

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

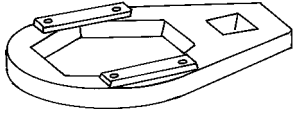

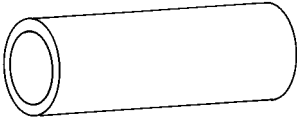
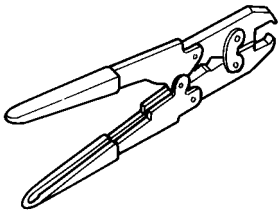
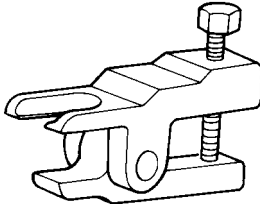
Application	Description
Lubricant	Power Steering Fluid DEXRON®-III
Capacity	1.0 L (1.05 qt)

FASTENER TIGHTENING SPECIFICATIONS

Application	N•m	Lb-Ft	Lb-In
Adjuster Plug Locknut	70	52	-
Coolant Surge Tank Attaching Nuts	4	-	35
Coupling Flange Pinch Bolt	22	16	-
Inner Tie Rod Bolts	90	66	-
Inner Tie Rod Pinch Bolt	22	16	-
Outer Tie Rod Hex Nut	60	44	-
Outer Tie Rod Pinch Bolt	22	16	-
Pinion Locknut	30	22	
Pinion Preload	0.9 to 1.7	-	8 to 15
Power Steering Line Fittings-Cylinder End	27	20	-
Power Steering Line Fittings-Valve End	18	13	-
Steering Gear Inlet and Outlet Pipe Fittings	27	20	-
Steering Gear Retaining Bracket Nuts	38	28	-
Steering Gear Retaining Bracket Studs	20	15	-

SPECIAL TOOLS

SPECIAL TOOLS TABLE

 <p>A105C025</p>	<p>KM-472 Wrench</p>	 <p>A105C030</p>	<p>J-29810 Stub Shaft Protector</p>
 <p>A105C026</p>	<p>J-36545 Installing Tube</p>	 <p>A104A008</p>	<p>KM-J-26610 Installer</p>
 <p>A106C034</p>	<p>KM-507-B Ball Joint Remover</p>		

DIAGNOSIS

POWER RACK AND PINION STEERING GEAR

Hissing Noise

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

6C - 4 POWER STEERING GEAR

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 for insufficient lubrication.	Lubricate the steering gear.
Check the steering gear mounting for looseness.	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 as needed.

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 steering coupling for binding or looseness.	Replace the steering coupling flange.
Check the power steering pump flow control valve for sticking and improper alignment.	Replace the power steering pump.
Check the wheel alignment.	Adjust the wheel alignment.
Check the wheel bearings for wear or damage.	Replace the wheel bearings.
Check the steering gear-to-column joints for improper installation.	Adjust the steering coupling flange on the steering gear and the steering column. Replace the coupling flange as needed.
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 as needed.
Check the steering gear adjustments.	Perform a straight-ahead check.
Check the steering column shaft seal for rubbing on the shaft.	Replace the shaft seal.
Check the steering shaft bearings for binding.	Replace the steering 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 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 pump drive belt for slippage.	Tighten the pump drive 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 pump drive belt for looseness.	Tighten the pump drive 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 looseness.	Tighten the steering gear mounting bracket nuts.
Check the steering gear-to-column joints for improper installation.	Adjust the steering coupling flange on the steering gear and the steering column. Replace the coupling flange as needed.
Check the outer tie rods and ball joints for looseness.	Tighten the tie rods and the ball joints. Replace the tie rods and the ball joints as needed.

Hard Steering or Lack of Assist (Especially During Parking)

Checks	Action
Check the steering gear-to column joints for improper installation.	Adjust the steering coupling flange on the steering gear and the steering column. Replace the coupling flange as needed.
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 steering coupling.	Tighten the steering coupling flange. Replace the steering coupling flange as needed.
Check the pump drive belt tension.	Adjust the pump drive belt tension.

**POWER RACK AND PINION
STEERING GEAR BENCH TESTING****Removal, Setup and Testing Procedure**

Notice: 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 in order to reach the power steering gear on the bench.
4. Disconnect the return line from the the power steering fluid reservoir. Extend this line in order 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.

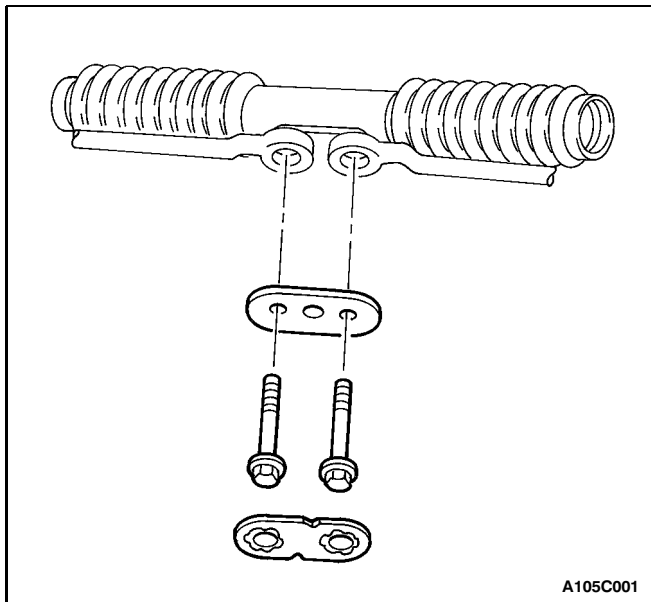
7. Check the power steering fluid level. Refer to Section 6A, Power Steering System.

8. Start the engine and turn the rack and pinion stub shaft to 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.



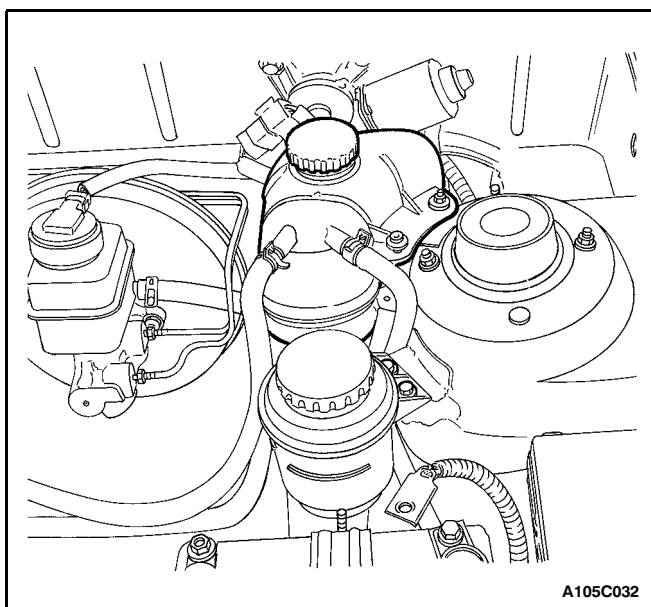
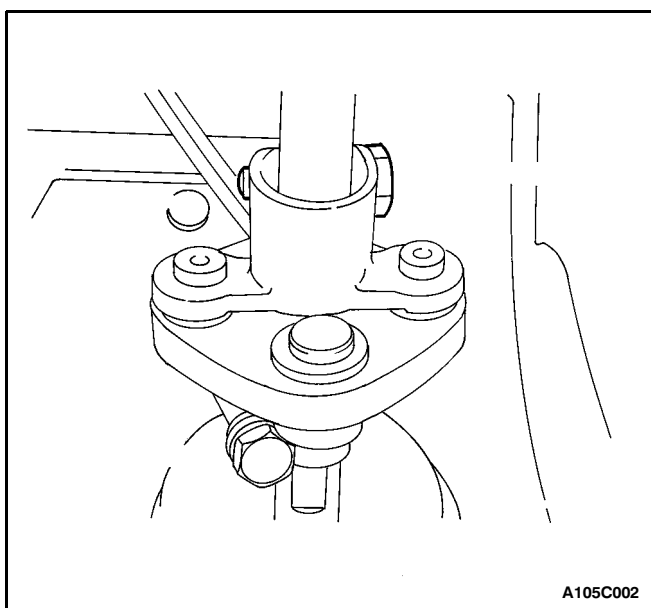
MAINTENANCE AND REPAIR

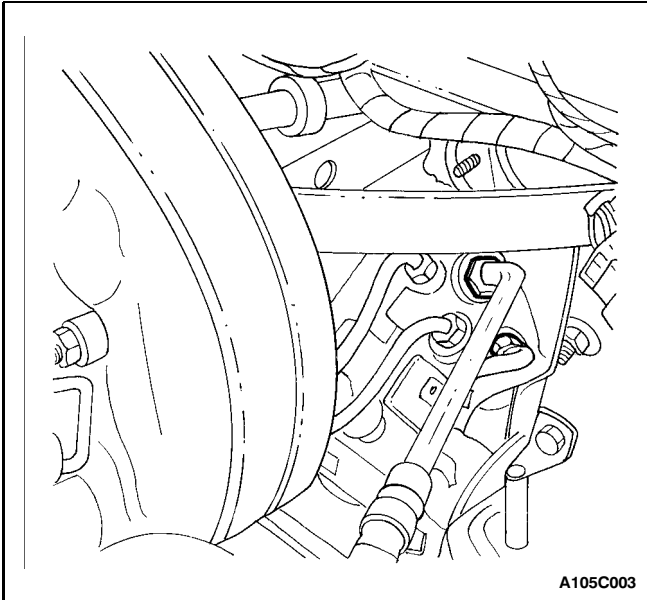
ON-VEHICLE SERVICE

RACK AND PINION ASSEMBLY (LEFT-HAND DRIVE)

Removal Procedure

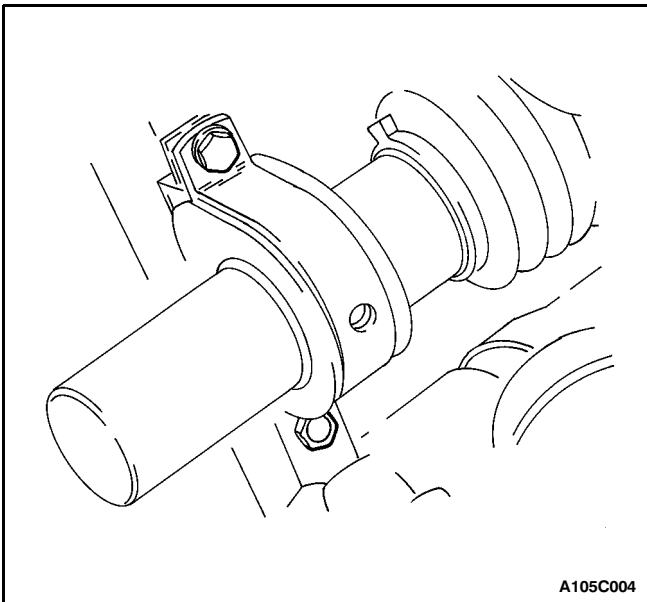
1. Disconnect the negative battery cable.
2. Disconnect the inner tie rods from the rack and pinion assembly by removing the lock plate, the inner tie rod bolts, and the inner tie rod plate. Do not reuse the lock plate.
3. Position the steering gear straight ahead by turning the steering wheel until the spokes are centered diagonally and pointing downward.
4. Loosen the top pinch bolt on the coupling flange.
5. Disconnect the coolant surge tank from the vehicle by removing the attaching nuts. Without disconnecting the hoses, move the tank out of the repair area.





A105C003

6. Disconnect the steering gear inlet and outlet pipe fittings.



A105C004

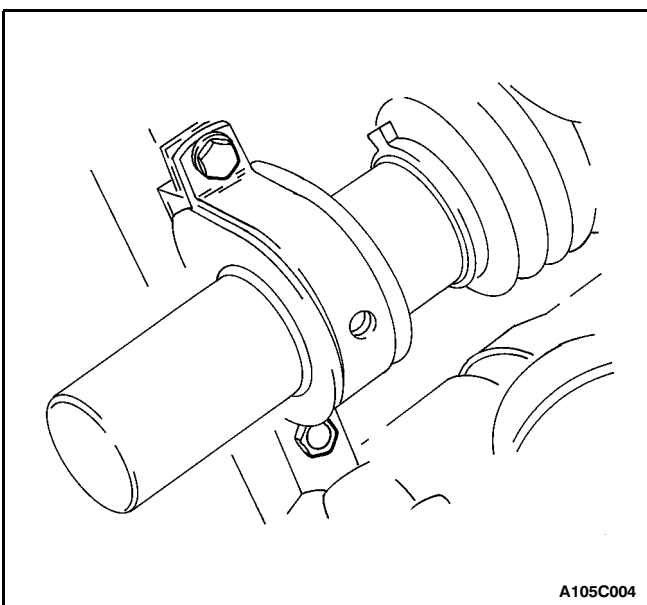
7. Remove the left inner and outer tie rod from the vehicle. Refer to "Outer Tie Rod" and "Inner Tie Rod" in this section.
8. Disconnect the steering gear retaining bracket nuts from the bottom of each steering gear retaining bracket. Disconnect the steering gear retaining bracket bolts from the top of each steering gear retaining bracket.
9. Remove the rack and pinion assembly through the front wheel opening.
10. If the studs were removed with the mounting clamps, reinstall the studs into the cowl.

Tighten

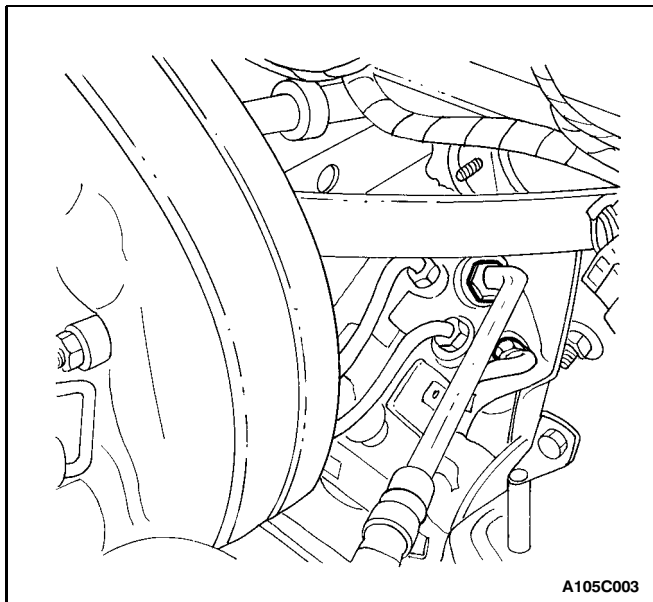
Tighten the steering gear retaining bracket studs to 20 N•m (15 lb-ft).

Installation Procedure

1. Install the rack and pinion steering gear assembly through the front wheel opening. The steering gear must be in a straight-ahead position. The steering wheel spokes must be centered diagonally and point downwards.
2. Connect the steering gear assembly to the body with two mounting brackets. Loosely attach all the steering gear retaining bracket nuts and bolts.



A105C004

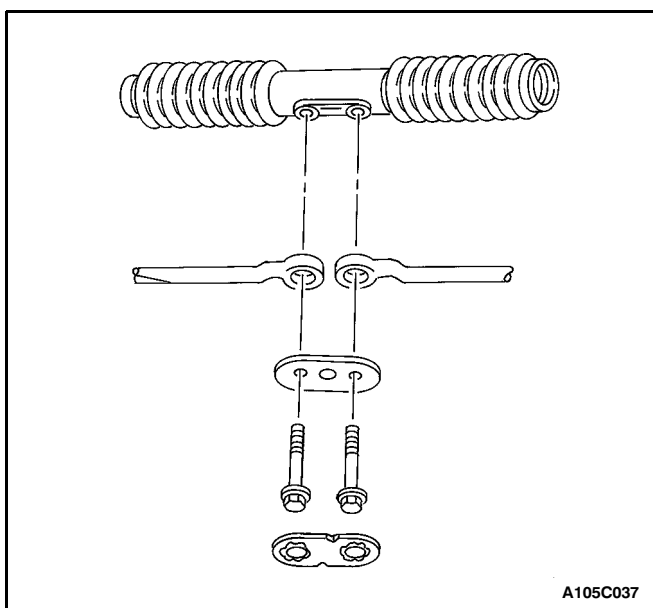


A105C003

3. Connect the steering gear inlet and outlet pipe fittings.

Tighten

Tighten the steering gear inlet and outlet pipe fittings to 27 N•m (20 lb-ft).



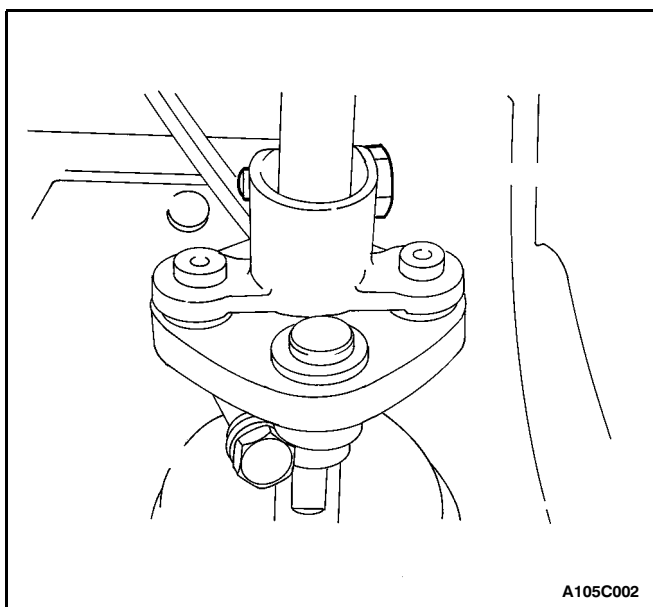
A105C037

Important: Be sure the center housing cover washers are located between the tie rods and the steering gear. Always use a new lock plate.

4. Connect both tie rods to the steering gear by threading the inner tie rod bolts through the inner tie rod plate, the tie rods, and the center housing cover washers into the rack guide. Install a new lock plate.

Tighten

Tighten the inner tie rod bolts to 90 N•m (66 lb-ft).

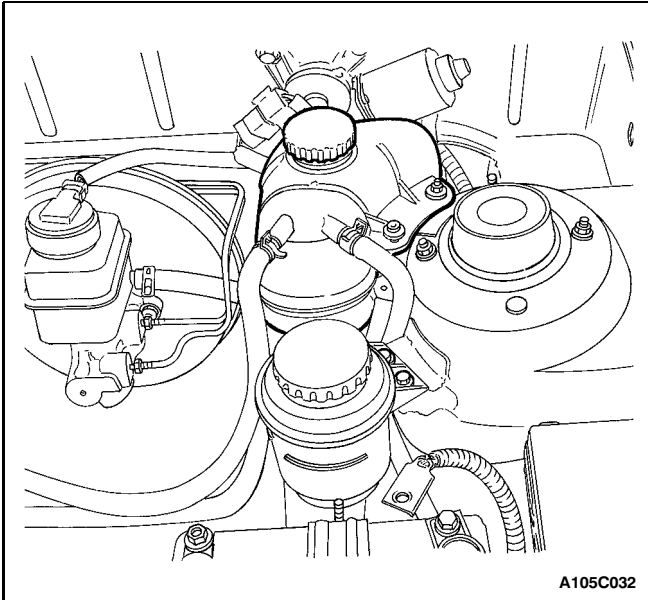


A105C002

5. Seat the dash seal and attach the coupling flange to the steering gear. Secure the coupling flange assembly with the top pinch bolt on the coupling flange assembly.

Tighten

Tighten the coupling flange pinch bolt to 22 N•m (16 lb-ft).



6. Tighten all the steering gear retaining bracket nuts and bolts.

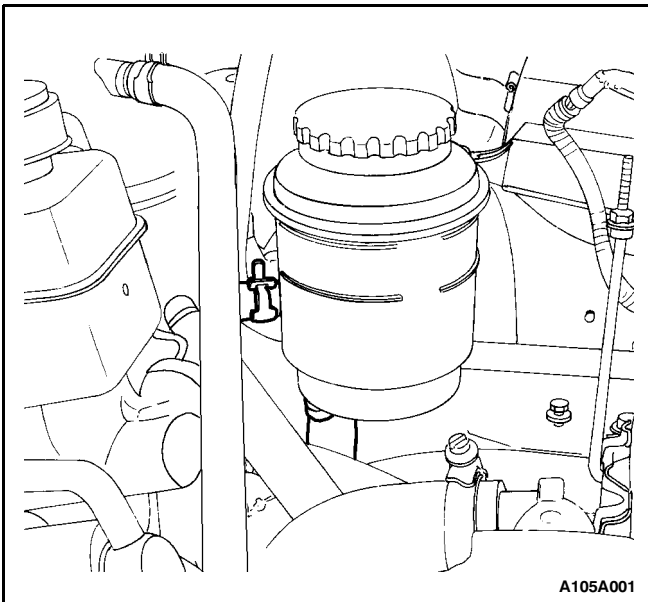
Tighten

Tighten the steering gear retaining bracket nuts to 38 N•m (28 lb-ft).

7. Check that the steering gear has remained in the straight-ahead position.
8. Inspect for leaks. If leaks are found, correct the cause of the leak and bleed system. Refer to Section 6A, Power Steering System.
9. Connect negative battery cable.
10. Reconnect the coolant surge tank with the attaching nuts.

Tighten

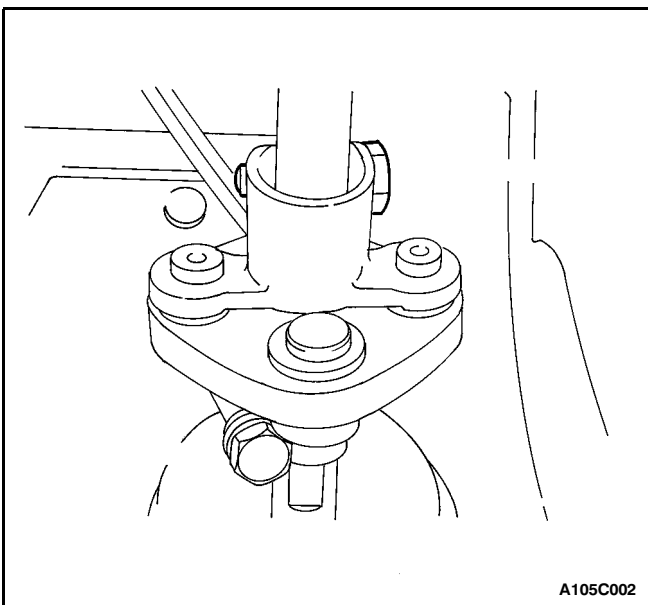
Tighten the coolant surge tank attaching nuts to 4 N•m (36 lb-in).

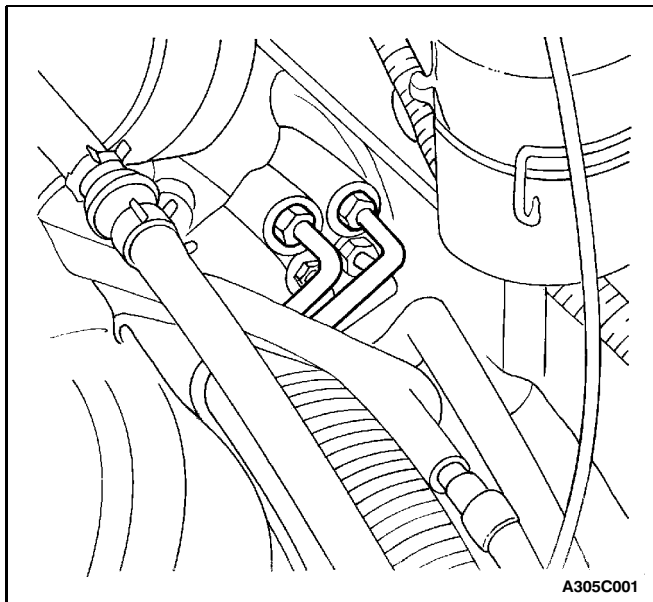


RACK AND PINION ASSEMBLY (RIGHT-HAND DRIVE)

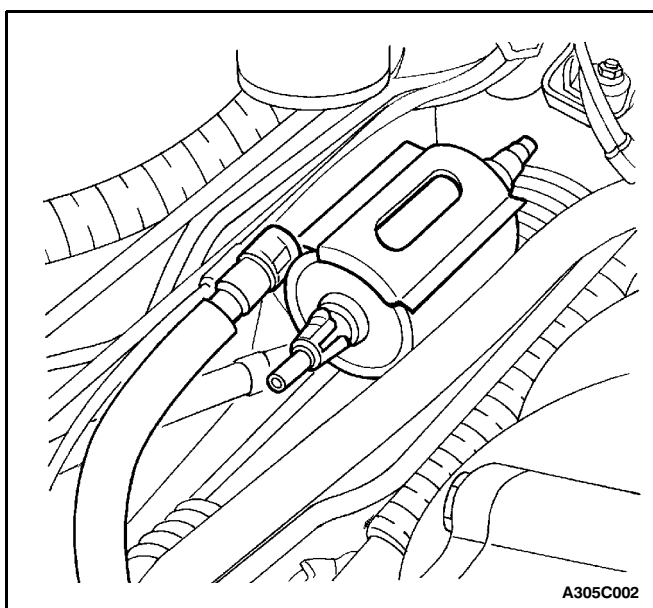
Removal Procedure

1. Disconnect the negative battery cable.
2. Raise the vehicle slightly off the ground.
3. Siphon the power steering fluid from the fluid reservoir.
4. Remove the left and the right wheel assemblies and the outer tie rod ends. Refer to "Outer Tie Rod" in this section.
5. Loosen the top pinch bolt on the coupling flange.

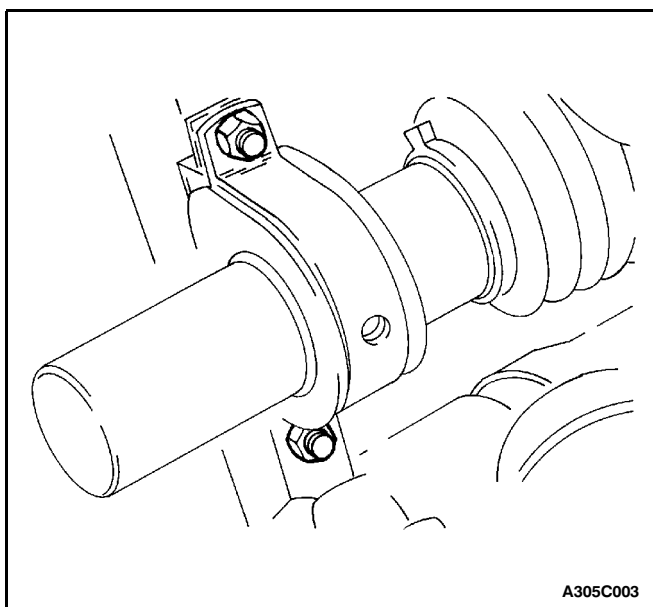




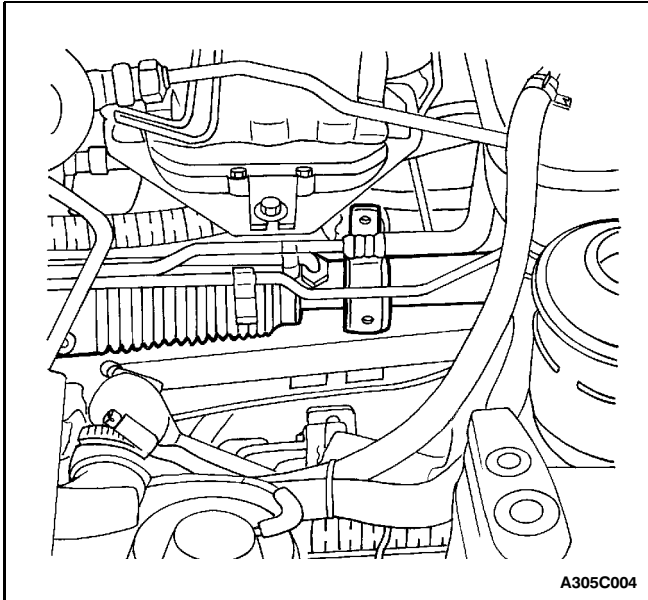
6. Disconnect the steering gear inlet pipe and outlet pipe fittings. Position the steering gear inlet pipe away from the steering gear assembly.



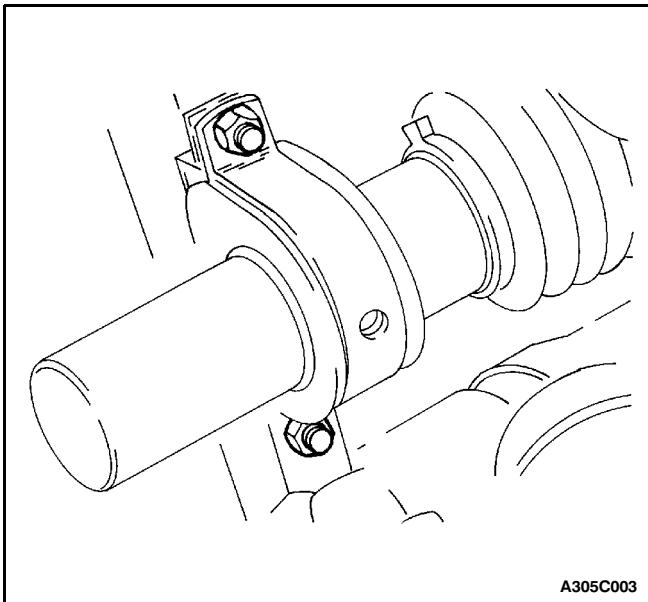
7. Remove the hydraulic lines from the spacer clips.
8. Remove the fuel line from the output side of the fuel filter. Remove the fuel filter from the retaining bracket.
9. Remove the fuel filter bracket.



10. Remove the two nuts from the steering gear right retaining bracket by reaching through the right front wheel opening.



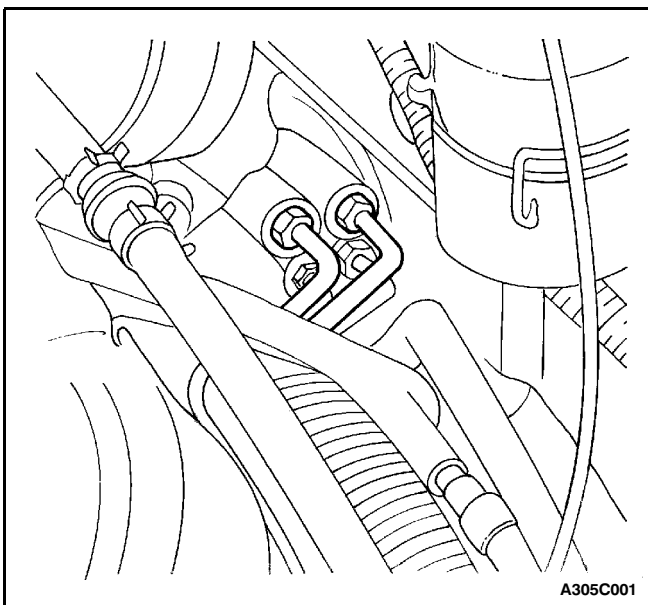
11. Remove the steering gear left retaining bracket.



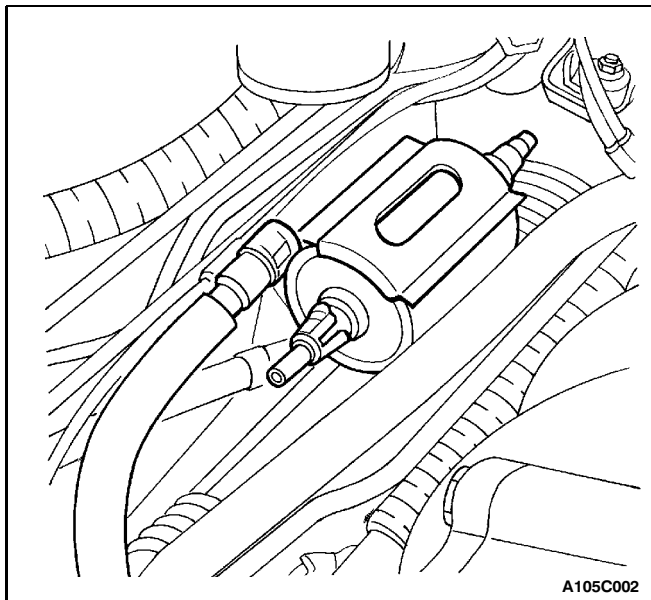
12. Remove the rack and pinion assembly (complete with the tie rods) through the left front wheel opening.

Installation Procedure

- 1. Install the rack and pinion assembly through the left front wheel opening. The steering gear must be in a straight-ahead position. The steering wheel spokes must be centered diagonally and point downwards.**
- 2. Loosely install the steering gear right retaining bracket.**



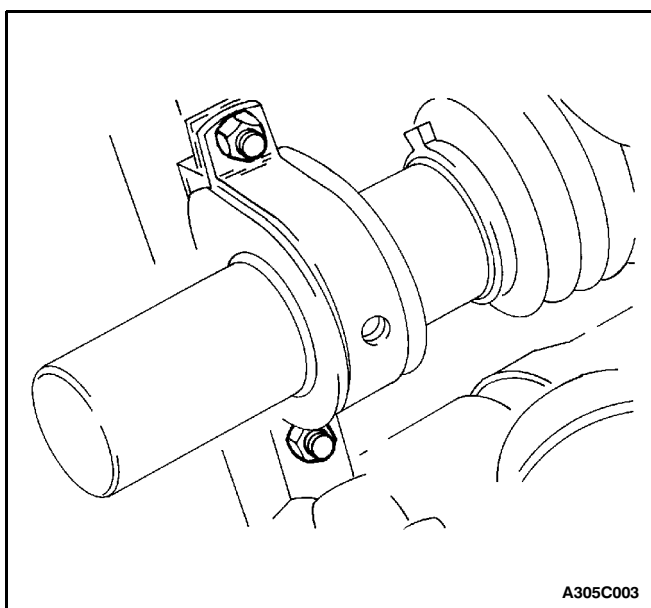
3. Route the steering gear outlet pipe fitting to the steering gear valve, but do not tighten.



4. Seat the dash seal and attach the coupling flange to the steering gear. Secure the coupling flange assembly with the top pinch bolt on the coupling flange assembly.

Tighten

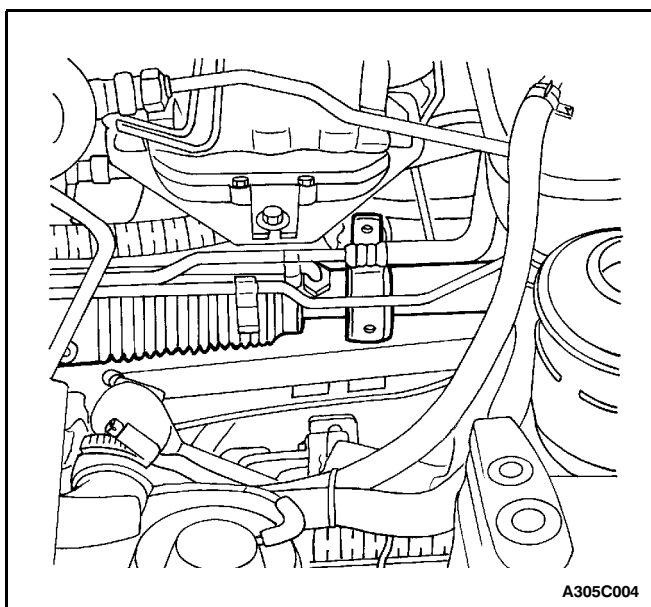
Tighten the coupling flange pinch bolt to 22 N•m (16 lb-ft).



5. Loosely install the steering gear left retaining bracket.
6. Install the steering gear right retaining bracket nuts by reaching through the right front wheel opening.

Tighten

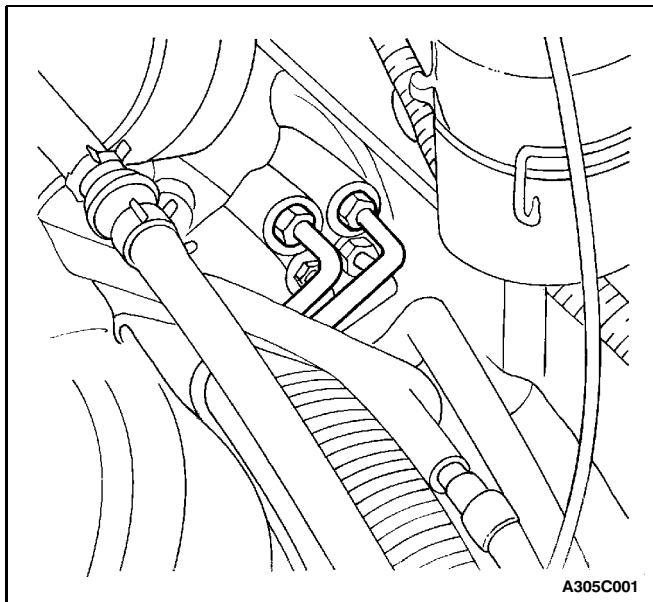
Tighten the steering gear retaining bracket nuts to 38 N•m (28 lb-ft).



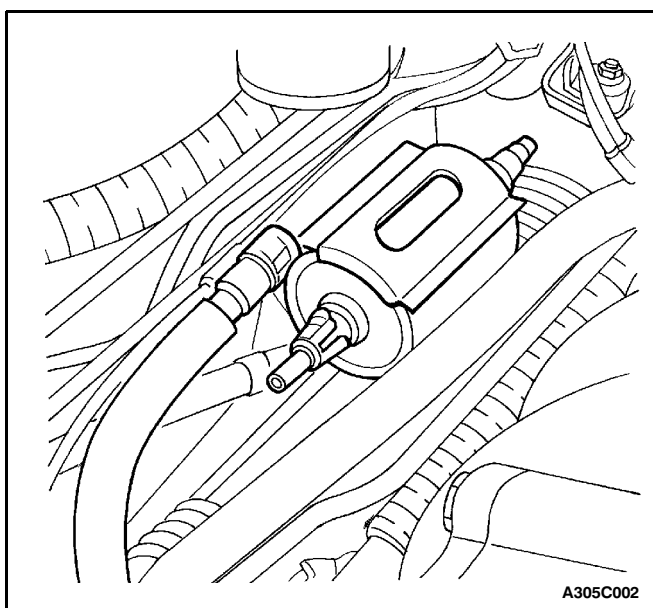
7. Install the steering gear left retaining bracket nut and the bolt.

Tighten

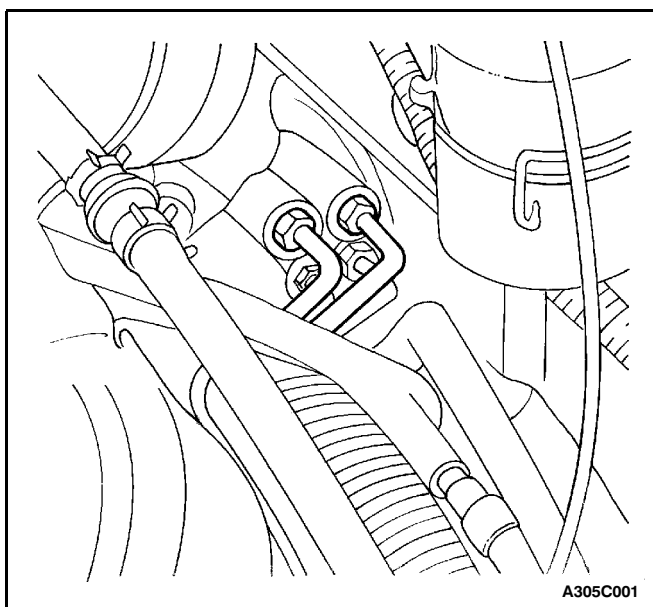
Tighten the steering gear retaining bracket nut and the bolt to 38 N•m (28 lb-ft).



8. Route the steering gear inlet pipe to the steering gear valve, but do not tighten.



9. Install the fuel filter bracket. Install the fuel filter into the bracket.
10. Install the fuel line to the output side of the fuel filter.

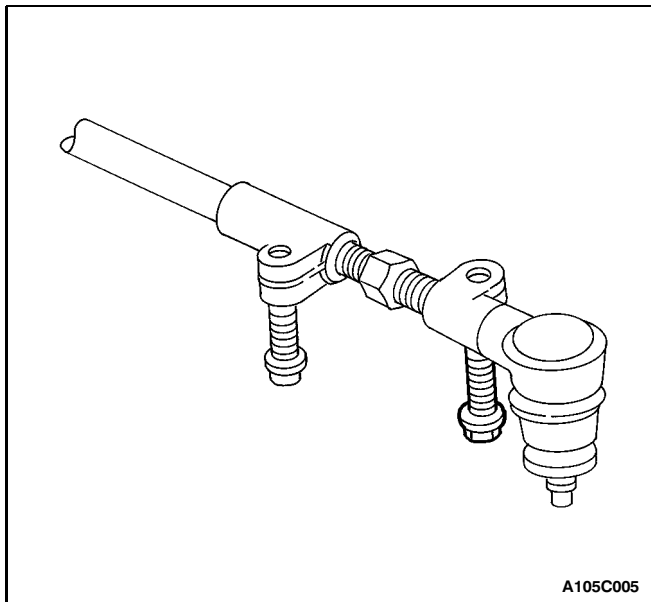


11. Install the steering gear hydraulic lines into the spacer clips.
12. Tighten the steering gear inlet and outlet pipes at the steering gear valve.

Tighten

Tighten the steering gear inlet and outlet pipe fittings to 27 N•m (20 lb-ft).

13. Install the left and the right outer tie rod ends and the wheel assemblies. Refer to "Outer Tie Rod" in this section.
14. Check that the steering gear has remained in the straight-ahead position.
15. Inspect for leaks. If leaks are found, correct the cause of the leak and bleed the system. Refer to Section 6A, Power Steering System.
16. Lower the vehicle and connect the negative battery cable.



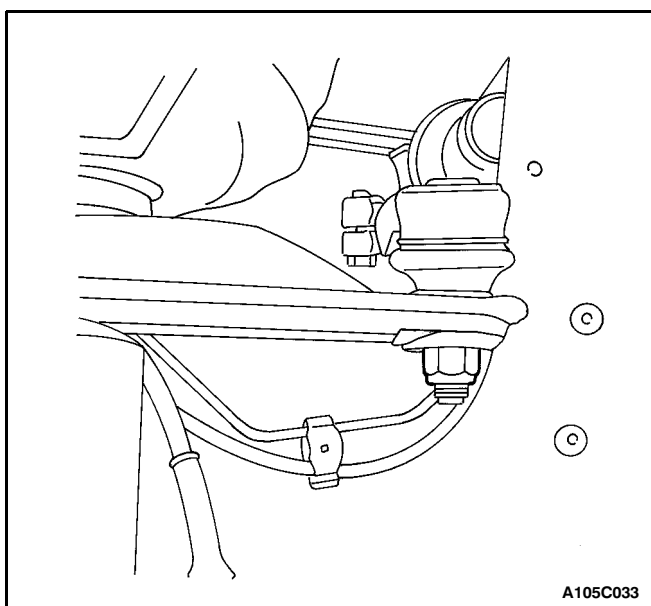
OUTER TIE ROD

Tools Required

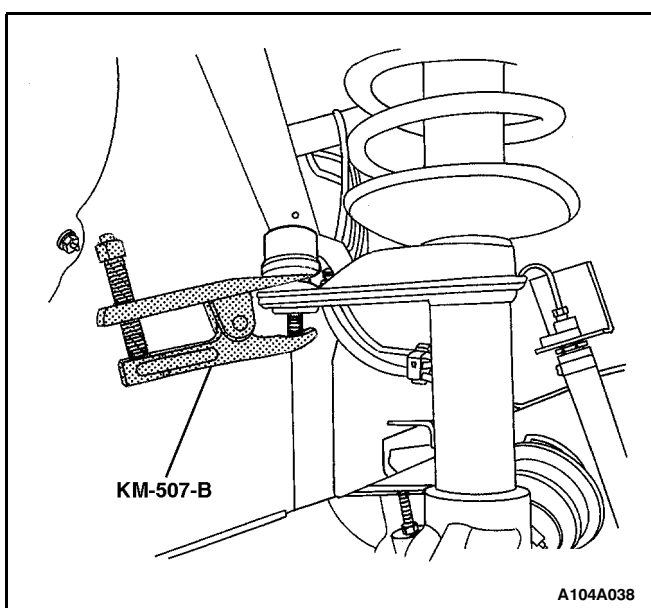
KM-507-B Ball Joint Remover

Removal Procedure

1. Loosen the outer tie rod pinch bolt.

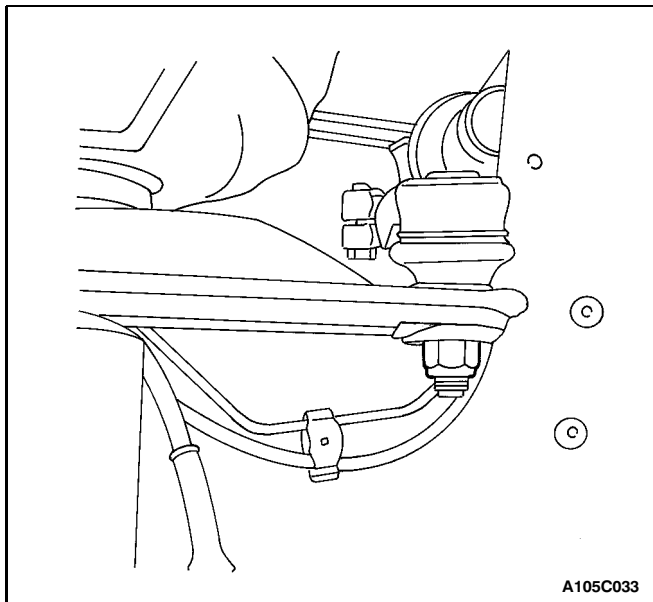


2. Remove outer tie rod hex nut.



3. Disconnect the outer tie rod from the steering knuckle using the ball joint remover KM-507-B.

4. Remove the outer tie rod.

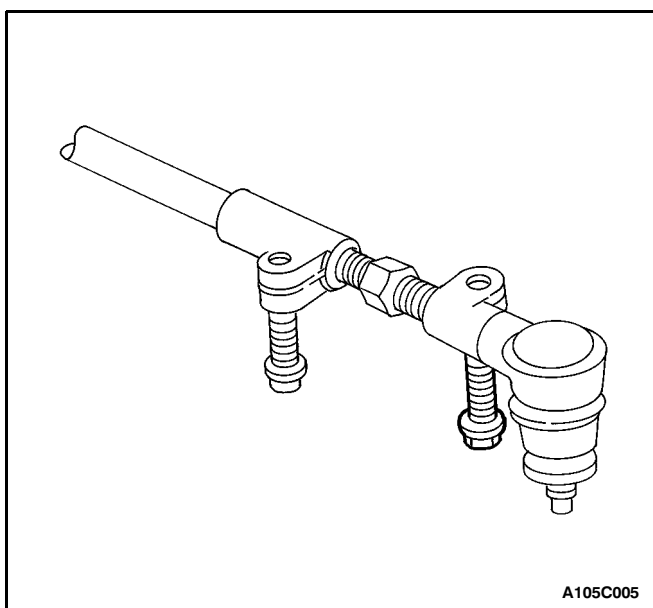


Installation Procedure

1. Install the outer tie rod.
2. Connect the outer tie rod to the steering knuckle.
3. Install the outer tie rod hex nut.

Tighten

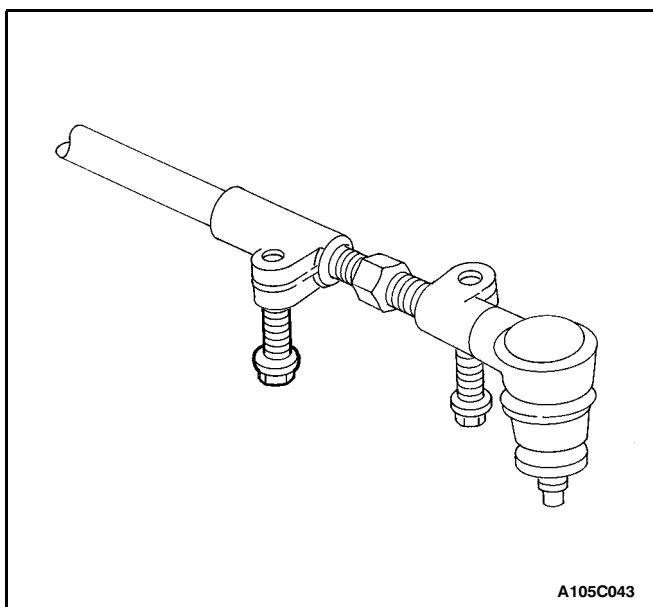
Tighten the outer tie rod hex nut to 60 N•m (44 lb-ft).



4. Make the toe-in adjustment by turning the tie rod adjuster. Refer to Section 2B, Wheel Alignment.
5. Tighten the outer tie rod pinch bolt.

Tighten

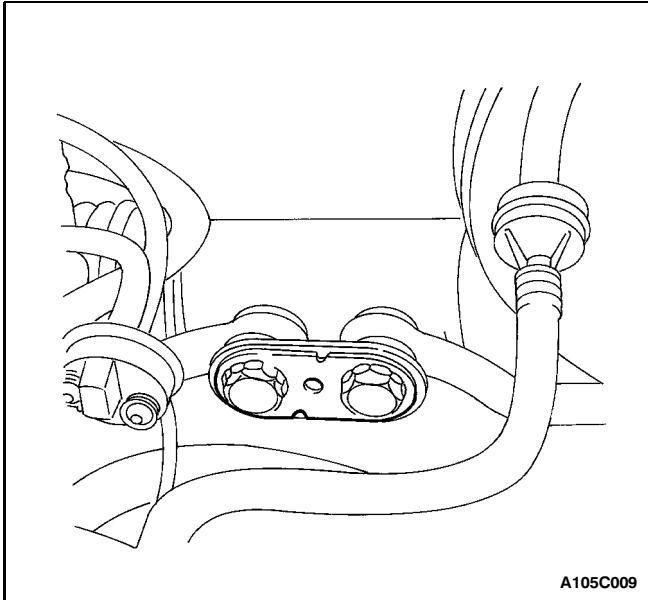
Tighten the outer tie rod pinch bolt to 22 N•m (16 lb-ft).



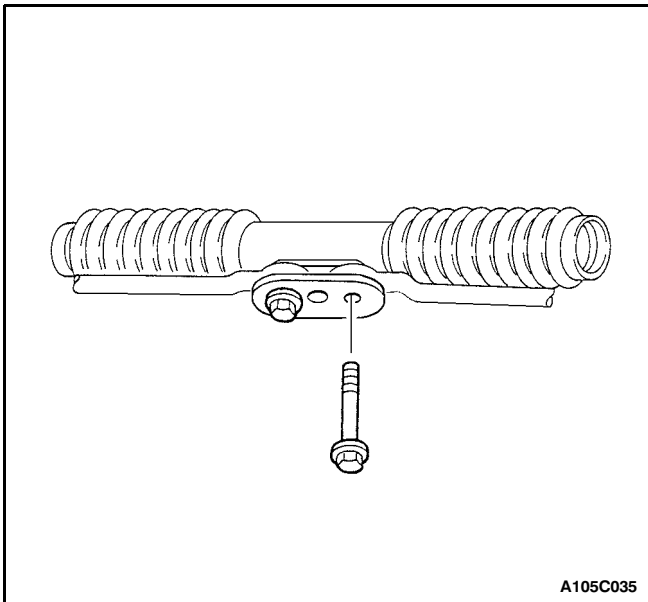
INNER TIE ROD

Removal Procedure

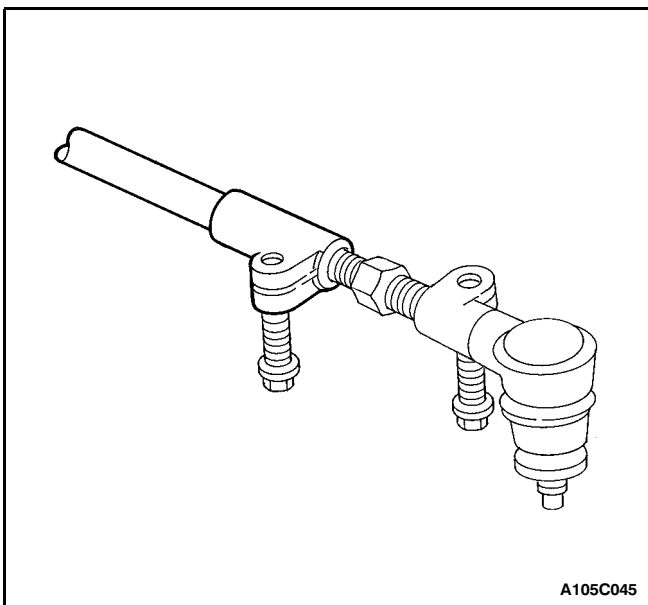
1. Loosen the inner tie rod pinch bolt.



2. Remove the lock plate. Do not reuse it.

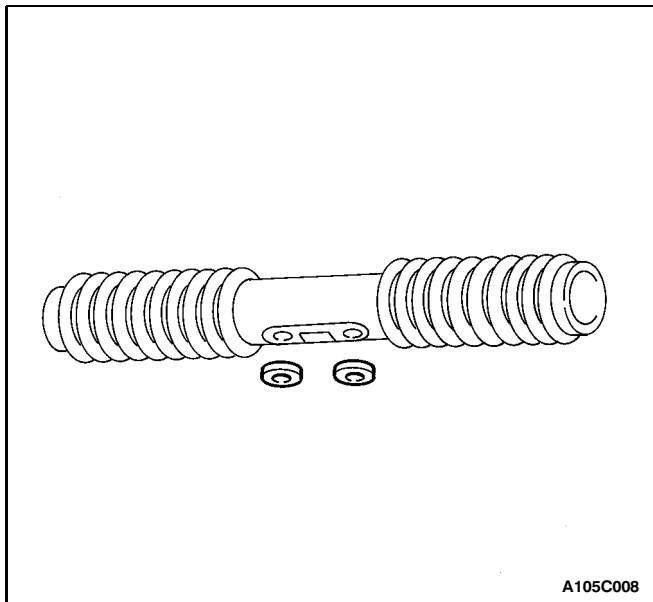


3. Remove the inner tie rod bolt from the rack and pinion assembly.



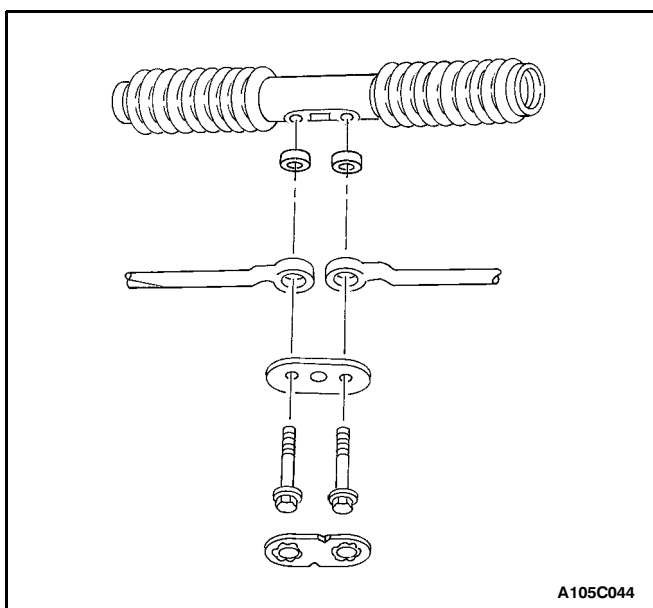
Notice: If both inner tie rods need to be removed, reinstall the tie rod bolt after removing the first tie rod to keep the rack and pinion boot and the other parts properly aligned.

4. Remove the inner tie rod by sliding it out between the bolt support plate and the rack and pinion boot and turning it off the tie rod adjuster screw.



Installation Procedure

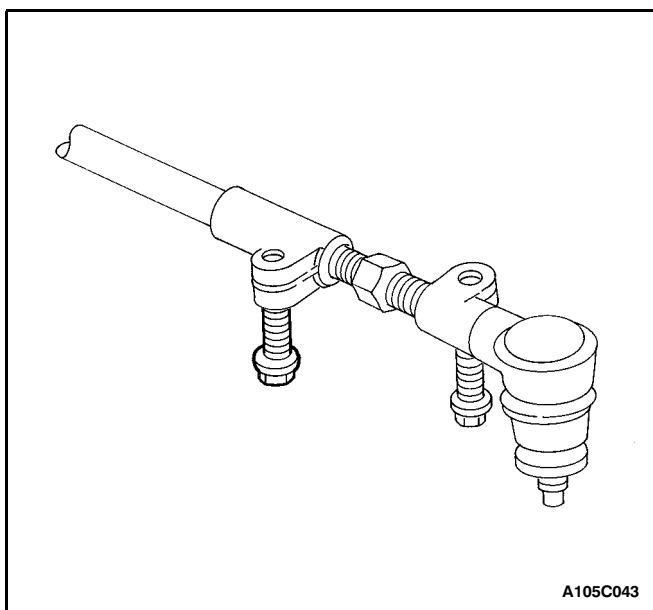
1. Be sure the center housing cover washers are fitted into the rack and pinion boot.



2. Install the inner tie rod by turning it onto the tie rod adjuster screw and sliding it between the inner tie rod plate and the center housing cover washer.
3. Insert the inner tie rod bolt through the holes in the inner tie rod plate, the inner tie rod, the center housing cover washer (captured in recesses in rack and pinion boot), the rack guide assembly (which is hidden inside the rack and pinion boot), and into the threaded hole in the rod and rack assembly.

Tighten

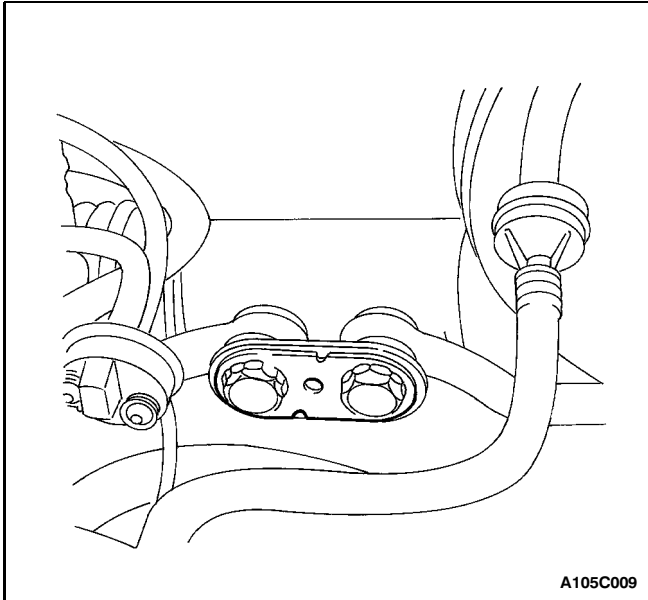
Tighten the inner tie rod bolts to 90 N•m (66 lb-ft).



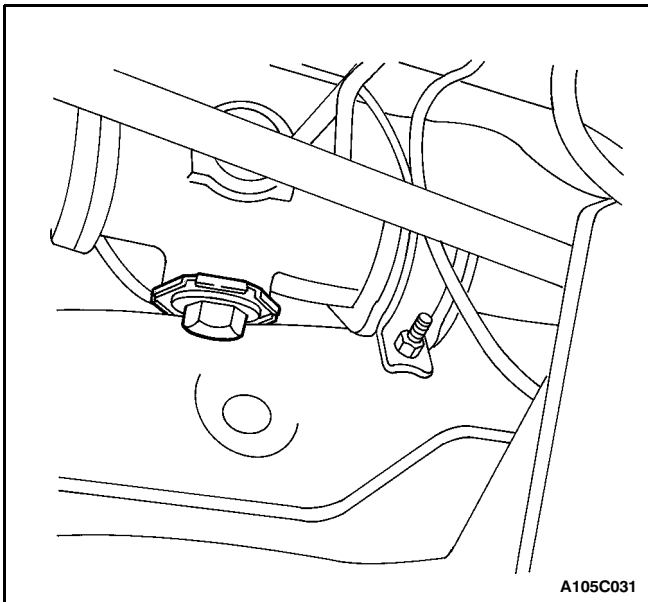
4. Tighten the inner tie rod pinch bolt.

Tighten

Tighten the inner tie rod pinch bolt to 22 N•m (16 lb-ft).



5. Install the new lock plate with the notches in the proper position over the flats of the inner tie rod bolts.



RACK BEARING PRELOAD ON-VEHICLE ADJUSTMENT

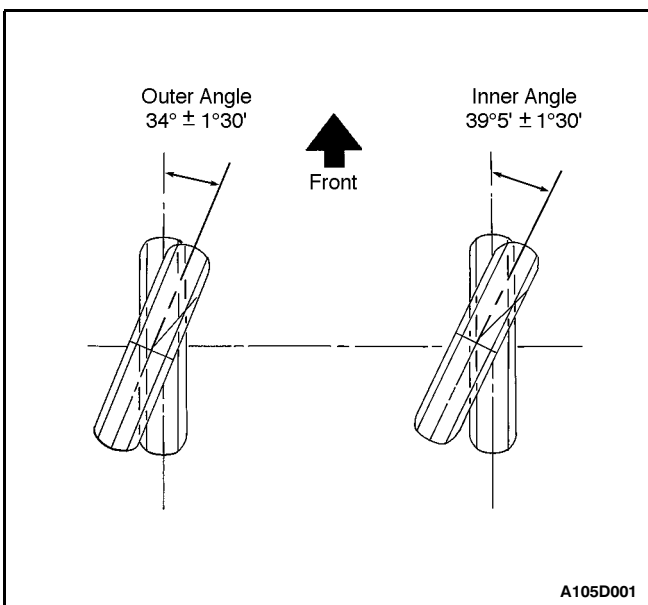
Adjustment Procedure

Make the rack bearing adjustment with the front wheel raised and the steering wheel centered. Be sure to check the returnability of the steering wheel to center after the adjustment.

1. Loosen the locknut and turn the adjuster plug clockwise until a torque of 10 N•m (88 lb-in) is obtained.
2. Back the adjuster plug off by 55 to 65 degrees. Check the pinion preloaded torque is within the range 0.9 to 1.7 N•m (8 to 15 lb-in).
3. Tighten the adjuster plug locknut while holding the adjuster plug stationary.

Tighten

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



STRAIGHT-AHEAD CHECK

After all the necessary operations on the steering gear are completed, 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 Step 2	-
2	Is the steering coupling flange pinch bolt lying horizontally?	-	Go to Step 3	Go to Step 4
3	Is the steering wheel off center by more than 5 degrees?	-	Go to Step 5	Go to Step 6
4	The pinion is displaced on the rack. The steering pinion position must be corrected. Is the repair complete?	-	Go to Step 2	-
5	Remove steering wheel and center on the spindle splines. Is the repair complete?	-	Go to Step 3	-
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. Do the angles match the value specified?	Inner angle: 39° 5' 4" 1° 30' Outer angle: 34° 4" 1° 30'	System OK	Go to Step 7
7	The rack assembly was not assembled correctly. Repair as needed. Is the repair complete?	-	Go to Step 6	-

UNIT REPAIR

RACK AND PINION

There is no provision for overhaul or disassembly of the rack and pinion power steering gear. The power steering gear is serviced only as an assembly.

RACK AND PINION BOOT

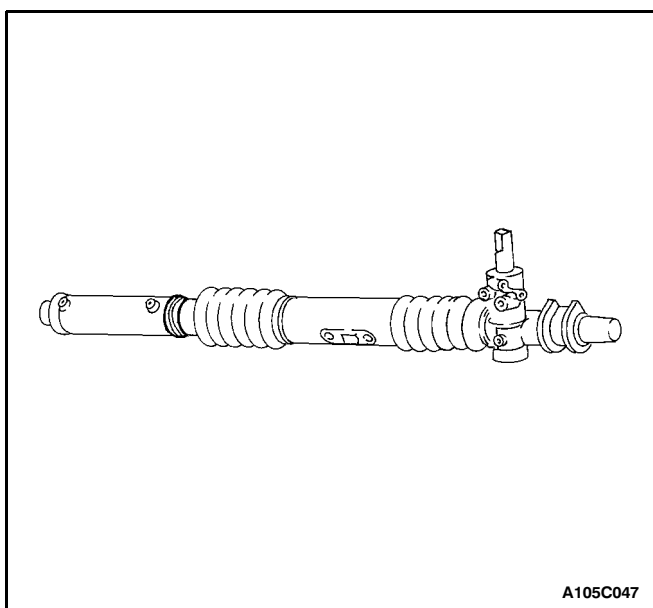
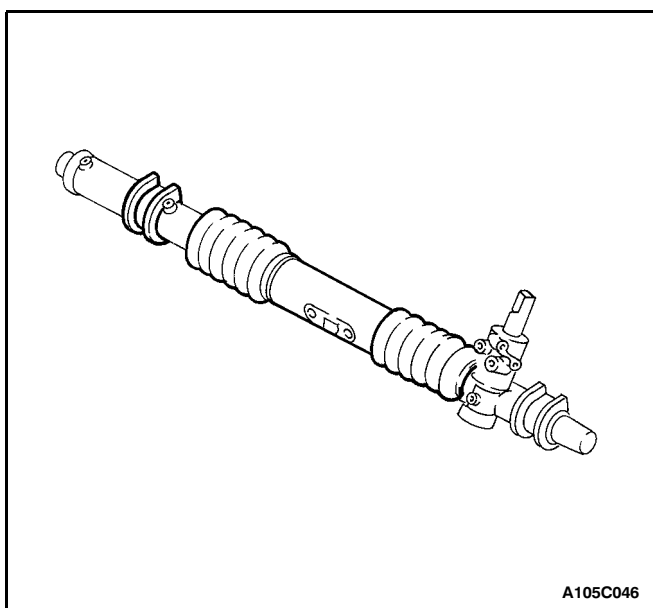
(Left-Hand Drive Shown, Right-Hand Drive Similar)

Tools Required

KM-J-26610 Installer

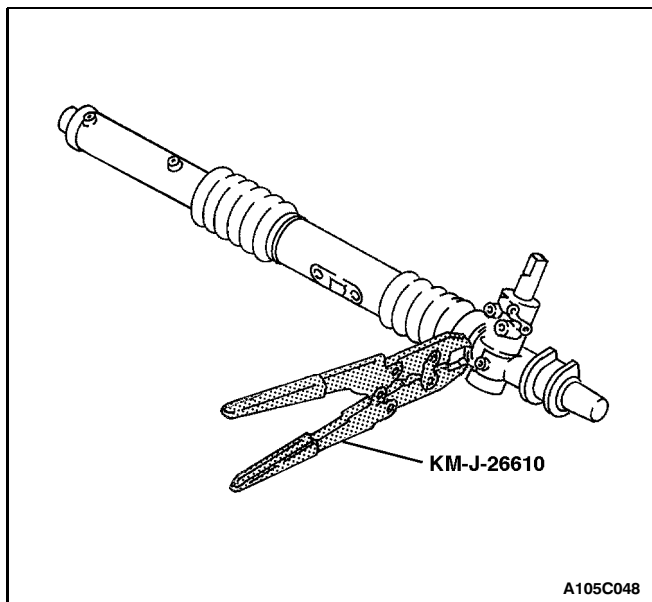
Disassembly Procedure

1. Remove the rack and pinion steering assembly from the vehicle. Refer to "Rack and Pinion Assembly" in this section.
2. Disconnect the hydraulic cylinder lines. Refer to "Hydraulic Cylinder Lines" in this section.
3. Cut off the rack and pinion boot clamps. Remove the mounting bracket bushing, the boot retaining bushing and the rack and pinion boot.
4. Replace the boot retaining bushing if it is damaged.

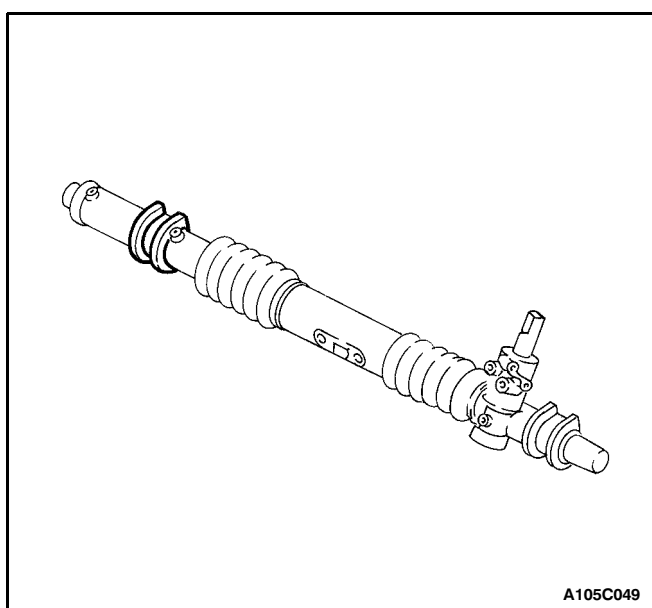


Assembly Procedure

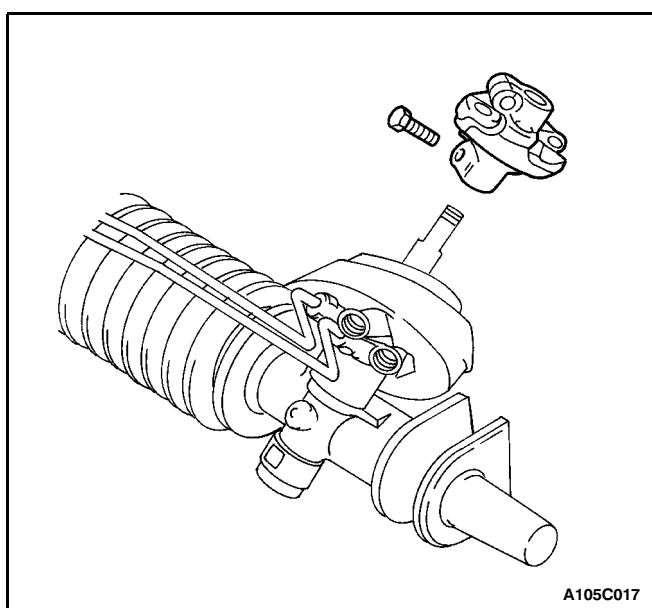
1. Slide the boot onto the housing.
2. Install the boot retaining bushing onto the housing. Lightly coat the boot retaining bushing with multipurpose grease for ease of assembly.



3. Slide the boot onto the boot retaining bushing and seat the boot into the housing groove at the pinion end of housing.
4. Crimp the new boot clamps using the installer KM-J-26610.



5. Install the mounting bracket bushing onto the housing.
6. Connect the hydraulic cylinder lines. Refer to "Hydraulic Cylinder Lines" in this section.
7. Install the rack and pinion steering assembly into the vehicle. Refer to "Rack and Pinion Assembly" in this section.

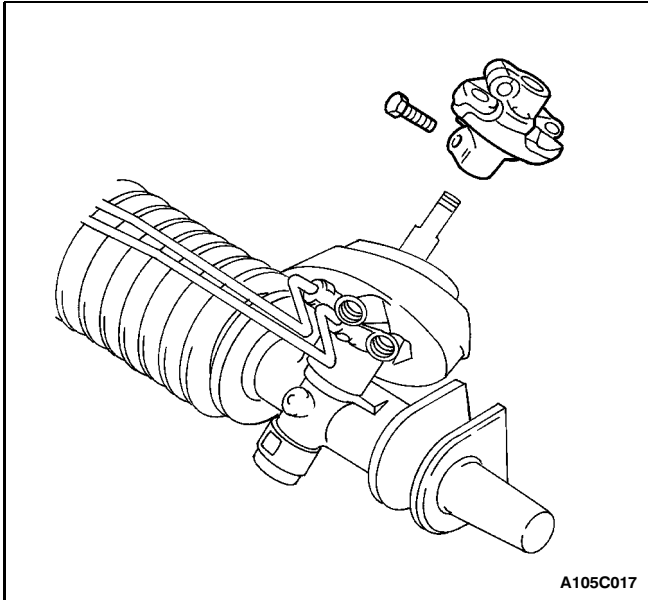


FLANGE AND STEERING COUPLING ASSEMBLY

(Left-Hand Drive Shown, Right-Hand Drive Similar)

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 pinch bolt from the flange and steering coupling assembly.
3. Disconnect the flange and steering coupling assembly from the stub shaft of the pinion and valve assembly.



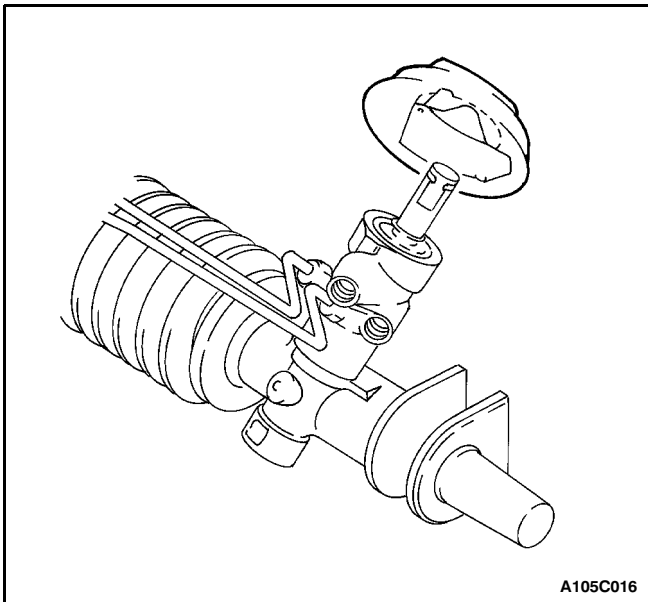
Assembly Procedure

1. Connect the flange and steering coupling assembly to the stub shaft of the pinion and valve assembly.
2. Insert the pinch bolt into the flange and steering coupling assembly.

Tighten

Tighten the coupling flange pinch bolt to 22 N•m (16 lb-ft).

3. Install the rack and pinion steering coupling assembly into the vehicle. Refer to "Rack and Pinion Assembly" in this section.

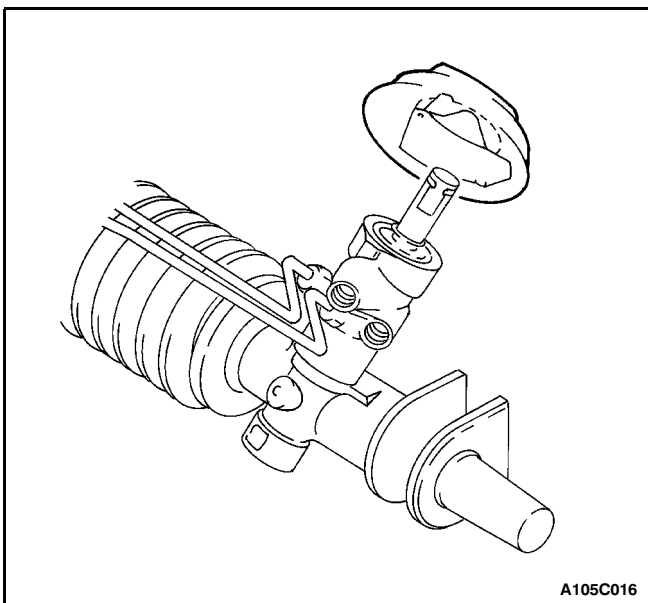


DASH SEAL

(Left-Hand Drive Shown, Right-Hand Drive Similar)

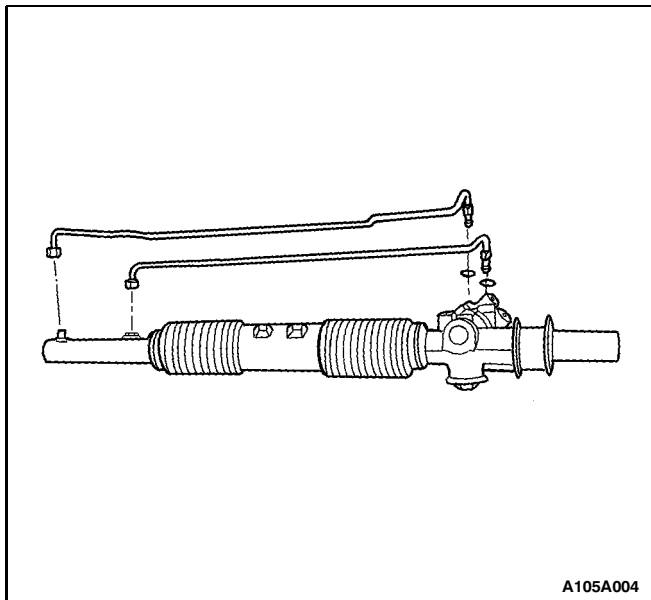
Disassembly Procedure

1. Remove the rack and pinion steering assembly from the vehicle. Refer to "Rack and Pinion Assembly" in this section.
2. Remove the flange and steering coupling assembly. Refer to "Flange and Steering Coupling Assembly" in this section.
3. Remove the dash seal from the rack and pinion housing.



Assembly Procedure

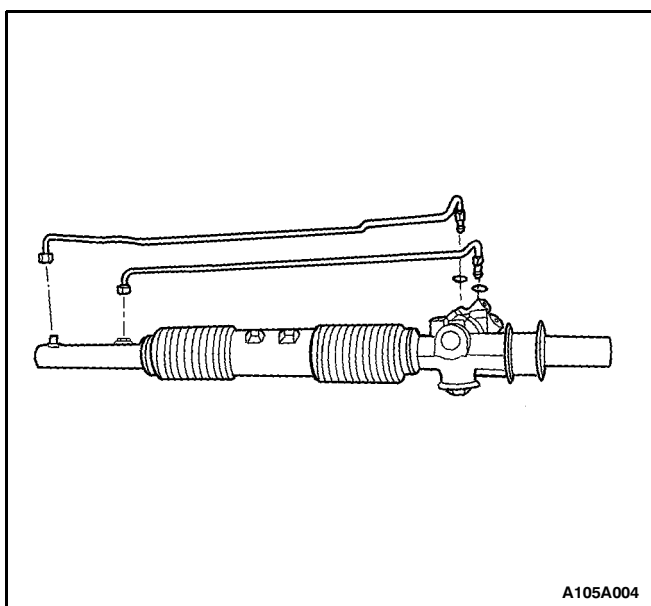
1. Line up the notches in the dash seal to the notches in the rack and pinion housing.
2. Connect the dash seal to the housing.
3. Connect the flange and steering coupling assembly. Refer to "Flange and Steering Coupling Assembly" in this section.
4. Install the rack and pinion steering assembly into the vehicle. Refer to "Rack and Pinion Assembly" in this section.



HYDRAULIC CYLINDER LINES (Left-Hand Drive Shown, Right-Hand Drive Similar)

Disassembly Procedure

1. Remove the rack and pinion steering assembly from the vehicle. Refer to "Rack and Pinion Assembly" in this section.
2. Disconnect the cylinder lines from the rack and pinion housing. Remove the O-ring seals.



Assembly Procedure

1. Lubricate the O-ring seals with power steering fluid.
2. Place the O-ring seals into the housing. Connect the cylinder lines to the rack and pinion housing.
3. Install the power steering line fittings at the pinion valve end.

Tighten

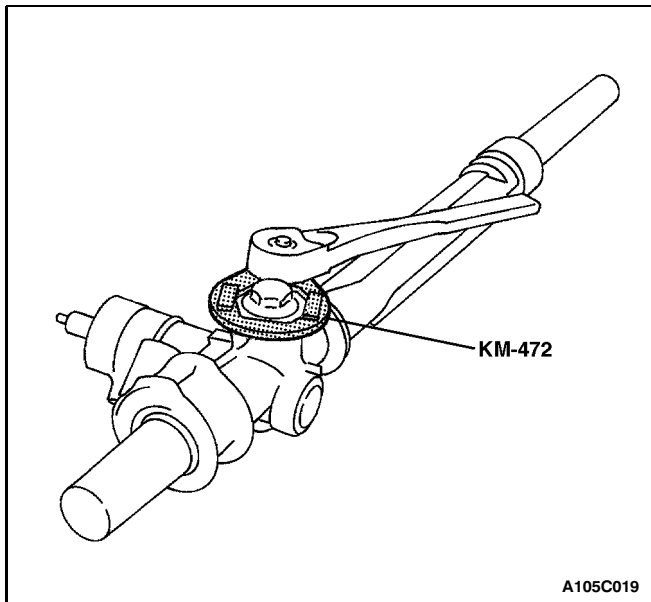
Tighten the power steering line fittings to 18 N•m (13 lb-ft).

4. Install the power steering line fittings at the cylinder end.

Tighten

Tighten the power steering line fittings to 27 N•m (20 lb-ft).

5. Install the rack and pinion steering assembly into the vehicle. Refer to "Rack and Pinion Assembly" in this section.



STUB SHAFT SEALS AND UPPER BEARING

(Left-Hand Drive Shown, Right-Hand Drive Similar)

Tools Required

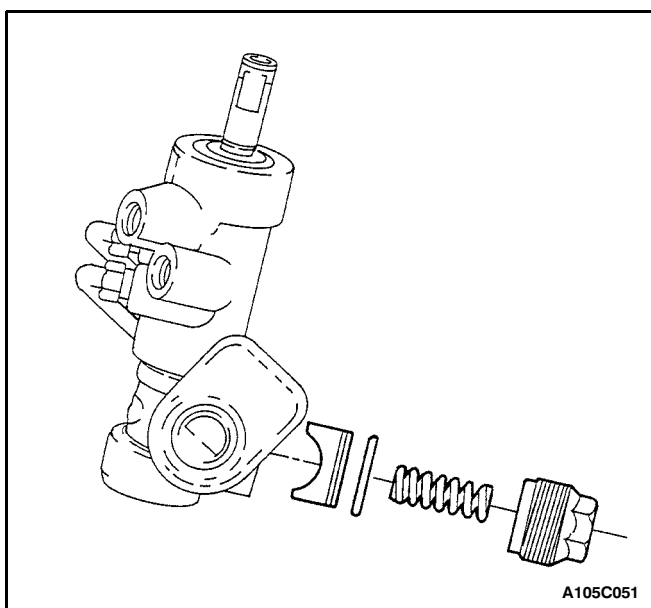
KM-472 Wrench

J-36545 Installing Tube

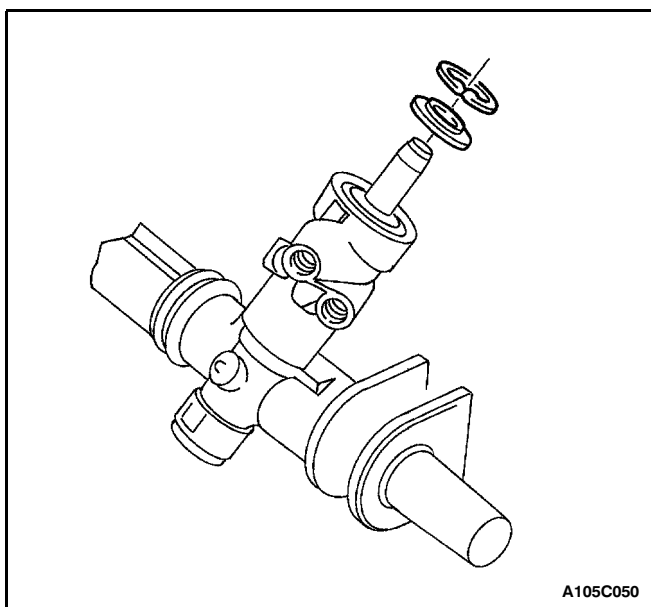
J-29810 Stub Shaft Seal Protector

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 using the wrench KM-472.

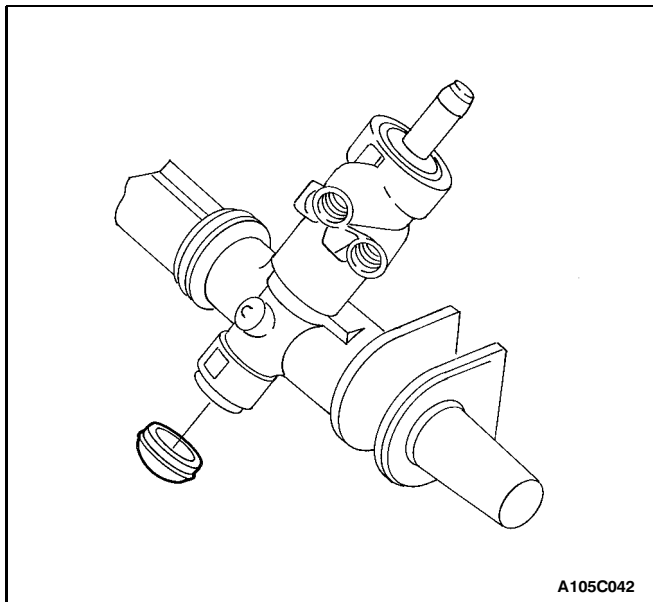


3. Remove the adjuster plug, the adjuster spring, and the rack bearing with the O-ring seal attached from the housing.



4. Remove the retaining ring and the stub shaft dust seal from around the stub shaft.

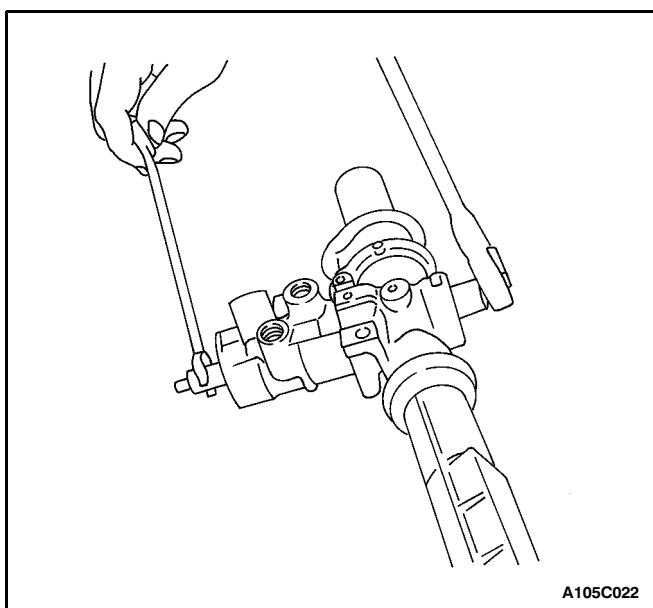
5. Remove the dust cap from the bottom of the housing.



A105C042

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

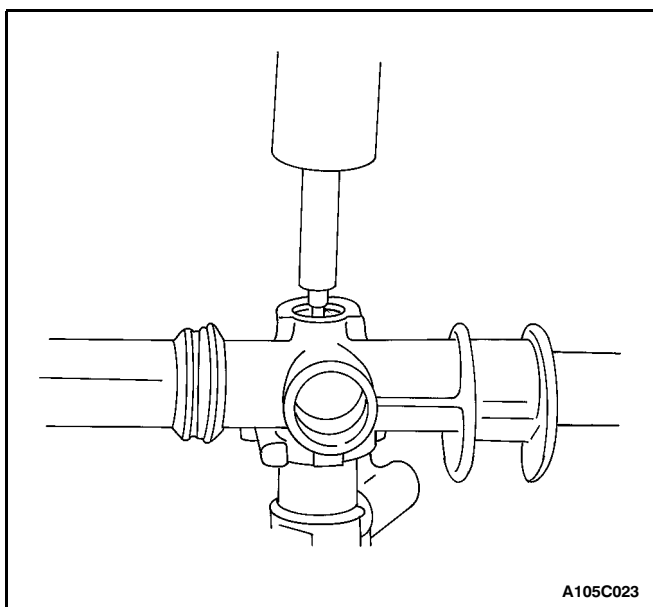
6. While holding the stub shaft, remove the locknut from the pinion.



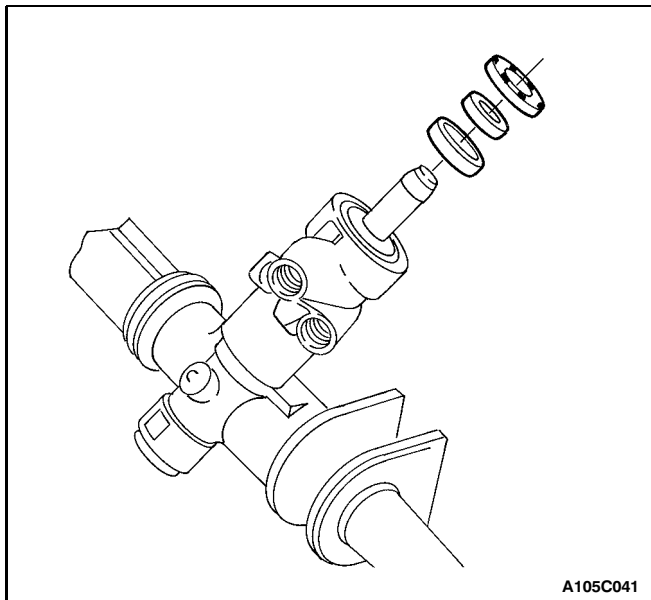
A105C022

Important: Complete removal of valve and pinion assembly is not required.

7. Using a press, press on the threaded end of the pinion until it is flush with the ball bearing assembly.

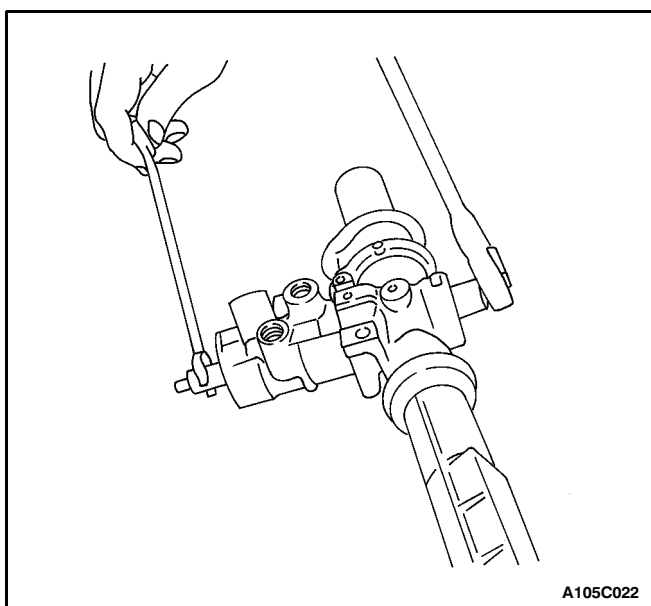


A105C023



Important: The bearing and annulus are pressed together. Disassemble only if bearing replacement is required.

8. Remove stub shaft dust seal, stub shaft seal and stub shaft bearing annulus assembly from valve end of housing.



Assembly Procedure

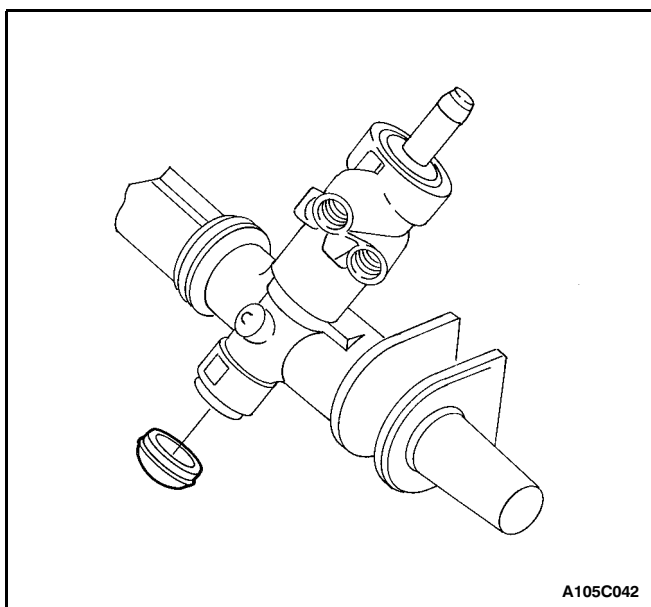
1. Seat the pinion assembly into the housing.

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

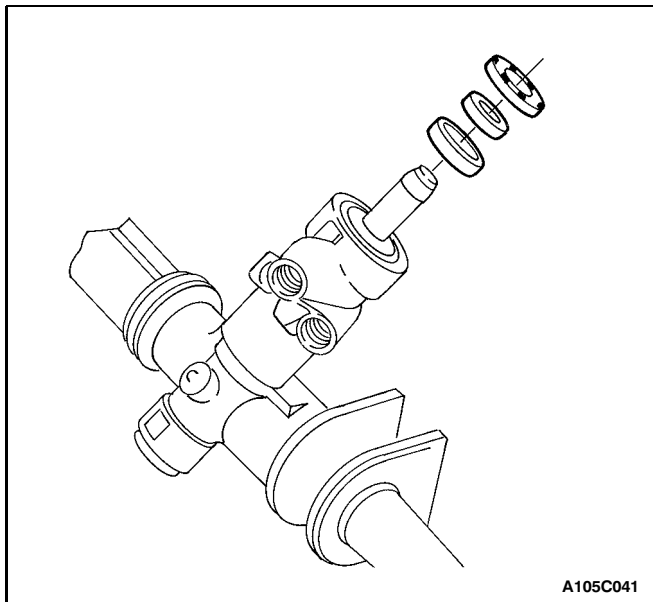
2. While holding the stub shaft, thread the locknut onto the end of the pinion.

Tighten

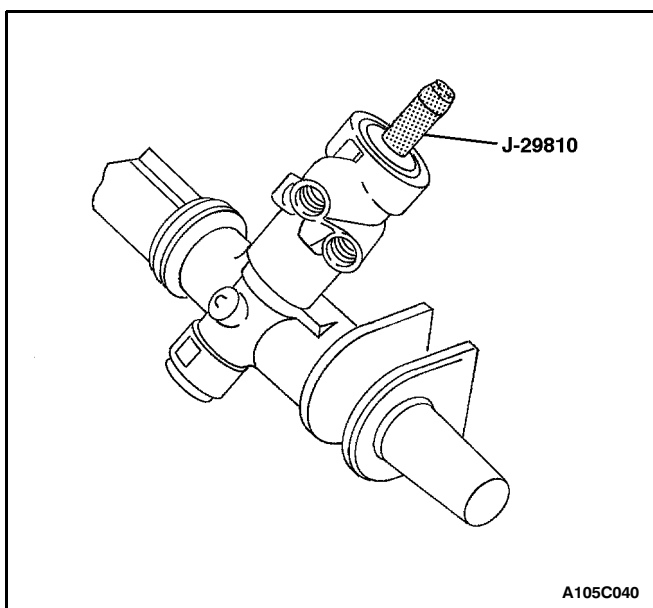
Tighten the pinion locknut to 30 N•m (22 lb-ft).



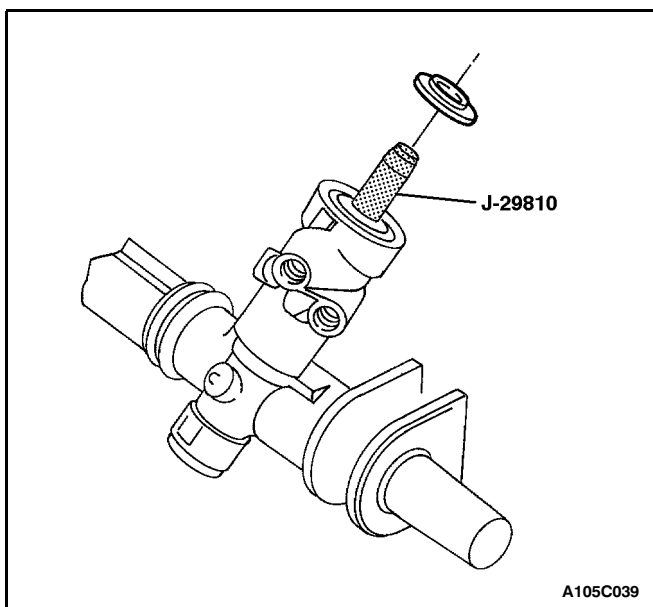
3. Install the dust cap to the bottom of the housing.



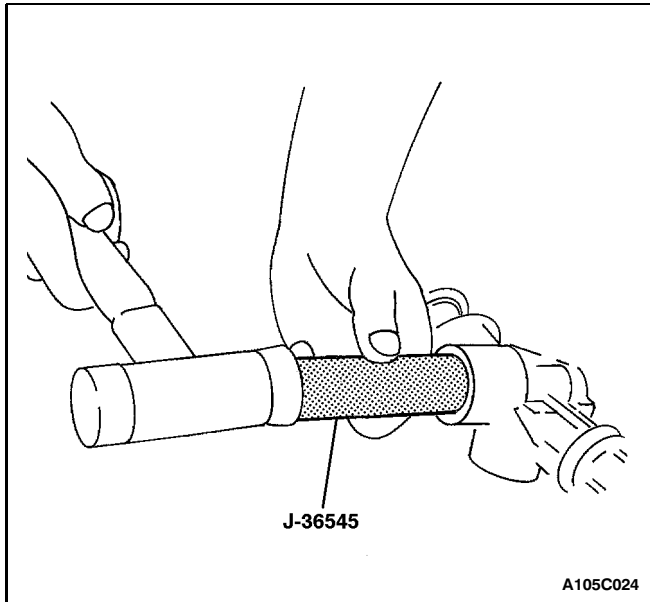
4. Install the stub shaft bearing annulus assembly onto the stub shaft and slide it into the valve end of the housing.



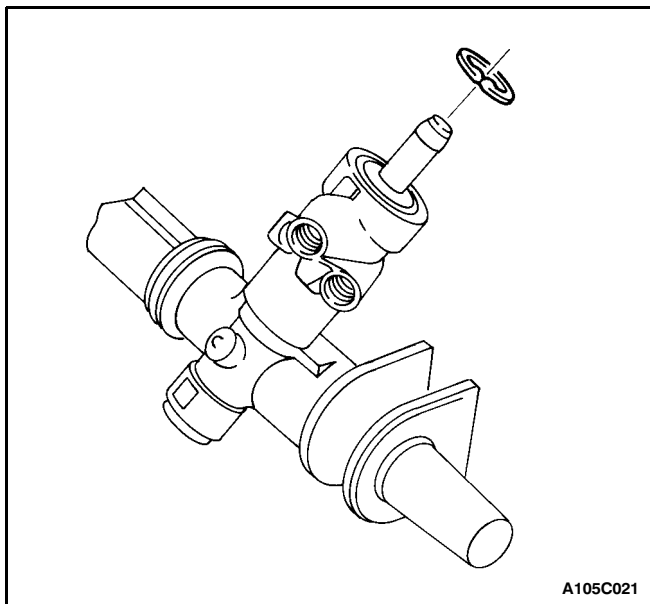
5. Place the stub shaft seal protector J-29810 onto the stub shaft.



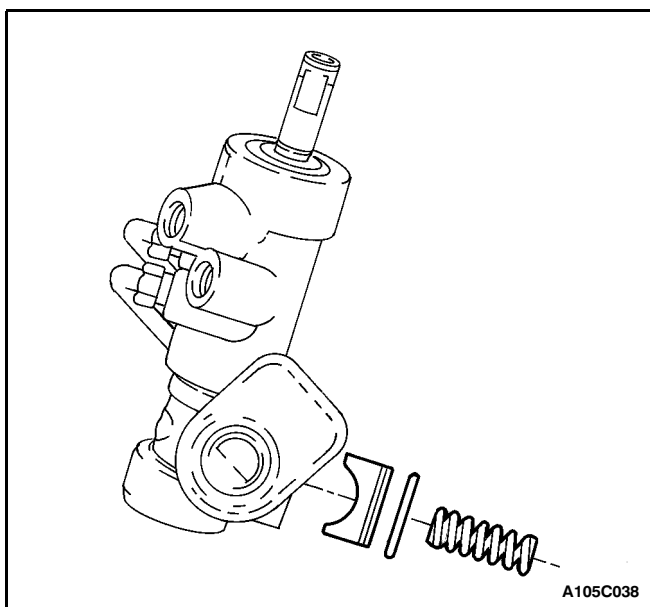
6. Install stub shaft dust seal over the protector and slide it into the housing.



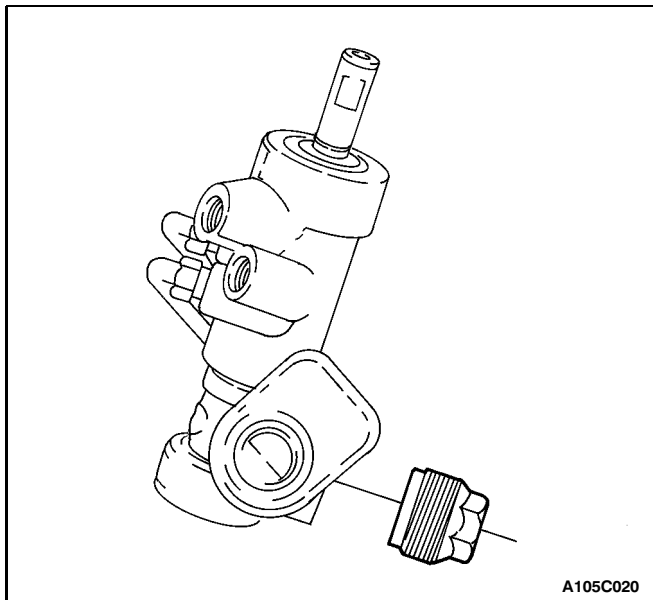
7. Seat the annulus assembly and the stub shaft seal with the installing tube J-36545.



8. Place the retaining ring into the groove in the housing.



9. Coat the rack bearing, the O-ring seal attached to the rack bearing, the adjuster spring, and the adjuster plug with lithium grease.
10. Insert the rack bearing with the O-ring seal and the adjuster spring into the housing.



11. With the rack centered in the housing, install the adjuster plug and turn it clockwise until a torque of 10 N•m (88 lb-in) is obtained. Then back the adjuster plug off by 55 to 65 degrees. Check the pinion preloaded torque is within the range 0.9 to 1.7 N•m (8 to 15 lb-in).
12. Install the adjuster plug locknut and tighten while holding the adjuster plug stationary.

Tighten

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

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

GENERAL DESCRIPTION AND SYSTEM OPERATION

POWER RACK AND PINION

General Description

The power rack and pinion steering system has a rotary control valve which directs the 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 which moves the rack left or right. The force is then transmitted through the inner and the outer tie rods to the steering knuckles, which turn the wheels.

If hydraulic assist is not available, manual control is maintained. However, under these conditions, more steering effort is required. The movement of the steering wheel is transferred to the pinion. The movement of the pinion is then transferred through the pinion teeth, which mesh with the teeth on the rack, causing the rack to move.

A vane-type pump provides hydraulic pressure for the system.

The boot and rack guide, the rack bearings, and the valve and pinion assembly are no longer serviceable on this vehicle. They must be replaced as whole units.