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

#### 1990 Nissan 240SX

GENERAL INFORMATION
Engine Performance and Maintenance Motorist Assurance Program Standards For Automotive Repair

All Makes and Models

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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.

#### **ENGINE ASSEMBLIES**

# SERVICE PROCEDURES REQUIRED AND SUGGESTED FOR PROPER VEHICLE OPERATION

#### CYLINDER HEAD ASSEMBLIES

NOTE:

A Cylinder Head Assembly is a cylinder head fitted with valves, associated springs, retainers, and on overhead camshaft cylinder heads (OHC), camshaft, camshaft bearings, lash adjusters, tappets and rockers.

#### CYLINDER HEAD ASSEMBLY INSPECTION

Condition	Code	Procedure
Adjustable valve las out of specification Internal component:	on B	Require repair.
(any component) .	A	(1) Require repair or replacement of cylinder head assembly.

(1) - It is Required that all other failure related components be inspected for cause and condition. Additional components or assemblies may be Suggested for repair or replacement, such as a water pump on a short block (reason code 4, technician's recommendation based on substantial and informed experience).

#### Example:

If there is a failed head gasket with an external coolant leak, in addition to Requiring replacement of the head gasket, inspection of the following for cause and condition is Required: Block, Cooling System, Cylinder Head. It may be Suggested that additional inspections be performed, such as the other head gasket on a V-type engine.

#### LONG BLOCK ASSEMBLIES

NOTE:

A Long Block Assembly is a short block assembly together with a cylinder head assembly and all those components fitted within the rocker or cam cover, and timing cover

(the whole presented as an assembly). A rebuilt or new oil pump, or kit shall be supplied or fitted as appropriate.

#### LONG BLOCK ASSEMBLY INSPECTION

(1) - It is Required that all other failure related components be inspected for cause and condition. Additional components or assemblies may be Suggested for repair or replacement such as a water pump on a short block (reason code 4, technician's recommendation based on substantial and informed experience).

#### Example:

If there is a failed head gasket with an external coolant leak, in addition to Requiring replacement of the head gasket, inspection of the following for cause and condition is Required: Block, Cooling System, Cylinder Head. It may be Suggested that additional inspections be performed, such as the other head gasket on a V-type engine.

#### SHORT BLOCK ASSEMBLIES

NOTE:

A Short Block Assembly is a cylinder block and all those components contained within the limits of the block deck or decks, the pan rail, the block rear face and the timing cover (where fitted), including the crankshaft.

#### SHORT BLOCK ASSEMBLY INSPECTION

(1) - It is Required that all other failure related components be inspected for cause and condition. Additional components or assemblies may be Suggested for repair or replacement, such as a water pump on a short block (reason code 4, technician's recommendation based on substantial and informed experience).

#### Example:

If there is a failed head gasket with an external coolant leak, in addition to Requiring replacement of the head gasket, inspection of the following for cause and condition is Required: Block, Cooling System, Cylinder Head. It may be Suggested that additional inspections be performed, such as the other head gasket on a V-type engine.

### **ENGINE COMPONENTS**

# ACCELERATOR PEDAL POSITION SENSORS

ACCELERATOR PEDAL POSITION SENSOR INSPECTION

Condition	Code	Procedure
Attaching hardware missing	. C	Require replacement of hardware.
Attaching hardware threads damaged	. A	
Attaching hardware threads stripped (threads missing)	. A	
Connector broken Connector (Weatherpack	. A	of hardware Require repair or replacement.
type) leaking Connector melted		Require repair or replacement (1) Require repair or replacement.
Connector missing Inoperative		
Missing		inspection required Require replacement.
specification Terminal broken Terminal burned, affectin	. A	<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>
performance		(1) Require repair or replacement.
Terminal burned, not affecting performance . Terminal corroded,	. 2	Suggest repair or replacement.
affecting performance . Terminal corroded, not		Require repair or replacement.
affecting performance . Terminal loose, affecting		Suggest repair or replacement.
performance  Terminal loose, not affecting performance .		<ul><li> Require repair or replacement.</li><li> Suggest repair or replacement.</li></ul>
Threads stripped (threads missing)		Require replacement.
Wire lead conductors exposed	. A . A	<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>
Wire lead shorted  (1) - Determine cause and	corr	Require repair or replacement. ect prior to repair or
replacement of part (2) - Inoperative include	s inte e com	ermittent operation or out of OEM ponents may be serviceable; check

### ACCESSORY BELTS

Condition	Code	Procedure
Alignment incorrect	. В	(1) Further inspection required.
Cracked	. 1	Suggest replacement. Suggest replacement. Require replacement.
Tension out of		Require replacement.
-	. В	Require adjustment or replacement.
Worn beyond adjustment range	. В	Require replacement.
	. A	Require replacement.
<ul><li>(1) - Determine cause of</li><li>(2) - Determine cause of</li></ul>		rect alignment and require repair. and suggest repair.

### ACCESSORY PULLEYS

#### ACCESSORY PULLEY INSPECTION

Alignment incorrect Attaching hardware	В	Require repair or replacement.
2	А	Require repair or replacement of hardware.
Attaching hardware missing	С	Require replacement of hardware.
Attaching hardware not functioning	A	Require repair or replacement of hardware.
Bent Cracked Loose Missing Pulley damaged, affecting	A A C	Require replacement.

### **ACTUATORS**

See SENSORS AND ACTUATORS.

### AIR CONDITIONING CYCLING SWITCHES

### AIR CONDITIONING CYCLING SWITCH INSPECTION

Condition		Code			Procedure
Attaching missing	hardware	. С	 	Require	replacement of hardware.
Attaching threads	hardware damaged	. A	 Requir	e repair	or replacement of hardware.

Attaching hardware threads stripped		
(threads missing)	Α	Require repair or replacement of hardware.
Connector broken Connector (Weatherpack	A	Require repair or replacement.
type) leaking Connector melted	A A	Require repair or replacement (1) Require repair or replacement.
Connector missing Contaminated	C A	Require replacement (2) Require repair or
Inoperative	В	replacement(3) Require repair or replacement. Further inspection required.
Leaking	A C	Require repair or replacement Require replacement.
specification	В	Require repair or replacement.
performance Terminal broken Terminal burned, affecting	A A	<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>
performance  Terminal burned, not	А	(1) Require repair or replacement.
affecting performance Terminal corroded,	2	Suggest repair or replacement.
affecting performance Terminal corroded, not	A	Require repair or replacement.
affecting performance Terminal loose, affecting	2	Suggest repair or replacement.
performance Terminal loose, not	В	Require repair or replacement.
affecting performance Threads damaged	1 A	<ul><li> Suggest repair or replacement.</li><li> Require repair or replacement.</li></ul>
Threads stripped (threads missing)	А	Require replacement.
exposed	В А А	<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>
Wire lead shorted	A	Require repair or replacement.
repair or replacement	ont par	amination, such as engine ticles, or water. Require
	omp	ermittent operation or out of OEM onents may be serviceable; check ocedure.

## AIR CONDITIONING PRESSURE SENSORS

AIR CONDITIONING PRESSURE SENSOR INSPECTION

Condition		Code		Procedi	ure
Attaching missing	hardware	С	 Require	replacement hardwar	

threads damaged	A	Require repair or replacement of hardware.
Attaching hardware threads stripped		
(threads missing)	Α	Require repair or replacement of hardware.
Connector broken Connector (Weatherpack	A	Require repair or replacement.
type) leaking Connector melted	A A	Require repair or replacement (1) Require repair or replacement.
Connector missing Contaminated	C A	
Inoperative	В	replacement(3) Require repair or
•		replacement. Further inspection required.
Leaking	Α	Require repair or replacement.
Missing	С	Require replacement.
specification	В	Require repair or replacement.
performance	Α	Require repair or replacement.
Terminal broken	Α	Require repair or replacement.
Terminal burned, affecting	_	(1)
performance	A	(1) Require repair or replacement.
Terminal burned, not		repracement.
affecting performance	2	Suggest repair or replacement.
Terminal corroded, affecting performance	А	Require repair or replacement.
affecting performance Terminal corroded, not	A	Require repair or replacement.
affecting performance	2	Suggest repair or replacement.
Terminal loose, affecting performance	В	Require repair or replacement.
Terminal loose, not		
affecting performance	1	Suggest repair or replacement.
Threads damaged Threads stripped (threads	A	Require repair or replacement.
missing)	A	Require replacement.
exposed	В	Require repair or replacement.
Wire lead corroded	Α	Require repair or replacement.
Wire lead open	Α	Require repair or replacement.
Wire lead shorted	А	Require repair or replacement.
(1) - Determine cause and c	orr	ect prior to repair or
replacement of part. (2) - Determine source of c	ont.	amination, such as engine
		ticles, or water. Require
repair or replacement	•	-
		ermittent operation or out of
check for accepted cl	ean	components may be serviceable; ing procedure.

# AIR DUCTS AND TUBES

Attaching hardware

AIR DUCT AND TUBE INSPECTION

Condition Code Procedure

Attaching hardware broken	А	Require repair or replacement of hardware.
Attaching hardware		
missing	С	Require replacement of hardware.
Attaching hardware not		
2	A	Require repair or replacement of hardware.
Leaking	Α	Require repair or replacement.
Missing	С	Require replacement.
,	Α	Require repair or replacement.

### AIR FILTER ELEMENTS

#### AIR FILTER ELEMENT INSPECTION

Condition	Code	Procedure
Leaking	. A	Require replacement.
oil-soaked		(1) Require replacement Suggest replacement to comply with vehicle's OEM recommended
Melted	7\	service intervals Required replacement.
		Require replacement.
performance		
(1) - Further inspection	requi	red to determine cause.

### AIR FILTER GASKETS

See AIR FILTER HOUSINGS AND GASKETS.

### AIR FILTER HOUSINGS AND GASKETS

### AIR FILTER HOUSING AND GASKET INSPECTION

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.
		Require repair or replacement Require replacement.

Condition		Code	Pro	cedure
Attaching				
missing	• • • • • • • • • • • • • • • • • • • •	. C	Require replacement hard	ent of dware.
Attaching		7\	Require repair or replace	aomon+
		. A	of hard	
Attaching threads s				
	missing)	. A	Require repair or replace of hard	
	broken	. A	Require repair or replace	
	(Weatherpack	. A	Require repair or replace	ement.
	melted		(1) Require rep	air or
Connector	missing	. C	Require replace	ement.
Contaminat	ted	. A	(2) Require rep	
Inoperativ	ve	. В	(3) Require rep	air or
			replacement. Fringer inspection required	
			Require repair or replace	ement.
Missing Resistance		. C	Require replace	ement.
specifica	ation	. В	Require repair or replace	ement.
	d, affecting	7\	Poguiro repair er replac	omon+
Terminal k	nce oroken	. A	<ul><li>Require repair or replace</li><li>Require repair or replace</li></ul>	ement.
Terminal k	ourned, affectin	g	(1) Require rep	air or
_		• A	replace	
	ourned, not g performance .	2	Suggest repair or replace	ement
Terminal o	corroded,			
	g performance . corroded, not	. A	Require repair or replace	ement.
affecting	g performance .		Suggest repair or replace	ement.
	loose, affecting		Require repair or replace	ement.
	loose, not	1		
	g performance . amaged		<ul><li>Suggest repair or replace</li><li>Require repair or replace</li></ul>	
Threads st	tripped (threads	70		
	conductors	. A	Require replace	ement.
exposed			Require repair or replace	
	corroded		<ul><li>Require repair or replace</li><li>Require repair or replace</li></ul>	
Wire lead	openshorted	. A	<ul><li>Require repair or replace</li><li>Require repair or replace</li></ul>	
(1) - Deta	ermine cause and	corre	ct prior to repair or	
rep	lacement of part		_	
			mination, such as engine icles, or water. Require	
	air or replaceme		icies, or water. Require	
(3) - Inog	perative include	s inte	rmittent operation or out of	
	specification. ck for accepted		omponents may be serviceable ng procedure.	;
			<u> </u>	

# AIR INJECTION CONTROL SOLENOIDS

### AIR INJECTION CONTROL SOLENOID INSPECTION

Condition		Code	Procedure
Attaching missing		С	Require replacement of hardware.
Attaching threads o		А	Require repair or replacement
Attaching threads s			of hardware.
(threads	missing)	A	of hardware.
	broken (Weatherpack	A	. Require repair or replacement.
type) lea Connector	aking melted	A A	. Require repair or replacement (1) Require repair or replacement.
	missing		Require replacement.
inoperativ	re	В	(2) Require repair or replacement. Further inspection required.
Resistance	out of		. Require repair or replacement.
Restricted	d, affecting		
Terminal k	nce	A	<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>
	ourned, affecting nce		(1) Require repair or replacement.
	ourned, not g performance	2	. Suggest repair or replacement.
affecting	g performance corroded, not	А	. Require repair or replacement.
affecting	g performance Loose, affecting	2	. Suggest repair or replacement.
performar	nce	В	. Require repair or replacement.
affecting	g performance		
Threads st	amaged cripped (threads		1 1
	conductors	А	Require replacement.
			. Require repair or replacement.
			<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>
Wire lead	shorted	A	Require repair or replacement.
			ect prior to repair or
(2) - Inop		inte	ermittent operation or out of
	specification. S ck for accepted o		components may be serviceable;

#### AIR PLENUM INSPECTION

Condition	Code	Procedure
<pre>Integrated air or fuel control components inoperative</pre>	. A	
<pre>Internal air or fuel   components damaged,   affecting performance .</pre>	. A	Require repair or replacement of component.
<pre>Internal air or fuel   components damaged, not   affecting performance .</pre>		No service suggested or required.
Internal air or fuel components missing	. C	Require replacement of component.
Leaking	. A	<ul><li> Require repair or replacement.</li><li> Require repair or replacement.</li></ul>
(1) - Inoperative include OEM specification.	s inte	ermittent operation or out of

### AIR PUMP BELTS

### AIR PUMP BELT INSPECTION

Condition	Code	Procedure
Alignment incorrect	. В	(1) Further inspection required.
Cracked	. 1	Suggest replacement. Suggest replacement.
Missing Noisy	. C	
Plies separated Tension out of	. A	Require replacement.
	. В	Require adjustment or replacement.
Worn so it contacts bottom	m	Require replacement.
of pulley	. A	Require replacement.
<ul><li>(1) - Determine cause of incorrect alignment and require repair.</li><li>(2) - Determine cause of noise and suggest repair.</li></ul>		

# AIR PUMPS (ELECTRIC-DRIVEN)

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	
Connector broken Connector (Weatherpack	. A	Require repair or replacement.
type) leaking Connector melted		<pre> Require repair or replacement(1) Require repair or</pre>
Connector missing Inoperative Leaking	. A	
Missing Noisy Terminal broken	. C	Require replacement. Suggest replacement. Require repair or replacement.
Terminal burned, affectin performance	g	
Terminal burned, not affecting performance .	. 2	-
Terminal corroded, affecting performance . Terminal corroded, not	. A	Require repair or replacement.
affecting performance . Terminal loose, affecting		Suggest repair or replacement.
performance Terminal loose, not		Require repair or replacement.
affecting performance . Threads damaged	. A	<ul><li> Suggest repair or replacement.</li><li> Require repair or replacement.</li></ul>
Threads stripped (threads missing)		Require repair or replacement.
(1) - Determine cause and replacement of part		ect prior to repair or
	s inte	ermittent operation or out

# AIR TUBES

See AIR DUCTS AND TUBES.

# ASPIRATOR, CHECK AND DECEL VALVES

ASPIRATOR, CHECK AND DECEL VALVE INSPECTION

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	А	Require repair or replacement

Inoperative	A (1) Require r	ardware. epair or acement.
Leaking Melted, affecting	A Require repl	acement.
Melted, not affecting	A Require repl	
-		equired.
	C Require repl A Require repair or repl	
± ± · · ·	A Require repair or repl	acement.
(1) - Inoperative includes of OEM specification.	intermittent operation or out	

### **BAFFLES**

See SHROUDS, BAFFLES AND DEFLECTORS.

### BALLAST PRIMARY SUPPLY RESISTOR WIRES

See BALLAST RESISTORS AND PRIMARY SUPPLY RESISTOR WIRES.

### BALLAST RESISTORS AND PRIMARY SUPPLY RESISTOR WIRES

BALLAST RESISTOR AND PRIMARY SUPPLY RESISTOR WIRE INSPECTION

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.
Conductor exposed Connector broken Connector melted	. A	Require replacement Require repair or replacement (1) Require repair or replacement.
Connector missing Inoperative Insulation overheated Terminal broken	. A . A . A	Require replacement.  Require replacement.  Require replacement.  Require replacement.
Terminal burned, affectin performance	_	(1) Require repair or replacement.
Terminal burned, not affecting performance . Terminal corroded,	. 2	Suggest repair or replacement.
affecting performance . Terminal corroded, not	. A	Require repair or replacement.
•	. 2	Suggest repair or replacement.
performance Terminal loose, not		Require repair or replacement.
	. 1	Suggest repair or replacement.

- (1) Determine cause and correct prior to repair or
- replacement of part.

  (2) Inoperative includes intermittent operation or out of OEM specification.

### BAROMETRIC PRESSURE SENSORS

#### BAROMETRIC PRESSURE SENSOR INSPECTION

Condition	Code	Procedure
Attaching hardware missing	C Require	e replacement of hardware.
Attaching hardware threads damaged	A Require repair	
Attaching hardware threads stripped (threads missing)	A Require repair	
Connector broken	A Require repair	of hardware.
Connector (Weatherpack type) leaking	A Require repair	
Connector melted	A (1) Re	replacement.
Connector missing Contaminated	C Requi	
Inoperative		equire repair or acement. Further ection required.
Leaking		or replacement.
specification Restricted, affecting	B Require repair	or replacement.
performance Terminal broken Terminal burned, affectin	A Require repair A Require repair	
performance	A (1) Re	equire repair or replacement.
Terminal burned, not affecting performance . Terminal corroded,	2 Suggest repair	or replacement.
affecting performance . Terminal corroded, not	A Require repair	or replacement.
affecting performance . Terminal loose, affecting	2 Suggest repair	or replacement.
performance Terminal loose, not		or replacement.
affecting performance . Threads damaged Threads stripped (threads	<ul><li>1 Suggest repair</li><li>A Require repair</li></ul>	or replacement. or replacement.
missing)	A Requi	ire replacement.
exposed	A Require repair A Require repair	or replacement. or replacement. or replacement. or replacement.

<sup>(1) -</sup> Determine cause and correct prior to repair or

- replacement of part.
- (2) Determine source of contamination, such as engine coolant, fuel, metal particles, or water. Require repair or replacement.
- (3) Inoperative includes intermittent operation or out of OEM specification. Some components may be serviceable; check for accepted cleaning procedure.

#### **BATTERIES**

Proper operation of any electrical system or component can be affected by battery condition. The battery(ies) must meet or exceed minimum specification for vehicle as equipped and test to that specific battery's CCA.

#### Definition of Terms

- \* Battery Performance Testing
  Testing that determines whether or not a battery meets both
  vehicle OEM and battery manufacturer's specifications.
- \* Cold Cranking Amp (CCA) Rating
  The number of amperes a new, fully charged battery at
  0°F (-17.8°C) can deliver for 30 seconds and maintain at
  least a voltage of 1.2 volts per cell (7.2 volts for a
  12-volt battery).
- \* Cranking Amps (CA)
  The number of amperes a new, fully charged battery, typically at 32° F (0° C) can deliver for 30 seconds and maintain at least a voltage of 1.2 volts per cell (7.2 volts for a 12-volt battery).
- \* OEM Cranking Amps
  The minimum CCA required by the original vehicle manufacturer
  for a specific vehicle.

#### BATTERY INSPECTION

Condition	Code	Procedure
Battery frozen	(1)	Further inspection required.
Case leaking Casing swollen		equire replacement.
Circuit open internally Electrolyte	A Re	equire replacement.
contamination	A (2)	Further inspection required.
Electrolyte discoloration	A (2)	Further inspection required.
Fails to accept and hold charge Fluid level low		
Out of performance specification		-
for battery Out of specification for	B (5) Re	equire replacement.
application	B (5) Re	equire replacement.

Post (top or side) burned, affecting performance A .	(6) Require repair or replacement.			
Post (top or side) burned, not affecting performance 2 .	(6) Suggest repair or			
Post (top or side) corroded, affecting	replacement.			
	Require repair.			
	Suggest repair.			
	Require replacement.			
	(6) Require repair or replacement.			
melted, not affecting	(6) Suggest repair or			
Specific gravity low B .	replacement (7) Further inspection			
State of charge low A .	required (7) Further inspection			
	required Suggest cleaning battery (8) Require cleaning battery. Further inspection required.			
Vent cap loose A .	Require repair or replacement of vent cap.			
Vent cap missing C .	Require replacement of vent cap.			
(1) - DO NOT attempt to charge a battery to warm thoroughly	frozen battery. Allow and then performance-test.			
If battery fails performance test, require replacement.  (2) - No service suggested or required unless the battery fails performance test, in which case, require				
replacement. (3) - This phrase refers to a ba				
accept and/or retain a charge using appropriate times listed in the Battery Charging Guide of the BCI Service Manual, battery charger operating manual, or battery				
manufacturer's specifications.  (4) - Determine cause of low fluid level. Refill to proper				
level(s) with water (disti Recharge battery and perfo	rmance-test.			
(5) - The battery may meet battery manufacturer's specifications but test below the minimum specification defined by the vehicle's OEM for				
that vehicle.				
(6) - Determine cause and correct replacement of part.	-			
(7) - Recharge and test to manufacturer's specifications.  If battery fails performance test, require replacement.				
(8) - Check fluid level and adjust to manufacturer's specification. Suggest checking charging system				
for proper operation.				

Condition	Code	Procedure
Application incorrect Attaching hardware	. В	Require repair or replacement.
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 Connector melted		
Connector missing Insulation damaged,	. C	. ±
conductors exposed	. A	(2) Require repair or replacement.
Insulation damaged, conductors not exposed Open		
(conduit) melted	. 2	(1) Suggest repair or replacement.
Protective shield (conduit) missing Resistance (voltage drop)	. 2	Suggest repair or replacement.
out of specification Routed incorrectly Secured incorrectly Shorted Terminal broken Terminal burned, affecting	<ul><li>B</li><li>B</li><li>A</li><li>A</li></ul>	<ul> <li>Require repair or replacement.</li> <li>Require repair.</li> <li>Require repair.</li> <li>Require repair or replacement.</li> <li>Require repair or replacement.</li> </ul>
performance		(1) Require repair or replacement.
Terminal burned, not affecting performance . Terminal corroded,	. 2	Suggest repair or replacement.
· · · · · · · · · · · · · · · · · · ·	. A	Require repair or replacement.
affecting performance . Terminal loose, affecting	. 2	Suggest repair or replacement.
performance Terminal loose, not	. В	Require repair or replacement.
	. 1	Suggest repair or replacement.
	. A	Require repair or replacement.
<ul><li>(1) - Determine cause and replacement of part</li><li>(2) - Exposed conductor a end does not require</li></ul>	t rep	lacement (aftermarket) terminal

### BATTERY CONNECTORS

See BATTERY CABLES, WIRES AND CONNECTORS.

# BATTERY TRAYS AND HOLD DOWN HARDWARE

#### BATTERY TRAY AND HOLD DOWN HARDWARE INSPECTION

Condition	Code	Procedure
Battery improperly secured	. 2	Suggest repair.
• -	. A	Require repair or replacement.
<del>_</del>		No service suggested or required.
Broken, affecting performance Broken, not affecting	. A	Require repair or replacement.
•		No service suggested or required.
Corroded, affecting performance Corroded, not affecting	. A	Require repair or replacement.
performance	. 2	Suggest repair or replacement.
performance	. A	Require repair or replacement.
performance Missing Threads damaged	. C . A	Suggest repair or replacement Require replacement Require repair or replacement.
Threads stripped (threads missing)	. A	Require replacement. Require repair.

# **BATTERY WIRES**

See BATTERY CABLES, WIRES AND CONNECTORS.

## BELT-DRIVEN AIR PUMPS

### BELT-DRIVEN AIR PUMP INSPECTION

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.
Inoperative Leaking Missing Noisy Pulley alignment	. A	
incorrect Pulley bent Pulley cracked Pulley loose Pulley missing Threads damaged Threads stripped (threads	. A . A . A . C	Require repair or replacement. Require replacement. Require replacement. Require repair or replacement. Require repair or replacement. Require repair or replacement.

missing) ..... A .. Require repair or replacement.

(1) - Inoperative includes intermittent operation or out of OEM specification.

### BELT IDLER ASSEMBLIES (ACCESSORY AND CAM BELTS)

BELT IDLER ASSEMBLY (ACCESSORY AND CAM BELT) INSPECTION

Condition	Code	Procedure
Alignment incorrect Attaching hardware	. В	Require repair or replacement.
	. 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.
Bearings worn Cracked Missing Noisy Seized	. 2 . C . 2	Suggest replacement. Suggest replacement. Require replacement. Suggest replacement. Require repair or replacement.

### BELT TENSIONERS (ACCESSORY AND CAM BELTS)

BELT TENSIONER (ACCESSORY AND CAM BELT) INSPECTION

Condition	Code	Procedure
Alignment incorrect Attaching hardware	. В	Require repair or replacement.
2	. A	Require repair or replacement of hardware.
Attaching hardware missing	. C	Require replacement of hardware.
Attaching hardware not	7\	Require repair or replacement
-		of hardware.
Bearings worn Belt tension incorrect .		Suggest replacement Require adjustment or repair.
Cracked		Suggest replacement.
Missing		Require replacement.
Noisy		Suggest replacement.
belt life	. A	
Seized	. A	Require repair or replacement.

### **BOOST CONTROL MECHANISMS**

See WASTE GATES AND BOOST CONTROL MECHANISMS.

### **CAMSHAFT POSITION SENSORS**

CAMSHAFT POSITION SENSOR INSPECTION

Condition	Code	Procedure
Attaching hardware		
missing	C	Require replacement of hardware.
Attaching hardware thr		
damaged	А	Require repair or replacement of hardware.
Attaching hardware		
threads stripped (threads missing)	А	Require repair or replacement
_		of hardware.
Connector broken Connector (Weatherpack		Require repair or replacement.
type) leaking		Require repair or replacement.
Connector melted	А	(1) Require repair or replacement.
Connector missing	C	Require replacement.
Contaminated	А	(2) Require repair or replacement.
Inoperative	В	(3) Require repair or
		replacement. Further
Leaking	A	<pre>inspection required Require repair or replacement.</pre>
Missing		Require replacement.
Terminal broken		Require repair or replacement.
Terminal burned, affect		Require repair or repracement.
performance		(1) Require repair or
		replacement.
Terminal burned, not affecting performance	e 2	Suggest repair or replacement.
Terminal corroded,	2	Suggest repair or repracement.
affecting performance	e A	Require repair or replacement.
Terminal corroded, not		
affecting performance		Suggest repair or replacement.
Terminal loose, affect performance		Require repair or replacement.
Terminal loose, not		Require repair or replacement.
affecting performance	1	Suggest repair or replacement.
Wire lead conductors exposed	В	Require repair or replacement.
Wire lead corroded		Require repair or replacement.
Wire lead open		Require repair or replacement.
Wire lead shorted		Require repair or replacement.
(1) - Determine cause	and corr	ect prior to repair or
replacement of p		
		amination, such as engine ticles, or water. Require
repair or replace		cicies, or water. Require
(3) - Inoperative incl	ludes int	ermittent operation or out of
OEM specification	on. Some	components may be serviceable;
check for accept	ed clean	ing procedure.

### CARBURETORS AND CHOKES

NOTE: Proper operation of a carburetor includes the ability to control air/fuel mixtures during all phases or driving operation to comply with all federal and local emissions standards. Adjustments are to be considered repairs.

Condition	Code	Procedure
Air/fuel control incorrect	. В	Require repair or replacement.
	. 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.
Components binding Components damaged, affecting operation or	. A	Require repair or replacement.
performance	. C	components.
Contaminated	. A	(1) Require repair or replacement. Further inspection required.
Controlling linkages binding	. A	Require repair or replacement of linkage.
Leaking Mechanical operation	. A	3
incorrect		
cleaning procedure.	Deter ant, f	erviceable; check for accepted mine source of contamination, fuel, metal particles, or water. ement.

### CASTING CORE PLUGS AND EXPANSION PLUGS

CASTING CORE PLUG AND EXPANSION PLUG INSPECTION

Condition	Code	Procedure
Leaking	A	Require replacement.
	2	Suggest replacement.

# CHARGE AIR COOLERS "INTERCOOLERS" (CAC)

CHARGE AIR COOLER "INTERCOOLER" (CAC) INSPECTION

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

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### CHECK VALVES

See ASPIRATOR, CHECK AND DECEL VALVES.

### CHOKES

See CARBURETORS AND CHOKES.

### **CLUTCH PEDAL POSITION SWITCHES**

#### CLUTCH PEDAL POSITION SWITCH INSPECTION

Condition	Code Proces	dure
Attaching hardware missing	. C Require replacement hardway	
Attaching hardware thread damaged		ment
Attaching hardware threads stripped		
(threads missing)	. A Require repair or replaced of hardwards.	
Connector broken Connector melted	1 1 1	r or
Connector missing Inoperative	. C Require replacement	ent. r or ther
Missing		
specification Terminal broken Terminal burned, affecting	. A Require repair or replacement	
performance		
Terminal burned, not affecting performance . Terminal corroded,	. 2 Suggest repair or replacement	ent.
•	. A $\dots$ Require repair or replacement	ent.
	. 2 Suggest repair or replacement	ent.
performance Terminal loose, not		ent.
affecting performance . Threads damaged Threads stripped (threads	. A Require repair or replacement	
missing)		ent.

exposed		 В	 Require	repair	or	replacement.
Wire lead	corroded	 Α	 Require	repair	or	replacement.
Wire lead	open	 Α	 Require	repair	or	replacement.
Wire lead	shorted	 Α	 Require	repair	or	replacement.

- (1) Determine cause and correct prior to repair or replacement of part.
- (2) Inoperative includes intermittent operation or out of OEM specification. Some components may be serviceable; check for accepted cleaning procedure.

### **COLD START INJECTORS**

See FUEL AND COLD START INJECTORS.

#### **CONNECTORS**

See WIRING HARNESSES AND CONNECTORS.

### **COOLANT**

### COOLANT INSPECTION

Condition	Code	Procedure
Acidity (pH) incorrect .	. 1	Suggest correction or replacement.
Contaminated	. В	(1) Require replacement or recycling. Further inspection required.
Level low	. В	(2) Require filling to proper level.
		(3) Suggest replacement Require correction or replacement.
Type incorrect	. В	Require replacement.
(3) - The system should b refilled with corre	coola inco: e dra: ct co	<u> </u>

### **COOLANT RECOVERY TANKS**

#### COOLANT RECOVERY TANK INSPECTION

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.
Leaking	. A	. Require repair or replacement.

Missing				
equipmer	nt)	 С	 Require	replacement.

### COOLING FAN MOTOR MODULES

See COOLING FAN MOTOR RELAYS AND MODULES.

### COOLING FAN MOTOR RELAYS AND MODULES

COOLING FAN MOTOR RELAY AND MODULE INSPECTION

Condition	Code	Procedure
Attaching hardware broken	. А	Require repair or replacement of hardware.
Attaching hardware missing	. С	Require replacement of hardware.
Attaching hardware not functioning	. А	Require repair or replacement of hardware.
Connector broken Connector (Weatherpack	. A	Require repair or replacement.
type) leaking	. A . A	<pre> Require repair or replacement (1) Require repair or</pre>
Connector missing Housing cracked Malfunctioning	. 2	Require replacement Suggest repair or replacement (2) Require repair or replacement.
Missing  Terminal broken  Terminal burned, affecting	. A	Require replacement Require repair or replacement.
performance	. A	(1) Require repair or replacement.
Terminal burned, not affecting performance . Terminal corroded,	. 2	Suggest repair or replacement.
	. A	Require repair or replacement.
affecting performance . Terminal loose, affecting	. 2	Suggest repair or replacement.
performance	. В	Require repair or replacement.
affecting performance . Wire lead conductors	. 1	Suggest repair or replacement.
exposed		
Wire lead corroded		
Wire lead open	. A . A	<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>
(1) - Determine cause and	dorr	ect prior to repair or
replacement of part (2) - Includes inoperative	z. 7e, int	termittent operation, failure, or out of OEM specification.

### COOLING FAN MOTOR RESISTORS

Condition	Code	Procedure
Application incorrect	. В	Require replacement.
Attaching hardware broken	. A	Require repair or replacement of hardware.
Attaching hardware missing	. C	Require replacement of
Attaching hardware not		hardware.
	. A	Require repair or replacement of hardware.
Connector broken Connector (Weatherpack	. A	Require repair or replacement.
type) leaking Connector melted		Require repair or replacement (1) Require repair or replacement.
Connector missing Missing Open Resistance out of	. C	Require replacement. Require replacement. Require replacement.
specification	. A	<ul><li>Require repair or replacement.</li><li>Require replacement.</li><li>Require repair or replacement.</li></ul>
performance	. A	(1) Require repair or replacement.
Terminal burned, not affecting performance . Terminal corroded,	2	. Suggest repair or replacement.
· · · · · · · · · · · · · · · · · · ·	A	. Require repair or replacement.
· · · · · · · · · · · · · · · · · · ·	2	. Suggest repair or replacement.
performance		. Require repair or replacement.
Terminal loose, not affecting performance .	1	. Suggest repair or replacement.
(1) - Determine cause and replacement of part		ect prior to repair or

# COOLING FAN MOTOR SENSORS AND SWITCHES

### COOLING FAN MOTOR SENSOR AND SWITCH INSPECTION

Condition		Code	Procedure
Attaching hard missing		С	Require replacement of hardware.
Attaching hard damaged			Require repair or replacement of hardware.
Attaching hard threads strip (threads miss	ped	А	Require repair or replacement of hardware.
Connector brok			Require repair or replacement (1) Require repair or replacement.
			Require replacement(2) Require repair or

Inoperative	В	replacement(3) Require repair or replacement. Further inspection required.		
Leaking	A C			
specification Terminal broken Terminal burned, affecting	B A	<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>		
performance	А	(1) Require repair or replacement.		
Terminal burned, not affecting performance Terminal corroded,	2	Suggest repair or replacement.		
affecting performance Terminal corroded, not	А	Require repair or replacement.		
affecting performance Terminal loose, affecting	2	Suggest repair or replacement.		
performance Terminal loose, not	В	Require repair or replacement.		
affecting performance Threads damaged	1 A	<ul><li> Suggest repair or replacement.</li><li> Require repair or replacement.</li></ul>		
Threads stripped (threads missing)	А	Require replacement.		
Wire lead conductors exposed	В			
Wire lead corroded	Α	Require repair or replacement.		
Wire lead open	Α	Require repair or replacement.		
Wire lead shorted	A	Require repair or replacement.		
<ol> <li>(1) - Determine cause and correct prior to repair or replacement of part.</li> <li>(2) - Determine source of contamination, such as engine coolant, fuel, metal particles, or water. Require repair or replacement.</li> <li>(3) - Inoperative includes intermittent operation or out of OEM specification. Some components may be serviceable; check for accepted cleaning procedure.</li> </ol>				
check for accepted CI	ean	ing procedure.		

# COOLING FAN MOTOR SWITCHES

See COOLING FAN MOTOR SENSORS AND SWITCHES.

## COOLING FAN MOTORS

COOLING FAN MOTOR INSPECTION

Condition	Code	Procedure
Attaching hardware broken	. A	Require repair or replacement of hardware.
Attaching hardware missing	. С	Require replacement of hardware.
Attaching hardware not functioning	. A	Require repair or replacement of hardware.
Connector broken Connector (Weatherpack	. A	. Require repair or replacement.
· ±	. A	. Require repair or replacement.

Connector melted	A	(1) Require repair or replacement.
Connector missing  Hydraulic fan motor	С	Require replacement.
leaking	A A	<pre>. Require repair or replacement (2) Require replacement.</pre>
Missing	C 2	Require replacement. Suggest replacement.
application Terminal broken	B A	<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>
Terminal burned, affecting performance	A	(1) Require repair or replacement.
Terminal burned, not affecting performance Terminal corroded,	2	. Suggest repair or replacement.
affecting performance Terminal corroded, not	A	. Require repair or replacement.
affecting performance Terminal loose, affecting	2	. Suggest repair or replacement.
performance Terminal loose, not	В	. Require repair or replacement.
affecting performance Vibration	1	. Suggest repair or replacement Suggest replacement.
exposed	B A A	<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>
Wire lead shorted	Α	. Require repair or replacement.
(1) - Determine cause and c replacement of part.		
(2) - Check fan motor/contr intermittent operatio		. Inoperative includes r out of OEM specification.

# **CRANKSHAFT POSITION SENSORS**

### CRANKSHAFT POSITION SENSOR INSPECTION

Condition	Code	Procedure
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 Connector (Weatherpack	. A	Require repair or replacement.
type) leaking Connector melted		1 1
Connector missing Contaminated Inoperative	. A	Require replacement Require repair or replacement Require repair or replacement. Further inspection required.
Leaking	. A	Require repair or replacement.

Missing	С	Require replacement.
	B A	<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>
performance	A	(1) Require repair or replacement.
Terminal burned, not		-
affecting performance Terminal corroded,	2	Suggest repair or replacement.
affecting performance Terminal corroded, not	A	Require repair or replacement.
affecting performance Terminal loose, affecting	2	Suggest repair or replacement.
performance Terminal loose, not	В	Require repair or replacement.
affecting performance	1	Suggest repair or replacement.
Threads damaged	Ā	
Threads stripped (threads		Require repair of repracement.
missing)	Α	Require replacement.
Wire lead conductors		noquire repracement.
exposed	В	Require repair or replacement.
Wire lead corroded	A	
Wire lead open	Α	
Wire lead shorted		± , ± ,
(1) - Determine cause and creplacement of part.	orr	rect prior to repair or
(2) - Determine source of c	ont	tamination, such as engine
·		rticles, or water. Require
repair or replacement		, 01
(3) - Inoperative includes	int	termittent operation or out of OEM ponents may be serviceable; check
for accepted cleaning	pr	rocedure.

### **DECEL VALVES**

See ASPIRATOR, CHECK AND DECEL VALVES.

### **DEFLECTORS**

See SHROUDS, BAFFLES AND DEFLECTORS.

### **DIP STICKS AND TUBES**

#### DIP STICK AND TUBE INSPECTION

Condition	Code	Procedure
	. 2	Require replacement Suggest repair or replacement.
		Require repair or replacement.
performance Leaking, affecting performance (for example		Suggest repair or replacement.
<u> </u>	•	Require repair or replacement.
performance	. 2 C	Suggest repair or replacement.  Require replacement.

### DIP STICK TUBES

See DIP STICKS AND TUBES.

# DISTRIBUTOR ADVANCES AND RETARDERS (MECHANICAL AND VACUUM)

DISTRIBUTOR ADVANCE AND RETARDER (MECHANICAL AND VACUUM) INSPECTION

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.
		Require repair or replacement. (1) Require repair or replacement.
(1) - Inoperative include	s inte	ermittent operation.

### DISTRIBUTOR BOOTS AND SHIELDS

DISTRIBUTOR BOOT AND SHIELD INSPECTION

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.
Deteriorated Leaking Missing Torn	. A	Require replacement Require replacement.

### **DISTRIBUTOR CAPS**

DISTRIBUTOR CAP INSPECTION

Condition	Code		Procedure
Application incorrect Arcing			
Attaching hardware broken	А	Require	repair or replacement

Attaching hardware missing	C Require replacement of hardware.
Attaching hardware not functioning	A Require repair or replacement of hardware.
Burned Carbon button missing Carbon button worn, affecting performance Carbon button worn, not affecting performance Carbon-tracked Cracked Loose Terminal broken Terminal burned, affecting performance	A Require replacement. A Require replacement.
	A Require replacement.
	A (1) Require repair or replacement.
	2 Suggest repair or replacement.
Terminal corroded, affecting performance Terminal corroded, not	A Require repair or replacement.
affecting performance Terminal eroded, affecting	2 Suggest repair or replacement.
performance	A Require repair or replacement.
J 1	No service suggested or required.
Terminal loose, affecting performance Terminal loose, not	B Require repair or replacement.
	1 Suggest repair or replacement.
(1) - Determine cause and creplacement of part.	correct prior to repair or

## DISTRIBUTOR RETARDERS (MECHANICAL AND VACUUM)

See DISTRIBUTOR ADVANCES AND RETARDERS (MECHANICAL AND VACUUM).

### **DISTRIBUTOR ROTORS**

DISTRIBUTOR ROTOR INSPECTION

Condition	Code	Procedure
Application incorrect Attaching hardware	. В	Require replacement.
2	. 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.
Carbon-tracked Contact burned Corroded	. A	± ±

Eroded		 1	Suggest replaceme	ent.
Loose		 Α	Require repair or replaceme	ent.
Out of	specification	 В	Require replacement	ent.

# DISTRIBUTOR SHIELDS

See DISTRIBUTOR BOOTS AND SHIELDS.

# DISTRIBUTORS

### DISTRIBUTOR INSPECTION

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.
Bushings worn, affecting performance	. A	Require repair or replacement.
Bushings worn, not affecting performance . Cam lobes worn, affecting		Suggest repair or replacement.
performance		Require repair or replacement.
affecting performance . Gear broken Gear worn, affecting		<ul><li> Suggest repair or replacement.</li><li> Require repair or replacement.</li></ul>
performance	. A	Require replacement.
performance		No service suggested or required.
Integrated pickup triggering device loose Integrated pickup	. A	Require repair or replacement.
triggering device magnetism incorrect		
Leaking oil internally . Noisy Pickup triggering device		<ul><li>Require repair or replacement.</li><li>Suggest repair or replacement.</li></ul>
(reluctor) broken Pickup triggering device	. A	Require repair or replacement.
(reluctor) loose  Pickup triggering device	. A	Require repair or replacement.
(reluctor) weak Reluctor (pickup	. A	Require repair or replacement.
triggering device) broken	. A	Require repair or replacement.
triggering device) loose Reluctor (pickup triggering device)	. A	Require repair or replacement.
weak		Require repair or replacement.
Shaft bent		Require replacement Require repair or replacement.

Thrust washer missing	С	 Require repair or replacement.
Thrust washer worn,		
affecting performance	Α	 Require repair or replacement.
Thrust washer worn, not		
affecting performance	1	 Suggest repair or replacement.

## EARLY FUEL EVAPORATION VALVES (HEAT RISER ASSEMBLIES)

EARLY FUEL EVAPORATION VALVE (HEAT RISER ASSEMBLY) INSPECTION

Condition	Code	Procedure
Broken	. A	. Require replacement of affected parts.
Diaphragm inoperative	. A	(1) Further inspection required.
Leaking	. 2	<ul><li>Require repair or replacement.</li><li>Suggest repair or replacement.</li><li>Require replacement of affected</li></ul>
Spring broken	. В	parts Require replacement of spring(s).
Spring inoperative	. A	(2) Require replacement of spring(s).
OEM specification. separate from the hoof the inoperative diaphragm is part oheat riser.	If the eat ri diaphi f the	ermittent operation or out of e inoperative diaphragm is iser, then require replacement ragm. If the inoperative heat riser, then replace the ermittent operation or out of OEM

## **EGR COOLERS**

See EGR PLATES AND COOLERS.

#### EGR EXHAUST MANIFOLD PASSAGES

See EGR INTAKE AND EXHAUST MANIFOLD PASSAGES.

#### EGR INTAKE AND EXHAUST MANIFOLD PASSAGES

EGR INTAKE AND EXHAUST MANIFOLD PASSAGE INSPECTION

Condition	Code	Procedure
Leaking	. A	 Require repair or replacement.
	. A	 Require repair or replacement.

#### EGR PLATES AND COOLERS

EGR PLATE AND COOLER INSPECTION

Condition	1	Code				Procedure
Leaking		А	 Require	repair	or	replacement.

Missing	С	 	Requi	re	replacement.
Restricted, affecting					
performance	A	 Require	repair	or	replacement.

#### **ELECTRONIC SPARK CONTROL MODULES**

#### ELECTRONIC SPARK CONTROL MODULE INSPECTION

Condition	Code	Procedure
Application incorrect Attaching hardware	. В	Require replacement.
missing	. C	Require replacement of hardware.
Attaching hardware threads damaged	. A	Require repair or replacement of hardware.
Attaching hardware threads stripped	7	
(threads missing)	. A	Require repair or replacement of hardware.
Connector broken Connector (Weatherpack	. A	Require repair or replacement.
type) leaking Connector melted	. A	Require repair or replacement. (1) Require repair or replacement.
Connector missing Contaminated	. A	
Leaking Malfunctioning		Require repair or replacement (3) Require repair or replacement.
Missing  Terminal broken  Terminal burned, affectin	. A	Require replacement. Require replacement.
performance	-	(1) Require repair or replacement.
Terminal burned, not affecting performance . Terminal corroded,	. 2	Suggest repair or replacement.
	. A	Require repair or replacement.
	. 2	Suggest repair or replacement.
performance Terminal loose, not		Require repair or replacement.
affecting performance .	. 1	Suggest repair or replacement.
Threads damaged Threads stripped (threads		Require repair or replacement.
missing)		Require replacement.
exposed		Require repair or replacement.
Wire lead corroded		Require repair or replacement.
Wire lead open Wire lead shorted	. A	<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>
(1) - Determine cause and		ect prior to repair or

- replacement of part.

  (2) Determine source of contamination, such as engine coolant, fuel, metal particles, or water. Require repair or replacement of source.

  (3) - Includes inoperative, intermittent operation, failure to

## **ELECTRONIC TRANSMISSION CONTROL DEVICES**

#### ELECTRONIC TRANSMISSION CONTROL DEVICE INSPECTION

Condition	Code	Procedure
Attaching hardware missing	. C	Require replacement of
Attaching hardware		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 Connector (Weatherpack	. A	Require repair or replacement.
type) leaking	. A	Require repair or replacement.
Connector melted		(1) Require repair or replacement.
Connector missing	. C	Require replacement.
Contaminated	. A	(2) Require repair or replacement.
Leaking		Require repair or replacement.
Malfunctioning	. A	(3) Require repair or
Migging	C	replacement.
Missing	. C	Require replacement.
specification	. В	Require repair or replacement.
Restricted, affecting		1 1
performance		Require repair or replacement.
Terminal broken		Require repair or replacement.
Terminal burned, affectin		(1) Doguine repair or
performance	. A	(1) Require repair or replacement.
Terminal burned, not		repracement.
	. 2	Suggest repair or replacement.
	. A	Require repair or replacement.
	. 2	Suggest repair or replacement.
performance		Require repair or replacement.
Terminal loose, not	1	Comment was in an armine
affecting performance . Threads damaged		<ul><li> Suggest repair or replacement.</li><li> Require repair or replacement.</li></ul>
Threads stripped (threads		
missing)	. A	Require replacement.
exposed		
Wire lead corroded		
Wire lead open		
Wire lead shorted	. A	Require repair or replacement.
(1) - Determine cause and replacement of part		ect prior to repair or

- replacement of part.
  (2) Determine source of contamination, such as engine coolant, fuel, metal particles, or water. Require repair or replacement.

(3) - Includes inoperative, intermittent operation, failure to perform all functions, or out of OEM specification.

#### ELECTRONIC TRANSMISSION FEEDBACK DEVICES

#### ELECTRONIC TRANSMISSION FEEDBACK DEVICE INSPECTION

Condition	Code	Procedure
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 Connector (Weatherpack	. A	
type) leaking	. A	Require repair or replacement.
Connector melted		(1) Require repair or replacement.
Connector missing	. C	Require replacement.
Contaminated	. A	(2) Require repair or replacement.
Inoperative	. В	(3) Require repair or replacement. Further
		inspection required.
Leaking		Require repair or replacement.
Missing	. C	Require replacement.
specification Restricted, affecting	. В	Require repair or replacement.
performance	. A	Require repair or replacement.
Terminal broken Terminal burned, affectin		Require repair or replacement.
performance		(1) Require repair or replacement.
Terminal burned, not	0	Q.,
affecting performance . Terminal corroded,	. 2	Suggest repair or replacement.
affecting performance . Terminal corroded, not	. A	Require repair or replacement.
affecting performance . Terminal loose, affecting		Suggest repair or replacement.
performance Terminal loose, not		Require repair or replacement.
affecting performance .	1	Suggest repair or replacement.
Threads damaged	. A	
Threads stripped (threads	_	
missing)		Require replacement.
exposed	. B	Require repair or replacement.
Wire lead corroded		Require repair or replacement.
Wire lead open		
Wire lead shorted	. A	Require repair or replacement.
(1) - Determine cause and		ect prior to repair or

- replacement of part.
  (2) Determine source of contamination, such as engine coolant,

- fuel, metal particles, or water. Require repair or
- replacement.

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

#### ENGINE COOLANT TEMPERATURE SENSORS

#### ENGINE COOLANT TEMPERATURE SENSOR INSPECTION

Condition	Code	Procedure
Attaching hardware missing	. C	Require replacement of hardware.
Attaching hardware threads damaged	. A	
Attaching hardware threads stripped	71	
(threads missing)  Connector broken		<ul><li> Require repair or replacement of hardware.</li><li> Require repair or replacement.</li></ul>
Connector (Weatherpack type) leaking		Require repair or replacement.
Connector melted		
Connector missing Contaminated		Require replacement(2) Require repair or
Inoperative	. В	replacement(3) Require repair or replacement. Further
Leaking	. A	inspection required Require repair or replacement.
Missing		
specification	. В	Require repair or replacement.
performance Terminal broken Terminal burned, affectin	. A	<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>
performance		(1) Require repair or replacement.
Terminal burned, not affecting performance . Terminal corroded,	. 2	Suggest repair or replacement.
affecting performance . Terminal corroded, not	. A	Require repair or replacement.
affecting performance . Terminal loose, affecting		Suggest repair or replacement.
performance		Require repair or replacement.
affecting performance . Threads damaged Threads stripped (threads	. A	<ul><li> Suggest repair or replacement.</li><li> Require repair or replacement.</li></ul>
missing)		Require replacement.
exposed	. A	<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>

- (1) Determine cause and correct prior to repair or replacement of part.
- (2) Determine source of contamination, such as engine coolant, fuel, metal particles, or water. Require repair or replacement.
- (3) Inoperative includes intermittent operation or out of OEM specification. Some components may be serviceable; check for accepted cleaning procedure.

#### **ENGINE COOLING SYSTEMS**

NOTE: Overheating, poor

Overheating, poor engine performance, and insufficient cabin heat can be affected by, but are not limited to, all of the components in the engine cooling system.

#### ENGINE COVERS (OIL PAN, VALVE COVER, TIMING COVER)

ENGINE COVER (OIL PAN, VALVE COVER, TIMING COVER) INSPECTION

Condition	Code		Procedure
Attaching hardware incorrect	. B	Require	replacement.
Attaching hardware loose	. A	Require repair or	replacement.
missing	. 2	Suggest repair or	replacement.
performance Bent, not affecting	. A	Require repair or	replacement.
performance		No service	suggested or required.
Cracked (not leaking) Leaking externally Leaking internally, causing fluid			replacement.
contamination Missing Restricted passage Threads damaged	. C . A		replacement. replacement.

#### **ENGINE OIL**

#### ENGINE OIL INSPECTION

Condition	Code		Procedure
Contaminated	. A		(1) Require replacement of oil and filter.
Level high	. В	• • •	Determine source of incorrect level and require repair.
Level low	. В	• • •	Determine source of incorrect level and require repair.
Maintenance intervals	. 3	• • •	Suggest replacement to comply with vehicle's OEM recommended service intervals.

(1) - Determine source of contamination, such as engine coolant, fuel, metal particles, or water when changing oil. Require

#### **ENGINE OIL CANISTERS**

See ENGINE OIL FILTERS AND CANISTERS.

## **ENGINE OIL COOLERS (EXTERNAL)**

ENGINE OIL COOLER (EXTERNAL) INSPECTION

Condition	Code	Procedure
Air flow restriction Attaching hardware	. A	Require repair or replacement.
2	. A	Require repair or replacement of hardware.
Attaching hardware	0	Dami'na wanlaaanat af
missing		Require replacement of hardware.
Attaching hardware not		
functioning	. A	Require repair or replacement of hardware.
Bypassed	. A	Require repair or replacement.
Connection leaking		
Corroded		Suggest repair or replacement.
Fins damaged, affecting		
		Require repair or replacement.
Fins damaged, not		
affecting performance .	. 2	Suggest repair or replacement.
Fluid flow restrictions		
Internal restrictions,		
affecting performance .	. A	Require repair or replacement.
Leaking		Require repair or replacement.
Missing		Require replacement.
Threads damaged		Require repair or replacement.
Threads stripped (threads		
missing)		Require replacement.

#### ENGINE OIL DRAIN PLUGS AND GASKETS

ENGINE OIL DRAIN PLUG AND GASKET INSPECTION

Condition	Code	Procedure
Missing	. C	Require repair or replacement Require replacement(1) Require repair or replacement.

(1) - Some OEMs require replacement of drain plug gasket when removing drain plug. Inspect threads in oil pan for damage.

## **ENGINE OIL FILTERS AND CANISTERS**

ENGINE OIL FILTER AND CANISTER INSPECTION

Conditio	on	Code			Procedure
Bulged		. A	 (1)	Require	replacement.

		Further inspection required.
Canister attaching hardware broken	A	Require repair or replacement of hardware.
Canister attaching		
	A	Require repair.
Canister attaching hardware missing Canister attaching	С	Require replacement.
hardware not		
functioning	A	Require repair or replacement of hardware.
Center tube collapsed	A	(2) Require replacement. Further inspection required.
Contaminated	A	(3) Require replacement of oil and filter.
Dented	2	(4) Suggest replacement. Further inspection required.
Leaking		<u> </u>
Maintenance intervals	3	Suggest replacement to comply with vehicle's OEM recommended service intervals.

Einthon inapostion required

- (1) Inspect pressure relief valve.
- (2) Inspect bypass.
- (3) Determine cause of contamination, such as engine coolant, fuel, metal particles, or water when changing oil. Require repair or replacement.
- (4) Determine cause, such as broken motor mount.

#### **ENGINE OIL GASKETS**

See ENGINE OIL DRAIN PLUGS AND GASKETS.

#### ENGINE OIL PRESSURE GAUGES (MECHANICAL)

ENGINE OIL PRESSURE GAUGE (MECHANICAL) INSPECTION

Condition	Code	Procedure
Indicates out of range	B (1) Further	inspection required.
Inoperative	A (2) Further	_
	A Require repair or re 2 Suggest repair or re	placement.
pressure, or temper (2) - Gauge may indicate pressure, or temper Inoperative include	problem with contaminated oil, rature, or problem with gauge. problem with contaminated oil, rature, or problem with gauge. es intermittent operation, out out of range. Further inspection cause.	level,

## **EVAPORATIVE EMISSION (EVAP) CANISTER FILTERS**

EVAPORATIVE EMISSION (EVAP) CANISTER FILTER INSPECTION

Condition Code Procedure

Attaching hardware broken	A	Require repair or replacement of hardware.
Attaching hardware missing	С	Require replacement of hardware.
Attaching hardware not functioning	А	Require repair or replacement of hardware.
Maintenance interval	3	Suggest replacement to comply with OEM recommended service interval.
Missing	С	Require replacement.
performance	A	Require replacement.
performance Water-contaminated		

# EVAPORATIVE EMISSION (EVAP) CANISTER PURGE DEVICES

# EVAPORATIVE EMISSION (EVAP) CANISTER PURGE DEVICE INSPECTION

Condition	Code	Procedure
Attaching hardware missing	. C	Require replacement of hardware.
Attaching hardware threads damaged	. A	Require repair or replacement of hardware.
Attaching hardware threads stripped	7	
(threads missing)	. A	of hardware.
Connector broken Connector (Weatherpack	. A	Require repair or replacement.
type) leaking Connector melted		Require repair or replacement. (1) Require repair or replacement.
Connector missing Contaminated		Require replacement.
Inoperative	. В	
Leaking		
specification	. В	Require repair or replacement.
performance Terminal broken Terminal burned, affectin	. A	<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>
performance		(1) Require repair or replacement.
Terminal burned, not affecting performance . Terminal corroded,	. 2	_
	. A	Require repair or replacement.
	. 2	Suggest repair or replacement.

Terminal loose, affecting						
performance	В		Require	repair	or	replacement.
Terminal loose, not			1	-		±
affecting performance	1		Suggest	repair	or	replacement.
Threads damaged						replacement.
Threads stripped (threads			1	-		±
missing)	A			. Requi	ire	replacement.
Wire lead conductors				1		±
exposed	В		Require	repair	or	replacement.
Wire lead corroded			_	_		replacement.
Wire lead open	Α		Require	repair	or	replacement.
Wire lead shorted			Require	repair	or	replacement.
			_	_		_
(1) - Determine cause and c	orre	ect p	prior to	repair	or	
replacement of part.						
(2) - Determine source of c	onta	amina	ation, su	uch as e	eng:	ine coolant,
fuel, metal particles	, 01	r wat	ter. Requ	ire rep	pain	r or
replacement.						
(3) - Inoperative includes	inte	ermit	tent ope	eration	or	out of
OEM specification. So	me d	compo	onents ma	ay be se	erv:	iceable;
check for accepted cl	eani	ing p	procedure	∋.		

## **EVAPORATIVE EMISSION (EVAP) CANISTERS**

EVAPORATIVE EMISSION (EVAP) CANISTER INSPECTION

Condition	Code	Procedure
Inoperative	. A	(1) Require repair or replacement.
Leaking	. C	Require replacement.
(1) - Inoperative include OEM specification.	s intermittent ope	eration or out of

# EVAPORATIVE EMISSION (EVAP) FEEDBACK DEVICES

EVAPORATIVE EMISSION (EVAP) FEEDBACK DEVICE INSPECTION

Condition	Code	Procedure
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
Connector broken Connector (Weatherpack	. A	of hardware Require repair or replacement.
type) leaking		Require repair or replacement. (1) Require repair or replacement.
		Require replacement.  (2) Require repair or replacement.

Inoperative	В	(3) Require repair or replacement. Further inspection required.
Leaking	A	Require repair or replacement.
Missing Resistance out of	С	Require replacement.
specification Restricted, affecting	В	Require repair or replacement.
performance	А	Require repair or replacement.
Terminal broken  Terminal burned, affecting	A	
performance	A	(1) Require repair or replacement.
	2	Suggest repair or replacement.
Terminal corroded,	71	Doguino monoin on monlecement
affecting performance Terminal corroded, not	А	Require repair or replacement.
affecting performance Terminal loose, affecting	2	Suggest repair or replacement.
performance Terminal loose, not	В	Require repair or replacement.
affecting performance	1	
Threads damaged Threads stripped (threads	A	Require repair or replacement.
missing)	Α	Require replacement.
exposed	В	Require repair or replacement.
Wire lead corroded	Α	
Wire lead open	Α	Require repair or replacement.
Wire lead shorted	Α	Require repair or replacement.
(1) - Determine cause and creplacement of part.	orr	ect prior to repair or
(2) - Determine source of confuel, metal particles		camination, such as engine coolant, or water. Require repair or
replacement. (3) - Inoperative includes	int	termittent operation or out of
	me	components may be serviceable;

## **EXHAUST GAS RECIRCULATION DEVICES**

#### EXHAUST GAS RECIRCULATION DEVICE INSPECTION

Condition	Code	Procedure
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 Connector (Weatherpack	. A	Require repair or replacement.
type) leaking		Require repair or replacement (1) Require repair or replacement.

Connector missing Contaminated	C A	(2) Require repair or
Inoperative	В	replacement(3) Require repair or replacement. Further inspection required.
Leaking	А	Require repair or replacement.
Missing	С	Require replacement.
specification	В	Require repair or replacement.
Restricted, affecting performance	А	Require repair or replacement.
Restricted, not affecting	7.1	
performance Terminal broken	1 A	<ul><li> Suggest repair or replacement.</li><li> Require repair or replacement.</li></ul>
Terminal burned, affecting	А	Require repair or repracement.
performance	A	(1) Require repair or replacement.
Terminal burned, not		repracement.
affecting performance Terminal corroded,	2	Suggest repair or replacement.
affecting performance	А	Require repair or replacement.
Terminal corroded, not	2	
affecting performance Terminal loose, affecting	2	Suggest repair or replacement.
performance	В	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)	А	Require replacement.
Wire lead conductors		
exposed	B A	<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>
Wire lead open	A	<ul><li> Require repair or replacement.</li><li> Require repair or replacement.</li></ul>
Wire lead shorted	A	Require repair or replacement.
(1) - Determine cause and c	'Orr	ect prior to repair or
replacement of part.	,OII,	ect prior to repair or
(2) - Determine source of c	ont	amination, such as engine coolant,
fuel, metal particles replacement.	, 0	r water. Require repair or
(3) - Inoperative includes		ermittent operation or out of
OEM specification. So check for accepted cl		components may be serviceable;
Check for accepted cr	.eail.	ing procedure.

# EXHAUST GAS RECIRCULATION FEEDBACK DEVICES

#### EXHAUST GAS RECIRCULATION FEEDBACK DEVICE INSPECTION

Condition	Code	Procedure
Attaching hardware missing	C .	Require replacement of hardware.
3	A .	Require repair or replacement of hardware.
Attaching hardware threads stripped (threads missing)	A .	Require repair or replacement of hardware.

Connector broken Connector (Weatherpack	A	Require repair or replacement.			
type) leaking	A A	Require repair or replacement (1) Require repair or replacement.			
Connector missing Contaminated	C A				
Inoperative	В				
Leaking	A C	Require repair or replacement Require replacement.			
Resistance out of specification	В	Require repair or replacement.			
performance	A	Require repair or replacement.			
performance	1	Suggest repair or replacement.			
Terminal broken Terminal burned, affecting	A	Require repair or replacement.			
performance	A	(1) Require repair or replacement.			
Terminal burned, not affecting performance Terminal corroded,	2	Suggest repair or replacement.			
affecting performance Terminal corroded, not	A	Require repair or replacement.			
affecting performance Terminal loose, affecting	2	Suggest repair or replacement.			
performance	В	Require repair or replacement.			
affecting performance	1	Suggest repair or replacement.			
Threads damaged Threads stripped (threads	A	Require repair or replacement.			
missing)	A	Require replacement.			
exposed	В	Require repair or replacement.			
Wire lead corroded	A	Require repair or replacement.			
Wire lead open	A	Require repair or replacement.			
Wire lead shorted	A	Require repair or replacement.			
(1) - Determine cause and creplacement of part.	orr	ect prior to repair or			
(2) - Determine to real contamination, such as engine coolant,					

- (2) Determine source of contamination, such as engine coolant, fuel, metal particles, or water. Require repair or replacement.
- replacement.

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

#### **EXPANSION PLUGS**

See CASTING CORE PLUGS AND EXPANSION PLUGS.

## FAN CONTROL SENSORS

FAN CONTROL SENSOR INSPECTION

Condition Code Procedure

missing	С	Require replacement of hardware.
Attaching hardware threads damaged	A	Require repair or replacement
Attaching hardware		of hardware.
threads stripped (threads missing)	A	Require repair or replacement of hardware.
Connector broken Connector (Weatherpack	A	Require repair or replacement.
type) leaking Connector melted	A A	<pre> Require repair or replacement(1) Require repair or</pre>
Connector missing Contaminated	C A	Require replacement(2) Require repair or replacement.
Inoperative	В	(3) Require repair or replacement. Further
Leaking	А	<pre>inspection required Require repair or replacement.</pre>
Missing	С	Require replacement.
specification	В	Require repair or replacement.
performance	Α	Require repair or replacement.
Terminal broken Terminal burned, affecting	Α	Require repair or replacement.
performance  Terminal burned, not	A	(1) Require repair or replacement.
affecting performance Terminal corroded,	2	Suggest repair or replacement.
affecting performance Terminal corroded, not	Α	Require repair or replacement.
affecting performance Terminal loose, affecting	2	Suggest repair or replacement.
performance Terminal loose, not	В	Require repair or replacement.
affecting performance Threads damaged	1 A	<ul><li> Suggest repair or replacement.</li><li> Require repair or replacement.</li></ul>
Threads stripped (threads	А	Require repair or repracement.
missing)	A	Require replacement.
exposed	В	Require repair or replacement.
Wire lead corroded		
Wire lead open		
Wire lead shorted	A	Require repair or replacement.
(1) - Determine cause and c replacement of part.		
(2) - Determine source of c coolant, fuel, metal		amination, such as engine ticles, or water. Require
repair or replacement (3) - Inoperative includes OEM specification. So	inte me c	ermittent operation or out of components may be serviceable;
check for accepted cl	eam]	ing procedure.

Condition	Code	Procedure
Contaminated	. B (1) Require	repair or placement.
Fuel incorrect	. B (2) Require f	_
(1) - Determine of source replacement.	ce of contamination. Require re	pair or
(2) - If a fuel other tha	an specification fuel is presented service is to flush and fill	

## FUEL ACCUMULATORS AND DAMPERS

#### FUEL ACCUMULATOR AND DAMPER INSPECTION

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.
	. A	Require repair or replacement (1) Require replacement Require replacement.
(1) - Inoperative include OEM specification.	s inte	ermittent operation or out of

## FUEL AND COLD START INJECTORS

NOTE: You are not required to replace injectors in sets. However, you may suggest replacement of all injectors for preventive maintenance.

#### FUEL AND COLD START INJECTOR INSPECTION

Condition	Code	Procedure
	. В	Require replacement.
Attaching hardware broken	. A	Require repair or replacement of hardware.
Attaching hardware	. С	Require replacement of
Attaching hardware not	•	hardware.
2	. A	Require repair or replacement of hardware.
Connector broken Connector (Weatherpack	. A	Require repair or replacement.
type) leaking		Require repair or replacement (1) Require repair or
Connector missing	. C	replacement Require replacement.

Flow restricted						
Inoperative	В			(2) R	equ.	ire repair or
				repl	acer	ment. Further
				insp	ect:	ion required.
Leaking	Α	Re	quire			
Resistance out of			-	-		-
specification	В			. Requ	ire	replacement.
Terminal broken						replacement.
Terminal burned, affecting			1.	-1 -	-	1
performance	Α			(1) R	ean	ire repair or
porrormanos				( - ) - 1		replacement.
Terminal burned, not						repracement.
· · · · · · · · · · · · · · · · · · ·	2	S11	innest	renair	$\circ$ r	replacement.
Terminal corroded,	_	50	iggebe	repair	ΟŢ	repracement.
affecting performance	Δ	Re	muire	renair	$\circ$ r	renlacement
Terminal corroded, not	11	•• ••	.quiic	repair	ΟŢ	repracement.
affecting performance	2	S11	innest	renair	$\circ$ r	renlacement
Terminal loose, affecting	_	50	iggebe	repair	ΟŢ	repracement.
performance	B	Po	ani ra	rensir	or	renlacement
Terminal loose, not	ם	•• 1/6	quire	reparr	OI	repracement.
affecting performance	1	Cii	aaost	ropoir	or	ronlagomont
Threads damaged	А	Ke	quire	reparr	OI	replacement.
Threads stripped (threads	71			D =		
missing)	А		• • • • •	. Requ	ire	replacement.
(1) Determine						
(1) - Determine cause and c	orr	ct pri	or to	repair	or	
replacement of part.						
(2) - Inoperative includes						
OEM specification. So	me (	ompone	ents ma	ay be s	erv	iceable.

## **FUEL DAMPERS**

See FUEL ACCUMULATORS AND DAMPERS.

## FUEL DELIVERY CHECK VALVES

FUEL DELIVERY CHECK VALVE INSPECTION

Condition	Code	Procedure
Leaking externally	. A (1) Requir . A Require repair o . C Require	r replacement.
down)	. A Require repair o	r replacement.
(1) - Inoperative include specification.	s intermittent operation o	c out of OEM

# FUEL DISTRIBUTORS (BOSCH CIS)

FUEL DISTRIBUTOR (BOSCH CIS) INSPECTION

Condition	(	Code				Procedure
Inoperative		А	 	repla	acer	ire repair or ment. Further ion required.
Leaking Out of specificati Restricted, affect	on			repair	or	replacement.

performance	 Α	 (2) Require repair or
		replacement. Further
		inspection required.

- (1) Inoperative includes intermittent operation.
- (2) Some components may be serviceable; check for accepted cleaning procedure.

#### FUEL FILLER NECKS AND RESTRICTORS

#### FUEL FILLER NECK AND RESTRICTOR INSPECTION

Condition	Code	Procedure
Attaching hardware broken	. A	Require repair or replacement of hardware.
-	. C	Require replacement of hardware.
Attaching hardware not functioning	. A	Require repair or replacement of hardware.
	. C	<ul><li>Require repair or replacement.</li><li>Suggest repair or replacement.</li></ul>

#### **FUEL FILTERS**

#### FUEL FILTER INSPECTION

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.
		Require repair or replacement Suggest replacement to comply with OEM recommended service interval.
Missing	. С	Require replacement.
•		Require replacement.
performance	. 1	

## **FUEL INJECTORS**

#### FUEL INJECTOR INSPECTION

Condition Code Procedure

missing	С	Require replacement of hardware.
Attaching hardware threads damaged	A	Require repair or replacement of hardware.
Attaching hardware threads stripped		or naraware.
(threads missing)	Α	Require repair or replacement of hardware.
Connector broken Connector (Weatherpack	A	. Require repair or replacement.
type) leaking Connector melted	A A	. Require repair or replacement (1) Require repair or replacement.
Connector missing Contaminated	C A	Require replacement (2) Require repair or
Inoperative	В	replacement(3) Require repair or replacement. Further
Leaking	A	inspection required. Require repair or replacement.
Missing	С	Require replacement.
Resistance out of	_	
specification	В	. Require repair or replacement.
Restricted, affecting performance	A	. Require repair or replacement.
performance	2	. Suggest repair or replacement.
Terminal broken	А	. Require repair or replacement.
Terminal burned, affecting performance	A	(1) Require repair or replacement.
Terminal burned, not affecting performance Terminal corroded,	2	. Suggest repair or replacement.
affecting performance Terminal corroded, not	A	. Require repair or replacement.
affecting performance Terminal loose, affecting	2	. Suggest repair or replacement.
performance	В	. Require repair or replacement.
affecting performance	1	
Threads damaged	А	. Require repair or replacement.
Threads stripped (threads missing)	А	Poguiro roplagoment
Wire lead conductors	А	Require replacement.
	В	. Require repair or replacement.
Wire lead corroded	Α	. Require repair or replacement.
Wire lead open		. Require repair or replacement.
Wire lead shorted	A	. Require repair or replacement.
(1) - Determine cause and c replacement of part.	orr	ect prior to repair or
(2) - Determine source of c		amination, such as engine coolant, r water. Require repair or
replacement.		
	me (	ermittent operation or out of components may be serviceable;
	caii.	Ting Procedure.

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.
Inoperative	. A	
Leaking Terminal broken Terminal burned, affectin	. A	Require repair or replacement.
performance		(2) Require repair or replacement.
Terminal burned, not affecting performance . Terminal corroded,	. 2	Suggest repair or replacement.
· · · · · · · · · · · · · · · · · · ·	. A	Require repair or replacement.
	. 2	Suggest repair or replacement.
performance Terminal loose, not		Require repair or replacement.
affecting performance . Wire lead conductors	. 1	Suggest repair or replacement.
exposed	. B	Require repair or replacement.
Wire lead corroded	. A	Require repair or replacement.
Wire lead open	. A	Require repair or replacement.
Wire lead shorted	. A	Require repair or replacement.
(1) - Inoperative include OEM specification.	s int	ermittent operation or out of
(2) - Determine cause and replacement of part		ect prior to repair or

## **FUEL PRESSURE REGULATORS**

## FUEL PRESSURE REGULATOR INSPECTION

Condition	Code			Procedure
Contaminated	2	 	replace	ment. Further
Inoperative	. В	 	-	<pre>ion required. ire repair or  replacement.</pre>
Leaking (internally or externally)	А	 Require	repair or	replacement.
specification Vapor bypass restricted		_	_	-

(1) - Some components may be serviceable; check for accepted cleaning procedure. Determine source of contamination. Require repair or replacement.

# FUEL PUMPS (IN-TANK AND EXTERNAL, ELECTRICAL OR MECHANICAL)

FUEL PUMP (IN-TANK AND EXTERNAL, ELECTRICAL OR MECHANICAL) INSPECTION

Condition	Code	Procedure
Attaching hardware broken	. A	Require repair or replacement
Attaching hardware		of hardware.
missing	. C	Require replacement of hardware.
Attaching hardware not functioning	. A	± ± ±
Connector broken Connector (Weatherpack	. A	of hardware. Require repair or replacement.
type) leaking	. A	Require repair or replacement.
Connector melted		
Connector missing	. C	Require replacement.
Contaminated	. A	(2) Require replacement.
Inoperative	. A	(3) Require repair or replacement.
Leaking externally	70	De malane and a language language
(includes pulsator) Leaking internally	. A	Require repair or replacement.
(includes pulsator)	. A	Require repair or replacement.
Noisy		Suggest repair or replacement.
Out of specification		Require repair or replacement.
Terminal broken		Require repair or replacement.
Terminal burned, affectin		
performance	. A	(1) Require repair or replacement.
Terminal burned, not		
	. 2	Suggest repair or replacement.
Terminal corroded,	_	
2 I	. A	Require repair or replacement.
Terminal corroded, not	0	Constant many by an array large many
affecting performance . Terminal loose, affecting	. 2	Suggest repair or replacement.
performance		Require repair or replacement.
Terminal loose, not	• •	Require repair or repracement.
affecting performance .	. 1	Suggest repair or replacement.
Threads damaged		Require repair or replacement.
Threads stripped (threads		
missing)	. A	Require replacement.
Wire lead conductors		
exposed		Require repair or replacement.
		Require repair or replacement.
Wire lead open	. A	
Wire lead shorted	. A	Require repair or replacement.
(1) - Determine cause and	corr	ect prior to repair or
replacement of part		TIT FIRST OF TOPALL OF
		amination. Require repair or
(3) - Inoperative include	s int	ermittent operation.

## **FUEL RAILS**

#### FUEL RAIL INSPECTION

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.
Contaminated	. A	Require repair or replacement.
(1) - Determine source of replacement.	cont	amination. Require repair or

## FUEL RESTRICTORS

See FUEL FILLER NECKS AND RESTRICTORS.

## **FUEL TANKS**

FUEL TANK INSPECTION

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.
	. A	Require repair or replacement. (1) Require repair. Require repair or replacement.
•	. В	Require replacement.
		No service suggested or required.
Leaking	. A	Require repair or replacement.
(1) - Determine source of replacement.	conta	amination. Require repair or

## GAS CAPS

GAS CAP INSPECTION

Condition	Code		Procedure
Application incorrect Fails to maintain proper	. В	 Require	replacement.
pressure	. C . A	 Require Require	replacement. replacement. replacement.
pressure relief) Seals missing			replacement. replacement.

#### **GASKETS**

#### GASKET INSPECTION

Condition	n	Code		Procedure
Leaking		. A	( ]	1) Require repair or replacement.

(1) - Require inspection of mating and sealing surface and repair or replace as necessary.

# GROMMETS (VALVE COVER)

GROMMET (VALVE COVER) INSPECTION

Conditio	n	Code		Procedure
Leaking		. 2	 (1)	Suggest repair or replacement.

(1) - Require inspection of mating and sealing surface and repair or replace as necessary.

#### HARMONIC DAMPERS

#### HARMONIC DAMPER INSPECTION

Condition	Code	Procedure
Application incorrect Attaching hardware	. В	Require replacement.
2	. A	Require repair or replacement of hardware.
Attaching hardware missing	. C	Require replacement of hardware.
Attaching hardware not	7\	Require repair or replacement
		of hardware.
Dented (fluid	. A	Require replacement.
		Require replacement. Require repair or replacement.
only)	. A	Require replacement.

Outer ring slipped out of		
position	Α	Require replacement.
Positioned incorrectly	Α	. Require repair or replacement.
Rubber damping material		
	1	Suggest replacement.
Seal surface worn, causing		
		. Require repair or replacement.
	Α	. Require repair or replacement.
Threads stripped (threads		
missing)	Α	Require replacement.

# **HEATER CONTROL VALVES**

#### HEATER CONTROL VALVE INSPECTION

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.
Coolant leak	. A	Require replacement Require repair or replacement (1) Require repair or replacement.
	. A	Require replacement Require repair or replacement.
(1) - Includes inoperative failure to perform a	•	± ,

## **HEATER CORES**

#### HEATER CORE INSPECTION

Condition	Code	Procedure
Air flow restriction Attaching hardware	. A	Require repair or replacement.
2	. 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.
Bypassed	. A	± ± ± ± ± ± ± ± ± ± ± ± ± ± ± ± ± ± ±
j ,	. A	Require repair or replacement.
- ·	. 2	Suggest repair or replacement.

affectir	ng performance	Α	 Require	repair or	replacement.
Leaking		Α	 Require	repair or	replacement.
Missing		С	 	. Require	replacement.

## HOSE AND TUBE COUPLERS, CONNECTORS AND CLAMPS

NOTE: When replacing fuel lines and hoses, replace with product that meets or exceeds OEM design specifications.

HOSE AND TUBE COUPLER, CONNECTOR AND CLAMP INSPECTION

Condition	Code	Procedure
		Require replacement. Require repair. Suggest replacement. Require replacement.
leak	. A	<pre> Require repair or replacement Require repair or replacement Require replacement.</pre>
-		Require replacement of safety clip.
Stripped	. A	Require replacement.

#### **HOSE CLAMPS**

See HOSE AND TUBE COUPLERS, CONNECTORS AND CLAMPS.

## **HOSE CONNECTORS**

See HOSE AND TUBE COUPLERS, CONNECTORS AND CLAMPS.

#### **HOSE COUPLERS**

See HOSE AND TUBE COUPLERS, CONNECTORS AND CLAMPS.

# HOSES AND TUBES (FUEL LINES, RADIATOR, VACUUM, BY PASS, HEATER, RECOVERY TANK AND OIL COOLERS)

HOSE AND TUBE (FUEL LINE, RADIATOR, VACUUM, BY PASS, HEATER, RECOVERY TANK AND OIL COOLER) INSPECTION

Condition	Code	Procedure
Application incorrect Connected incorrectly Corroded, not reusable Cracked	. 1 . A . 1 . 1	Require replacement. Require repair. Suggest replacement. Require replacement. Suggest repair or replacement. Suggest repair or replacement. Require replacement.
force, allowing hose to leak	. A	<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li><li>Suggest replacement.</li></ul>

Melted	1 C 1	Suggest repair or replacement Require replacement Suggest replacement.
fabric is visible Protective sleeves	Α	Require replacement.
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 Suggest repair or replacement.
Safety clip missing Spongy	_ C 1	
Stripped	A	Require replacement.
Swollen Threads damaged Threads stripped (threads	B A	Require replacement Require repair or replacement.
missing)	A 1	Require replacement Suggest repair or replacement.

## HOUSINGS

See THERMOSTATS AND HOUSINGS.

## IDLE AIR CONTROLS

IDLE AIR CONTROL INSPECTION

Condition	Code	Procedure
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)	7\	Require repair or replacement
-		of hardware.
Connector broken Connector (Weatherpack		
type) leaking Connector melted		Require repair or replacement(1) Require repair or replacement.
Connector missing Contaminated		
Inoperative	. В	(3) Require repair or replacement. Further inspection required.
Leaking		
specification	. В	Require repair or replacement.
Restricted, affecting performance Terminal broken	. A	<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>

Terminal burned, affecting performance	А			(1) F	Requ	ire repair or replacement.
Terminal burned, not affecting performance Terminal corroded,	2		Suggest	repair	or	replacement.
affecting performance Terminal corroded, not	A		Require	repair	or	replacement.
affecting performance Terminal loose, affecting	2		Suggest	repair	or	replacement.
performance Terminal loose, not	В		Require	repair	or	replacement.
affecting performance Threads damaged	1 A					replacement. replacement.
Threads stripped (threads missing)	A			. Requ	ire	replacement.
Wire lead conductors exposed						replacement. replacement.
Wire lead open Wire lead shorted	Α		Require	repair	or	replacement. replacement.
(1) - Determine cause and c		ect				1
replacement of part. (2) - Determine source of c fuel, metal particles						
replacement.  (3) - Inoperative includes  OEM specification. So  check for accepted cl	me o	comp	onents ma	ay be s		

# IDLE SPEED CONTROL ACTUATORS

#### IDLE SPEED CONTROL ACTUATOR INSPECTION

Condition	Code	Procedure
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
Connector broken Connector (Weatherpack	. A	of hardware Require repair or replacement.
type) leaking Connector melted		± ±
Connector missing Contaminated		
Inoperative	. В	
Leaking		Require repair or replacement.
specification	. B	Require repair or replacement.

Terminal broken  Terminal burned, affecting	Α	• •	Require	repair	or	replacement.
performance	A	• • •		(1) R	equ.	ire repair or replacement.
Terminal burned, not						_
	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	В	• •	Require	repair	or	replacement.
Terminal loose, not	_					
affecting performance				-		-
Threads damaged	А		Require	repair	or	replacement.
Threads stripped (threads						_
missing)	A			. Requ	ire	replacement.
Wire lead conductors						_
exposed	В		_	-		replacement.
Wire lead corroded	Α		_	-		replacement.
Wire lead open	Α		-	-		replacement.
Wire lead shorted	Α	• •	Require	repair	or	replacement.

- (1) Determine cause and correct prior to repair or replacement of part.
- (2) Determine source of contamination, such as engine coolant, fuel, metal particles, or water. Require repair or replacement.
- replacement.

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

#### **IGNITION BOOTS**

See

IGNITION WIRES, BOOTS, COIL TOWERS AND TERMINALS (SECONDARY).

#### **IGNITION COIL TOWERS**

See

IGNITION WIRES, BOOTS, COIL TOWERS AND TERMINALS (SECONDARY).

#### **IGNITION COILS**

#### IGNITION COIL INSPECTION

Condition	Code	Procedure
Arcing	. A	Require replacement.
	. A	Require repair or replacement of hardware.
Attaching hardware	C	Require replacement of
		hardware.
Attaching hardware not functioning	. A	Require repair or replacement of hardware.
Connector broken Connector (Weatherpack	. A	Require repair or replacement.
type) leaking		<pre> Require repair or replacement(1) Require repair or</pre>

Connector missing	С	replacement Require replacement.			
Corroded, affecting performance Corroded, not affecting	A	Require replacement.			
performance Distorted	2	Suggest replacement (2) No service suggested or required.			
Inoperative	A A B A	(3) Require replacement Require replacement Require replacement Require replacement (1) Require repair or			
-	A	replacement.			
Terminal burned, not affecting performance Terminal corroded,	2	Suggest repair or replacement.			
affecting performance	А	Require repair or replacement.			
Terminal corroded, not affecting performance Terminal loose, affecting	2	Suggest repair or replacement.			
performance	В	Require repair or replacement.			
affecting performance Wire lead conductors	1	Suggest repair or replacement.			
exposed	В				
Wire lead corroded	A				
Wire lead open Wire lead shorted	A A	<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>			
wire read shorted	А	Require repair or replacement.			
(1) - Determine cause and correct prior to repair or replacement of part.					
	res	sult of overheating; coil should			
(3) - Inoperative includes	inte	ermittent operation.			

# IGNITION CONTROL MODULES (ICM)

IGNITION CONTROL MODULE (ICM) INSPECTION

Condition	Code	Procedure
Application incorrect Attaching hardware	. В	Require replacement.
2	. C	Require replacement of hardware.
Attaching hardware threads damaged	. A	Require repair or replacement of hardware.
Attaching hardware threads stripped (threads missing)	. А	Require repair or replacement of hardware.
Code set (if applicable)	. A	(1) Further inspection required.
Connector broken Connector (Weatherpack	. A	Require repair or replacement.
• • •		Require repair or replacement (2) Require repair or replacement.

Contaminated	A			(3) Re	qu:	ire repair or replacement.
Leaking	Α	F	Require	repair	or	
Malfunctioning						ire repair or
, , , , , , , , , , , , , , , , , , ,				, , -	1 -	replacement.
Missing	С			Requi	re	
Terminal broken	Ā					replacement.
Terminal burned, affecting			- 1-	-1 -		-1
performance	Α			(2) Re	au:	ire repair or
1				` ,	-	replacement.
Terminal burned, not						1
	2	S	Suggest	repair	or	replacement.
Terminal corroded,			2 2	-		±
affecting performance	Α	F	Require	repair	or	replacement.
Terminal corroded, not			_	_		_
affecting performance	2	S	Suggest	repair	or	replacement.
Terminal loose, affecting						
performance	В	F	Require	repair	or	replacement.
Terminal loose, not						
affecting performance						replacement.
Threads damaged	Α	F	Require	repair	or	replacement.
Wire lead conductors						
exposed						replacement.
Wire lead corroded						replacement.
Wire lead open	А					replacement.
Wire lead shorted	Α	F	Require	repair	or	replacement.
(1)					,	
(1) - Refer to manufacturer						
procedure and require	rep	air c	or repla	cement	OI	allected
component(s). (2) - Determine cause and c	0.3030	a+ 22		~~~~ <del>.</del>	0.70	
replacement of part.	OLIE	ect pr	.101 0	reparr	OI	
(3) - Determine source of c	on+ -	minat	ion a	ah aa a	nat	ino
coolant, fuel, metal						
repair or replacement		.10162	, ∪⊥ wa	icci. Ne	qui	LIC
(4) - Includes inoperative,		ermit	tent or	eration	_	or failure to
nerform all functions				, CI a CI OII	,	)

Connector missing ..... A ............ Require repair.

#### **IGNITION SWITCHES**

See SWITCHES.

perform all functions.

#### **IGNITION TERMINALS**

See

IGNITION WIRES, BOOTS, COIL TOWERS AND TERMINALS (SECONDARY) .

## IGNITION WIRES, BOOTS, COIL TOWERS AND TERMINALS (SECONDARY)

NOTE: You are not required to replace ignition wires in sets. However, you may suggest replacement of the entire secondary wire set for preventive maintenance.

IGNITION WIRE, BOOT, COIL TOWER AND TERMINAL (SECONDARY) INSPECTION

Condition	Code		Procedure
Application incorrect Attaching hardware	В		Require replacement.
broken	А	Require	repair or replacement of hardware.

Attaching hardware missing	С			Require	re	eplacement of hardware.
Attaching hardware not functioning	A		Require	e repair	01	r replacement of hardware.
Carbon-tracked Corroded Insulation leaking	A 1					replacement. replacement.
(shorted)	A 2 C 1	• •	Suggest	repair . Requi	or re	replacement. replacement. replacement. replacement.
Resistance incorrect Routed incorrectly Terminal broken Terminal burned, affecting	B 2 A			. Requi	re Su	replacement. ggest repair. replacement.
performance	A	• • • •		(2) Re	qu.	ire repair or replacement.
Terminal burned, not affecting performance Terminal corroded,	2	••	Suggest	repair	or	replacement.
affecting performance Terminal corroded, not	A	• •	Require	repair	or	replacement.
affecting performance Terminal loose, affecting	2	• •	Suggest	repair	or	replacement.
performance	В	• •	Require	repair	or	replacement.
affecting performance	1	• •	Suggest	repair	or	replacement.
<ul> <li>(1) - If improper routing a systems, require repa heatshields, etc., ar failure of secondary</li> <li>(2) - Determine cause and c replacement of part.</li> </ul>	ir. e i: ign	Prop ntend itior	per rout: ded to pi n compone	ing, har revent p ents.	dwa rer	are,

## IN-TANK FUEL STRAINERS

IN-TANK FUEL STRAINER INSPECTION

Condition	Code		Procedure
Missing	. A	Require repair or	replacement.

## **INERTIA FUEL SHUT-OFF SWITCHES**

INERTIA FUEL SHUT-OFF SWITCH INSPECTION

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 melted	А	
Connector missing	С	replacement Require replacement.
Contaminated	Ā	
Inoperative	А	
Missing	С	replacement Require replacement.
Terminal broken	A	
Terminal burned, affecting		
performance	A	
Terminal burned, not		replacement.
affecting performance	2	Suggest repair or replacement.
Terminal corroded,	_	
affecting performance Terminal corroded, not	A	Require repair or replacement.
affecting performance	2	Suggest repair or replacement.
Terminal loose, affecting		
performance	В	Require repair or replacement.
Terminal loose, not affecting performance	1	Suggest repair or replacement.
Wire lead conductors	-	Suggest repair of repracement.
exposed	В	
Wire lead corroded	A	
Wire lead open Wire lead shorted	A A	<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>
		·· noquire repair or repracement.
(1) - Determine cause and c	orr	sect prior to repair or
replacement of part.	ont	tamination, such as engine coolant,
		or water. Require repair or
replacement.	-	
	int	termittent operation or out of
OEM specification.		

## INTAKE AIR TEMPERATURE SENSORS

#### INTAKE AIR TEMPERATURE SENSOR INSPECTION

Condition	Code	Procedure
Attaching hardware missing	. C	Require replacement of hardware.
Attaching hardware threads damaged	. A	Require repair or replacement of hardware.
Attaching hardware threads stripped		
	. A	Require repair or replacement of hardware.
Connector broken Connector (Weatherpack	. A	Require repair or replacement.
` ±		Require repair or replacement (1) Require repair or replacement.
		Require replacement(2) Require repair or replacement.
Inoperative	. В	(3) Require repair or

	7	replacement. Further inspection required.
Leaking	A C	Require repair or replacement Require replacement.
specification	В	Require repair or replacement.
performance Terminal broken	A A	<ul><li> Require repair or replacement.</li><li> Require repair or replacement.</li></ul>
Terminal burned, affecting performance	А	(1) Require repair or
Terminal burned, not		replacement.
affecting performance Terminal corroded,	2	Suggest repair or replacement.
affecting performance Terminal corroded, not	A	Require repair or replacement.
affecting performance Terminal loose, affecting	2	Suggest repair or replacement.
performance	В	Require repair or replacement.
affecting performance Threads damaged Threads stripped (threads	1 A	22 1
missing)	A	Require replacement.
exposed	B A A A	<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>
(1) - Determine cause and creplacement of part.	orr	ect prior to repair or
(2) - Determine source of c		amination, such as engine coolant, r water. Require repair or
(3) - Inoperative includes	me	ermittent operation or out of components may be serviceable; ing procedure.

# INTAKE MANIFOLDS

#### INTAKE MANIFOLD INSPECTION

Condition	Code	Procedure
Corroded, affecting sealability Integrated air or fuel control components	. A	Require repair or replacement.
±	. A	(1) Require repair or replacement.
<pre>Internal air or fuel   components damaged,   affecting performance .</pre>	. A	Require repair or replacement of component.
<pre>Internal air or fuel   components damaged, not   affecting performance .</pre>		No service suggested or required.
<pre>Internal air or fuel   components missing</pre>	. C	Require replacement of

						component.
Leaking	A		Require	repair	or	replacement.
Out of specification	В			. Requi	re	replacement.
Restricted						
Threads damaged	Α		Require	repair	or	replacement.
Threads stripped (threads						
missing)						
Warped	В		Require	repair	or	replacement.
(1) - Inoperative includes	inte	ermi	ttent op	eration	or	out of
OEM specification.						

## **INTERCOOLERS**

See CHARGE AIR COOLERS "INTERCOOLERS" (CAC).

## **KNOCK SENSORS**

#### KNOCK SENSOR INSPECTION

Condition	Code Pro	cedure
Attaching hardware missing	1 1	ment of
Attaching hardware thread damaged	s . A Require repair or repla	
Attaching hardware threads stripped (threads missing)		
Connector broken Connector (Weatherpack		dware. cement.
type) leaking Connector melted	. A $\dots$ (1) Require reg	
Connector missing Inoperative	. C Require replac	cement. pair or Turther
Leaking	. A Require repair or replac	cement.
specification  Terminal broken  Terminal burned, affectin	. A Require repair or replac	
performance	. A (1) Require rep	pair or cement.
Terminal burned, not affecting performance . Terminal corroded,	. 2 Suggest repair or replac	cement.
affecting performance . Terminal corroded, not	. A Require repair or replac	cement.
affecting performance . Terminal loose, affecting	. 2 Suggest repair or replac	cement.
performance Terminal loose, not	. B Require repair or replac	cement.
affecting performance . Threads damaged Threads stripped (threads		
missing)	. A Require replac	cement.

Wire lead conductors						
exposed						
Wire lead corroded						
Wire lead open						
Wire lead shorted	Α		Require	repair	or	replacement.
<ul> <li>(1) - Determine cause and c replacement of part.</li> <li>(2) - Inoperative includes OEM specification. So check for accepted cl</li> </ul>	int me	ermi comp	ttent ope	eration ay be se	or	out of

# LIQUID VAPOR SEPARATORS

#### LIQUID VAPOR SEPARATOR INSPECTION

Condition	Code	Procedure
Inoperative	A (1) Requi	ire repair or replacement.
Missing	A Require C Require A Require repair or	replacement. replacement.
(1) - Inoperative includes	s intermittent operation or	out of OEM

# MANIFOLD ABSOLUTE PRESSURE (MAP) SENSORS

#### MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR INSPECTION

Condition	Code	Procedure
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
Connector (Weatherpack		of hardware Require repair or replacement.
type) leaking Connector melted		1 1
Connector missing Contaminated		
Inoperative	. В	(3) Require repair or replacement. Further inspection required.
Leaking		<del>_</del> <del>_</del> <del>_</del> <del>_</del> <del>_</del> <del>_</del> <del>_</del> <del>_</del> <del>_</del>
<pre>specification Restricted, affecting</pre>		Require repair or replacement.
performance Terminal broken		<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>

Terminal burned, affecting performance	А			. (1) R	equ	ire repair or replacement.
Terminal burned, not affecting performance Terminal corroded,	2		Suggest	repair	or	replacement.
affecting performance Terminal corroded, not	A		Require	repair	or	replacement.
affecting performance Terminal loose, affecting	2	• •	Suggest	repair	or	replacement.
performance	В	• •	Require	repair	or	replacement.
affecting performance				_		replacement.
Threads damaged Threads stripped (threads	Α	• •	Require	repair	or	replacement.
missing)	Α			. Requ	ire	replacement.
Wire lead conductors exposed Wire lead corroded	B A A A	• •	Require Require	repair repair	or or	replacement. replacement. replacement. replacement.
<ul><li>(1) - Determine cause and convergence replacement of part.</li><li>(2) - Determine source of confuel, metal particles</li></ul>	onta	amina	ition, si	ıch as	eng:	
replacement. (3) - Inoperative includes OEM specification. So check for accepted cl	me (	compo	nents ma	ay be s		

# MASS AIR FLOW (MAF) SENSORS

MASS AIR FLOW (MAF) SENSOR INSPECTION

Condition	Code	Procedure
Attaching hardware missing	C	Require replacement of hardware.
Attaching hardware thread damaged		uire repair or replacement of hardware.
Attaching hardware threads stripped	7	
<del>-</del>	_	uire repair or replacement of hardware.
Connector broken Connector (Weatherpack	A Requ	ire repair or replacement.
type) leaking Connector melted	-	<pre>ire repair or replacement (1) Require repair or</pre>
Connector missing Contaminated		Require replacement (2) Require repair or
Inoperative	В	replacement (3) Require repair or replacement. Further
Leaking		<pre>inspection required. ire repair or replacement Require replacement.</pre>
specification	B Requ	ire repair or replacement.

Restricted, affecting performance Terminal broken Terminal burned, affecting performance	A A	• •	Require	repair	or	replacement. replacement.
Terminal burned, not						replacement.
affecting performance Terminal corroded,	2		Suggest	repair	or	replacement.
affecting performance Terminal corroded, not	А		Require	repair	or	replacement.
affecting performance Terminal loose, affecting	2	• •	Suggest	repair	or	replacement.
performance Terminal loose, not	В		Require	repair	or	replacement.
affecting performance	1		Suggest	repair	or	replacement.
Threads damaged Threads stripped (threads	A	• •	Require	repair	or	replacement.
missing)	A			. Requi	ire	replacement.
exposed	В		Require	repair	or	replacement.
Wire lead corroded	Α					replacement.
Wire lead open	Α					replacement.
Wire lead shorted	A	• •	Require	repair	or	replacement.
(1) - Determine cause and creplacement of part.	orr	ect	prior to	repair	or	
(2) - Determine source of contamination, such as engine coolant, fuel, metal particles, or water. Require						
repair or replacement (3) - Inoperative includes OEM specification. So check for accepted cl	inte me	comp	onents ma	ay be se		

# METAL AIR MANIFOLDS AND PIPES

#### METAL AIR MANIFOLD AND PIPE INSPECTION

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.
Broken	А	Require repair of injection tube or replacement of manifold.
Corroded, affecting structural integrity .	1	Suggest replacement of injection tube or manifold.
Leaking	A	Require repair of injection tube or replacement of manifold.
Loose	C	Require replacement. Require replacement of injection tube or manifold.

Threads damaged	А	 	Require repair.
Threads stripped (threads			
missing)	Α	 Requ	ire replacement.

# METAL AIR PIPES

See METAL AIR MANIFOLDS AND PIPES.

### MIX CONTROL SOLENOIDS

### MIX CONTROL SOLENOID INSPECTION

Condition	Code	Procedure
Attaching hardware missing	. C	Require replacement of hardware.
Attaching hardware threads damaged	. A	Require repair or replacement of hardware.
Attaching hardware threads stripped	3	
(threads missing)	. A	of hardware.
Connector broken Connector (Weatherpack		Require repair or replacement.
type) leaking Connector melted	. A	Require repair or replacement (1) Require repair or replacement.
Connector missing Contaminated		
Inoperative	. B	(3) Require repair or replacement. Further
Leaking		inspection required Require repair or replacement Require replacement.
specification	. В	Require repair or replacement.
performance		Require repair or replacement.
Terminal broken Terminal burned, affecting		Require repair or replacement.
performance  Terminal burned, not	. A	(1) Require repair or replacement.
	. 2	Suggest repair or replacement.
	. A	Require repair or replacement.
	. 2	Suggest repair or replacement.
performance		Require repair or replacement.
affecting performance .		Suggest repair or replacement.
Threads damaged Threads stripped (threads		Require repair or replacement.
missing)		Require replacement.
exposed	. B	Require repair or replacement.
Wire lead corroded	. A	Require repair or replacement.
Wire lead open	. A	Require repair or replacement.

Wire lead shorted ...... A .. Require repair or replacement.

- (1) Determine cause and correct prior to repair or replacement of part
- replacement of part.

  (2) Determine source of contamination, such as engine coolant, fuel, metal particles, or water. Require repair or replacement.
- (3) Inoperative includes intermittent operation or out of OEM specification. Some components may be serviceable; check for accepted cleaning procedure.

### **MOTOR MOUNTS**

#### MOTOR MOUNT INSPECTION

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.
Broken	. A	Require replacement.
	. A	Require replacement.
	. A	Require replacement.
affecting performance .		No service suggested or required.
Rubber deteriorated, affecting performance . Rubber deteriorated, not	. A	Require replacement.
· ·		No service suggested or required.
Threads damaged Threads stripped (threads	. A	Require repair or replacement.
missing)	. A	Require replacement.

### O-RINGS, GASKETS, SEALS AND SPRING LOCKS

O-RING, GASKET, SEAL AND SPRING LOCK INSPECTION

(1) - Require inspection of mating and sealing surface and repair or replace as necessary.

### **02 SENSORS**

O2 SENSOR INSPECTION

Condition Code Procedure

Attaching hardware missing	C Require replacement of
Attaching hardware threads damaged	hardware.  A Require repair or replacement
Attaching hardware	of hardware.
threads stripped (threads missing)	A Require repair or replacement of hardware.
Connector broken Connector (Weatherpack	A Require repair or replacement.
type) leaking Connector melted	A Require repair or replacement.  A (1) Require repair or replacement.
Connector missing Contaminated	C Require replacement. A (2) Require repair or
Inoperative	replacement.  B (3) Require repair or replacement. Further
Leaking	inspection required.
Missing	C Require replacement.
specification Restricted, affecting	B Require repair or replacement.
performance  Terminal broken  Terminal burned, affecting	A Require repair or replacement. A Require repair or replacement.
performance	A (1) Require repair or replacement.
Terminal burned, not affecting performance Terminal corroded,	2 Suggest repair or replacement.
affecting performance Terminal corroded, not	A Require repair or replacement.
affecting performance Terminal loose, affecting	2 Suggest repair or replacement.
performance Terminal loose, not	B Require repair or replacement.
affecting performance Threads damaged Threads stripped (threads	
missing)	A Require replacement.
	B Require repair or replacement. A Require repair or replacement.
Wire lead open Wire lead shorted	A Require repair or replacement.
(1) - Determine cause and c	correct prior to repair or
	contamination, such as engine particles, or water. Require
repair or replacement (3) - Inoperative includes OEM specification. So	t. intermittent operation or out of ome components may be serviceable;
check for accepted cl	

Condition	Code	Procedure
Connector broken Connector (Weatherpack	. A	Require repair or replacement.
type) leaking Connector melted		± ± ±
Connector missing		
Inoperative	. A	(2) Require repair or replacement.
Leaking		± ±
Output signal incorrect Terminal broken		
Terminal burned, affectin		·· noquire repair or repracement.
performance	. A	(1) Require repair or replacement.
Terminal burned, not	2	Suggest repair or replacement.
Terminal corroded,	• 2	suggest repair or repracement.
affecting performance . Terminal corroded, not	. A	Require repair or replacement.
affecting performance . Terminal loose, affecting		Suggest repair or replacement.
performance		Require repair or replacement.
Terminal loose, not affecting performance .	. 1	Suggest repair or replacement.
Threads damaged		Require repair or replacement.
Threads stripped (threads missing)		Require replacement.
(1) - Determine cause and		ect prior to repair or
replacement of part (2) - Inoperative include OEM specification.		ermittent operation or out of

# OIL PUMP PICK-UP SCREENS

OIL PUMP PICK-UP SCREEN INSPECTION

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.
Bypass stuck Cracked Loose Missing Positioned incorrectly Restricted Screen torn	. A . A . C . A	<ul> <li>Require repair or replacement.</li> </ul>

### OIL PUMP INSPECTION

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.
Broken	. A	Require repair or replacement.
Pressure relief valve stuck		
4	. В	Require repair or replacement.

# PARK NEUTRAL POSITION SWITCHES

#### PARK NEUTRAL POSITION SWITCH INSPECTION

Condition	Code	Procedure
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 Connector (Weatherpack	. A	Require repair or replacement.
type) leaking Connector melted		Require repair or replacement (1) Require repair or replacement.
Connector missing Contaminated		Require replacement (2) Require repair or
Inoperative	. В	replacement(3) Require repair or replacement. Further inspection required.
Leaking		
specification  Terminal broken  Terminal burned, affectin	. A	1 1
performance	_	(1) Require repair or replacement.
Terminal burned, not affecting performance . Terminal corroded,	. 2	Suggest repair or replacement.
•	. A	Require repair or replacement.

Terminal corroded, not						
affecting performance	2		Suggest	repair	or	replacement.
Terminal loose, affecting			33	-		-
performance	В		Require	repair	or	replacement.
Terminal loose, not			_	_		_
affecting performance	1		Suggest	repair	or	replacement.
Threads damaged	Α		Require	repair	or	replacement.
Threads stripped (threads						
missing)	Α			. Requi	ire	replacement.
Wire lead conductors						
exposed	В		Require	repair	or	replacement.
Wire lead corroded	Α		Require	repair	or	replacement.
Wire lead open			Require	repair	or	replacement.
Wire lead shorted	Α		Require	repair	or	replacement.
(1) - Determine cause and c	orre	ect p	prior to	repair	or	
replacement of part.						
(2) - Determine source of c	onta	amina	ation, su	ıch as e	eng:	ine
coolant, fuel, metal	part	ticle	es, or wa	ater. Re	equ:	ire
repair or replacement						
(3) - Inoperative includes	inte	ermit	ttent ope	eration	or	out of
OEM specification. So	me o	comp	onents ma	ay be se	erv:	iceable;
check for accepted cl						,
-			-			

### PCV BREATHER ELEMENTS

### PCV BREATHER ELEMENT INSPECTION

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.
Leaking		Require replacement Suggest replacement to comply with vehicle's OEM recommended service intervals.
Melted		
performance		Require replacement.
performance	. 1	Suggest replacement. Require replacement.

### **PCV ORIFICES**

### PCV ORIFICE INSPECTION

Condition	Code	Procedure
		Require replacement Suggest repair or replacement to comply with OEM recommended service intervals.

Missing	С	 	Requi	re	replacement.
Restricted	Α	 Require	repair	or	replacement.

### **PCV VALVES**

### PCV VALVE INSPECTION

Condition	Code	Procedure
Application incorrect Attaching hardware	. В	Require replacement.
2	. A	Require repair or replacement of hardware.
Attaching hardware		
	. C	Require replacement of hardware.
Attaching hardware not	-	D
functioning	. A	Require repair or replacement of hardware.
Grommet broken	. A	Require repair or replacement of grommet.
Grommet missing  Grommet not	. C	. Require replacement of grommet.
	. A	Require repair or replacement of grommet.
Inoperative	. A	(1) Require replacement.
Leaking	. A	Require replacement.
Maintenance interval	. 3	Suggest replacement to comply with vehicle's OEM recommended
		service intervals.
		Require replacement. Require replacement.
(1) - Inoperative include OEM specification.	s inte	ermittent operation or out of

# PICK-UP ASSEMBLIES (INCLUDES MAGNETIC, HALL EFFECT AND $_{\tt OPTICAL)}$

### PICK-UP ASSEMBLY (MAGNETIC, HALL EFFECT AND OPTICAL) INSPECTION

Condition	Code	Procedure
Adjustment incorrect Attaching hardware	. В	Require repair.
2	. A	Require repair or replacement of hardware.
Attaching hardware		
missing	. С	Require replacement of hardware.
Attaching hardware not		
functioning	. A	Require repair or replacement of hardware.
Connector broken Connector (Weatherpack	. A	Require repair or replacement.
	. A	Require repair or replacement.
		Require replacement(2) Require replacement.
Oil-soaked		

Terminal burned affecting	А	• •	Require	repair	or	replacement.
Terminal burned, affecting performance	A			(1) Re	equ.	ire repair or replacement.
Terminal burned, not affecting performance Terminal corroded,	2		Suggest	repair	or	replacement.
affecting performance Terminal corroded, not	A		Require	repair	or	replacement.
affecting performance	2		Suggest	repair	or	replacement.
Terminal loose, affecting performance	В		Require	repair	or	replacement.
Terminal loose, not affecting performance Wire lead conductors	1		Suggest	repair	or	replacement.
exposed	В		Require	repair	or	replacement.
Wire lead corroded	Α		Require	repair	or	replacement.
Wire lead open			_	_		replacement.
Wire lead shorted	A	• •	Require	repair	or	replacement.
(1) - Determine cause and creplacement of part.	orre	ect ]	prior to	repair	or	
(2) - Inoperative includes	inte	ermi <sup>.</sup>	ttent ope	eration	or	out of
OEM specification. Re procedures.	fer	to (	OEM recon	mmended	sei	rvice'

### POWER STEERING PRESSURE SENSORS

POWER STEERING PRESSURE SENSOR INSPECTION

Condition	Code	Procedure
Attaching hardware missing	. C	Require replacement of hardware.
Attaching hardware threads damaged	. A	Require repair or replacement of hardware.
Attaching hardware threads stripped		OI Haldwale.
(threads missing)	. A	Require repair or replacement of hardware.
Connector broken Connector (Weatherpack	. A	Require repair or replacement.
		Require repair or replacement. (1) Require repair or replacement.
Connector missing Contaminated		
Inoperative	. В	(3) Require repair or replacement. Further inspection required.
Leaking	Α	Require repair or replacement.
Missing		Require replacement.
specification Restricted, affecting	. В	Require repair or replacement.
performance  Terminal broken  Terminal burned, affecting	. A	1 1 1
performance	_	(1) Require repair or

						replacement.
Terminal burned, not	0		G .			1
affecting performance	2	• •	Suggest	repair	or	replacement.
Terminal corroded,	7\		Doguino	ronair	0.20	ronlagoment
affecting performance Terminal corroded, not	А	• •	Require	reparr	OI	repracement.
affecting performance	2		Suggest	renair	or	replacement
Terminal loose, affecting	_	• •	buggese	гератг	OI	repracement.
performance	В		Require	repair	or	replacement.
Terminal loose, not				1	-	
affecting performance	1		Suggest	repair	or	replacement.
Threads damaged	Α		Require	repair	or	replacement.
Threads stripped (threads						
missing)	Α			. Requi	ire	replacement.
Wire lead conductors	_					
exposed						
Wire lead corroded						replacement.
Wire lead open			_	-		replacement.
Wire lead shorted	А	• •	Require	reparr	OI	replacement.
(1) - Determine cause and c	orra	2C+ 1	nrior to	renair	or	
replacement of part.	OLL		PIIOI CO	reparr	OI	
(2) - Determine source of c	onta	amina	ation, su	ıch as e	enai	ine
coolant, fuel, metal						
repair or replacement			,		_	
(3) - Inoperative includes		ermit	ttent ope	eration	or	out of
OEM specification. So	me d	comp	onents ma	ay be se	erv	iceable;
check for accepted cl	ean	ing p	procedure	€.		

# POWERTRAIN CONTROL MODULES (PCM) AND PROM

POWERTRAIN CONTROL MODULE (PCM) AND PROM INSPECTION

Condition	Code	Procedure
Application incorrect Attaching hardware	. В	Require replacement.
	. 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.
Code set (if applicable)	. A	
Connector broken Connector (Weatherpack	. A	Require repair or replacement.
type) leaking Connector melted		Require repair or replacement. (2) Require repair or replacement.
		Require repair(3) Require repair or replacement.
Leaking		Require repair or replacement (4) Require repair or replacement.
Missing Terminal broken		Require replacement.

Terminal burned, affecting performance	А			(2) R	equ:	ire repair or replacement.
Terminal burned, not affecting performance Terminal corroded,	2		Suggest	repair	or	replacement.
affecting performance Terminal corroded, not	A	• •	Require	repair	or	replacement.
affecting performance Terminal loose, affecting	2	• •	Suggest	repair	or	replacement.
performance	В	• •	Require	repair	or	replacement.
affecting performance	1		Suggest	repair	or	replacement.
Threads damaged Threads stripped (threads	Α	• •	Require	repair	or	replacement.
missing)	A	• • •		. Requi	ire	replacement.
exposed			Require	repair	or	replacement.
Wire lead corroded	Α		Require	repair	or	replacement.
Wire lead open			Require	repair	or	replacement.
Wire lead shorted	А	• •	Require	repair	or	replacement.
(1) - Refer to manufacturer	's	diagr	nostic ti	rouble d	code	9

- procedure and require repair or replacement of affected component(s).
- (2) Determine cause and correct prior to repair or
- replacement of part.

  (3) Determine source of contamination, such as engine coolant, fuel, metal particles, or water. Require repair or replacement.
- (4) Includes inoperative, intermittent operation, failure to perform all functions, or out of OEM specification.

### POWERTRAIN CONTROL PROM

See POWERTRAIN CONTROL MODULES (PCM) AND PROM.

#### PRESSURIZED EXPANSION TANK CAPS

See RADIATOR CAPS AND PRESSURIZED EXPANSION TANK CAPS.

### RADIATOR CAPS AND PRESSURIZED EXPANSION TANK CAPS

RADIATOR CAP AND PRESSURIZED EXPANSION TANK CAP INSPECTION

Condition	Code	Procedure
Application incorrect Coolant recovery check	. В	Require replacement.
<u> </u>	. A	(1) Require replacement.
Gasket missing	. C	Require replacement. Require replacement of gasket. Require replacement. Require replacement of seal.
(1) - Inoperative includes OEM specification.	s inte	ermittent operation or out of

### RADIATOR FAN BLADE INSPECTION

Condition	Code	Procedure
Application incorrect Attaching hardware	. В	Require replacement.
2	. A	Require repair or replacement of hardware.
Attaching hardware missing	. C	Require replacement of
Attaching hardware not		hardware.
functioning	. A	Require repair or replacement of hardware.
Bent		
Broken		Require replacement.
Cracked		
Loose		. Require repair or replacement Require replacement.

### **RADIATOR FAN CLUTCHES**

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

### RADIATOR FAN CLUTCH INSPECTION

Condition	Code	Procedure
Attaching hardware broken	. A	Require repair or replacement of hardware.
-	. C	Require replacement of hardware.
Attaching hardware not functioning	. A	Require repair or replacement of hardware.
	. A	Require replacement Require replacement Require repair or replacement of fastener.
Inoperative	. 1 . A	(1) Require replacement. Suggest replacement.
Thermal control incorrect	. В	Require repair or replacement.
(1) - Inoperative include OEM specification.	s inte	ermittent operation or out of

### **RADIATORS**

### RADIATOR INSPECTION

Condition	Code	Procedure
Air flow restriction	A	Require repair.

Application incorrect Attaching hardware	В	Require replacement.
	A	Require repair or replacement of hardware.
Attaching hardware	_	
missing	С	Require replacement of hardware.
Attaching hardware not		
functioning	Α	Require repair or replacement of hardware.
Connection leaking	Α	± ± ±
Corroded	1	Suggest repair or replacement.
Fins damaged, affecting	70	Damina wasin an malasamant
performance	A	Require repair or replacement.
affecting performance	2	Suggest repair or replacement.
Internal oil cooler	_	saggest repair of repracement.
leaking	Α	Require repair or replacement.
Internal restrictions,		
affecting performance	В	Require repair or replacement.
Internal restrictions, not	0	Constant many in the second
affecting performance	2	22 1
Leaking	A	Require repair or replacement.
Threads damaged	A	Require repair or replacement.
Threads stripped (threads missing)	А	Require repair or replacement.
Tubes damaged, affecting	7.1	Require repair or repracement.
performance	Α	Require repair or replacement.
Tubes damaged, not		
affecting performance	• •	No service suggested or required.
Tubes damaged, not		No service suggested or

### **ROLL OVER VALVES**

ROLL OVER VALVE INSPECTION

Condition	Code	Procedure
Inoperative Leaking Missing	. A	Require replacement.
(1) - Inoperative includes OEM specification.	s intermittent oper	ration or out of

### **SEALING COMPOUNDS**

SEALING COMPOUND INSPECTION

Conditio	n Code	Procedure
Leaking	A	(1) Require repair or replacement.

(1) - Require inspection of mating and sealing surface and repair or replace as necessary.

### SEALS

Condition	Code	Procedure
Leaking	A	(1) Require repair or replacement.
	uire inspection of mating and seal	ing surface and

# SECONDARY AIR INJECTION SYSTEM MANAGEMENT DEVICES

### SECONDARY AIR INJECTION SYSTEM MANAGEMENT DEVICE INSPECTION

Condition	Code	Procedure
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
Connector broken Connector (Weatherpack		of hardware Require repair or replacement.
type) leaking Connector melted		Require repair or replacement (1) Require repair or replacement.
Connector missing Contaminated		Require replacement(2) Require repair or replacement.
Inoperative	. В	(3) Require repair or replacement. Further
Leaking		<pre>inspection required Require repair or replacement Require replacement.</pre>
Resistance out of specification Restricted, affecting		Require repair or replacement.
performance Terminal broken Terminal burned, affectin	. A	<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>
performance  Terminal burned, not	. A	(1) Require repair or replacement.
affecting performance . Terminal corroded,	. 2	Suggest repair or replacement.
affecting performance . Terminal corroded, not affecting performance .		<ul><li> Require repair or replacement.</li><li> Suggest repair or replacement.</li></ul>
Terminal loose, affecting performance		Require repair or replacement.
Terminal loose, not affecting performance . Threads damaged		Suggest repair or replacement Require repair or replacement.
Threads stripped (threads missing)		
Wire lead conductors exposed		<ul><li> Require repair or replacement.</li><li> Require repair or replacement.</li></ul>

Wire	lead	open	 Α	 Require	repair	or	replacement.
Wire	lead	shorted	 Α	 Require	repair	or	replacement.

- (1) Determine cause and correct prior to repair or replacement of part.
- (2) Determine source of contamination, such as engine coolant, fuel, metal particles, or water. Require repair or replacement.
- (3) Inoperative includes intermittent operation or out of OEM specification. Some components may be serviceable; check for accepted cleaning procedure.

### SENSORS AND ACTUATORS

NOTE: Conditions pertaining to the sensors and actuators listed in this section may be found under the name of the sensor or actuator.

### SENSOR ABBREVIATION TABLE

Sensor	Abbreviation
Accelerator Pedal Position Sensor Air Conditioning Cycling Switch Air Conditioning Pressure Sensor Air Fuel Ratio Sensor	AC
Barometric Pressure Sensor  Camshaft Position Sensor  Clutch Pedal Position Switch  Cooling Fan Motor Sensors and Switches	CMP CPP
Crankshaft Position Sensor	CKP
Electronic Transmission Feedback Devices Engine Coolant Temperature Sensor Evaporative Emission feedback devices	ECT
Exhaust Gas Recirculation feedback devices  Fan Control Sensor	FC
Knock Sensor  Manifold Absolute Pressure Sensor  Mass Air Flow Sensor	KS MAP
O2 Sensor	02S PNP
Power Steering Pressure Sensor	TVV
Throttle Position Switch Transmission Range Switch Vehicle Speed Sensor Volume Air Flow Sensor	TR Switch VSS

#### ACTUATOR ABBREVIATION TABLE

Actuator	Abbreviation
Air Injection Control Solenoid  Electronic Transmission control devices  Evaporative Emission Canister  Purge Device	EVAP
Exhaust Gas Recirculation Device	EGR
Fuel Injector Idle Air Control	

Idle Speed Control Actuator ISC
Mix Control Solenoid MC Solenoid
Secondary Air Injection System Management Device AIR, PAIR
Vacuum Regulator Solenoid
Waste Gate Control Solenoid

### SHROUDS, BAFFLES AND DEFLECTORS

### SHROUD, BAFFLE AND DEFLECTOR INSPECTION

Condition	Code	Procedure
Application incorrect, affecting cooling system		
performance	. A	. Require repair or replacement.
broken	. A	Require repair or replacement of hardware.
Attaching hardware		
missing	. C	Require replacement of hardware.
Attaching hardware not	-	5
-	. A	Require repair or replacement of hardware.
Bent, affecting cooling system performance	Δ	. Require repair or replacement.
Blocked, affecting cooling		. Require repair of repracement.
system performance		. Require repair or replacement.
Broken, affecting cooling system performance	. A	. Require repair or replacement.
Cracked, affecting cooling system performance		. Require repair or replacement.
Loose, affecting cooling	• A	. Require repair or repracement.
system performance	. A	Require repair.
Loose, not affecting cooling system		
performance		Suggest repair.
Missing, affecting cooling system performance		Require replacement.

### SPARK PLUGS

NOTE: You are not required to replace spark plugs in sets. However, you may suggest replacement of the other plugs for preventive maintenance.

#### SPARK PLUG INSPECTION

Condition	Code	Procedure
Application incorrect Electrode eroded	. 1	
Gap incorrect Insulation broken Insulator cracked Leaking compression Maintenance interval Threads damaged Threads stripped (threads	. A . A . A	Require repair or replacement. Require replacement Require replacement Require replacement Require repair or replacement Require repair or replacement. Require repair or replacement.

3.	A Require replacement. use of fouling and suggest repair.
SPRING LOCKS	
SPRING LOCK INSPE	TION
Condition	Code Procedure
Leaking	A (1) Require repair or replacement.
	ection of mating and sealing surface and place as necessary.
SUPER CHARG	
Condition	Code Procedure
Attaching hardware damaged, affectine operation or performance	
-	C Require replacement of hardware.
Bearing noisy Bearing worn Boost pressure incorrect	A Require replacement.
(1) - Boost pressu	B Require repair or replacement. A Require repair or replacement. Suggest repair or replacement. A Require repair or replacement. Require repair or replacement.
components.	
SWITCHES	
SWITCH INSPECTION	
Condition	Code Procedure
Attaching hardware broken	A Require repair or replacement of hardware.
Attaching hardware missing	
Attaching hardware functioning	

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 ........ (1) Require repair or replacement. Burned, not affecting performance ..... 2 . . . . . . . . . . . (1) Suggest repair or replacement. 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 ......... (2) Require repair or replacement. Melted, affecting performance .......... A ......... (1) Require repair or replacement. Melted, not affecting (1) Suggest repair or replacement. Missing ..... C ...... Require replacement. Out of adjustment ..... B .. Require repair or replacement. Terminal broken ..... A .. Require repair or replacement. Terminal burned, affecting performance ..... A ..... (1) Require repair or replacement. 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. (1) - Determine cause and correct prior to repair or replacement of part. (2) - Includes inoperative, intermittent operation, or failure to perform all functions.

### THERMAL VACUUM VALVES

#### THERMAL VACUUM VALVE INSPECTION

Condition	Code	Procedure
Connector broken Connector (Weatherpack	. A	Require repair or replacement.
		Require repair or replacement. (1) Require repair or replacement.
		Require replacement(2) Require repair or

Inoperative	В	replacement(3) Require repair or replacement. Further
	_	inspection required.
Leaking	Α	
Missing Resistance out of	С	Require replacement.
specification Restricted, affecting	В	Require repair or replacement.
performance	Α	Require repair or replacement.
Terminal broken	Α	Require repair or replacement.
Terminal burned, affecting		
performance	A	(1) Require repair or replacement.
Terminal burned, not		
	2	Suggest repair or replacement.
Terminal corroded,		
affecting performance	Α	Require repair or replacement.
Terminal corroded, not		
affecting performance	2	Suggest repair or replacement.
Terminal loose, affecting		
performance	В	Require repair or replacement.
Terminal loose, not		
affecting performance	1	Suggest repair or replacement.
Threads damaged	Α	Require repair or replacement.
Threads stripped (threads		
missing)	Α	Require replacement.
Wire lead conductors		
exposed	В	Require repair or replacement.
Wire lead corroded	Α	Require repair or replacement.
Wire lead open	Α	Require repair or replacement.
Wire lead shorted	Α	Require repair or replacement.
(1) - Determine cause and c	orr	ect prior to repair or
replacement of part.		
		amination, such as engine coolant,
fuel, metal particles	, 0	r water. Require repair or
replacement.		
(3) - Inoperative includes	int	ermittent operation or out of
OEM specification. So	me	components may be serviceable;
check for accepted cl	ean	ing procedure.

### THERMOSTATIC AIR DOOR ASSEMBLIES

### THERMOSTATIC AIR DOOR ASSEMBLY INSPECTION

Condition	Code	Procedure
Attaching hardware damaged, affecting operation or		
performance	. A	Require repair or replacement of hardware.
Attaching hardware		
missing	. C	Require replacement of hardware.
Binding	. A	Require repair or replacement.
	. C	<ul><li>Require repair or replacement.</li><li>Require replacement.</li><li>Require repair or replacement.</li></ul>

# THERMOSTATS AND HOUSINGS

### THERMOSTAT AND HOUSING INSPECTION

Condition	Code	Procedure
Application incorrect Attaching hardware	. В	Require replacement.
	. A	Require repair or replacement of hardware.
Attaching hardware corroded	. 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.
Housing corroded Inoperative Installation incorrect . Leaking Thermostat missing	. А . В . А	Suggest replacement of housing (1) Require replacement Require repair or replacement.
Threads damaged Threads stripped (threads		Require repair or replacement.
missing)	. A	Require repair or replacement.
(1) - Inoperative include OEM specification.	s inte	ermittent operation or out of

### THROTTLE BODIES

### THROTTLE BODY INSPECTION

Condition	Code	Procedure
Connector broken Connector (Weatherpack	. A	Require repair or replacement.
type) leaking Connector melted		<u> </u>
Connector missing Contaminated		
Leaking		1 1
Restricted		(3) Require repair Require repair or replacement.
Terminal broken  Terminal burned, affecting		Require repair or repracement.
performance	_	(1) Require repair or replacement.
Terminal burned, not		
affecting performance . Terminal corroded,	. 2	Suggest repair or replacement.
affecting performance .	. A	Require repair or replacement.
Terminal corroded, not affecting performance . Terminal loose, affecting		Suggest repair or replacement.
performance Terminal loose, not		Require repair or replacement.
	. 1	Suggest repair or replacement.

Threads damaged	Α		Require	repair	or	replacement.
Threads stripped (threads missing)	7\		Poguiro	ronair	or	ronlagomon+
Throttle shaft binding,	А	• •	Require	reparr	OI	repracement.
affecting performance	A		Require	repair	or	replacement.
Throttle shaft worn,	7\		Doguino		0.70	man la comant
affecting performance Throttle shaft worn, not	А	• •	Require	reparr	OI	repracement.
affecting performance	1		Suggest	repair	or	replacement.
Wire lead conductors	_					7
exposed			Require	repaır	or	replacement.
Wire lead corroded	Α		Require	repair	or	replacement.
Wire lead open	Α		Require	repair	or	replacement.
Wire lead shorted						replacement.
			-10-100	1	-	
(1) - Determine cause and oreplacement of part.	corr	ect	prior to	repair	or	
repracement or part.						

- (2) Determine source of contamination, such as engine coolant, fuel, metal particles, or water. Require repair or replacement.
- (3) Some components may be serviceable; check for accepted cleaning procedure.

### THROTTLE CABLES

See THROTTLE LINKAGES AND CABLES.

### THROTTLE LINKAGES AND CABLES

THROTTLE LINKAGE AND CABLE INSPECTION

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		<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>
performance Bracket bent, not affecting performance .		<pre> Require repair or replacement No service suggested or</pre>
Bracket broken, affecting		required.
performance Bracket broken, not affecting performance .		Require replacement No service suggested or
Bracket corroded,		required.
Bracket corroded, not affecting performance .	. 2	<ul><li> Require repair or replacement.</li><li> Suggest repair or replacement.</li></ul>
Bracket cracked, affectin performance Bracket cracked, not	_	Require repair or replacement.
affecting performance .	. 1	Suggest repair or replacement.

Bracket loose, affecting		
	Α	Require repair or replacement.
Bracket loose, not		
affecting performance	1	Suggest repair or replacement.
Bracket missing	С	Require replacement.
Broken	Α	Require replacement.
Cracked	Α	Require repair or replacement.
Disconnected	Α	Require repair or replacement.
Kinked	Α	Require repair or replacement.
Melted	Α	Require repair or replacement.
Missing	С	Require replacement.
Noisy	2	Suggest repair or replacement.
Out of adjustment	В	(1) Require repair or
<u> </u>		replacement.
Routed incorrectly	2	Suggest repair.
Seized	Ā	Require repair or replacement.
	_	

(1) - Follow OEM recommended adjustment procedures. Require repair or replacement if out of specification.

### THROTTLE POSITION SENSORS

THROTTLE POSITION SENSOR INSPECTION

Condition	Code	Procedure
Attaching hardware missing	C	. Require replacement of hardware.
Attaching hardware threads damaged	A Requi	ire repair or replacement of hardware.
Attaching hardware threads stripped		
	-	ire repair or replacement of hardware.
Connector broken Connector (Weatherpack	A Requi	re repair or replacement.
type) leaking Connector melted		re repair or replacement (1) Require repair or replacement.
Connector missing Contaminated		Require replacement.
Inoperative	В	
Missing	C	
	A Requi	re repair or replacement. re repair or replacement.
performance Terminal burned, not		equire repair or replacement.
affecting performance . Terminal corroded,	2 Sugges	st repair or replacement.
affecting performance . Terminal corroded, not	A Requi	re repair or replacement.
affecting performance .	2 Sugges	st repair or replacement.
Terminal loose, affecting performance Terminal loose, not	B Requi	re repair or replacement.

affecting performance	1		Suggest	repair	or	replacement.
Threads damaged	Α		Require	repair	or	replacement.
Threads stripped (threads						
missing)	Α			. Requi	ire	replacement.
Wire lead conductors						
exposed	В		Require	repair	or	replacement.
Wire lead corroded	Α		Require	repair	or	replacement.
Wire lead open	Α		Require	repair	or	replacement.
Wire lead shorted	Α		Require	repair	or	replacement.
(1) - Determine cause and c	orre	ect	prior to	repair	or	
replacement of part.						
(2) - Determine source of c	ont	amin	ation, su	uch as e	engi	ine coolant,
fuel, metal particles	, 0	r wa	ter. Requ	ire rep	paiī	r or
_						

(3) - Inoperative includes intermittent operation or out of

check for accepted cleaning procedure.

OEM specification. Some components may be serviceable;

### THROTTLE POSITION SWITCHES

#### THROTTLE POSITION SWITCH INSPECTION

replacement.

Condition	Code	Procedure
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)	7\	Require repair or replacement
-		of hardware.
Connector broken Connector (Weatherpack	. A	Require repair or replacement.
type) leaking Connector melted		
Connector missing Inoperative		Require replacement.
inoperative	. Б	replacement. Further
Missing	. C	inspection required Require replacement.
specification Terminal broken		<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>
Terminal burned, affectin	g	
performance	. A	(1) Require repair or replacement.
Terminal burned, not affecting performance . Terminal corroded,	. 2	Suggest repair or replacement.
affecting performance .	. A	Require repair or replacement.
Terminal corroded, not affecting performance . Terminal loose, affecting	. 2	Suggest repair or replacement.
performance Terminal loose, not		Require repair or replacement.
affecting performance . Threads damaged		

Threads stripped (threads						
missing)	Α			. Requi	ire	replacement.
Wire lead conductors						
exposed	В		Require	repair	or	replacement.
Wire lead corroded						
Wire lead open						
Wire lead shorted	Α		Require	repair	or	replacement.
(1) - Determine cause and co	orre	ect ]	prior to	repair	or	
replacement of part.						_
(2) - Inoperative includes						
OEM specification. Son		_		-	erv	iceable;
check for accepted cle	ean:	ing p	procedure	€.		

# TIMING BELT SPROCKETS

#### TIMING BELT SPROCKET INSPECTION

Condition	Code	Procedure
Alignment incorrect Attaching hardware	. В	Require repair.
2	. A	Require repair or replacement of hardware.
Attaching hardware		V = 1300 511 01 01 01 01 01 01 01 01 01 01 01 01 0
missing	. C	Require replacement of hardware.
Attaching hardware not		
functioning	. A	Require repair or replacement of hardware.
Bent	. A	Require replacement.
Cracked	. A	Require replacement.
Key damaged		Require replacement.
Loose	. A	Require repair or replacement.
Missing		Require replacement.
belt life	. A	Require replacement.
affecting belt life	. A	Require repair or replacement.
Sprocket loose Sprocket-to-shaft		
±	. В	Require repair or replacement.

### TIMING BELTS

### TIMING BELT INSPECTION

Condition	Code	Procedure
Broken	. A	Require replacement.
specification		Require repair.
		Suggest replacement.
		Suggest replacement. Further inspection required.
		Suggest replacement.
Maintenance intervals	. 3	Suggest replacement to comply with vehicle OEM recommended

	service intervals.
Missing	C (3) Require replacement.
Noisy	2 (4) Further inspection
	required.
	See note below.
	A Require replacement.
Tension out of	
specification	B Require adjustment or
	replacement.
Teeth missing	A Require replacement.
(1) - Inspect belt tensioner	, , ,
• •	ncorrect alignment and require repair.
	ngine damage may result from timing
belt damage/failure.	
(4) - Determine cause of no	ise and suggest repair.

# TORQUE STRUTS

### TORQUE STRUT INSPECTION

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 Body dented		Require replacement.  (1) Further inspection required.
Body punctured Bushing deteriorated,	. A	Require replacement.
affecting performance . Bushing deteriorated, not		Require replacement.
affecting performance .		No service suggested or required.
Bushings missing Bushings separated from	. C	Require replacement.
mounting eye  Damping (none)  Leaking oil, enough for  fluid to be running down	. A	Suggest replacement. Require replacement.
the body	. A	Require replacement Require replacement (2) Further inspection
Piston rod bent Piston rod broken Seized Threads damaged Threads stripped (threads	. A . A	required

piston rod movement. If dents don't restrict movement, no service is suggested or required.

(2) - If noise is isolated to shock or strut, suggest replacement.

### TRANSMISSION RANGE SWITCHES

### TRANSMISSION RANGE SWITCH INSPECTION

Condition	Code	Procedure
Attaching hardware		
	C	Require replacement of hardware.
Attaching hardware		
threads damaged	А	Require repair or replacement of hardware.
Attaching hardware		
threads stripped	7	Danie wasin an wallanaman
(threads missing)	А	Require repair or replacement of hardware.
Connector broken	А	Require repair or replacement.
Connector (Weatherpack		
type) leaking		Require repair or replacement.
Connector melted	A	(1) Require repair or replacement.
Connector missing	C	Require replacement.
Contaminated	A	(2) Require repair or
	_	replacement.
Inoperative	В	(3) Require repair or
		replacement. Further inspection required.
Leaking	A	Require repair or replacement.
Missing		Require replacement.
Resistance out of		
specification		Require repair or replacement.
Terminal broken		Require repair or replacement.
Terminal burned, affect performance		(1) Require repair or
periormance		replacement.
Terminal burned, not		-
_affecting performance	e 2	Suggest repair or replacement.
Terminal corroded,	70	Deguine versin en menlagement
affecting performance Terminal corroded, not		Require repair or replacement.
affecting performance		Suggest repair or replacement.
Terminal ĺoose, affect		
performance	В	Require repair or replacement.
Terminal loose, not	e 1	Suggest repair or replacement.
affecting performance Threads damaged		<ul><li> Suggest repair or replacement.</li><li> Require repair or replacement.</li></ul>
Threads stripped (thre	eads	Require repair of repracement.
missing)		Require replacement.
Wire lead conductors	_	
exposed		Require repair or replacement.
Wire lead corroded Wire lead open		
Wire lead shorted		<ul><li> Require repair or replacement.</li><li> Require repair or replacement.</li></ul>
(1) - Determine cause	and corre	ect prior to repair or
replacement of p		omination such as series assistant
		amination, such as engine coolant, water. Require repair or
ruer, merar barr	TTCTES, 01	- Maccr. Wedarre rebarr or

- replacement.

  (3) Inoperative includes intermittent operation or out of OEM specification. Some components may be serviceable;

### **TUBE CLAMPS**

See HOSE AND TUBE COUPLERS, CONNECTORS AND CLAMPS.

### **TUBE CONNECTORS**

See HOSE AND TUBE COUPLERS, CONNECTORS AND CLAMPS.

### TUBE COUPLERS

See HOSE AND TUBE COUPLERS, CONNECTORS AND CLAMPS.

### **TUBES**

See HOSES AND TUBES (FUEL LINES, RADIATOR, BY PASS, HEATER, RECOVERY TANK AND OIL COOLERS).

### **TURBO CHARGERS**

#### TURBO CHARGER INSPECTION

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.
Boost pressure incorrect	. A	
Leaking		Require repair or replacement.
,		<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>
(1) - Boost pressure probo	lems n	may be caused by other systems

### **VACUUM CONNECTIONS**

See VACUUM HOSES, TUBES AND CONNECTIONS (NON-METALLIC).

### VACUUM HOSES, TUBES AND CONNECTIONS (NON-METALLIC)

VACUUM HOSE, TUBE AND CONNECTION (NON-METALLIC) INSPECTION

Condition	Code		Procedure
Leaking	. A	Require Require	replacement. replacement.

Restricted	Α	 Require	repair	or	replacement.
Surface cracks (dry-					
rotted)	1	 	. Sugge	st	replacement.

# **VACUUM REGULATOR SOLENOIDS**

### VACUUM REGULATOR SOLENOID INSPECTION

Condition	Code	Procedure
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	± ± ±
Connector broken Connector (Weatherpack	. A	of hardware Require repair or replacement.
type) leaking Connector melted		<pre> Require repair or replacement (1) Require repair or</pre>
Connector missing Contaminated		Require replacement
Inoperative	. В	(3) Require repair or replacement. Further
Leaking		inspection required Require repair or replacement Require replacement.
Resistance out of specification Restricted, affecting	. В	Require repair or replacement.
performance Terminal broken	. A	<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>
Terminal burned, affecting performance		(1) Require repair or replacement.
Terminal burned, not affecting performance . Terminal corroded,	. 2	Suggest repair or replacement.
affecting performance . Terminal corroded, not	. A	Require repair or replacement.
affecting performance . Terminal loose, affecting		Suggest repair or replacement.
performance Terminal loose, not	. В	Require repair or replacement.
affecting performance . Threads damaged Threads stripped (threads	. A	<ul><li> Suggest repair or replacement.</li><li> Require repair or replacement.</li></ul>
missing)		Require replacement.
exposed	. A . A	<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>

<sup>(1) -</sup> Determine cause and correct prior to repair or replacement of part.

- (2) Determine source of contamination, such as engine coolant, fuel, metal particles, or water. Require repair or replacement.
- (3) Inoperative includes intermittent operation or out of OEM specification. Some components may be serviceable; check for accepted cleaning procedure.

### **VACUUM TUBES**

See VACUUM HOSES, TUBES AND CONNECTIONS (NON-METALLIC).

### **VEHICLE SPEED SENSORS**

### VEHICLE SPEED SENSOR INSPECTION

Condition	Code	Procedure
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 Connector (Weatherpack	. A	Require repair or replacement.
type) leaking	. A	Require repair or replacement.
Connector melted	. A	
Connector missing	. C	Require replacement.
Contaminated		
		replacement.
Inoperative	. B	(3) Require repair or
		replacement. Further
		inspection required.
Leaking		Require repair or replacement.
Missing	. C	Require replacement.
Resistance out of		
specification	. B	Require repair or replacement.
Terminal broken		Require repair or replacement.
Terminal burned, affecting	g	
performance	. A	
Terminal burned, not		-
affecting performance . Terminal corroded,	. 2	Suggest repair or replacement.
affecting performance .	. A	Require repair or replacement.
Terminal corroded, not affecting performance .		Suggest repair or replacement.
Terminal loose, affecting performance		Require repair or replacement.
Terminal loose, not		
affecting performance .		Suggest repair or replacement.
Threads damaged		Require repair or replacement.
Threads stripped (threads missing)		Require replacement.
exposed	. в	Require repair or replacement.
Wire lead corroded		Require repair or replacement.

Wire	lead	open	 Α	 Require	repair	or	replacement.
Wire	lead	shorted	 Α	 Require	repair	or	replacement.

- (1) Determine cause and correct prior to repair or replacement of part.
- (2) Determine source of contamination, such as engine coolant, fuel, metal particles, or water. Require repair or replacement.
- (3) Inoperative includes intermittent operation or out of OEM specification. Some components may be serviceable; check for accepted cleaning procedure.

### **VOLUME AIR FLOW SENSORS**

### VOLUME AIR FLOW SENSOR INSPECTION

Condition	Code	Procedure
Attaching hardware missing	. C	Require replacement of hardware.
Attaching hardware threads damaged	. A	Require repair or replacement of hardware.
Attaching hardware threads stripped	7	
(threads missing)		Require repair or replacement of hardware.
Connector broken Connector (Weatherpack	. A	Require repair or replacement.
type) leaking		<pre> Require repair or replacement (1) Require repair or</pre>
Contaminated		
Inoperative	. В	
Leaking		Require repair or replacement Require replacement.
specification	. В	Require repair or replacement.
performance  Terminal broken  Terminal burned, affectin	. A	<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>
performance		(1) Require repair or replacement.
Terminal burned, not affecting performance . Terminal corroded,	. 2	Suggest repair or replacement.
	. A	Require repair or replacement.
	. 2	Suggest repair or replacement.
performance Terminal loose, not		Require repair or replacement.
affecting performance . Threads damaged	. A	<ul><li> Suggest repair or replacement.</li><li> Require repair or replacement.</li></ul>
Threads stripped (threads missing)		Require replacement.

Wire lead conductors	
Wire lead corroded Wire lead open	<ul><li>B Require repair or replacement.</li><li>A Require repair or replacement.</li><li>A Require repair or replacement.</li></ul>
Wire lead shorted	A Require repair or replacement.
<pre>fuel, metal particles,     replacement. (3) - Inoperative includes i</pre>	errect prior to repair or entamination, such as engine coolant, or water. Require repair or entermittent operation or out of the components may be serviceable;
check for accepted cle	±

### WASTE GATE CONTROL SOLENOIDS

### WASTE GATE CONTROL SOLENOID INSPECTION

Condition	Code	Procedure
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	
Connector broken	. A	of hardware Require repair or replacement.
Connector (Weatherpack type) leaking Connector melted		Require repair or replacement (1) Require repair or replacement.
Connector missing Contaminated		Require replacement(2) Require repair or replacement.
Inoperative	. B	
Leaking		Require repair or replacement Require replacement.
specification	. B	Require repair or replacement.
performance Terminal broken	. A	<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>
Terminal burned, affecting performance		(1) Require repair or replacement.
Terminal burned, not affecting performance . Terminal corroded,	. 2	Suggest repair or replacement.
	. A	Require repair or replacement.
•	. 2	Suggest repair or replacement.
performance Terminal loose, not		Require repair or replacement.
	. 1	Suggest repair or replacement.

Threads damaged Threads stripped (threads	A	• •	Require	repair	or	replacement.
missing)	A	• • •		. Requi	ire	replacement.
exposed Wire lead corroded Wire lead open Wire lead shorted	A A	• •	Require Require	repair repair	or or	replacement. replacement. replacement.
<ul> <li>(1) - Determine cause and c replacement of part.</li> <li>(2) - Determine source of c fuel, metal particles replacement.</li> </ul>	ont	amin	ation, sı	ıch as e	eng:	
(3) - Inoperative includes OEM specification. So check for accepted cl	me	comp	onents ma	ay be se		

### WASTE GATES AND BOOST CONTROL MECHANISMS

WASTE GATE AND BOOST CONTROL MECHANISM INSPECTION

Condition	Code			Procedure
Boost pressure incorrect	. A	 	replacemen	e repair or nt. Further n required.
Leaking	. A	 Require	repair or re	eplacement.
(1) - Incorrect boost pre or out of OEM speci		ludes in	termittent og	peration

### WATER PUMPS (ELECTRIC)

WATER PUMP (ELECTRIC) INSPECTION

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 Connector (Weatherpack	. A	Require repair or replacement.
type) leaking Connector melted		<pre> Require repair or replacement(1) Require repair or</pre>
Connector missing Inoperative Leaking Missing Noisy Rotation incorrect for	. A . A . C	Require replacement.  (2) Require replacement.  Require repair or replacement.  Require replacement.  Suggest replacement.
application		<ul><li>Require repair or replacement.</li><li>Require repair or replacement.</li></ul>

Terminal burned, affecting performance	A			(1) R	equ	ire repair or replacement.
Terminal burned, not	0					
affecting performance Terminal corroded,	2	• •	Suggest	repair	or	replacement.
affecting performance	Α		Require	repair	or	replacement
Terminal corroded, not		• •	nequire	reparr	01	repracement.
affecting performance	2		Suggest	repair	or	replacement.
Terminal loose, affecting						
performance	В		Require	repair	or	replacement.
Terminal loose, not	1		C			
affecting performance Vibration						
Wire lead conductors		• • •		· suggi	-50	repracement.
exposed	В		Require	repair	or	replacement.
Wire lead corroded						replacement.
Wire lead open			-	_		replacement.
Wire lead shorted	А		Require	repair	or	replacement.
<ul><li>(1) - Determine cause and creplacement of part.</li><li>(2) - Check fan motor/contrintermittent operation</li></ul>	ols	. In	operative	e inclu	des	tion.

# WATER PUMPS (NON-ELECTRIC)

WATER PUMP (NON-ELECTRIC) INSPECTION

Condition	Code	Procedure
Attaching hardware broken	. A	Require repair or replacement of hardware.
Attaching hardware corroded	. A	Require repair or replacement of hardware.
Attaching hardware missing	. C	Require replacement of hardware.
-	. A	Require repair or replacement of hardware.
Corrosion (internal) is excessive, affecting performance		Require replacement.
performance	. 2	. Suggest cooling system service (1) Require replacement.
Leaking		Require replacement. Require replacement.
application		Require repair or replacement Require replacement.
(1) - Inoperative include OEM specification.	s inte	ermittent operation or out of

Condition	Code	Procedure
Application incorrect	. В	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	
Connector broken Connector (Weatherpack	. A	Require repair or replacement.
type) leaking Connector melted	. A	Require repair or replacement. (1) Require repair or replacement.
Connector missing Insulation damaged,	. C	Require replacement.
conductors exposed Insulation damaged,	. A	Require repair or replacement.
conductors not exposed Open		Suggest replacement Require repair or replacement.
(conduit) melted	. 2	(1) Suggest repair or replacement.
Protective shield (conduit) missing Resistance (voltage drop)		Suggest repair or replacement.
out of specification Routed incorrectly Secured incorrectly Shorted Terminal broken Terminal burned, affectin	. A . B . B . A . A	<ul> <li>Require repair or replacement.</li> <li>Require repair.</li> <li>Require repair.</li> <li>Require repair or replacement.</li> <li>Require repair or replacement.</li> </ul>
performance		(1) Require repair or replacement.
Terminal burned, not affecting performance . Terminal corroded,	. 2	Suggest repair or replacement.
affecting performance .	. A	Require repair or replacement.
Terminal corroded, not affecting performance . Terminal loose, affecting	. 2	Suggest repair or replacement.
performance Terminal loose, not	. В	Require repair or replacement.
	. 1	Suggest repair or replacement.
	. A	Require repair or replacement.
(1) - Determine cause and replacement of part		ect prior to repair or