**ABC123** 

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2000 Chevrolet Camaro

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GENERAL INFORMATION

Brake Systems - January 2000 Motorist Assurance Program Standards For Automotive Repair

All Makes & Models

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# INTRODUCTION TO MOTORIST ASSURANCE PROGRAM (MAP)

# OVERVIEW OF MOTORIST ASSURANCE PROGRAM (MAP)

Automotive industry professionals and interested readers: The Motorist Assurance Program (MAP) is the consumer outreach effort of the Automotive Maintenance and Repair Association, Inc. (AMRA). Participation in the Motorist Assurance Program is drawn from auto repair companies and independents, parts and equipment manufacturers and suppliers, vehicle manufacturers and industry associations.

Our organization's mission is to strengthen the relationship between the consumer and the auto repair industry. We encourage motorists to take greater responsibility for their vehicles-through proper, manufacturer-recommended, maintenance, and endorse participating service and repair shops (including franchisees and dealers) who adopt (1) the MAP 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 an inspection of the vehicle's (problem) system and that the results be communicated to the customer according to industry standards. Since 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,

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Engine Maintenance and Performance, HVAC, and Electrical Systems.

Further, revisions to all of these inspection communication standards are re-published periodically. In addition to the above, standards for Drive Train and Transmissions were promulgated and published in 1998. Participating shops utilize these Uniform Inspection & Communication Standards (UI&CS) 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 governing body, and the program adjusted as needed.

To assure recourse for auto repair customers if they are not satisfied with a repair transaction, the Motorist Assurance Program offers mediation and arbitration through the BBB and other similar 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 UI&CS in communicating the results of their inspection to their customers. Complaints and "come-backs" dropped significantly.

To put some "teeth" in the program, an accreditation requirement for shops was initiated. The requirements are stringent, and a self-policing technique has been incorporated which includes the "mystery shopping" of outlets. By year-end 1999, over 4,000 auto repair facilities had been accredited by the Motorist Assurance Program.

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 | Street, NW - Suite 700 Washington, DC 20005 Phone (202) 712-9042 - Fax (202) 216-9646 E-mail map@bostromdc.org

# 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

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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

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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.

## **BRAKES**

# SERVICE PROCEDURES REQUIRED & SUGGESTED FOR PROPER VEHICLE OPERATION

Some states may have specifications that differ from OEM. Check your local/state regulations. Where state or local laws are stricter, they take precedence over these guidelines.

# ACCELEROMETERS (G SENSOR OR LATERAL)

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Condi ti on	Code	Procedure
Connector Loose	A B C	Require replacement. Require repair or replacement. Require repair or replacement. Require replacement. Require re-positioning to vehicle manufacturer's
. •		speci fi cati ons. Requi re repl acement. AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

## **ACCUMULATORS**

## **ANCHOR PINS**

See BACKING PLATES.

## ANTI-LOCK BRAKE SYSTEMS

NOTE: Anti-lock brakes are an integral part of the brake system. It is essential that the anti-lock brakes function properly when

brake service is performed.

Anti-lock brake systems are commonly referred to as "ABS" and will be referred to as "ABS" throughout these guidelines. Some ABS components also function as part of a traction control system (TCS).

WARNING: When diagnosing and servicing high pressure components,

observe safety procedures and equipment requirements established by the vehicle manufacturer to reduce the

possibility of serious personal injury.

NOTE: Intermittent electrical conditions are often caused by a loss

of ground, poor connection, or water intrusion into the

wiring harness.

NOTE: Electro-magnetic interference (EMI) may be caused by

incorrect installation of accessories or components. EMI can

result in improper system operation.

## **BACKING PLATES**

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Condi ti on	Code	Procedure
	Α	Require repair or replacement Require replacement.
structural integrity Backing plate bent Backing plate broken	В В А	Require replacement. Require repair or replacement. Require replacement. Require replacement.
structural integrity Loose	B C A	Require replacement. Require repair or replacement. Require replacement. Require repair or replacement. AÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ

## **BRAKE FLUID**

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

DOT 3, DOT 4, and DOT 5.1 brake fluids are clear or light amber in color. DOT 5 brake fluid is violet in color. Correct fluid required for the brake system is stamped on the master cylinder cover.

## BRAKE FLUID INSPECTION

Beyond service interval . 3 .. Suggest flushing and refilling with correct fluid.

Brake fluid type

incorrect ..... B .. Require flushing and refilling with correct fluid.

Contaminated, for example, fluid other than brake

fluid present ...... A or B ...... (1) Require service. Hydraulic component .... 3 ... Suggest flushing and refilling overhaul or replacement with correct fluid.

Rubber master cylinder cover gasket distorted

- (1) If a fluid other than brake fluid is present in the brake system which DOES affect the rubber parts, the required service is to:
  - \* Remove all components having rubber parts from the system.
  - \* Flush lines with denatured alcohol or brake cleaner
  - \* Repair or replace all components having rubber parts
  - \* Flush and fill with correct brake fluid. (Code A)

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

#### BRAKE FRICTION MATERIAL

See FRICTION MATERIAL.

## **BRAKE PADS**

See FRICTION MATERIAL.

## **BRAKE PEDALS**

## **BRAKE SHOES**

See FRICTION MATERIAL.

## **BRAKE SHOE HARDWARE**

See also SELF-ADJUSTING SYSTEMS.

## BRAKE STOPLIGHT SWITCHES

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	AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Bent	
type) leaking Connector melted Connector missing	A Require repair or replacement. A (1) Require replacement. C Require replacement.
Out of adjustment	C Require replacement. B Require adjustment or replacement. B Require replacement.
Terminal burned, affecting	A (2) Require repair
Terminal burned, not affecting performance	or replacement.  2 Suggest repair or replacement.
Terminal corroded, affecting performance Terminal corroded, not	A Require repair or replacement.
affecting performance Terminal loose, affecting	, ,
	1 Suggest repair or replacement.
Threads damaged Threads stripped (threads missing)	A Require repair or replacement.  A Require replacement.
(2) - Determine cause and of part.	correct prior to replacement of part. correct prior to repair or replacement
BULB SOCKETS	
	ААААААААААААААААААААААААААААААAAAAAAAA
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.
BrokenBulb seized in socket	A Require repair or replacement.

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Burned, affecting	
performance	A (1) Require repair or replacement.
Burned, not affecting	
performance	2 (1) Suggest repair or replacement.
Connector broken	A Require repair or replacement.
Connector missing Connector (Weatherpack	C Require replacement.
	A Require repair or replacement.
Connector mel ted	A (2) Require repair or replacement.
Corroded, affecting	'
performance Corroded, not affecting	A Require repair or replacement.
o o	2 Suggest repair or replacement.
	A Require repair or replacement.
	A (2) Require replacement.
	A Require repair or replacement.
	A Require repair or replacement.
Terminal burned, affecting	(0) Dec la constant
perrormance	A (2) 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	B Require repair or replacement.
Terminal loose, not affecting performance	1 Suggest repair or replacement.
(1) - Determine cause and c	correct prior to repair or
replacement of socket	
(2) - Determine cause and c	correct prior to repair or
replacement of part. ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ	λα
BULBS AND LEDS	
NOTE: Copied from Electr	sical III Co and madified Dags not
include soldered-i	rical UIGs and modified. Does not n components.
	AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Application incorrect Base burned, affecting	B (1) Require replacement.
	A (2) Require repair
	or replacement.
Raso burned not affecting	

Base burned, not affecting

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performance	2	(2) Suggest repair or replacement.	
Base corroded, affecting		er ropraeement.	
performance Base corroded, not	A Require	repair or replacement.	
affecting performance Base loose, affecting	2 Suggest	repair or replacement.	
performanceBase loose, not affecting	B Require	repair or replacement.	
performance	1 Suggest	repair or replacement.	
Burned out	Α	Require replacement.	
Intermittent	Α	Require replacement.	
Missing			
Seized in socket	A Require	repair or replacement.	
Terminal broken Terminal burned, affecting	A Require	repair or replacement.	
performance	Α	(2) Require repair or replacement.	
Terminal burned, not			
affecting performance	2	or replacement.	
Terminal corroded,			
affecting performance Terminal corroded, not			
Terminal loose, affecting		repair or replacement.	
performance  Terminal Loose, not	·	repair or replacement.	
affecting performance	ı suggest	repair or repracement.	
<ul><li>(1) - Application incorrect or color.</li><li>(2) - Determine cause and c replacement of part.</li><li>ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ</li></ul>	orrect prior to	repair or	
CALIPER HARDWARE			
CALIPER HARDWARE INSPECTION AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA		AAAAAAAAAAAAAAAAAAAAAAA Procedure	
	•	repair or replacement.	
Broken Corroded, affecting	•		
performance  Dust boots on slider pin	·	·	
(bolt) missing  Dust boots on slider pin		e replacement of boots.	
(bolt) torn			
Missing Shim bent		. (1) Require removal	
Shim (OE standard)		or replacement.	
on m (or orangana)			

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	C (2) Require replacement. B (1) Require removal
Shim worn	or replacement.  A(1) Require removal or replacement.
Slider pin (bolt) bent	B Require replacement of slider pin or bolt and lubricants.
Slider pin (bolt)	prin or bort and rubir cants.
rust-pitted	A Require replacement of slider pin or bolt and lubricants.
Slider pin (bolt) worn	A Require replacement of slider pin or bolt and lubricants.
Threads damaged Threads stripped (threads	A Require repair or replacement.
missing)	A Require replacement.
Worn, affecting performance	A Require replacement.
• •	e if shim is not OE. / be suggested to reduce noise.

# **CALIPERS**

You are not required to replace or rebuild calipers in axle sets. However, when replacing or rebuilding a caliper due to the conditions that follow, you may suggest servicing, rebuilding, or replacement of the other caliper (on the same axle) for improved performance and preventive maintenance (for example, the part is close to the end of its useful life, replacing the caliper may extend pad life, or contribute to more balanced braking).

CAUTION: When installing loaded calipers, it is required that friction material be matched in axle sets for consistent braking characteristics.

#### CALIPER INSPECTION

Bleeder port damaged ... A Require repair or replacement of caliper.

Bleeder screw broken off in caliper ... A ... (1) Require repair or replacement of caliper.

Bleeder screw plugged ... A ... (1) Require repair or replacement of bleeder screw.

Bleeder screw seized ... A ... (2) Require replacement of caliper.

Casting corroded, affecting structural integrity ... A ... Require replacement.

Casting damaged, affecting structural integrity ... A ... Require replacement.

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Dust boot around caliper torn		 Require replacement of dust boot.
Leaking Mounting pin threads	A	 Require repair or replacement.
damaged	A	 Require repair or replacement of component with damaged threads.
Mounting pin threads stripped in caliper bracket (threads		
-	A	 Require repair or replacement of caliper bracket.
Mounting pin threads stripped in steering knuckle (threads		
missing)  Mounting pin threads	A	 Require repair or replacement of steering knuckle.
stripped (threads	A	 Require repair or replacement of component with stripped threads.
Parking brake cable		···· oade.
support, lever, or retu spring bent Parking brake cable support, lever, or retu	A	 Require replacement of parts.
spring broken Parking brake mechanism	A	 Require replacement of parts.
caliper inoperative Piston corroded (pitted or peeling chrome		 Require repair or replacement.
plating)	В	 Require replacement of piston and rebuilding or replacement of caliper.
Piston damaged, affectir performance		 Require replacement of piston and rebuilding or replacement of caliper.
Piston damaged, not affecting performance		 No service suggested or required.
Piston finish worn off	В	 Require replacement of piston and rebuilding or replacement
Piston sticking	A	 of caliper. Require rebuilding or replacement of caliper.
Slide mechanism sticking	A	 Require repair or replacement of slide mechanism.
<ul><li>(1) - Only required if t</li><li>(2) - Seized is defined</li></ul>		ic system must be opened. er screw that cannot be

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## **CONTROLLERS**

See ELECTRONIC CONTROLLERS.

## DIGITAL RATIO AXLE CONTROLLERS AND BUFFERS (DRAC AND DRAB)

Connector broken Connector (Weatherpack	Α	 Require repair or replacement.
type) Leaking	Α	 Require repair or replacement.
= :		(1) Require replacement.
		Require replacement.
		Require replacement.
		Require repair or replacement.
Terminal burned, affecting		
performance	Α	 (2) Require repair
·		or replacement.
Terminal burned, not		·
affecting performance	2	 Suggest repair or replacement.
Terminal corroded,		
affecting performance	Α	 Require repair or replacement.
Terminal corroded, not		
	2	 Suggest repair or replacement.
Terminal loose, affecting		
performance	В	 Require repair or replacement.
Terminal Loose, not		
affecting performance	1	 Suggest repair or replacement.
<u>.</u>		

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

## DISABLE SWITCHES

See SWI TCHES.

#### **DRUMS**

Determine the need to recondition based upon individual drum conditions that follow. Friction material replacement does not require drum reconditioning unless other justifications exist. DO NOT recondition new drums unless they are being pressed or bolted onto an existing hub. It is not necessary to replace drums in axle sets. However, when replacing or reconditioning a drum due to the conditions that follow, you may suggest reconditioning of the other drum on the same axle to eliminate uneven braking behavior. Always wash drums

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after servicing or before installing. DRUM INSPECTION Condi ti on Code Procedure Balance weight missing ...... No service suggested or requi red. Bell-mouthed, affecting performance ..... A ..... Require reconditioning or replacement. Cooling fin broken ...... No service suggested or requi red. Cracked ..... B ..... Require replacement. Drum diameter is greater than OEM "machine to" specifications but less than "discard at" specifications, and the drum does not require reconditioning ...... 1 ...... (1) Suggest replacement. Drum diameter will exceed OEM "machine to" specifications after requi red reconditioning ...... B ...... (2) Require replacement. Hard-spotted ...... 2 ...... Suggest reconditioning or replacement. Measured diameter is greater than OEM discard specifications ..... B ..... Require replacement. Out-of-round (runout), affecting performance .. A ...... Require reconditioning or replacement. Out-of-round (runout), exceeding manufacturer's specifications ...... B ...... Require reconditioning or replacement. Scored ..... B ..... Require reconditioning or replacement. Surface threaded due to improper machining ..... B ...... Require reconditioning or replacement. Tapered, affecting performance ..... A ..... Require reconditioning or replacement. (1) - Only applies to vehicles for which OEM "machine to" specifications exist. If OEM does not supply "machine to" specifications, the drum may be worn to discard speci fi cati ons. (2) - If OEM does not supply "machine to" specifications, you may machine to discard specifications. 

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# **ELECTRICAL PUMPS AND MOTORS**

Copied fuel pump conditions from engine UIGs & deleted pulsator from leaking conditions.

		ÄÄÄÄ	ON AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Attaching hardware broken	Α		Require repair or replacement of hardware.
Attaching hardware missing	С		Require replacement of
Attaching hardware not			hardware.
functioning	Α		Require repair or replacement of hardware.
Connector broken Connector (Weatherpack	Α		Require repair or replacement.
type) leaking	Α		Require repair or replacement.
Connector mel ted	Α		(1) Require repair or replacement.
Connector missing	С		Require replacement.
Contami nated			(2) Require replacement.
Inoperative	Α		(3) Require repair or replacement.
Leaking externally	Α		Require repair or replacement.
Leaking internally			Require repair or replacement.
Noi sy			·
Terminal broken			
Terminal burned, affecting			The second secon
performance	Α		(1) Require repair
Terminal burned, not			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	1		Suggest repair or replacement.
Threads damaged			Require repair or replacement.
Threads stripped (threads			
missing) Wire lead conductors			Require replacement.
exposed			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.

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- (1) Determine cause and correct prior to repair or replacement of part.
- (2) Determine source of contamination. Require repair or replacement.
- (3) Inoperative includes intermittent operation or out of OEM specifications.

# **ELECTRONIC CONTROLLERS**

ELECTRONIC CONTROLLER INSPE		
	ÄÄÄÄ Code	AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Application incorrect Attaching hardware	В	Require replacement.
mi ssi ng	С	Require replacement of hardware.
Attaching hardware threads damaged	Α	Require repair or replacement of hardware.
Attaching hardware threads stripped (threads		
<u>.</u>	Α	Require repair or replacement of hardware.
Code set (if applicable)	Α	(1) Further inspection required.
Connector broken Connector mel ted		Require repair or replacement(2) Require repair or replacement.
Connector missing Contaminated I noperative	Α	Require repair or replacement. Require repair or replacement.
Leaking		(3) Further inspection required Require repair or replacement Require replacement Require repair or replacement.
Terminal burned, affecting performance	Α	(2) Require repair or replacement.
Terminal burned, not 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		<ul><li> Suggest repair or replacement.</li><li> Require repair or replacement.</li></ul>
Threads stripped (threads missing)		Require replacement.

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- (1) Refer to manufacturer's diagnostic trouble code procedure and require repair or replacement of affected component(s).
- (2) Determine cause and correct prior to repair or replacement of part.
- (3) Inoperative includes intermittent operation or out of OEM specification. Some components may be serviceable. Check for accepted cleaning procedure.

#### **FLUID**

See BRAKE FLUID.

## FLUID LEVEL SENSOR SWITCHES

See SWI TCHES.

## FOUR WHEEL DRIVE SWITCHES

See SWITCHES.

## FRICTION MATERIAL

NOTE: Original Equipment Manufacturer (OEM) specifications

designate replacement at different thicknesses.

CAUTION: It is required that friction material be matched in axle

sets for consistent braking characteristics.

## FRICTION MATERIAL INSPECTION

Contaminated, for example, fluid that leaked from caliper, wheel cylinder, or axle seal ......... A ........ (1) Require replacement. Cracked through ..... B Require replacement. Flaking or chunking .... B Require replacement. Glazed (shiny) ...... No service suggested or requi red. Grooves or ridges ...... (2) No service suggested or requi red. Permanently attached hardware bent ..... A ..... Require replacement. Permanently attached hardware broken ...... A ......... Require replacement. Permanently attached

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hardware Loose Permanently attached	Α	Require replacement.	
hardware missing Permanently attached	C	Require replacement.	
hardware seized	A Require r	repair or replacement.	
Rivets Loose			
Separating from backing .			
Shoe table or web bent Shoe table or web			
cracked Shoe table or web worn,	Α	Require replacement.	
affecting performance	Α	Require replacement.	
Surface cracking			
3		ed. Further inspection	
	•	necessary to determine cause.	
Tapered wear	B(3)	Suggest replacement.	
(uneven wear)	mate requi re	eplacement of friction erial not suggested or ed. Further inspection required. See CALIPERS and CALIPER HARDWARE.	
Wear indicator device (electronic) contacts rotor	B (5) F	Require replacement of appropriate parts.	
Wear indicator device		appropriate parts.	
(mechanical) bent	(	6) Further inspection required.	
Wear indicator device (mechanical) broken	(	(6) Further inspection required.	
Wear indicator device (mechanical) contacts		r equi r eu.	
rotor	(	6) Further inspection required.	
Worn close to minimum specifications	1 (7)	·	
Worn to, or below minimum specifications			
(1) - Identify and repair o		ition prior to	
replacing friction ma (2) - When reconditioning of replacement of frictions and the conditions are the conditions and the conditions are the condi	or replacing drums on material may b	e suggested	
depending on the seve (3) - Some vehicles use pactors specific vehicles	ls that are tapere	ed by design. Refer	

to specific vehicle application. If not normal, require

(4) - Uneven pad thickness is normal on some vehicles. Refer to

replacement of pads and correction of cause.

specific vehicle applications.

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- (5) The pad wear indicator light may come on due to other electrical problems.
- (6) Explain to the customer that the purpose of the wear indicator is to alert him or her to check for friction wear. Wear indicators may be bent or broken. Therefore, the friction material must be measured. The need for friction material replacement is determined based upon the conditions stated in this section. Periodic inspection is suggested.
- (7) When the part appears to be close to the end of its useful life, replacement may be suggested.

## **G SENSORS**

See ACCELEROMETERS.

# **HOSES**

HOSE INSPECTION ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ	ÄÄÄÄÄ Code	ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ
Attaching hardware broken	. А	Require repair or replacement of hardware.
Attaching hardware missing	. С	
Attaching hardware not functioning	. А	Require repair or replacement of hardware.
Blistered		Require replacement Require repair or replacement.
(threads missing) Incorrectly secured Inner fabric		Require replacement. Require repair.
(webbing) cut	. A	Require replacement. Require replacement. Require replacement. Require replacement.
Routed incorrectly	. А . В	Require replacement.

# HYDRAULIC MODULATORS

NOTE:

Many modulators can only be replaced as complete assemblies. Whenever possible, replace the failed

component part. If replacement of the failed part is not

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possible, then replace the modulator assembly.
HYDRAULIC MODULATOR INSPECTION ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ
Attaching hardware broken A Require repair or replacement of hardware.
Attaching hardware missing C Require replacement of hardware.
Attaching hardware not functioning A Require repair or replacement
of hardware.
Connector broken A Require repair or replacement. Connector (Weatherpack
type) leaking A Require repair or replacement. Connector melted A (1) Require replacement.
Connector missing C Require replacement.
Disabled A Require repair or replacement.
Electrical failure A Require repair or replacement.
External leak A Require repair or replacement.
Housing cracked B Require repair or replacement.
Inoperative (2) A Require repair or replacement.
Internal Leak A Require repair or replacement.
Missing C Require replacement.
Terminal burned, affecting performance A (1) Require repair or replacement.
Termi nal burned, not
affecting performance 2 Suggest repair or replacement. Terminal corroded,
affecting performance A Require repair or replacement.  Terminal corroded, not
affecting performance 2 Suggest repair or replacement.  Terminal loose, affecting
performance B Require repair or replacement. Terminal loose, not
affecting performance 1 Suggest repair or replacement.
Threads damaged A Require repair or replacement.
Threads stripped (threads
missing) A Require replacement.
Valve stuck A Require repair or replacement.
Wire Lead burned A Require repair or replacement.
Wire Lead conductors
exposed B Require repair or replacement.
Wire lead open A Require repair or replacement.
Wire lead shorted A Require repair or replacement.
<ul><li>(1) - Determine cause and correct prior to replacement of part.</li><li>(2) - Inoperative includes intermittent operation or out of OEM</li></ul>

(2) - Inoperative includes intermittent operation or out of OEM speci fi cati on.

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# **HYDRO-BOOSTERS**

NOTE: Hydro-boosters and	hydro-electric boosters are combined.
	ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ
Attaching hardware broken	A Require repair or replacement of hardware.
Attaching hardware missing	C Require replacement of hardware.
Attachi ng hardware not functi oni ng	A Require repair or replacement of hardware.
Connector broken Connector (Weatherpack	A Require repair or replacement.
type) leaking	A Require repair or replacement. A (1) Require replacement. C Require replacement.
inadequate assist Leaking Leaks fluid at fitting	A Require repair or replacement. B Require repair or replacement. B Require tightening or
Leaks fluid at unit Leaks fluid from pressure	replacement.  B Require repair or replacement.
hose(s) Leaks fluid into passenger	B . Require replacement of hose(s).
compartment	B Require repair or replacement. A Require repair or replacement.
performance	A (1) Require repair or replacement.
Termi nal burned, not affecti ng performance Termi nal corroded,	2 Suggest repair or replacement.
	A Require repair or replacement.
affecting performance Terminal loose, affecting	2 Suggest repair or replacement.
performance Termi nal loose, not	B Require repair or replacement.
affecting performance Threads stripped (threads	1 Suggest repair or replacement.
missing)	A Require replacement.
(1) - Determi ne cause and c ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ	orrect prior to replacement of part. ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ

 ${\tt HYDRO\text{-}ELECTRIC\ BOOSTERS\ (POWERMASTER)}$ 

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See HYDRO-BOOSTERS.

# **IGNITION DISABLE SWITCHES**

See SWI TCHES.

# LATERAL ACCELERATION SWITCHES

See ACCELEROMETERS.

**LEDS** 

See BULBS AND LEDS.

# **LENSES**

LENSE INSPECTION AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Application incorrect Attaching hardware	. A Require replacement.
	. A Require repair or replacement of hardware.
Attaching hardware missing	. C Require replacement of hardware.
Attachi ng hardware not functi oni ng	. A Require repair or replacement of hardware.
Broken, affecting performance Broken, not affecting	. A Require replacement.
performance	No service suggested or required.
Cracked	. A Require replacement.
Di scol ored	·
Leaking	
	. A Require replacement.
performance	. C Require replacement.
AAAAAAAAAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

# MASTER CYLINDERS

Brake fluid leaking from rear of master cylinder

	DIVARLE STOTE LIN ONLY INSTE	CHON GOIDELINES
ABC123		Article Chevrolet Camaro
Brake p	B Require repair of the state of the stat	·
	evel low	replacement. ther inspection
	al valve failure A Require repair o cylinder leaking	requi red. or repl acement.
brake	fluid internally . A Require repair of	
	does not return A Require repair of ugged A Require repair of	
Rubber	olugged A Require repair of master cylinder gasket distorted	л тергасешетт.
	ummy A (3) Require repl	acement of the gasket.
a (2) - R	This condition may be normal on some vehicles anti-lock brakes. Refer to OEM procedures for adjusting low flo	uid Level.
m	nspect for brake hydraulic system leaks and naterial wear. This condition may indicate contaminated brake	
S	This condition may indicate contaminated brais See BRAKE FLUID. ХАХАХАХАХАХАХАХАХАХАХАХАХАХАХАХАХАХАХА	
МО	DDULATORS	
	See HYDRAULIC MODULATORS.	
МО	OTORS	
	See ELECTRICAL PUMPS AND MOTORS.	
PAI	RKING BRAKE SWITCHES	
	See SWI TCHES.	
PAI	RKING BRAKE SYSTEMS	
NOTE:	The parking brake is an integral part of system. It is important that the parking be properly when brake service is performed.	
	G BRAKE SYSTEM INSPECTION AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAA Procedure
	ng hardware n Require repair	or replacement of hardware.
Attachi	ng hardware	or naroware.

Attaching hardware not

hardware.

missing ..... C ...... Require replacement of

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functioning	Α	Require repair or replacement of hardware.
Cable improperly adjusted Cable or individual wires in the cable	В	Require cable adjustment.
	Α	Require replacement of cable assembly.
Cable sticking Cable stuck inside conduit and cannot be lubricated so that parking brake	A	Require cable lubrication.
	Α	Require replacement of cable assembly.
Inoperative (1)	Α	Require replacement of inoperative parts.
Parking brake parts bent	В	Require repair or replacement of bent parts.
Parking brake parts broken	Α	Require replacement of broken parts.
Parking brake parts missing	С	Require replacement of missing parts.
Threads damaged Threads stripped (threads	Α	Require repair or replacement.
, ,	Α	Require replacement.
(1) - Inoperative includes AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA		ermittent operation. AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

# **PADS**

See FRICTION MATERIAL.

# PEDAL TRAVEL SWITCHES

See SWI TCHES.

# **PEDALS**

See BRAKE PEDALS.

# **POWERMASTER**

See HYDRO-BOOSTERS.

# **PUMPS**

See ELECTRICAL PUMPS AND MOTORS.

# PRESSURE DIFFERENTIAL SWITCHES

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See SWITCHES.

#### PRESSURE SWITCHES

See SWITCHES.

# **RELAYS**

NOTE: Copied from Electrical UIGs

RELAY 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.

Housing broken ..... A ..... Require replacement. Housing cracked ...... 2 ...... Suggest replacement. Inoperative (1) ...... A ......... Require replacement.

Missing ..... C ..... Require replacement. Terminal broken ..... A .. Require repair or replacement.

Terminal burned,

affecting performance .. A ....... (2) 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.

- (1) Inoperative includes intermittent operation or out of OEM speci fi cati on.
- (2) Determine cause and correct prior to repair or replacement of part.

## ROTORS

Determine the need to recondition based upon individual rotor conditions that follow. Friction material replacement does not require rotor reconditioning unless other justifications exist. DO NOT recondition new rotors unless they are being pressed or bolted onto an

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existing hub. It is not necessary to replace rotors in axle sets. However, when replacing or reconditioning a rotor due to the conditions that follow, you may suggest reconditioning of the other rotor on the same axle to eliminate uneven braking behavior.

Determine the need to replace based upon the individual rotor conditions that follow. Reconditioning is defined as machining and block sanding, or block sanding only. Block sanding is defined as using 120-150 grit sandpaper with moderate to heavy force for 60 seconds per side. Always wash rotors after servicing or before installing.

ROTOR INSPECTION

ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ	ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ	ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ
Condi ti on	Code	Procedure

Corrosion affecting

Lateral runout (wobble)

exceeds OEM

specifications ...... B ......... Require re-indexing, reconditioning, or replacement according to specifications.

Measured thickness is less

than OEM discard

specifications ..... B ..... Require replacement.

Rotor thickness is less than OEM "machine to" specifications but thicker than "discard at"

than "discard at" specifications, and the

rotor does not require

reconditioning ......... 1 ........... (2) Suggest replacement.

Rotor thickness will be less than OEM "machine to" specifications after

requi red

reconditioning ....... B ...... (3) Require replacement. Surface is rust-pitted ... B ...... Require reconditioning or replacement of rotor according

to OEM specifications.

Surface is scored ..... B ... (4) Require reconditioning or replacement of rotor according

replacement of rotor according to 0EM specifications.

Thickness variation (parallelism) exceeds OEM

specifications ...... B ...... Require reconditioning or replacement of rotor according to OEM specifications.

(1) - Examples of severe corrosion are: composite plate

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missing part.

- separated from friction surfaces and cooling fins cracked or missing.
- (2) Only applies to vehicles for which OEM "machine to" specifications exist. If OEM does not supply "machine to" specifications, the rotor may be worn to discard specifications.
- (3) If OEM does not supply "machine to" specifications, you may machine to discard specifications.
- (4) Scoring is defined as grooves or ridges in the friction contact surface. Some vehicle manufacturers require machining when scoring exceeds their allowable specifications.

#### SELF-ADJUSTING SYSTEMS

Bent ..... A ... Require repair or replacement

of bent part.

Broken A Require repair or replacement of broken part.

Inoperative A (1) Require repair or replacement of inoperative parts.

Missing C Require replacement of

Star wheel does not turn freely ..... A .. Require repair or replacement.

# SHOE HARDWARE

See BRAKE SHOE HARDWARE.

#### SHOES

See FRICTION MATERIAL.

# **SOCKETS**

See BULB SOCKETS.

# SPEED SENSORS (ELECTRONIC WHEEL AND VEHICLE)

NOTE:

Copied Vehicle Speed Sensors from Engine UIGs & added Air Gap incorrect, loose, and wire lead misrouted. For "contaminated" removed coolant & fuel examples from note.

SPEED SENSOR INSPECTION

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	AÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ	
Air gap incorrect	B (1) Require adjustment or replacement.	
Attachi ng hardware mi ssi ng	C Require replacement of hardware.	
Attaching hardware threads damaged	A Require repair or replacement of hardware.	
Attachi ng hardware threads stri pped (threads mi ssi ng)	A Require repair or replacement	
Connector broken	of hardware. A Require repair or replacement.	
	A Require repair or replacement. A (2) Require repair or	
	replacement. C Require replacement. A (3) Require repair or	
	replacement.  B(4) Require repair or replacement. Further	
Lead routing incorrect	inspection required.  B Require rerouting according to vehicle manufacturer's	
	specifications.  A Require repair or replacement.  A Require repair or replacement.	
MissingResistance out of	C Require replacement.	
	B Require repair or replacement.	
	2 Suggest replacement. A Require repair or replacement.	
affecting performance  Terminal burned, not	A (2) Require repair or replacement.	
affecting performance Terminal corroded,	2 Suggest repair or replacement.	
affecting performance Terminal corroded, not	A Require repair or replacement.  2 Suggest repair or replacement.	
Terminal Loose,	B Require repair or replacement.	
Terminal Loose, not	1 Suggest repair or replacement.	
	A Require repair or replacement.	
Wire Lead conductors	A Require replacement.	
exposed	B Require repair or replacement.	

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Wire lead corroded .... A .. Require repair or replacement.
Wire lead misrouted .... B .. Require re-routing according to vehicle manufacturer's specifications.
Wire lead open .... A .. Require repair or replacement.
Wire lead shorted ... A .. Require repair or replacement.

- (1) If a sensor is not adjustable, further inspection is required to identify and correct cause.
- (2) Determine cause and correct prior to repair or replacement of part.
- (3) Determine source of contamination, such as metal particles or water. Require repair or replacement.
- (4) Inoperative includes intermittent operation or out of OEM specification. Some components may be serviceable; check for accepted cleaning procedure.

## STEEL BRAKE LINES

STEEL BRAKE LINE INSPECTION Condi ti on 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. Corroded, affecting structural integrity ... A ...... Require replacement. Fitting incorrect (for example, compression fitting) ..... B ..... Require replacement. Flare type incorrect .... B .. Require repair or replacement. Leaking ..... A .. Require repair or replacement. Line material incorrect (copper, etc.) ..... B ..... Require replacement. Restricted ..... A ..... Require replacement. Routed incorrectly ..... B .... Require routing correction. Rust-pitted ...... 1 ...... Suggest replacement. Threads damaged ..... A .. Require repair or replacement. Threads stripped (threads missing) ..... A ...... Require replacement. 

# STOPLIGHT SWITCHES

See BRAKE STOPLIGHT SWITCHES.

## **ABC123**

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## **SWITCHES**

NOTE: Copied from Electrical UIGs & added "float saturated" from

old fluid level sensor switches.

STEEL	BRAKE	LINE	I NSPECTI ON	
X X X X X X X			~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	`^

Condi ti on Code Procedure

Attaching hardware

broken ..... A ... Require repair or replacement of hardware.

Attaching hardware

missing ...... C ...... Require replacement of

Attaching hardware not

functioning ..... A ... Require repair or replacement of hardware.

Binding, affecting

performance ..... A .. Require repair or replacement.

Binding, not affecting

performance ...... 2 .. Suggest repair or replacement. Broken ..... A .. Require repair or replacement.

Burned, affecting

performance ..... A ........... (1) Require repair or

Burned, not affecting

replacement.

replacement.

Cracked, affecting

performance  $\ldots\ldots$  A  $\ldots$  Require repair or replacement.

Cracked, not affecting

performance ........... 1 ... Suggest repair or replacement. Float saturated ..... A ..... Require replacement.

Leaking ..... A .. Require repair or replacement. Malfunctioning ..... A .......... (2) Require repair or

replacement.

Melted, affecting

performance ..... A ......... (1) Require repair or

Melted, not affecting performance ......

replacement.

Missing ..... C ..... Require replacement.

2 ..... (1) Suggest repair or replacement.

Terminal broken ..... A .. Require repair or replacement.

Out of adjustment ..... B .. 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

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affecting performance	2	 Suggest	repai r	or	replacement.
Terminal loose, affecting					
performance	В	 Requi re	repai r	or	replacement.
Terminal Loose, not					
affecting performance	1	 Suggest	repai r	or	replacement.
Won't return	Α	 Requi re	repai r	or	replacement.
Worn	1	 	Sugge	est	replacement.

- (1) Determine cause and correct prior to repair or replacement of part.
- (2) Includes inoperative, intermittent operation, or failure to perform all functions.

#### **TIRES**

Consult the vehicle owner's manual or vehicle placard for correct size, speed ratings, and inflation pressure of the original tires.

TIRE INSPECTION

## TOOTHED RINGS (TONE WHEEL)

NOTE: Copied from Drivetrain UIGs.

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

# TOOTHED RING INSPECTION

Condi ti on	code		i i ocedai e
Alignment incorrect	В		. Require repair or replacement.
Bent	В		•
performance	Α	Requ	ire repair. Identify and correct cause.
Cracked	В		Require replacement.
Loose	Α		Require replacement
			of worn parts.
Missing	С		Require replacement.

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Number of teeth incorrect Teeth broken Teeth damaged, affecting performance ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ	· ·
VACUUM BOOSTERS	
	AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Attaching hardware	A Require 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.
Auxiliary vacuum pump inoperative	A (1) Require repair or replacement.
Check valve grommet deteriorated, affecting performance	A Require replacement of grommet.
affecting performance	<ul><li>1 . Suggest replacement of grommet.</li><li>A (2) Require repair or</li></ul>
·	replacement.  A Require replacement of check
Check valve missing	valve.  C Require replacement of check valve.
	2 Suggest replacement. A Require repair or replacement.
type) leaking	A Require repair or replacement.  A (3) Require replacement.  C Require replacement.
Leaking Terminal burned, affecting	A Require replacement.
performance  Termi nal burned, not	A (3) Require repair or replacement.
	2 Suggest repair or replacement.
	A Require repair or replacement.

ABC123	Entire Article
	2000 Chevrolet Camaro

<b>.</b>	2		Suggest repair or replacement.
Terminal Loose, affecting performance  Terminal Loose, not	В		Require repair or replacement.
affecting performance			Suggest repair or replacement.
Threads damaged Threads stripped (threads	Α		Require repair or replacement.
missing)	Α		Require replacement.
Vacuum hose filter	Α		Require replacement of filter.
Vacuum hose filter			
restricted			Require replacement of filter. Require repair or replacement.
Wire lead conductors	А		require repair or repracement.
exposed	В		Require repair or replacement.
Wire Lead open	Α		Require repair or replacement.
Wire Lead shorted	Α		Require repair or replacement.
(1) - Inoperative includes OEM specification.	int	ermi	ttent operation or out of
(2) - Inoperative includes	int	ermi	ttent operation.
(3) - Determine cause and c	orr	ect	prior to replacement of part.
ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ	ÄÄÄÄ	ÄÄÄÄÄ	ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ

# **VACUUM HOSES**

See HOSES.

# **VALVES**

	ÄÄÄÄ Code	AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Attaching hardware broken	Α	Require repair or replacement of hardware.
Attaching hardware missing	С	Require replacement of
Attaching hardware		hardware.
•	Α	Require repair or replacement of hardware.
Leaking Linkage bent (rear	В	Require repair or replacement.
	Α	Require repair or replacement of linkage.
Linkage broken (rear		
load valves)	А	Require repair or replacement of linkage.
Linkage disconnected (rear load valves)	С	Require repair or replacement of linkage.
Pressure out of		or rrinage.

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specification	В	 Require adjustment. If no possible, require replacement.
Sei zed	Α	 Require replacement.
		Require repair or replacement.
Termi nal burned,		
	Α	 (1) Require repair or replacement.
Terminal burned, not		•
affecting performance	2	 Suggest repair or replacement.
Terminal corroded,		
	Α	 Require repair or replacement.
Terminal corroded, not		and a special section of
	2	 Suggest repair or replacement.
Terminal loose, affecting		
	В	Require repair or replacement.
Termi nal loose, not	_	 mequi e i epai e e i epi accinente.
	1	Suggest repair or replacement.
Threads damaged		Require repair or replacement.
Threads stripped (threads	, ,	 require repair of repracement.
	Δ	Require replacement.
		Require repair or replacement.
Wire lead conductors	А	 require repair of repracement.
	D	Degui se sensi s es seni ecoment
		Require repair or replacement.
Wire lead open		Require repair or replacement.
Wire lead shorted	А	 Require repair or replacement.

# WHEEL ATTACHING HARDWARE

For conditions noted below, also check condition of wheel stud holes.

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

# WHEEL ATTACHING HARDWARE INSPECTION

Broken	Α	Require replacement (1) Require replacement Require repair or replacement
20000		of affected component.
Lug nut flats rounded Lug nut installed	Α	Require replacement of nut.
9	В	Require repair.
0	Α	Require replacement of nut.

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incorrect B Require Lug nut seized A Require Stud incorrect B Require Threads damaged A Require of c	re replacement of nut and/or stud. replacement of stud.
Threads stripped (threads missing) A R co	
(1) - Some manufacturers require replacement any wheel if two or more studs or nuts are broken or missing.  AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	on the same wheel
WHEEL BEARINGS, RACES AND SEALS	
NOTE: Grease seal replacement is required You are not required to replace the sets. Determine the need to replace individual component conditions that	se components in axle based upon the
WHEEL BEARINGS, RACES AND SEALS INSPECTION AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ
·	placement of seal and ion of axle, bearing, using, and vent tube.
i adjustmen	djustment of bearing, f possible. If proper t cannot be obtained, eplacement of bearing assembly.
Bearing rollers, balls or races are worn, pitted, or feel rough when rotated as	
an assembly B Require r	assembly.
Seal leaking	spection of bearings.
(1) - Require inspection of mating and seali repair or replace as necessary. Check vent may force fluid past the seal. AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	ng surface and vent. A plugged

WHEEL CYLINDERS

# **ABC123**

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You are not required to replace or rebuild wheel cylinders in axle sets. However, when rebuilding or replacing a wheel cylinder due to the conditions that follow, you may suggest rebuilding or replacement of the other wheel cylinder (on the same axle) for preventive maintenance, for example, the part is close to the end of its useful life.

Determine the need to rebuild or replace based upon the individual wheel cylinder conditions that follow.

, and the second		
	ÄÄÄ ode	ААААААААААААААААААААААААААААААААААА Procedure
Attaching hardware bent .	В	Require replacement of bent parts.
Attaching hardware broken	Α	Require repair or replacement of hardware.
	Α	. Require replacement of corroded parts.
Attaching hardware LooseAttaching hardware	Α	Require repair or replacement.
•	С	Require replacement of hardware.
Attaching hardware not functioning	Α	Require repair or replacement of hardware.
Bleeder port damaged (if non-repairable) Bleeder screw broken off in wheel cylinder (if non-	Α	Require replacement.
		(1) Require replacement (1) Require repair or replacement of bleeder screw.
Bl eeder screw seized Bore corroded (pitted) Bore grooved Bore oversized Dust boot missing	B A B	(2) Require replacement Require replacement.
Dust boot torn	Α	. (3) Require replacement of dust boot.
Leaki ng	Α	(4) Require rebuilding or replacement.
Piston corroded, affecting performance	В	Require replacement of piston and rebuilding or replacement of wheel cylinder.
Piston finish worn off	В	Require replacement of piston and rebuilding or replacement

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of wheel cylinder. Piston stuck in bore .... A .... Require replacement of wheel cvl i nder. Loose ..... B .. Require repair or replacement. Threads damaged ..... A .. Require repair or replacement. Threads stripped (threads missing) ..... A ..... Require replacement. (1) - Only required if the hydraulic system must be opened. (2) - Seized is defined as bleeder screw that cannot be removed after a practical attempt at removing. Only required if the hydraulic system must be opened. (3) - Inspect for conditions related to wheel cylinder. (4) - Leaking is defined as a drop or more. Dampness is normal.

## WIRING HARNESSES

NOTE: Copied from Electrical UIGs.

WIRING HARNESS INSPECTION Condi ti on Code Procedure Application incorrect ... B .. Require repair or replacement. Attaching hardware broken ..... A ... Require repair or replacement of hardware. Attaching hardware missing ...... C ...... Require replacement of hardware. Attaching hardware not functioning ..... A ... Require repair or replacement of hardware. Connector broken ..... A .. Require repair or replacement. Connector (Weatherpack type) leaking ..... A .. Require repair or replacement. Connector melted ...... A ......... (1) Require repair or replacement. Connector missing ...... C ..... Require replacement. Insulation damaged, conductors exposed ..... A .. Require repair or replacement. Insulation damaged. conductors not exposed . 1 ..... Suggest replacement. Open ..... A .. Require repair or replacement. Protecti ve shi el d (conduit) melted ...... 2 ........... (1) Suggest repair or replacement. Protective shield (conduit) missing ...... 2 .. Suggest repair or replacement. Resistance (voltage drop) out of specification ... A .. Require repair or replacement. Routed incorrectly ..... B ...... Require repair. Secured incorrectly ..... B ...... Require repair.

ABC123		Entire Article 2000 Chevrolet Camaro
Shorted	Α	Require repair or replacement.

Shorted	Α		Requi re	repai i	ror	replacement.
Terminal broken	Α		Requi re	repai i	r or	replacement.
Terminal burned, affecting performance	Α			(1)	Requi	re repair or replacement.
Terminal burned, not						
affecting performance	2		Suggest	repai i	ror	replacement.
Terminal corroded,						
affecting performance	Α		Requi re	repai i	r or	replacement.
Terminal corroded, not			·	•		
affecting performance	2		Suggest	repai i	r or	replacement.
Terminal loose, affecting			33	'		!
performance	В		Regui re	repai i	r or	replacement.
Terminal Loose, not		• •	Roquiro	i opai i	0.	r opracomont.
affecting performance	1		Suggest	renai i	r or	renl acement
Voltage drop out of	•	• •	Juggest	ГСРагі	Oi	r opi accilicitt.
9 1	۸		Dogui co	ropoli	cor	ronl acomont
speci fi cati on	А		Require	герагі	OI	repracement.

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

# **END OF ARTICLE**