

MAZDA RECIRCULATING BALL

GLC
808 (1300) Mizer
808 (1600)
RX3SP
RX4
Cosmo
RE Pickup

DESCRIPTION

Steering gear is a recirculating ball type with a variable ratio, depending on turning angle of sector shaft. The pinion shaft and steering shaft are an integral (nonseparable) unit on some models, while the shaft is separable from the pinion on others. Steering linkage is basically the same for all models, having a nonadjustable center link, two 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, 808, RX3SP) — 1) Disconnect negative battery cable. Remove horn cap, horn contact cup and spring. Mark position of steering wheel to shaft. Unscrew steering wheel nut and remove steering wheel. Remove column covers and disconnect wiring connectors. Remove stop ring from shaft and screw from combination switch. Lift off combination switch. Remove steering lock and ignition switch assembly (except GLC).

2) Detach column support bracket. Loosen nut securing bottom of column jacket to gear housing. Pull jacket off shaft. Separate the dust cover from the dash panel.

3) Raise and support front of vehicle and remove left front wheel. Unscrew nuts and bolts securing upper control arm shaft to support bracket. Note number and placement of shims so that correct wheel alignment can be retained when reassembly is made. Remove left upper control arm.

4) Disconnect center link from pitman arm using a puller. Remove nuts and bolts holding steering gear to frame, noting any shims which may be present. Withdraw steering gear from vehicle.

Removal (RX4, Cosmo, RE Pickup) — Raise and support front of vehicle. Remove front wheel. Detach pitman arm from center link. Remove bolt securing flexible coupling to worm shaft. Detach pitman arm from gear. Remove speedometer cable from clips attached to gear housing and power brake unit. Unbolt 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.

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

STEERING GEAR

Disassembly — Drain gear oil from housing. Remove pitman arm from sector shaft, if not done so during removal. Unscrew side cover attaching bolts and loosen adjusting screw lock nut. Turn adjusting screw in to remove side cover from housing. Take adjusting screw and shim from slot in sector shaft. Withdraw sector shaft. Unbolt end cover, then withdraw worm and ball nut assembly. On GLC, worm and ball nut assembly is held in place by an adjuster plug and lock nut instead of being bolted on end cover.

Inspection — Check ball nut rotation on worm. If movement is not smooth for full length of travel, replace worm and ball nut assembly. Ball nut is not to be serviced separately. Check worm bearings and cups, sector shaft gear surface, and oil seal. If any component is defective, replace it.

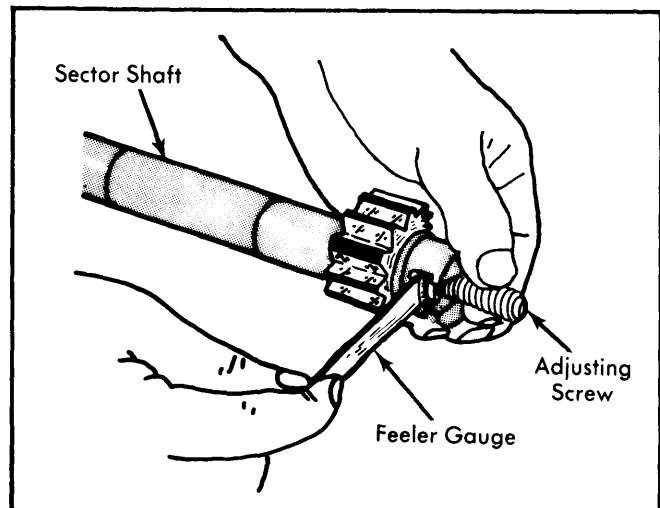


Fig. 1 Checking Adjusting Screw End Clearance

Assembly & Adjustment — 1) Replace oil seal in housing. Insert worm shaft and ball nut assembly into gear housing. Position end cover (or column jacket) with bearing preload adjusting shims and tighten cover (jacket) bolts. Attach preload checking tool (49 0180 510) to pinion splines (or top end of steering shaft) and connect a pull scale to the tool. If reading is below .22 lb. (.1 kg) reduce the shim; if above .88 lb. (.4 kg), increase the shim. On GLC only, tighten adjuster plug to give 1.7-4.3 INCH lb. (2-5 cmkg) preload.

2) Insert sector shaft into gear housing, using care not to damage oil seal. Ensure center of sector gear is aligned with center of worm gear. See Fig. 2. Insert adjusting screw into slot in end of sector shaft. Check end clearance as illustrated and add appropriate shim to bring clearance within 0-.004" (0-.1 mm). Place side cover and gasket over adjusting screw and turn adjusting screw until cover is in place, install attaching bolts.

Steering Gears & Linkage

MAZDA RECIRCULATING BALL (Cont.)

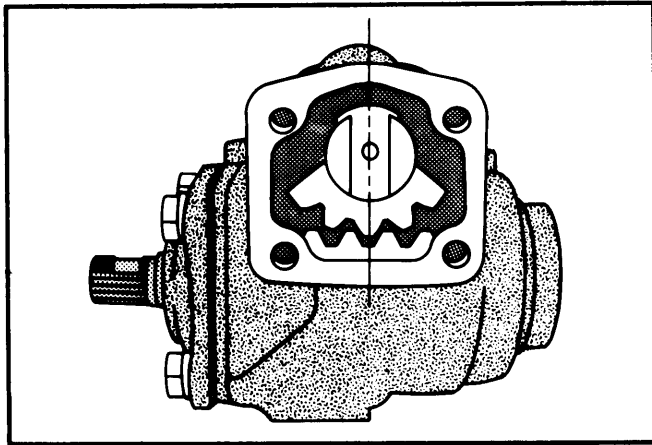


Fig. 2 Aligning Sector Gear & Rack

3) Install pitman arm onto sector shaft, aligning marks. Install and tighten retaining nut. Measure pitman arm backlash. If necessary, turn sector adjusting screw until zero backlash is obtained. Tighten adjusting screw lock nut, taking care not to disturb backlash adjustment.

4) Check worm shaft rotating torque. Attach an INCH lbs. torque wrench to worm shaft. If not to specifications, adjust as necessary. Fill gear housing with lubricant (SAE 90 EP).

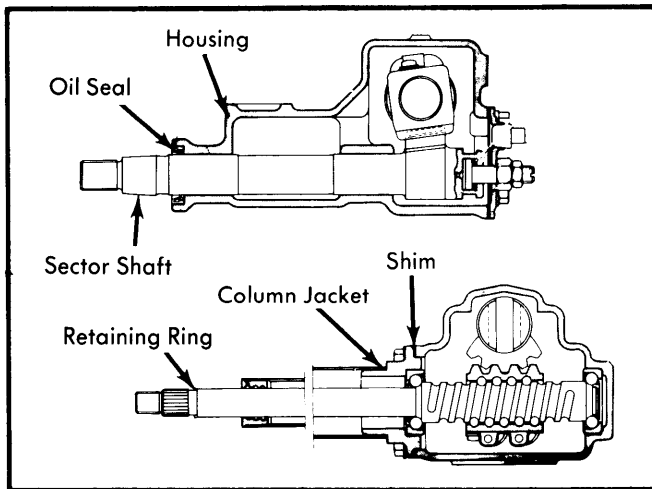


Fig. 3 Steering Gear Cutaway of RX3SP (Others Similar)

Initial Worm Bearing Preload Torque

Application	INCH lbs. (cmkg)
808, RX4 & RE Pickup	0.9-3.5 (1-4)
Cosmo	2.6-4.3 (3-5)
RX3SP & GLC	1.7-4.3 (2-5)

Final Worm Bearing Preload Torque

Application	INCH lbs. (cmkg)
808	7.8-13 (9-15)
RX3SP & GLC	5.2-10.4 (6-12)
Cosmo	5.2-11.3 (6-13)
RX4 & RE Pickup	7.9-10.4 (9-12)

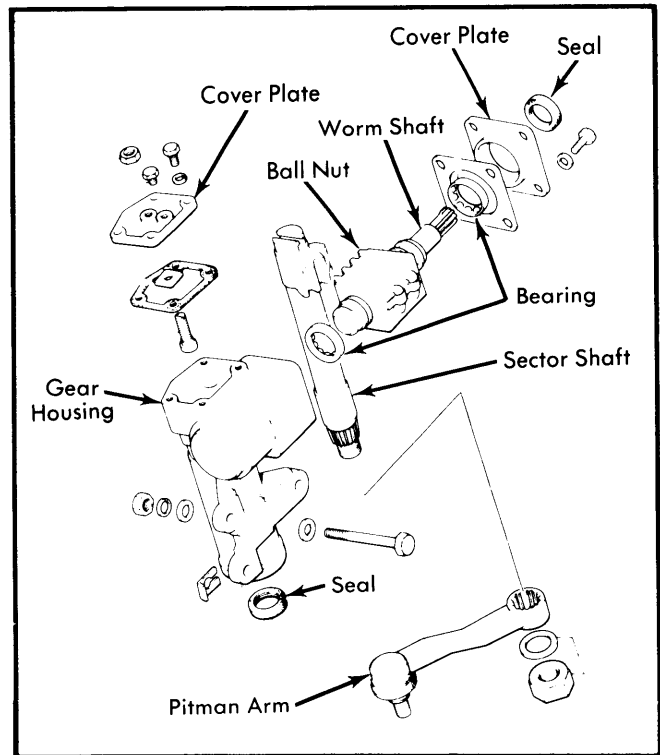


Fig. 4 Exploded View of RX4 Recirculating Ball Steering Gear (Others Similar)
GLC Uses Adjuster Nut Instead of Cover Plate

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs. (mkg)
Gear Box-to-Frame	
All Models	32-40 (4.4-5.5)
Pitman Arm-to-Sector Shaft	
GLC	58-87 (8-12)
808 & RX3SP	94-123 (13-17)
RX4, Cosmo & RE Pickup	108-130 (15-18)
Steering Wheel Nut	
All Models	22-29 (3-4)
Tie Rod-to-Center Link	
All Models	22-32 (3-4.5)