

*** ANTI-LOCK BRAKES UNIFORM INSPECTION GUIDELINE ***

Article Text

1996 Volkswagen Golf
For Volkswagen Technical Site
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Thursday, August 19, 1999 11:29PM

ARTICLE BEGINNING

GENERAL INFORMATION

Anti-Lock Brake System (ABS) Motorist Assurance Program
Standards For Automotive Repair

All Makes and Models

INTRODUCTION TO MOTORIST ASSURANCE PROGRAM (MAP)

The Motorist Assurance Program was formed in 1992 by forty (40) companies who were concerned about the image of automotive service establishments. Today, MAP is an industry-wide association dedicated to strengthening consumer satisfaction with the automotive repair industry. MAP's participants represent the majority of the nation's multi-bay retail automotive outlets, their parts and equipment suppliers, independent repair shops, industry associations, car companies, manufacturers representatives, and the trade press. MAP is developing standards of service, uniform inspection procedures and other programs to assure consumers of the industry's professionalism and the commitment to excellence shared by MAP's sponsoring companies.

MAP's achievements to date include production and distribution (over 280,000) of the consumer brochure "How to Find Your Way Under the Hood and Around Your Car", development of a Pledge of Satisfaction to Consumers and Standards of Service and establishment of relationships with regulatory agencies.

As auto repair becomes an issue for federal and state regulators, MAP is working to educate government leaders on the dynamics of automotive service and the self-monitoring efforts MAP has undertaken on the industry's behalf. MAP's sponsoring companies are becoming well-known to government representatives as exemplary businesses working to improve the industry. Media sources also look to MAP to provide information and advice to consumers and on working with automotive technicians and repair establishments.

In the next few months, MAP plans to assist member repair facilities in implementing the MAP Pledge to Customers, establishing an alternate dispute resolution system to help resolve customer complaints within the industry, and developing a shop accreditation program to encourage policies in concert with the MAP Standards of Service and Inspection Guidelines.

MAP has united the aftermarket behind its consumer-oriented goals and has established itself both within and outside of the industry. We welcome you to join us as MAP continues its outreach. With your support, both the automotive repair industry and your customers will reap the benefits. Please contact MAP at:

808 17th Street, NW
Suite 200
Washington, D.C. 20006

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MAP UNIFORM INSPECTION GENERAL GUIDELINES

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 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.

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- * **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. The following reasons may be used for required and suggested services:

Reasons to Require Repair or Replacement:

- * component no longer performs intended purpose
- * component does not meet a design specification (regardless of performance)
- * component is missing.

Reasons to Suggest Repair or Replacement

- * component is close to the end of its useful life (just above discard specifications or weak; failure likely to occur soon, etc.)
- * address a customer need, convenience or request (stiffen ride, enhance performance, eliminate noise, etc.)
- * comply with maintenance recommended by the vehicle's Original Equipment Manufacturer (OEM)
- * technician's recommendation based on substantial and informed experience.

BRAKE SERVICE PROCEDURES REQUIRED AND SUGGESTED FOR PROPER VEHICLE OPERATION

ANTI-LOCK BRAKE SYSTEMS: GENERAL

Anti-lock brake systems are considered an essential part of brake systems on which they are found .

Anti-lock brake systems are commonly referred to as "ABS" and will be referred to as "ABS" throughout these guidelines. Some ABS components also function as part of a traction control system (TCS). Inspection, diagnostic and service procedures vary. Refer to appropriate service manuals for vehicle's specific requirements.

WARNING: When diagnosing and servicing high pressure components, observe safety procedures and equipment requirements established by the vehicle manufacturer to reduce the possibility of serious personal injury.

CAUTION: Most manufacturers prohibit the use of DOT 5 brake fluid in a system equipped with ABS.

NOTE: Intermittent electrical conditions are often caused by a

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Electro-magnetic interference (EMI) may be caused by incorrect installation of accessories or components which can result in improper system operation.

ABS: WHEEL SPEED OR VEHICLE SPEED SENSORS

Condition	Procedure	Note
Improper output signal	Further inspection required.	Component failure may be caused by water intrusion into the wiring harness.
Internal resistance does not meet specifications	Require replacement.	Always check insulation for damage and wiring for excessive resistance.
Cracked sensor housing	Require replacement.	
Improper routing of lead	Require re-routing according to vehicle manufacturer's specifications.	
Damaged wire lead	Require replacement.	
Contamination of surface	Suggest cleaning; identify and correct source.	
Damaged or missing tip or sensor	Require replacement.	
Loose	Require adjustment to vehicle manufacturer's specifications.	Some integral bearing assemblies with sensors may require replacement.
Improper air gap	Require adjustment to vehicle manufacturer's specifications.	If a sensor is not adjustable further inspection is required to identify and correct cause.

ABS: TOOTHED RING (TONE WHEEL)

[illegible]

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Condition	3	Procedure	3	Note
AA				
Teeth damaged	3	Further inspection	3	No action required unless
	3	required.	3	ABS system performance is
	3		3	affected. If performance
	3		3	is affected, require
	3		3	replacement.
AA				
Cracked	3	Require replacement.	3	
AA				
Teeth missing or	3	Require replacement.	3	
broken	3		3	
AA				
Loose	3	Require replacement	3	
	3	of worn parts.	3	
AA				
Contaminated	3	Suggest cleaning,	3	
	3	identify and correct	3	
	3	cause.	3	
AA				
Missing	3	Require replacement.	3	
AA				
Improper alignment	3	Require repair or	3	
	3	replacement.	3	
AA				
Bent	3	Require replacement.	3	
AA				
Incorrect	3	Require replacement.	3	If the toothed ring
	3		3	requires replacement and
	3		3	cannot be replaced as a
	3		3	separate component,
	3		3	replace the assembly of
	3		3	which the ring is a part.
AA				

ABS: FLUID LEVEL SENSOR SWITCH

ABS: FLUID LEVEL SENSOR SWITCH

AA				
Condition	3	Procedure	3	
AA				
Saturated float	3	Require replacement.	3	
AA				
Improper output	3	Require replacement.	3	
AA				

ABS: PRESSURE SWITCHES

ABS: PRESSURE SWITCHES

AA				
Condition	3	Procedure	3	
AA				

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Leaks	3	Require tightening or replacement as necessary.
Improper output	3	Require replacement.
Damaged housing	3	Require replacement.
Loose connector	3	Require repair or replacement.

**ABS: PARKING BRAKE, STOP LIGHT, PEDAL TRAVEL OR IGNITION
DISABLE SWITCH**

ABS: PARKING BRAKE, STOP LIGHT, PEDAL TRAVEL

Condition	Procedure
Out of adjustment	Require adjustment or replacement.
Bent or broken	Require replacement.
Improper output	Require replacement.
Contaminated	Suggest cleaning or replacement as necessary.
Saturated float	Require replacement.
Improper output	Require replacement.

ABS: FOUR WHEEL DRIVE SWITCH

ABS: FOUR WHEEL DRIVE SWITCH

Condition			Procedure		
Broken	3	Require replacement.			
Missing	3	Require replacement.			
Improper output	3	Require replacement.			
Leaking	3	Require repair or replacement.			
Loose	3	Require repair or replacement.			

ABS: ACCELEROMETER (G SENSOR OR LATERAL)

ABS: ACCELEROMETER (G SENSOR OR LATERAL)

Condition		Procedure	
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9
10	10	10	10
11	11	11	11
12	12	12	12
13	13	13	13
14	14	14	14
15	15	15	15
16	16	16	16
17	17	17	17
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30	30	30	30
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36	36	36	36
37	37	37	37
38	38	38	38
39	39	39	39
40	40	40	40
41	41	41	41
42	42	42	42
43	43	43	43
44	44	44	44
45	45	45	45
46	46	46	46
47	47	47	47
48	48	48	48
49	49	49	49
50	50	50	50
51	51	51	51
52	52	52	52
53	53	53	53
54	54	54	54
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56	56	56	56
57	57	57	57
58	58	58	58
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62	62	62	62
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64	64	64	64
65	65	65	65
66	66	66	66
67	67	67	67
68	68	68	68
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73	73	73	73
74	74	74	74
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82	82	82	82
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86	86	86	86
87	87	87	87
88	88	88	88
89	89	89	89
90	90	90	90
91	91	91	91
92	92	92	92
93	93	93	93
94	94	94	94
95	95	95	95
96	96	96	96
97	97	97	97
98	98	98	98
99	99	99	99
100	100	100	100

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Out of position 3 Require re-positioning to vehicle manufacturer's
 3 specifications.

[illegible]

Improper output ³ Require replacement.

[illegible]

Loose ³ Require repair or replacement.

[illegible]

Broken ³ Require replacement.

[illegible]

ABS: DIGITAL RATIO AXLE CONTROLLER/BUFFER (DRAC OR DRAB)

ABS: DIGITAL RATIO AXLE CONTROLLER/BUFFER (DRAC OR DRAB)

[illegible]

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

[illegible]

Improper calibration ³ Require repair or replacement.

[illegible]

No output 3 Require replacement.

[illegible]

ABS: HYDRAULIC MODULATORS

NOTE: Many modulators can only be replaced as complete assemblies. Whenever possible, replace the failed component part. If replacement of the failed part is not possible then replace the modulator assembly.

ABS: HYDRAULIC MODULATORS

[illegible]

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

[illegible]

Internal leak ³ Require repair or replacement.

[illegible]

External leak ³ Require repair or replacement.

[illegible]

Stuck valve ³ **Require repair or replacement.**

[illegible]

Electrical failure ³ Require repair or replacement.

[illegible]

Cracked housing ³ **Require repair or replacement.**

[illegible]

Missing or by-passed ³ Require repair or replacement.

[illegible]

Improper calibration ³ **Require repair or replacement.**

[illegible]

ABS: ELECTRONIC CONTROLLER

ABS: ELECTRONIC CONTROLLER

[illegible]

Condition	3	Procedure	3	Note
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AA			
Inoperative	³	Require replacement.	³
AA			
Cracked housing	³	Suggest replacement.	³
	³		³
	³		³
	³		³
AA			

If moisture enters the controller it can reduce life expectancy or impair function.

ABS: WIRING HARNESS

NOTE: Component failure may be caused by water intrusion into the wiring harness. Always check insulation for damage and wiring for excessive resistance.

ABS: WIRING HARNESS

AA			
Condition	³	Procedure	
AA			
Mis-routed	³	Require re-routing to vehicle manufacturer specifications.	
AA			
Shorted or open	³	Require repair or replacement.	
AA			
Damaged (cut, burned or chaffed)	³	Require repair or replacement.	
AA			
Connector and/or terminal problem (bent, broken, corroded or loose)	³	Require repair or replacement.	
AA			
Excessive resistance	³	Require repair or replacement.	
AA			
Poor ground	³	Require repair or replacement.	
AA			
Blown fuse/fusible link or diode	³	Require identification and correct cause; then replace component.	
AA			

ABS:ELECTRICAL PUMP & MOTORS

ABS: ELECTRICAL PUMP & MOTORS

AA			
Condition	³	Procedure	³ Note
AA			
Inoperative	³	Require replacement.	³
AA			
Leaking	³	Require repair or replacement.	³
AA			
Excessive run time	³	Further inspection	³ If excessive run time or

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3 required.
3 failure to build pressure
3 is traced to the pump,
3 require replacement.
3
Does not build
pressure

```

ABS: ACCUMULATORS

ABS: ACCUMULATORS

```

3
Condition
3 Procedure
Incorrect pre-charge
3 Require replacement.
Leaking
3 Require replacement.

```

ABS: RELAYS

ABS: RELAYS

```

3 Procedure
3 Note
Open
3 Require replacement.
Shorted
3 Require replacement.
Intermittent
3 Require replacement.
Missing
3 Require replacement.
Cracked housing
3 Suggest replacement.
3 If moisture enters the relay
3 it can reduce life expectancy
3 or impair function.

```

ABS: TIRES AND WHEELS

ABS: TIRES AND WHEELS

```

3 Procedure
Incorrect size, diameter or pressure
3 Consult the vehicle owner's
may affect the operation of ABS and
3 manual or vehicle placard for
traction control systems.
3 correct size, speed ratings
3 and inflation pressure of the
3 original tires. Do not exceed
3 the maximum load or inflation
3 capacity of the tire specified
3 by OE.

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REQUEST FOR MAP MEMBERSHIP INFORMATION

NOTE: To print membership information request form, print portion of article between dashed lines.

MAP

Request for Membership Information

I want to be a part of the automotive maintenance and repair industry's move to improve the level of Customer satisfaction.

Please send me information on how I can become a member of MAP.

Name _____

Company/Organization _____

Address _____

Phone _____ FAX _____

MAP

808 17th STREET, NW

Suite 200

Washington, D. C 20006

Phone 202 466 7050

Fax 202 223 9569

END OF ARTICLE