CHRYSLER CORP. IMPORTS RECIRCULATING BALL

Arrow Pickup, Challenger, Ram-50 Pickup, Sapporo

DESCRIPTION

Steering system uses a recirculating ball gear of variable ratio. This type of gear minimizes gear ratio at the straight-ahead position, resulting in high stability at center. Gear ratio increases as the wheel is turned from center, allowing easy maneuvering.

REMOVAL & INSTALLATION

STEERING GEAR

1) Disconnect steering shaft from gear box main shaft. Using puller, separate relay rod from pitman arm.

2) Remove gear box from frame. Pull pitman arm from cross shaft. To install, reverse removal procedure.

TIE ROD ASSEMBLY

Removal

Disconnect tie rod ends from steering knuckle, using puller. Unscrew tie rods ends from tie rod.

Installation

1) Grease tie rod end dust cover and coat lower edge of cup with packing sealer before installation. Temporarily install tie rod ends to tie rods.

2) Distance from center-to-center of tie rod ends should be 13.33" (338.6 mm) for Challenger and Sapporo; 14.78" (375.5 mm) left tie rod and 14.84" (377 mm) right tie rod on Pickup models.

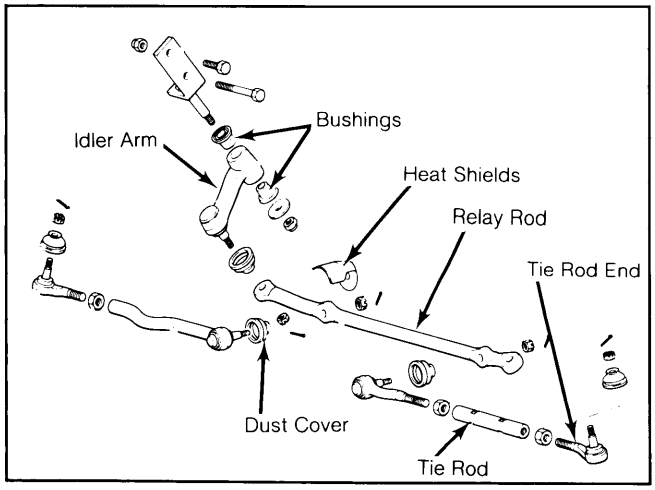
3) Amount of threads showing on each side of tie rod sleeve should be equal. Install tie rods to vehicle and check toe-in. *See WHEEL ALIGNMENT Section.*

RELAY ROD

Removal

Disconnect tie rod ends from steering knuckle arms using puller. Detach pitman arm and idler arm, using the same puller. Remove relay rod.

Fig. 1: Exploded View Showing Steering Linkage Components



Installation

To install, reverse removal procedure, noting the following: Ensure dust covers are well greased and that lower edge of covers are coated with packing sealer.

IDLER ARM

Removal

Disconnect idler arm from relay rod, using puller. Remove idler arm assembly from frame.

NOTE: Do not disassemble idler arm and support unless absolutely necessary.

Installation

1) Apply soapy water to bushings and idler arm. Push bushings into arm, using a vise if necessary.

2) Grease bracket shaft and inner surface of bushing, then insert shaft into idler arm. Install washer with knurled side toward bushing and using a new self-locking nut, tighten to specification.

PITMAN ARM

Removal

After removing steering gear, disconnect pitman arm from cross shaft, using a puller.

Installation

During installation, ensure slit on cross shaft aligns with pitman arm mark.

OVERHAUL

STEERING GEAR

Disassembly

1) Prior to disassembly, record starting torque of mainshaft (as guide during assembly). Remove adjusting screw lock nut, turn screw counterclockwise (partial turn), then remove cover.

2) When cover is free of sector shaft, remove adjusting screw. Set gear in straight ahead (center) position and withdraw sector shaft from gear box.

3) Measure and record steering mainshaft starting torque with sector shaft removed. Remove end cover and record thickness of shim. Carefully remove mainshaft, ball nut assembly and bearings.

CAUTION: Do not disassemble the mainshaft and ball nut assembly.

Inspection

Check components for excess wear or free play. If rough rotation or excess play is found in mainshaft or ball nut, replace both as an assembly. Do not force ball nut to either end of mainshaft.

Reassembly & Adjustment

1) Place gear box in vise with mainshaft in horizontal position. Replace end cover with shim (same as removed) and tighten. Measure mainshaft preload. If less or greater than 3.0-4.8 INCH lbs. (.33-.53 N.m), reduce or increase shim size to obtain proper preload. Refer to Mainshaft Shim table.

2) Install adjusting screw and proper shim in groove on sector shaft. Be sure axial play of shaft is no greater than .002" (.05 mm). If greater, change shim size. Refer to Sector Shaft Shim table.

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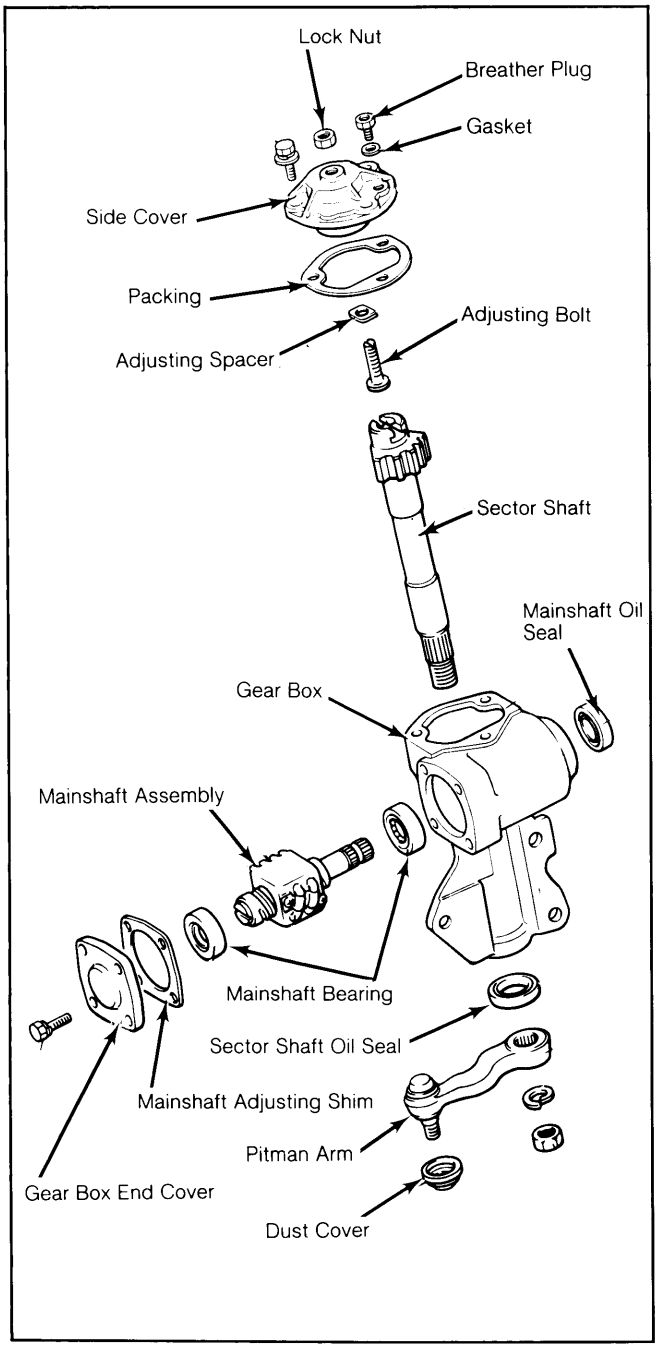
MAINSHAFT SHIMS

Shim No.	Thickness In. (mm)
1	.0020 (.05)
2	.0024 (.06)
3	.0030 (.07)
4	.0040 (.10)
5	.0080 (.20)
6	.0120 (.30)
7	.0200 (.50)

Fig. 2: Exploded View Showing Components of Recirculating Ball & Nut Steering Gear Box



3) Lubricate and install sector shaft in housing. Replace cover and cover bolts. Turn sector shaft several times from side to side, then turn adjusting screw in and out several times, to set proper gear mesh.

SECTOR SHAFT SHIMS

Shim No.	Thickness In. (mm)
1	.077 (1.95)
2	.079 (2.00)
3	.081 (2.05)
4	.083 (2.10)

4) Loosen adjusting screw until no play is noticed at main shaft when gear is central in position. Tighten lock nut. Recheck main shaft preload; it should now be 5.7-7.4 INCH lbs. (.63-.81 N.m).

5) Fill gear box with SAE 90 gear oil. Check oil level through lower right bolt hole. Proper level from hole is .8" (20 mm).

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Gear Box End Cover	11-14 (15-19)
Gear Box-to-Frame	25-29 (34-39)
Idler Arm Bracket-to-Frame	29-43 (39-58)
Pitman Arm-to-Gear Box	94-108 (128-147)
Relay Rod-to-Idler Arm	25-33 (34-45)
Relay Rod-to-Pitman Arm	25-33 (34-45)
Tie Rod End Lock Nuts	36-40 (49-54)
Tie Rod Stud Nuts	36-40 (49-54)