

CHRYSLER CORP. (GEMMER/ROSS) WORM & ROLLER

Dodge

A100 (1965-70)
"D" Models (1969-71)
P200 (1965-72)
P300 (1965-73)
W100/200 (1969-71)
W300 (1965-74)

All Other Models — Remove steering gear from vehicle, and clamp in a soft-jawed vise. Turn steering gear two turns to either side of center position. Using an INCH lb. torque wrench, measure torque required to rotate input shaft back through center position at a constant rate. Add or remove shims between housing end plate and housing to obtain correct preload. Adjust worm and roller mesh preload.

DESCRIPTION

Worm & Roller type manual steering gear consists of a worm gear, sector shaft assembly, and steering linkage. Worm gear, which is an integral part of input shaft, rotates on ball bearings in gear housing. Roller, which rides on worm gear, is mounted to sector shaft. Sector shaft and roller assembly rotates as a unit in bushings mounted in lower part of housing. Rotation of worm gear is transmitted to sector shaft through roller assembly, and is then relayed to steering linkage through pitman arm.

ADJUSTMENT

WORM BEARING PRELOAD

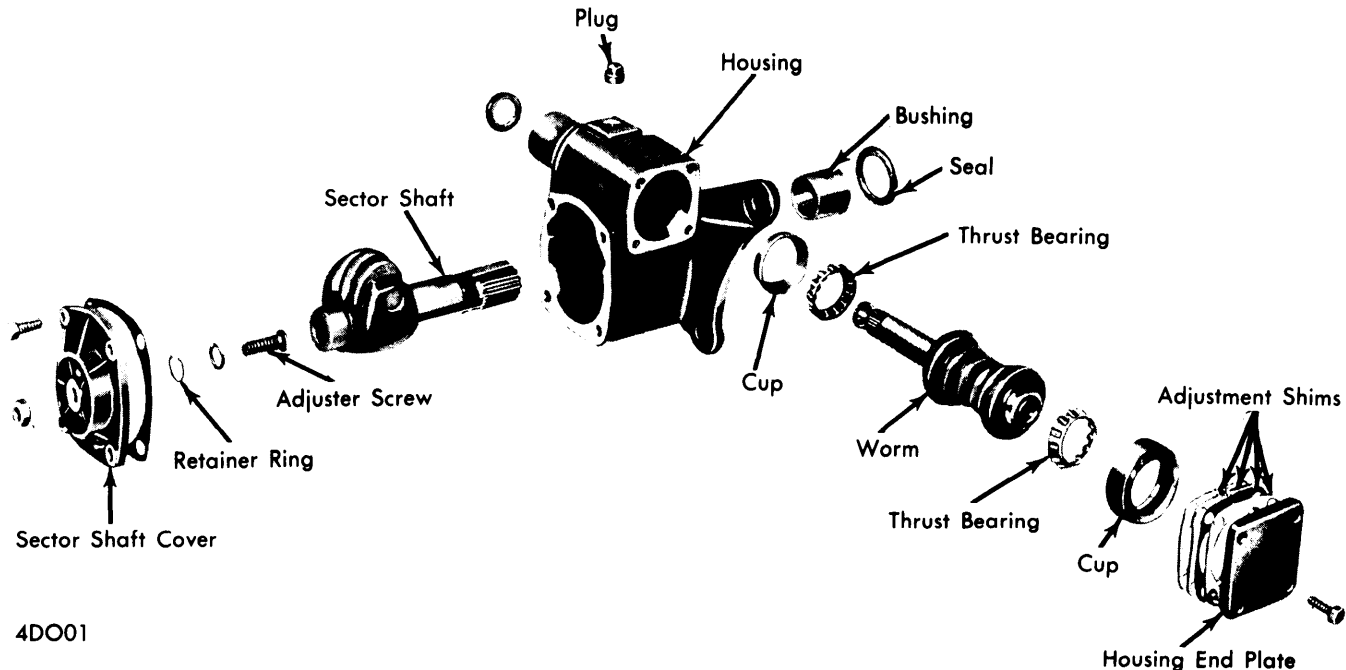
"P" Models & W300 — Remove horn button and spring from center of steering wheel. Mark pitman arm and sector shaft for reassembly reference, and remove pitman arm from sector shaft. Loosen sector shaft adjuster screw lock nut, and back off screw two turns. Turn steering wheel two turns to one side of center position, and attach an INCH lb. torque wrench to steering wheel attaching nut. Measure torque required to rotate wheel through center position. Add or remove shims between housing end cover and housing to obtain correct preload. Adjust worm and roller mesh preload.

Worm Bearing Preload

Application	Inch Lbs.
"A" Models.....	2-5½
"D" Models.....	5-10
"P" Models.....	7-14
"W" Models	
W100/200.....	5-10
W300.....	7-14

WORM & ROLLER MESH PRELOAD

Remove grille assembly on "A" models only. Mark pitman arm and sector shaft for reassembly reference, and remove pitman arm from sector shaft. Turn steering wheel to exact center position, and loosen sector shaft adjuster screw. Tighten adjuster screw until all backlash between worm and roller gears just disappears. Attach an INCH lb. torque wrench to steering wheel attaching nut and measure torque required to rotate steering gear through center position at a constant rate. Tighten or loosen sector shaft adjuster screw as necessary, to obtain correct mesh preload. Tighten adjuster lock nut, recheck preload, then install pitman arm to sector shaft. Install grille assembly on "A" models.



4DO01

STEERING GEAR ASSEMBLY (TYPICAL)

Manual Steering Gears

CHRYSLER CORP. (GEMMER/ROSS) WORM & ROLLER (Cont.)

Worm & Roller Mesh Preload

Application	Inch Lbs.
"A" Models	8-10
"D" Models	12-21
"P" Models	20-27
"W" Models	
W100/200	12-21
W300	20-27

REMOVAL & INSTALLATION

"A" MODELS

Removal — 1) Disconnect negative battery cable, and remove grille assembly. Remove pitman arm from sector shaft, then remove steering gear-to-frame attaching bolts. If vehicle equipped with column mounted shift controls, disconnect control rods at steering column. Remove steering column cap plate, and column access plate from vehicle. Disconnect directional switch wiring under instrument panel, and remove steering column clamp. Remove steering gear, column assembly, steering wheel, and transmission control lever from vehicle as an assembly.

2) Remove horn button from steering wheel, and disconnect horn wire. Remove horn housing attaching screws, and remove horn housing from steering column. Remove directional indicator switch lever, directional indicator switch, and steering wheel attaching nut. Remove steering shaft snap ring, then slide steering gear and shaft assembly from steering column.

Installation — 1) Slide steering gear and shaft assembly into steering column, and install steering shaft snap ring. Insert directional switch wiring into steering column, and pull down through column. Install directional indicator switch, switch operating lever, and steering wheel to column assembly. Install horn housing, connect horn wire, and install horn button.

2) Install steering column, steering wheel, steering gear, and transmission control lever into vehicle as an assembly. Install steering column clamp at instrument panel, and install steering gear-to-frame attaching bolts. Align steering column, then tighten clamp bolts. Install pitman arm to sector shaft. If vehicle equipped with column mounted shift controls, connect control rods at steering column. Install column cap plate, steering access plate, and grille assembly. Connect directional switch wiring under instrument panel, then connect negative battery cable.

"P" MODELS

Removal — Disconnect negative battery cable, and disconnect horn wire connector. Remove any gearshift linkage attached to steering column. Remove horn button from steering wheel, then remove steering wheel from column. Disconnect drag link at pitman arm, then remove pitman arm from sector shaft. Remove steering gear-to-frame attaching bolts, and lower steering gear and shaft assembly from vehicle.

Installation — Install steering gear and shaft assembly in vehicle from below frame, and loosely install steering gear attaching bolts. Install steering column-to-instrument panel clamp, and tighten screws. Tighten steering gear attaching bolts, then loosen clamp screws. Install steering wheel and attaching parts to steering column. Tighten clamp screws, then connect any transmission linkage disconnected during removal. Install pitman arm, then install drag link.

ALL OTHER MODELS

Removal — Loosen steering column support bracket bolts, and remove floor cover plate at base of column (if equipped). Remove pitman arm from sector shaft, and remove flexible coupling clamp bolt. Tap column and coupling assembly upward until coupling is free from gear input shaft. Remove steering gear-to-frame attaching bolts, and remove steering gear from vehicle.

Installation — Position steering gear on frame and install gear attaching bolts. Install pitman arm on sector shaft, and place wheels in straight ahead position. Position steering wheel in straight ahead position, and install flexible coupling to input shaft. Install floor cover plate, and tighten steering column support bracket bolts.

OVERHAUL

"P" MODELS

Disassembly — Remove steering column jacket clamp, and column jacket. Remove sector shaft cover and gasket. Remove housing end cover, shims, bearing, and bearing cup from housing. Remove steering shaft and worm assembly, then remove remaining bearing cup from housing. Remove sector shaft assembly from housing.

Inspection — Inspect bearings and bearing cups for wear, chips, cracks or pits. Inspect sector shaft, and worm and steering shaft assembly for tooth and roller wear. Inspect housing and covers for cracks. Position sector shaft in housing, and install sector shaft cover. Shaft bushings should support shaft without side play or bind. *NOTE* — If bushings are worn, replace housing and bushing, or cover and bushing as an assembly. Check condition of seals.

Reassembly — Install steering shaft seal and upper shaft bearing. Lubricate shaft and worm assembly with suitable gear lubricant, and install assembly into housing. Lubricate lower bearing assembly, and install bearing and bearing cup into housing. Install housing end plate with shims removed at time of disassembly. Rotate steering shaft through several revolutions to seat bearings. Check and adjust (if necessary) worm bearing preload. Install new sector shaft oil seal. Lubricate sector shaft assembly, and install shaft in housing, using care not to damage seal. Install adjuster screw washer, and retainer ring. Thread cover assembly onto adjuster screw until cover bottoms on housing. Install cover attaching bolts, then loosely install adjuster screw lock nut. Adjust worm and roller mesh preload. Install steering jacket oil seal, steering column jacket, and jacket clamp.

ALL OTHER MODELS

Disassembly — Remove filler plug and drain fluid from steering gear. Loosen adjuster screw lock nut, and remove sector shaft cover attaching bolts. Position steering gear at center position, and remove sector shaft and cover as an assembly. Remove adjuster screw lock nut, and turn adjuster screw clockwise to remove cover from shaft assembly. Remove housing end plate from housing, keeping shim pack intact, then remove lower bearing and bearing cup. Remove worm and input shaft assembly, and remove upper bearing cup.

CHRYSLER CORP. (GEMMER/ROSS) WORM & ROLLER (Cont.)

Inspection — Inspect bearings and bearing cups for wear, chips, cracks, or pits. Inspect sector shaft, and worm shaft for tooth and roller wear. Inspect housing and covers for cracks. Position sector shaft in housing, and install sector shaft cover. Shaft bushings or bearings should support shaft without side play or bind. *NOTE* — If bushings (bearings) are worn, replace housing and bushing, or cover and bushing as an assembly. Check condition of seals.

Reassembly — Install upper bearing over input shaft and seat against worm gear. Install input shaft and worm assembly into housing. Install lower bearing and bearing cup on worm, and install housing end plate, using shims removed at time of disassembly. Rotate input shaft through several revolutions to seat bearings. Adjust worm bearing preload. Install adjuster screw, washer, and retainer in end of sector shaft. Turn sector

shaft cover onto adjuster screw until bottomed, then back off one turn. Install adjuster lock nut. Install sector shaft and cover assembly to housing, and adjust worm and roller mesh preload.

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs.
Adjuster Screw Lock Nut	
"A" Models	35
All Other Models	20
Pitman Arm Attaching Nut	
"P" Models	250
W300	250
All Other Models	95-145
Sector Shaft Cover Bolts	18-20
Housing End Plate Bolts	18-20