement.
---------	-----------------------------------

AA

Leaking	<sup>3</sup> Require repair or replacement.
---------	---

AA

Restricted	<sup>3</sup> Require repair or replacement.
------------	---

AA

Damaged	<sup>3</sup> Suggest repair or replacement.
---------	---

AA

**EGR CONTROLS (ELECTRICAL/VACUUM)**

AA

Condition	<sup>3</sup>	Procedure
-----------	--------------	-----------

AA

Missing	<sup>3</sup> Require replacement.
---------	-----------------------------------

AA

Inoperative	<sup>3</sup> Require repair or replacement.
-------------	---

AA

Damaged	<sup>3</sup> Suggest repair or replacement.
---------	---

AA

Leaking	<sup>3</sup> Require repair or replacement.
---------	---

AA

Restricted	<sup>3</sup> Require repair or replacement.
------------	---

AA

**EGR INTAKE/EXHAUST MANIFOLD PASSAGES**

AA

Condition	<sup>3</sup>	Procedure
-----------	--------------	-----------

AA

Leaking	<sup>3</sup> Require repair or replacement.
---------	---

AA

Restricted	<sup>3</sup> Require repair or replacement.
------------	---

AA

**AIR INJECTION SYSTEM**

**AIR PUMP**

AA

Condition	<sup>3</sup>	Procedure
-----------	--------------	-----------

AA

Missing	<sup>3</sup> Require replacement.
---------	-----------------------------------

AA

Damaged	<sup>3</sup> Suggest repair or replacement.
---------	---

AA

Inoperative	<sup>3</sup> Require repair or replacement.
-------------	---

Thursday, August 19, 1999 11:34PM

Missing <sup>3</sup> Require replacement.



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**Article Text (p. 37)**

1996 Volkswagen Golf

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Thursday, August 19, 1999 11:35PM

```

AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Condi tion          3                      Procedure
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Missing             3  Require replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Damaged             3  Suggest replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Leaking             3  Require repair or replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Restricted          3  Require repair or replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

```

**EVAPORATIVE EMISSION CANISTER PURGE VALVE (ELECTRICAL/VACUUM)**

```

AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Condi tion          3                      Procedure
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Missing             3  Require replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Damaged             3  Suggest replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Inoperative         3  Require replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Leaking             3  Require replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

```

**GAS CAP**

```

AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Condi tion          3                      Procedure
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Missing             3  Require replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Leaking             3  Require replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Damaged             3  Suggest replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

```

**LIQUID/VAPOR SEPARATOR**

```

AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Condi tion          3                      Procedure
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Missing             3  Require replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Leaking             3  Require replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Damaged             3  Suggest repair or replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Inoperative         3  Require repair or replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

```

**ROLL OVER VALVE**

```

AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Condi tion          3                      Procedure

```

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```

AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Missing          3 Require replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Damaged          3 Suggest repair or replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Inoperative      3 Require replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Leaking          3 Require replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

```

**TRANSMISSION & CLUTCH RELATED INSPECTION INFORMATION**

**AUTOMATIC TRANSMISSION FILTER**

```

AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Condition          3 Procedure
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Contaminated      3 Require replacement of fluid and filter.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Maintenance intervals 3 Suggest replacement to comply with OEM
                    3 recommended service intervals.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

```

**TRANSMISSION FLUID**

```

AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Condition          3 Procedure
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
See * TRANSMISSION UNIFORM INSPECTION GUIDELINES *. (1)
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
(1) - TRANSMISSION UNIFORM INSPECTION GUIDELINES article is not
      available at this time.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

```

**CLUTCH FLUID**

```

AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Condition          3 Procedure
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
See * TRANSMISSION UNIFORM INSPECTION GUIDELINES *. (1)
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
(1) - TRANSMISSION UNIFORM INSPECTION GUIDELINES article is not
      available at this time.
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

```

**END OF ARTICLE**