



Modern Automotive Technology Chapter 70

Steering System Diagnosis And Repair



*North Montco
Technical Career Center*

Learning Objectives

- Describe common steering system problems.
- Properly inspect and determine the condition of a steering system.
- Explain basic steering column repair operations.
- Adjust both worm gears and rack-and-pinion gears.
- Describe service and repair procedures for a rack-and-pinion steering gear.
- Service power steering belts, hoses, and fluid.
- Explain how to complete basic power steering tests.
- Use safe work procedures.



Chapter 70

1. You should Bleed a power steering system to ensure that all of the air is out of the lines, pump, and gearbox.
2. A power steering Pressure Test checks the operation of the power steering pump, pressure relief valve, control valve, hoses, and power piston.

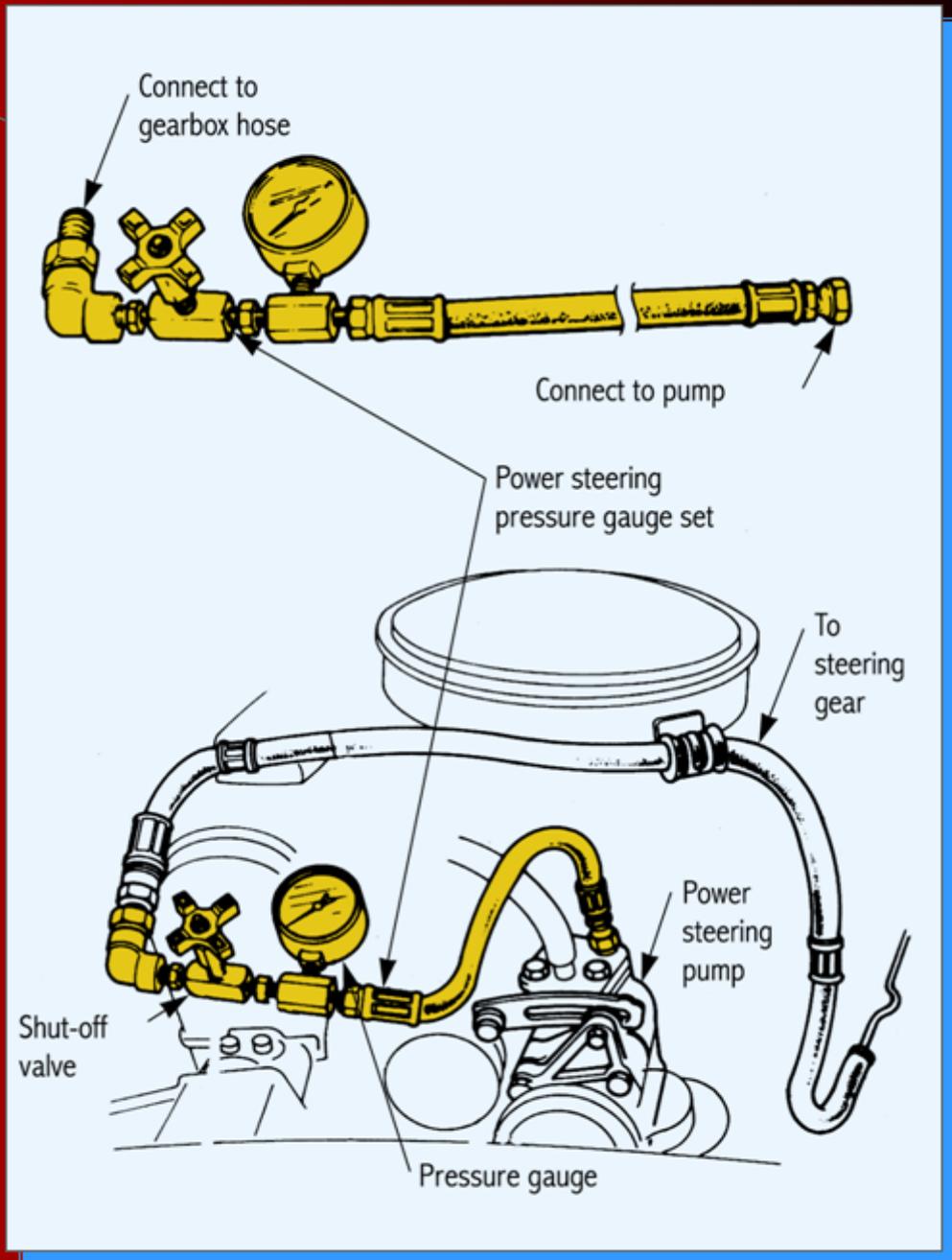


Bleeding the System

- When hydraulic components are serviced, bleed any air out of the system
- Idle the engine and turn the steering wheel fully from side to side
- Check the fluid level often
- Cycling the system will force air from the steering gear, back to the reservoir



Pressure Test Connections

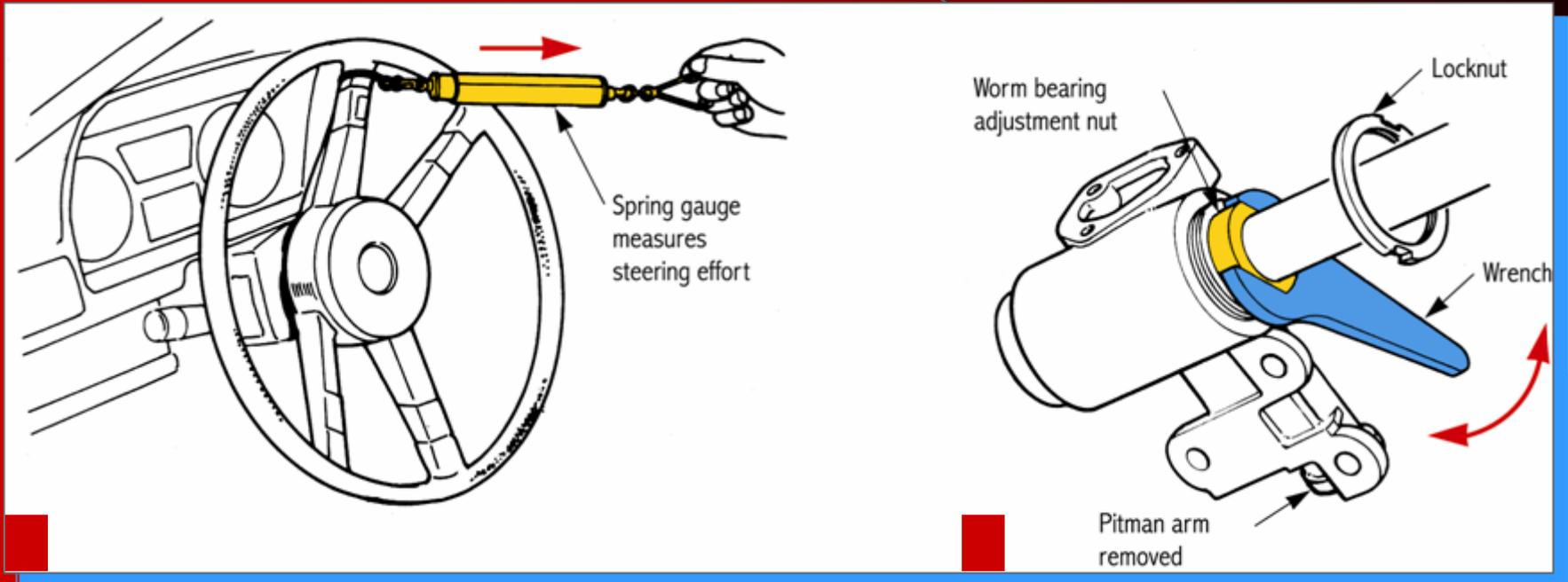


Chapter 70

3. To make a Worm Bearing Preload Adjustment, start by disconnecting the pitman arm (if the gearbox is installed in the vehicle).
4. Pitman shaft Over-Center Clearance controls the amount of play between the pitman shaft gear and the teeth on the ball nut.



Worm Bearing Preload Adjustment

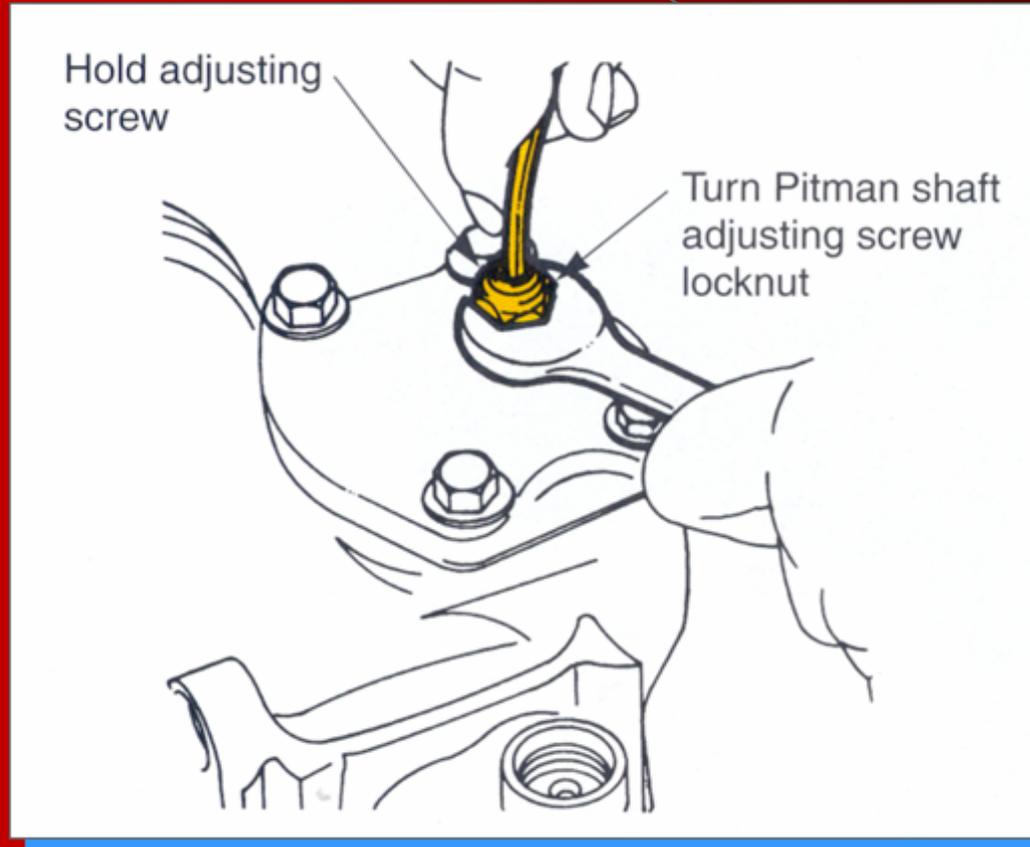


Compare the required force to specs

If needed, tighten or loosen the adjustment nut



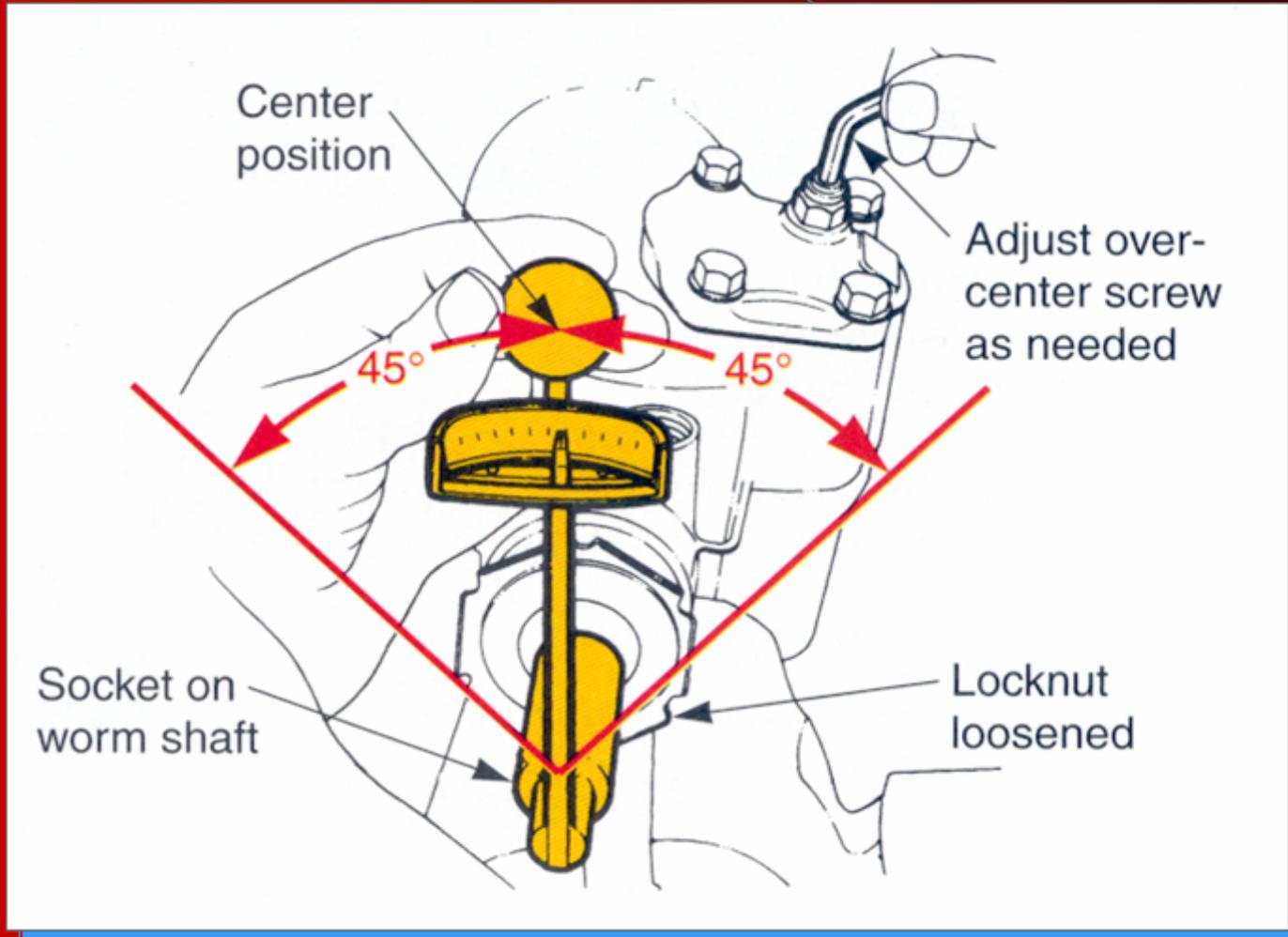
Over-Center Clearance Adjustment



Loosen the locknut and bottom the adjustment screw lightly



Over-Center Clearance Adjustment

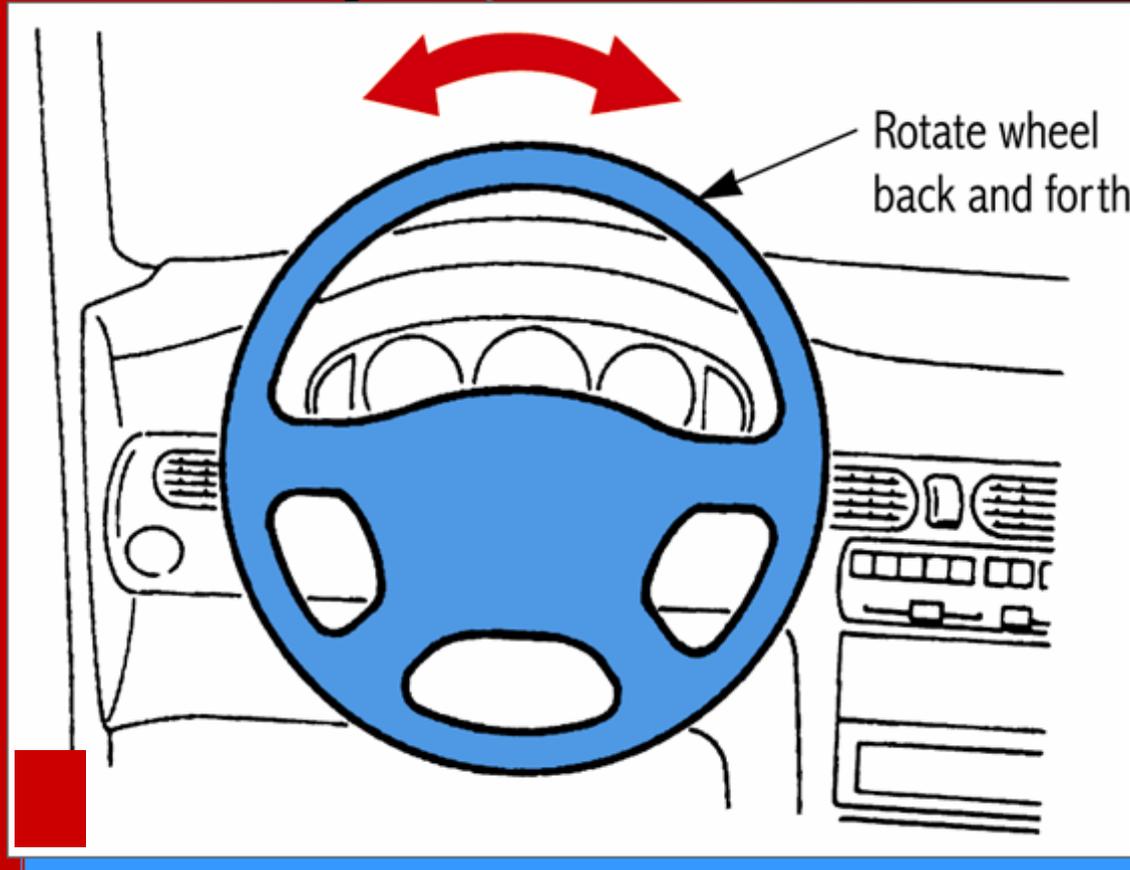


Chapter 70

5. A Dry Park Test is an effective way to check play in the steering linkage or rack-and-pinion mechanism.
6. A Wheel Puller is used to remove a steering wheel from its shaft.



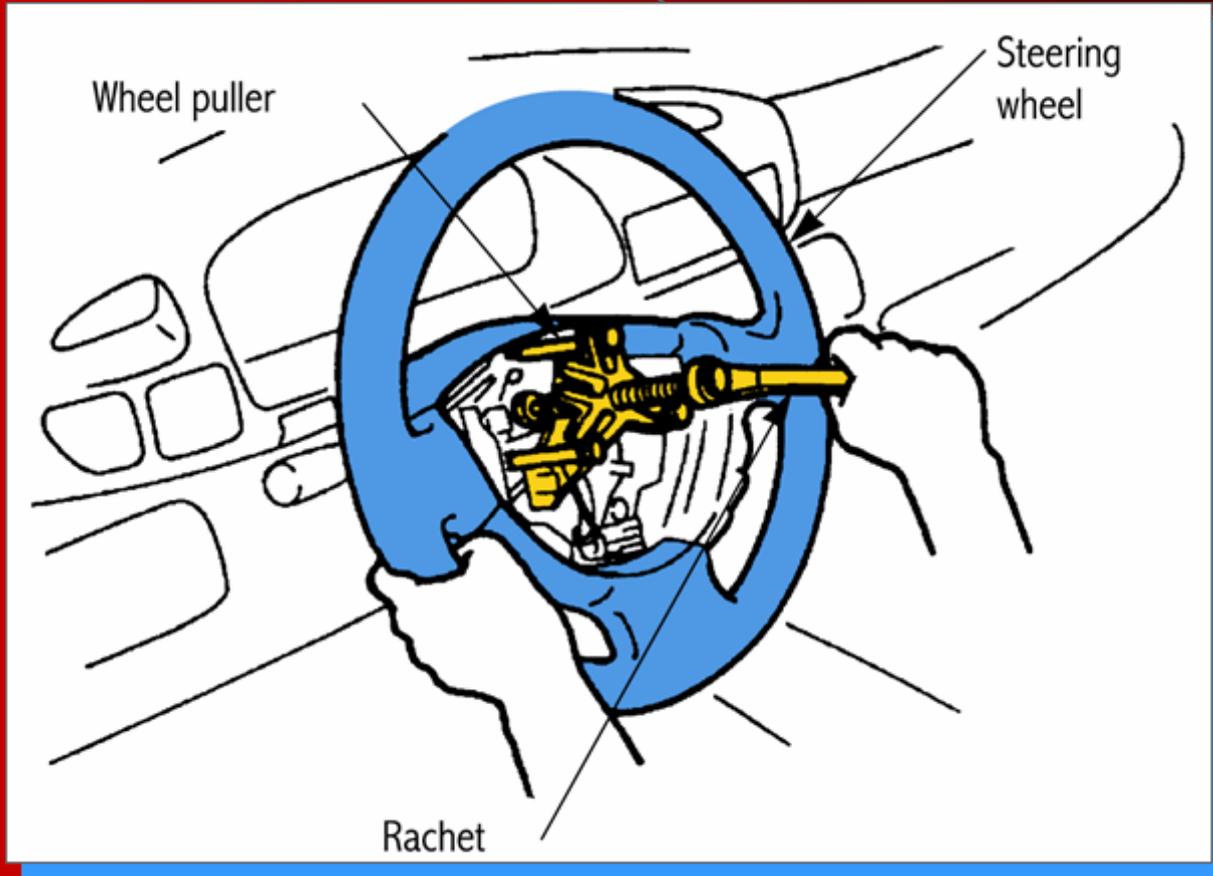
Dry Park Test



With the vehicle on the ground, rotate the steering wheel back and forth while someone watches for part wear



Steering Wheel Removal



Tighten the puller down against the steering shaft to remove the wheel

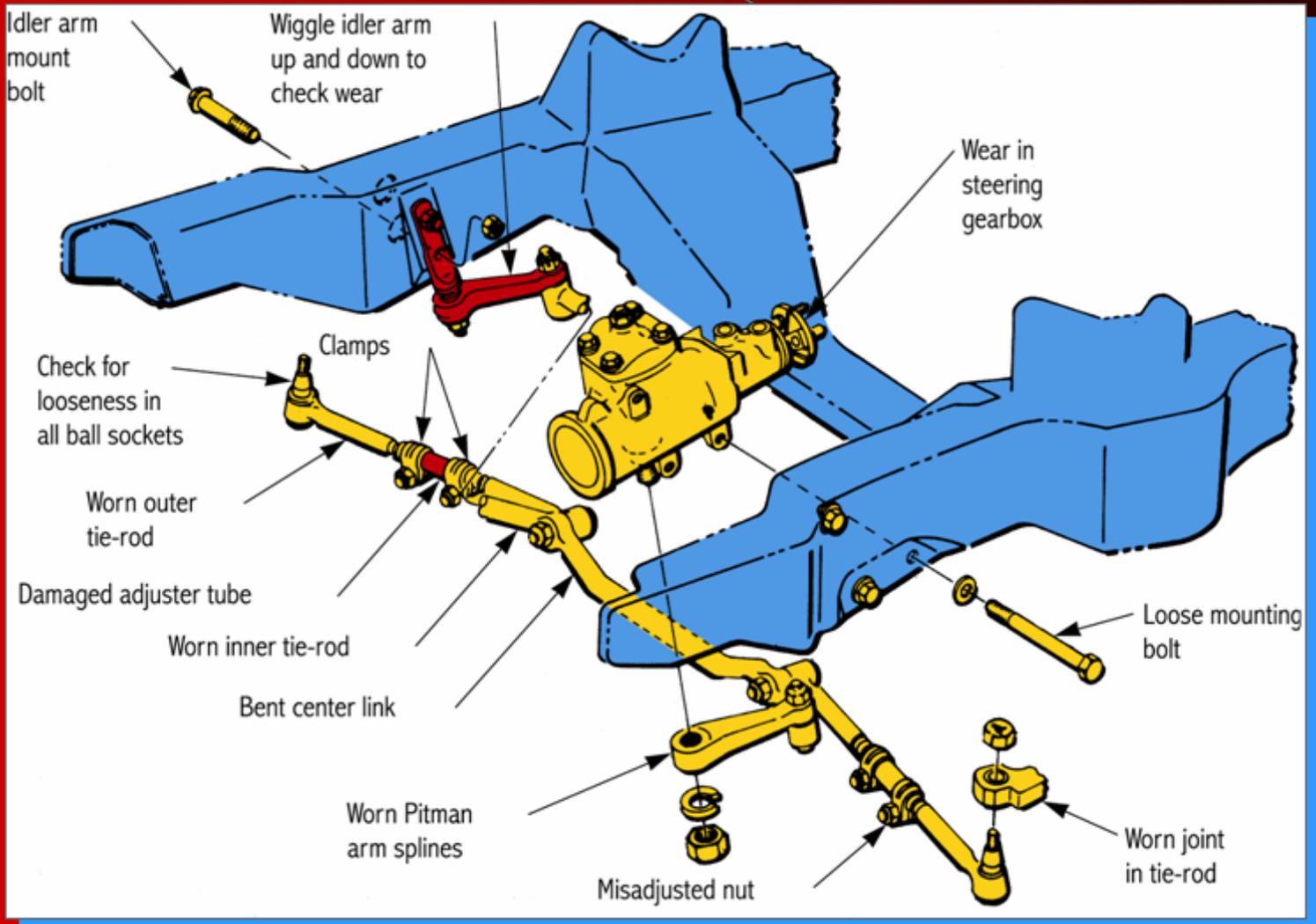


Chapter 70

7. **Hard Steering** is when the turning the steering wheel requires higher than normal effort.
8. **Belt Squeal** is a loud screeching sound produced by a slipping belt.

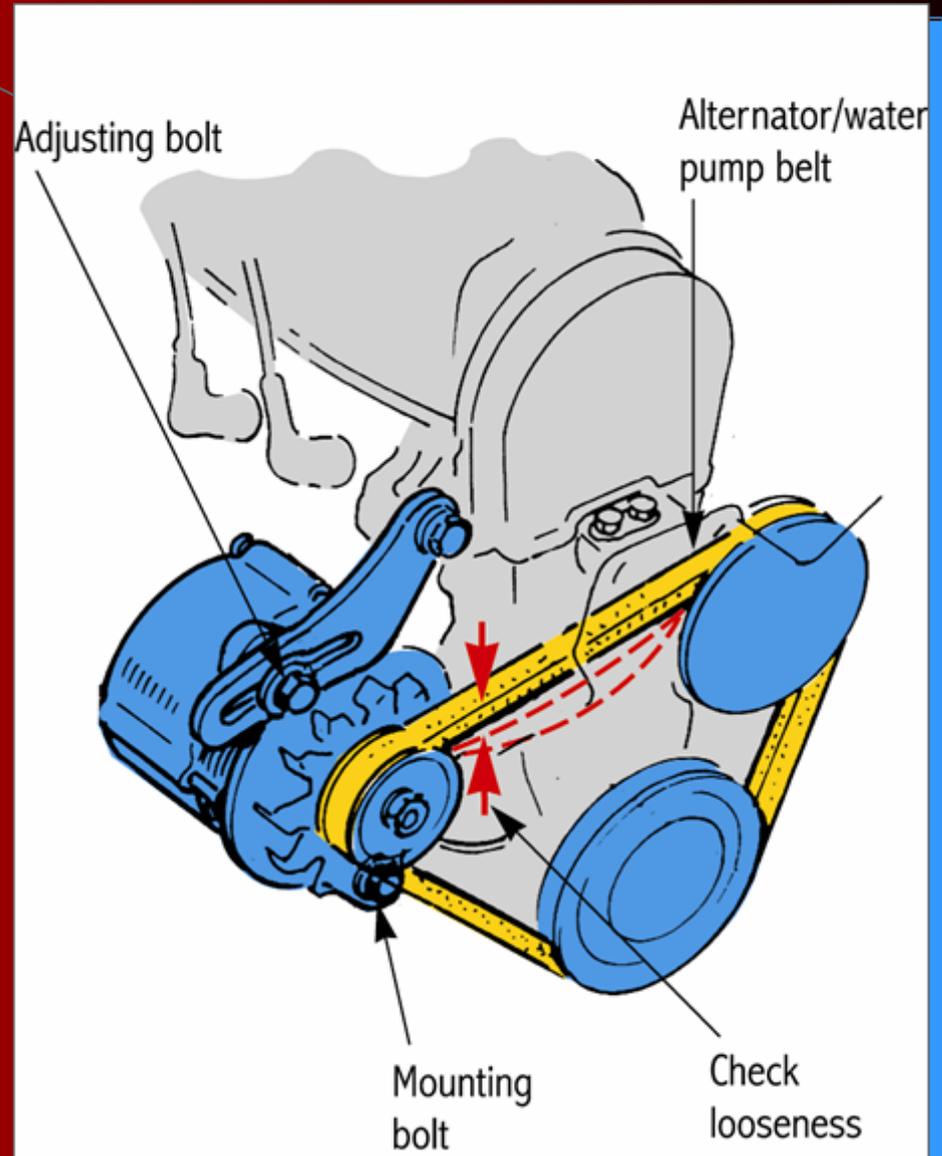


Steering System Inspection



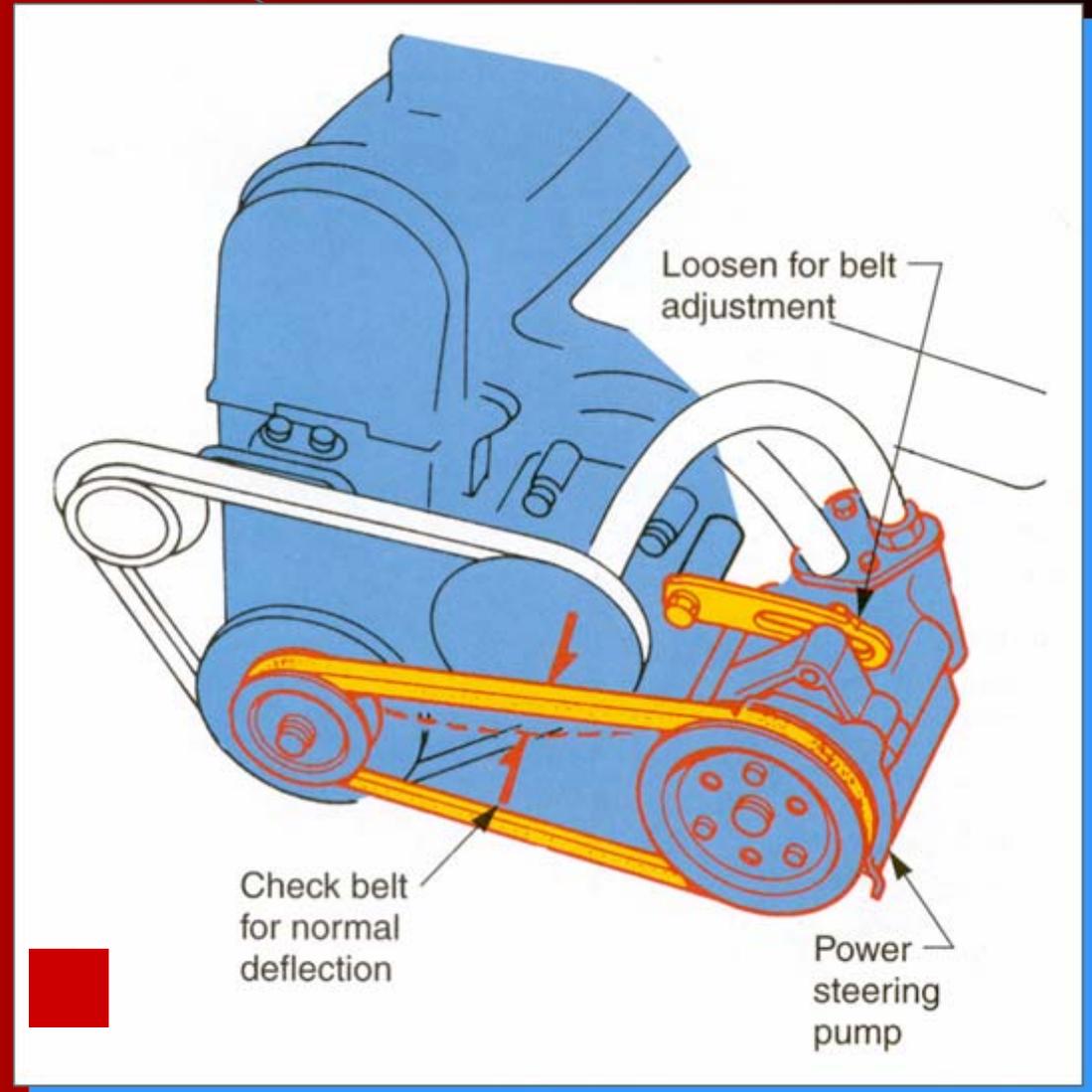
Belt Adjustment

Loosen the adjusting bolts, carefully pry the component outward and tighten the adjusting bolts



Servicing the Belt

When changing a belt, pry on a recommended point and adjust tension to specs

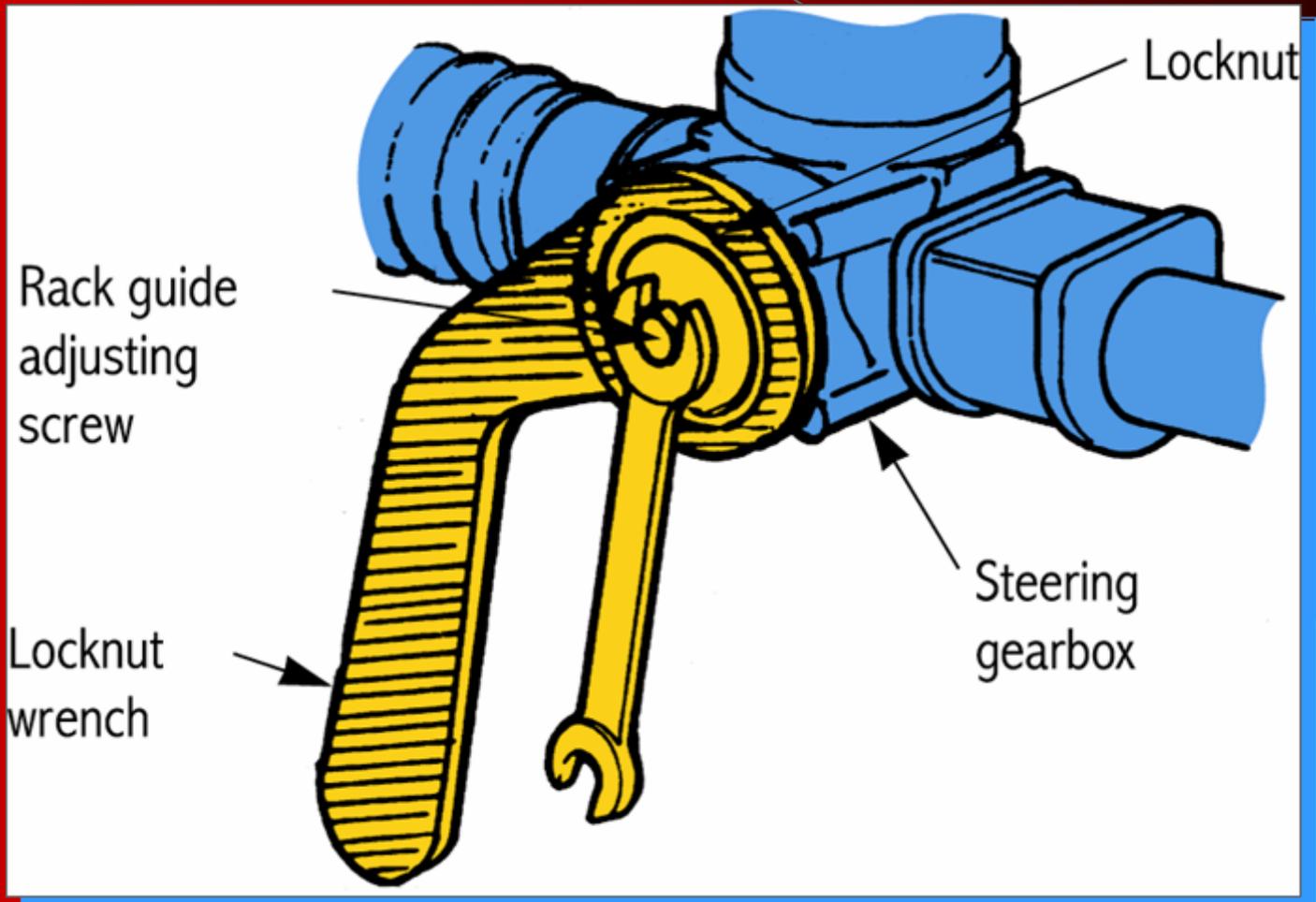


Chapter 70

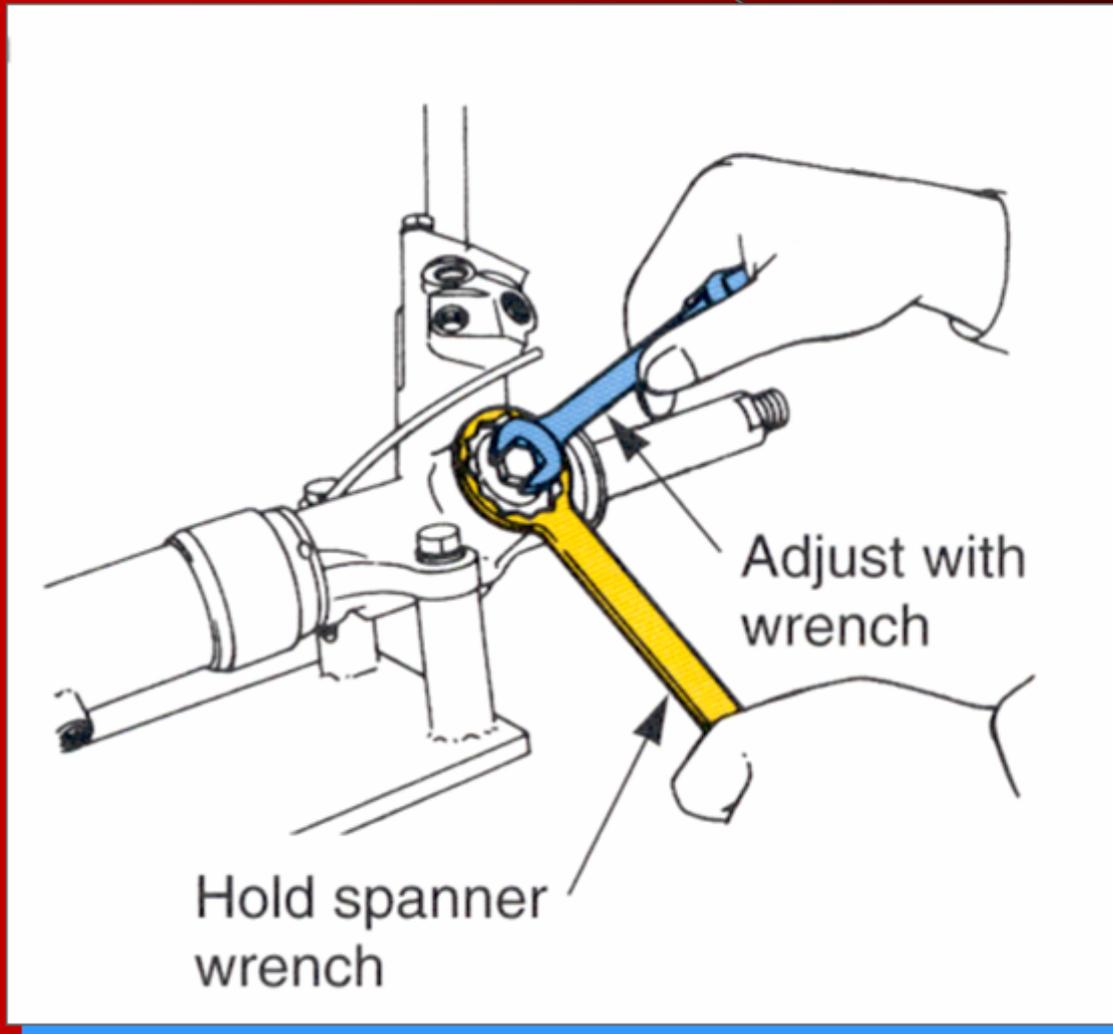
9. Most manual rack-and-pinion steering gears have a Rack Guide Adjustment screw.
10. Steering Wheel Play is the most frequent steering system problem.



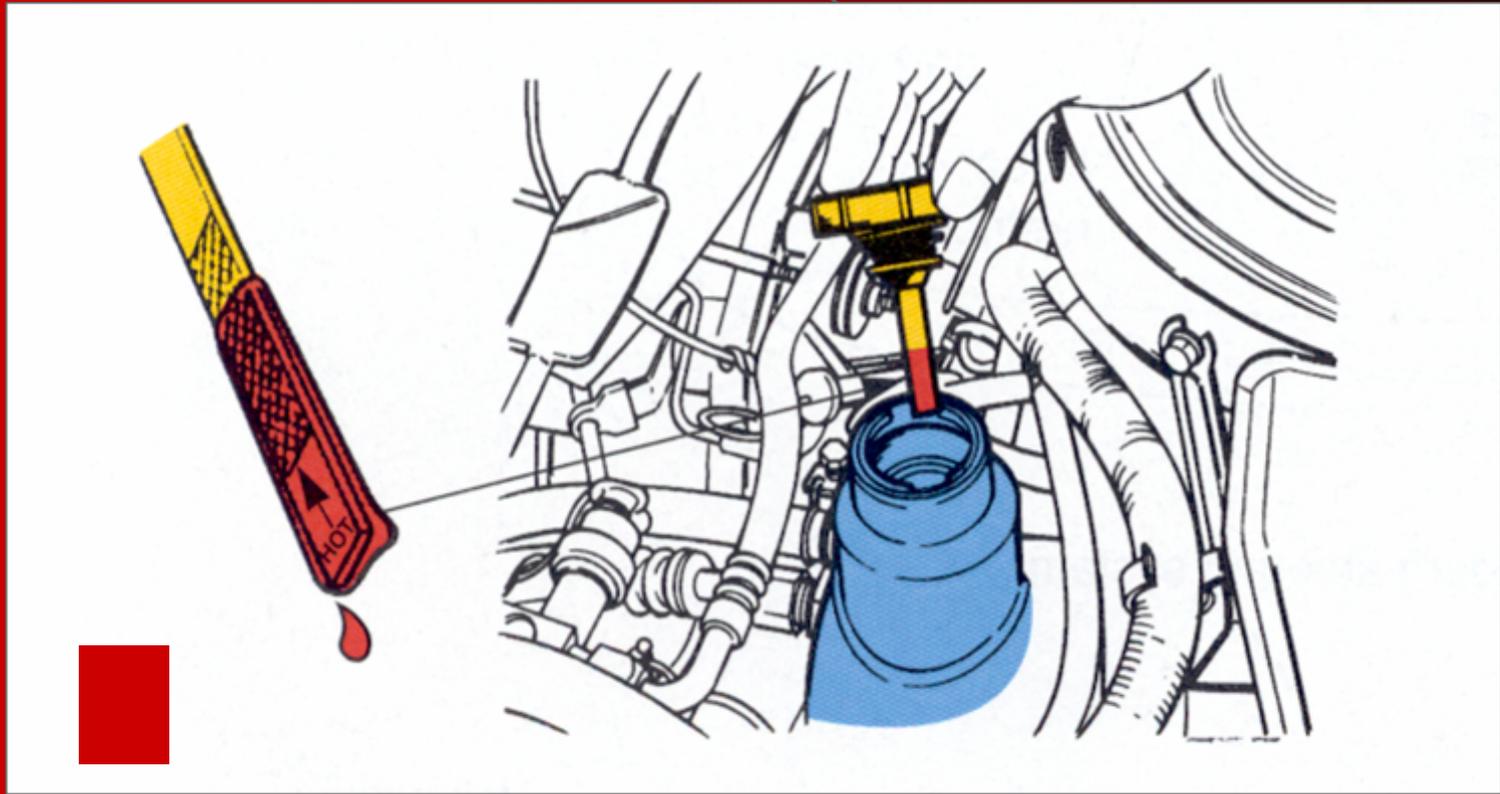
Adjust the Rack Guide to Eliminate Steering Wheel Play



Power Rack-and-Pinion Service



Checking the Fluid



Check most systems at operating temperature,
with the engine off



Learning Objectives

- Describe common steering system problems.
- Properly inspect and determine the condition of a steering system.
- Explain basic steering column repair operations.
- Adjust both worm gears and rack-and-pinion gears.
- Describe service and repair procedures for a rack-and-pinion steering gear.
- Service power steering belts, hoses, and fluid.
- Explain how to complete basic power steering tests.
- Use safe work procedures.

