

SECTION : 6C

POWER STEERING GEAR

CAUTION : *Disconnect the negative battery cable before removing or installing any electrical unit or when a tool or equipment could easily come in contact with exposed electrical terminals. Disconnecting this cable will help prevent personal injury and damage to the vehicle. The ignition must also be in LOCK unless otherwise noted.*

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SPECIFICATIONS

GENERAL SPECIFICATIONS

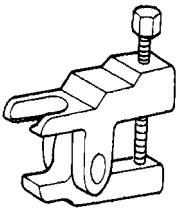
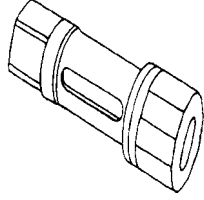
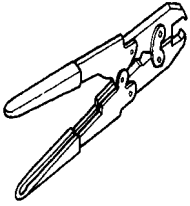
Application	Description
Capacity	1.0 Liter (1.06 qt)
Lubricant	Power Steering Fluid DEXRON®-III

FASTENER TIGHTENING SPECIFICATIONS

Application	N•m	Lb-Ft	Lb-In
Adjuster Plug	5	–	44
Adjuster Plug Locknut	70	52	–
Dash Seal Retaining Ring Nuts	9	–	80
Hydraulic Cylinder Line Fittings – Cylinder End	27	20	–
Hydraulic Cylinder Line Fittings – Valve End	18	13	–
Inner Tie Rods	100	74	–
Intermediate Shaft Pinch Bolts	25	18	–
Outer Tie Rod Adjusting Nut	22	16	–
Outer Tie Rod Nut	60	44	–
Pinion Locknut	30	22	–
Pinion Preload	1	–	9
Steering Gear Inlet and Outlet Pipe Fittings	27	20	–
Steering Gear Mounting Bracket Nuts and Bolts	57	42	–

SPECIAL TOOLS

SPECIAL TOOLS TABLE

 <small>A106C034</small>	<p>KM-507-B Ball Joint Remover</p>	 <small>B105C059</small>	<p>J-35423 Rack Guide Spring Cap Wrench</p>
 <small>A104A008</small>	<p>KM-J-22610 Installer</p>		

DIAGNOSIS

POWER RACK AND PINION STEERING GEAR

Hissing Noise

Checks	Action
Check the intermediate shaft joints for looseness.	Tighten the intermediate shaft joints.
Check the power steering hose for contact with other components.	Be sure the power steering hose is correctly fitted into the hose clips.

Rattling Noise in Steering Gear

Checks	Action
Check the power steering hose for contact with the body.	Be sure the power steering hose is correctly fitted into the hose clips.
Check the steering gear mounting for improper installation.	Lubricate the steering gear.
Check the steering gear mounting for improper installation.	Tighten the steering gear mounting bracket nuts.
Check the outer tie rods for improper installation.	Tighten the outer tie rod joints. Replace the outer tie rods.

Poor Return of Steering Wheel to Center

Checks	Action
Check the steering wheel for contact with the turn signal housing.	Adjust the turn signal housing.
Check the intermediate shaft joints for binding or looseness.	Replace the intermediate shaft.
Check the power steering pump flow control valve for sticking and improper alignment.	Replace the power steering pump.
Check the wheel alignment.	Align the wheels.
Check the wheel bearings for wear or damage.	Replace the wheel bearings.
Check the intermediate shaft joints for improper installation.	Adjust the intermediate shaft between the steering gear and the steering column. Replace the intermediate shaft.
Check the outer tie rods and the ball joints for binding or looseness.	Tighten the tie rods and the ball joints. Replace the tie rods and the ball joints.
Check the steering gear adjustments.	Perform a straight-ahead check.
Check the steering column shaft seal for rubbing on the shaft.	Replace the dash seal.
Check the steering shaft bearings for binding.	Replace the stub shaft bearings.

Momentary Increase in Effort When Turning the Wheel Quickly

Checks	Action
Check the power steering pump for internal leaks.	Replace the power steering pump.
Check the hoses for damage or restricted flow.	Replace the power steering hoses and/or pipes.
Check the power steering fluid level.	Fill the power steering fluid reservoir.
Check the power steering pump flow control valve for sticking and improper operation.	Replace the power steering pump.

Steering Surges or Jerks When Turning with Engine Running

Checks	Action
Check the power steering pump for insufficient pressure.	Replace the power steering pump.
Check the power steering pump flow control valve for sticking and improper operation.	Replace the power steering pump.
Check the power steering pump serpentine belt for slippage.	Tighten the power steering serpentine belt.
Check for air contamination in the power steering system.	Bleed the power steering system.

Steering Vibrates During Low Speed or Static Steering

Checks	Action
Check for air contamination in the power steering system.	Bleed the power steering system.
Check the power steering pump serpentine belt for looseness.	Tighten the power steering serpentine belt.

Excessive Wheel Kickback or Loose Steering

Checks	Action
Check for air contamination in the power steering system.	Bleed the power steering system.
Check the wheel bearings for wear or damage.	Replace the wheel bearings.
Check the steering gear mounting for improper installation.	Tighten the steering gear mounting bracket nuts.
Check the intermediate shaft joints for improper installation.	Adjust the intermediate shaft between the steering gear and the steering column. Replace the intermediate shaft.
Check the outer tie rods and the ball joints for looseness.	Tighten the tie rods and the ball joints. Replace the tie rods and the ball joints.

Hard Steering or Lack of Assist (Especially During Parking)

Checks	Action
Check the intermediate shaft joints for improper installation.	Adjust the intermediate shaft between the steering gear and the steering column. Replace the coupling flange.
Check the power steering pump flow control valve for sticking and improper installation.	Replace the power steering pump.
Check the power steering pump for insufficient pressure.	Replace the power steering pump.
Check the power steering pump for internal leaks.	Replace the power steering pump.
Check for a loose or a worn intermediate shaft.	Tighten the intermediate shaft. Replace the intermediate shaft, as needed.
Check the power steering pump serpentine belt tension.	Tighten the power steering serpentine belt.

POWER RACK AND PINION STEERING GEAR BENCH TESTING

Removal, Setup and Testing Procedure

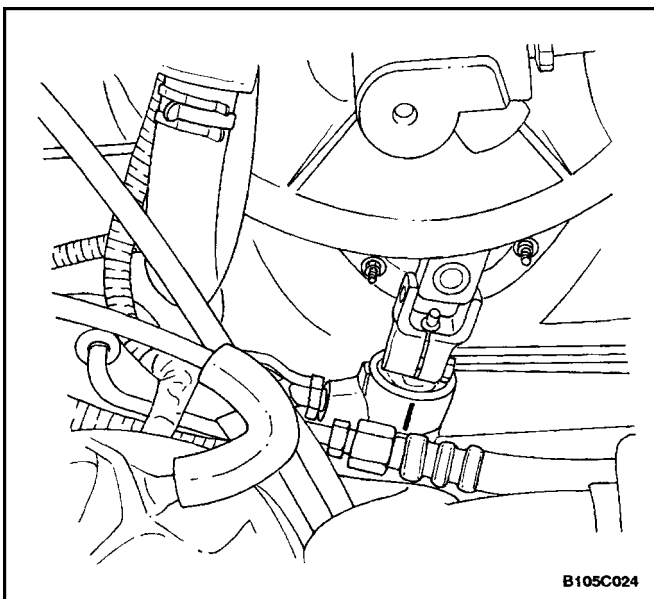
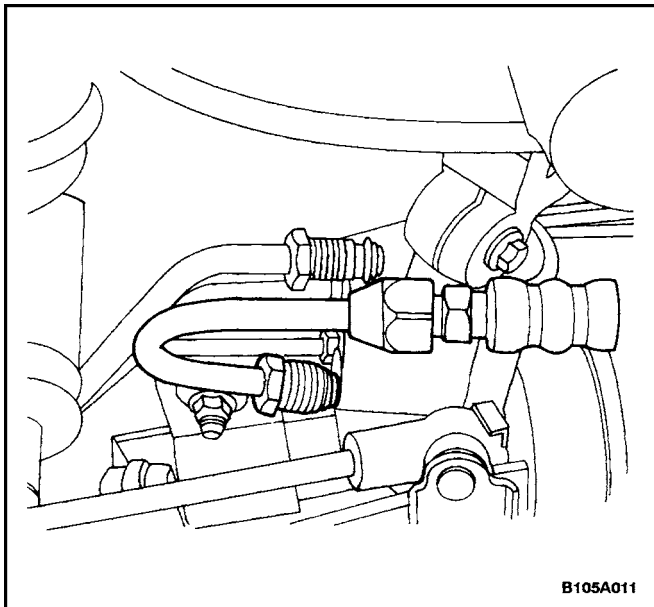
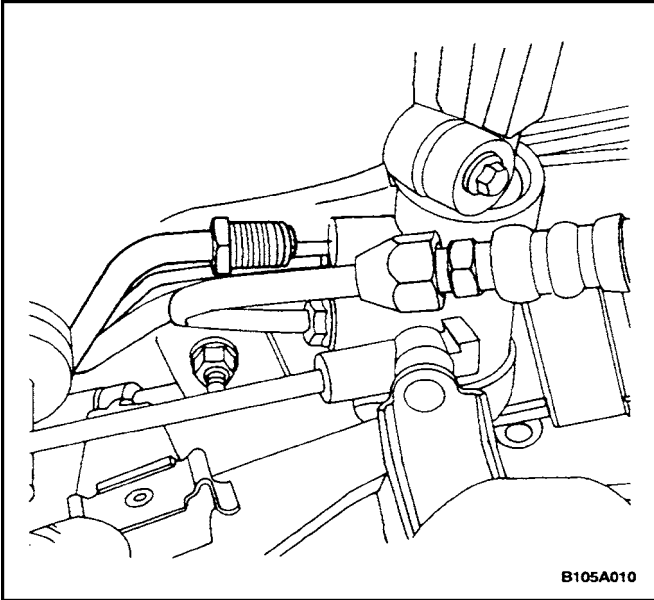
Important : Pressure checks or pressure and flow checks may also be conducted using this setup.

1. Disconnect and remove the power steering gear. Refer to "Rack and Pinion Assembly" in this section.
2. Place the power steering gear on a bench next to the vehicle.
3. Disconnect the pressure line at the point where the hose connects to the pipe. Extend this line to reach the power steering gear on the bench.
4. Disconnect the return line from the the power steering fluid reservoir. Extend this line to reach the power steering gear on the bench.
5. Connect the power steering pipes to the power steering gear.

6. Start the engine and allow it to idle for 10 seconds.
7. Check the power steering fluid level. Refer to *Section 6A, Power Steering System*.
8. Start the engine and turn the rack and pinion stub shaft a full turn in each direction. Hold the shaft against each stop for 5 seconds.
9. Inspect for possible leak points. Refer to *Section 6A, Power Steering System*.

Installation Procedure

1. Stop the engine.
2. Disconnect the power steering pipes from the power steering gear.
3. Remove the extensions and reconnect the pressure and return lines.
4. Install and connect the power steering gear. Refer to "Rack and Pinion Assembly" in this section.
5. Start the engine and allow it to idle for 10 seconds.
6. Check the power steering fluid level. Refer to *Section 6A, Power Steering System*.



MAINTENANCE AND REPAIR

ON-VEHICLE SERVICE

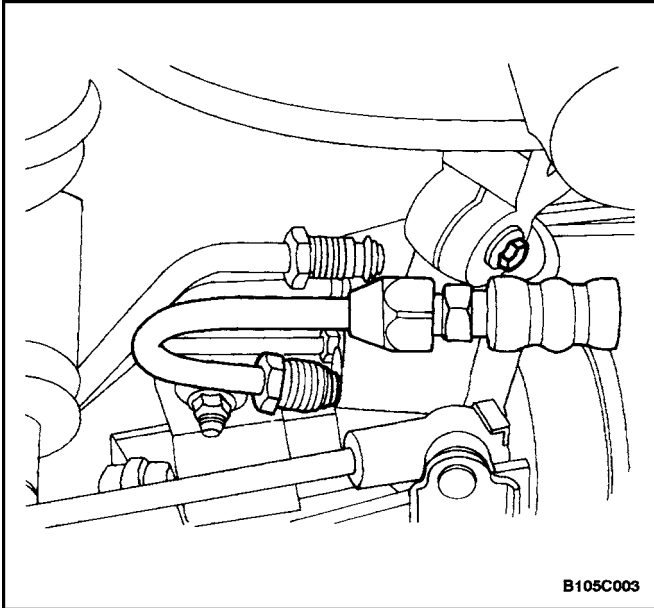
RACK AND PINION ASSEMBLY

Tools Required

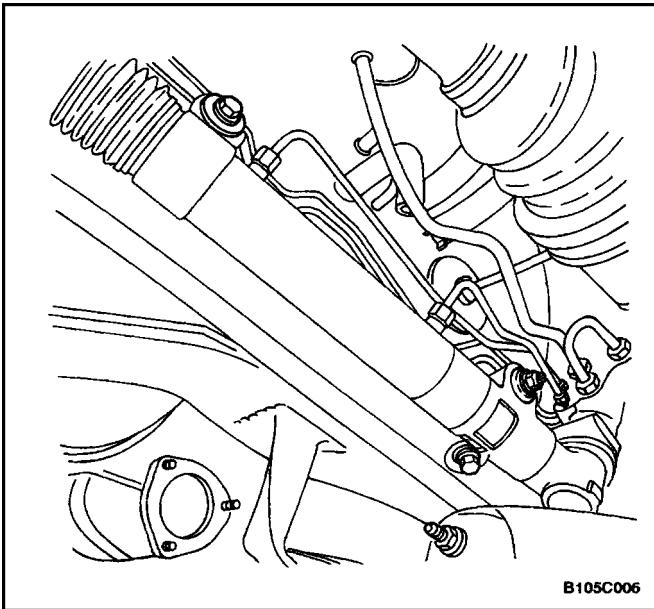
KM-507-B Ball Joint Remover

Removal Procedure

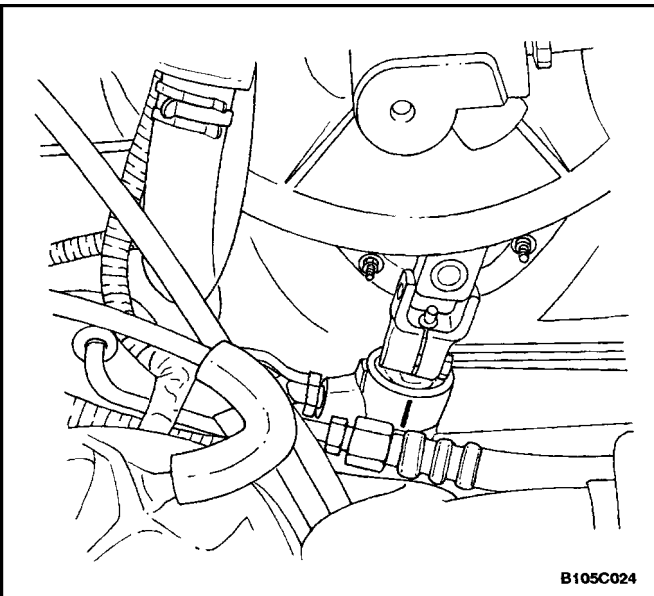
1. Disconnect the negative battery cable.
2. Raise and suitably support the vehicle.
3. Remove the wheels. Refer to *Section 2E, Tires and Wheels*.
4. Disconnect the power steering gear fluid outlet pipe. Place a drain pan under the steering gear to catch the power steering fluid.
5. Disconnect the power steering gear fluid inlet pipe.
6. Position the steering gear straight ahead by turning the steering wheel until the steering wheel spokes are vertical and pointed to the left.
7. Scribe a mark on the stub shaft housing that lines up with a mark on the intermediate shaft lower coupling.



8. Loosen the intermediate shaft pinch bolt.

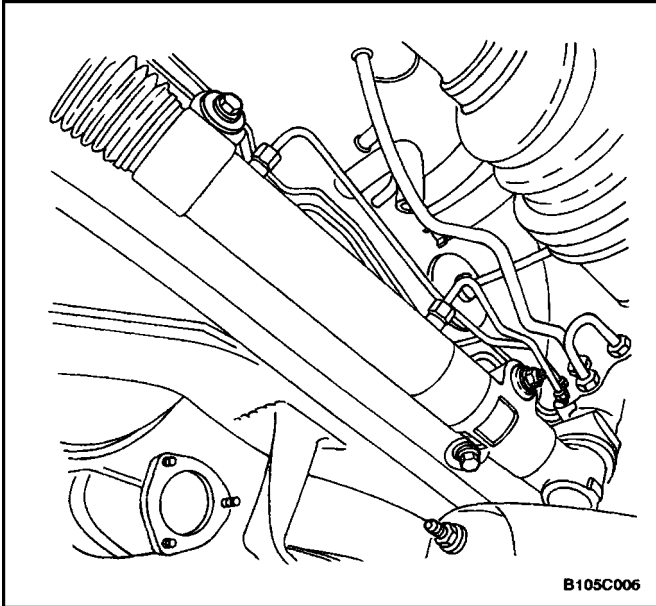


9. Remove the crossmember assembly. Refer to *Section 2C, Front Suspension*.
10. Remove the bolt from the lower steering gear mounting bracket and the bolt (right side) and the nut (left side) from the upper steering gear mounting brackets.
11. Remove the rack and pinion assembly from below.



Installation Procedure

1. Install the rack and pinion assembly from below. The steering gear must be in a straight-ahead position, and the steering wheel spokes must be vertical and pointing to the left. Align the marks on the shafts to ensure proper positioning.

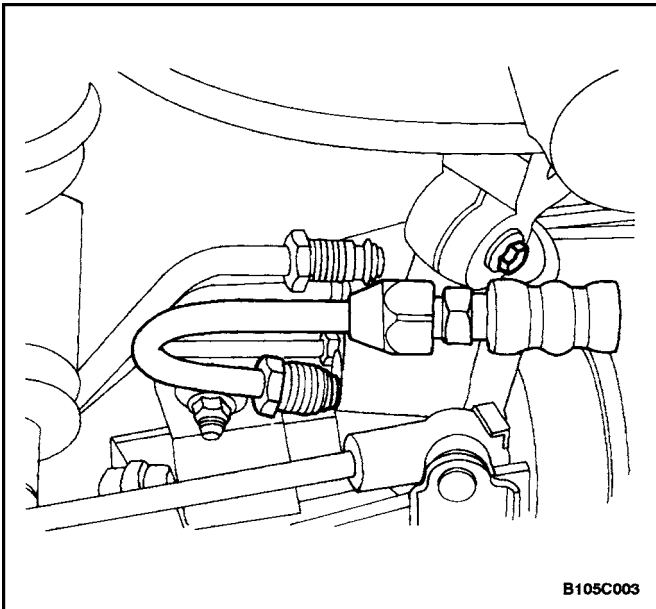


2. Install the bolt (right side) and the nut (left side) on the upper steering gear mounting brackets and install the bolt on the lower steering gear mounting bracket.

Tighten

Tighten the steering gear mounting bracket bolts and the nut to 57 N•m (42 lb–ft).

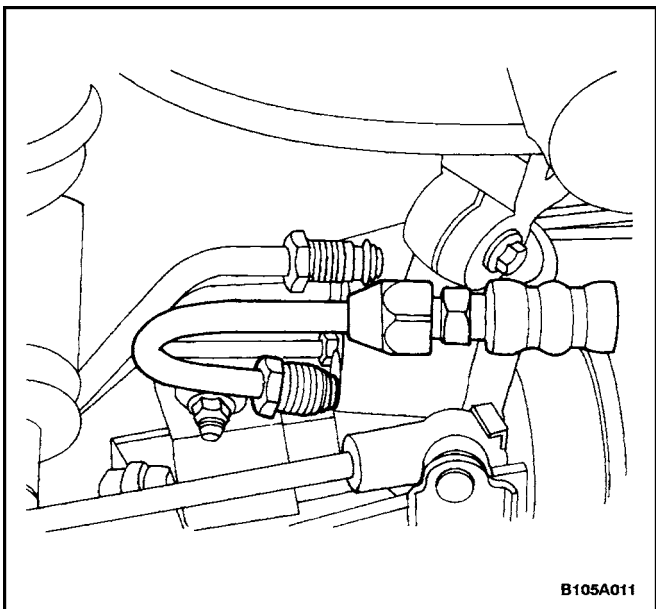
3. Install the crossmember assembly. Refer to *Section 2C, Front Suspension*.



4. Tighten the lower intermediate shaft pinch bolt.

Tighten

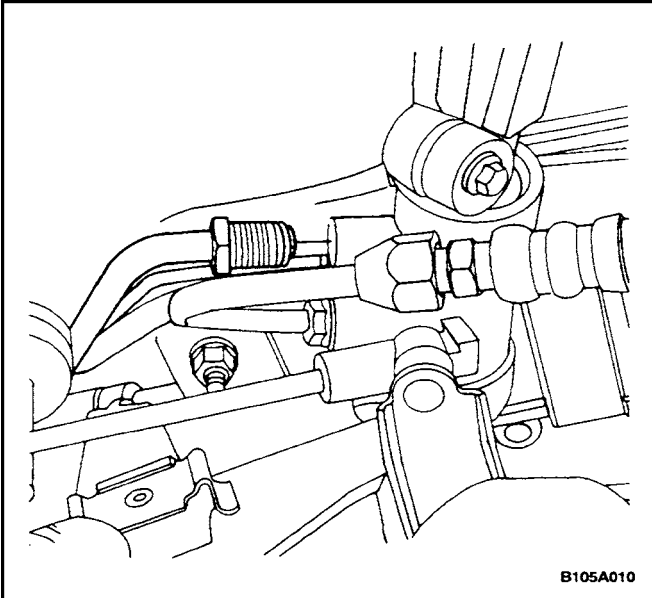
Tighten the lower intermediate shaft pinch bolt to 25 N•m (18 lb–ft).



5. Connect the power steering gear fluid inlet pipe.

Tighten

Tighten the steering gear inlet pipe fitting to 27 N•m (20 lb–ft).



6. Connect the power steering gear fluid outlet pipe.

Tighten

Tighten the steering gear outlet pipe fitting to 27 N•m (20 lb–ft).

7. Install the wheels. Refer to *Section 2E, Tires and Wheels*.
8. Lower the vehicle.
9. Do a straight–ahead check. Refer to "Straight–Ahead Check" in this section.

Notice : When adding fluid or making a complete fluid change, always use power steering fluid DEXRON®–III or equivalent. Failure to use the proper fluid will cause hose and seal damage and fluid leaks.

10. Refill the power steering system and check for leaks. If leaks are found, correct the cause of the leak and bleed the system. Refer to *Section 6A, Power Steering System*.
11. Connect the negative battery cable.

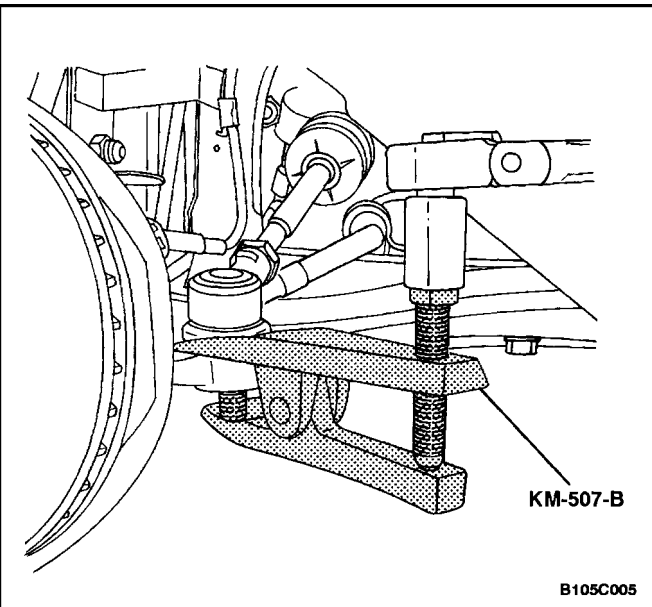
OUTER TIE ROD

Tools Required

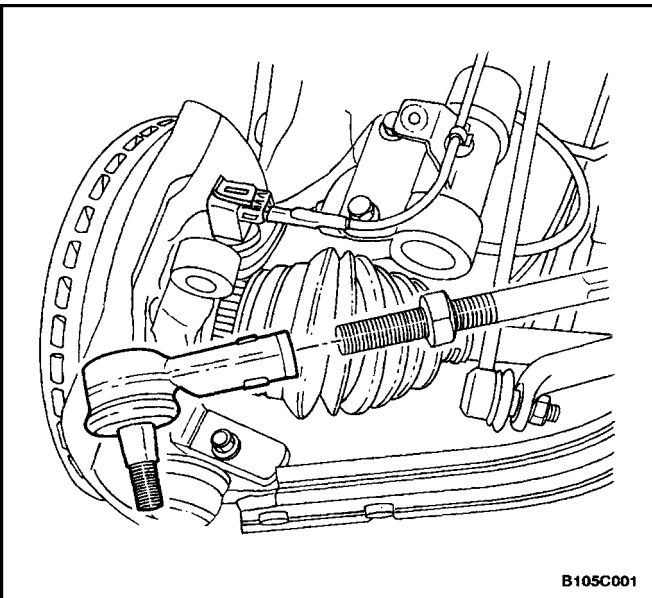
KM–507–B Ball Joint Remover

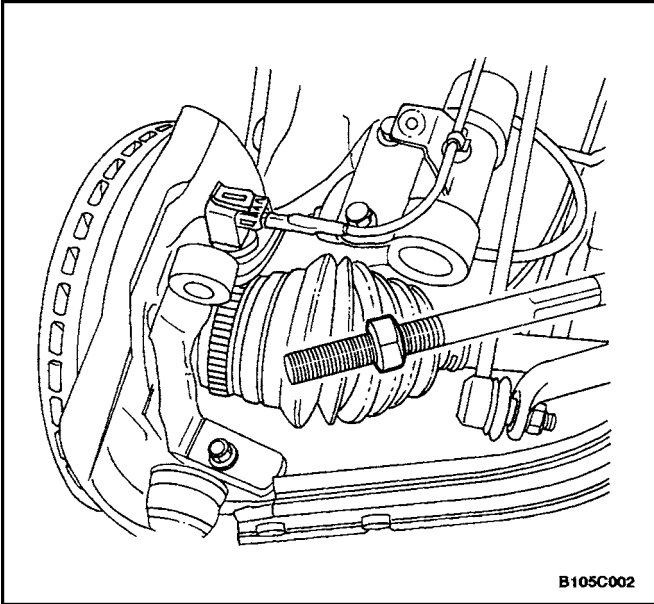
Removal Procedure

1. Remove the wheel. Refer to *Section 2E, Tires and Wheels*.
2. Mark the threads on the inner tie rod to aid in re-positioning the adjusting nut.
3. Remove the outer tie rod nut and disconnect the outer tie rod from the steering knuckle using the ball joint remover KM–507–B.



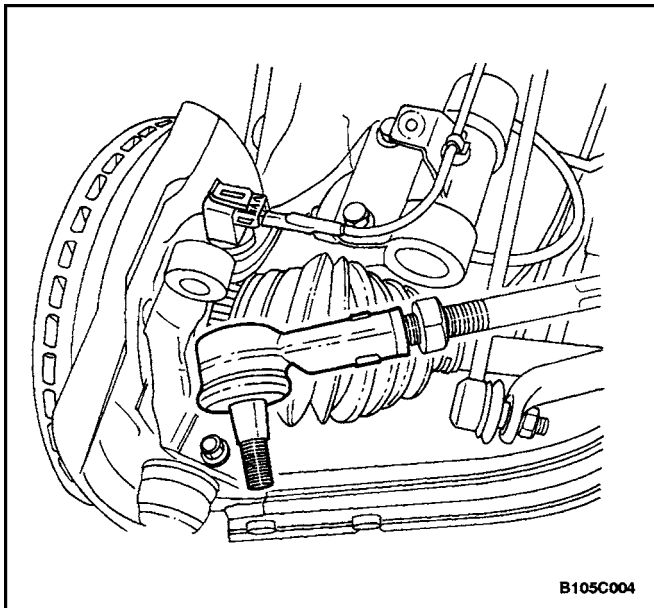
4. Loosen the outer tie rod adjusting nut and remove the outer tie rod by twisting it off the inner tie rod.



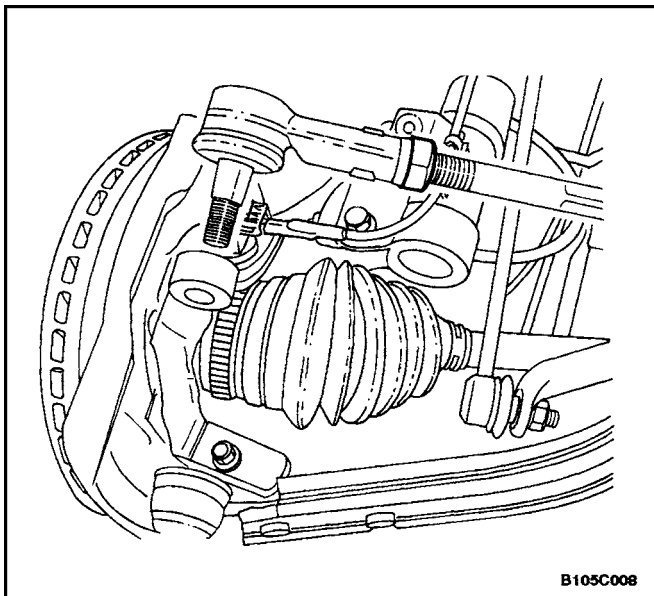


Installation Procedure

1. Reposition the adjusting nut to the marks on the inner tie rod.



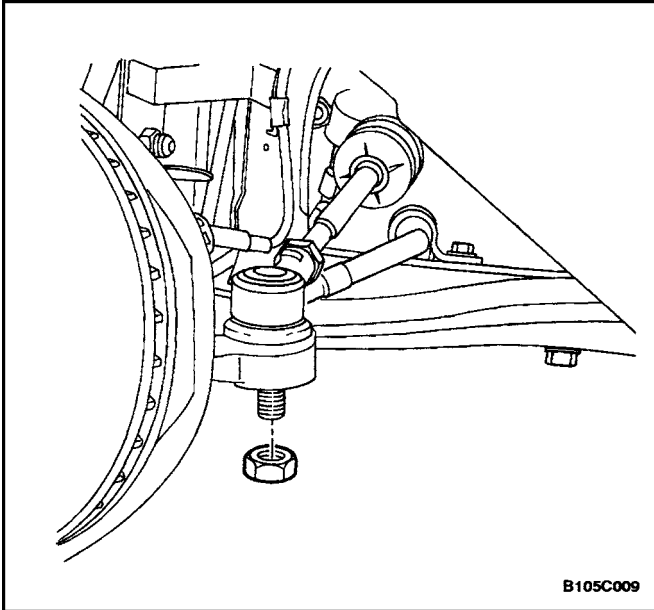
2. Install the outer tie rod by twisting it onto the inner tie rod.



3. Connect the outer tie rod to the steering knuckle.
4. Perform a front toe adjustment. Refer to *Section 2B, Wheel Alignment*.
5. Tighten the adjusting nut.

Tighten

Tighten the outer tie rod adjusting nut to 22 N•m (16 lb–ft).

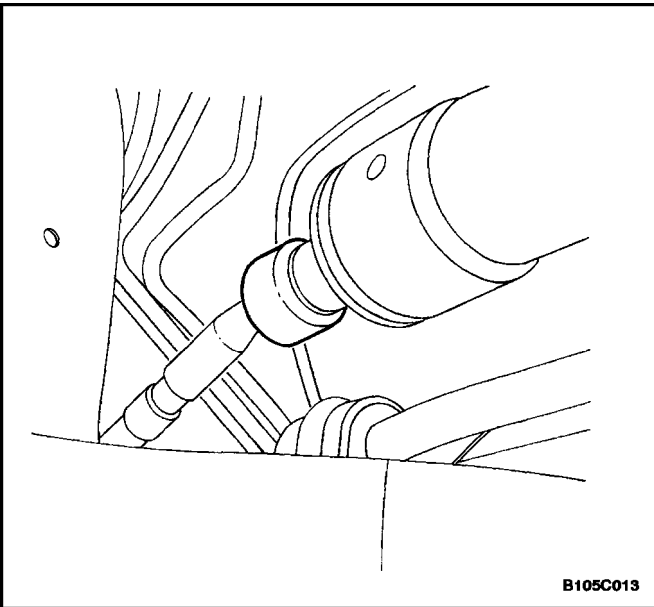


6. Install the outer tie rod nut.

Tighten

Tighten the outer tie rod nut to 60 N•m (44 lb–ft).

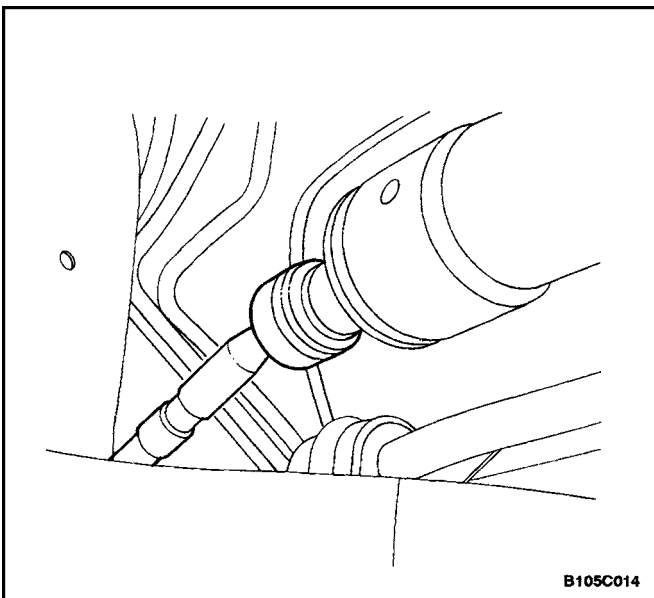
7. Install the wheel. Refer to *Section 2E, Tires and Wheels*.



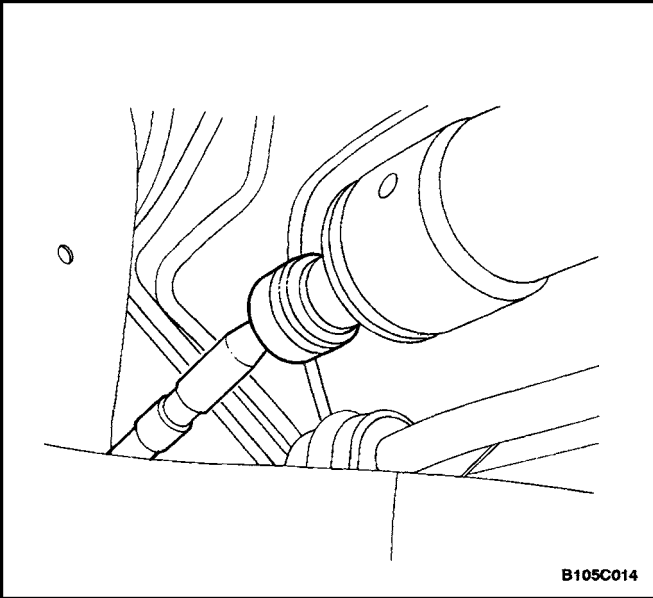
INNER TIE ROD

Removal Procedure

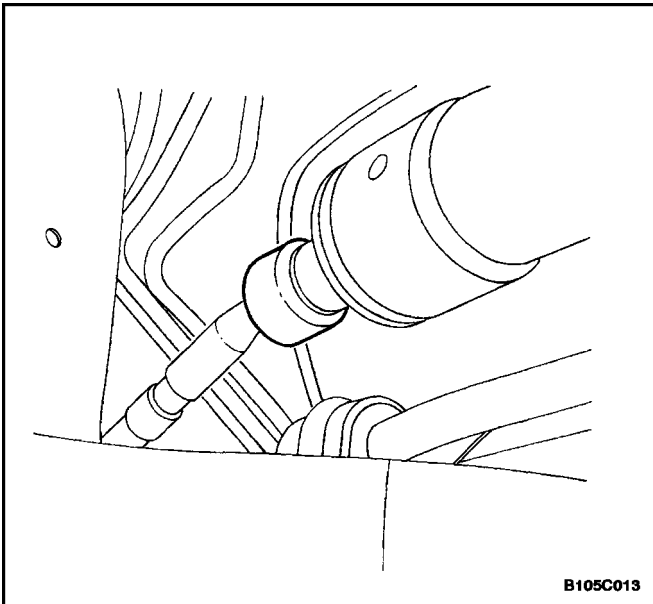
1. Raise and suitably support the vehicle.
2. Remove the wheel. Refer to *Section 2E, Tires and Wheels*.
3. Remove the outer tie rod. Refer to "Outer Tie Rod" in this section.
4. Remove the dust boot. Refer to "Dust Boot" in this section.
5. Push back the plastic retainer that protects the connection between the inner tie rod and the power steering gear rack.



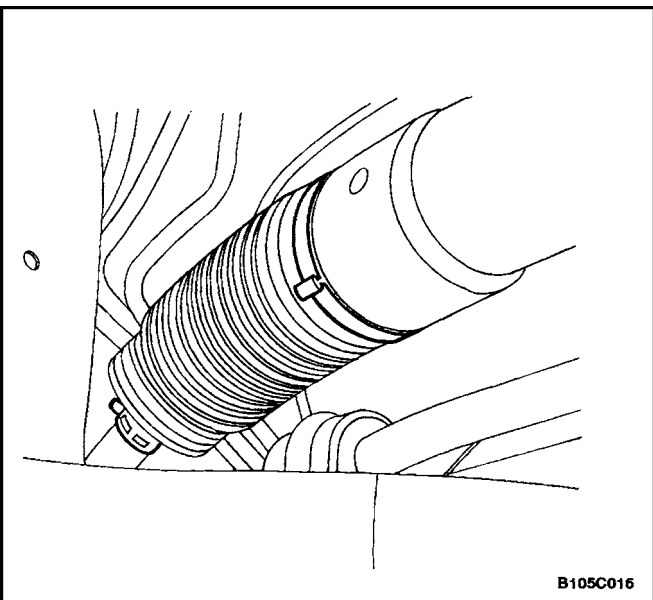
6. Remove the inner tie rod.



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Installation Procedure

Important : The right and left inner tie rods are unequal in length. Be sure to install the correct inner tie rod on the proper side of the power steering gear.

1. Install the inner tie rod.

Tighten

Tighten the inner tie rod to 100 N•m (74 lb–ft).

2. Push the plastic retainer over the tie rod.
3. Install the dust boot. Refer to "Dust Boot" in this section.
4. Install the outer tie rod. Refer to "Outer Tie Rod" in this section.
5. Install the wheel. Refer to *Section 2E, Tires and Wheels*.
6. Lower the vehicle.

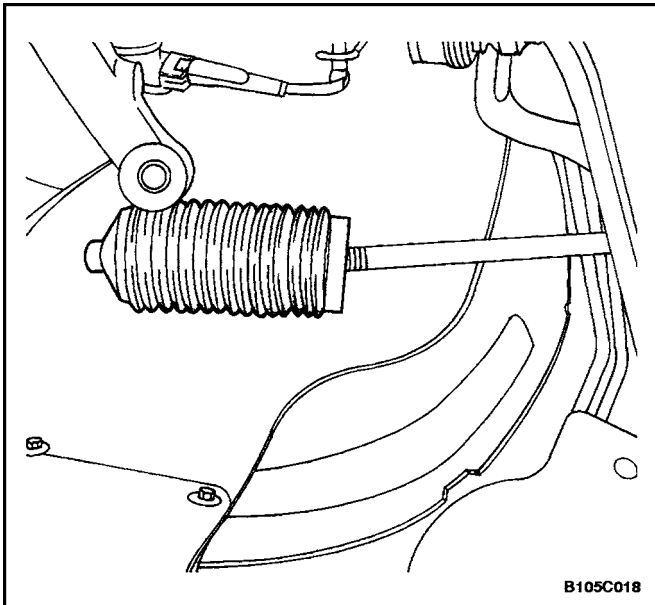
DUST BOOT

Tools Required

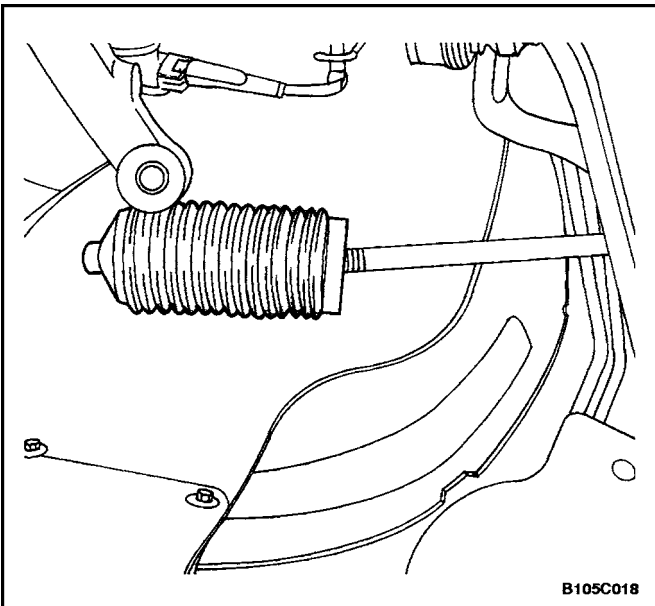
KM–J–22610 Installer

Removal Procedure

1. Raise and suitably support the vehicle
2. Remove the wheel. Refer to *Section 2E, Tires and Wheels*.
3. Remove the outer tie rod. Refer to "Outer Tie Rod" in this section.
4. Remove the dust boot retaining clamps.

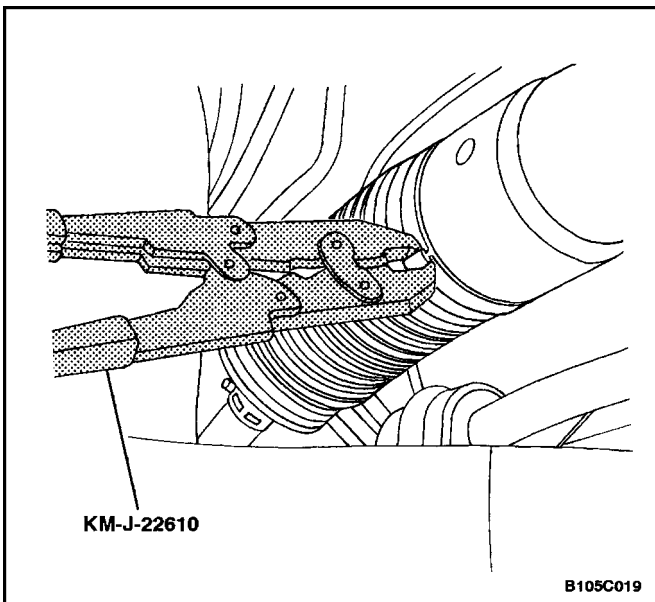


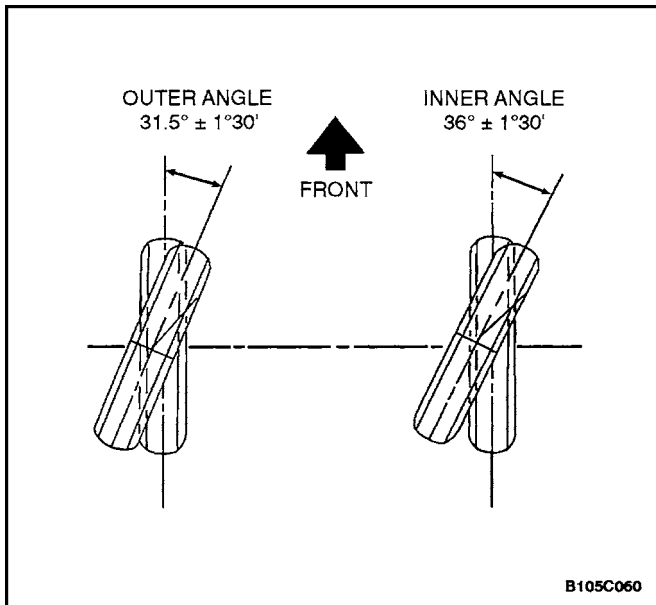
5. Remove the dust boot.



Installation Procedure

1. Install the dust boot.
2. Install the tie rod end dust boot retaining clamp. Install the cylinder end dust boot retaining clamp with the installer KM-J-22610.
3. Install the outer tie rod. Refer to "Outer Tie Rod" in this section.
4. Install the wheel. Refer to *Section 2E, Tires and Wheels*.
5. Lower the vehicle.





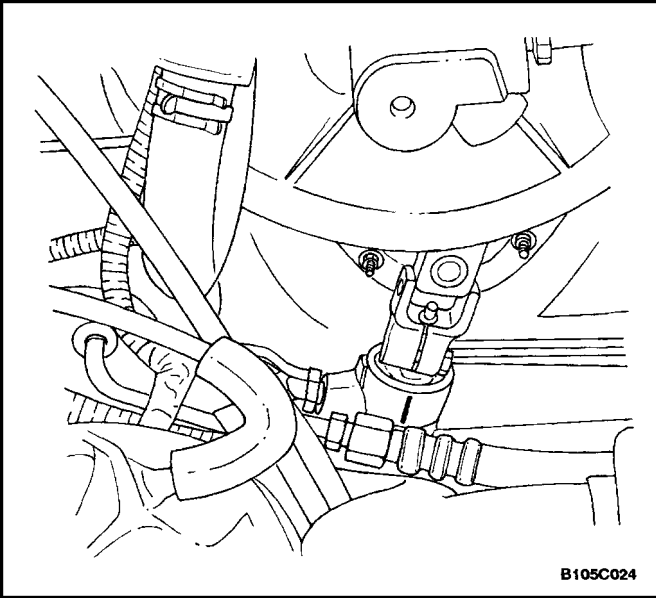
STRAIGHT-AHEAD CHECK

After all the necessary operations on the steering gear are completed (removing and installing, disassembling and assembling), check the exact straight-ahead position of the steering in each case.

With the vehicle on the floor, place the steering wheel in the straight-ahead position. Mark the centerline of both tires on the floor. Turn the steering wheel all the way to the right and mark the new centerline of both tires on the floor.

Straight–Ahead Check Table

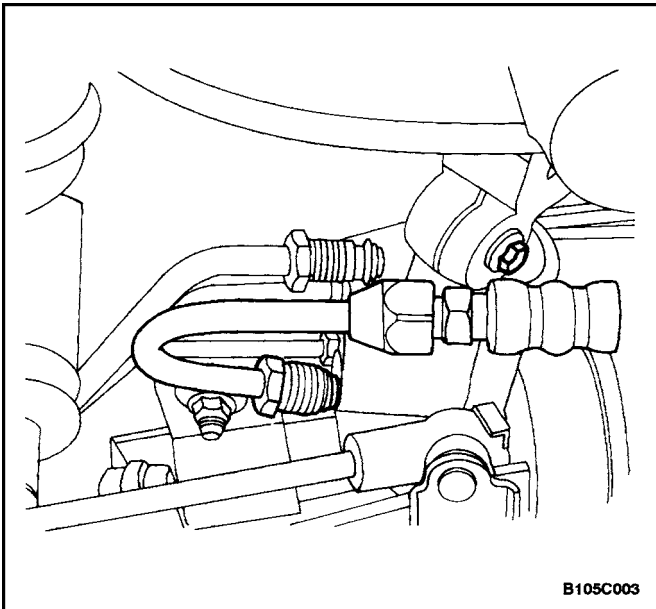
Step	Action	Value(s)	Yes	No
1	Place the steering wheel in the straight-ahead position. Is the wheel in the correct position?		Go to <i>Step 2</i>	
2	Is the lower intermediate shaft pinch bolt lying parallel to the steering gear?		Go to <i>Step 3</i>	Go to <i>Step 4</i>
3	Is the steering wheel off center by more than 5 degrees?		Go to <i>Step 5</i>	Go to <i>Step 6</i>
4	The pinion is displaced on the rack. The steering pinion position must be corrected. Is the repair complete?		Go to <i>Step 2</i>	
5	Remove steering wheel and center it on the spindle splines. Is the repair complete?		Go to <i>Step 3</i>	
6	Turn the steering wheel all the way to the right. Measure the inner and the outer angles of the tire centerline compared to the straight-ahead centerline. Are the angles within specifications?	Inner angle: 36° Outer angle: 31.5°	System OK	Go to <i>Step 7</i>
7	The rack assembly was not assembled correctly. Repair, as needed. Is the repair complete?		Go to <i>Step 6</i>	



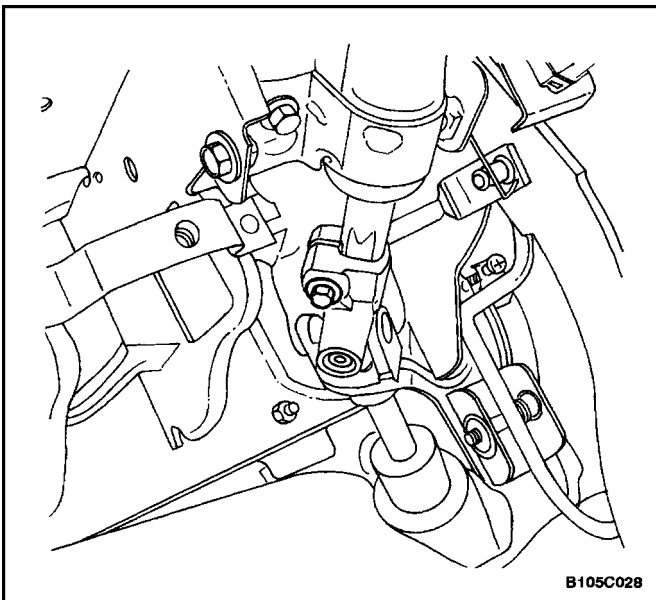
INTERMEDIATE SHAFT AND DASH SEAL

Removal Procedure

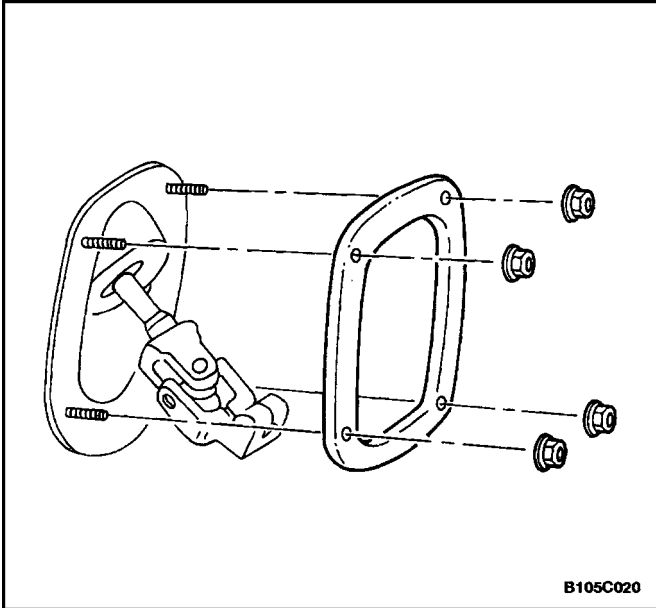
1. Turn the steering wheel until it is horizontal, with the spokes pointing down. This is the straight-ahead position. Make a mark on the stub shaft housing that lines up with a mark on the intermediate shaft lower universal joint. This mark will be used for proper alignment during installation.



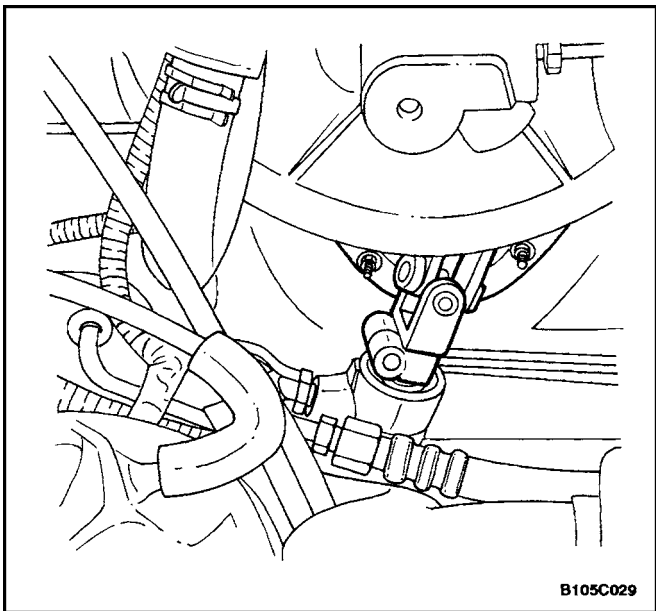
2. Remove the lower pinch bolt from the universal joint on the intermediate shaft.



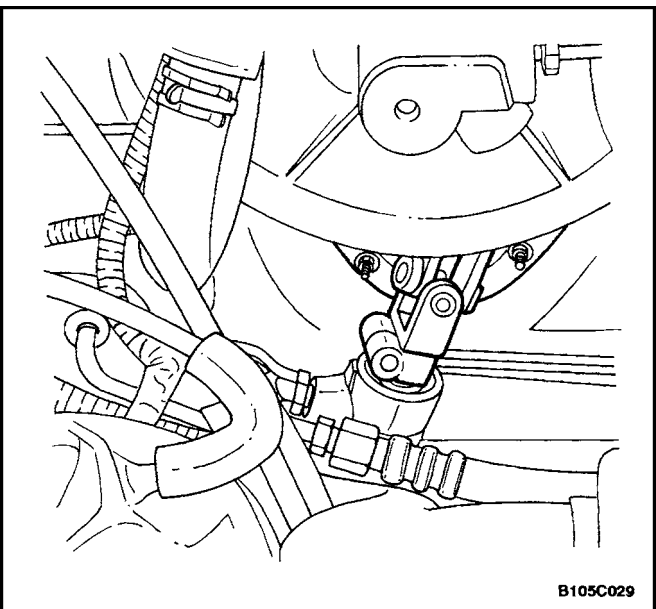
3. Turn the steering wheel so that the upper pinch bolt is accessible. Remove the upper pinch bolt from the universal joint on the intermediate shaft.



4. Remove the nuts from the dash seal retaining ring and remove the dash seal retaining ring.

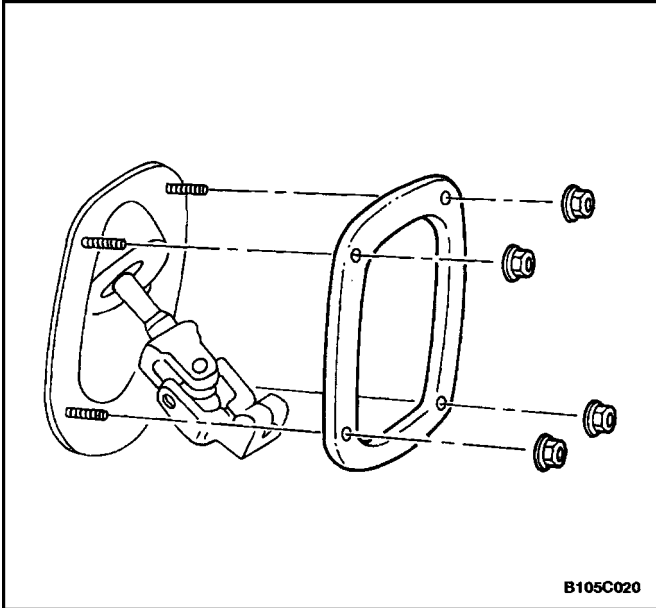


5. Remove the coupling from the power steering gear and pull the intermediate shaft out of the engine compartment.



Installation Procedure

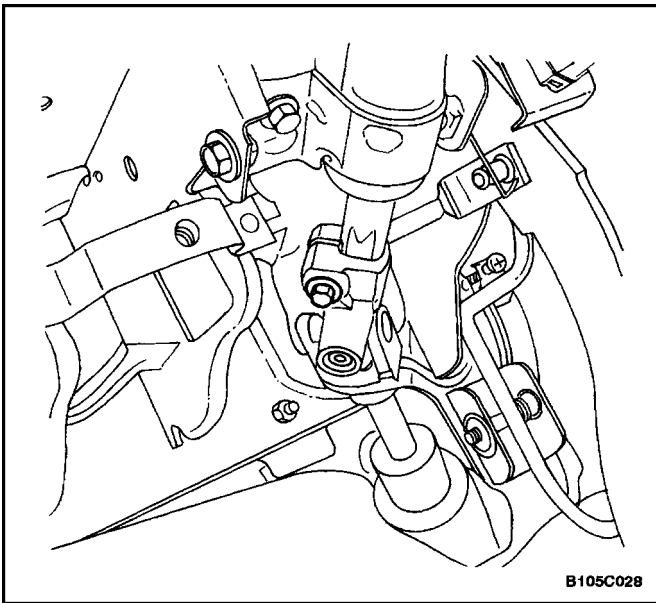
1. Install the intermediate shaft into the vehicle.



2. Install the dash seal retaining ring with the nuts.

Tighten

Tighten the dash seal retaining ring nuts to 9 N•m (80 lb-in).

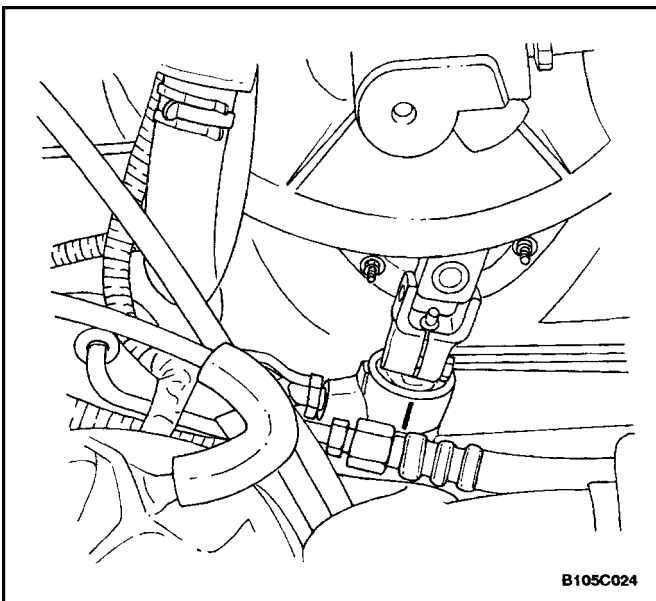


Important : When attaching the upper universal joint, the steering wheel must be placed in the straight-ahead position with the spokes pointing down.

3. Attach the upper universal joint of the intermediate shaft onto the steering column.
4. Install the pinch bolt into the upper universal joint on the intermediate shaft and tighten the bolt.

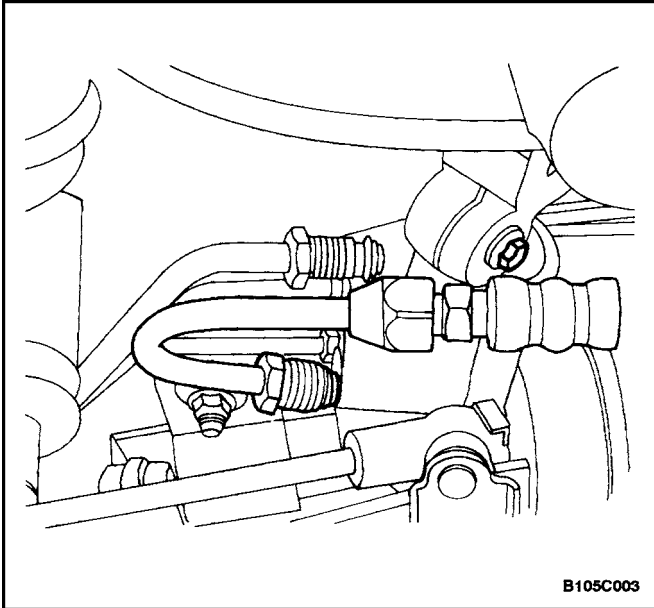
Tighten

Tighten the upper intermediate shaft pinch bolt to 25 N•m (18 lb-ft).



Important : When attaching the lower universal joint, the marks on the intermediate shaft and on the stub shaft should line up.

5. Attach the lower universal joint of the intermediate shaft onto the steering gear stub shaft.



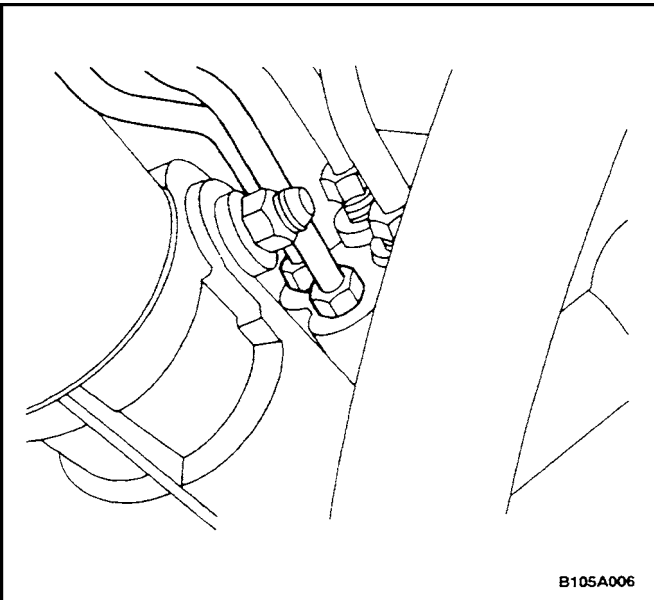
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Important : When installing the lower intermediate shaft pinch bolt, make sure the bolt goes through the universal joint on the side of the stub shaft with the notch. If you have trouble seating the universal joint completely down onto the stub shaft, rotate the steering wheel slightly while pushing down on the universal joint.

6. Install the bolt into the lower universal joint on the intermediate shaft and tighten the bolt.

Tighten

Tighten the intermediate shaft pinch bolt to 25 N•m (18 lb–ft).

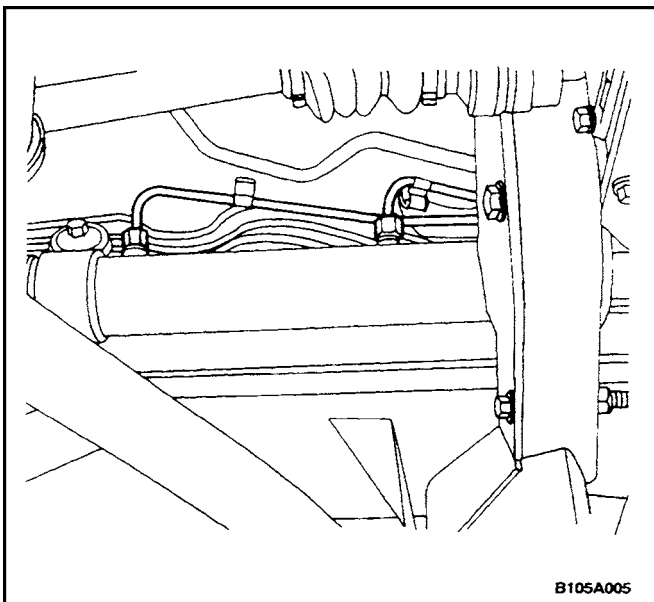


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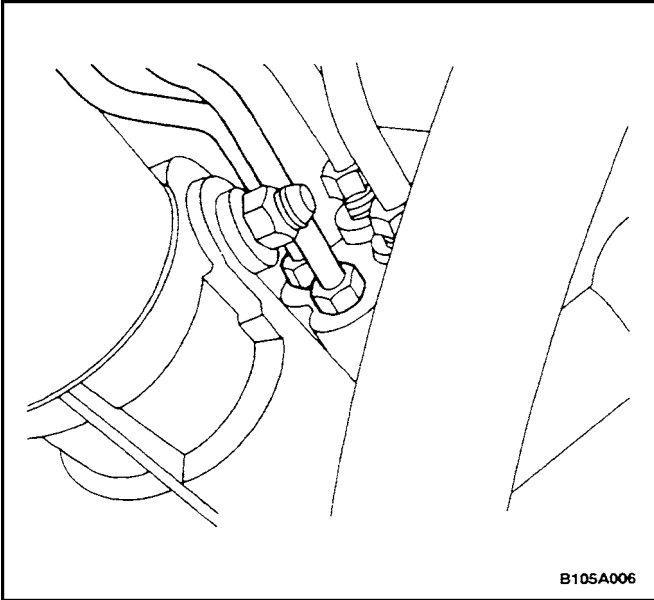
HYDRAULIC CYLINDER LINES

Removal Procedure

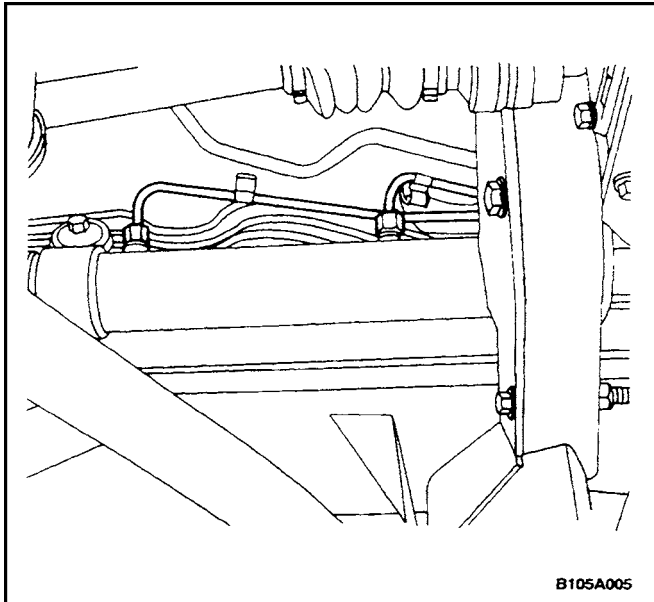
1. Siphon the power steering fluid from the fluid reservoir.
2. Raise and suitably support the vehicle.
3. Disconnect the power steering gear hydraulic cylinder pipes from the power steering gear at the valve end. Replace the O–ring seals, as needed.
4. Disconnect the power steering gear hydraulic cylinder pipes from the power steering gear at the cylinder end.
5. Unclip the steering gear hydraulic cylinder pipes from the power steering fluid reservoir return line and remove them from the vehicle.



B105A005



B105A006



B105A005

Installation Procedure

1. Lubricate any new O-ring seals with power steering fluid.
2. Place the O-ring seals into the housing and install the steering gear hydraulic cylinder pipes.
3. Connect the power steering gear hydraulic cylinder pipes to the power steering gear at the valve end.

Tighten

Tighten the hydraulic cylinder line fittings at the valve end to 18 N•m (13 lb–ft).

4. Connect the power steering gear hydraulic cylinder pipes to the power steering gear at the cylinder end and clip them to the power steering fluid reservoir return line.

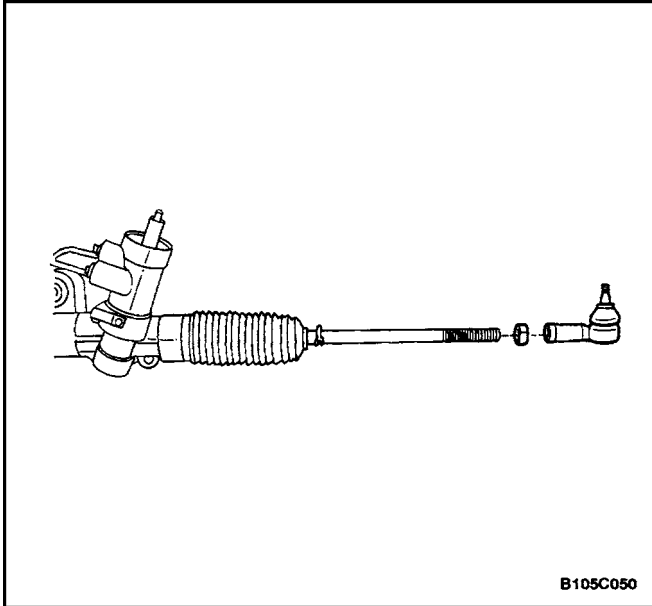
Tighten

Tighten the hydraulic cylinder line fittings at the cylinder end to 27 N•m (20 lb–ft).

5. Lower the vehicle.

Notice : When adding fluid or making a complete change, always use DEXRON®-III power steering fluid. Failure to use the proper fluid will cause hose and seal damage and fluid leaks.

6. Fill the fluid reservoir with power steering fluid.
7. Inspect for leaks. If there are leaks, correct the cause of the leaks and bleed the system. Refer to "Bleeding the Power Steering System" in this section.



UNIT REPAIR

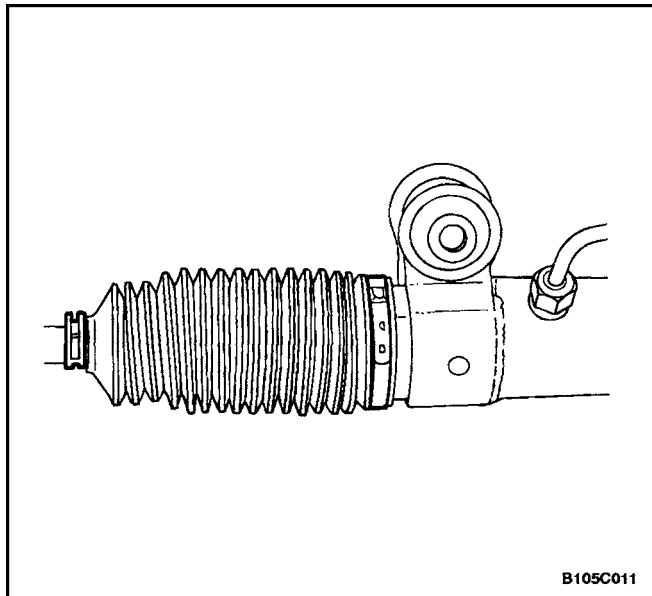
RACK AND PINION

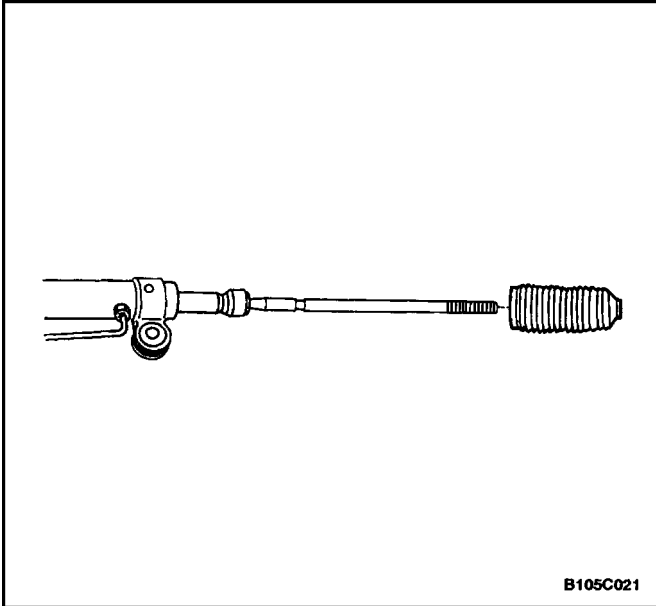
Tools Required

KM-J-22610 Installer

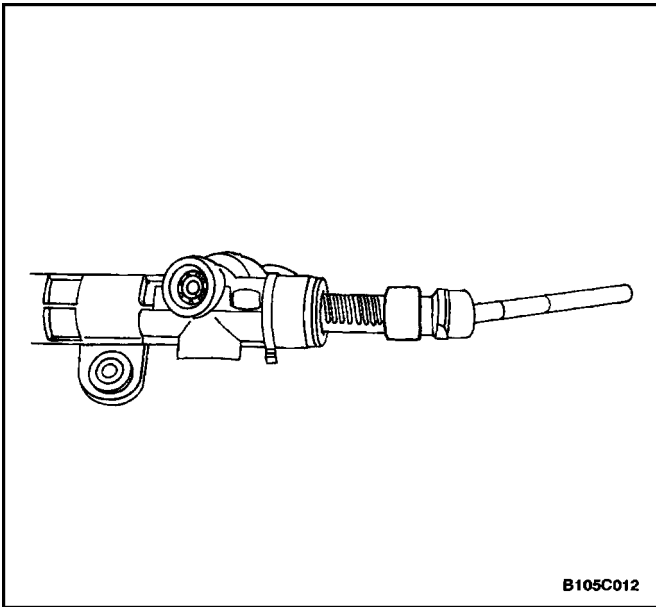
Disassembly Procedure

1. Remove the rack and pinion steering assembly from the vehicle. Refer to "Rack and Pinion Assembly" in this section.
2. Remove the valve and pinion assembly from the rack and pinion steering assembly. Refer to "Valve and Pinion" in this section.
3. Remove the rack bearing assembly from the rack and pinion steering assembly. Refer to "Rack Bearing" in this section.
4. Mark the threads on the inner tie rod to aid in repositioning the adjusting nut.
5. Loosen the adjusting nut and remove the outer tie rod nut and the adjusting nut.
6. Remove the dust boot retaining clamps.

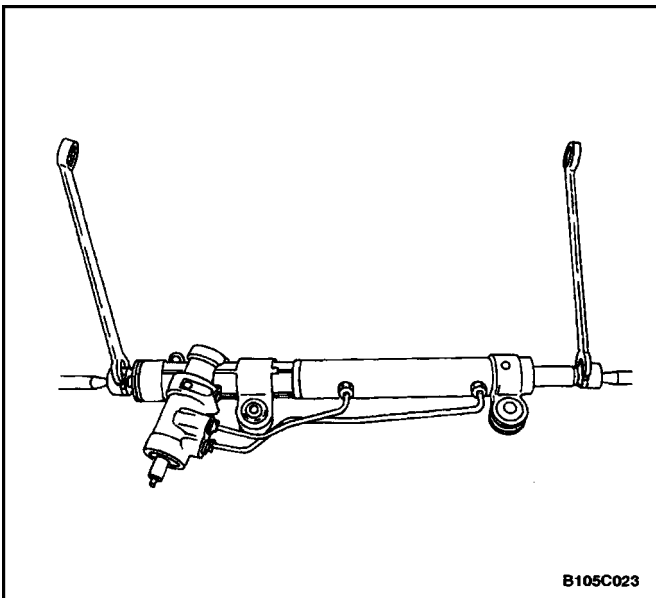




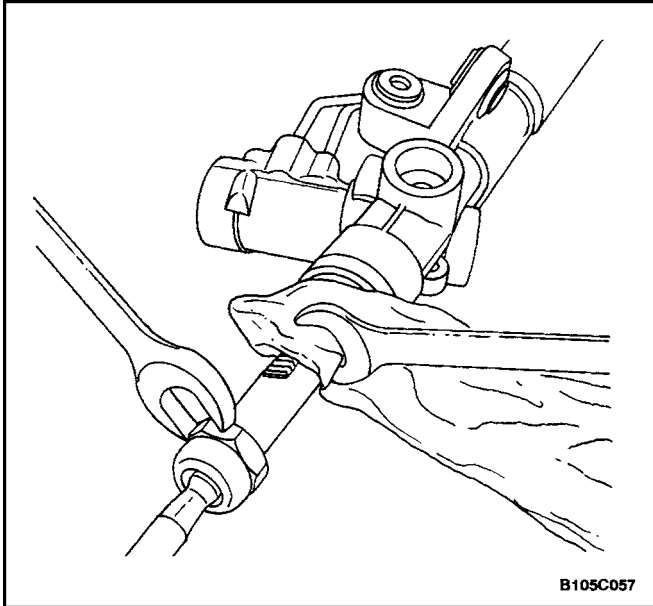
7. Remove the dust boot.



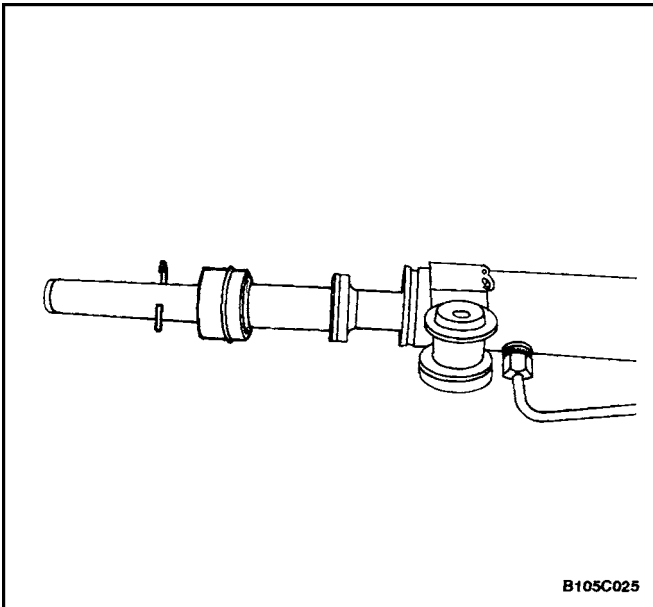
8. Push back the plastic retainer that protects the connection between the inner tie rod and the power steering gear rack.



9. Counterhold the pinion-side inner tie rod and remove the cylinder-side inner tie rod.

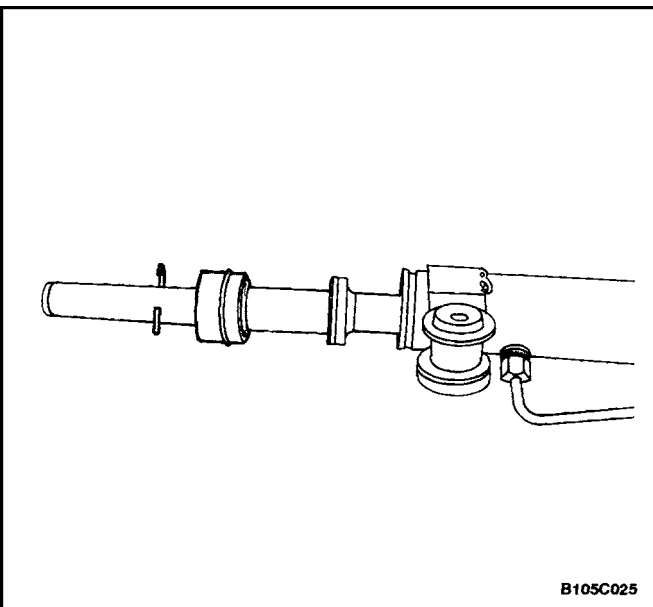


10. Place a rag over the rack, counterhold the rack assembly on the teeth with a wrench, and remove the pinion-side inner tie rod.



Important : The retaining ring can be released by inserting a small screwdriver through the hole in the side of the housing.

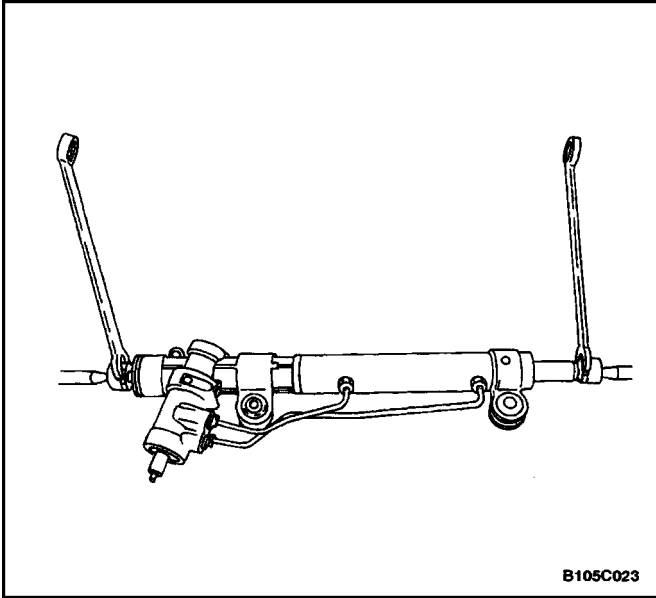
11. Remove the bulkhead inner cylinder retaining ring the bulkhead inner cylinder and the rack.



Assembly Procedure

Notice : Coat all the seals with power steering fluid to ensure proper sealing.

1. Install the rack, the bulkhead inner cylinder, and the bulkhead inner cylinder retaining ring.



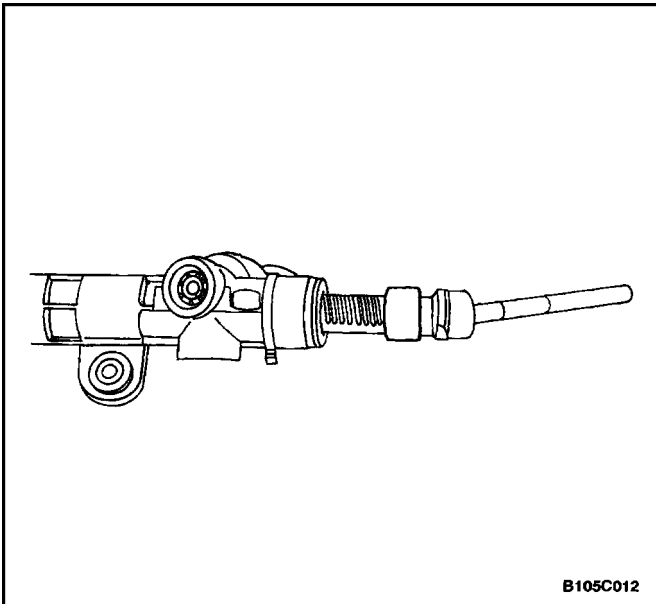
Notice : To prevent the inner tie rods from loosening, use Loctite® 242 (or equivalent) on both inner tie rod connections to secure them to the rack shaft.

Important : The right and the left inner tie rods are unequal in length. Be sure to install the correct inner tie rod on the proper side of the power steering gear.

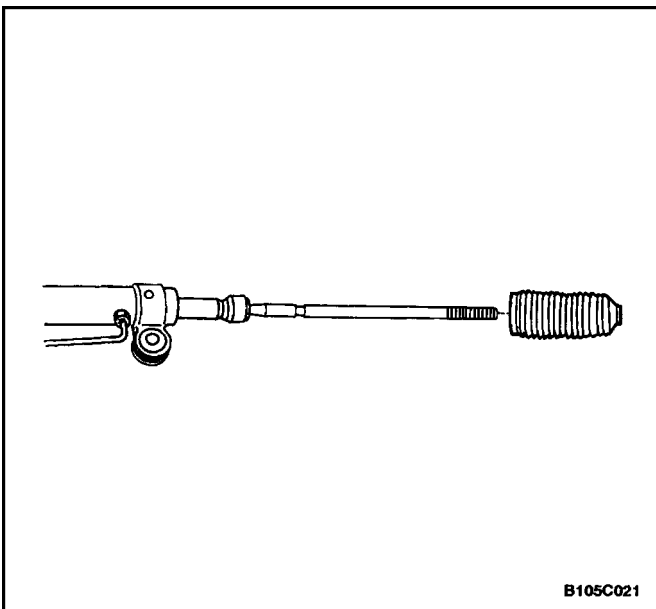
2. Firmly seat the inner tie rods against the rack and tighten both ends simultaneously.

Tighten

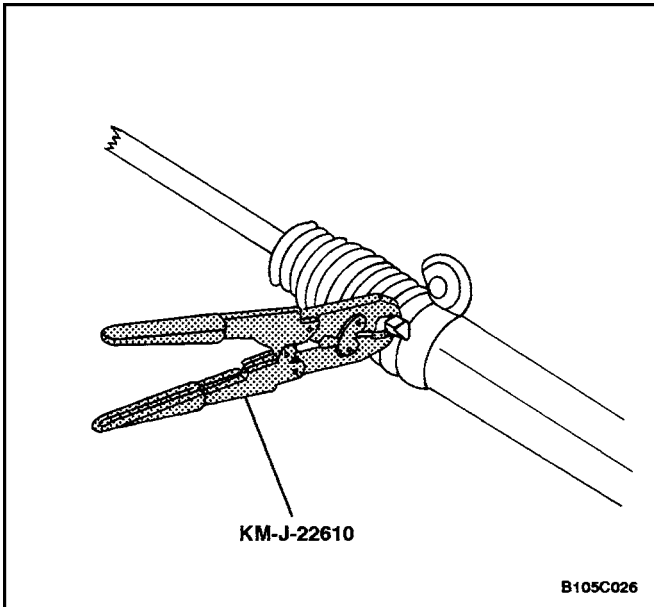
Tighten the inner tie rods to 100 N•m (74 lb–ft).



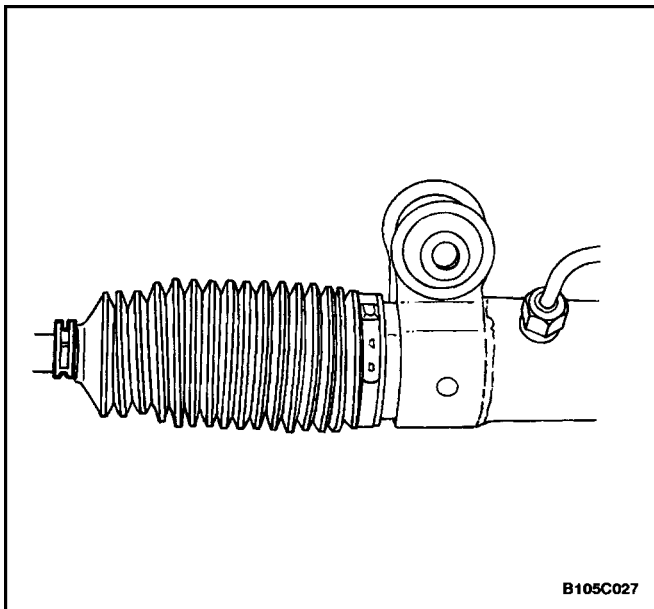
3. Push the plastic retainer back onto the connection between the inner tie rod and the power steering gear rack.



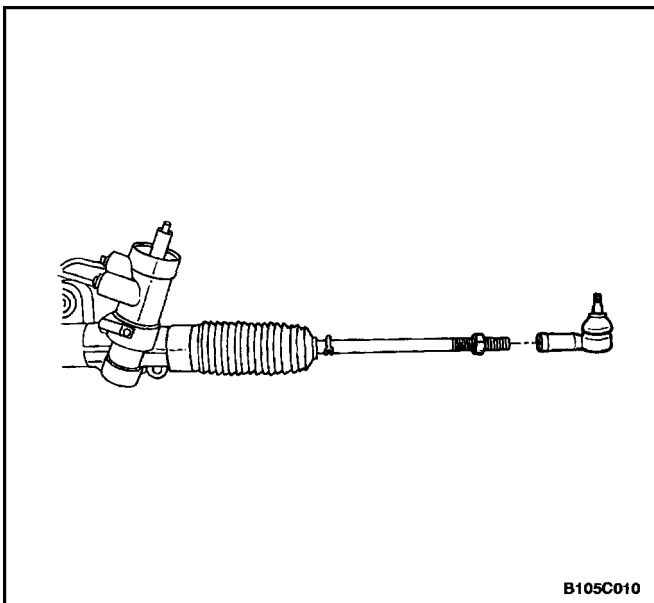
4. Install the dust boot.



5. Install the cylinder end dust boot retaining clamps with the installer KM-J-22610.



6. Install the tie rod end boot retaining clamps.

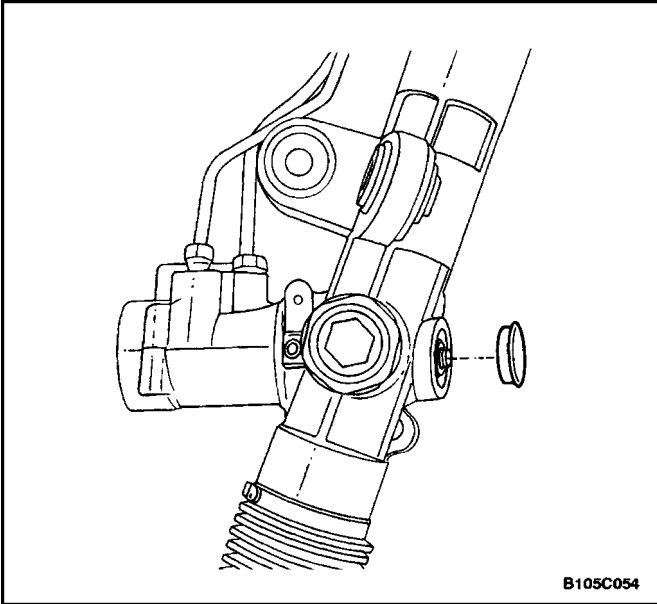


7. Reposition the adjusting nut to the marks on the inner tie rod and install the outer tie rod by twisting it onto the inner tie rod.
8. Perform a front toe adjustment. Refer to *Section 2B, Wheel Alignment*.
9. Tighten the adjusting nut.

Tighten

Tighten the outer tie rod adjusting nut to 22 N•m (16 lb–ft).

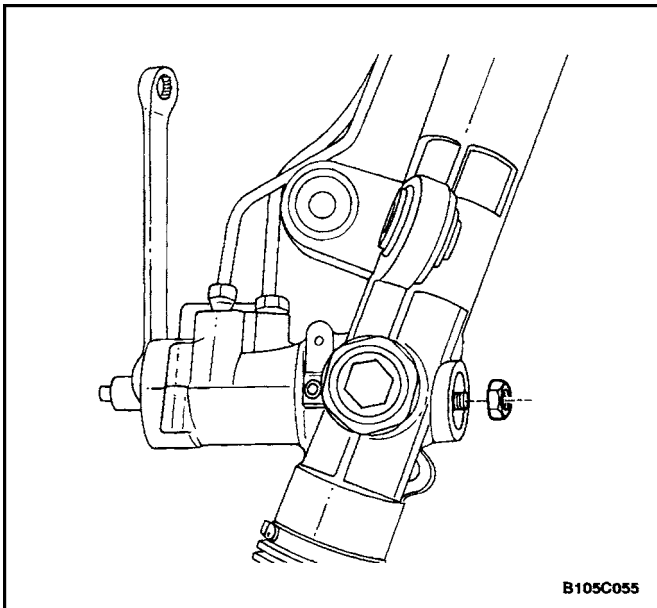
10. Install the rack bearing assembly into the rack and pinion steering assembly. Refer to "Rack Bearing" in this section.
11. Install the valve and pinion assembly into the rack and pinion steering assembly. Refer to "Valve and Pinion" in this section.
12. Install the rack and pinion steering assembly into the vehicle. Refer to "Rack and Pinion Assembly" in this section.



STUB SHAFT SEALS AND UPPER AND LOWER BEARING

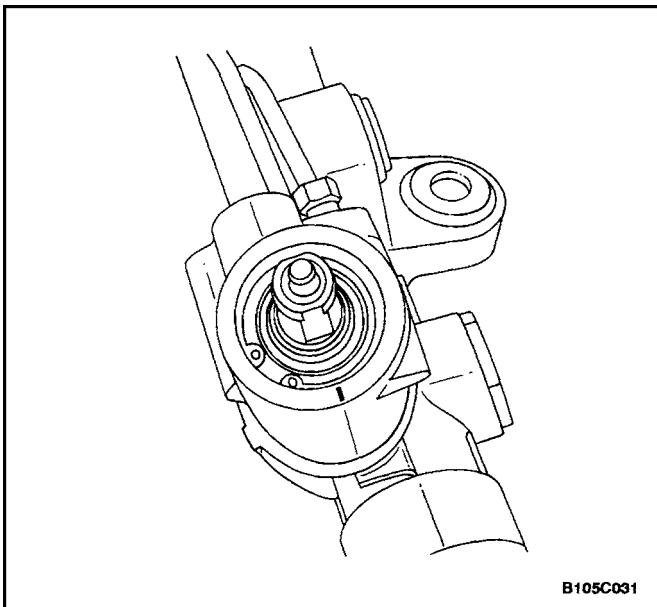
Disassembly Procedure

1. Remove the rack and pinion steering assembly from the vehicle. Refer to "Rack and Pinion Assembly" in this section.
2. Remove the dust cover from the lower end of the housing.

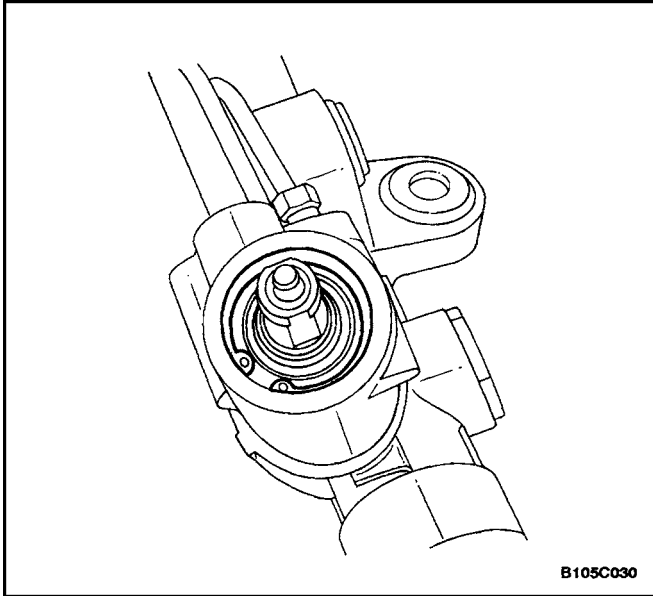


Notice : If the stub shaft is not held, damage to the pinion teeth will occur.

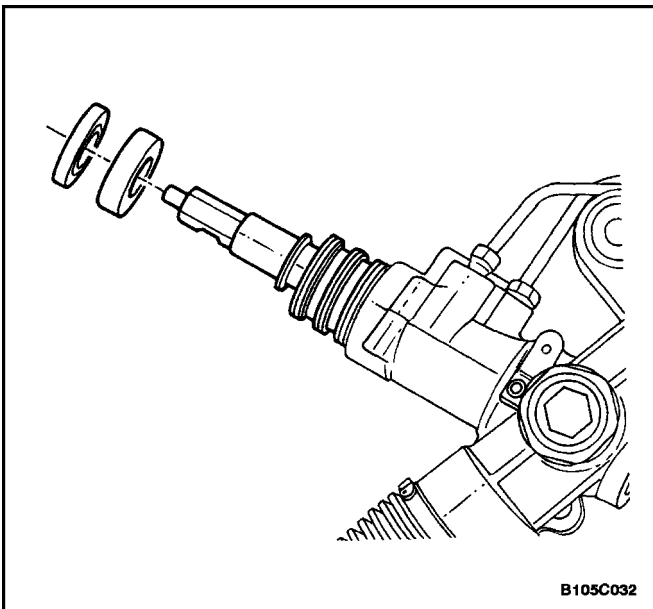
3. While holding the stub shaft with a wrench, remove the locknut from the pinion.



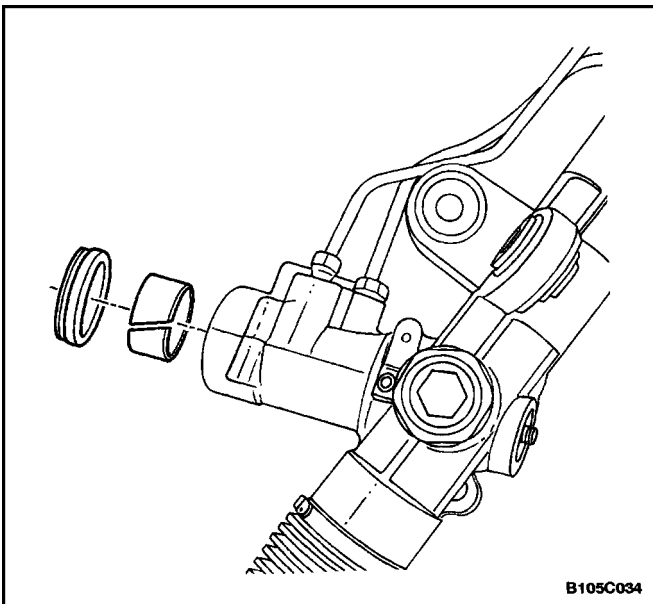
4. With the gear centered, mark the location of the stub shaft notch on the housing to aid in properly installing the valve and pinion assembly.



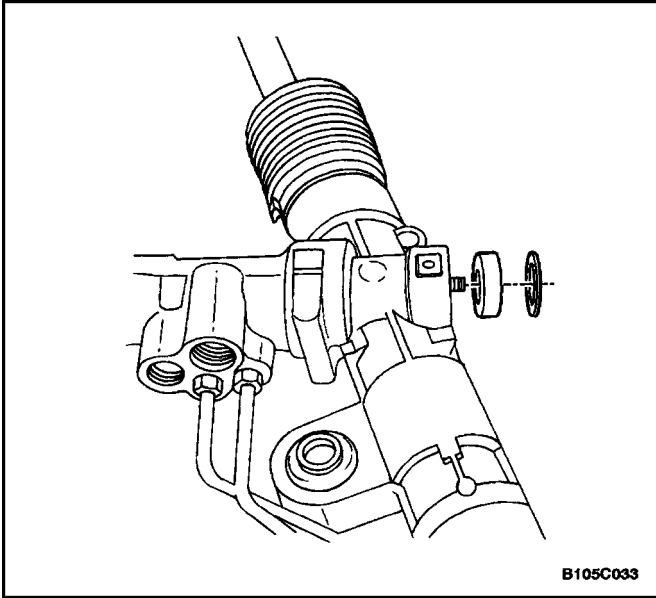
5. Remove the stub shaft retaining ring and, using an arbor press, press on the threaded end of the pinion until it is possible to remove the pinion and valve assembly from the housing.



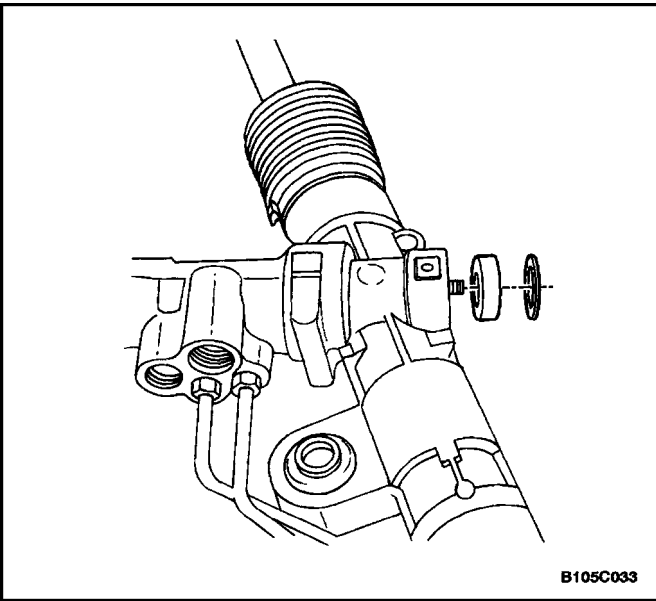
6. Remove the stub shaft dust seal the stub shaft bearing annulus assembly and the valve assembly from the housing. Discard the stub shaft dust seal.



7. Remove the lower valve assembly bearing and the bushing.



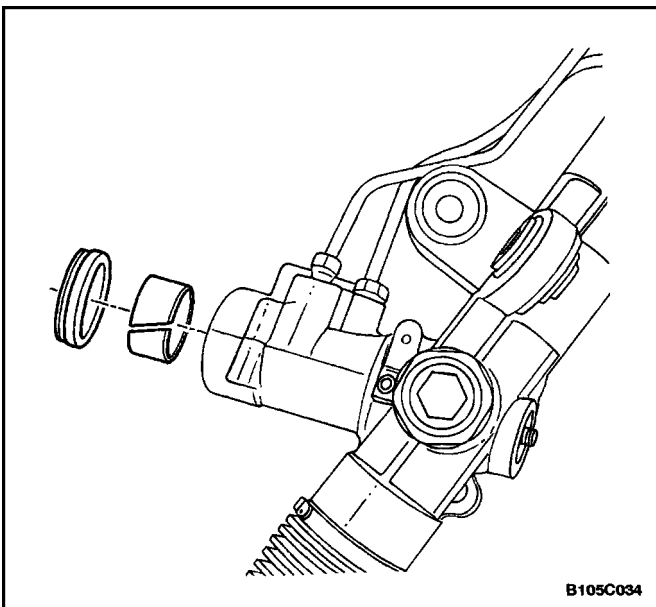
8. Remove the lower bearing assembly retaining ring and press the lower bearing assembly from the lower end of the housing..



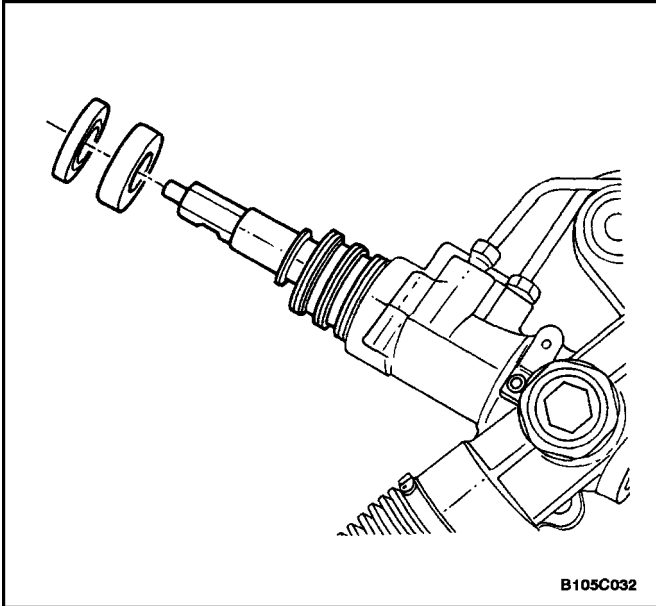
Assembly Procedure

Notice : Coat all the seals with power steering fluid to ensure proper sealing and prevent vehicle damage.

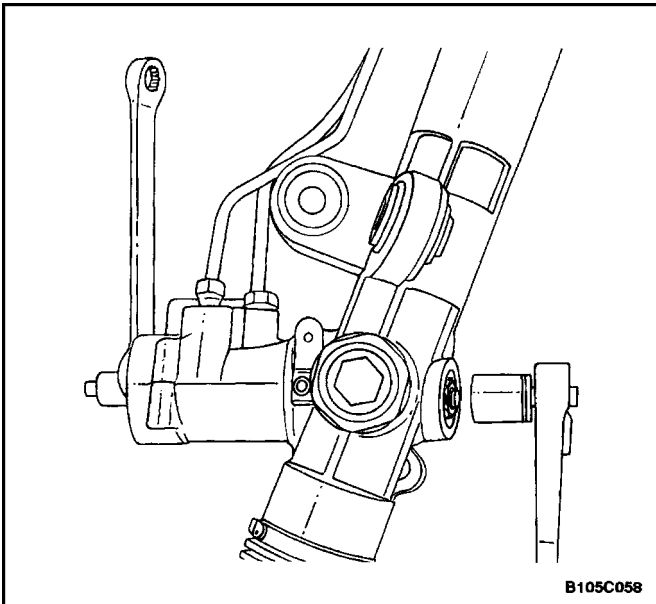
1. Install the lower bearing assembly and the lower bearing assembly retaining ring into the lower end of the housing.



2. Install the lower valve assembly bearing and the bushing.



3. Center the rack in the housing.
4. Install the the valve assembly, the stub shaft bearing annulus assembly, and a new stub shaft dust seal into the housing.



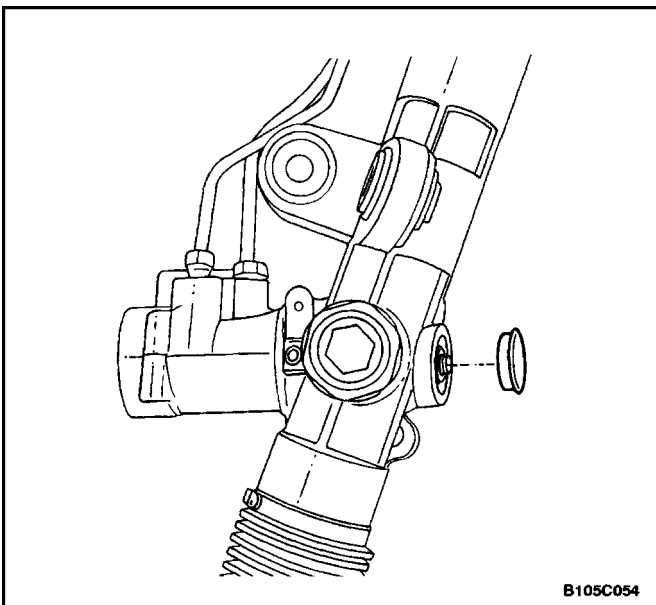
Important : When the valve and pinion assembly is fully seated in the housing, be sure that the notch in the stub shaft and the mark on the housing line up.

Notice : If the stub shaft is not held, damage to the pinion teeth will occur.

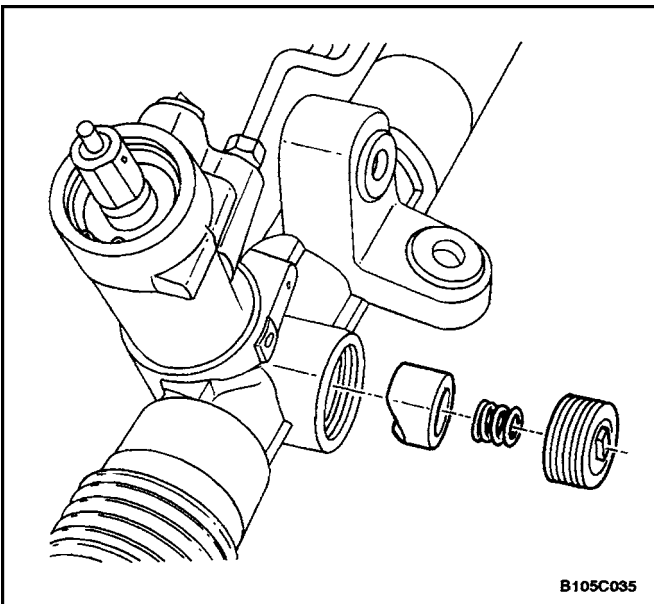
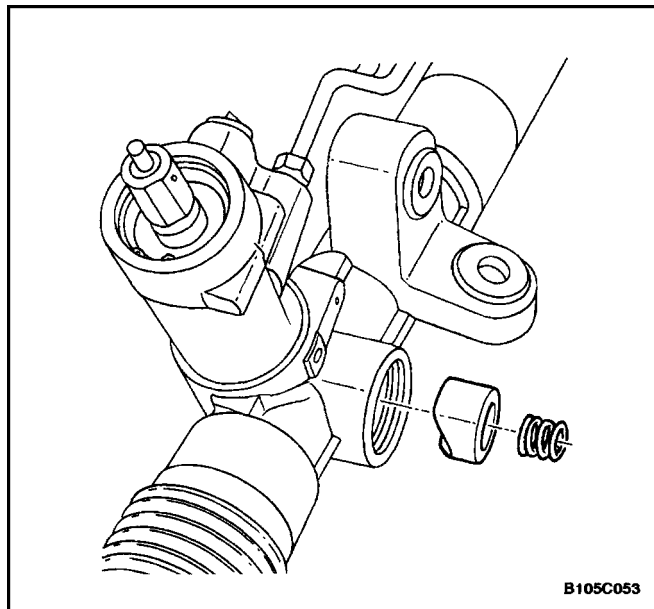
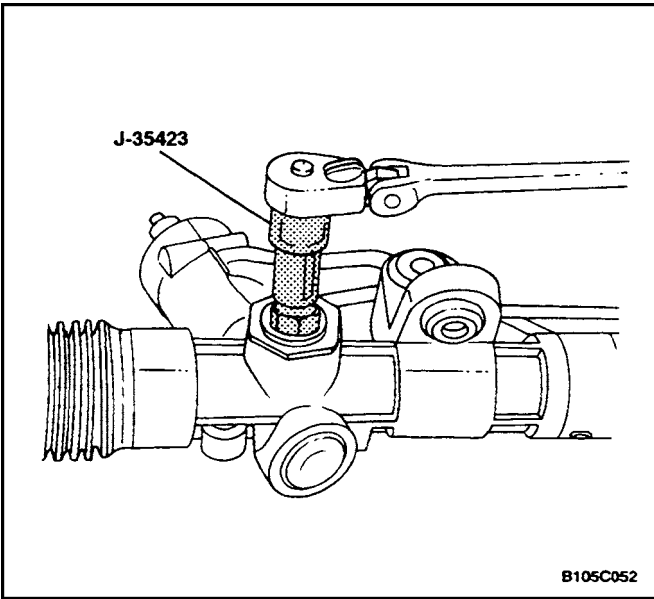
5. While holding the stub shaft, install the locknut onto the pinion shaft.

Tighten

Tighten the pinion locknut to 30 N•m (22 lb–ft).



6. Replace the dust cover onto the housing.
7. Install the rack and pinion steering assembly. Refer to "Rack and Pinion Assembly" in this section.



RACK BEARING

Tools Required

J-35423 Rack Guide Spring Cap Wrench

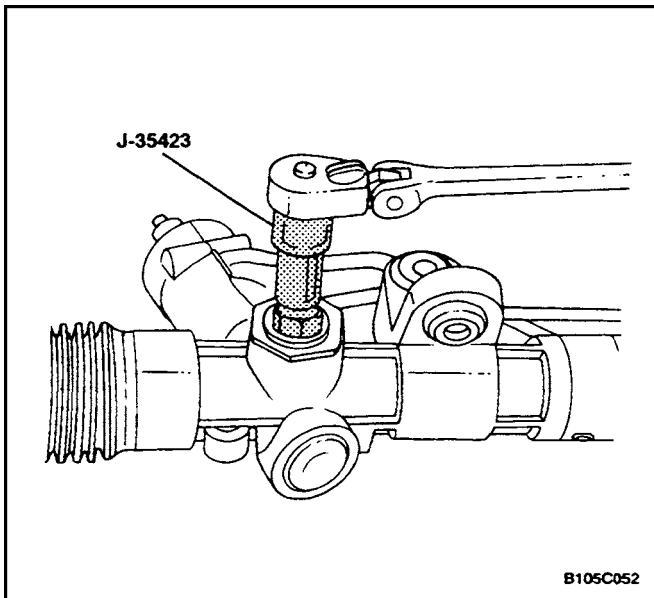
Disassembly Procedure

1. Remove the rack and pinion steering assembly from the vehicle. Refer to "Rack and Pinion Assembly" in this section.
2. Remove the adjuster plug locknut from the adjuster plug, and remove the adjuster plug from the housing with the rack guide spring cap wrench J-35423, or with a 19 mm allen wrench.

3. Remove the adjuster spring and the rack bearing.

Assembly Procedure

1. Coat the rack bearing, the adjuster spring, and the adjuster plug with lithiumbased grease and install them into the housing.

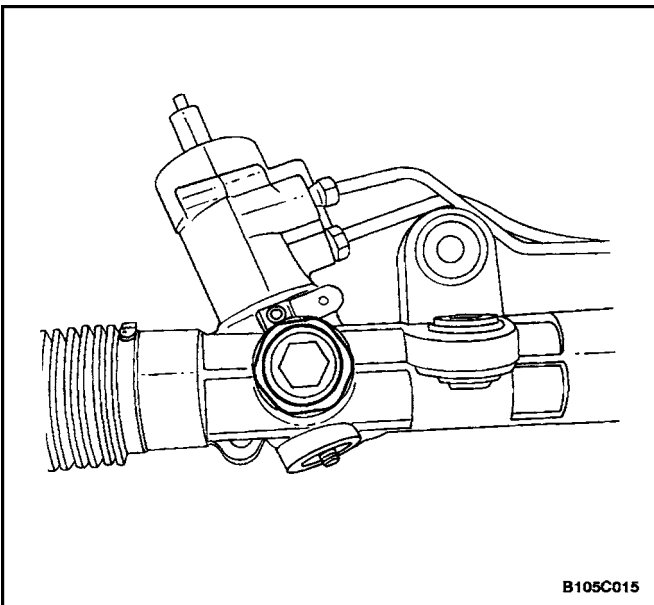


2. With the rack centered, turn the adjuster plug clockwise until a torque of 7 N•m (62 lb-in) is obtained, then back it off by 30 to 40 degrees. Check the pinion torque. Maximum pinion preloaded torque is 1 N•m (9 lb-in).
3. Thread the locknut on the adjuster plug and tighten it.

Tighten

Tighten the adjuster plug locknut to 70 N•m (52 lb-ft), while holding the adjuster plug stationary with the rack guide spring cap wrench J-35423 or with a 19 mm allen wrench.

4. Install the rack and pinion assembly. Refer to "Rack and Pinion Assembly" in this section.



RACK BEARING PRELOAD ADJUSTMENT

Adjustment Procedure

1. Raise and suitably support the vehicle.
2. Center the steering wheel.
3. Remove the power steering gear. Refer to "Rack and Pinion Assembly" in this section.
4. Loosen the locknut and turn the adjuster plug clockwise until a torque of 5 N•m (44 lb-in) is obtained, then loosen it by 30 to 40 degrees.
5. Tighten the locknut on the adjuster plug while holding the adjuster plug stationary.

Tighten

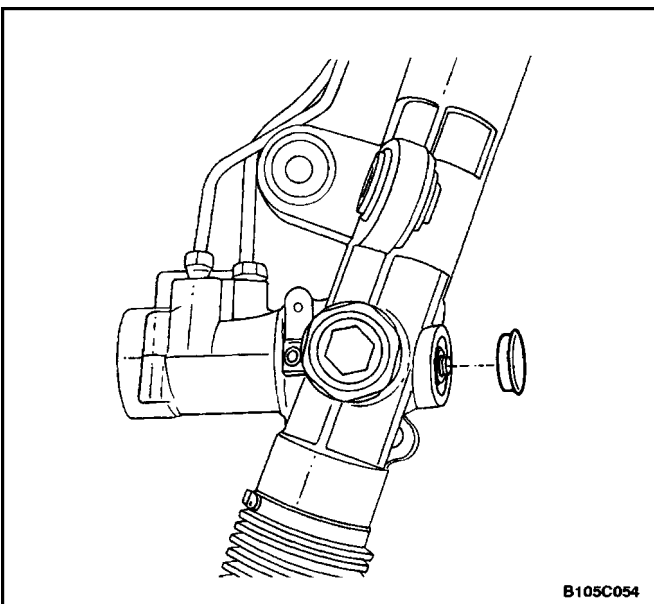
Tighten the adjuster plug locknut to 70 N•m (52 lb-ft).

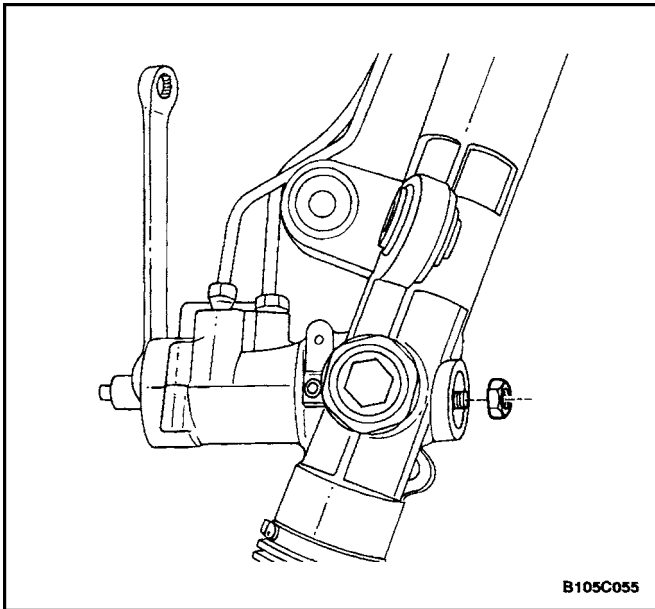
6. Install the power steering gear. Refer to "Rack and Pinion Assembly" in this section.
7. Be sure to check the returnability of the steering wheel to center position after adjustment.

VALVE AND PINION

Disassembly Procedure

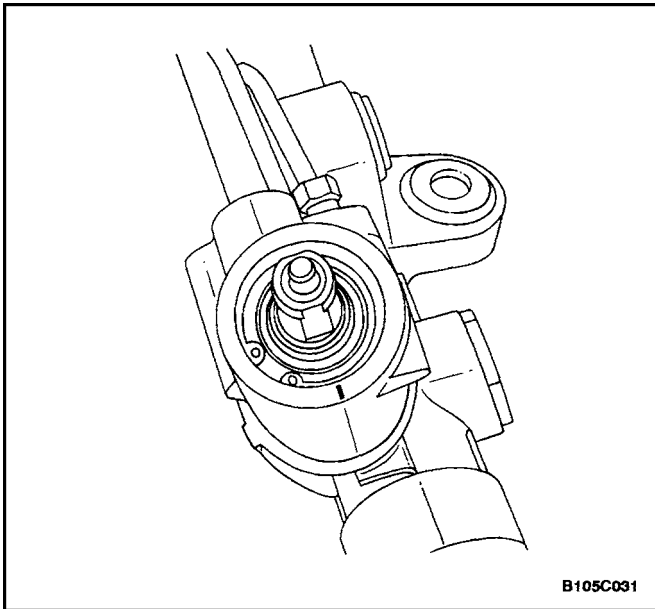
1. Remove the rack and pinion steering assembly from the vehicle. Refer to "Rack and Pinion Assembly" in this section.
2. Remove the dust cover from the lower end of the housing.



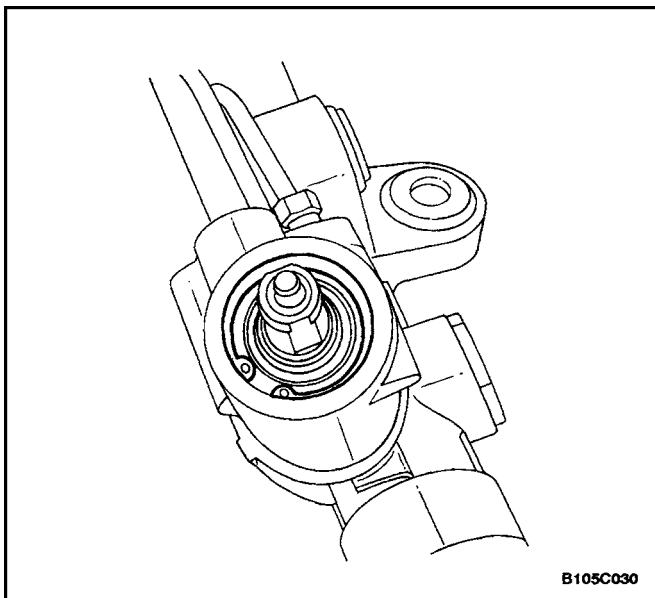


Notice : If the stub shaft is not held, damage to the pinion teeth will occur.

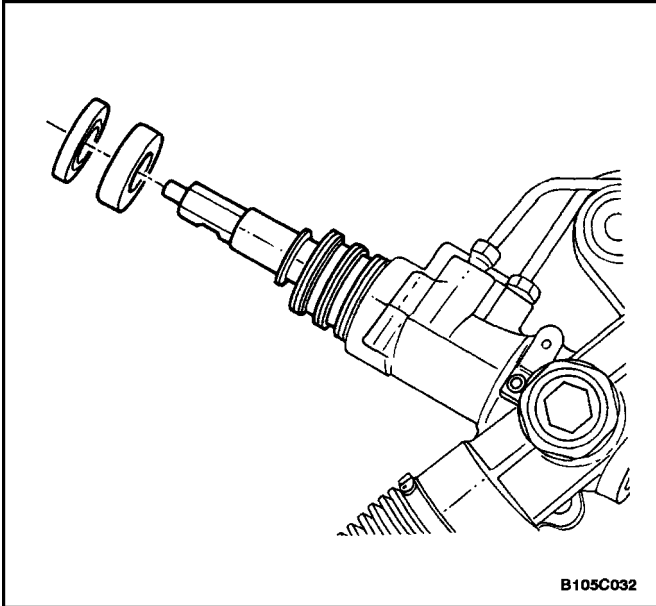
3. While holding the stub shaft, remove the locknut from the pinion.



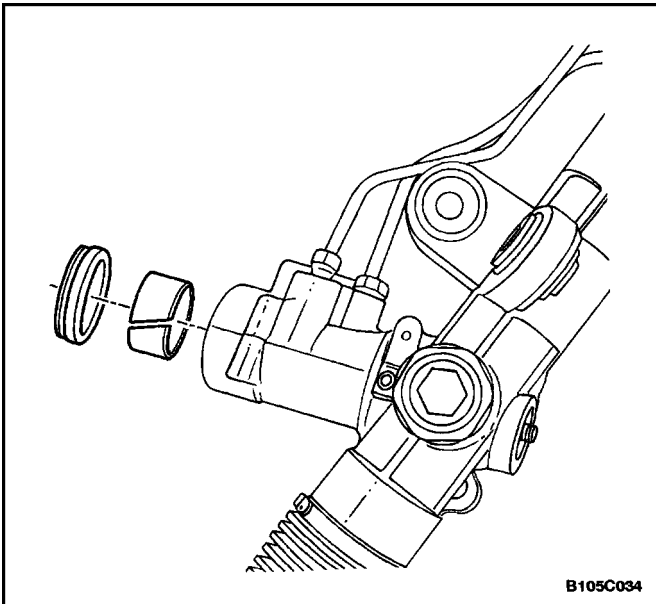
4. With the gear centered, mark the location of the stub shaft notch on the housing to aid in properly installing the pinion and valve assembly.



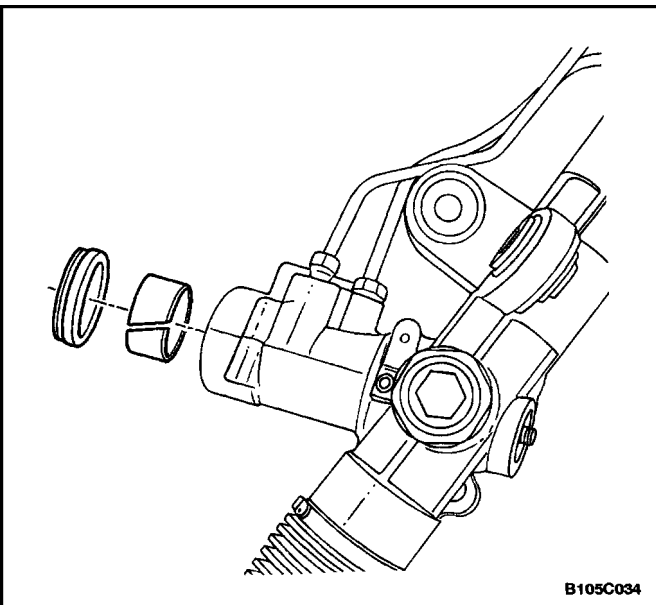
5. Remove the upper housing retaining ring and, using an arbor press, press on the threaded end of the pinion until it is possible to remove the valve and pinion assembly from the housing.



6. Remove the stub shaft dust seal, the stub shaft bearing annulus assembly, and the valve and pinion assembly from the housing.



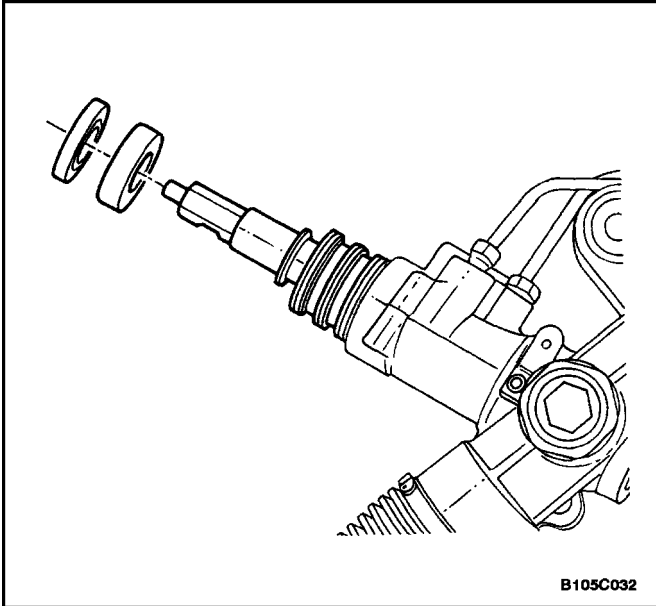
7. Inspect the valve body rings for wear or damage. Replace the valve body rings, as needed. Coat the rings with power steering fluid before installation.
8. Remove the lower pinion valve seal and bushing. Discard the seal.



Assembly Procedure

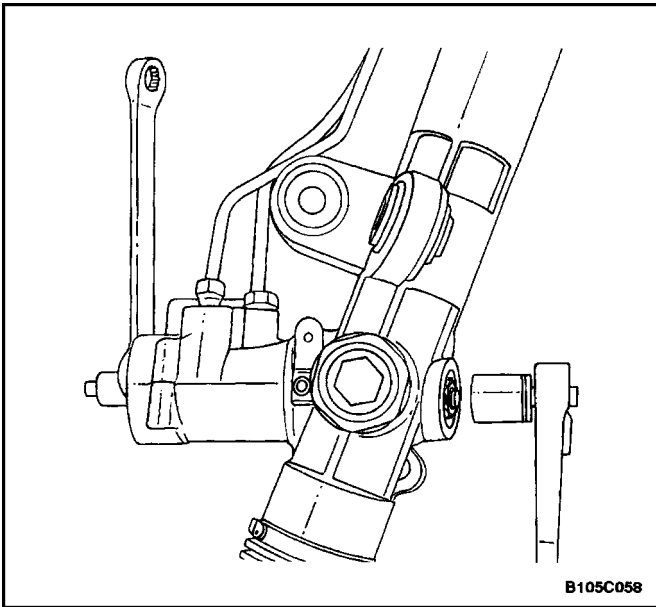
Notice : Coat all of the seals and bushings with power steering fluid to ensure proper sealing and prevent vehicle damage.

1. Install the bushing and a new lower pinion valve seal.



Important : When the valve and pinion assembly is fully seated in the housing, be sure the notch in the stub shaft and the mark on the housing line up. If this is not done, the vehicle will not pass the straight-ahead check and will have poor steering performance.

2. Install the valve and pinion assembly, the stub shaft bearing annulus assembly, and the stub shaft dust seal.

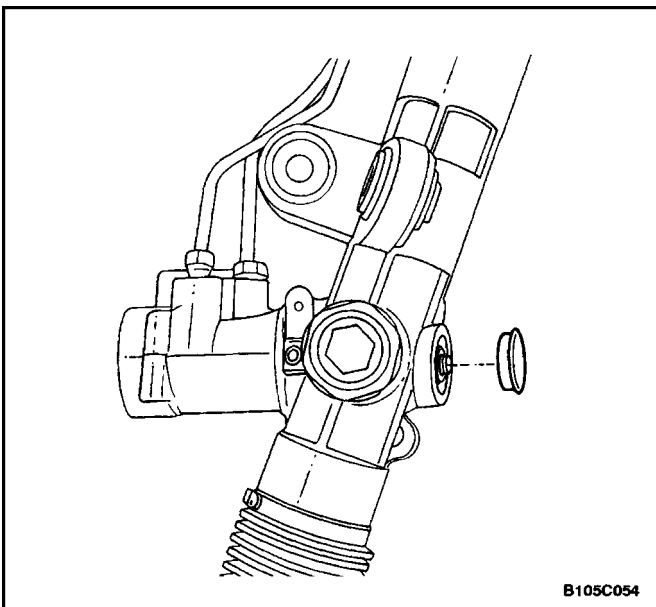


Notice : If the stub shaft is not held, damage to the pinion teeth will occur.

3. While holding the stub shaft, tighten the locknut onto the pinion shaft.

Tighten

Tighten the pinion locknut to 30 N•m (22 lb–ft).



4. Replace the dust cover onto the housing.
5. Install the rack and pinion steering assembly. Refer to "Rack and Pinion Assembly" in this section.
6. Perform the straight-ahead check. Refer to "Straight-Ahead Check" in this section.

GENERAL DESCRIPTION AND SYSTEM OPERATION

POWER RACK AND PINION

The power rack and pinion steering system has a rotary control valve that directs hydraulic fluid coming from the hydraulic pump to one side or the other side of the rack piston. The integral rack piston is attached to the rack. The rack piston converts hydraulic pressure to a linear force

that moves the rack left or right. That force is then transmitted through the tie rods to the steering knuckles, which turn the wheels.

If power rack and pinion steering is not available, manual rack and pinion control is used; however, with this system, more steering effort is required. The movement of the steering wheel is transferred to the pinion. The rotary movement of the pinion is then transferred through the pinion threads, which mesh with teeth on the rack, thereby causing the rack to move in a linear direction.

A vane-type of hydraulic pump provides hydraulic pressure for both steering systems.