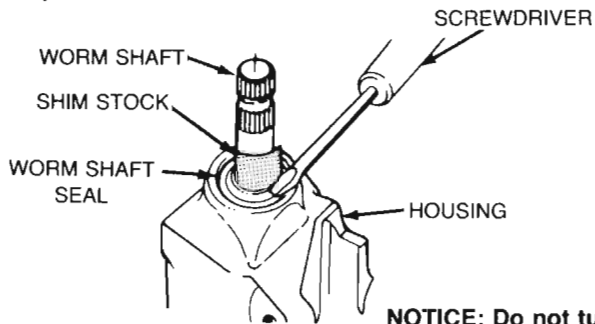


**MODEL 525
RECIRCULATING BALL
MANUAL STEERING GEAR**

1. REMOVE AND INSTALL WORM SHAFT SEAL GEAR ASSEMBLED

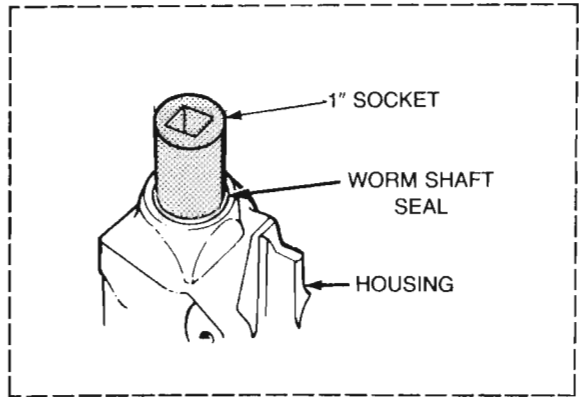
REMOVE

1. Wrap 0.1 mm to 0.2 mm (.005" to .008") shim stock around shaft and insert between shaft and seal. Pry seal out.



INSTALL

1. Install parts as shown.



Install seal.

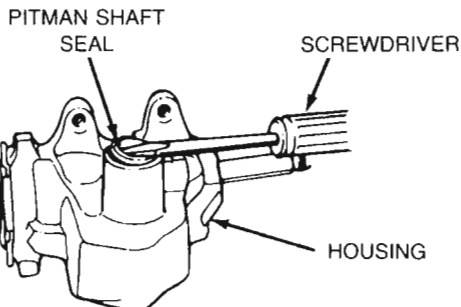
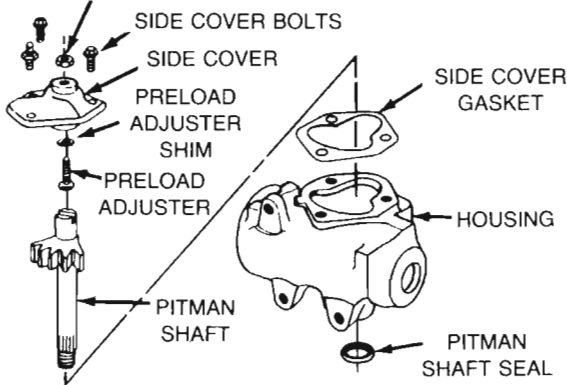
NOTICE: Do not turn steering wheel hard against "stops" when linkage is disconnected.

2. REMOVE AND INSTALL PITMAN SHAFT AND SIDE COVER

REMOVE

1. Center steering gear.
2. Remove parts as shown.

PRELOAD ADJUSTER NUT
(If replacing gasket only, do not remove.)

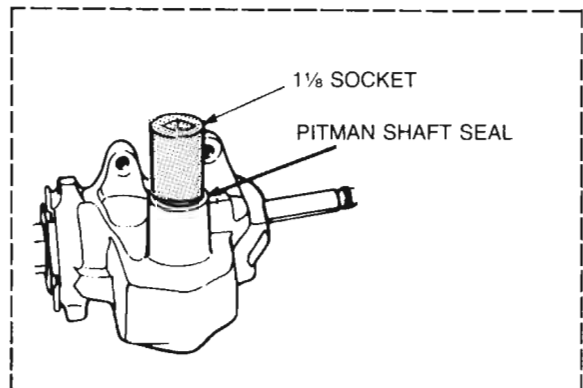
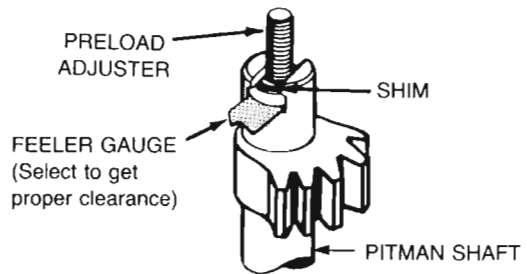


INSTALL

1. Before installing turn preload adjuster screw counter-clockwise until it bottoms, then back screw off one half turn.
2. Install parts as shown

Checking end clearance

If clearance is greater than .05 mm (.002") a steering gear lash adjuster kit is available.



Install seal

LUBRICATION

The steering gear requires .312 kg (11 oz) of lubricant GM4673M or equivalent.

3. REMOVE AND INSTALL WORMSHAFT AND BALL NUT

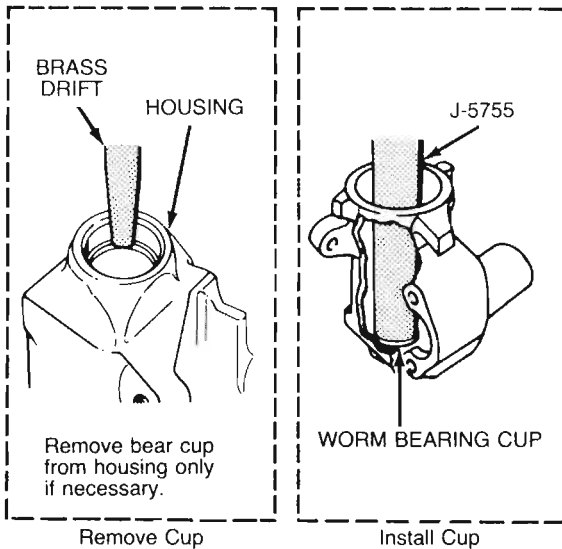
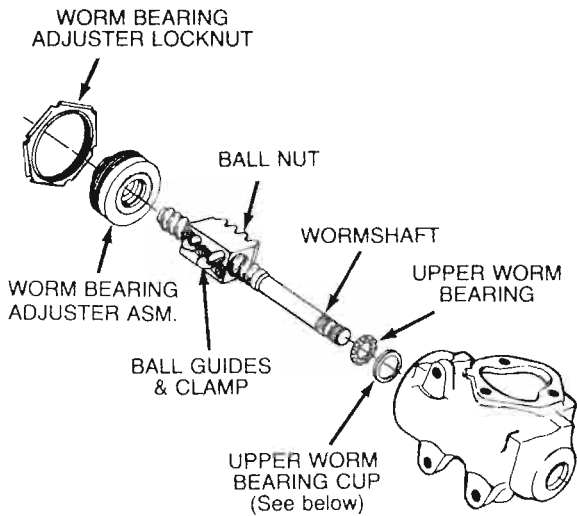
REMOVE

1. Loosen lock nut. Use punch against edge of slot.
2. Remove parts as shown.

INSTALL

1. Install parts as shown.

NOTICE: Use care that the ball nut does not run down to either end of the worm. Damage may be done to the ends of the ball guides if the ball nut is allowed to rotate until stopped at the end of the worm.



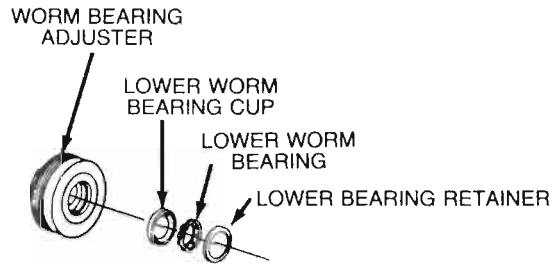
4. DISASSEMBLE AND ASSEMBLE WORM BEARING ADJUSTER

DISASSEMBLE

1. Pry lower bearing retainer out with screwdriver
2. Remove cup using J- 5822 puller and slide hammer.

ASSEMBLE

1. Press cup into adjuster using J-5755.
2. Install parts as shown.



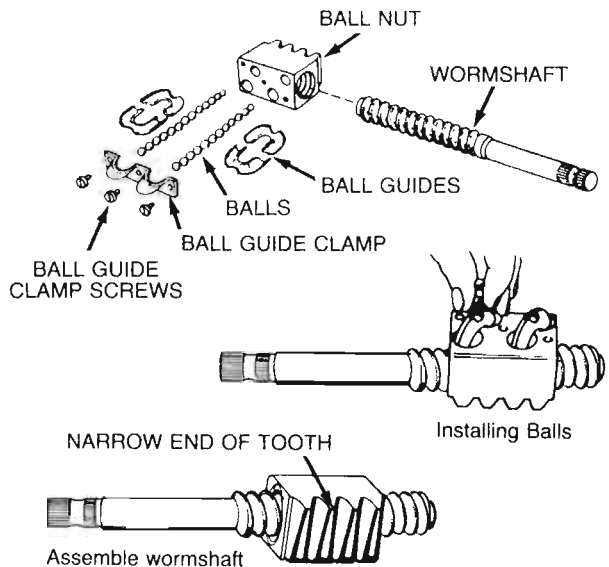
5. DISASSEMBLE AND ASSEMBLE WORMSHAFT AND BALL NUT

DISASSEMBLE

1. Disassemble parts as shown.
2. Clean and inspect all parts for excessive wear.

ASSEMBLE

1. Assemble parts as shown.
2. Refer to fig. A for number of balls used.



Dimension A-Measures land between ball grooves

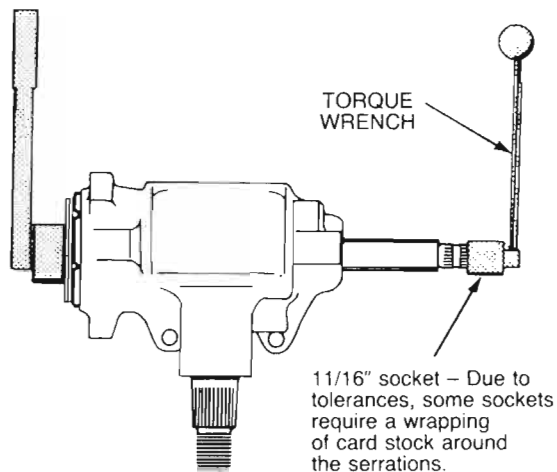
Dim A		Balls per circuit
mm	in	
1.0	0.04	25
2.5	0.10	27
5.0	0.20	27

WORMSHAFT

Fig. A

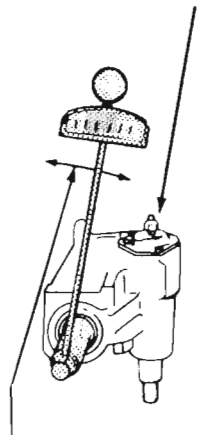
6. ADJUST WORM BEARING PRELOAD

1. Tighten worm bearing adjuster until it bottoms then loosen one-quarter turn.
2. Carefully turn the wormshaft all the way to end of travel then turn back one-half turn.
3. Tighten adjuster plug until torque wrench reads 0.6 to 1.0 N•m (5 to 8 in-lbs).
4. Tighten locknut using punch against edge of slot.



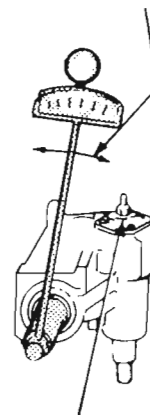
7. ADJUST "OVER CENTER" PRELOAD

A. Back off preload adjuster until it stops, then turn it in one full turn.



With gear at center of travel, check torque to turn stub shaft. (reading #1)

B. Turn adjuster in until torque to turn stub shaft is 0.5 to 1.2 N•m (4 to 10 in-lbs) more than reading #1.



Torque adjuster lock nut to 34 N•m (25 ft-lbs). Prevent adjuster screw from turning while torqueing lock nut.

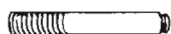
ADJUSTMENT SPECIFICATIONS – MANUAL STEERING

ADJUSTMENT	TORQUE TO TURN WORM SHAFT	
Worm Bearing.....	0.6-1.0 N•m.....	5-8 In. Lbs.
Over Center Preload.....	0.5-1.2 N•m.....	4-10 In. Lbs. in excess of Worm Bearing Preload.
Total Steering Gear Preload.....	1.8 N•m	16 In. Lbs. Maximum

RECOMMENDED TORQUE SPECIFICATIONS

MANUAL STEERING GEAR	N•m	FT. LB.
Gear to Frame Bolts	95.....	70
Pitman Shaft Nut	251.....	185
Side Cover Bolts	40.....	30
Pitman Shaft Adjusting Screw Locknut	34.....	25
Coupling Flange Nuts (525 Size Gear)	24.....	18
Coupling Flange to Gear Pinch Bolt	40.....	30
Clamp to Ball Nut Screw	5.5.....	4

SPECIAL TOOLS



J-5755



J-5822

J-5755 Worm Bearing Cup Installer

J-5822 Worm Bearing Adjuster Cup Puller