Steering Gears & Linkage

MAZDA RECIRCULATING BALL

626, RX7, B2000 & B2200 Pickup, GLC Wagon

DESCRIPTION

Steering gear is a recirculating ball type with a variable ratio, depending on turning angle of sector shaft. The worm gear and steering shaft are an integral (non-separable) unit.

Steering linkage is basically the same for all models, having a non-adjustable center link, 2 adjustable tie rods, an idler arm assembly, and pitman arm.

ADJUSTMENT

NOTE: Adjustments are performed during assembly portion of overhaul. See Overhaul procedure in this article.

REMOVAL & INSTALLATION

STEERING GEAR

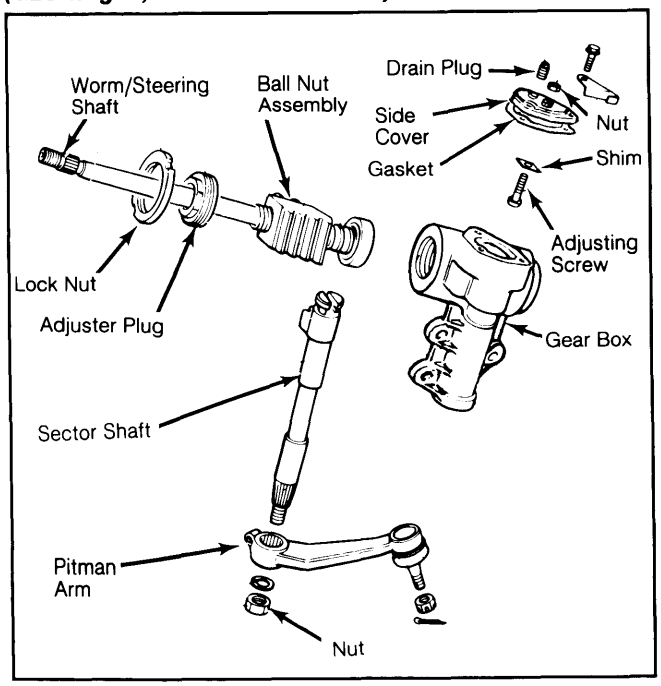
Removal (GLC Wagon, B2000 & B2200 Pickup)

1) Disconnect negative battery cable. Remove steering wheel and switches. *See Mazda under Steering Wheel & Column Switches article in this Section.* Remove bolts holding column to dash. Loosen dust cover screws, any other column bolts and pull column jacket off shaft.

2) On GLC Wagon, disconnect center link from pitman arm with puller. Remove steering gear mounting bolts and pull gear forward after raising vehicle.

3) On B2000 Pickup models, remove air cleaner, brake master cylinder and power booster and clutch master cylinder. On column shift models remove the lower bracket from the selection rod and shift rod.

Fig. 1: Exploded View of Steering Gear Assembly (GLC Wagon, 626 and RX7 Models)



4) Raise and support vehicle. Remove left front wheel, then disconnect and remove pitman arm. Place jack under lower left control arm and support. Remove upper left control arm, noting position of shims. Unbolt steering gear and pull up out of vehicle.

Removal (626 & RX7)

1) Disconnect negative battery cable. Remove steering wheel and switches. *See Mazda under Steering Wheel & Column Switches in this Section.* Remove bolts holding column to dash. Tape holes to retain lubricant. Remove air duct.

2) Raise and support front of vehicle. Disconnect pitman arm and center link. Remove nuts and bolts retaining steering gear housing to body. Remove under cover, engine mount and stabilizer bar (626 only). Remove hood (RX7 only). Remove steering gear assembly from vehicle.

Removal (626 Tilt Wheel)

1) Remove the set plate attaching nut and slide the set plate toward the steering wheel. Loosen the bolt securing the yoke joint to the worm shaft.

2) Raise and support the front end of vehicle. Remove front wheel. Remove cotter pin and castellated nut and disconnect center link from pitman arm.

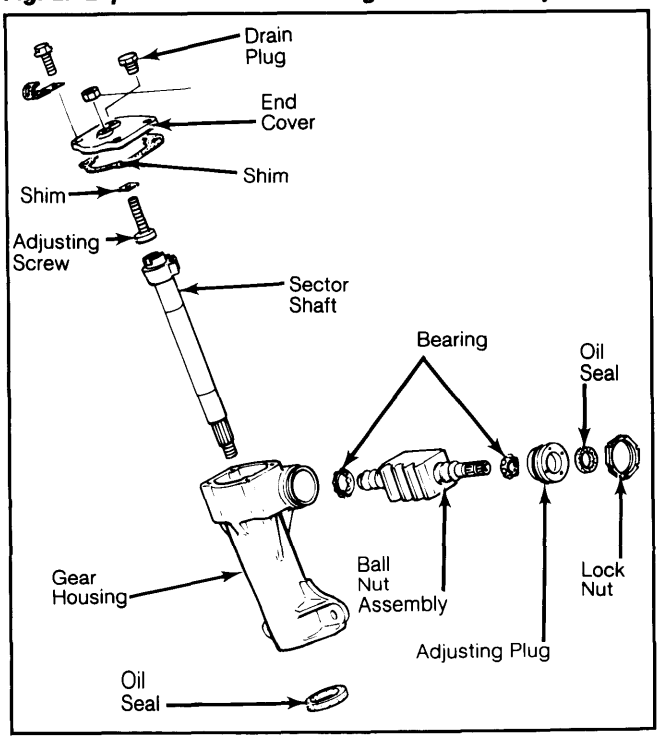
3) Remove pitman arm. Remove steering gear housing mounting bolts and remove gear housing.

Installation (All Models)

To install, reverse removal procedure, ensuring any shims which were removed are installed in original positions.

NOTE: To avoid damage to steering column components, do not apply bending or striking forces to steering shaft or column.

Fig. 2: Exploded View of Steering Gear Assembly



Gear assembly shown is for B2000 and B2200 Pickups.

MAZDA RECIRCULATING BALL (Cont.)

STEERING LINKAGE

Steering linkage may be removed as an assembly or as individual components. Whenever tie rod setting is disturbed, toe-in must be reset. *See Mazda in WHEEL ALIGNMENT section.*

OVERHAUL

DISASSEMBLY

Steering Gear

1) Drain gear oil from housing. Remove pitman arm from sector shaft, if not removed previously. Remove sector shaft adjusting screw lock nut. Remove side cover attaching bolts and remove side cover by turning adjusting screw clockwise.

2) Remove sector shaft adjusting screw and shim from sector shaft. Remove sector shaft carefully to avoid damage to oil seal.

3) On B2000 models, remove lock ring, adjusting plug with oil seal, outer bearing, worm ball nut assembly and inner bearing.

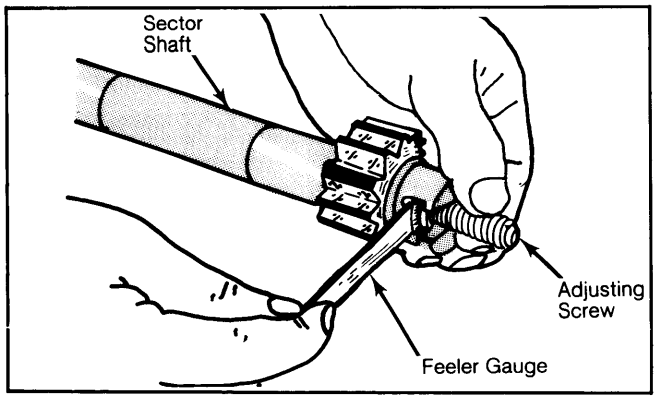
4) On GLC Wagon, 626 and RX7 models, remove ball nut/worm gear adjusting plug lock nut. Then remove adjusting plug and withdraw ball nut, worm gear and steering shaft assembly from gear housing.

INSPECTION

1) Check ball nut rotation on worm gear. If movement is not smooth for full length of travel, replace worm and ball nut assembly. Ball nut is not to be serviced separately.

2) Check worm bearings and cups, sector shaft gear surface, and oil seal. Check clearance between sector shaft and housing bore. Clearance should be .004" (.1 mm) or less. If any component is defective, replace it.

Fig. 3: Checking Sector Shaft Adjusting Screw End Clearance



REASSEMBLY AND ADJUSTMENT

Steering Gear

1) Replace oil seals if necessary. Insert worm gear, ball nut assembly into gear housing.

2) Install adjuster plug into gear housing.

Worm Bearing Preload

1) On all models, attach an INCH lb. torque wrench to steering shaft and check preload. See Initial Worm Bearing Preload chart.

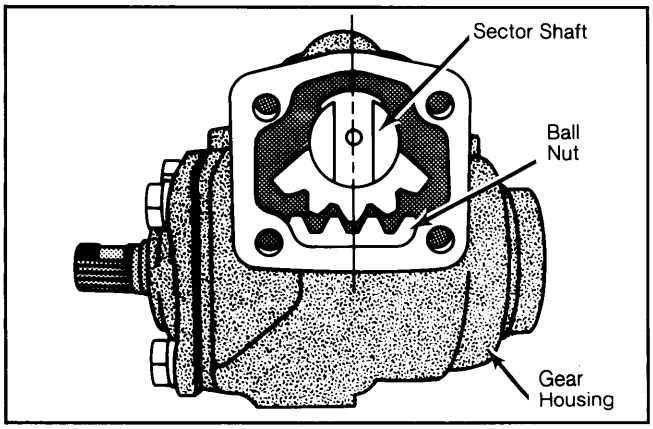
2) Tighten or loosen adjusting plug if preload is not to specifications. Install lock nut.

INITIAL WORM BEARING PRELOAD

Application	INCH Lbs. (N.m)
Without Sector Shaft [1]	1.7-4.3 (.2-.5)

[1] — If preload is checked with a spring scale and 3.9" (10 cm) attachment the reading should be .44-1.10 INCH lbs. (2-5 N.m).

Fig. 4: Aligning Sector Shaft to Ball Nut



Sector Shaft End Play

1) Check clearance between sector shaft adjusting screw and sector shaft. Insert shim so that final clearance will be .004" (.1 mm) or less. Insert sector shaft with ball nut. *See Fig. 4.*

2) Insert adjusting screw and shim in sector shaft. Place side cover and gasket over adjusting screw and turn adjusting screw until cover is in place, then install cover bolts.

Steering Gear Backlash

1) Install pitman arm to sector shaft. Install and tighten retaining nut. Measure pitman arm backlash. If necessary, turn sector adjusting screw until zero backlash is obtained.

2) Tighten adjusting screw lock nut, taking care not to disturb backlash adjustment.

3) Check worm shaft rotating torque. Attach an INCH lb. torque wrench to steering shaft upper end. If not to specifications, adjust as necessary. See Final Worm Bearing Preload chart. Fill gear housing with lubricant (API GL-4 SAE 90).

FINAL WORM BEARING PRELOAD

Application	INCH Lbs. (N.m)
B2000	5.2-7.8 (.57-.86)
RX7	1.3-2.7 (.14-.30)
GLC Wagon & 626	[1] 5.2-10.4 (.57-1.1)

[1] 626 with tilt steering 5.2-7.8 INCH Lbs. (.57-.86 N.m).

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Pitman Arm-to-Sector Shaft	
B2000 & RX7	108-130 (147-177)
GLC Wagon & 626	58-87 (79-118)
Tie Rod Lock Nut	
B2000	25-32 (34-43)
GLC Wagon, 626 & RX7	51-58 (69-79)