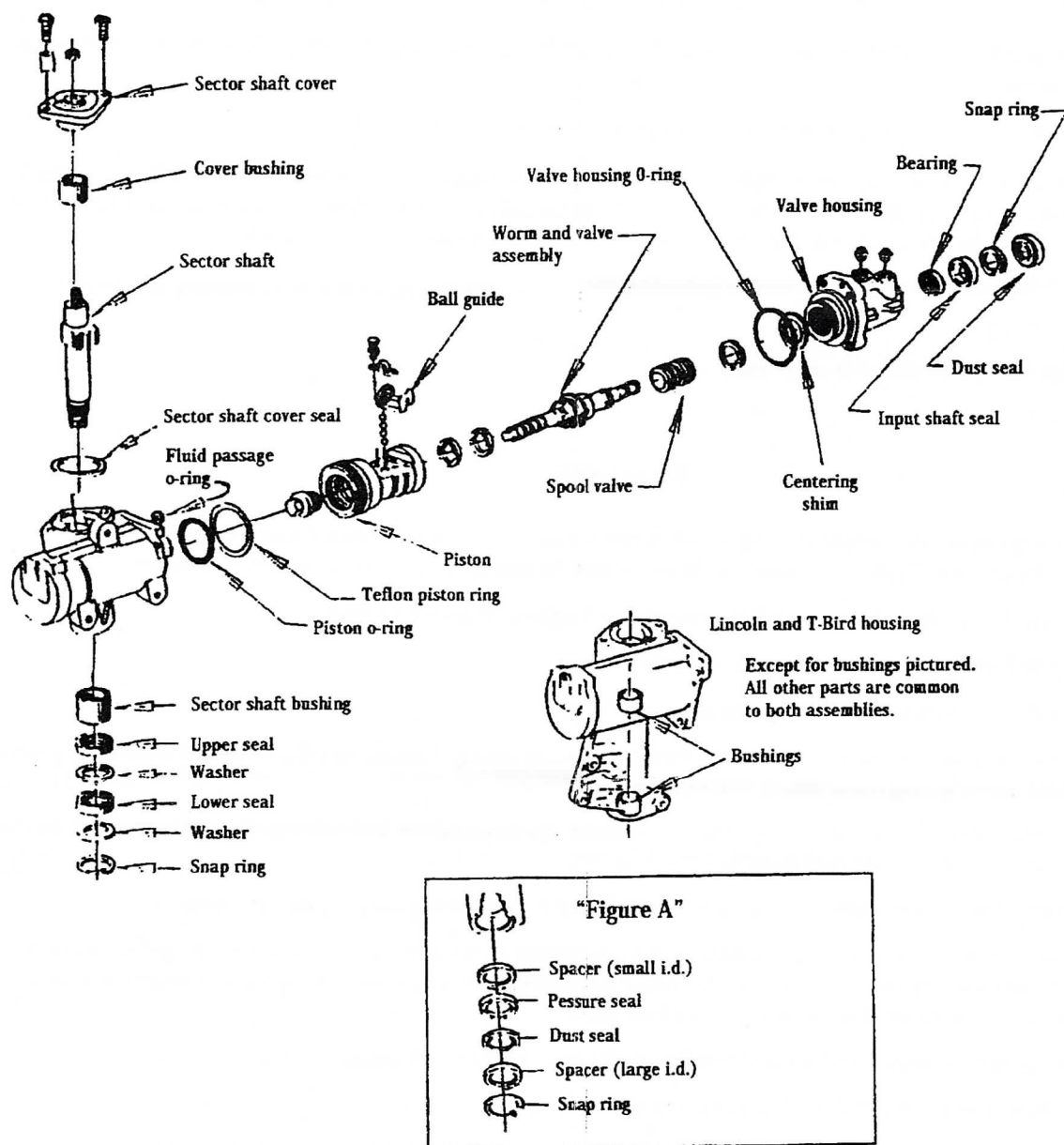


# Steering Gear Assembly

## Typical Of Ford, Lincoln, Mercury & T-Bird 1965-Up



### Notes:

When servicing the sector shaft seals on a later unit using precision ground spacers, install spacers and seals as shown in "Figure A" pictured above. Regardless of components removed from unit, the lower sector shaft area can be serviced either way.

Before discarding any components, compare size of fluid passage o-ring to select proper replacement.

Two sector shaft cover seals have been provided. Early models with .067 counterbore depth, use thin seal. Later models with .112 counterbore depth, use thick seal.

Thoroughly clean outside of gear before making any repairs to these units. Use a clean work area, as dirt will cause leaks and improper operation of the system.

## Disassembly

1. Secure the gear in a soft-jawed vise. turn worm shaft to both stops and count turns; return halfway, to center (1 3/4 to 2 turns).
2. Remove sector shaft cover bolts. Loosen sector shaft by tapping lower end with soft hammer and remove cover and shaft.
3. Remove valve housing bolts and pull the valve assembly, worm shaft and piston from the housing as an assembly. **Note: Do not allow the worm shaft to rotate out of the piston.**
4. Rotate the worm shaft throughout its entire range, to check for roughness or binding.
5. Unscrew the worm shaft from the ball nut, allowing the balls to fall inside the piston. Remove the ball guide and place the balls in a cleaning fluid. The design of some worm shafts will not allow the worm shaft to be removed from the ball nut with the balls in place. To service these units, remove the ball guide clamp, invert the ball nut over a cloth and rotate the shaft in both directions to allow all 27-29 balls to fall out.
6. Remove the lock-nut and retaining nut. Separate worm and valve assembly from the valve housing and remove the centering shim from the housing.
7. Discard all "O" rings, sealing rings, dust seals and oil seals.

## Reassembly

**General:** Thoroughly clean all parts with solvent and dry with compressed air, being careful to remove all solvent from grooves and ports. Pre-lubricate all parts before installing. Inspect all parts for wear, nicks or scoring, replace where necessary.

1. Check the worm shaft bearing and sector shaft bushings for looseness or roughness. Replace if necessary.
2. Press a new worm shaft seal into the valve housing and replace the snap ring.
3. Assemble the new dust seal in the valve housing with the rubber side facing out.
4. Carefully insert the valve spool in the valve housing rotating slightly to eliminate binding. The spool should move freely in the housing. If burrs or roughness are found remove by using crocus cloth or a hard stone in a radial motion.
5. Install the spool on the worm and valve assembly and replace the snap ring. The deepest groove in the valve spool should be away from the snap ring and clearance between the snap ring and spool should be from .001 to .005.
6. Place new "O" ring and teflon ring on the ball nut. Extreme care should be taken to avoid stretching the teflon ring excessively.
7. Install the inner seal and spacer washer in the sector shaft housing, seal first and washer second, press into the housing together. Repeat this procedure with the outer seal and washer. Install a new snap ring in the housing groove. **Important: When using later design sector shaft seals with precision ground spacers, install as shown in "Figure A" on front page.**
8. Locate the centering shim, and worm and valve assembly in the valve housing, rotating the valve spool slightly to avoid binding.
9. Install the retaining nut and torque to 50 ft. lbs., tighten the lock nut to 35-45 ft. lbs.
10. Place the worm shaft in the ball nut until the first groove in the worm shaft is visible through the hole closest to the center of the ball nut.
11. Install the ball guide and slowly rotate the worm shaft in a clockwise direction while feeding in the balls. It may be necessary to rotate the shaft counter clockwise in order to feed in all the balls. Be careful not to back off more than 3 turns.
12. Install the ball guide clamp after all the balls (27-29) have been fed into the ball nut.
13. Replace the "O" ring on the valve housing and fluid passage groove and carefully guide the ball nut into the housing. Align the fluid passages in the valve and gear housings and install the retaining bolts.
14. Locate the sector shaft cover "O" ring in the housing, rotate the worm shaft and ball nut to align the teeth of the sector shaft and ball nut. Install the sector shaft and cover in the gear housing. Install and tighten the sector shaft cover bolts and tighten the valve housing retaining bolts.
15. Worm bearing preload 2-8 in. lbs. Total meshload over mechanical center 17 in. lbs. (max.). total meshload over worm bearing preload 11-13 in. lbs.