

# Uniform Inspection and Communication Standards

## DRIVE TRAIN AND TRANSMISSION

### OVERVIEW

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, 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.

To assure auto repair customers recourse if they were not satisfied with a repair transaction, the Motorist Assurance Program offers mediation and arbitration through the Better Business Bureau 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](http://www.motorist.org) or contact us at:

7101 Wisconsin Avenue

Bethesda, MD 20814

Phone (301) 634-4955 - Fax (202) 318-0378

January 2002

Map@motorist.org

## 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: IMPORTANT -When a procedure states that a required or suggested repair or replacement is recommended, the basis for the recommendation MUST be explained to the customer. If the customer asks whether there are alternatives to the recommendation, generally acceptable repair/replacement options must be explained, whether performed or not by the shop.**

**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.**

## DRIVE/POWER TRAIN ASSEMBLIES

**NOTE:** Whenever transmission or drivetrain service is performed that affects the suspension alignment, for example, removing the engine cradle, it is required that the alignment be checked and corrected if necessary.

## AUTOMATIC TRANSMISSION/TRANSAXLE ASSEMBLIES

### Automatic Transmission/Transaxle Assemblies

Condition	Code	Procedure
Any internal component failure that requires removal of the assembly from the vehicle for service. See note below.	A	Require repair or replacement of the automatic transmission/transaxle assembly. See note below.
NOTE: It is Required that the torque converter and all other failure-related components be inspected for cause and condition.		
NOTE: For components not requiring removal of the assembly, refer to the component listing in this document.		

## DIFFERENTIAL AND FINAL DRIVE ASSEMBLIES

**NOTE:** Does not include half shafts.

### Differential and Final Drive Assemblies

Condition	Code	Procedure
Any internal component failure that requires removal of the assembly from the vehicle for service. See note below.	A	Require repair or replacement of the differential assembly.
NOTE: For components not requiring removal of the assembly, refer to the component listing in this document.		

## MANUAL TRANSMISSION/TRANSAXLE ASSEMBLIES

### Manual Transmission/Transaxle Assemblies

Condition	Code	Procedure
Any internal component failure that requires removal of the assembly from the vehicle for service. See note below.	A	Require repair or replacement of the manual transmission/transaxle assembly.
NOTE: For components not requiring removal of the assembly, refer to the component listing in this document.		

## TRANSFER CASE ASSEMBLIES

## Transfer Case Assemblies

Condition	Code	Procedure
Any internal component failure that requires removal of the assembly from the vehicle for service. See note below.	A	Require repair or replacement of the transfer case differential assembly.
NOTE: For components not requiring removal of the assembly, refer to the component listing in this document.		

## DRIVE/POWER TRAIN COMPONENTS

The conditions listed for the components included in this section assume that the problem has been isolated to the specific component through proper testing.

### ACTUATORS (ELECTRICAL)

#### Actuators (Electrical)

Condition	Code	Procedure
Attaching hardware broken	A	Require repair or replacement of hardware.
Attaching hardware missing	C	Require replacement of hardware.
Attaching hardware not functioning	A	Require repair or replacement of hardware.
Connector broken	A	Require repair or replacement.
Connector (Weatherpack type) leaking	A	Require repair or replacement.
Connector melted, affecting performance	A	Require repair or replacement. See note below.
NOTE: Determine cause and correct prior to repair or replacement of part.		
Connector melted, not affecting performance	2	Suggest repair or replacement. See note below.
NOTE: Determine cause and correct prior to repair or replacement of part.		
Connector missing	C	Require replacement.
Inoperative	A	Require replacement. See note below.
NOTE: Inoperative includes intermittent operation or out of OEM specification.		
Missing	C	Require replacement.
Noisy	2	Suggest repair or replacement.
Out of adjustment	B	Require repair or replacement.
Terminal broken	A	Require repair or replacement.
Terminal burned, affecting performance	A	Require repair or replacement. See note below.
NOTE: Determine cause and correct prior to repair or replacement of part.		
Terminal burned, not affecting performance	1	Suggest repair or replacement. See note below.

performance		below.
NOTE: Determine cause and correct prior to repair or replacement of part.		
Terminal corroded, affecting performance	A	Require repair or replacement.
Terminal corroded, not affecting performance	1	Suggest repair or replacement.
Terminal loose, affecting performance	B	Require repair or replacement.
Terminal loose, not affecting performance	1	Suggest repair or replacement.

## ACTUATORS (VACUUM)

### Actuators (Vacuum)

Condition	Code	Procedure
Attaching hardware broken	A	Require repair or replacement of hardware.
Attaching hardware missing	C	Require replacement of hardware.
Attaching hardware not functioning	A	Require repair or replacement of hardware.
Connector broken	A	Require repair or replacement.
Connector (Weatherpack type) leaking	A	Require repair or replacement.
Connector melted, affecting performance	A	Require repair or replacement. See note below.
NOTE: Determine cause and correct prior to repair or replacement of part.		
Connector melted, not affecting performance	2	Suggest repair or replacement. See note below.
NOTE: Determine cause and correct prior to repair or replacement of part.		
Connector missing	C	Require replacement.
Inoperative	A	Require replacement. See note below.
NOTE: Inoperative includes intermittent operation or out of OEM specification.		
Leaking (vacuum)	A	Require repair or replacement.
Linkage bent, affecting performance	A	Require repair or replacement of linkage.
Linkage bent, not affecting performance	2	Suggest repair or replacement of linkage.
Linkage binding, affecting performance	A	Require repair or replacement of linkage.
Linkage binding, not affecting performance	1	Suggest repair or replacement of linkage.
Linkage broken	A	Require repair or replacement of linkage.
Linkage loose, affecting performance	A	Require repair or replacement of linkage.
Linkage loose, not affecting performance	1	Suggest repair or replacement of linkage.
Linkage missing	C	Require replacement.

Linkage noisy	2	Suggest repair or replacement.
Missing	C	Require replacement.
Noisy	2	Suggest repair or replacement.
Out of adjustment	A	Require repair or replacement.
Terminal burned, affecting performance	A	Require repair or replacement. See note below.
NOTE: Determine cause and correct prior to repair or replacement of part.		
Terminal burned, not affecting performance	2	Suggest repair or replacement.
NOTE: Determine cause and correct prior to repair or replacement of part.		
Terminal corroded, affecting performance	A	Require repair or replacement.
NOTE: Determine cause and correct prior to repair or replacement of part.		
Terminal corroded, not affecting performance	2	Suggest repair or replacement.
Terminal loose, affecting performance	B	Require repair or replacement.
Terminal loose, not affecting performance	1	Suggest repair or replacement.

## AXLES

### Axles

Condition	Code	Procedure
Bent	A	Require replacement.
Broken	A	Require replacement.
End play exceeds specifications	B	Require repair or replacement.
Flange bent	A	Require replacement.
Flange threads stripped	A	Require repair or replacement.
Twisted	A	Require replacement.
Worn, affecting performance	A	Require replacement.

## BEARINGS AND RACES

**NOTE:** When replacing or repacking bearings, grease seal replacement is required. You are not required to replace these components in axle sets. Determine the need to replace based upon the individual component conditions that follow.

### Bearings and Races

Condition	Code	Procedure
Bearing end-play exceeds specifications	B	Require adjustment of bearing, if possible. If proper adjustment cannot be obtained, require

		replacement of bearing assembly.
Bearing rollers, balls or races are worn, pitted, or feel rough when rotated as an assembly	B	Require replacement of bearing assembly.

## BELL CRANKS

### Bell Cranks

Condition	Code	Procedure
Attaching hardware broken	A	Require repair or replacement of hardware.
Attaching hardware missing	C	Require replacement of hardware.
Attaching hardware not functioning	A	Require repair or replacement of hardware.
Bent	A	Require repair or replacement.
Broken	A	Require repair or replacement.
Cracked	A	Require repair or replacement.
Missing	C	Require replacement.
Worn, affecting performance	A	Require repair or replacement.

## BELL HOUSINGS

See Housings (Bell, Case, Tail (Extension) and Auxiliary).

## BUSHINGS (EXTERNAL)

### Bushings (External)

Condition	Code	Procedure
Attaching hardware bent	B	Require repair or replacement of bent part if available; otherwise, replace bushing.
Attaching hardware broken	A	Require replacement of broken part if available; otherwise, replace bushing.
Attaching hardware corroded, affecting structural integrity	A	Require replacement of corroded part if available; otherwise, replace bushing.
Attaching hardware incorrect	A	Require replacement of incorrect part if available; otherwise, replace bushing.
Attaching hardware loose	A	Require repair or replacement of loose part if available; otherwise, replace bushing.
Attaching hardware missing	C	Require replacement of missing part if available; otherwise, replace bushing.
Attaching hardware threads damaged	A	Require repair or replacement of part with damaged threads if available; otherwise, replace bushing.
Attaching hardware threads	A	Require replacement of part with stripped

stripped (threads missing)		threads if available; otherwise, replace bushing.
Binding	A	Require repair or replacement.
Contaminated	1	Suggest replacement.
Deteriorated, affecting performance	A	Require repair or replacement.
Distorted, affecting performance	A	Require repair or replacement.
Missing	C	Require replacement.
Noisy	2	Further inspection required. See note and caution below.

NOTE: If noise isolated to bushing, suggest repair or replacement.

CAUTION: Use only approved lubricant on rubber bushings. Petroleum-based lubricants may damage rubber bushings.

Rubber separating from internal metal sleeve on bonded bushing	A	Require replacement.
Seized	A	Require replacement.
Shifted (out of position)	B	Require repair or replacement.
Split	A	Require replacement.
Surface cracking (weather-checked)	4	No service suggested or required.
Worn, affecting performance	A	Require repair or replacement.
Worn close to the end of its useful life	1	Suggest replacement.

## CABLES (SPEEDOMETER)

### Cables (Speedometer)

Condition	Code	Procedure
Attaching hardware broken	A	Require repair or replacement of hardware.
Attaching hardware missing	C	Require replacement of hardware.
Attaching hardware not functioning	A	Require repair or replacement of hardware.
Bent	A	Require repair or replacement.
Binding	A	Require repair or replacement.
Bracket bent, affecting performance	A	Require repair or replacement.
Bracket bent, not affecting performance		No service suggested or required.
Bracket broken, affecting performance	A	Require replacement.
Bracket broken, not affecting performance		No service suggested or required.
Bracket corroded, affecting performance	A	Require repair or replacement.

Bracket corroded, not affecting performance	2	Suggest repair or replacement.
Bracket cracked, affecting performance	A	Require repair or replacement.
Bracket cracked, not affecting performance	1	Suggest repair or replacement.
Bracket loose, affecting performance	A	Require repair or replacement.
Bracket loose, not affecting performance	1	Suggest repair or replacement.
Bracket missing	C	Require replacement.
Broken	A	Require replacement.
Cracked	A	Require repair or replacement.
Disconnected	A	Require repair or replacement.
Kinked	A	Require repair or replacement.
Melted	A	Require repair or replacement. See note below.
NOTE: Determine cause and correct prior to repair or replacement of part.		
Missing	C	Require replacement.
Noisy	2	Suggest repair or replacement.
Routed incorrectly	2	Suggest repair.
Seized	A	Require repair or replacement.

## CABLES (TV, DETENT, AND SHIFT)

### Cables (TV, Detent, and Shift)

Condition	Code	Procedure
Attaching hardware broken	A	Require repair or replacement of hardware.
Attaching hardware missing	C	Require replacement of hardware.
Attaching hardware not functioning	A	Require repair or replacement of hardware.
Bent	A	Require repair or replacement.
Binding	A	Require repair or replacement.
Bracket bent, affecting performance	A	Require repair or replacement.
Bracket bent, not affecting performance	2	No service suggested or required.
Bracket broken, affecting performance	A	Require replacement.
Bracket broken, not affecting performance	2	No service suggested or required.
Bracket corroded, affecting performance	A	Require repair or replacement.
Bracket corroded, not affecting performance	2	Suggest repair or replacement.

Bracket cracked, affecting performance	A	Require repair or replacement.
Bracket cracked, not affecting performance	1	Suggest repair or replacement.
Bracket loose, affecting performance	A	Require repair or replacement.
Bracket loose, not affecting performance	1	Suggest repair or replacement.
Bracket missing	C	Require replacement.
Broken	A	Require replacement.
Cracked	A	Require repair or replacement.
Disconnected	A	Require repair or replacement.
Frayed	A	Require replacement.
Kinked	A	Require repair or replacement.
Melted	A	Require repair or replacement. See note below.
NOTE: Determine cause and correct prior to repair or replacement of part.		
Missing	C	Require replacement.
Noisy	2	Suggest repair or replacement.
Out of adjustment	B	Require repair or replacement See note below.
Note: Cable replacement is required if it cannot be adjusted within specifications.		
Routed incorrectly	2	Suggest repair.
Seized	A	Require repair or replacement.
Self-adjuster inoperative	A	Require repair or replacement of self-adjuster.
Threads damaged	A	Require repair or replacement.
Threads stripped (threads missing)	A	Require replacement.

## CARRIER BEARINGS

See Intermediate Shaft Support Bearings

## CLUTCH CABLES AND CABLE HOUSINGS

### Clutch Cables and Cable Housings

Condition	Code	Procedure
Broken	A	Require replacement.
Cable bent	A	Require replacement.
Cable binding	A	Require repair or replacement.
Cable mounting loose	B	Require repair or replacement.
Cable out of adjustment	B	Require repair or replacement.

Frayed	B	Require replacement.
Housing heat-damaged	1	Suggest replacement.
Missing	C	Require replacement.
Noisy	2	Suggest repair or replacement.
Seized	A	Require replacement.
Threads damaged	A	Require repair or replacement.
Threads stripped (threads missing)	A	Require replacement.
Worn, affecting performance	A	Require replacement.

## CLUTCH DISCS (MANUAL TRANSMISSION)

### Clutch Discs (Manual Transmission)

Condition	Code	Procedure
Backing plate cracked	A	Require replacement.
Broken	A	Require replacement.
Contaminated with oil	A	Require replacement.
Damper cushion broken	A	Require replacement.
Damper cushion collapsed	A	Require replacement.
Damper spring collapsed	A	Require replacement.
Damper spring missing	C	Require replacement. See note below.
NOTE: Not all clutch discs have springs in all spring chambers on the disc.		
Friction material cracked through	B	Require replacement.
Friction material flaking or chunking	B	Require replacement.
Friction material surface cracking		No service suggested or required.
Grooved	B	No service suggested or required unless the pressure plate or flywheel is being resurfaced or replaced. In this case, replacement of clutch disc is required.
Ridged	B	No service suggested or required unless the pressure plate or flywheel is being resurfaced or replaced. In this case, replacement of clutch disc is required.
Splines worn, affecting performance	A	Require replacement.
Warped	A	Require replacement.
Wear exceeds specifications (where applicable)	B	Require replacement.

Worn close to the end of its useful life	1	Suggest replacement.
Worn, affecting performance	A	Require replacement.

## CLUTCH FORKS

### Clutch Forks

Condition	Code	Procedure
Bent	B	Require replacement.
Broken	A	Require repair or replacement.
Cracked	B	Require repair or replacement.
Worn close to the end of its useful life	1	Suggest replacement.
Worn, affecting performance	A	Require replacement.

## CLUTCH LINKAGES (MECHANICAL)

See Linkages (External).

## CLUTCH MASTER CYLINDERS

### Clutch Master Cylinders

Condition	Code	Procedure
Cover gasket distorted	A	Require replacement of cover gasket.
Cover gasket gummy	A	Require replacement of cover gasket.
Cylinder leaking fluid from rear of bore	A	Require repair or replacement.
Cylinder leaking fluid internally	A	Require replacement.
Dust boot missing	C	Require replacement of dust boot.
Dust boot punctured	A	Require replacement of dust boot.
Dust boot torn	A	Require replacement of dust boot.
Fluid level incorrect	B	Require fluid level adjustment.
Housing damaged, affecting performance	A	Require repair or replacement.
Master cylinder has residue in reservoir	2	Further inspection required. See note below.
NOTE: Do not replace master cylinder unless it exhibits conditions listed for replacement. You may suggest fluid change according to OEM service intervals.		
Threads damaged	A	Require repair replacement
Threads stripped (threads missing)	A	Require replacement.

## CLUTCH PEDALS

### Clutch Pedals

Condition	Code	Procedure
Bent, affecting performance	A	Require repair or replacement.
Broken	A	Require repair or replacement.
Pedal pad missing	C	Require replacement of pedal pad.
Pivot bushings worn, affecting performance	A	Require replacement of pivot bushings.

## CLUTCH PIVOTS

### Clutch Pivots

Condition	Code	Procedure
Bent	A	Require replacement.
Broken	A	Require repair or replacement.
Cracked	A	Require repair or replacement.
Threads damaged	A	Require repair or replacement.
Threads stripped (threads missing)	A	Require replacement.
Worn close to the end of its useful life	1	Suggest replacement.
Worn, affecting performance	A	Require replacement.

## CLUTCH PRESSURE PLATES

See Pressure Plates.

## CLUTCH RELEASE BEARINGS

### Clutch Release Bearings

Condition	Code	Procedure
Collar broken	A	Require replacement.
Cracked	A	Require replacement.
Rough when rotated as an assembly	B	Require replacement.
Seized	A	Require replacement.
Wear exceeds specifications	B	Require replacement.
Worn close to the end of its useful life	1	Suggest replacement.
Worn, affecting performance	A	Require replacement.

## CLUTCH SLAVE CYLINDERS (CONCENTRIC)

### Clutch Slave Cylinders (Concentric)

<b>Condition</b>	<b>Code</b>	<b>Procedure</b>
Bearing rough when rotated as an assembly	B	Require replacement.
Bearing seized	A	Require replacement.
Bleeder pipe leaks	A	Require repair or replacement.
Carrier assembly worn, affecting performance	A	Require replacement.
Collar broken	A	Require replacement.
Cracked	A	Require replacement.
Housing leaks	A	Require replacement.
Inoperative	A	Require replacement.
Release binding	A	Require replacement.
Spring broken	A	Require replacement.
Threads damaged	A	Require repair or replacement.
Threads stripped (threads missing)	A	Require replacement.
Worn, affecting performance	A	Require replacement.

## **CLUTCH SLAVE CYLINDERS (CONVENTIONAL OR EXTERNAL)**

### **Clutch Slave Cylinders (Conventional or External)**

<b>Condition</b>	<b>Code</b>	<b>Procedure</b>
Binding	A	Require repair or replacement.
Bleeder port damaged (not repairable)	A	Require replacement. See note below.
NOTE: Only required if the hydraulic system must be opened.		
Bleeder port damaged (repairable)	A	Require repair. See note below.
NOTE: Only required if the hydraulic system must be opened.		
Bleeder screw broken off in slave cylinder	A	Require replacement. See note below.
NOTE: Only required if the hydraulic system must be opened.		
Bleeder screw seized	A	Require replacement. See note below.
NOTE: Seized is defined as a bleeder screw that cannot be removed after a practical attempt at removing it has been made.		
Bore corroded (pitted)	B	Require replacement.
Bore grooved	A	Require replacement.
Threads damaged	A	Require repair or replacement.
Threads stripped (threads missing)	A	Require replacement.

## **COMPANION FLANGES**

See Yokes and Slip Yokes.

## **CONNECTORS**

See Wiring Harnesses and Connectors.

## COOLER BYPASS VALVES

### Cooler Bypass Valves

Condition	Code	Procedure
Inoperative	A	Require replacement.
Installed incorrectly	A	Require repair.
Leaking	A	Require repair or replacement.
Restricted	A	Require repair or replacement.

## COOLER LINES

### Cooler Lines

Condition	Code	Procedure
Abrasion damage, affecting structural integrity	A	Require repair or replacement.
Abrasion damage, not affecting structural integrity		No service suggested or required.
Application incorrect	B	Require replacement.
Attaching hardware broken	A	Require repair or replacement of hardware.
Attaching hardware missing	C	Require replacement of hardware.
Attaching hardware not functioning	A	Require repair or replacement of hardware.
Clamp corroded, not reusable	1	Suggest replacement. See note below.
NOTE: If clamp removed, require replacement		
Connected incorrectly	A	Require repair.
Corroded, affecting structural integrity	A	Require replacement.
Corroded, not affecting structural integrity		No service suggested or required.
Cracked	A	Require repair or replacement.
Fitting type incorrect (such as compression fitting)	B	Require replacement.
Flange leaking	A	Require repair or replacement.
Insufficient clamping force, allowing hose to leak	A	Require repair or replacement.
Leaking	A	Require repair or replacement.
Melted	1	Suggest repair or replacement.
Missing	C	Require replacement.

Outer covering damaged to the extent that the inner fabric is visible	A	Require replacement.
Protective sleeves damaged	2	Suggest replacement of sleeves.
Protective sleeves missing	C	Require replacement of sleeves.
Restricted, affecting performance	A	Require repair or replacement.
Routed incorrectly	B	Require repair.
Swollen	1	Suggest replacement.
Threads damaged	A	Require repair or replacement.
Threads stripped (threads missing)	A	Require replacement.
Type incorrect	1	Suggest repair or replacement.

## COOLERS

See Transmission Coolers.

## CV JOINTS

### CV Joints

Condition	Code	Procedure
Bearing, bushing or seal surface worn, affecting performance	A	Require repair or replacement.
Boot clamp broken	A	Require repair or replacement of clamp.
Boot clamp loose	A	Require repair or replacement of clamp.
Boot clamp missing	C	Require repair or replacement of clamp.
Boot leaking	A	Require replacement of CV boot. See note below.
NOTE: Further inspection of joint required before replacing boot.		
Boot surface cracked, not leaking	2	Suggest replacement of CV boot.
Cage broken	A	Require repair or replacement of CV joint.
Housing damaged to the extent that it no longer performs its intended function	A	Require repair or replacement of CV joint. See note below.
NOTE: Housing assembly may appear blue in color from normal manufacturing process of heat-treating the housing.		
Housing worn to the extent that it no longer performs its intended function	A	Require repair or replacement of CV joint. (See note below.)
NOTE: Housing assembly may appear blue in color from normal manufacturing process of heat-treating the housing.		

Holes elongated	A	Require replacement.
Internal parts binding	A	Require repair or replacement.
Internal parts worn	A	Require repair or replacement.
Lubricant missing	C	Require cleaning, inspection, and repacking of CV joint.
Threads damaged	A	Require repair or replacement.
Threads stripped (threads missing)	A	Require replacement.

## DIP STICK TUBES

### Dip Stick Tubes

Condition	Code	Procedure
Broken	A	Require repair or replacement.
Checkball missing	C	Suggest repair or replacement.
Cracked	A	Require repair or replacement.
Hold down bracket broken	A	Require repair or replacement.
Hold down bracket missing	C	Require replacement.
Leaking	A	Require repair or replacement.
Missing	C	Require replacement.
Threads damaged	A	Require repair or replacement.
Threads stripped (threads missing)	A	Require replacement.

## DIP STICKS (FLUID LEVEL INDICATORS)

### Dip Sticks (Fluid Level Indicators)

Condition	Code	Procedure
Application incorrect	B	Require replacement.
Broken	A	Require replacement.
Compressed	A	Require repair or replacement.
Missing	C	Require replacement.
Modified	A	Require replacement.
Stretched	A	Require repair or replacement.

## DOWEL PINS, GUIDES, AND PILOT HOLES

### Dowel Pins, Guides, and Pilot Holes

Condition	Code	Procedure
Application incorrect	B	Require repair or replacement.
Cracked	A	Require repair or

		replacement.
Distorted	A	Require repair or replacement.
Missing	C	Require replacement.
Positioned incorrectly	B	Require repair or replacement.
Stepped	A	Require repair or replacement.
Worn to the extent that it no longer performs its intended function	A	Require repair or replacement.

## DRIVE SHAFT FLANGES

See Companion Flanges.

## DRIVE SHAFTS AND HALF SHAFTS

### Drive Shafts and Half Shafts

Condition	Code	Procedure
Balance weight missing	C	Require repair or replacement.
Bearing cap bore distorted	A	Require repair or replacement.
Bent	A	Require replacement.
Bolt holes elongated	A	Require repair or replacement.
Bushing or seal surface worn, affecting performance	A	Require repair or replacement.
Leaking through soft yoke plug	A	Require repair or replacement of soft yoke plug.
Out of balance	A	Require repair or replacement.
Retainer strap bent	A	Require replacement of retainer strap.
Slip yoke broken	A	Require replacement.
Splines worn, affecting performance	A	Require replacement.
Splines worn, not affecting performance, but close to the end of their useful life	1	Suggest repair or replacement.
Threads damaged	A	Require repair or replacement.
Threads stripped (threads missing)	A	Require replacement.
U-bolt damaged, affecting performance	A	Require replacement of U-bolts.
Yoke damaged, affecting performance	A	Require repair or replacement of yoke.

## DUST BOOTS

**NOTE: Does not include CV boots.**

### Dust Boots

Condition	Code	Procedure
Cracked, not leaking	1	Suggest replacement.
Missing	C	Require replacement.
Leaking	A	Require repair or replacement.
Torn	A	Require replacement.
Weather checked, surface cracked		No service suggested or required.

## ENGINE MOUNTS

See Mounts (Engine, Transaxle, and Transmission).

## EXCITER RINGS

See Toothed Rings (Tone Wheels).

## FILLER TUBES

See Dip Stick Tubes.

## FILTERS AND SCREENS

### Filters and Screens

Condition	Code	Procedure
At service interval	3	Suggest replacement.
Bent	A	Require repair or replacement.
Exceeding service interval	3	Suggest replacement.
Missing	C	Require replacement.
Near service interval	3	Suggest replacement.
Restricted	A	Require repair or replacement. See note below.
NOTE: Further inspection may be required to determine the source of restriction or contamination.		
Torn	A	Require replacement.
Worn, affecting performance (metal or nylon screen type)	A	Require repair or replacement.

## FLANGES

See Companion Flanges.

## FLEX PLATES

### Flex Plates

Condition	Code	Procedure
Bent, affecting performance	A	Require replacement.
Bent, not affecting performance		No service suggested or required.
Bolt or stud holes elongated	B	Require replacement.
Broken	A	Require replacement.
Cracked	A	Require replacement.
Ring gear worn close to the end of its useful life	1	Suggest replacement.
Ring gear worn to the extent that it no longer performs its intended function	A	Require replacement.
Weights missing	A	Require repair or replacement.

## FLUID LEVEL INDICATORS

See Dip Sticks (Fluid Level Indicators).

## FLUIDS AND LUBRICANTS

### Fluids and Lubricants

Condition	Code	Procedure
Application incorrect	B	Require replacement. See note below.
NOTE: Determine and correct cause.		
At service interval	3	Suggest replacement.
Beyond service interval	3	Suggest replacement.
Burned		Further inspection required. See note below.
NOTE: Fluid that is burned indicates a serious problem. Determine and correct the cause.		
Contaminated, for example, fluid other than hydraulic fluid present	A or B	Require service. See note below.

NOTE: If a fluid other than the correctly specified fluid is present in the hydraulic system which DOES affect the rubber parts, the required service is to: 1) remove all components having rubber parts from the system, 2) flush lines with denatured alcohol or hydraulic cleaner, 3) repair or replace all components having rubber parts, and 4) bleed and flush with correct hydraulic fluid. (Code A)

NOTE: If a fluid other than the correctly specified fluid is present in the hydraulic system which DOES NOT affect the rubber parts, the required service is to flush and fill with the correct hydraulic fluid. (Code B)

Exceeding service interval	3	Suggest replacement.
Hydraulic fluid incorrect	B	Require service. See note below.

NOTE: If a fluid other than specification hydraulic fluid is present in the hydraulic system, the required service is to flush and fill with the correct hydraulic fluid.

Level incorrect	B	Require correction of fluid level.
Near service interval	3	Suggest replacement.
Rubber master cylinder cover gasket distorted and gummy	A	Require service. See note below.

NOTE: If a fluid other than the correctly specified fluid is present in the hydraulic system which DOES affect the rubber parts, the required service is to: 1) remove all components having rubber parts from the system, 2) flush lines with denatured alcohol or hydraulic cleaner, 3) repair or replace all components having rubber parts, and 4) bleed and flush with correct hydraulic fluid.

Varnished		Further inspection required. See note below.
-----------	--	--

Note: Fluid that is varnished may indicate a serious problem. Determine and correct the cause.

## FLYWHEELS

**NOTE:** Clutch disc replacement does not necessitate flywheel reconditioning, unless other conditions justify the reason to do so.

### Flywheels

Condition	Code	Procedure
Attaching hardware broken	A	Require repair or replacement of hardware.
Attaching hardware missing	C	Require replacement of hardware.
Attaching hardware not functioning	A	Require repair or replacement of hardware.
Cracked (other than mounting area)	A	Require resurfacing or replacement. See note below.

NOTE: Some manufacturers allow slight surface cracking in the friction surface.

Cracks in mounting area	B	Require replacement.
Hard spots	B	Require repair or replacement.
Ring gear broken	A	Require replacement of ring gear.
Ring gear teeth worn, affecting performance	A	Require replacement of ring gear.
Runout exceeds specifications	B	Require repair or replacement.
Scored	B	Require repair or replacement.

Surface cracks after resurfacing to manufacturer's minimum specifications	B	Require replacement.
Wear exceeds specifications	B	Require replacement.
Worn, not affecting performance, but close to the end of its useful life	1	Suggest repair or replacement.
Worn, affecting performance	A	Require repair or replacement.
Threads damaged	A	Require repair or replacement.
Threads stripped (threads missing)	A	Require replacement.

## FORCE MOTORS

See Actuators (Electrical).

## GUIDES

See Dowel Pins, Guides, and Pilot Holes.

## HALF SHAFTS

See Drive Shafts and Half Shafts

## HOSES, LINES, AND TUBES

### Hoses, Lines, and Tubes

Condition	Code	Procedure
Application incorrect	B	Require replacement.
Connected incorrectly	A	Require repair.
Corroded, not reusable	1	Suggest replacement.
Cracked line or tube	A	Require replacement.
Surface cracked (weather-checked)	1	Suggest repair or replacement.
Hard hose	1	Suggest replacement.
Inner fabric (webbing) damaged	A	Require replacement.
Insufficient clamping force, allowing hose to leak	A	Require repair or replacement.
Leaking	A	Require repair or replacement.
Maintenance intervals	3	Suggest replacement.
Melted	1	Suggest repair or replacement.
Missing	C	Require replacement.

Outer covering damaged	1	Suggest replacement.
Outer covering damaged to the extent that the inner fabric is visible	A	Require replacement.
Protective sleeves damaged	2	Suggest replacement of sleeves.
Protective sleeves missing	2	Suggest replacement of sleeves.
Restricted, affecting performance	A	Require repair or replacement.
Restricted, not affecting performance	2	Suggest repair or replacement.
Routed incorrectly	2	Suggest replacement.
Safety clip missing	C	Require replacement.
Spongy	1	Suggest repair or replacement.
Stripped	A	Require replacement.
Swollen	B	Require replacement.
Threads damaged	A	Require repair or replacement.
Threads stripped (threads missing)	A	Require replacement.
Type incorrect	1	Suggest repair or replacement.

## HOUSINGS (BELL, CASE, TAIL (EXTENSION) AND AUXILIARY)

### Housings (Bell, Case, Tail (Extension) and Auxiliary)

Condition	Code	Procedure
Bearing race loose in bore	A	Require repair or replacement.
Broken, affecting performance	A	Require repair or replacement.
Cracked	A	Require repair or replacement.
Dowel pin holes worn, affecting performance		See Dowel Pins, Guides, and Pilot Holes.
Machined surfaces damaged, affecting performance	A	Require repair or replacement.
Threads damaged	A	Require repair or replacement.
Threads stripped (threads missing)	A	Require replacement.
Worn, affecting performance	A	Require repair or replacement.

## INTERMEDIATE SHAFT SUPPORT BEARINGS

### Intermediate Shaft Support Bearings

--	--	--

<b>Condition</b>	<b>Code</b>	<b>Procedure</b>
Attaching hardware broken	A	Require repair or replacement of hardware.
Attaching hardware missing	C	Require replacement of hardware.
Attaching hardware not functioning	A	Require repair or replacement of hardware.
Bearing rollers, balls or races are worn, pitted, noisy, or feel rough when rotated as an assembly	A	Require replacement of bearing assembly.
Bracket bent, affecting performance	A	Require repair or replacement.
Bracket bent, not affecting performance		No service suggested or required.
Bracket broken, affecting performance	A	Require replacement.
Bracket broken, not affecting performance	2	Suggest repair or replacement of bracket.
Bracket corroded, affecting performance	A	Require repair or replacement.
Bracket corroded, not affecting performance	2	Suggest repair or replacement.
Bracket cracked, affecting performance	A	Require repair or replacement.
Bracket cracked, not affecting performance	1	Suggest repair or replacement.
Bracket holes elongated, affecting performance	A	Require repair or replacement.
Bracket holes elongated, not affecting performances)		No service suggested or required.
Bracket loose, affecting performance	A	Require repair or replacement.
Bracket loose, not affecting performance	1	Suggest repair or replacement.
Bracket missing	C	Require replacement.
Cracked	A	Require replacement.
Rough (brinelling, spalling)	A	Require replacement.
Rubber deteriorated, affecting performance	A	Require replacement.
Seized	A	Require replacement.

## **KEY INTERLOCK SYSTEMS**

See Shift Interlock Systems (Selector and Key Interlock Systems).

## LIMITED SLIPS

See Differential Assembly

## LINES

See Hoses, Lines, and Tubes.

## LINKAGES (EXTERNAL)

### Linkages (External)

Condition	Code	Procedure
Components missing	C	Require replacement of missing components.
Linkage bent, affecting performance	A	Require repair or replacement of linkage.
Linkage bent, not affecting performance	2	Suggest repair or replacement of linkage.
Linkage binding, affecting performance	A	Require repair or replacement of linkage.
Linkage binding, not affecting performance	1	Suggest repair or replacement of linkage.
Linkage broken	A	Require repair or replacement of linkage.
Linkage loose, affecting performance	A	Require repair or replacement of linkage.
Linkage loose, not affecting performance	1	Suggest repair or replacement of linkage.
Linkage missing	C	Require replacement.
Linkage noisy	2	Suggest repair or replacement.
Out of adjustment	B	Require repair or replacement.
Worn to the extent that it no longer performs its intended function	A	Require repair or replacement.

## LOCKING HUB ASSEMBLIES

### Locking Hub Assemblies

Condition	Code	Procedure
Inoperative	A	Require repair or replacement.
NOTE: Inoperative includes intermittent operation.		
Loose	A	Require repair or replacement.
Seized in any position	A	Require repair or replacement.

## LOCKING HUB CONTROL KNOBS

### Locking Hub Control Knobs

Condition	Code	Procedure
Damaged, affecting performance	A	Require replacement.
Missing	C	Require replacement.
Worn, affecting performance	A	Require replacement.

## LUBRICANTS

See Fluids and Lubricants.

## METAL-CLAD SEALS

See Seals.

## METALASTIC JOINTS

See Rubber Joints (Metalastic).

## MODULATOR PINS

### Modulator Pins

Condition	Code	Procedure
Application incorrect	B	Require replacement.
Missing	C	Require replacement.

## MODULATORS

### Modulators

Condition	Code	Procedure
Bent, affecting performance	A	Require replacement.
Contaminated (water, fuel, etc.)	A	Require replacement. See note below.
NOTE: Further inspection is required to determine the cause of the contamination		
Housing cracked	A	Require replacement.
Inoperative	A	Require replacement. See note below.
NOTE: Inoperative includes intermittent operation or out of OEM specification.		
Leaking fluid externally	A	Require repair or replacement.
Leaking fluid internally	A	Require replacement.
Leaking vacuum	A	Require replacement.
Nipple broken	A	Require replacement.

Threads damaged	A	Require repair or replacement.
Threads stripped (threads missing)	A	Require replacement.

## **MOUNTS (ENGINE, TRANSAXLE, AND TRANSMISSION)**

### **Mounts (Engine, Transaxle, and Transmission)**

<b>Condition</b>	<b>Code</b>	<b>Procedure</b>
Attaching hardware broken	A	Require repair or replacement of hardware.
Attaching hardware missing	C	Require replacement of hardware.
Attaching hardware not functioning	A	Require repair or replacement of hardware.
Broken	A	Require replacement.
Leaking (hydraulic mount)	A	Require replacement.
Mounting hole worn, affecting performance	A	Require replacement.
Mounting hole worn, not affecting performance		No service suggested or required.
Rubber deteriorated, affecting performance	A	Require replacement.
Rubber deteriorated, not affecting performance		No service suggested or required.
Threads damaged	A	Require repair or replacement.
Threads stripped (threads missing)	A	Require replacement.

## **ODOMETER DRIVES (MECHANICAL)**

See Speedometer/Odometer Drives (Mechanical).

## **ODOMETER HEADS (MECHANICAL)**

See Speedometer/Odometer Heads (Mechanical).

## **OIL PANS**

See Transmission Pans.

## **PANS**

See Transmission Pans.

## **PILOT HOLES**

See Dowel Pins, Guides, and Pilot Holes.

## PRESSURE PLATES

### Pressure Plates

Condition	Code	Procedure
Balance weight missing	C	Require replacement.
Broken	A	Require replacement.
Contact surface distorted	B	Require replacement.
Cracks	B	Require replacement.
Fingers bent	A	Require replacement.
Hard spots	B	Require replacement.
Scored	B	Require replacement.
Spring rate less than specifications	B	Require replacement.
Worn, affecting performance	A	Require replacement.
Worn beyond specifications	B	Require replacement.
Worn close to the end of its useful life	1	Suggest replacement.

## PRESSURE SWITCHES

See Switches.

## RACES

See Bearings and Races.

## RUBBER JOINTS (METALASTIC)

These joints may be found on half and/or drive shafts. They are usually found on European vehicles featuring a three-lug drive flange. They may be equipped with a centering ball or pin.

### Rubber Joints (Metalastic)

Condition	Code	Procedure
Drive flange bent	A	Require repair or replacement.
Drive flange damaged, affecting performance	A	Require replacement.
Rubber drive joint cracked	2	Suggest replacement.
Rubber drive joint damaged, affecting performance	A	Require replacement.
Rubber drive joint split between mounting holes	A	Require replacement.
Rubber drive joint torn at mounting holes	A	Require replacement.
Rubber drive joint weather-cracked		No service suggested or

required.

## SCREENS

See Filters and Screens.

## SEALS

### Seals

Condition	Code	Procedure
Leaking	A	Require repair or replacement. See note below.
NOTE: Require inspection of mating and sealing surface and repair or replace as necessary. Check vent. A plugged vent may force fluid past the seal.		

## SEALS (METAL-CLAD)

See Seals.

## SELECTOR INTERLOCK SYSTEMS

See Shift Interlock Systems (Selector and Key Interlock Systems).

## SERVOS

See Actuators (Vacuum).

## SHIFT INTERLOCK SYSTEMS (SELECTOR AND KEY INTERLOCK SYSTEMS)

See: Actuators (Electrical), Cables, Linkages (External), Switches.

## SENSORS

### Sensors

Condition	Code	Procedure
Attaching hardware broken	A	Require repair or replacement of hardware.
Attaching hardware missing	C	Require replacement of hardware.
Attaching hardware not functioning	A	Require repair or replacement of hardware.
Connector broken	A	Require repair or replacement.
Connector (Weatherpack type) leaking	A	Require repair or replacement.

Connector melted	A	Require repair or replacement. See note below.
NOTE: Determine cause and correct prior to repair or replacement of part.		
Connector missing	C	Require replacement.
Inoperative	A	Require repair or replacement. See note below.
NOTE: Inoperative includes intermittent operation or out of specification.		
Leaking (vacuum/fluid/air)	A	Require replacement.
Out of adjustment	B	Further inspection required. See note below.
NOTE: Follow OEM recommended adjustment procedures. Repair or replace if out of specification.		
Terminal broken	A	Require repair or replacement.
Terminal burned, affecting performance	A	Require repair or replacement. See note below.
NOTE: Determine cause and correct prior to repair or replacement of part.		
Terminal burned, not affecting performance	2	Suggest repair or replacement.
Terminal corroded, affecting performance	A	Require repair or replacement.
Terminal corroded, not affecting performance	2	Suggest repair or replacement.
Terminal loose, affecting performance	B	Require repair or replacement.
Terminal loose, not affecting performance	1	Suggest repair or replacement.
Threads damaged	A	Require repair or replacement.
Threads stripped (threads missing)	A	Require replacement.

## SIDE COVERS

See Transmission Pans.

## SLIP YOKES

See Yokes and Slip Yokes.

## SOLENOIDS

See: Actuators (Electrical), Actuators (Vacuum).

## SPEED SENSORS (ELECTRONIC WHEEL AND VEHICLE)

## Speed Sensors (Electronic Wheel and Vehicle)

Condition	Code	Procedure
Air gap incorrect	B	Require adjustment or replacement. See note below.

NOTE: If a sensor is not adjustable, further inspection is required to identify and correct cause.

Attaching hardware missing	C	Require replacement of hardware.
Attaching hardware threads damaged	A	Require repair or replacement of hardware.
Attaching hardware threads stripped (threads missing)	A	Require repair or replacement of hardware.
Connector broken	A	Require repair or replacement.
Connector (Weatherpack type) leaking	A	Require repair or replacement.
Connector melted	A	Require repair or replacement. See note below.

NOTE: Determine cause and correct prior to repair or replacement of part.

Connector missing	C	Require replacement.
Contaminated	A	Require repair or replacement. See note below.

NOTE: Determine source of contamination, such as metal particles or water. Require repair or replacement.

Inoperative	B	Require repair or replacement. Further inspection required. See note below.
-------------	---	---

NOTE: Inoperative includes intermittent operation or out of OEM specification. Some components may be serviceable; check for accepted cleaning procedure.

Leaking	A	Require repair or replacement.
Loose	A	Require repair or replacement.
Missing	C	Require replacement.
Resistance out of specification	B	Require repair or replacement.
Sensor housing cracked	2	Suggest replacement.
Terminal broken	A	Require repair or replacement.
Terminal burned, affecting performance	A	Require repair or replacement. See note below.

NOTE: Determine cause and correct prior to repair or replacement of part.

Terminal burned, not affecting performance	2	Suggest repair or replacement.
Terminal corroded, affecting performance	A	Require repair or replacement.
Terminal corroded, not affecting performance	2	Suggest repair or replacement.

Terminal loose, affecting performance	B	Require repair or replacement.
Terminal loose, not affecting performance	1	Suggest repair or replacement.
Threads damaged	A	Require repair or replacement.
Threads stripped (threads missing)	A	Require replacement.
Wire lead conductors exposed	B	Require repair or replacement.
Wire lead corroded	A	Require repair or replacement.
Wire lead misrouted	B	Require re-routing according to vehicle manufacturer's specifications.
Wire lead open	A	Require repair or replacement.
Wire lead shorted	A	Require repair or replacement.

## SPEEDOMETER-DRIVEN GEAR HOUSINGS

See Speedometer/Odometer Drives (Mechanical).

## SPEEDOMETER/ODOMETER DRIVES (MECHANICAL)

### Speedometer/Odometer Drives (Mechanical)

Condition	Code	Procedure
Application incorrect	B	Require replacement.
Attaching hardware broken	A	Require repair or replacement of hardware.
Attaching hardware missing	C	Require replacement of hardware.
Attaching hardware not functioning	A	Require repair or replacement of hardware.
Inoperative	A	Require replacement. See note below.
NOTE: Inoperative includes intermittent operation.		
Leaking	A	Require repair or replacement.
Missing	C	Require replacement.
Teeth broken	A	Require repair or replacement.
Threads damaged	A	Require repair or replacement.
Threads stripped (threads missing)	A	Require replacement.
Worn close to the end of its useful life	1	Suggest replacement.
Worn, affecting performance	A	Require replacement.

## SPEEDOMETER/ODOMETER HEADS (MECHANICAL)

### Speedometer/Odometer Heads (Mechanical)

Condition	Code	Procedure
Attaching hardware broken	A	Require repair or replacement of hardware.

Attaching hardware missing	C	Require replacement of hardware.
Attaching hardware not functioning	A	Require repair or replacement of hardware.
Lens broken	A	Require repair or replacement. See note below.
NOTE: If lens is available as a separate part, require replacement of lens only.		
Lens cloudy	2	Suggest repair or replacement. See note below.
NOTE: If lens is available as a separate part, suggest replacement of lens only.		
Lens missing	C	Require repair or replacement. See note below.
NOTE: If lens is available as a separate part, require replacement of lens only.		
Malfunctioning	A	Require repair or replacement. See note below.
NOTE: Includes inoperative, intermittent operation, failure to perform all functions, out of OEM specification, or out of range.		
Noisy	2	Suggest repair or replacement.
Threads damaged	A	Require repair or replacement.
Threads stripped (threads missing)	A	Require replacement.

## SPEEDOMETERS AND ODOMETERS (ELECTRONIC)

### Speedometers and Odometers (Electronic)

Condition	Code	Procedure
Attaching hardware broken	A	Require repair or replacement of hardware.
Attaching hardware missing	C	Require replacement of hardware.
Attaching hardware not functioning	A	Require repair or replacement of hardware.
Connector broken	A	Require repair or replacement.
Connector (Weatherpack type) leaking	A	Require repair or replacement.
Connector melted	A	Require repair or replacement. See note below.
NOTE: Determine cause and correct prior to repair or replacement of part.		
Connector missing	C	Require replacement.
Leaking	A	Require replacement.
Lens broken	A	Require repair or replacement. See note below.
NOTE: If lens is available as a separate part, require replacement of lens only.		
Lens cloudy	2	Suggest repair or replacement. See note below.
NOTE: If lens is available as a separate part, suggest replacement of lens only.		

Lens missing	C	Require repair or replacement. See note below.
NOTE: If lens is available as a separate part, require replacement of lens only.		
Malfunctioning	A	Require repair or replacement. See note below.
NOTE: Includes inoperative, intermittent operation, failure to perform all functions, out of OEM specification, or out of range.		
Mechanical head noisy	2	Suggest repair or replacement.
Terminal broken	A	Require repair or replacement.
Terminal burned, affecting performance	A	Require repair or replacement. See note below.
NOTE: Determine cause and correct prior to repair or replacement of part.		
Terminal burned, not affecting performance	2	Suggest repair or replacement.
Terminal corroded, affecting performance	A	Require repair or replacement.
Terminal corroded, not affecting performance	2	Suggest repair or replacement.
Terminal loose, affecting performance	B	Require repair or replacement.
Terminal loose, not affecting performance	1	Suggest repair or replacement.

## SWITCHES

### Switches

Condition	Code	Procedure
Attaching hardware broken	A	Require repair or replacement of hardware.
Attaching hardware missing	C	Require replacement of hardware.
Attaching hardware not functioning	A	Require repair or replacement of hardware.
Binding, affecting performance	A	Require repair or replacement.
Binding, not affecting performance	2	Suggest repair or replacement.
Broken	A	Require repair or replacement.
Burned, affecting performance	A	Require repair or replacement. See note below.
NOTE: Determine cause and correct prior to repair or replacement of part.		
Burned, not affecting performance	2	Suggest repair or replacement. See note below.
NOTE: Determine cause and correct prior to repair or replacement of part.		
Cracked, affecting performance	A	Require repair or replacement.

Cracked, not affecting performance	1	Suggest repair or replacement.
Leaking	A	Require repair or replacement.
Malfunctioning	A	Require repair or replacement. See note below.
NOTE: Includes inoperative, intermittent operation, or failure to perform all functions.		
Melted, affecting performance	A	Require repair or replacement. See note below.
NOTE: Determine cause and correct prior to repair or replacement of part.		
Melted, not affecting performance	2	Suggest repair or replacement. See note below.
NOTE: Determine cause and correct prior to repair or replacement of part.		
Missing	C	Require replacement.
Out of adjustment	B	Require repair or replacement.
Terminal broken	A	Require repair or replacement.
Terminal burned, affecting performance	A	Require repair or replacement. See note below.
NOTE: Determine cause and correct prior to repair or replacement of part.		
Terminal burned, not affecting performance	2	Suggest repair or replacement.
Terminal corroded, affecting performance	A	Require repair or replacement.
Terminal corroded, not affecting performance	2	Suggest repair or replacement.
Terminal loose, affecting performance	B	Require repair or replacement.
Terminal loose, not affecting performance	1	Suggest repair or replacement.
Won't return	A	Require repair or replacement.
Worn	1	Suggest replacement.

## STONE WHEELS

See Toothed Rings (Stone Wheels).

## TOOTHED RINGS (STONE WHEELS)

If the toothed ring requires replacement and cannot be replaced as a separate component, replace the assembly of which the ring is a part.

### Toothed Rings (Stone Wheels)

Condition	Code	Procedure
Alignment incorrect	B	Require repair or replacement.

Bent	B	Require replacement.
Contaminated, affecting performance	A	Require repair. Identify and correct cause.
Cracked	B	Require replacement.
Loose	A	Require replacement of worn parts.
Missing	C	Require replacement.
Number of teeth incorrect	B	Require replacement.
Teeth broken	A	Require replacement.
Teeth damaged, affecting performance	A	Require replacement.

## TORQUE CONVERTERS

### Torque Converters

Condition	Code	Procedure
Converter clutch lock-up operation is faulty	A	Require replacement.
Cover shell damaged, affecting performance	A	Require replacement.
Does not meet stall speed specification	B	Require replacement.
End play exceeds specifications	B	Require replacement.
Hub broken	A	Require replacement.
Hub cracked	A	Require replacement.
Internal component failure	A	Require replacement.
Leaking	A	Require repair or replacement.
Pilot broken	A	Require replacement.
Pilot worn, affecting performance	A	Require replacement.
Threads damaged	A	Require repair or replacement.
Threads stripped (threads missing)	A	Require replacement.
Weights missing	C	Require replacement.

## TRANSAXLE MOUNTS

See Mounts (Engine, Transaxle, and Transmission).

## TRANSDUCERS (TRANSMISSION)

See Sensors.

## TRANSMISSION COOLERS

### Transmission Coolers

Condition	Code	Procedure
Air flow obstruction	A	Require repair.

Attaching hardware broken	A	Require repair or replacement of hardware.
Attaching hardware missing	C	Require replacement of hardware.
Attaching hardware not functioning	A	Require repair or replacement of hardware.
Connection leaking	A	Require repair or replacement.
Contaminated	A	Require repair or replacement.
Corroded	1	Suggest repair or replacement.
Fins damaged, affecting performance	A	Require repair or replacement.
Fins damaged, not affecting performance		No service suggested or required.
Internal restrictions	B	Require repair or replacement.
Leaking	A	Require repair or replacement.
Threads damaged	A	Require repair or replacement.
Threads stripped (threads missing)	A	Require repair or replacement.
Tubes damaged, affecting performance	A	Require repair or replacement.
Tubes damaged, not affecting performance		No service suggested or required.

## TRANSMISSION MOUNTS

See Mounts (Engine, Transaxle, and Transmission).

## TRANSMISSION PANS

### Transmission Pans

Condition	Code	Procedure
Bent, interfering with filter or other internal components	A	Require repair or replacement.
Leaking	A	Require repair or replacement.

## TRANSMISSION RANGE INDICATORS (PRNDL)

### Transmission Range Indicators (PRNDL)

Condition	Code	Procedure
Binding	A	Require repair or replacement.
Broken	A	Require repair or replacement.
Components missing	C	Require replacement of missing components.
Loose, affecting performance	A	Require repair or replacement.
Out of adjustment	A	Require repair.
Worn, affecting performance	A	Require repair or replacement.

## TUBES

See Hoses, Lines, and Tubes.

## UNIVERSAL JOINTS (CARDON OR CROSS TYPE)

### Universal Joints (Cardon or Cross Type)

Condition	Code	Procedure
Attaching hardware broken	A	Require repair or replacement of hardware.
Attaching hardware missing	C	Require replacement of hardware.
Attaching hardware not functioning	A	Require repair or replacement of hardware.
Bearing cap distorted	B	Require replacement.
Binding	A	Require replacement.
Cross (trunion) worn, affecting performance	A	Require replacement.
Double cardon centering ball damaged	A	Require replacement.
Double cardon centering ball worn, affecting performance	A	Require replacement.
Double cardon centering spring broken	A	Require replacement.
Double cardon centering spring missing	C	Require replacement.
Double cardon centering spring weak	A	Require replacement.
End cap seal cracked	2	Suggest replacement.
End cap seal missing	C	Require replacement of seal.
Grease fitting broken	A	Require replacement of grease fitting. See note below.
NOTE: A broken grease fitting does not require replacement of the U-Joint.		
Grease fitting missing	C	Require replacement of grease fitting. See note below.
NOTE: A missing grease fitting does not require replacement of the U-Joint.		
Rust-colored powder around end cap seals	A	Require replacement.
Threads damaged	A	Require repair or replacement.
Threads stripped (threads missing)	A	Require replacement.
Worn, affecting performance	A	Require replacement.

## VACUUM CONTROLS

See Actuators (Vacuum).

## VACUUM HOSES

See Hoses, Lines, and Tubes.

## VACUUM MOTORS

See Actuators (Vacuum).

## VACUUM-OPERATED SWITCHES

See Switches.

## VEHICLE SPEED SENSORS

See Speed Sensors (Electronic Wheel and Vehicle).

## VENTS

### Vents

Condition	Code	Procedure
Broken	A	Require replacement.
Missing	C	Require replacement.
Plugged	A	Require repair or replacement. See note below.

NOTE: A plugged vent may force fluid past the seal.

## VIBRATION DAMPERS

### Vibration Dampers

Condition	Code	Procedure
Broken	A	Require replacement.
Missing	C	Require replacement.
Out of position	B	Require repair or replacement.
Threads damaged	A	Require repair or replacement.
Threads stripped (threads missing)	A	Require replacement.

## WHEEL ATTACHMENT HARDWARE

**NOTE:** For conditions noted below, also check conditions of wheel stud holes.

**CAUTION:** Proper lug nut torque is essential. Follow recommended torque specifications and tightening sequence. DO NOT lubricate threads unless specified by the vehicle manufacturer.

### Wheel Attachment Hardware

<b>Condition</b>	<b>Code</b>	<b>Procedure</b>
Bent	A	Require replacement.
Broken	A	Require replacement. See note below.
NOTE: Some manufacturers require replacement of all studs on that wheel if two or more studs or nuts on the same wheel are broken or missing.		
Loose	B	Require repair or replacement of affected component.
Lug nut installed backward	B	Require repair or replacement.
Lug nut mating surface dished	A	Require replacement of nut.
Lug nut mating type incorrect	B	Require replacement of nut.
Lug nut rounded	A	Require replacement of nut. See note below.
NOTE: Only required if removing wheel.		
Lug nut seized	A	Require replacement of nut. See note below.
NOTE: Only required if removing wheel.		
Stud incorrect	B	Require replacement of stud.
Threads damaged	A	Require repair or replacement.
Threads stripped (threads missing)	A	Require replacement.

## **WHEEL SPEED SENSORS**

See Speed Sensors (Electronic Wheel and Vehicle).

## **WIRING HARNESSSES AND CONNECTORS**

### **Wiring Harnesses and Connectors**

<b>Condition</b>	<b>Code</b>	<b>Procedure</b>
Application incorrect	B	Require repair or replacement.
Attaching hardware broken	A	Require repair or replacement of hardware.
Attaching hardware missing	C	Require replacement of hardware.
Attaching hardware not functioning	A	Require repair or replacement of hardware.
Connector broken	A	Require repair or replacement.
Connector (Weatherpack type) leaking	A	Require repair or replacement.
Connector melted	A	Require repair or replacement. See note below.
NOTE: Determine cause and correct prior to repair or replacement of part.		
Connector missing	C	Require replacement.
Insulation damaged, conductors exposed	A	Require repair or replacement.
Insulation damaged, conductors not	1	Suggest replacement.

exposed		
Open	A	Require repair or replacement.
Protective shield (conduit) melted	2	Suggest repair or replacement. See note below.
NOTE: Determine cause and correct prior to repair or replacement of part.		
Protective shield (conduit) missing	2	Suggest repair or replacement.
Resistance (voltage drop) out of specification	A	Require repair or replacement.
Routed incorrectly	B	Require repair.
Secured incorrectly	B	Require repair.
Shorted	A	Require repair or replacement.
Terminal broken	A	Require repair or replacement.
Terminal burned, affecting performance	A	Require repair or replacement. See note below.
NOTE: Determine cause and correct prior to repair or replacement of part.		
Terminal burned, not affecting performance	1	Suggest repair or replacement. See note below.
NOTE: Determine cause and correct prior to repair or replacement of part.		
Terminal corroded, affecting performance	A	Require repair or replacement. See note below.
NOTE: Determine cause and correct prior to repair or replacement of part.		
Terminal corroded, not affecting performance	1	Suggest repair or replacement.
Terminal loose, affecting performance	B	Require repair or replacement.
Terminal loose, not affecting performance	1	Suggest repair or replacement.
Transmission connector leaking		See Transmission Assembly.
Voltage drop out of specification	A	Require repair or replacement.

## YOKES AND SLIP YOKES

### Yokes and Slip Yokes

Condition	Code	Procedure
Bearing cap bore distorted	A	Require repair or replacement.
Bent	A	Require replacement.
Bolt holes elongated	A	Require repair or replacement.
Bushing or seal surface worn, affecting performance	A	Require repair or replacement.
Leaking through soft yoke plug	A	Require repair or replacement of soft yoke plug.
Retainer strap bent	A	Require replacement of retainer strap.

Slip yoke broken	A	Require replacement.
Splines worn, affecting performance	A	Require replacement.
Splines worn close to the end of their useful life	1	Suggest replacement.
Threads damaged	A	Require repair or replacement.
Threads stripped (threads missing)	A	Require replacement.
U-bolt damaged, affecting performance	A	Require replacement of U-bolts.
Yoke damaged, affecting performance	A	Require repair or replacement.