

GROUP TAB LOCATOR

INs	Introduction	
0s	Lubrication & Maintenance	
3s	Differential & Driveline	
7s	Cooling	
8As	Audio	
8Js	Instrument Cluster	

8Ns	Power Fold-Away Mirror	
8Qs	Vehicle Theft Security	
8W	Wiring	
11s	Exhaust System	
21s	Transmission/Transfer Case	
Service Manual Comment Forms		

INTRODUCTION

TABLE OF CONTENTS

page

VEHICLE IDENTIFICATION NUMBER
 DESCRIPTION..... 1

VEHICLE IDENTIFICATION NUMBER

The VIN contains 17 characters that provide data concerning the vehicle. Refer to the decoding chart to determine the identification of a vehicle.

DESCRIPTION

The Vehicle Identification Number (VIN) plate is attached to the top left side of the instrument panel.

VEHICLE IDENTIFICATION NUMBER DECODING CHART

POSITION	INTERPRETATION	CODE = DESCRIPTION
1	Country of Origin	1 = United States
2	Make	J = Jeep
3	Vehicle Type	4 = MPV
4	Gross Vehicle Weight Rating	G = 5001-6000 lbs.
5	Vehicle Line	8= Grand Cherokee 4X2 (RHD) W = Grand Cherokee 4X4 (LHD)
6	Series	4 = Laredo 5 = Limited
7	Body Style	8 = 4dr Sport Utility
8	Engine	S = 4.0 Liter N = 4.7 Liter 4 = 3.1 Liter
9	Check Digit	
10	Model Year	1=2001
11	Assembly Plant	Y = Steyr Assembly
12 thru 17	Vehicle Build Sequence	

DESCRIPTION

This Service Manual Supplement includes ONLY the information that is new or updated for 2001 Model Year. All other Service Manual information is in the 2000 Model Year Service Manual.

When you are using this information you may be referred to another section of the Service Manual. The refer to is written differently than in prior years.

LUBRICATION & MAINTENANCE

TABLE OF CONTENTS

	page		page
LUBRICATION & MAINTENANCE		OPERATION	5
DESCRIPTION	1	FLUID FILL/CHECK LOCATIONS	
SPECIFICATIONS	2	INSPECTION	5
FLUID TYPES		MAINTENANCE SCHEDULES	
DESCRIPTION	3	DESCRIPTION	5

LUBRICATION & MAINTENANCE

DESCRIPTION - FUEL REQUIREMENTS

Your engine is designed to meet all emissions regulations and provide excellent fuel economy and performance when using high quality unleaded “regular” gasoline having an octane rating of 87. The routine use of premium gasoline is not recommended. Under normal conditions the use of premium fuel will not provide a benefit over high quality regular gasolines and in some circumstances may result in poorer performance.

Light spark knock at low engine speeds is not harmful to your engine. However, continued heavy spark knock at high speeds can cause damage and immediate service is required. Engine damage resulting from operation with a heavy spark knock may not be covered by the new vehicle warranty.

Poor quality gasoline can cause problems such as hard starting, stalling and hesitations. If you experience these symptoms, try another brand of gasoline before considering service for the vehicle.

Over 40 auto manufacturers world-wide have issued and endorsed consistent gasoline specifications (the Worldwide Fuel Charter, WWFC) to define fuel properties necessary to deliver enhanced emissions, performance and durability for your vehicle. We recommend the use of gasolines that meet the WWFC specifications if they are available.

REFORMULATED GASOLINE

Many areas of the country require the use of cleaner burning gasoline referred to as “reformulated” gasoline. Reformulated gasoline contain oxygenates, and are specifically blended to reduce vehicle emissions and improve air quality.

We strongly support the use of reformulated gasoline. Properly blended reformulated gasoline will provide excellent performance and durability for the engine and fuel system components.

GASOLINE/OXYGENATE BLENDS

Some fuel suppliers blend unleaded gasoline with oxygenates such as 10% ethanol, MTBE, and ETBE. Oxygenates are required in some areas of the country during the winter months to reduce carbon monoxide emissions. Fuels blended with these oxygenates may be used in your vehicle.

CAUTION: DO NOT use gasoline containing METHANOL. Gasoline containing methanol may damage critical fuel system components.

MMT IN GASOLINE

MMT is a manganese-containing metallic additive that is blended into some gasoline to increase octane. Gasoline blended with MMT provide no performance advantage beyond gasoline of the same octane number without MMT. Gasoline blended with MMT reduce spark plug life and reduce emission system performance in some vehicles. We recommend that gasolines free of MMT be used in your vehicle. The MMT content of gasoline may not be indicated on the gasoline pump; therefore, you should ask your gasoline retailer whether or not his/her gasoline contains MMT.

It is even more important to look for gasoline without MMT in Canada because MMT can be used at levels higher than allowed in the United States. MMT is prohibited in Federal and California reformulated gasoline.

SULFUR IN GASOLINE

If you live in the northeast United States, your vehicle may have been designed to meet California low emission standards with Cleaner-Burning California reformulated gasoline with low sulfur. If such fuels are not available in states adopting California emission standards, your vehicles will operate satisfactorily on fuels meeting federal specifications, but emission control system performance may be adversely affected. Gasoline sold outside of California is permitted to have higher sulfur levels which may affect the performance of the vehicle’s catalytic converter. This may cause the

LUBRICATION & MAINTENANCE (Continued)

Malfunction Indicator Lamp (MIL), Check Engine or Service Engine Soon light to illuminate. We recommend that you try a different brand of unleaded gasoline having lower sulfur to determine if the problem is fuel related prior to returning your vehicle to an authorized dealer for service.

CAUTION: If the Malfunction Indicator Lamp (MIL), Check Engine or Service Engine Soon light is flashing, immediate service is required; see on-board diagnostics system section.

MATERIALS ADDED TO FUEL

All gasoline sold in the United States and Canada are required to contain effective detergent additives. Use of additional detergents or other additives is not needed under normal conditions.

FUEL SYSTEM CAUTIONS

CAUTION: Follow these guidelines to maintain your vehicle's performance:

- The use of leaded gas is prohibited by Federal law. Using leaded gasoline can impair engine performance, damage the emission control system, and could result in loss of warranty coverage.
- An out-of-tune engine, or certain fuel or ignition malfunctions, can cause the catalytic converter to overheat. If you notice a pungent burning odor or some light smoke, your engine may be out of tune or malfunctioning and may require immediate service. Contact your dealer for service assistance.
- When pulling a heavy load or driving a fully loaded vehicle when the humidity is low and the temperature is high, use a premium unleaded fuel to help prevent spark knock. If spark knock persists, lighten the load, or engine piston damage may result.
- The use of fuel additives which are now being sold as octane enhancers is not recommended. Most of these products contain high concentrations of methanol. Fuel system damage or vehicle performance problems resulting from the use of such fuels or additives is not the responsibility of DaimlerChrysler Corporation and may not be covered under the new vehicle warranty.

NOTE: Intentional tampering with emissions control systems can result in civil penalties being assessed against you.

DESCRIPTION

This Service Manual Supplement includes ONLY the information that is new or updated for 2001 Model Year. All other Service Manual

information is in the 2000 Model Year Service Manual.

When you are using this information you may be referred to another section of the Service Manual. The refer to is written differently than in prior years.

SPECIFICATIONS

SPECIFICATIONS - FLUID CAPACITIES

DESCRIPTION	SPECIFICATION
FUEL TANK	20 U.S. Gallons (76 Liters)****
Engine Oil - with Filter - 4.0L	5.7L (6.0 qts.)
Engine Oil - with Filter - 4.7L	5.7L (6.0 qts.)
Cooling System - 4.0L	14.1L (15 qts.)***
Cooling System - 4.7L	13.7L (14.5 qts.)***
Power Steering	
AUTOMATIC TRANSMISSION	
Service Fill - 42RE	3.8L (4.0 qts)
O-haul Fill - 42RE	9.1-9.5L (19-20 pts)
O-haul Fill - 45RFE	13.33L (28.0 pts.)
Dry fill capacity Depending on type and size of internal cooler, length and inside diameter of cooler lines, or use of an auxiliary cooler, these figures may vary. (Refer to 21 - TRANSMISSION/TRANSAXLE/ AUTOMATIC/FLUID - STANDARD PROCEDURE)	
TRANSFER CASE	
NV242	1.35L (2.85 pts.)
NV247	1.6L (3.4 pts.)
FRONT AXLE	
Model 186 FBI	1.18L (2.5 pts.)
* When equipped with Vari-Lok, include 0.07L (0.15 pts.) of Friction Modifier.	
REAR AXLE	
Model 194 RBI	1.66L (3.5 pts.)*
Model 226 RBA	2.24L (4.75 pts.)**
* When equipped with Trac-lok, include 2.5 ounces of Friction Modifier.	
** When equipped with Trac-lok or Vari-Lok, include 2.5 ounces of Friction Modifier.	
*** Includes 0.9L (1.0 qts.) for coolant reservoir.	
****Nominal refill capacities are shown. A variation may be observed from vehicle to vehicle due to manufacturing tolerance and refill procedure.	

FLUID TYPES

DESCRIPTION - ENGINE COOLANT

ETHYLENE-GLYCOL MIXTURES

CAUTION: Richer antifreeze mixtures cannot be measured with normal field equipment and can cause problems associated with 100 percent ethylene-glycol.

The required ethylene-glycol (antifreeze) and water mixture depends upon the climate and vehicle operating conditions. The recommended mixture of 50/50 ethylene-glycol and water will provide protection against freezing to -37°C (-35°F). The antifreeze concentration **must always** be a minimum of 44 percent, year-round in all climates. **If percentage is lower than 44 percent, engine parts may be eroded by cavitation, and cooling system components may be severely damaged by corrosion.** Maximum protection against freezing is provided with a 68 percent antifreeze concentration, which prevents freezing down to -67.7°C (-90°F). A higher percentage will freeze at a warmer temperature. Also, a higher percentage of antifreeze can cause the engine to overheat because the specific heat of antifreeze is lower than that of water.

Use of 100 percent ethylene-glycol will cause formation of additive deposits in the system, as the corrosion inhibitive additives in ethylene-glycol require the presence of water to dissolve. The deposits act as insulation, causing temperatures to rise to as high as 149°C (300°F). This temperature is hot enough to melt plastic and soften solder. The increased temperature can result in engine detonation. In addition, 100 percent ethylene-glycol freezes at 22°C (-8°F).

PROPYLENE-GLYCOL MIXTURES

Its overall effective temperature range is smaller than that of ethylene-glycol. The freeze point of 50/50 propylene-glycol and water is -32°C (-26°F). 5°C higher than ethylene-glycol's freeze point. The boiling point (protection against summer boil-over) of propylene-glycol is 125°C (257°F) at 96.5 kPa (14 psi), compared to 128°C (263 deg. F) for ethylene-glycol. Use of propylene-glycol can result in boil-over or freeze-up on a cooling system designed for ethylene-glycol. Propylene glycol also has poorer heat transfer characteristics than ethylene glycol. This can increase cylinder head temperatures under certain conditions.

Propylene-glycol/ethylene-glycol Mixtures can cause the destabilization of various corrosion inhibitors, causing damage to the various cooling system components. Also, once ethylene-glycol and propy-

lene-glycol based coolants are mixed in the vehicle, conventional methods of determining freeze point will not be accurate. Both the refractive index and specific gravity differ between ethylene glycol and propylene glycol.

ENGINE OIL

WARNING: NEW OR USED ENGINE OIL CAN BE IRRITATING TO THE SKIN. AVOID PROLONGED OR REPEATED SKIN CONTACT WITH ENGINE OIL. CONTAMINANTS IN USED ENGINE OIL, CAUSED BY INTERNAL COMBUSTION, CAN BE HAZARDOUS TO YOUR HEALTH. THOROUGHLY WASH EXPOSED SKIN WITH SOAP AND WATER. DO NOT WASH SKIN WITH GASOLINE, DIESEL FUEL, THINNER, OR SOLVENTS, HEALTH PROBLEMS CAN RESULT. DO NOT POLLUTE, DISPOSE OF USED ENGINE OIL PROPERLY. CONTACT YOUR DEALER OR GOVERNMENT AGENCY FOR LOCATION OF COLLECTION CENTER IN YOUR AREA.

API SERVICE GRADE CERTIFIED

Use an engine oil that is API Service Grade Certified. MOPAR® provides engine oils that conform to this service grade.

SAE VISCOSITY

An SAE viscosity grade is used to specify the viscosity of engine oil. Use only engine oils with multiple viscosities such as 5W-30 or 10W-30. These are specified with a dual SAE viscosity grade which indicates the cold-to-hot temperature viscosity range. Select an engine oil that is best suited to your particular temperature range and variation (Fig. 1).

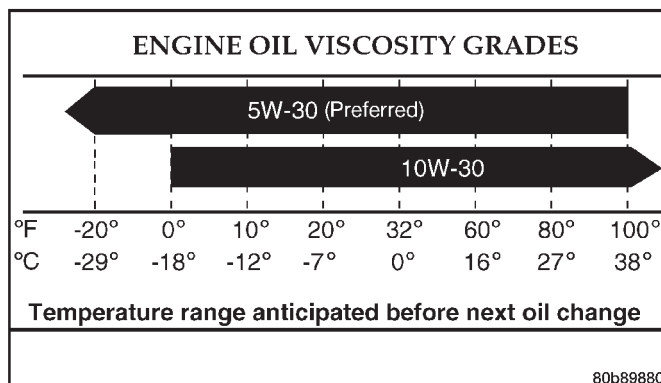


Fig. 1 Temperature/Engine Oil Viscosity

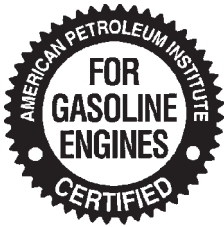
ENERGY CONSERVING OIL

An Energy Conserving type oil is recommended for gasoline engines. The designation of ENERGY CONSERVING is located on the label of an engine oil container.

FLUID TYPES (Continued)

CONTAINER IDENTIFICATION

Standard engine oil identification notations have been adopted to aid in the proper selection of engine oil. The identifying notations are located on the label of engine oil plastic bottles and the top of engine oil cans (Fig. 2).



9400-9

Fig. 2 Engine Oil Container Standard Notations

DESCRIPTION - ENGINE OIL

WARNING: NEW OR USED ENGINE OIL CAN BE IRRITATING TO THE SKIN. AVOID PROLONGED OR REPEATED SKIN CONTACT WITH ENGINE OIL. CONTAMINANTS IN USED ENGINE OIL, CAUSED BY INTERNAL COMBUSTION, CAN BE HAZARDOUS TO YOUR HEALTH. THOROUGHLY WASH EXPOSED SKIN WITH SOAP AND WATER. DO NOT WASH SKIN WITH GASOLINE, DIESEL FUEL, THINNER, OR SOLVENTS, HEALTH PROBLEMS CAN RESULT. DO NOT POLLUTE, DISPOSE OF USED ENGINE OIL PROPERLY. CONTACT YOUR DEALER OR GOVERNMENT AGENCY FOR LOCATION OF COLLECTION CENTER IN YOUR AREA.

API SERVICE GRADE CERTIFIED

Use an engine oil that is API Service Grade Certified. MOPAR® provides engine oils that conform to this service grade.

SAE VISCOSITY

An SAE viscosity grade is used to specify the viscosity of engine oil. Use only engine oils with multiple viscosities such as 5W-30 or 10W-30. These oils are specified with a dual SAE viscosity grade which indicates the cold-to-hot temperature viscosity range. Select an engine oil that is best suited to your particular temperature range and variation (Fig. 3).

ENERGY CONSERVING OIL

An Energy Conserving type oil is recommended for gasoline engines. The designation of ENERGY CONSERVING is located on the label of an engine oil container.

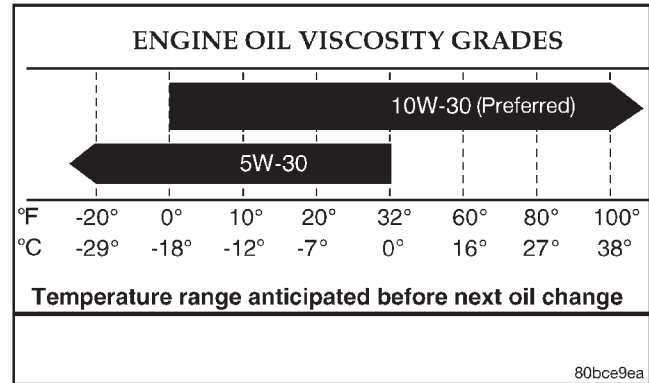


Fig. 3 Temperature/Engine Oil Viscosity

CONTAINER IDENTIFICATION

Standard engine oil identification notations have been adopted to aid in the proper selection of engine oil. The identifying notations are located on the label of engine oil plastic bottles and the top of engine oil cans (Fig. 4).



9400-9

Fig. 4 API Symbol

DESCRIPTION

A multi-purpose, hypoid gear lubricant which conforms to the following specifications should be used. Mopar Hypoid Gear Lubricant conforms to all of these specifications.

FRONT AXLE

- The lubricant should have MIL-L-2105C and API GL 5 quality specifications.
- Lubricant is SAE 75W-140 SYNTHETIC gear lubricant.

REAR AXLE

- The lubricant should have MIL-L-2105C and API GL 5 quality specifications.
- Lubricant is a thermally stable SAE 80W-90 gear lubricant.
- Lubricant for axles intended for heavy-duty or trailer tow use is SAE 75W-140 SYNTHETIC gear lubricant.

NOTE: Trac-lok™ and Vari-lok™ equipped axles require a friction modifier be added to the lubricant.

FLUID TYPES (Continued)

CAUTION: If axle is submerged in water, lubricant must be replaced immediately to avoid possible premature axle failure.

DESCRIPTION - TRANSFER CASE - NV242

Recommended lubricant for the NV242 transfer case is Mopar® ATF+4, type 9602 Automatic Transmission Fluid.

DESCRIPTION - TRANSFER CASE - NV247

Mopar® Transfer Case Lubricant (P/N 05016796) is the only lubricant recommended for the NV247 transfer case.

DESCRIPTION - AUTOMATIC TRANSMISSION FLUID

NOTE: Refer to the maintenance schedules in this group for the recommended maintenance (fluid/filter change) intervals for this transmission.

NOTE: Refer to Service Procedures in this group for fluid level checking procedures.

Mopar® ATF +4, type 9602, Automatic Transmission Fluid is the recommended fluid for DaimlerChrysler automatic transmissions.

Dexron II fluid IS NOT recommended. Clutch chatter can result from the use of improper fluid.

Mopar® ATF +4, type 9602, Automatic Transmission Fluid when new is red in color. The ATF is dyed red so it can be identified from other fluids used in the vehicle such as engine oil or antifreeze. The red color is not permanent and is not an indicator of fluid condition. As the vehicle is driven, the ATF will begin to look darker in color and may eventually become brown. **This is normal.** A dark brown/black fluid accompanied with a burnt odor and/or deterioration in shift quality may indicate fluid deterioration or transmission component failure.

FLUID ADDITIVES

DaimlerChrysler strongly recommends against the addition of any fluids to the transmission, other than those automatic transmission fluids listed above. Exceptions to this policy are the use of special dyes to aid in detecting fluid leaks.

Various "special" additives and supplements exist that claim to improve shift feel and/or quality. These additives and others also claim to improve converter clutch operation and inhibit overheating, oxidation, varnish, and sludge. These claims have not been supported to the satisfaction of DaimlerChrysler and these additives **must not be used.** The use of trans-

mission "sealers" should also be avoided, since they may adversely affect the integrity of transmission seals.

OPERATION - AUTOMATIC TRANSMISSION FLUID

The automatic transmission fluid is selected based upon several qualities. The fluid must provide a high level of protection for the internal components by providing a lubricating film between adjacent metal components. The fluid must also be thermally stable so that it can maintain a consistent viscosity through a large temperature range. If the viscosity stays constant through the temperature range of operation, transmission operation and shift feel will remain consistent. Transmission fluid must also be a good conductor of heat. The fluid must absorb heat from the internal transmission components and transfer that heat to the transmission case.

FLUID FILL/CHECK LOCATIONS

INSPECTION - FLUID FILL/CHECK LOCATIONS

The fluid fill/check locations and lubrication points are located in each applicable group.

MAINTENANCE SCHEDULES

MAINTENANCE SCHEDULES

SCHEDULE—A

1 000 KM

- Change engine oil.
- Change engine oil filter.
- Check all fluid levels.
- Check correct torque, intake manifold mounting nuts.
- Check correct torque, exhaust manifold mounting nuts.
- Check correct torque, turbocharger mounting nuts.
- Check correct torque, water manifold bolts.

10 000 KM

- Change engine oil.
- Change engine oil filter.

20 000 KM

- Change engine oil.
- Change engine oil filter.
- Replace air filter element.
- Drive belt visual inspection.

MAINTENANCE SCHEDULES (Continued)

30 000 KM

- Change engine oil.
- Change engine oil filter.

40 000 KM

- Change engine oil.
- Change engine oil filter.
- Replace air filter element.
- Drive belt visual inspection.
- Replace fuel filter/water separator element.**

50 000 KM

- Change engine oil.
- Change engine oil filter.

60 000 KM

- Change engine oil.
- Change engine oil filter.
- Replace air filter element.
- Replace drive belt.
- Check engine smoke.
- Replace engine coolant.

70 000 KM

- Change engine oil.
- Change engine oil filter.

80 000 KM

- Change engine oil.
- Change engine oil filter.
- Replace air filter element.
- Drive belt visual inspection.
- Replace fuel filter/water separator element.**

90 000 KM

- Change engine oil.
- Change engine oil filter.

100 000 KM

- Change engine oil.
- Change engine oil filter.
- Replace air filter element.
- Drive belt visual inspection.
- Check glow plug operation.

EVERY 40 000 KM AFTER 80 000 KM

- Replace fuel filter/water separator element.**

**The fuel filter/water separator element should be replaced once a year if the vehicle is driven less than 40 000 km annually or if power loss from fuel starvation is detected.

EVERY 10 000 KM AFTER 100 000 KM

- Change engine oil.
- Change engine oil filter.

EVERY 20 000 KM AFTER 100 000 KM

- Change engine oil.
- Change engine oil filter.
- Replace air filter element.
- Drive belt visual inspection.
- Check glow plug operation.

SCHEDULE—B**500 KM**

- Check correct torque, intake manifold mounting nuts.
- Check correct torque, exhaust manifold mounting nuts.
- Check correct torque, turbocharger mounting nuts.
- Check correct torque, water manifold bolts.

1 000 KM

- Change engine oil.
- Change engine oil filter.
- Check all fluid levels.

5 000 KM

- Change engine oil.
- Change engine oil filter.

10 000 KM

- Change engine oil.
- Change engine oil filter.
- Replace air filter element.
- Drive belt visual inspection.

15 000 KM

- Change engine oil.
- Change engine oil filter.

20 000 KM

- Change engine oil.
- Change engine oil filter.
- Replace air filter element.
- Drive belt visual inspection.

25 000 KM

- Change engine oil.
- Change engine oil filter.

30 000 KM

- Change engine oil.
- Change engine oil filter.
- Replace air filter element.
- Replace drive belt.
- Check engine smoke.
- Replace engine coolant.

MAINTENANCE SCHEDULES (Continued)

35 000 KM

- Change engine oil.
- Change engine oil filter.

40 000 KM

- Change engine oil.
- Change engine oil filter.
- Replace air filter element.
- Drive belt visual inspection.
- Replace fuel filter/water separator element.

45 000 KM

- Change engine oil.
- Change engine oil filter.

50 000 KM

- Change engine oil.
- Change engine oil filter.
- Replace air filter element.
- Drive belt visual inspection.

55 000 KM

- Change engine oil.
- Change engine oil filter.

60 000 KM

- Change engine oil.
- Change engine oil filter.
- Replace air filter element.
- Drive belt visual inspection.
- Replace fuel filter/water separator element.

65 000 KM

- Change engine oil.
- Change engine oil filter.

70 000 KM

- Change engine oil.
- Change engine oil filter.
- Replace air filter element.
- Drive belt visual inspection.

75 000 KM

- Change engine oil.
- Change engine oil filter.

80 000 KM

- Change engine oil.
- Change engine oil filter.
- Replace air filter element.
- Replace drive belt.
- Check engine smoke.
- Replace engine coolant.

85 000 KM

- Change engine oil.
- Change engine oil filter.

90 000 KM

- Change engine oil.
- Change engine oil filter.
- Replace air filter element.
- Drive belt visual inspection.

95 000 KM

- Change engine oil.
- Change engine oil filter.

100 000 KM

- Change engine oil.
- Change engine oil filter.
- Replace air filter element.
- Drive belt visual inspection.
- Check glow plug operation.
- Replace fuel filter/water separator element.

EVERY 5 000 KM AFTER 100 000 KM

- Change engine oil.
- Change engine oil filter.

EVERY 10 000 KM AFTER 100 000 KM

- Change engine oil.
- Change engine oil filter.
- Replace air filter element.
- Drive belt visual inspection.
- Check glow plug operation.

EVERY 20 000 KM AFTER 100 000 KM

- Replace fuel filter/water separator element.

DESCRIPTION

There are two maintenance schedules that show proper service for the Grand Cherokee.

First is Schedule "A". It lists all the scheduled maintenance to be performed under "normal" operating conditions.

Second is Schedule "B". It is a schedule for vehicles that are operated under the following conditions:

- Frequent short trip driving less than 5 miles (8 km)
- Frequent driving in dusty conditions
- Extensive idling
- Trailer towing
- Sustained high speed operation
- Off road driving
- Desert operation
- Frequent starting and stopping
- Cold climate operation
- Commercial service

Use the schedule that best describes the driving conditions.

Where time and mileage are listed, follow the interval that occurs first.

MAINTENANCE SCHEDULES (Continued)

EMISSION CONTROL SYSTEM MAINTENANCE

The scheduled emission maintenance listed in **bold type** on the Maintenance Schedules, must be done at the mileage specified to assure the continued proper functioning of the emission control system. These, and all other maintenance services included in this manual, should be done to provide the best vehicle performance and reliability. More frequent maintenance may be needed for vehicles in severe operating conditions such as dusty areas and very short trip driving.

UNSCHEDULED INSPECTION

AT EACH STOP FOR FUEL

- Check engine oil level, add as required.
- Check windshield washer solvent and add if required.

ONCE A MONTH

- Check tire pressure (including spare) and look for unusual wear or damage.
- Inspect battery and clean and tighten terminals as required.
- Check fluid levels of coolant reservoir, power steering and transmission and add as needed.

AT EACH OIL CHANGE

- Inspect exhaust system.
- Inspect brake hoses.
- Rotate the tires at each oil change interval shown on Schedule—A (7,500 miles) or every other interval shown on Schedule—B (6,000 miles).
 - Check coolant level, hoses and clamps.
 - Lubricate suspension ball joints.
 - After completion of off-road (4WD) operation, the underside of the vehicle should be thoroughly inspected. Examine threaded fasteners for looseness.

MAINTENANCE SCHEDULES

SCHEDULE—A

NOTE: Where both time and mileage are indicated, follow the interval which occurs first.

7,500 miles (12 000 km) or at 6 months

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake hoses.
- Inspect exhaust system.

15,000 Miles (24 000 km) or at 12 months

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake hoses.
- Inspect exhaust system.
- Lubricate upper knuckle ball stud.

22,500 Miles (36 000 km) or at 18 months

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake linings.
- Clean and lubricate brake caliper pins.
- Inspect brake hoses.
- Inspect exhaust system.

30,000 Miles (48 000 km) or at 24 months

- Change engine oil.
- Replace engine oil filter.
- **Replace engine air cleaner element.**
- **Replace spark plugs.**
- Drain and refill transfer case fluid.
- Lubricate upper knuckle ball stud.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake hoses.
- Inspect exhaust system.

37,500 Miles (60 000 km) or at 30 months

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake hoses.
- Inspect exhaust system.

45,000 Miles (72 000 km) or at 36 months

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake hoses.
- Inspect brake linings.
- Clean and lubricate brake caliper pins.
- Flush and replace engine coolant at 36 months or 52,500 Miles (84 000 km).
- Lubricate upper knuckle ball stud.
- Inspect exhaust system.

52,500 Miles (84 000 km) or at 42 months

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake hoses.
- Inspect exhaust system.

MAINTENANCE SCHEDULES (Continued)

60,000 Miles (96 000 km) or at 48 months

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- **Replace engine air cleaner element.**
- **Replace spark plugs.**
- **Inspect PCV valve and replace if necessary (4.7L only).***
- Inspect brake hoses.
- Inspect and replace drive belt if necessary (4.0L).
- Drain and replace brake fluid.
- Drain and refill transfer case fluid.
- Lubricate upper knuckle ball stud.
- Inspect exhaust system.

67,500 Miles (108 000 km) or at 54 months

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake linings
- Inspect brake hoses.
- Clean and lubricate brake caliper pins.
- Inspect exhaust system.

75,000 Miles (120 000 km) or at 60 months

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Flush and replace engine coolant if it has been 30,000 miles (48 000 km) or 24 months since last change.
- Inspect and replace drive belt if necessary (4.0L).**
- Inspect brake hoses.
- Inspect exhaust system.
- Lubricate upper knuckle ball stud.

82,500 Miles (132 000 km) or at 66 months

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Flush and replace engine coolant if it has been 30,000 miles (48 000 km) or 24 months since last change.
- Inspect brake hoses.
- Inspect exhaust system.

90,000 Miles (144 000 km) or at 72 months

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- **Replace engine air cleaner element.**
- **Replace spark plugs.**
- **Inspect PCV valve and replace if necessary (4.7L only).***

- Inspect and replace drive (4.0L and 4.7L).**
- Drain and refill transfer case fluid.
- Inspect brake hoses.
- Inspect brake linings.
- Clean and lubricate brake caliper pins.
- Lubricate upper knuckle ball stud.
- Inspect exhaust system.

97,500 Miles (156 000 km) or at 78 months

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake hoses.
- Inspect exhaust system.

100,000 Miles (160 000 km)

- Drain and refill automatic transmission fluid and change filter (except 45RFE & 545RFE applications).
- Adjust bands (except 45RFE & 545RFE applications).
- Drain and refill automatic transmission fluid and change main sump filter in 45RFE & 545RFE applications.
- Change spin-on cooler return filter in 45RFE & 545RFE applications.

105,000 Miles (168 000 km) or at 84 months

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Flush and replace engine coolant if it has been 30,000 miles (48 000 km) or 24 months since last change.
- Inspect and replace drive belt (4.0L and 4.7L).**
- Inspect brake hoses.
- Lubricate upper knuckle ball stud.
- Inspect exhaust system.

112,500 Miles (180 000 km) or at 90 months

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Flush and replace engine coolant if it has been 30,000 miles (48 000 km) or 24 months since last change.
- Inspect brake hoses.
- Inspect brake linings.
- Clean and lubricate brake caliper pins.
- Inspect exhaust system.

MAINTENANCE SCHEDULES (Continued)

120,000 Miles (192 000 km) or at 96 months

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- **Replace engine air cleaner element.**
- **Replace spark plugs.**
- **Inspect PCV valve and replace if necessary (4.7L only).***
- Inspect and replace drive belt (4.0L and 4.7L).**
- Inspect brake hoses.
- Drain and replace brake fluid.
- Drain and refill transfer case fluid.
- Lubricate upper knuckle ball stud.
- Inspect exhaust system.

NOTE: Inspection and service should also be performed anytime a malfunction is observed or suspected.

*This maintenance is recommended, but is not required to maintain warranty on the PCV valve.

**This maintenance is not required if the belt was previously replaced.

SCHEDULE—B

NOTE: Where both time and mileage are indicated, follow the interval which occurs first.

3,000 Miles (5 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake hoses.
- Inspect exhaust system.

6,000 Miles (10 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake hoses.
- Lubricate upper knuckle ball stud.
- Inspect exhaust system.

9,000 Miles (14 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake hoses.
- Inspect exhaust system.

12,000 Miles (19 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Drain and refill front and rear axles.

- Inspect brake linings.
- Clean and lubricate brake caliper pins.
- Inspect brake hoses.
- Lubricate upper knuckle ball stud.
- Inspect exhaust system.

15,000 miles (24 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- **Inspect engine air cleaner element, replace as necessary.**
- Inspect brake hoses.
- Inspect exhaust system.

18,000 Miles (29 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake hoses.
- Inspect exhaust system.
- Lubricate upper knuckle ball stud.

21,000 Miles (34 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake hoses.
- Inspect exhaust system.

24,000 Miles (38 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Drain and refill front and rear axles.
- Inspect brake linings.
- Clean and lubricate brake caliper pins.
- Inspect brake hoses.
- Lubricate upper knuckle ball stud.
- Inspect exhaust system.

27,000 Miles (43 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake hoses.
- Inspect exhaust system.

30,000 Miles (48 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- **Replace engine air cleaner element.**
- **Replace spark plugs.**
- **Inspect PCV valve and replace if necessary (4.7L only).***
- Inspect brake hoses.

MAINTENANCE SCHEDULES (Continued)

- Drain and refill automatic transmission fluid and change filter (except 45RFE & 545RFE applications).

- Adjust bands (except 45RFE & 545RFE applications).

- Drain and refill automatic transmission fluid and change main sump filter in 45RFE & 545RFE applications.

- Drain and refill transfer case fluid.
- Lubricate upper knuckle ball stud.
- Inspect exhaust system.

33,000 Miles (53 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake hoses.
- Inspect exhaust system.

36,000 Miles (58 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Drain and refill front and rear axles.
- Inspect brake linings.
- Clean and lubricate brake caliper pins.
- Inspect brake hoses.
- Lubricate upper knuckle ball stud.
- Inspect exhaust system.

39,000 Miles (62 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake hoses.
- Inspect exhaust system.

42,000 Miles (67 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake hoses.
- Lubricate upper knuckle ball stud.
- Inspect exhaust system.

45,000 Miles (72 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect and replace drive belt if necessary (4.0L only).

- **Inspect engine air cleaner element, replace as necessary.**

- Inspect brake hoses.
- Inspect exhaust system.

48,000 Miles (77 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Drain and refill front and rear axles.
- Inspect brake linings.
- Clean and lubricate brake caliper pins.
- Inspect brake hoses.
- Lubricate upper knuckle ball stud.
- Inspect exhaust system.

51,000 Miles (82 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Flush and replace engine coolant.
- Inspect brake hoses.
- Inspect exhaust system.

54,000 Miles (86 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake hoses.
- Lubricate upper knuckle ball stud.
- Inspect exhaust system.

57,000 Miles (91 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake hoses.
- Inspect exhaust system.

60,000 Miles (96 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- **Replace engine air cleaner element.**
- **Inspect PCV valve and replace if necessary (4.7L only).***

- **Replace spark plugs.**
- Inspect and replace drive belt (4.0L only).**
- Drain and refill automatic transmission fluid and change filter (except 45RFE & 545RFE applications).

- Adjust bands (except 45RFE & 545RFE applications).

- Drain and refill automatic transmission fluid and change main sump filter in 45RFE & 545RFE applications.

- Drain and refill transfer case fluid.
- Drain and refill front and rear axles.
- Inspect brake hoses.
- Inspect brake linings.
- Drain and replace brake fluid.

MAINTENANCE SCHEDULES (Continued)

- Clean and lubricate brake caliper pins.
- Lubricate upper knuckle ball stud.
- Inspect exhaust system.

63,000 Miles (101 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake hoses.
- Inspect exhaust system.

66,000 Miles (106 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake hoses.
- Lubricate upper knuckle ball stud.
- Inspect exhaust system.

69,000 Miles (110 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake hoses.
- Inspect exhaust system.

72,000 Miles (115 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Drain and refill front and rear axles.
- Inspect brake linings.
- Clean and lubricate brake caliper pins.
- Inspect brake hoses.
- Lubricate upper knuckle ball stud.
- Inspect exhaust system.

75,000 Miles (120 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect and replace drive belt(4.0L and 4.7L).**
- **Inspect engine air cleaner element, replace**

as necessary.

- Inspect brake hoses.
- Inspect exhaust system.

78,000 Miles (125 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake hoses.
- Lubricate upper knuckle ball stud.
- Inspect exhaust system.

81,000 Miles (130 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Flush and replace engine coolant.
- Inspect brake hoses.
- Inspect exhaust system.

84,000 miles (134 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Drain and refill front and rear axles.
- Inspect brake linings.
- Clean and lubricate brake caliper pins.
- Inspect brake hoses.
- Lubricate upper knuckle ball stud.
- Inspect exhaust system.

87,000 Miles (139 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake hoses.
- Inspect exhaust system.

90,000 Miles (144 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- **Replace engine air cleaner element.**
- **Replace spark plugs.**
- **Inspect PCV valve and replace if necessary (4.7L only).***
 - Inspect and replace drive (4.0L and 4.7L).**
 - Drain and refill automatic transmission fluid and change filter (except 45RFE & 545RFE applications).
 - Adjust bands (except 45RFE & 545RFE applications).
 - Drain and refill automatic transmission fluid and change main sump filter in 45RFE & 545RFE applications.
 - Change spin-on cooler return filter in 45RFE & 545RFE applications.
 - Inspect brake hoses.
 - Drain and refill transfer case fluid.
 - Lubricate upper knuckle ball stud.
 - Inspect exhaust system.

93,000 Miles (149 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake hoses.
- Inspect exhaust system.

MAINTENANCE SCHEDULES (Continued)

96,000 Miles (154 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Drain and refill front and rear axles.
- Inspect brake linings.
- Clean and lubricate brake caliper pins.
- Inspect brake hoses.
- Lubricate upper knuckle ball stud.
- Inspect exhaust system.

99,000 Miles (158 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake hoses.
- Inspect exhaust system.

102,000 Miles (163 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake hoses.
- Lubricate upper knuckle ball stud.
- Inspect exhaust system.

105,000 Miles (168 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- **Inspect engine air cleaner element, replace as necessary.**
- Inspect and replace drive belt (4.0L and 4.7L).**
- Inspect brake hoses.
- Inspect exhaust system.

108,000 Miles (173 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Drain and refill front and rear axles.
- Inspect brake linings.
- Clean and lubricate brake caliper pins.
- Inspect brake hoses.
- Lubricate upper knuckle ball stud.
- Inspect exhaust system.

111,000 Miles (178 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Flush and replace engine coolant.
- Inspect brake hoses.

- Inspect exhaust system.

114,000 Miles (182 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake hoses.
- Lubricate upper knuckle ball stud.
- Inspect exhaust system.

117,000 Miles (187 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- Inspect brake hoses.
- Inspect exhaust system.

120,000 Miles (192 000 km)

- Change engine oil.
- Replace engine oil filter.
- Inspect engine coolant level, hoses, clamps.
- **Replace engine air cleaner element.**
- **Inspect PCV valve and replace if necessary (4.7L only).***
- **Replace spark plugs.**
- Inspect and replace drive belt (4.0L and 4.7L).**
- Drain and refill automatic transmission fluid and change filter (except 45RFE & 545RFE applications).
- Adjust bands (except 45RFE & 545RFE applications).
- Drain and refill automatic transmission fluid and change main sump filter in 45RFE & 545RFE applications.
- Drain and refill transfer case fluid.
- Drain and refill front and rear axles.
- Inspect brake hoses.
- Inspect brake linings.
- Drain and replace brake fluid.
- Clean and lubricate brake caliper pins.
- Lubricate upper knuckle ball stud.
- Inspect exhaust system.

NOTE: Inspection and service should also be performed anytime a malfunction is observed or suspected.

*This maintenance is recommended, but is not required to maintain warranty on the PCV valve.

**This maintenance is not required if the belt was previously replaced.

DIFFERENTIAL & DRIVELINE

TABLE OF CONTENTS

	page		page
DIFFERENTIAL & DRIVELINE		PROPELLER SHAFT	16
DESCRIPTION	1	REAR AXLE - 198RBI	17
FRONT AXLE - 186FBI	1	REAR AXLE - 226RBA	42

DIFFERENTIAL & DRIVELINE

DESCRIPTION

This Service Manual Supplement includes ONLY the information that is new or updated for 2001 Model Year. All other Service Manual

information is in the 2000 Model Year Service Manual.

When you are using this information you may be referred to another section of the Service Manual. The refer to is written differently than in prior years.

FRONT AXLE - 186FBI

TABLE OF CONTENTS

	page		page
FRONT AXLE - 186FBI		INSTALLATION	12
ADJUSTMENTS	1	DIFFERENTIAL	
SPECIFICATIONS	9	REMOVAL	13
SPECIAL TOOLS	9	INSTALLATION	14
AXLE SHAFTS			
REMOVAL	12		

FRONT AXLE - 186FBI

ADJUSTMENTS

Ring and pinion gears are supplied as matched sets only. The identifying numbers for the ring and pinion gear are etched into the face of each gear (Fig. 1). A plus (+) number, minus (-) number or zero (0) is etched into the face of the pinion gear. This number is the amount (in thousandths of an inch) the depth varies from the standard depth setting of a pinion etched with a (0). The standard setting from the center line of the ring gear to the back face of the pinion is 92.1 mm (3.625 in.). The standard depth provides the best gear tooth contact pattern. Refer to Backlash and Contact Pattern Analysis paragraph in this section for additional information.

Compensation for pinion depth variance is achieved with a select shim/oil baffle. The shims are placed between the rear pinion bearing and the pinion gear head (Fig. 2).

If a new gear set is being installed, note the depth variance etched into both the original and replacement pinion. Add or subtract this number from the thickness of the original depth shim/oil slinger to compensate for the difference in the depth variances. Refer to the Pinion Gear Depth Variance chart.

Note where Old and New Pinion Marking columns intersect. Intersecting figure represents plus or minus the amount needed.

Note the etched number on the face of the pinion gear head (-1, -2, 0, +1, +2, etc.). The numbers represent thousands of an inch deviation from the standard. If the number is negative, add that value to the required thickness of the depth shims. If the number is positive, subtract that value from the thickness of the depth shim. If the number is 0 no change is necessary.

FRONT AXLE - 186FBI (Continued)

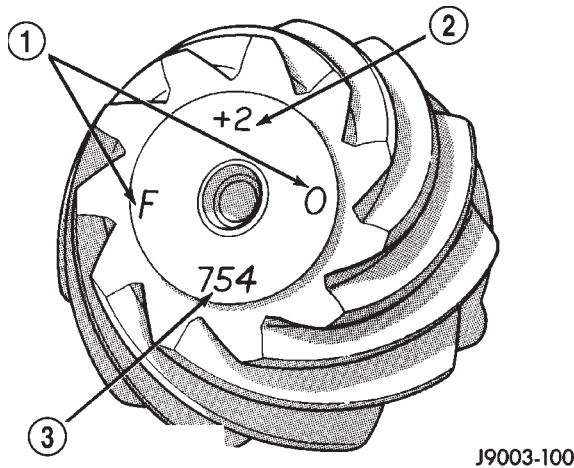


Fig. 1 Pinion Gear ID Numbers

- 1 - PRODUCTION NUMBERS
- 2 - DRIVE PINION GEAR DEPTH VARIANCE
- 3 - GEAR MATCHING NUMBER

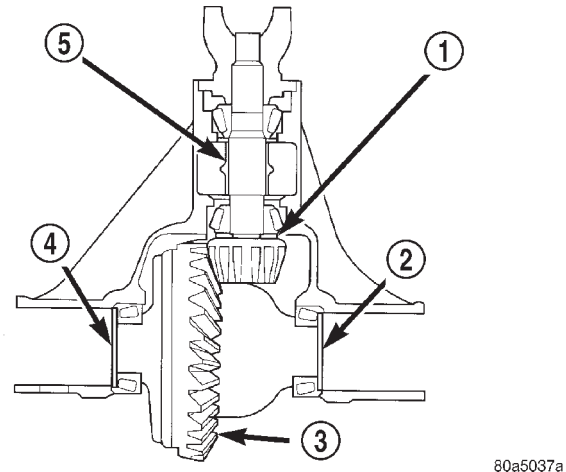


Fig. 2 Adjustment Shims Locations

- 1 - PINION GEAR DEPTH SHIM/OIL BAFFLE
- 2 - DIFFERENTIAL BEARING SHIM
- 3 - RING GEAR
- 4 - DIFFERENTIAL BEARING SHIM
- 5 - COLLAPSIBLE SPACER

PINION GEAR DEPTH VARIANCE

Original Pinion Gear Depth Variance	Replacement Pinion Gear Depth Variance								
	-4	-3	-2	-1	0	+1	+2	+3	+4
+4	+0.008	+0.007	+0.006	+0.005	+0.004	+0.003	+0.002	+0.001	0
+3	+0.007	+0.006	+0.005	+0.004	+0.003	+0.002	+0.001	0	-0.001
+2	+0.006	+0.005	+0.004	+0.003	+0.002	+0.001	0	-0.001	-0.002
+1	+0.005	+0.004	+0.003	+0.002	+0.001	0	-0.001	-0.002	-0.003
0	+0.004	+0.003	+0.002	+0.001	0	-0.001	-0.002	-0.003	-0.004
-1	+0.003	+0.002	+0.001	0	-0.001	-0.002	-0.003	-0.004	-0.005
-2	+0.002	+0.001	0	-0.001	-0.002	-0.003	-0.004	-0.005	-0.006
-3	+0.001	0	-0.001	-0.002	-0.003	-0.004	-0.005	-0.006	-0.007
-4	0	-0.001	-0.002	-0.003	-0.004	-0.005	-0.006	-0.007	-0.008

PINION DEPTH MEASUREMENT

Measurements are taken with pinion bearing cups and pinion bearings installed in the housing. Take measurements with Pinion Gauge Set and Dial Indicator C-3339 (Fig. 3).

(1) Assemble Pinion Height Block 6739, Pinion Block 6733 and rear pinion bearing onto Screw 6741 (Fig. 3).

(2) Insert assembled height gauge components, rear bearing and screw into the housing through pinion bearing cups (Fig. 4).

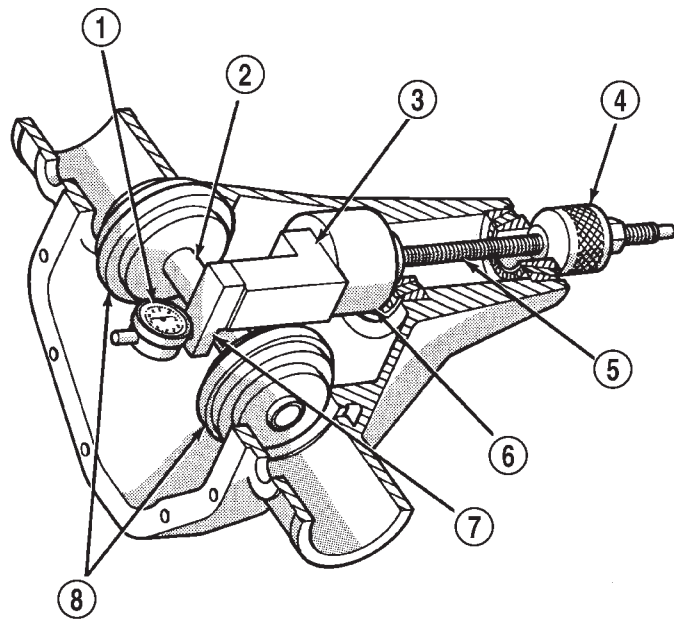
(3) Install front pinion bearing and Cone-nut 6740 hand tight (Fig. 3).

(4) Place Arbor Disc 6732 on Arbor D-115-3 in position, in the housing side bearing cradles (Fig. 5). Install differential bearing caps on Arbor Discs and tighten cap bolts to 41 N·m (30 ft. lbs.).

NOTE: Arbor Discs 6732 has different step diameters to fit other axles. Choose proper step for axle being serviced.

(5) Assemble Dial Indicator C-3339 into Scooter Block D-115-2 and secure set screw.

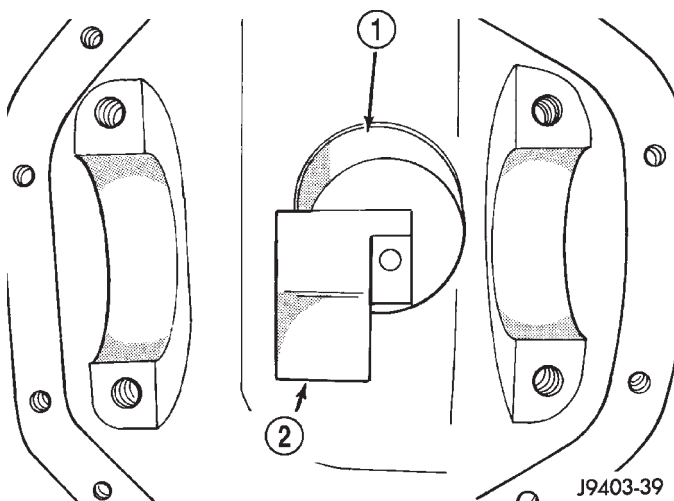
FRONT AXLE - 186FBI (Continued)



J9403-45

Fig. 3 Pinion Gear Depth Tools

- 1 - DIAL INDICATOR
- 2 - ARBOR
- 3 - PINION HEIGHT BLOCK
- 4 - CONE
- 5 - SCREW
- 6 - PINION BLOCK
- 7 - SCOOTER BLOCK
- 8 - ARBOR DISC

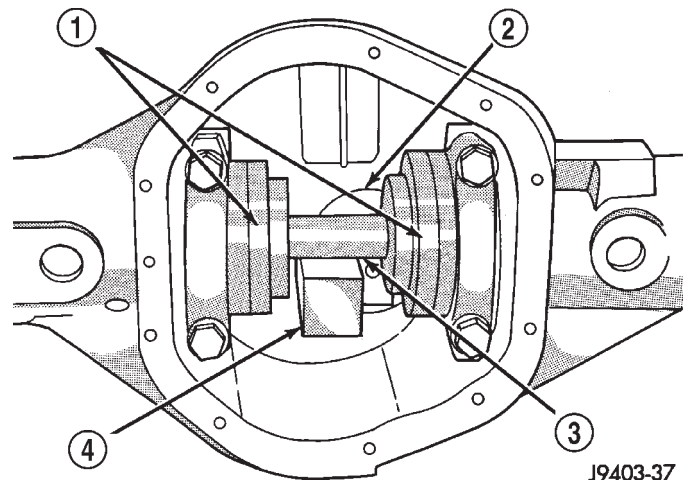


J9403-39

Fig. 4 Pinion Height Block

- 1 - PINION BLOCK
- 2 - PINION HEIGHT BLOCK

(6) Place Scooter Block/Dial Indicator in position in axle housing so dial probe and scooter block are flush against the rearward surface of the pinion height block (Fig. 3). Hold scooter block in place and



J9403-37

Fig. 5 Tools In Housing

- 1 - ARBOR DISC - 6732
- 2 - PINION BLOCK - 6733
- 3 - ARBOR - D-115-3
- 4 - PINION HEIGHT BLOCK - 6739

zero the dial indicator face to the pointer. Tighten dial indicator face lock screw.

(7) With scooter block still in position against the pinion height block, slowly slide the dial indicator probe over the edge of the pinion height block.

(8) Slide the dial indicator probe across the gap between the pinion height block and the arbor bar with the scooter block against the pinion height block (Fig. 6). When the dial probe contacts the arbor bar, the dial pointer will turn clockwise. Continue moving the dial probe to the crest of the arbor bar and record the highest reading. If the dial indicator can not achieve the zero reading, the rear bearing cup or the pinion depth gauge set is not installed correctly.

(9) Select a shim/oil baffle equal to the dial indicator reading plus the pinion depth variance number etched in the face of the pinion (Fig. 1). For example, if the depth variance is -2 , add $+0.002$ in. to the dial indicator reading.

DIFFERENTIAL

Differential side bearing preload and gear backlash is achieved by selective shims positioned behind the differential side bearing cones. The proper shim thickness can be determined using slip-fit Dummy Bearings D-348 in place of the differential side bearings and a Dial Indicator C-3339. Before proceeding with the differential bearing preload and gear backlash measurements, measure the pinion gear depth and prepare the pinion for installation. Establishing proper pinion gear depth is essential to establishing gear backlash and tooth contact patterns. After the overall shim thickness to take up differential side play is measured, the pinion is installed, and the

FRONT AXLE - 186FBI (Continued)

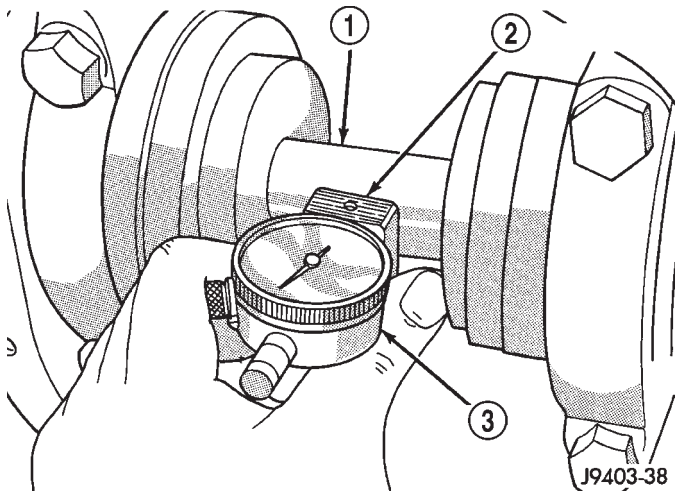


Fig. 6 Pinion Gear Depth Measurement

- 1 - ARBOR
- 2 - SCOOTER BLOCK
- 3 - DIAL INDICATOR

gear backlash shim thickness is measured. The overall shim thickness is the total of the dial indicator reading and the preload specification added together. The gear backlash measurement determines the thickness of the shim used on the ring gear side of the differential case. Subtract the gear backlash shim thickness from the total overall shim thickness and select that amount for the pinion gear side of the differential (Fig. 7). Differential shim measurements are performed with spreader W-129-B removed.

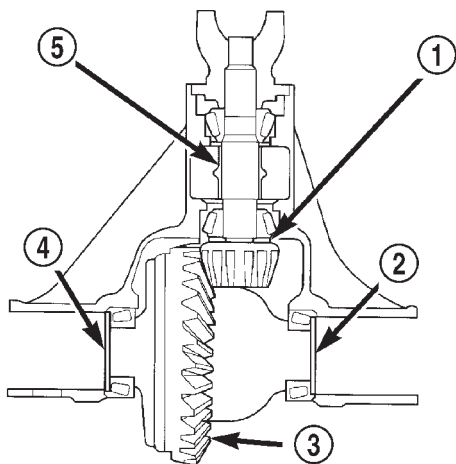


Fig. 7 Adjustment Shims Locations

- 1 - PINION GEAR DEPTH SHIM/OIL BAFFLE
- 2 - DIFFERENTIAL BEARING SHIM
- 3 - RING GEAR
- 4 - DIFFERENTIAL BEARING SHIM
- 5 - COLLAPSIBLE SPACER

SHIM SELECTION

NOTE: It is difficult to salvage the differential side bearings during the removal procedure. Install replacement bearings if necessary.

- (1) Remove differential side bearings from differential case.
- (2) Install ring gear on differential case and tighten bolts to specification.
- (3) Install dummy side bearings D-348 on differential case.
- (4) Install differential case in the housing.

CAUTION: When installing a Vari-Lok™ differential, the oil feed tube must be pointed to the bottom of the housing. If differential is forced in with the oil feed towards the top, the anti-rotation tabs will be damaged.

- (5) Record the thickness of Dummy Shims 8107. Insert the shims between the dummy bearings and the differential housing (Fig. 8).

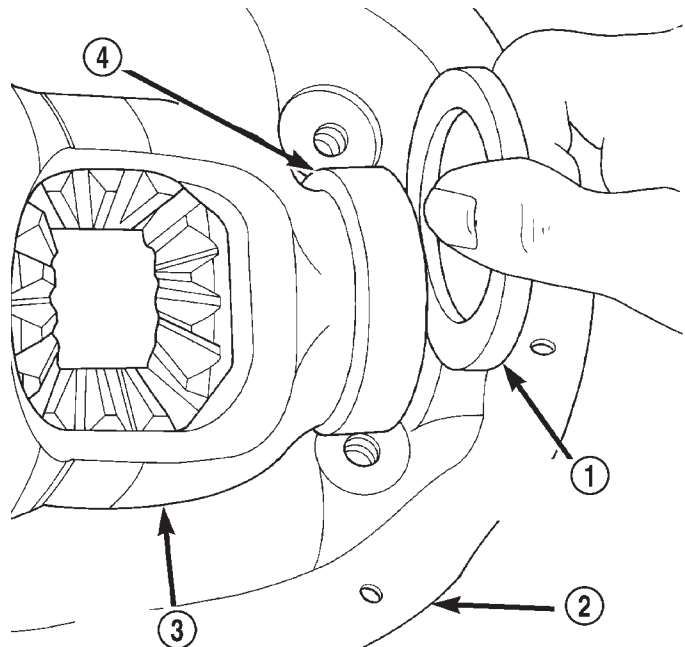


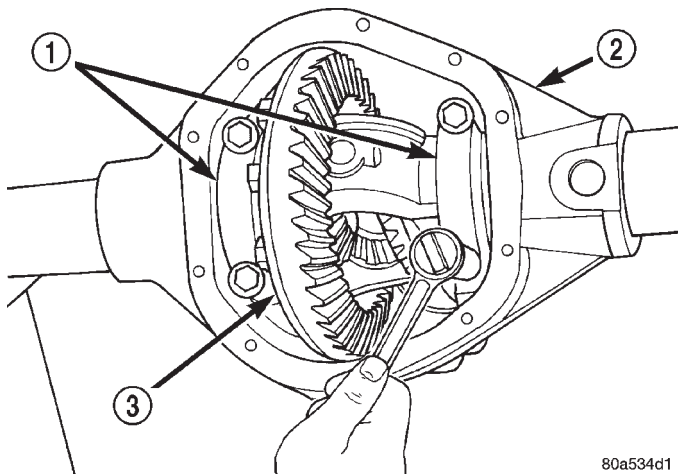
Fig. 8 Dummy Shim Location

- 1 - DUMMY SHIM
- 2 - AXLE HOUSING
- 3 - DIFFERENTIAL CASE
- 4 - DUMMY BEARINGS

- (6) Install the marked bearing caps in their correct positions. Install and snug the bolts (Fig. 9).

- (7) Using a dead-blow hammer, seat the differential dummy bearings to each side of the axle housing (Fig. 10) and (Fig. 11).

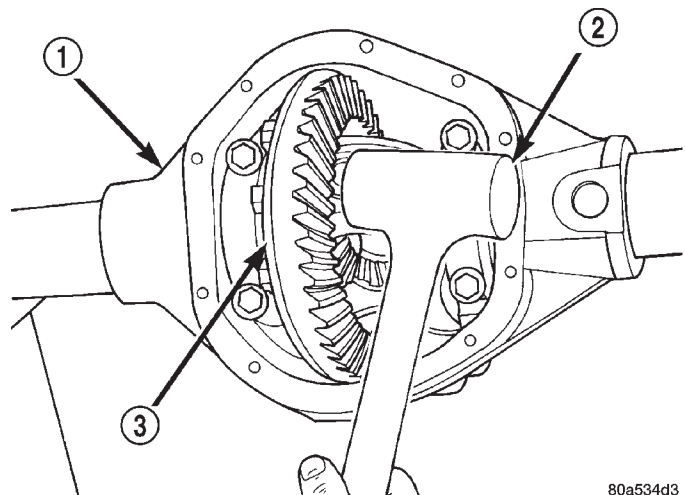
FRONT AXLE - 186FBI (Continued)



80a534d1

Fig. 9 Bearing Cap Bolts

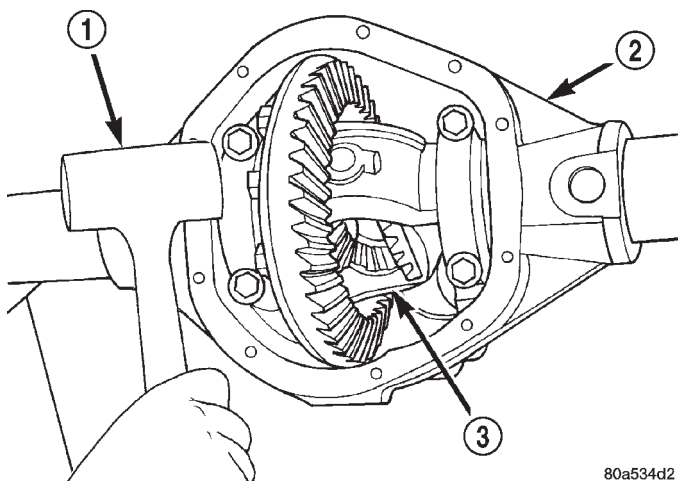
- 1 - BEARING CAP
- 2 - DIFFERENTIAL HOUSING
- 3 - DIFFERENTIAL CASE



80a534d3

Fig. 11 Seat Dummy Side Bearing

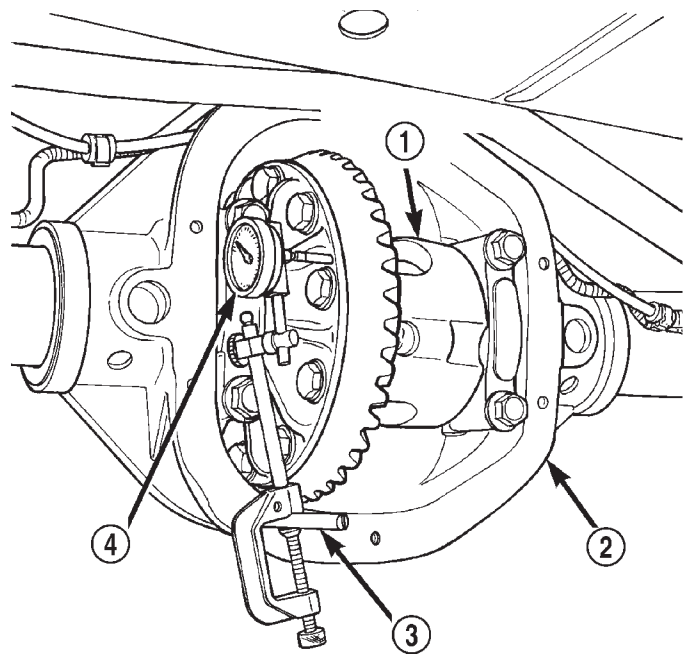
- 1 - DIFFERENTIAL HOUSING
- 2 - HAMMER
- 3 - DIFFERENTIAL CASE



80a534d2

Fig. 10 Seat Dummy Side Bearing

- 1 - HAMMER
- 2 - DIFFERENTIAL HOUSING
- 3 - DIFFERENTIAL CASE



80a7e2cf

Fig. 12 Differential Side Play

- 1 - DIFFERENTIAL CASE
- 2 - AXLE HOUSING
- 3 - SPECIAL TOOL C-3288-B
- 4 - SPECIAL TOOL C-3339

(8) Thread Pilot Stud C-3288-B into rear cover bolt hole below ring gear (Fig. 12).

(9) Attach a dial indicator C-3339 to Pilot Stud. Position the dial indicator plunger on a flat surface between the ring gear bolt heads (Fig. 12).

(10) Push and hold differential case to pinion gear side of the housing and zero dial indicator (Fig. 13).

(11) Push and hold differential case to ring gear side of the housing and record dial indicator reading (Fig. 14).

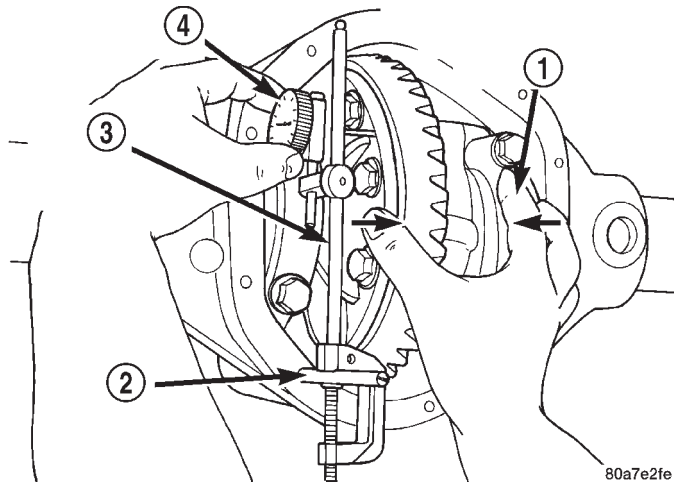
(12) Add 0.006 in. (0.152 mm) to the zero end play total. This new total represents the thickness of shims to compress or preload the new bearings when the differential is installed.

(13) Rotate dial indicator out of the way on the pilot stud.

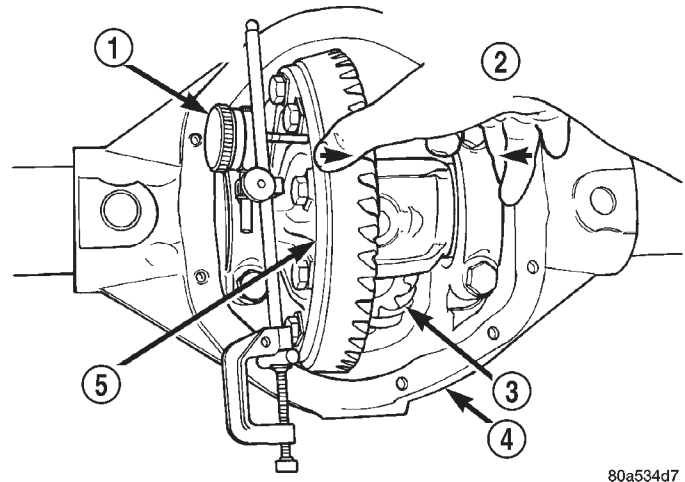
(14) Remove differential case and dummy bearings from the housing.

(15) Install the pinion gear in the housing. Install the pinion yoke and establish the correct pinion rotating torque.

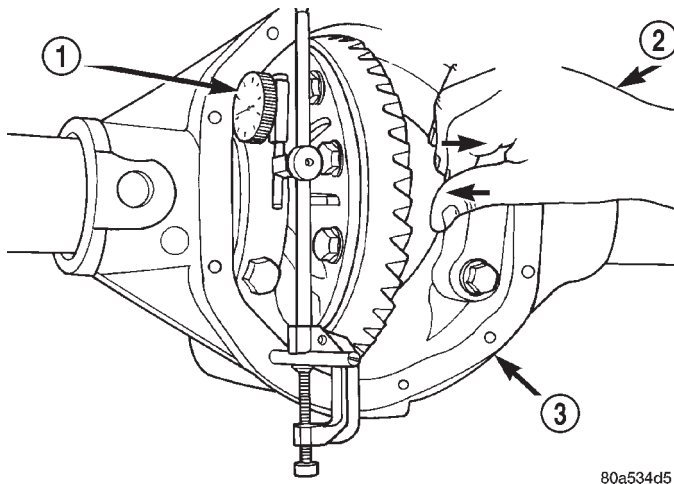
FRONT AXLE - 186FBI (Continued)

**Fig. 13 Zero Dial Indicator**

- 1 - FORCE DIFFERENTIAL CASE TO PINION GEAR SIDE
- 2 - PILOT STUD
- 3 - INDICATOR EXTENSION
- 4 - DIAL INDICATOR FACE

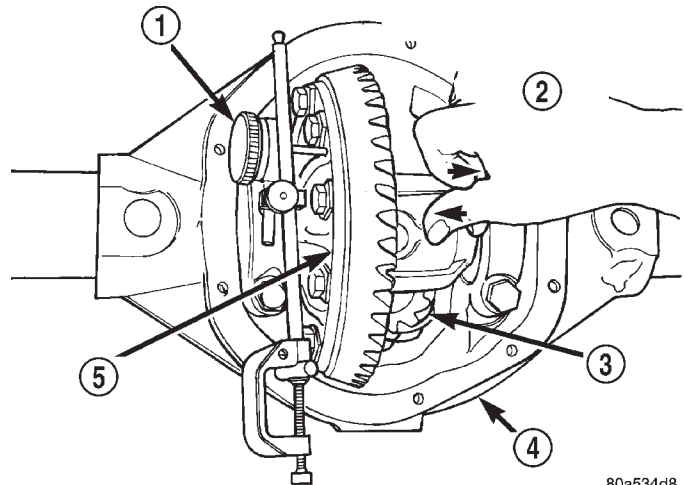
**Fig. 15 Zero Dial Indicator**

- 1 - ZERO DIAL INDICATOR FACE
- 2 - FORCE DIFFERENTIAL CASE TO PINION GEAR SIDE
- 3 - PINION GEAR
- 4 - DIFFERENTIAL HOUSING
- 5 - DIFFERENTIAL CASE

**Fig. 14 Dial Indicator**

- 1 - READ DIAL INDICATOR
- 2 - DIFFERENTIAL CASE TO RING GEAR SIDE
- 3 - DIFFERENTIAL HOUSING

This will be the total shim thickness to achieve zero backlash.

**Fig. 16 Dial Indicator Reading**

- 1 - DIAL INDICATOR
- 2 - DIFFERENTIAL CASE TO RING GEAR SIDE
- 3 - PINION GEAR
- 4 - DIFFERENTIAL HOUSING
- 5 - DIFFERENTIAL CASE

(16) Install differential case and Dummy Bearings D-348 in the housing.

(17) Install a single dummy Sshim in the ring gear side. Install bearing caps and tighten bolts snug.

(18) Seat ring gear side dummy bearing (Fig. 11).

(19) Position the dial indicator plunger on a flat surface between the ring gear bolt heads (Fig. 12).

(20) Push and hold differential case toward pinion gear and zero dial indicator (Fig. 15).

(21) Push and hold differential case to ring gear side of the housing and record dial indicator reading (Fig. 16). Add dummy shim thickness to this reading.

(22) Subtract 0.003 in. (0.076 mm) from the dial indicator reading to compensate for backlash between ring and pinion gears. This total is the thickness shim required to achieve proper backlash.

(23) Subtract the backlash shim thickness from the total preload shim thickness. The remainder is the shim thickness required on the pinion side of the axle housing.