POWER AND MANUAL RACK AND PINION STEERING
Step-By-Step Instructions

Make these three checks to Avoid Warranty Problems!
1. Make sure you flush the system to get rid of contamination.
2. Make sure you fill the system with the correct fluid.
3. Make sure you check the toe-in after installation.

Important: You are urged to refer to a suitable service manual before attempting to make repairs. If you do not have such a manual and lack some expertise, it is suggested that you seek the services of a qualified technician before you begin.

BEFORE YOU BEGIN,
READ THIS:
It is easy to install a replacement rack and pinion steering unit. However, you must take proper precautions to assure a safe, trouble-free installation. Park the vehicle in a level, well-ventilated area. Set the parking brake to avoid inadvertent movement. Rack and pinion mounting designs and hardware will vary among vehicle manufacturers. You must consider those detailed design differences but the general procedures for removing the original unit and installing the replacement unit remain the same. Read the instructions before beginning the installation. If additional information is needed, refer to a suitable service manual.

REMOVING ORIGINAL UNIT
1. Remove the cable from the negative battery terminal.
2. Raise the vehicle and support it safely. Remove the front wheels.
3. Disconnect the tie rod ends from the steering knuckles.
4. Separate the input shaft from the steering column or intermediate shaft. In some cases, this requires removing a pinch bolt. In others, a roll pin must be driven out.

CAUTION: On Air Bag-equipped cars, DO NOT allow the steering shaft to spin freely as this will cause damage to the air bag module located in the steering column.

NOTE: In some vehicles the intermediate shaft must be removed from the vehicle along with the steering unit.

NOTE: If you are removing a power rack and pinion unit, perform step #5.

5. Remove the fluid pressure and return lines from the steering unit. Cap the lines to keep dirt out and to reduce fluid spills.
6. Unbolt the steering unit from the chassis. Be sure to note the position of washers, rubber insulators and mounting shims.
7. If the steering unit cannot be lowered, slide it out through a wheel well.
8. If the outer tie rod ends are to be reused, remove them from the inner tie rods. NOTE: Count the number of turns when removing the outer tie rod ends. Be careful not to twist the bellows (boots) or damage the threads.

NOTE: For some models it may be necessary to unbolt and lower a chassis cross-member or engine cradle to remove the original steering unit from the vehicle. Sometimes you will have to disconnect the exhaust pipe or other component to gain access to the steering unit. In such cases, support the cross-member or cradle with a suitable jack. Also, sometimes you will have to disconnect the exhaust pipe or other component to gain access to the steering unit.
INSTALLING REPLACEMENT UNIT

1. Place the steering unit in position on the vehicle making sure the input shaft and steering column engage properly. Secure the input shaft/steering column connection making sure that the grooves for pinch bolts or roll pins are aligned during installation.

NOTE: Install cross-member, cradle or other parts previously removed.

2. Install the mounting brackets, shims, bolts, nuts, washers and insulators in correct position. Torque fasteners to the original vehicle manufacturer's specifications.

NOTE: If you are installing a power steering rack and pinion, perform the following steps:

3. Be careful to keep dirt out of the system, attach the fluid pressure and return lines.

NOTE: Do not use Teflon tape to seal fluid fittings or lines as this will void the warranty.

NOTE: Always install a power steering filter when replacing a power rack and pinion unit. This should be installed in the return hose at the power steering pump.

4. Clean the tie rod threads. Then thread the tie rod ends onto the tie rods to the depth noted at disassembly. Be careful not to damage the bellows.

NOTE: Make sure you install the bell crank counter-clockwise from the front and over the red groove.

5. Attach the tie rod ends to the steering knuckles. Tighten the tie rod end nuts to the original vehicle manufacturer's specifications and secure with new cotter pins.

6. Turn the ignition switch off. Then secure the cable to the negative battery terminal. If so equipped, turn the suspension system on.

NOTE: If you are installing a power steering rack and pinion, perform the following steps:

7. Install the wheels. Lower the vehicle and reset wheel toe. To avoid twisting the bellows, loosen the tie rod boot clamps before toe adjustment. Then tighten clamps after toe adjustment.

8. Fill the pump reservoir with the approved power steering fluid and bleed the system as follows:

A. Start the engine.
B. Turn the steering wheel fully from stop to stop several times.
C. Check fluid level and top off as required.

9. Road test the vehicle.

NOTE: If the vehicle makes noise,壮子 or vibrations or exhibits other problems, there may still be air trapped in the system.

1. Detach the fluid return line from the steering unit and place it in a container.

2. Disable the ignition.

3. Crank the engine in short bursts to avoid overheating the steering pump. Continue cranking the engine until fluid flows from the return line into the container and the fluid is clear.

4. Reattach the fluid return line and refill the reservoir.

INSTALLING SHORT RACK TYPE UNITS

This replacement is supplied without tie rods and without either the inner or the outer tie rod ends. You must transfer the tie rods from the original unit to the replacement unit. Install the necessary component parts to ensure correct installation.

1. After the rack and pinion assembly is removed from the vehicle, remove the bellows from the housing. Use side cutters to cut the large clamp. CAUTION: Do not puncture or damage the bellows. A punctured bellows must be replaced to prevent dirt, water and debris from entering the unit and destroying it.
2. Remove the tie rod assemblies by removing the inner tie rod housing.

**NOTE:** Ford units require drilling out pins or removing a roll pin before the inner tie rod can be detached.

A. If a solid pin is used, drill it out using a 4/32" drill bit. Do not drill deeper than 3/8". Remove with an Easy-Out.

B. If a roll pin is used, drilling is not needed. Simply use an Easy-Out to remove it.

3. Remove the shock dampener (if so equipped) from the inner tie rod housing and slide it back on the rack.

4. Use a wrench on the rack flat to hold the rack from turning while using another wrench to unscrew the inner tie rod housing.

CAUTION: Do Not apply force to the rack housing or pinion gear. Always use a wrench to hold the rack.

5. Install the tie rod assemblies on the replacement unit being careful to install the right side tie rod on the right and the left side on the left.

6. After tightening, make certain that the inner tie rod end swivels freely, without excess play.

7. Secure the inner tie rod housings. For GM and Chrysler units, stake the housing. For Ford units, install the lock pins supplied in the installation kit.

8. Install the shock dampeners, breather tube and bellows. Be sure to insert the breather tube into the bellows before securing the bellows with the clamp provided.

9. Continue with the installation instructions for the standard replacement unit.

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**USE CORRECT FLUID TO FLUSH AND FILL SYSTEM**

If the wrong fluid is used, the warranty is void.

Unless the fluid specified by the vehicle manufacturer is used in the power steering system, it may not function properly and the system may be damaged.

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![Diagram of tie rod assembly installation](image-url)
## Troubleshooting Chart

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Problem</th>
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</thead>
<tbody>
<tr>
<td>No Power Assist</td>
<td>Check for collapsed hoses. Replace hoses; Pump is defective. Replace; Replace or tighten belt; Lacks fluid. Fill Reservoir.</td>
</tr>
<tr>
<td>Wheel Does Not Return or Pulls Shudder When Wheel Is Turned</td>
<td>Check worn tie rod ends. Replace; Check/correct tire pressure; Steering out of line. Realign.</td>
</tr>
<tr>
<td>Steering Gear Rattles</td>
<td>Check for collapsed hoses. Replace hoses; O-rings misinstalled. Missing.</td>
</tr>
<tr>
<td>Fluid Leaks</td>
<td>Torque all fasteners to manufacturer's specifications; Check worn tie rod ends. Replace.</td>
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</tbody>
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