* EXHAUST SYSTEM UNIFORM INSPECTION GUIDELINES *

1995 Volvo 850

GENERAL INFORMATION
Exhaust Systems Motorist Assurance Program
Standards For Automotive Repair

All Makes and Models

INTRODUCTION TO MOTORIST ASSURANCE PROGRAM (MAP)

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INTRODUCTION TO MOTORIST ASSURANCE PROGRAM (MAP)

OVERVIEW OF MOTORIST ASSURANCE PROGRAM

The Motorist Assurance Program 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.

Our organization, s 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 greater responsibility for their vehicles—through proper, manufacturer—recommended, maintenance. We encourage participating service and repair shops (including franchisees and dealers) to adopt (1) a Pledge of Assurance to their Customers and (2) the Motorist Assurance Program Standards of Service. All participating service providers have agreed to subscribe to this Pledge and to adhere to the promulgated Standards of Service demonstrating 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 and the results communicated to the customer according to industry standards. Given that the industry did not have such standards, the Motorist Assurance Program successfully promulgated industry inspection communication standards in 1994-95 for the following systems: Exhaust, Brakes, ABS, Steering and Suspension, Engine Maintenance and Performance, HVAC, and Electrical Systems. Further, revisions to all of these inspection communication standards are continually re-published. In addition to these, standards for Drive Train and Transmissions have recently been promulgated. Participating shops utilize these Uniform Inspection & Communication

Standards 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 (and their representatives), concerned with auto repair and/or consumer protection, are conducted. Feedback from these sessions is brought back to the association, 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 mediation and arbitration through MAP/BBB-CARE and other non-profit organizations. MAP conducted pilot programs in twelve states before announcing the program nationally in October, 1998. During the pilots, participating repair shops demonstrated their adherence to the Pledge and Standards and agreed to follow the UICS in communicating the results of their inspection to their customers. To put some "teeth" in the program, an 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.

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. motorist.org or contact us at:

1444 I Street, NW Suite 700 Washington, DC 20005 Phone (202) 712-9042 Fax (202) 216-9646 January 1999

MAP UNIFORM INSPECTION GENERAL GUIDELINES

OVERVIEW OF SERVICE REQUIREMENTS AND SUGGESTIONS

It is MAP policy that all exhaust, brake, steering, suspension, wheel alignment, drive-line, engine performance and maintenance, and heating, ventilation and air conditioning, and electrical services be offered and performed under the standards 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 requests expressed by the customer.

When a component is suggested or required to be repaired or replaced, the decision to repair or replace must be made in the customer's best interest, and at his or her choice given the options available.

This section lists the various parts and conditions that indicate a required or suggested service or part replacement. Although this list is extensive, it is not fully inclusive. In addition to this list, a technician may make a suggestion. However, any suggestions must be based on substantial and informed experience, or the vehicle manufacturer's recommended service interval and must be documented.

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 discard 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 addresses a customer's need, convenience or request. If a customer's vehicle has one of these conditions, the procedure may be only 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 repair is required, a MAP shop must refuse partial service on that system if, in the judgment of the service provider, proceeding with the work could create or continue an unsafe condition. When a procedure states that required or suggested repair or replacement is recommended, the customer must be informed of the generally acceptable repair/replacement options whether or not performed by the shop.

When presenting suggested repairs to the customer, you must present the facts, allowing the customer to draw their own conclusions and make an informed decision about how to proceed.

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

Reasons to Require Repair or Replacement

- A Part no longer performs intended purpose
- B Part does not meet a design specification (regardless of performance)
- C Part is missing

NOTE:

When a repair is required, the shop must refuse partial service to the system in question, if the repair creates or continues an unsafe condition.

Reasons to Suggest Repair or Replacement

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

NOTE: Suggested services are always optional. When presenting suggested repairs to the customer, you must present the facts, allowing the customer to draw their own conclusions and make an informed decision about how to proceed.

EXHAUST

SERVICE PROCEDURES REQUIRED AND SUGGESTED FOR PROPER

VEHICLE OPERATION

WARNING: Federal EPA rules prohibit altering an exhaust system in any way that defeats the emission reduction components of a vehicle. Be sure to review and adhere to EPA policy on removing and replacing catalytic converters. Where state or local laws are stricter, they take precedence over these guidelines.

NOTE: Some exhaust systems are of a welded design. It is not required that the entire system be replaced. Determine the need to replace individual components based on conditions of component.

CATALYTIC CONVERTERS

CAUTION: Before working on an exhaust system, review EPA regulations on removing and replacing catalytic converters.

NOTE: Any time a converter has failed, further diagnosis is required to determine the reason(s) for converter failure.

CATALYTIC CONVERTER INSPECTION

Condition	Code		Procedure
Air injection tube broken	. А	•••	Require repair or replacement of injection tube or replacement of catalytic converter.
	. А		Require repair or replacement of injection tube or replacement of catalytic converter.
Air injection tube leaking	. A	•••	Require repair or replacement of injection tube or replacement of catalytic converter.
Air injection tube			converter.

loose	A	Require repair or replacement of injection tube or replacement of catalytic converter.
Air injection tube restricted	A	Require repair or replacement of injection tube or replacement of catalytic converter.
Air injection tube threads damaged	A	Require repair or replacement of injection tube or replacement of catalytic converter.
Air injection tube threads stripped (threads missing)	А	Require repair or replacement of injection tube or replacement of catalytic
Body cracked	ВА	converter Require repair or replacement Require repair or replacement.
missing	C C A A	 Require repair or replacement. Require replacement. Require repair or replacement. Require repair or replacement of flanges.
<pre>Inlet pipes cracked Internal rattle (except pellet-type)</pre>	B 2	Require repair or replacement (1) Further inspection
Mounting brackets that are part of converter		required.
broken		Require repair or replacement. (2) Require testing of converter.
Outlet pipes cracked Pieces of catalyst material found	В	Require repair or replacement.
downstream	1 A	
	A	Require repair or replacement.
(1) - If the converter is breaking up, suggest converter replacement. If an object has fallen into the converter, remove the object.		
(2) - Overheating is caused	agno	osis is required to determine
	orre	ect to ensure that new converter

EXHAUST AND TAIL PIPES

NOTE: For pipes with resonators, also see MUFFLERS AND RESONATORS.

Condition	Code	Procedure
Bracket broken Pipe bent out of	. A	Require repair or replacement.
position Pipe broken Pipe cracked Pipe leaking Pipe missing Pipe plugged Pipe weak due to	. A . B . A . C	Require repair or replacement. Require repair or replacement. Require repair or replacement. Require replacement. Require replacement. Require replacement.
corrosion, but no leaks present		Suggest replacement Require repair or replacement.

EXHAUST CONNECTIONS

EXHAUST CONNECTION INSPECTION

Condition	Code	Procedure
Attaching hardware incorrect	. B Require n	replacement of hardware.
Clamp loose	A Require A Require repair of C Require	replacement.
structural integrity Incorrect type (i.e. flange, ball & socket	. 1 Suggest	replacement.
		equire repair.

HANGERS

HANGER INSPECTION

Condition	Code		Procedure
Broken	. A	Require	replacement.
structural integrity Incorrect type Loose Missing Out of position Rubber deteriorated	BACB	Require repair or Require Require repair or Require repair or	replacement. replacement. replacement.

HEAT RISERS (MECHANICAL EFE DEVICES)

HEAT RISER (MECHANICAL EFE DEVICE) INSPECTION

Condition	Code	Procedure
Broken	. A	Require replacement of affected parts.
Diaphragm inoperative	. A	(1) Require replacement.

		Require repair or replacement Suggest repair or replacement of affected parts.
Seized	A	Require repair or replacement of affected parts.
Spring broken	В	Require replacement of
Spring inoperative	A	spring(s) Require replacement of spring(s).

(1) - If the inoperative diaphragm is separate from the heat riser, then require replacement of the inoperative diaphragm. If the inoperative diaphragm is part of the heat riser, then replace the heat riser.

HEAT SHIELDS

HEAT SHIELD INSPECTION

Condition	Code		Procedure
Bent			
structural integrity Loose	. A	Require repair or	replacement.

MANIFOLDS (CAST AND TUBE TYPE)

MANIFOLD (CAST AND TUBE TYPE) INSPECTION

Condition	Code	Procedure
Air injection tube in manifold broken	. A	Require repair or replacement of injection tube or replacement of manifold.
Air injection tube in manifold corroded, affecting structural		represente or manifold.
	. 1	Suggest replacement of injection tube or manifold.
Air injection tube in manifold leaking	. A	Require repair or replacement of injection tube or replacement of manifold.
Air injection tube in manifold loose Air injection tube in	. A	Require repair.
	. A	Require replacement of injection tube or manifold.
Air injection tube in manifold threads damaged	. A	Require repair of injection tube or manifold.
Air injection tube in manifold threads strippe	d	tube of manifold.
(threads missing)	. A	Require replacement of injection tube or manifold.
Bolt broken	. A	Require replacement of bolts.

Bolt loose	A	Require tightening or replacement of bolts.
Bolt missing	С	Require replacement of bolts.
Corroded, affecting sealability	А	Require repair or replacement.
Cylinder head threads stripped	A	Require repair or replacement of cylinder head.
Gasket leaking	A	Require tightening or replacement of gasket.
Heat stove bent	В	
Heat stove broken	A	-
Heat stove corroded, affecting structural		01 00000.
3	1	(1) Suggest replacement of stove.
Heat stove missing	С	(1) Require replacement of stove.
Manifold broken Manifold cracked Manifold warped Out of specification Stud broken Stud missing Stud threads damaged	A B A B A C	
Stud threads stripped (threads missing)	A	Require replacement of stud.
(1) - Stove may not be avai replacement of manifo		le separately; this may require

MECHANICAL EFE DEVICES

See HEAT RISERS (MECHANICAL EFE DEVICES).

MUFFLERS AND RESONATORS

MUFFLER AND RESONATOR INSPECTION

Condition	Code		Procedure
Body shell distorted, affecting performance or structural integrity Corrosion hole Missing Mounting bracket broken Mounting bracket cracked Nipple cracked Nipple loose Outer wrap peeling (exhaust not leaking) Plugged	. A C A A B A B	Require Require Require Require repair or Require repair or Require repair or Require repair or Suggest	replacement. replacement.
Puncture (other than a drain hole)		-	replacement.
Rattling or knocking noise from inside muffler Seam open (exhaust	€		replacement.

leaking)	A	Require replacement.
	2	Suggest replacement to address customer need and/or request.
Split (exhaust leaking) . Weak due to corrosion, but	A	Require replacement.
	1	Suggest replacement.