

## COURIER RECIRCULATING BALL

### DESCRIPTION

Steering gear is a recirculating ball and nut type. Two tubes carry the balls through worm channels, thus transmitting the turn action of the steering shaft.

Worm bearing preload and ball-nut meshload have adjustments provided, to maintain smooth steering operation.

### ADJUSTMENT

#### WORM BEARING PRELOAD

1) Drain gear box. Disconnect pitman arm from gear. Loosen sector adjusting screw lock nut and turn screw counterclockwise.

2) Using a torque wrench, rotate worm shaft. Preload should be 5.2-7.8 INCH lbs. (.57-.86 N.m). The preload before installing the sector shaft should be 1.7-4.3 INCH lbs. (.19-.48 N.m).

3) If not within specifications, remove end cover bolts, cover and shims. If preload is below minimum, reduce shim size. If above maximum, increase shim size. Shims are available in four sizes, .002" (.05 mm), .003" (.076 mm), .004" (.10 mm) and .008" (.20 mm).

#### SECTOR SHAFT & BALL-NUT MESHLOAD

1) Adjusting screw in side cover sets sector shaft to provide proper mesh between sector gear teeth and ball-nut rack. Adjustment is made only after setting worm bearing preload.

2) Disconnect pitman arm from center link. Loosen sector adjusting screw lock nut. Turn steering

wheel slowly to either stop. Then turn completely to opposite stop carefully counting the number of turns.

3) Divide by two to determine the center position. Turn steering wheel to the center position. Loosen the sector adjusting screw locknut. Turn adjusting screw in or out until adjustment is obtained. There should be no backlash.

4) Hold adjusting screw in position and tighten lock nut to 24-34 ft. lbs. (33-46 N.m). Recheck mesh load. Connect pitman arm to center link.

### REMOVAL & INSTALLATION

#### STEERING GEAR

##### Removal

1) Remove steering wheel and switches. See Courier in Steering Wheels & Column Switches in this Section. Remove support bracket, move floor mat away from column, and separate toe plate/boot from dash. Remove column jacket from shaft.

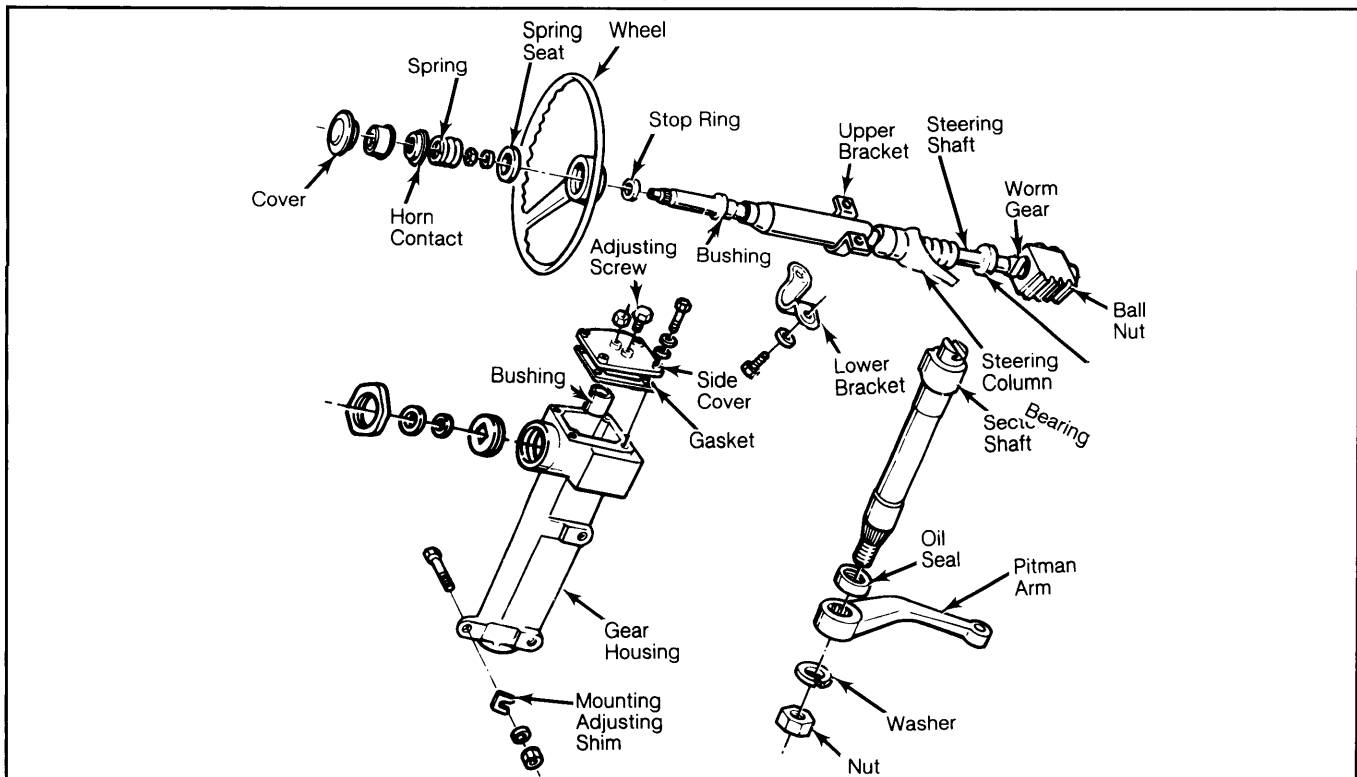
2) Remove air cleaner. Remove hydraulic lines from brake and clutch master cylinders, plug ports on both cylinders and remove from vehicle.

3) Raise front of vehicle and support with stands. Remove left front tire. Remove left dust cover from fender panel. Using a puller, disconnect center link from pitman arm.

4) Remove pitman arm retaining nut. Using a puller, remove pitman arm from sector shaft. Jack up lower control arm with a jack.

5) Remove upper control arm-to-support bracket bolts and nuts, noting number and locations of

Fig. 1: Exploded View of Courier Recirculating Ball Steering Column and Gear



# Steering Gears & Linkage

## COURIER RECIRCULATING BALL (Cont.)

shims so correct wheel alignment is maintained when shims are reinstalled.

6) Remove steering gear box retaining bolts and nuts and remove steering gear assembly.

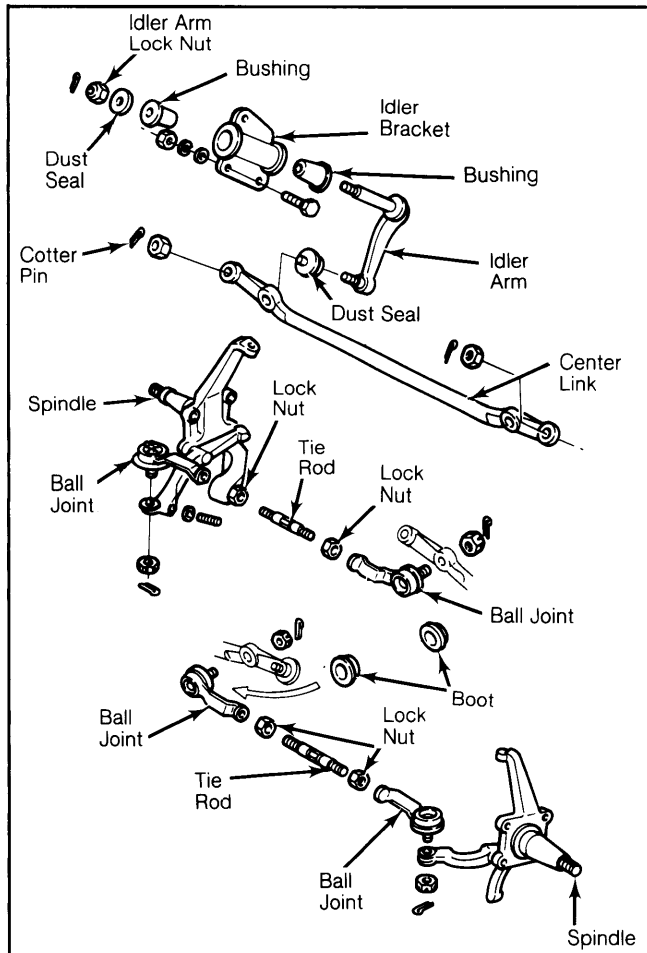
### Installation

To install, reverse removal procedure and place shim in original position between steering gear housing and frame to obtain proper clearance. Fill gear housing with SAE 90 oil. Bleed brake and clutch systems.

### STEERING LINKAGE

Center link can be removed from both tie rods, pitman arm, and idler arm by removing ball joint nuts and using a puller. After center link removal, pitman arm can be removed from sector shaft. Tie rods can also be removed with puller. Toe-in must be reset when tie rods or ball joints are replaced.

Fig. 2: Exploded View of Courier Steering Linkage



## OVERHAUL

### STEERING GEAR

#### Disassembly

1) With gear removed and drained, position gear in vise. Remove pitman arm from gear.

2) Remove sector shaft adjusting screw lock nut. Take off side cover by removing bolts and turning adjusting screw clockwise through the cover.

3) Remove adjusting screw and shim from sector shaft. Extract shaft from housing. Remove worm shaft and ball-nut assembly through bottom of housing after end cover and shims are removed.

### Inspection

Check operation of ball-nut assembly on worm shaft. If travel is not smooth or any part is worn, replace entire assembly. Check and replace all other components as necessary.

### Reassembly & Adjustment

1) Insert worm shaft and ball-nut assembly into gear housing. Install end cover and shims. Adjust bearing preload, as previously described. Place adjusting screw in slot of sector shaft and check end clearance.

2) Adjust clearance to 0-.004" (0-.10 mm) by adding or subtracting shims. Shims are available in four thicknesses, .077" (1.95 mm), .079" (2.0 mm), .081 (2.05 mm), and .083 (2.10 mm).

3) Turn worm shaft and place rack in center position of worm. Insert sector shaft and adjusting screw into gear housing, being careful not to damage bushings or seal.

4) Align center of sector gear with center of rack. Place side cover on adjusting screw, turn screw to position cover, then install cover retaining bolts.

5) Adjust sector gear and rack backlash, as previously described. Tighten adjusting screw lock nut. Install pitman arm to sector shaft and torque to specification.

### TIGHTENING SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Column Support Bracket .....	12-17 (16-23)
Gear-to-Frame .....	32-40 (43-54)
Pitman Arm-to-Gear .....	58-87 (78-117)
Side Cover Bolts .....	12-17 (16-23)
Steering Wheel Nut .....	22-29 (30-39)
Yoke Joint-to-Worm Shaft .....	15-17.5 (20-24)

### INCH Lbs. (N.m)

Meshload Adjusting Screw Lock Nut ...	23-34 (2.5-3.7)
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