

UNIFORM INSPECTION & COMMUNICATION STANDARDS 2010 - 2011

Exhaust Systems

EXHAUST SYSTEMS

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MAP STANDARDS OF SERVICE

MAP developed standards of service for shops to follow in working with customers. Written from the point of view of customers, and for the use of maintenance and repair shops, the standards expand on the ideas and promises established in MAP's Pledge to Customer

I. Our recommendations are based upon the following definitions.

System Failure - Parts/system indicated are out of manufacturers' specifications, have failed or are unable to perform their normal function as intended or designed by the manufacturers. Service/replacement is required.

Preventive/Scheduled Maintenance - Parts/system are scheduled for service/ replacement per industry standards or are near the end of their useful life and repair/ replacement is recommended in advance of parts/system failure. Service/replacement is suggested.

Improved System Performance - Parts/ system indicated are recommended for repair/ replacement to enhance/improve the vehicle's ability to perform as intended or designed by the manufacturer, or as requested by the customer. Service/replacement is suggested.

II. Training/Criteria Our personnel have acquired auto repair expertise through formal education or work experience. Where appropriate, personnel are moving toward certification (e.g. vehicle manufacturer, ASE, etc.) for the services performed. Continuing education will be supported by all MAP participants.

III. Appropriate Company Approved Inspection

We will perform an appropriate inspection based on MAP Uniform Inspection & Communication Standards.

IV. Written Estimates

Written estimates based on our inspection, in compliance with state and local regulations, will include parts (dollar amount), labor (dollar amount), and the total estimate.

V. Work Authorization

No work will be performed without the customer's prior approval.

VI. Limited Warranty

A minimum limited warranty will be offered of 90 days or 4,000 miles, whichever comes first, covering parts and labor.

VII. Returned Parts

All customers will be entitled to the return of old parts, or if they choose, they may examine the parts prior to leaving the store. Where failed parts are required to be returned to the manufacturer in order to

honor the warranty, the customer will be allowed to examine the parts.

VIII. Classification of Parts

Replaced parts will be identified as new, remanufactured, rebuilt or used. MAP participants will inform the customer and indicate on the estimate and invoice whether a part is new, remanufactured, rebuilt or used.

THE MAP PROCESS - OVERVIEW

Repair Association, Inc. (AMRA). Participation in the Motorist Assurance Program comes 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, Electrical Systems, and Drive Train and Transmissions. Further, revisions to all of these inspection communication standards are continually re-published. 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.

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:

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THE MAP PROCESS - OVERVIEW OF SERVICE REQUIREMENTS AND SUGGESTIONS

It is MAP policy that all exhaust, brake, steering, suspension, wheel alignment, drive-train, 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. However, any suggestions must be documented and must be based on substantial and informed experience or the vehicle manufacturer's recommended service interval. NOTE: Vehicle manufacturer service intervals are often categorized as either Normal or Severe. Frequently, motorists are unaware that their driving patterns and habits meet the criteria for following Severe Service schedules. Severe Service is generally defined as, but not limited to one or more of the following conditions: Driving in stop-and-go traffic; frequent short trips; high-speed driving; extreme temperatures; towing or hauling.

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.

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	Reasons to Suggest 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	1. Part is close to the end of its useful life B - Part does not meet a design specification (regardless of performance) (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 5. To comply with maintenance recommended by AMRA / MAP

Reasons to Require Repair or Replacement	Reasons to Suggest Repair or Replacement
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.	NOTE: Suggested services are <i>always</i> 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 SYSTEMS

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

Condition	Code	Procedure
Air injection tube broken	A	Require repair or replacement of injection tube or replacement of catalytic converter
Air injection tube burnt	A	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 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)	A	Require repair or replacement of injection tube or replacement of catalytic converter
Body Cracked	B	Require repair or replacement
Converter empty	A	Require repair or replacement
Converter fill plug missing	C	Require repair or replacement
Converter missing	C	Require repair or replacement
Exhaust gases leaking	A	Require repair or replacement
Flanges leaking	A	Require repair or replacement of flanges
Inlet pipes cracked	B	Require repair or replacement
Internal rattle (except pellet-type)	2	Further Inspection required
NOTE: If the converter is breaking up, suggest converter replacement. If an object has fallen into the converter, remove object		
Mounting brackets that are part of converter broken	A	Require repair or replacement
Obvious overheating	Require testing of converter	

Condition	Code	Procedure
NOTE: Overheating is caused by something other than the converter. Further diagnosis is required to determine the cause of the overheating.		
Outlet pipes cracked	B	Require repair or replacement
Pieces of catalyst material found downstream	1	Suggest replacement
Plugged	A	Require replacement
NOTE: Determine cause and correct to ensure that new converter will not become plugged.		
Testing has determined that existing converter has been lead-poisoned, contaminated or failed testing	A	Require repair or replacement

EXHAUST AND TAIL PIPES

Condition	Code	Procedure
Broken bracket	A	Require repair or replacement
Pipe Bent Out Of Position	B	Require repair or replacement
Pipe Broken	A	Require repair or replacement
Pipe Cracked	B	Require repair or replacement
Pipe Leaking	A	Require replacement
Pipe Missing	C	Require replacement
Pipe Plugged	A	Require replacement
Pipe Weak Due To Corrosion, But No Leaks Present	1	Suggest replacement
Weld Broken	A	Require repair or replacement

EXHAUST CONNECTIONS

Condition	Code	Procedure
Attaching hardware Incorrect	B	Require replacement of hardware
Clamp broken	A	Require replacement
Clamp Loose	A	Require repair or replacement
Clamp missing	C	Require replacement
Corroded, affecting structural integrity	1	Suggest replacement
Incorrect type (i.e. Flange, Ball & Socket, etc.)	B	Require replacement
Leaking	A	Require repair
Loose	A	Require repair

HANGERS

Condition	Code	Procedure
Broken	A	Require replacement
Corroded, affecting structural integrity	1	Suggest replacement
Incorrect type	B	Require replacement
Loose	B	Require repair or replacement
Missing	C	Require replacement
Out of position	B	Require repair or replacement

Condition	Code	Procedure
Rubber deteriorated	1	Suggest replacement

HEAT RISERS (MECHANICAL EFE DEVICES)

Condition	Code	Procedure
Broken	A	Require replacement of affected parts
Diaphragm Inoperative	A	Require replacement
NOTE: 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 heatriser		
Leaking	B	Require repair or replacement
Noisy	2	Suggest repair or replacement of affected parts
Seized	A	Require repair or replacement of affected parts
Spring broken	B	Require replacement of spring(s)
Spring Inoperative	A	Require replacement of spring(s)

HEAT SHIELDS

Condition	Code	Procedure
Bent, affecting performance	B	Require repair or replacement
Broken	A	Require replacement
Corroded affecting structural integrity	1	Suggest replacement
Loose	B	Require repair or replacement
Missing	C	Require replacement

MANIFOLDS (CAST AND TUBE TYPE)

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 integrity	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	A	Require repair
Air injection tube in manifold restricted	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 stripped (threads missing)	A	Require replacement of injection tube or manifold
Bolt Broken	A	Require replacement of bolt(s)

Condition	Code	Procedure
Bolt Loose	A	Require tightening or replacement of bolt(s)
Bolt Missing	C	Require replacement of bolt(s)
Corroded, affecting sealability	A	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	B	Require Repair Or Replacement of Stove
NOTE: Stove may not be available separately. This may require replacement of manifold.		
Heat Stove Broken	A	Require replacement of stove
NOTE: Stove may not be available separately. This may require replacement of manifold.		
Heat Stove Corroded, Affecting Structural Integrity	1	Suggest replacement of stove
NOTE: Stove may not be available separately. This may require replacement of manifold.		
Heat Stove Missing	C	Require replacement of stove
NOTE: Stove may not be available separately. This may require replacement of manifold.		
Manifold Broken	A	Require repair or replacement
Manifold Cracked	B	Require repair or replacement
Manifold Warped	A	Require repair or replacement
Out of specification	B	Require repair or replacement
Stud broken	A	Require replacement of stud
Stud missing	C	Require replacement of stud
Stud threads damaged	A	Require Repair Or Replacement of Stud
Stud threads stripped (threads missing)	A	Require replacement of stud

MECHANICAL EFE DEVICES

Condition	Code	Procedure
Broken	A	Require replacement of affected parts
Diaphragm Inoperative	A	Require replacement
NOTE: 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 heatriser		
Leaking	B	Require repair or replacement
Noisy	2	Suggest repair or replacement of affected parts
Seized	A	Require repair or replacement of affected arts

Condition	Code	Procedure
Spring broken	B	Require replacement of spring(s)
Spring Inoperative	A	Require replacement of spring(s)

MUFFLER VALVE

Condition	Code	Procedure
Inoperative	A	Require repair or replacement
NOTE: It may be necessary to replace the muffler assembly to correct this condition.		

MUFFLERS AND RESONATORS

Condition	Code	Procedure
Body shell distorted, affecting performance or structural integrity	A	Require replacement
Corrosion Hole	A	Require replacement
Missing	C	Require replacement
Mounting bracket broken	A	Require repair or replacement
Mounting bracket cracked	B	Require repair or replacement
Nipple Cracked	A	Require repair or replacement
Nipple Loose	B	Require replacement
Outer wrap peeling (Exhaust Not Leaking)	1	Suggest replacement
Plugged	A	Require replacement
Puncture (other than drain hole)	A	Require replacement
Rattling or knocking noise from inside muffler	B	Require replacement
Seam open (exhaust leaking)	A	Require replacement
Sound quality unsatisfactory	2	Suggest replacement to address customer need and/or request
Split (exhaust leaking)	A	Require replacement
NOTE: Further diagnosis required to determine cause of the split seam (i.e. Backfiring).		
Weak due to corrosion, but no leaks present	1	Suggest replacement

REASON CODE EXPLANATION

Code	Reason
Required	
A	Part No Longer Performs Intended Purpose
B	Part Does Not Meet A Design Specification (Regardless Of Performance)
C	Part Is Missing
Suggested/Optional	
1	Part Is Close To The End Of Its Useful Life
2	To Address A Customer Need, Convenience Or Request
3	To Comply With Maintenance Recommended By The Vehicle's Original Equipment Manufacturer

Code	Reason
4	Technician's Recommendation Based On Substantial And Informed Experience
5	To Comply With Maintenance Recommended By AMRA/MAP

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