

Key No. Part Name

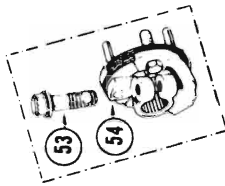
- 1 - HOUSING, STEERING GEAR
- 2 - RACE, THRUST BEARING (WORM)
- 3 - BEARING ASSY., ROLLER THRUST (WORM)
- 4 - RACE, THRUST BEARING (WORM)
- 5 - WORM, STEERING
- 6 - SEAL, "O" RING (STUB SHAFT)
- 7 - SHAFT, STUB
- 8 - SPOOL, VALVE
- 9 - SEAL, "O" RING (SPOOL)
- 10 - BODY, VALVE
- 11 - RING, VALVE BODY (3)
- 12 - SEAL, "O" RING (VALVE BODY) (3)
- 13 - RETAINER, BEARING (ADJUSTER)
- 14 - SPACER, THRUST BEARING
- 15 - RACE, UPPER THRUST BEARING (SMALL)
- 16 - BEARING, UPPER THRUST (LARGE)
- 17 - RACE, UPPER THRUST BEARING (LARGE)
- 18 - SEAL, "O" RING (ADJUSTER)

Key No. Part Name

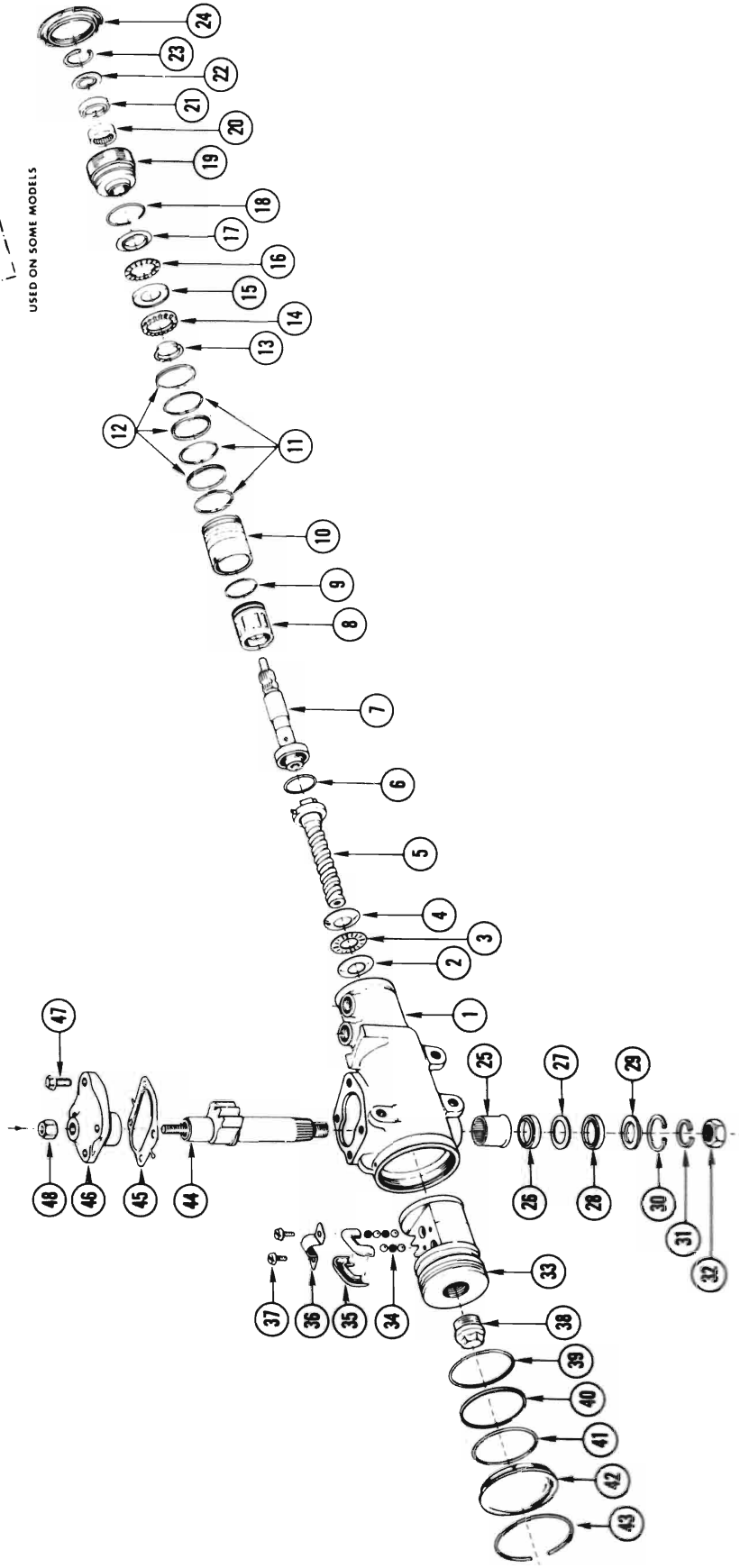
- 19 - PLUG, ADJUSTER
- 20 - BEARING, NEEDLE
- 21 - SEAL, STUB SHAFT
- 22 - SEAL, STUB SHAFT DUST
- 23 - RING, RETAINING
- 24 - NUT, ADJUSTER PLUG LOCK
- 25 - BEARING ASSY., NEEDLE (PITMAN SHAFT)
- 26 - SEAL, PITMAN SHAFT (SINGLE LIP)
- 27 - WASHER, SEAL BACK-UP (PITMAN SHAFT)
- 28 - SEAL, PITMAN SHAFT (DOUBLE LIP)
- 29 - WASHER, SEAL BACK-UP (PITMAN SHAFT)
- 30 - RING, RETAINING (PITMAN SHAFT SEAL)
- 31 - WASHER, PITMAN SHAFT LOCK
- 32 - NUT, PITMAN SHAFT
- 33 - NUT, RACK PISTON
- 34 - BALL
- 35 - GUIDE, BALL RETURN (2)
- 36 - CLAMP, BALL RETURN GUIDE

Key No. Part Name

- 37 - SCREW ASSY., LOCKWASHER & (2)
- 38 - PLUG, RACK PISTON
- 39 - SEAL, "O" RING (RACK PISTON)
- 40 - RING, RACK PISTON
- 41 - SEAL, "O" RING (HOUSING END PLUG)
- 42 - PLUG, HOUSING END
- 43 - RING, RETAINING (HOUSING END PLUG)
- 44 - GEAR ASSY., PITMAN SHAFT
- 45 - SEAL ASSY., GASKET
- 46 - COVER ASSY., HOUSING SIDE
- 47 - BOLT, HEX. HEAD (SIDE COVER) (4)
- 48 - NUT, LASH ADJUSTER
- 49 - THIS NUMBER NOT USED
- 50 - THIS NUMBER NOT USED
- 51 - THIS NUMBER NOT USED
- 52 - THIS NUMBER NOT USED
- 53 - BOLT, COUPLING PINCH
- 54 - COUPLING, STEERING SHAFT



USED ON SOME MODELS



1. REMOVE AND INSTALL PITMAN SHAFT SEALS IN CAR

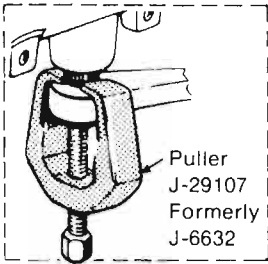
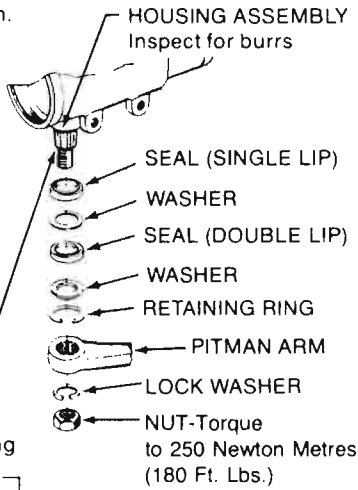
REMOVE

1. Clean exposed end of pitman shaft and end of housing after removing pitman arm.
2. Remove retaining ring with snap ring pliers J-4245.
3. Start engine and turn wheels fully to the left to force seals and washer out.
4. Turn off engine.
5. Inspect housing and shaft.

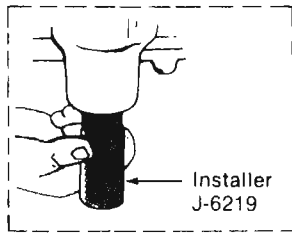
PITMAN SHAFT
Inspect seal surface for roughness and pitting

INSTALL

1. Install parts as shown.



Remove Pitman Arm

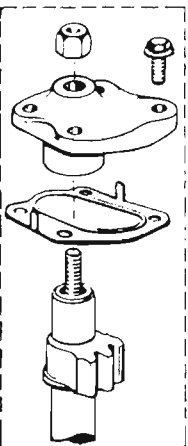


Install Seals

2. REMOVE AND INSTALL PITMAN SHAFT AND SIDE COVER

REMOVE

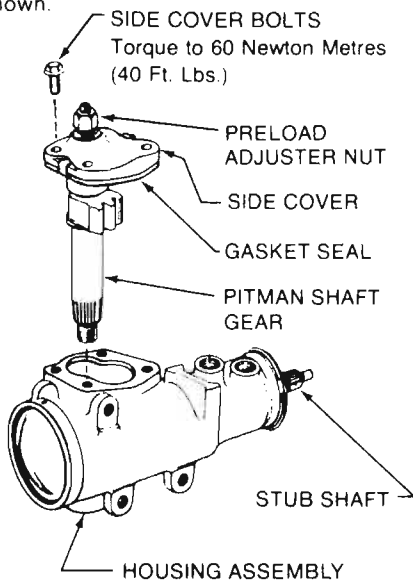
1. If pitman shaft and side cover are to be separated, remove preload adjuster nut.
2. Rotate stub shaft to center gear, then remove parts as shown.



Separate pitman shaft and gasket seal from side cover if required.

INSTALL

1. If removed, install gasket seal by bending tabs around cover edges.
2. Install parts as shown.



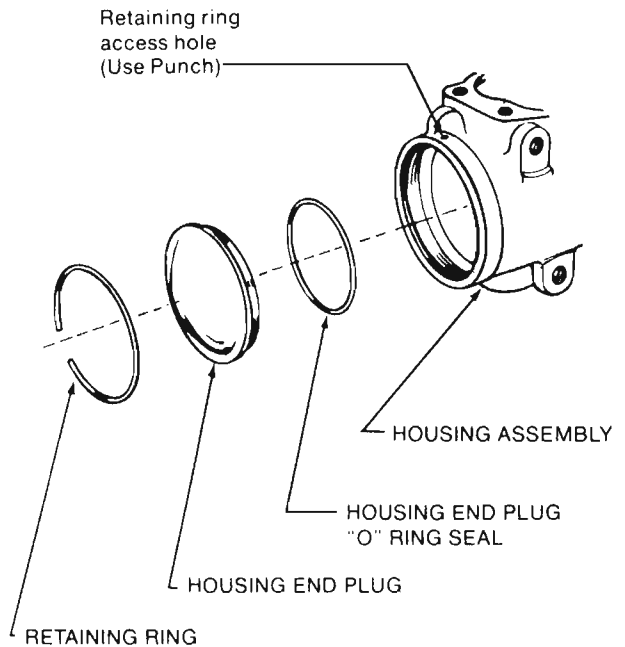
3. REMOVE AND INSTALL HOUSING END PLUG

REMOVE

1. Remove parts as shown.

INSTALL

1. Install parts as shown. Open end of retaining ring to be approx. 25 mm (1 inch) from access hole.



4. REMOVE AND INSTALL RACK PISTON

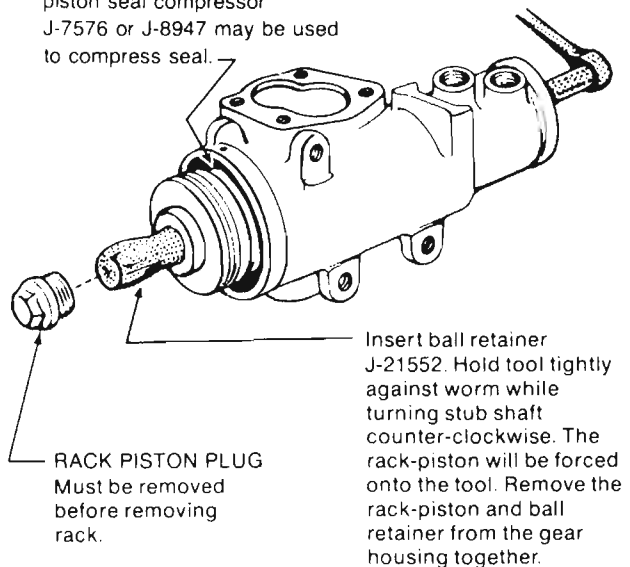
REMOVE

1. Remove parts as shown.

INSTALL

1. Install parts as shown.

When installing rack, care should be taken not to cut teflon seal, rack piston seal compressor J-7576 or J-8947 may be used to compress seal.



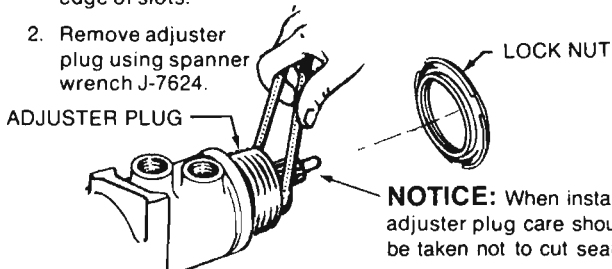
5. REMOVE AND INSTALL ADJUSTER PLUG ASSEMBLY

REMOVE

1. Loosen lock nut. Use punch against edge of slots.
2. Remove adjuster plug using spanner wrench J-7624.

INSTALL

1. Install parts as shown.



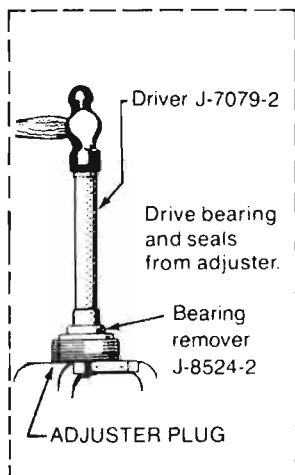
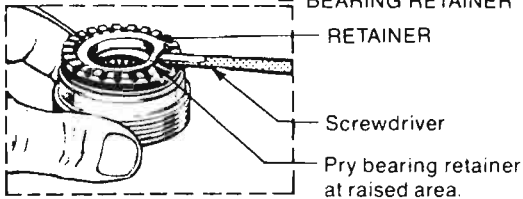
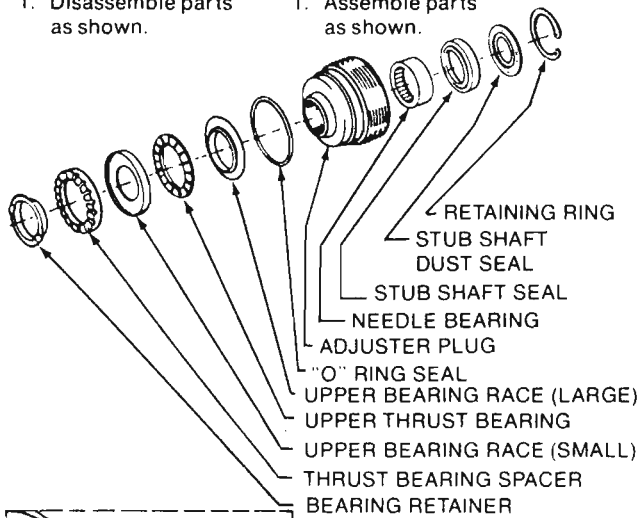
6. DISASSEMBLE AND ASSEMBLE ADJUSTER PLUG ASSEMBLY

DISASSEMBLE

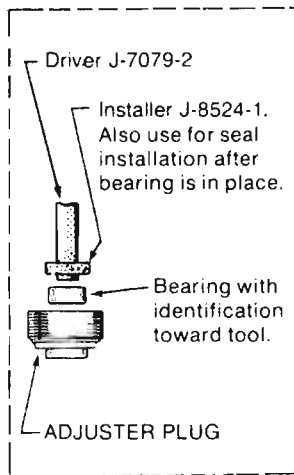
1. Disassemble parts as shown.

ASSEMBLE

1. Assemble parts as shown.



Remove bearing and seals.



Install bearing and seals.

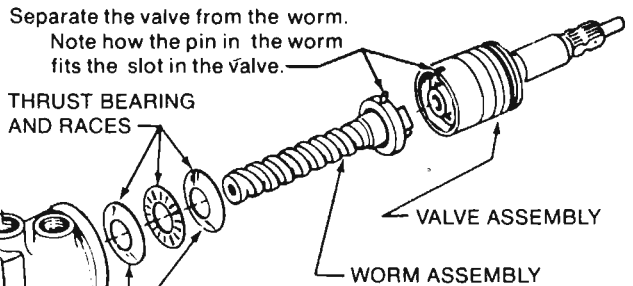
7. REMOVE AND INSTALL BEARING, WORM, AND VALVE ASSEMBLY

REMOVE

1. Grasp stub shaft and remove valve and worm assembly as a unit.

INSTALL

1. Install parts as shown.



NOTICE: When reassembling gear make sure angle of thrust races are as shown.

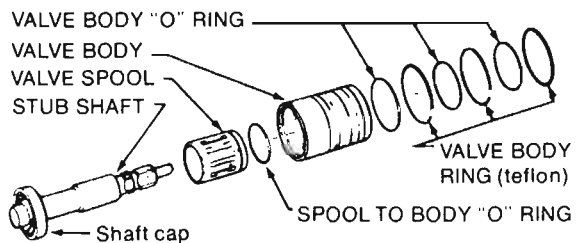
8. DISASSEMBLE AND ASSEMBLE VALVE

DISASSEMBLE

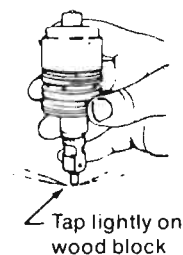
1. Disassemble parts as shown.

ASSEMBLE

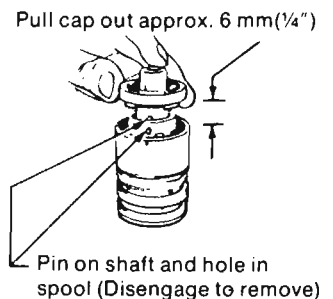
1. Assemble parts as shown.



A. Loosen shaft cap



B. Remove and install stub shaft.



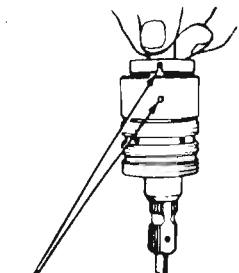
C. Remove and install spool

Rotate while removing or installing



Lubricate spool and body with power steering fluid.

D. Engage stub shaft



Notch must fully engage pin and cap must seat against shoulder.

9. DISASSEMBLE AND ASSEMBLE RACK PISTON

DISASSEMBLE

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

ASSEMBLE

1. Assemble parts as shown.

NOTICE: The black balls are smaller than the silver balls. The black and silver balls must be installed alternately into the rack-piston and return guide to maintain rack piston to worm gear preload.

TEFLON SEAL AND "O" RING—
If replaced lubricate new seal and "O" ring with power steering fluid.

Turn worm until worm groove is aligned with the lower ball return guide hole.

WORM—Slide all the way into the rack-piston.

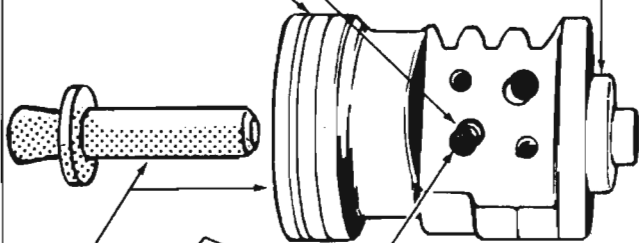
Lubricate balls with power steering fluid. Install balls, through ball return guide hole, while rotating worm counterclockwise.

Before assembling rack in housing, ball retainer J-21552 must be inserted into rack to allow removal of worm.

GUIDE—Alternately install remainder of balls and retain with grease at each end of guide.

CLAMP

SCREW—Tighten to 5 Newton Metres (4 Ft. Lbs.)



10. REMOVE AND INSTALL PITMAN SHAFT SEALS AND BEARING

REMOVE

1. Clean end of housing thoroughly to prevent dirt from entering and be extremely careful not to score the housing bore.
2. Remove retaining ring with snap ring pliers J-4245.
3. Using screw driver, pry seals and washers from bore.

INSTALL

1. Coat seal lip and washer face with anhydrous calcium grease.
2. Install parts as shown.

HOUSING ASSEMBLY
Inspect for burrs.

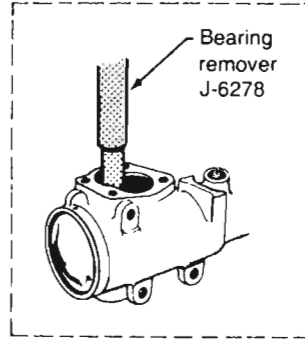
PITMAN SHAFT SEAL (SINGLE LIP)

PITMAN SHAFT SEAL (DOUBLE LIP)

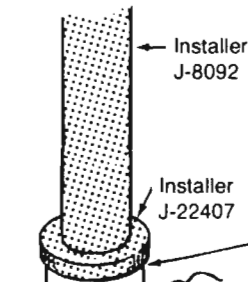
RETAINING RING

SEAL BACK UP WASHER

NEEDLE BEARING
Remove only if it needs replacing.

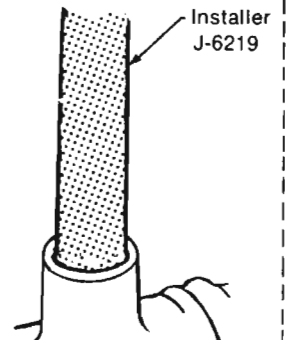


Removing bearing



When tool bottoms on housing bearing is fully installed.

Install Pitman shaft bearing.

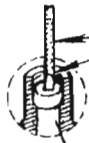


Install Pitman shaft seals.

11. REMOVE AND INSTALL CHECK VALVE

REMOVE

1. Remove parts as shown.



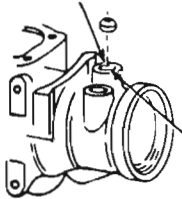
With small screwdriver, pry check valve from housing.

Care should be taken not to damage threads when prying on edge of housing.

Remove check valve.

INSTALL

1. Install parts as shown.



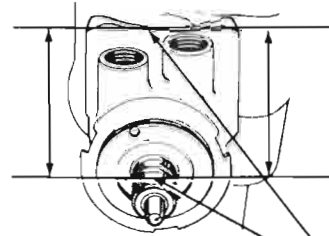
Install check valve.



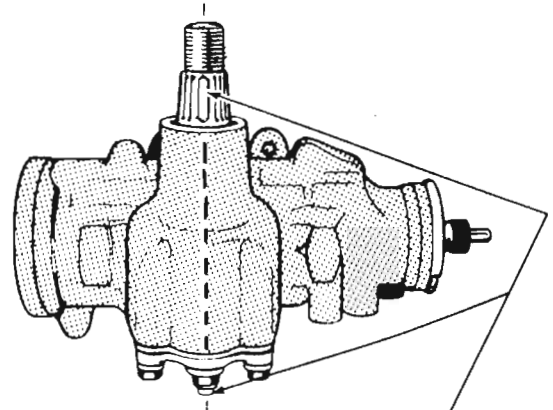
Using a piece of $\frac{3}{8}$ " tubing, 4 inches long, carefully drive the check valve into the housing.

13. PITMAN SHAFT "OVER-CENTER" SECTOR ADJUSTMENT

A.



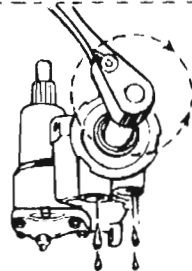
When gear is on center flat on stub shaft is normally on same side as, and parallel with, side cover.



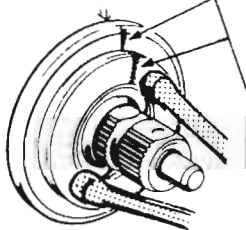
The block tooth on the Pitman shaft is in line with the over-center preload adjuster.

12. ADJUST THRUST BEARING PRELOAD

A. Before adjusting bearing preload, rotate the stub shaft back and forth to drain all oil from gear.

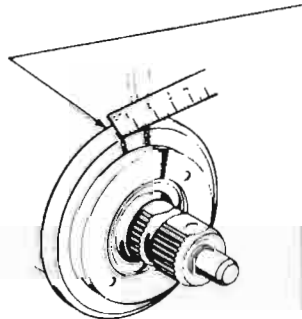


B. Using spanner wrench J-7624, tighten adjuster plug until thrust bearing is firmly bottomed, 27 Newton Metres (22 Ft. Lbs.).



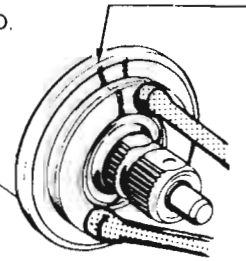
Mark housing and face of adjuster plug.

C.



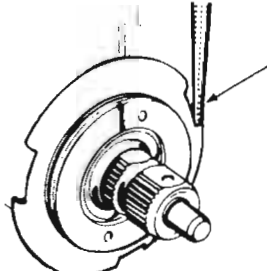
Measure back counterclockwise 13mm ($\frac{1}{2}$ ") and place a second mark on housing.

D.



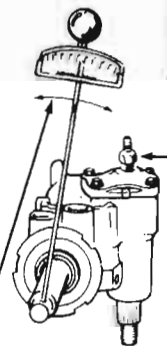
Turn adjuster counterclockwise until mark on face of adjuster lines up with second mark on housing.

E.



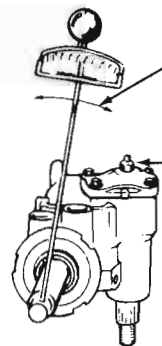
Using punch in notch tighten lock nut securely. Hold adjuster plug to maintain alignment of the marks.

B. 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).

C. Turn adjuster in until torque to turn stub shaft is 0.6 to 1.2 Newton Metres (6 to 10 in. Lbs.) more than reading #1.



Torque adjuster lock nut to 27 Newton Metres (20 Ft. Lbs.)

Prevent adjuster screw from turning while torquing lock nut.

RECOMMENDED TORQUE SPECIFICATIONS

	NEWTON METRES	FOOT-POUNDS
Gear to Frame Bolts	95	70
High Pressure Line Fitting (At Gear)	35	25
Oil Return Line Fitting (At Gear)	35	25
Adjusting Screw Locknut	27	20
Side Cover Bolts	61	45
Adjuster Plug Locknut	108	80
Coupling Flange Nuts	27	20
Return Guide Clamp Screws	5	4
Rack-Piston Plug	102	75
Pitman Shaft Nut	244	180
Coupling Flange Bolt	41	30

SPECIAL TOOLS

J-4245 — Snap Ring Pliers	J-8058 — 0-125 Newton-metre Torque Wrench (0-50 foot-pounds)
J-6217 — Connector Seat Installer	J-8092 — Handle
J-6219 — Pitman Shaft Seal Installer	J-8524-1 — Adjuster Plug Bearing Installer
J-6278 — Pitman Shaft Bearing Remover	J-8524-2 — Adjuster Plug Bearing Remover
J-7079-2 — Handle	J-8947 — Rack Piston Seal Compressor (70 mm 2¾" Piston Bore)
J-7576 — Rack Piston Seal Compressor (79 mm 3¼" Piston Bore)	J-21552 — Ball Retainer
J-7624 — Spanner Wrench	J-22407 — Pitman Shaft Bearing Installer
J-7754 — 0-5 Newton-metre Torque Wrench (0-25 inch-pounds)	J-25323 — Power Steering Analyzer
	J-29107 — Pitman Arm Puller