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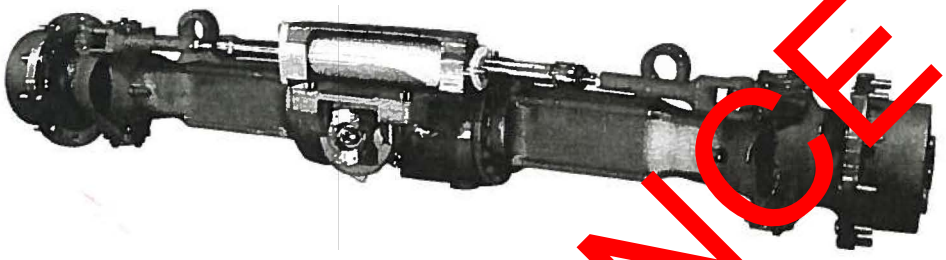
# Maintenance Manual
# Model 25S34 Axle

## 236507





SPICER OFF-HIGHWAY COMPONENTS

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# Foreward

This manual has been prepared to provide the customer and the maintenance personnel with information and instructions on the maintenance and repair of the Spicer Off Highway Products.

Extreme care has been exercised in the design and selection of materials and manufacturing of these units. The slight outlay in personal attention and cost required to provide regular and proper lubrication and inspection at stated intervals, and such adjustments as may be indicated will be reimbursed many times in low cost operation and trouble free service.

In order to become familiar with the various parts of the product, it's principle of operation, troubleshooting, and adjustments, it is urged that the mechanic study the instructions in this manual carefully and use it as a reference when performing maintenance and repair operations.

Whenever repair or replacement of component parts is required, only Spicer Off Highway Products approved parts as listed in the applicable parts manual should be used. Use of "will fit" or non-approved parts may endanger proper operation and performance of the equipment. Spicer Off Highway products does not warrant repair or replacement parts, nor failures resulting from the use of parts which are not supllied or approved by Spicer Off Highway Products. **Important:** Always furnish the distributor with the serial and model number when ordering parts.

# Safety Precautions

To reduce the chance of personal injury and/or property damage, the following instructions must be carefully observed.

Proper service and repair are important to the safety of the service technician and the safe, reliable operation of the machine. If replacement parts are required the part must be replaced with one of the same part number or with an equivalent part. Do not use a replacement part of lesser quality.

The service procedures recommended in this manual are effective methods of performing service and repair. Some of these procedures require the use of tools specifically designed for the purpose.

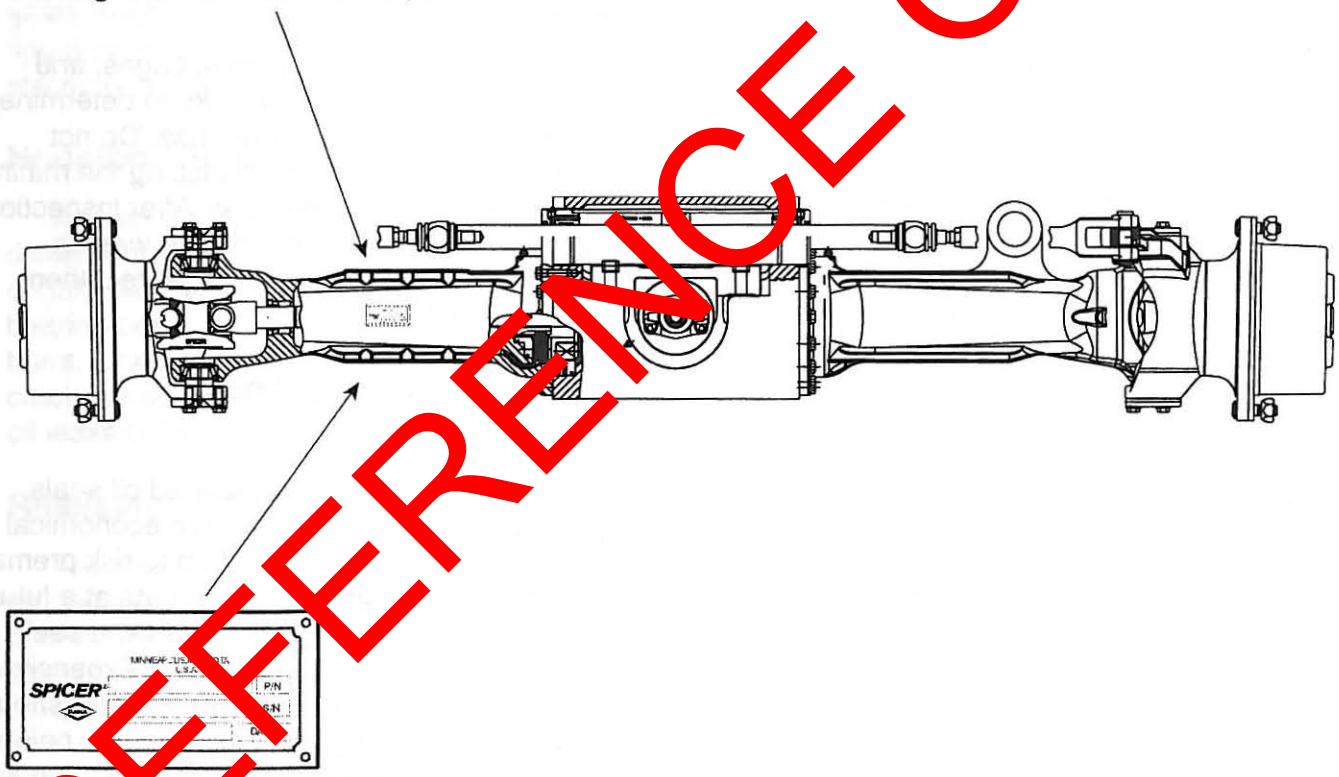
Accordingly, anyone who intends to use a replacement part, service procedure or tool which is not recommended must first determine that neither his safety nor the safe operation of the machine will be jeopardized by the replacement part, service procedure or tool selected.

It is important to note that this manual contains various 'Cautions' and 'Notices' that must be carefully observed in order to reduce the risk of personal injury during service or repair, and the possibility that improper service or repair may damage the unit or render it unsafe. It is also important to understand that these 'Cautions' and 'Notices' are not exhaustive, because it is impossible to warn of all the possible hazardous consequences that might result from failure to follow these instructions.

# Identification of Axle

Axle identification information is located on a riveted tag located on the rear, left side axle trumpet. Axle part number, serial number, build date, and gear ratios are supplied on this tag.

The tag is shown 180° out of position in the sketch shown below.



# Cleaning and Inspection

## Cleaning

Clean all parts thoroughly using solvent type cleaning fluid. It is recommended that parts be immersed in cleaning fluid and agitated slowy until parts are thoroughly cleaned of all old lubricants and foreign materials.

## Caution

Care should be exercised to avoid skin rashes, fire hazards and inhalation of vapors when using solvent type cleaners.

## Bearings

Remove bearings from cleaning fluid and strike larger side of cone flat against a bock of wood to dislodge solidified particles of lubricant. Immerse again in cleaning fluid to flush out particles. Repeat above operation until bearings are thoroughly clean. When drying bearings, use moisture-free compressed air being careful to direct air stream across bearings as to avoid spinning. Bearings may be rotated slowly by hand to facilitate the drying process.

## Housing

Clean interior and exterior of housings, bearing caps, etc., thoroughly. Cast parts may be cleaned in hot solution tanks with mild alkali solutions, providing these parts do not have ground or polished surfaces. Parts should remain in solution long enough to be thoroughly cleaned and heated. This will aid the evaporation of the cleaning solution and rinse water. Parts cleaned in solution tanks must be thoroughly rinsed with clean water to remove all traces of alkali. Cast parts may also be cleaned with steam cleaner.

## Caution

Care should be exercised to avoid skin rashes and inhalation of vapors when using alkali cleaners.

Thoroughly dry all parts cleaned immediately by using moisture-free compressed air or soft lintless absorbent wiping rags free of abrasive materials such as metal filings, contaminated oil or laping compound.

## Inspection

The importance of careful and thorough inspection of all parts cannot be overstressed. Replacement of all parts showing indication of wear or stress will eliminate costly and avoidable failures at a later date.

## Bearings

Carefully inspect all rollers, cages, and cups for wear, chipping or nicks to determine fitness of bearings for further use. Do not replace a bearing without replacing the mating cup or cone at the same time. After inspection, dip bearings in clean light oil and wrap in clean lintless cloth or paper to protect them until installed.

## Oil Seals, Gaskets and Retaining Rings

Replacement of spring loaded oil seals, gaskets, and snap rings is more economical when unit is disassembled than to risk premature overhaul to replace these parts at a future time. Loss of lubricant through a worn seal may result in failure of other more expensive parts of the assembly. Sealing member should be handled carefully, particularly when being installed. Cutting, scratching, or curling under lip of seal seriously impairs its efficiency. At reassembly, lubricate lips of oil seals with Multipurpose Lithium grease. “Grade 2” (MS107C).

# Cleaning and Inspection (Cont.)

## Gears and Shafts

If magna-flux process is available, use process to check parts. Examine teeth and ground and polished surfaces of all gears and shafts carefully for wear, pitting, chipping, nicks, cracks, or scoring. If gear teeth are cracked or show spots where case hardening is worn through, replace with new gear. Small nicks may be removed with suitable hone. Inspect shafts to make certain they are not sprung, bent, or splines twisted, and that shafts are true. Differential pinions and side gears must be replaced as sets. Differential ring gear and spiral pinion must also be replaced as a set if either is damaged.

## Housing and Covers

Inspect housing, covers, planet spider, and differential case to be certain they are thoroughly cleaned and that mating surfaces, bearing bores, etc., are free from nicks or burrs. Check all parts carefully for evidence of cracks or condition which cause subsequent oil leaks or failures.

## Reassembly of Axle

The reassembly instructions describe the procedure to be followed when reassembling and installing components of axle. Instructions covering reassembly of opposite side is identical unless otherwise noted.

**Important:** Class 8.8 and 10.9 and 12.9 fastening hardware have been used in the production of the axle assemblies covered in the manual. A table of proper torque values for the fastener classes above are provided within this manual. The class of hardware may be determined by the markings contained on the head of each capscrew. Class 12.9 torque values needs to be used on all sockethead capscrew used with this assembly.

Torque values specified in text of this manual are for class 8.8, 10.9 hardware where presently used in production. On all axles being overhauled, bolts should be identified as described above and torque value chart consulted for correct torque.

## At Reassembly Apply Thread Locking Compound Where Noted

Guidelines for application where to apply:

A. On bolts, capscrews, and studs (anchor end) apply compound on female threaded component part.
B. On nuts, apply compound to the male thread of the mating fastener.
C. Apply compound to coat the full length and circumference of thread engagement.
D. Remove excess compound from mating parts after fastener installation.

# Lubrication Specifications

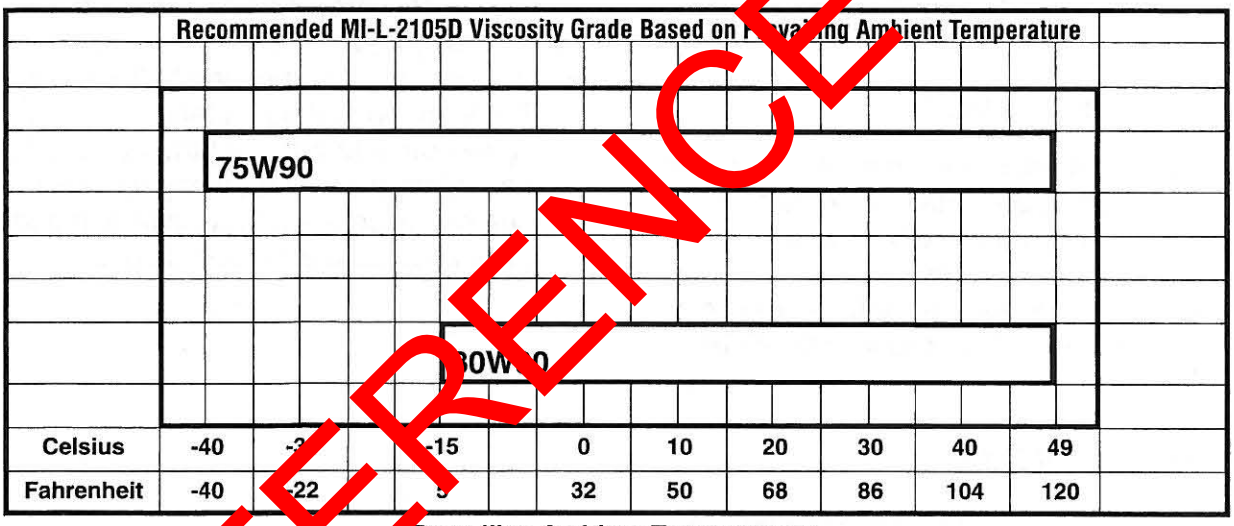
## Recommended Lubricants for Spicer 25 S 34 Axle

### Initial and Service Fill

Select high quality gear lubricant type GL5 that conforms to MIL-L-2105 specifications. Select the highest oil viscosity compatible with the prevailing ambient temperature as shown on the oil application chart shown below.

### Capacities

| | |
|---|---|
| Each wheel end | 1.5 qts. |
| Axle Center Section | 13.5 qts. |
| Axle Total Capacity | 16.5 qts. |




Prevailing Ambient Temperatures

# Internal Liquid Cooled Brake Fluids

## Actuator oils recommended for use in the liquid cooled brake circuit

1. Motor oil — API SE/CD
2. Transmission lubricants meeting the following specs:
   a) Caterpillar — TO-4
   b) John Deere — J20 C, D
   c) Military — MIL-PRF-2104G
   d) Allison — C-4
3. Hydraulic oil
4. Synthetic gear oils

# Torque Limits and Specifications

## Housing:

| | |
|---|---|
| Housing Arm/Trumpet Bolts | 110-120 ft-lbs (156-162 Nm) |
| Carrier Cover | 115-120 ft-lbs (156-162 Nm) |
| Brake Port Fittings | 7-10 ft-lbs (9.5-13.5 Nm) |
| Bleeder Screws | 7-10 ft-lbs (9.5-13.5 Nm) |

## Differential Torques:

| | |
|---|---|
| Adjusting Ring Clip Bolt | 15-17 ft-lbs (19.5-13.5 Nm) |
| Drive Gear Capscrews | 90-100 ft-lbs (122-135 Nm) |
| Cap Bolts | 75-90 ft-lbs (101-122 Nm) |
| Pinion Nut | 220-280 ft-lbs (298-380 Nm) |

## Wheel End Assembly:

| | |
|---|---|
| Hub Retainer Capscrews (with Loctite 271) | 115-120 ft-lbs (156-162 Nm) |
| Planetary Retaining Screws | 110-120 ft-lbs (149-162 Nm) |
| Wheel End Fill/Drain Plug | 40-45 ft-lbs (54-61 Nm) |

## Knuckles and Steer Cylinder:

| | |
|---|---|
| King Pin Retainer Bolts | 80-90 ft-lbs (108-122 Nm) |
| U-Joint Flange Screws | 55-60 ft-lbs (74-81 Nm) |
| Steer Cylinder Mounting Bolt | 80-90 ft-lbs (108-122 Nm) |
| Tie Rod Socket Assembly (with Loctite 271) | 192-207 ft-lbs (260-280 Nm) |
| Tie Rod Lock Nut | 221 ft-lbs (299 Nm) |

# Torque For Bolts, Capscrews, Studs and Nuts as Supplied

**Grade 5 Identification, 3 Radial Dashes 120° Apart on Head of Bolt**

**Grade 5**

**Grade 8 Identification, 6 Radial Dashes 60° Apart on Head of Bolt**

**Grade 8**

| Fastener Size | Lubricated and Plated | | Lubricated and Plated | |
|---|---|---|---|---|
| 1/4-20<br>1/4-28 | 80-90 Lbs. In. | [9-10 N.m] | 110-120 Lbs. In. | [13-14 N.m] |
| 5/16-18<br>5/16-24 | 180-200 Lbs. In. | [21-23 N.m] | 210-240 Lbs. In. | [24-27 N.m] |
| 3/8-16<br>3/8-24 | 25-28 Lbs. Ft. | [34-38 N.m] | 35-40 Lbs. Ft. | [48-54 N.m] |
| 7/16-14<br>7/16-20 | 40-45 Lbs. Ft. | [54-61 N.m] | 60-65 Lbs. Ft. | [82-88 N.m] |
| 1/2-13<br>1/2-20 | 65-70 Lbs. Ft. | [88-95 N.m] | 90-100 Lbs. Ft. | [125-135 N.m] |
| 9/16-12<br>9/16-18 | 90-100 Lbs. Ft. | [125-135 N.m] | 125-140 Lbs. Ft. | [170-190 N.m] |
| 5/8-11<br>5/8-18 | 125-140 Lbs. Ft. | [170-190 N.m] | 175-190 Lbs. Ft. | [240-260 N.m] |
| 3/4-10<br>3/4-16 | 220-245 Lbs. Ft. | [300-330 N.m] | 300-330 Lbs. Ft. | [410-450 N.m] |
| 7/8-9<br>7/8-14 | 330-360 Lbs. Ft. | [450-490 N.m] | 475-525 Lbs. Ft. | [645-710 N.m] |
| 1-8<br>1-12 | 475-525 Lbs. Ft. | [645-710 N.m] | 725-800 Lbs. Ft. | [985-1085 N.m] |
| 1-1/8-7<br>1-1/8-12 | 650-720 Lbs. Ft. | [880-975 N.m] | 1050-1175 Lbs. Ft. | [1425-1600 N.m] |
| 1-1/4-7<br>1-1/4-12 | 900-1000 Lbs. Ft. | [1220-1360 N.m] | 1475-1625 Lbs. Ft. | [2000-2200 N.m] |

# Torque/Tension Charts


## Coarse Threaded Fasteners

| Thread Size Class 8.8 | Torque | |
|---|---|---|
| | Nm | Lb-Ft |
| M5X0.8 | 5-6 | 43-53 |
| M6X1 | 8-10 | 71-88 |
| M8X1.25 | 20-25 | 177-221 |
| | | Lb-In |
| M10X1.5 | 40-45 | 30-33 |
| M12X1.75 | 70-78 | 52-59 |
| M14X2 | 110-125 | 81-92 |
| M16X2 | 170-190 | 125-140 |
| M20X2.5 | 340-380 | 251-280 |
| M24X3 | 580-650 | 428-479 |
| M30X3.5 | 1150-1300 | 848-959 |
| M36X4 | 2000-2250 | 1479-1660 |


## Coarse Threaded Fasteners

| Thread Size Class 10.9 | Torque | |
|---|---|---|
| | Nm | Lb-In |
| M5X0.8 | 7-8 | 62-71 |
| M6X1 | 12-14 | 106-124 |
| | | Lb-Ft |
| M8X1.25 | 30-35 | 22-26 |
| M10X1.5 | 60-65 | 40-48 |
| M12X1.75 | 100-110 | 74-81 |
| M14X | 155-180 | 114-133 |
| X2 | 240-270 | 177-199 |
| M20 | 450-500 | 332-369 |
| 24X3 | 800-900 | 590-664 |
| 0X3.5 | 1600-1800 | 1180-1328 |
| M36X4 | 2800-3150 | 2065-2323 |


## Coarse Threaded Fasteners

| Thread Size Class 12.9 | Torque | |
|---|---|---|
| | Nm | Lb-In |
| M5X0.8 | 8-10 | 71-88 |
| M6X | 14-16 | 124-142 |
| | | Lb-Ft |
| X1.25 | 34-40 | 26-30 |
| M1 X1.5 | 70-75 | 52-55 |
| 12X1.75 | 115-130 | 85-96 |
| 14X2 | 180-210 | 133-155 |
| M16X2 | 280-320 | 207-236 |
| M20X2.5 | 550-600 | 406-443 |
| M24X3 | 900-1050 | 664-774 |
| M30X3.5 | 1850-2100 | 1364-1549 |
| M36X4 | 3250-3700 | 2397-2729 |

## SAE "O" Ring Thread

| Thread Size | Torque | |
|---|---|---|
| | Nm | Lb-Ft |
| .3125-24 | 4-7 | 3-5 |
| .3750-24 | 7-11 | 5-8 |
| .4375-20 | 9-13 | 7-10 |
| .5000-20 | 14-18 | 10-13 |
| .5625-18 | 16-20 | 12-15 |
| .7500-16 | 27-34 | 20-25 |
| .8750-14 | 41-47 | 30-35 |
| 1.0625-12 | 61-38 | 45-50 |
| 1.3125-12 | 88-102 | 65-75 |
| 1.6250-12 | 102-115 | 75-85 |
| 1.8750-12 | 102-115 | 75-85 |



**NOTE:** Socket head capscrews are all Class 12.9

## Model 25S34
## Exploded View

# Model 25S34 Axle
## Parts List

| Item No. | Description | Qty. |
|---|---|---|
| 1 | Carrier Sub-Assy | 1 |
| 2 | Bearing Cup-Roller | 1 |
| 3 | Bearing Cone-Roller | 1 |
| 4 | Shim-ADJ | 1 |
| 5 | Gear & Pinion Assy-Spiral Bevel | 1 |
| 6 | Spacer-Collapsible | 1 |
| 7 | Bearing Cup-Roller | 1 |
| 8 | Bearing Cone-Roller | 1 |
| 9 | Thrustwasher-Brg | 1 |
| 10 | Seal-Oil | 1 |
| 11 | Deflector-Seal | 1 |
| 12 | End Yoke | 1 |
| 13 | Washer-Pinion Nut | 1 |
| 14 | Nut-Pinion | 1 |
| 15 | Case (Diff Std) | 1 |
| 16 | Thrustwasher-Differential Gear | 2 |
| 17 | Gear-Differential | 2 |
| 18 | Thrustwasher-Differential Pinion | 2 |
| 19 | Pinion-Differential | 2 |
| 20 | Shaft-Differential Std & T/L | 1 |
| 21 | Pin-Roll | |
| 22 | Bearing Cone-Roller | 2 |
| 23 | Gear & Pinion Assy-Spiral Be | 1 |
| 24 | Screw-Drive Gear | 12 |
| 25 | Bearing Cup-Roller | 2 |
| 26 | Cap-Differential Br (Part of m1) | 2 |
| 27 | Bolt-Hex | 4 |
| 28 | Ring-Adjusti g | 2 |
| 29 | Clip-Adj ting Ri g | 2 |
| 30 | Was er-Fl | 2 |
| 31 | B t-Hex | 2 |
| 32 | Cover Carrier | 1 |
| | Wa er-Fl | 12 |
| 34 | Bolt-He | 12 |
| 3 | Plug Pipe (Internal Drive) | 1 |
| 3 | Plug-Pipe (Internal Drive) | 1 |
| 37 | Plate-Spring Backing | 2 |
| 38 | Spring-Compression | 20 |
| 39 | Glyd Ring Inner | 2 |
| 40 | Ring-O Inner | 2 |
| 41 | Piston-Park | 2 |
| 42 | Ring-O Outer | 2 |
| 43 | Glyd Ring Outer | 2 |

| Item No. | Description | Qty. |
|---|---|---|
| 44 | Yoke-Center | 2 |
| 45 | Cross-U Joint | 4 |
| 46 | Seal Assy | 16 |
| 47 | Bearing Race Assy-U Joint | 16 |
| 48 | Ring-Snap | 12 |
| 49 | Housing-Axle | 2 |
| 50 | Tilt Eye Bushing | A/R |
| 51 | Bushing-Spindle | 2 |
| 52 | Seal-Oil | 2 |
| 53 | Seal-Oil | 2 |
| 54 | Shaft-Inne Yoke | 2 |
| 55 | Ring-O | 2 |
| 56 | Bushing-Flange | 2 |
| 57 | Co pling-Splined | 2 |
| 58 | ng-O uter | 2 |
| 59 | Gl ring Outer | 2 |
| 60 | Piston-Service | 2 |
| 61 | Ring-O Inner | 2 |
| 62 | Glyd Ring Inner | 2 |
| 63 | Plate-Lining Stop | 10 |
| 64 | Disc Assy-Friction | 8 |
| 65A | Shaft-Axle Right | 1 |
| 65B | Shaft-Axle Left | 1 |
| 66 | Washer-Flat | 32 |
| 67 | Bolt-Hex | 32 |
| 68 | Seat-Insert | 4 |
| 69 | Screw-Bleeder | 4 |
| 70 | Fitting-Hyd Brake | 4 |
| 71 | Strap-Bearing | 4 |
| 72 | Screw-Flange 12 Point | 8 |
| 73 | Ring-Snap | 2 |
| 74 | Spacer | 2 |
| 75 | Ring-O | 2 |
| 76 | End Yoke | 2 |
| 77 | Seal-Oil | 2 |
| 78 | Seal-Oil | 2 |
| 79 | Bushing-Spindle | 2 |
| 80 | Knuckle-Steering LH | 1 |
| 81 | Knuckle-Steering RH | 1 |
| 82 | Retainer-Grease | 4 |
| 83 | Bearing Cup-Roller | 4 |
| 84 | Bearing Cone-Roller | 4 |
| 85 | Seal-Oil | 4 |

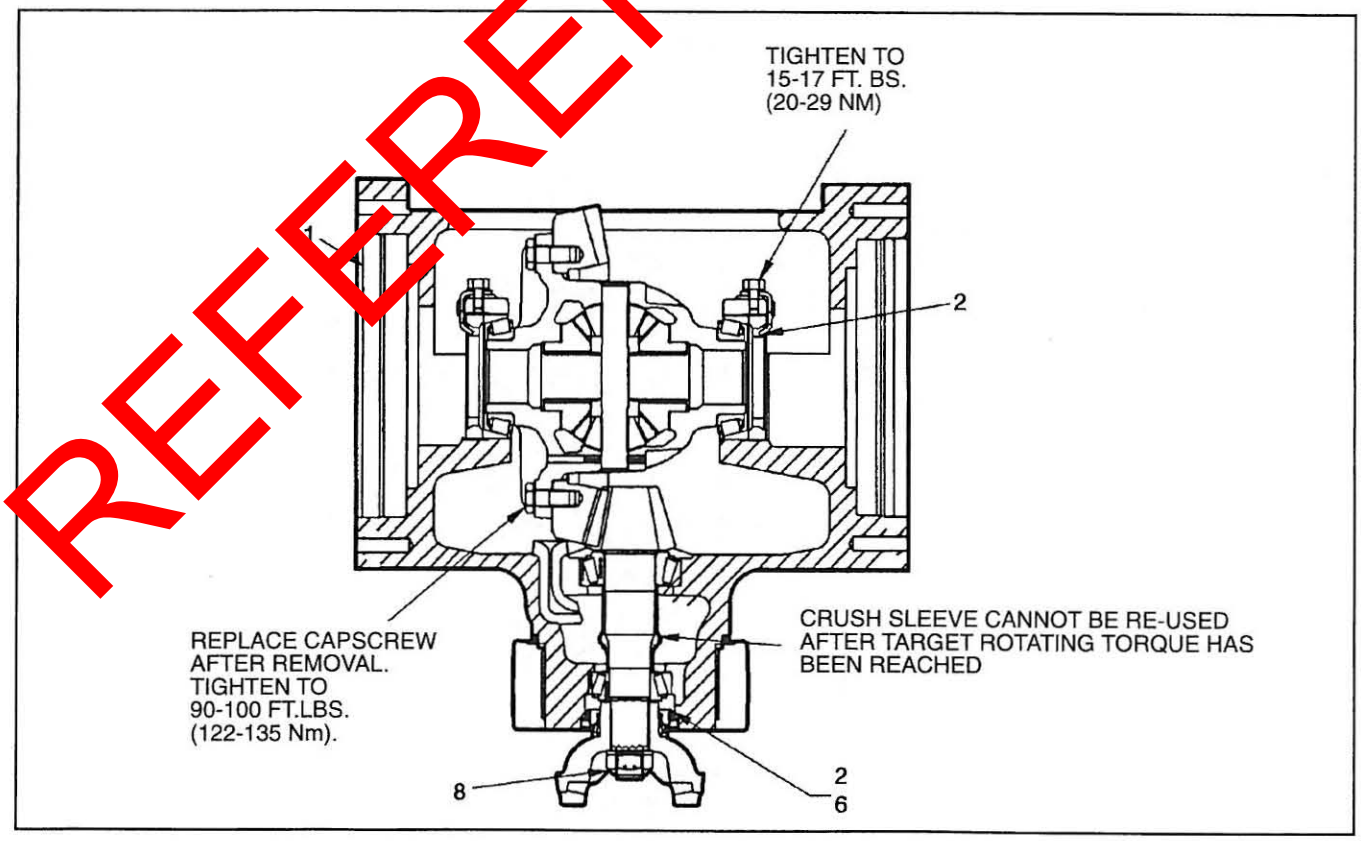
# Model 25S34 Axle
## Parts List (cont.)

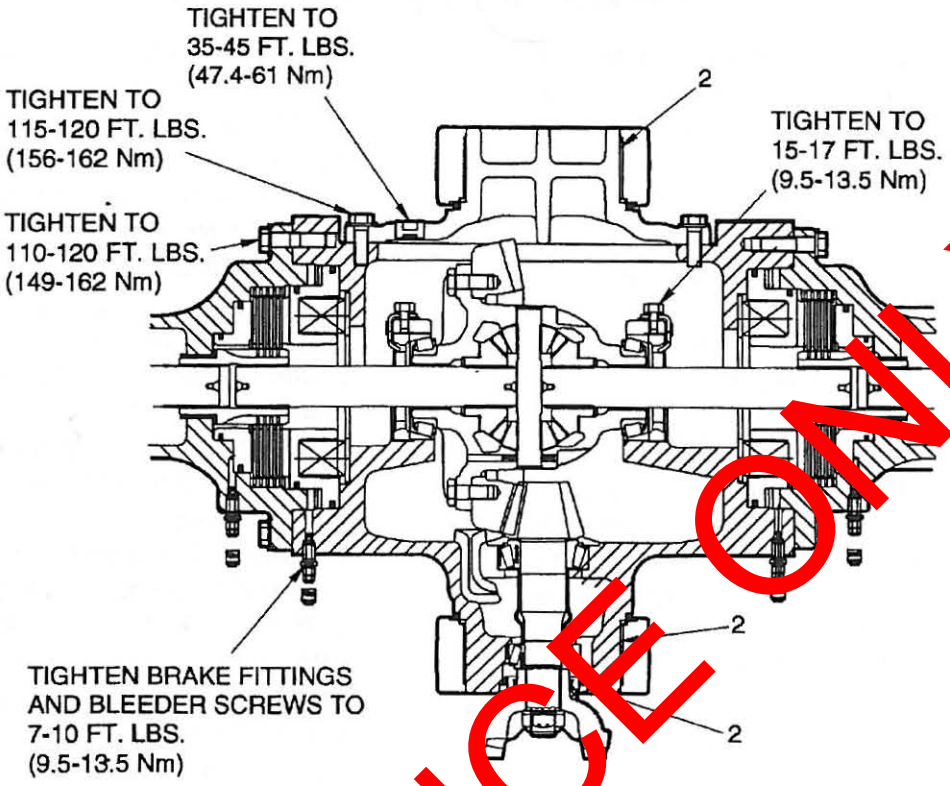
| Item No. | Description | Qty. |
|---|---|---|
| 86 | Shim-Formed | A/R |
| 87 | Cap-King Pin | 4 |
| 88 | Washer-Flat | 12 |
| 89 | Bolt-Hex | 12 |
| 90 | Fitting-Grease | 4 |
| 91 | Washer-Flat | 2 |
| 92 | Bolt-Stop | 2 |
| 93 | Seal-Oil | 2 |
| 94 | Bearing Cone-Roller Inner | 2 |
| 95 | Bearing Cup-Roller Inner | 2 |
| 96 | Bolt-Wheel RH | 20 |
| 97 | Hub-Wheel | 2 |
| 98 | Nut-Wheel | 20 |
| 99 | Bearing Cup-Roller Outer | 2 |
| 100 | Bearing Cone-Roller Outer | 2 |
| 101 | Ring-Snap | 2 |
| 102 | Hub-Planetary | 2 |
| 103 | Gear-Planetary Ring | 2 |
| 104A | Shim-Adj .003" | A/R |
| 104B | Shim-Adj .002" | A/R |
| 104C | Shim-Adj .005" | A/R |
| 104D | Shim-Adj .010" | A/R |
| 104E | Shim-Adj .020" | A/R |
| 104F | Shim-Adj .030" | A/R |
| 105 | Plate-Retaining | 2 |
| 106 | Bolt-Hex | 12 |
| 107 | Washer-Thrust Large | 2 |
| 108 | Washer-Thrust Small | 2 |
| 109 | Gear-Input | 2 |
| 110 | Washer-Drive Flange | 2 |
| 111 | Plug-Pipe (Internal Drive) | 2 |
| 112 | Screw-Socket Head | 4 |
| 113 | Flange-Drive Planetary | 2 |
| 114 | Ring-Snap | 6 |
| 115 | Shaft-Planet Gear | 6 |
| 116 | Washer-Drive Flange | 12 |
| 117 | Bearing Needle | 432 |
| 118 | Washer-Thrust | 6 |
| 119 | Gear-Spur | 6 |
| 120 | Cylinder Assy-Steering | 1 |
| 121 | Washer-Flat | 3 |
| 122 | Bolt-Hex | 3 |
| 123 | Socket Assy | 2 |
| 124 | Large Retaining Wire | 2 |
| 125 | Boot | 2 |
| 126 | Small Retaining Wire | 2 |
| 127 | Jamnut | 2 |
| 128 | Arm-Steering | 2 |
| 129 | Pin-Clevis | 2 |
| [illegible] | Shim-Adj | A/R |
| 131 | Ring-O | 4 |
| 132 | Bushing-Synthetic | 2 |
| 133 | Washer-Flat | 2 |
| 134 | Ring-Snap | 2 |
| 135 | Pin-Dowel | 2 |
| 136 | Fitting-Grease | 2 |
| 137 | Trunnion Beam-Rear | 1 |
| 138 | Pin-Locating | 4 |
| 139 | Ring-O | 2 |
| 140 | Bushing-Spindle | 2 |
| 141 | Thrustwasher-Brg | 2 |
| 142 | Seal-Grease | 2 |
| 143 | Trunnion Beam-Front | 1 |

# Axle Assembly Instruction

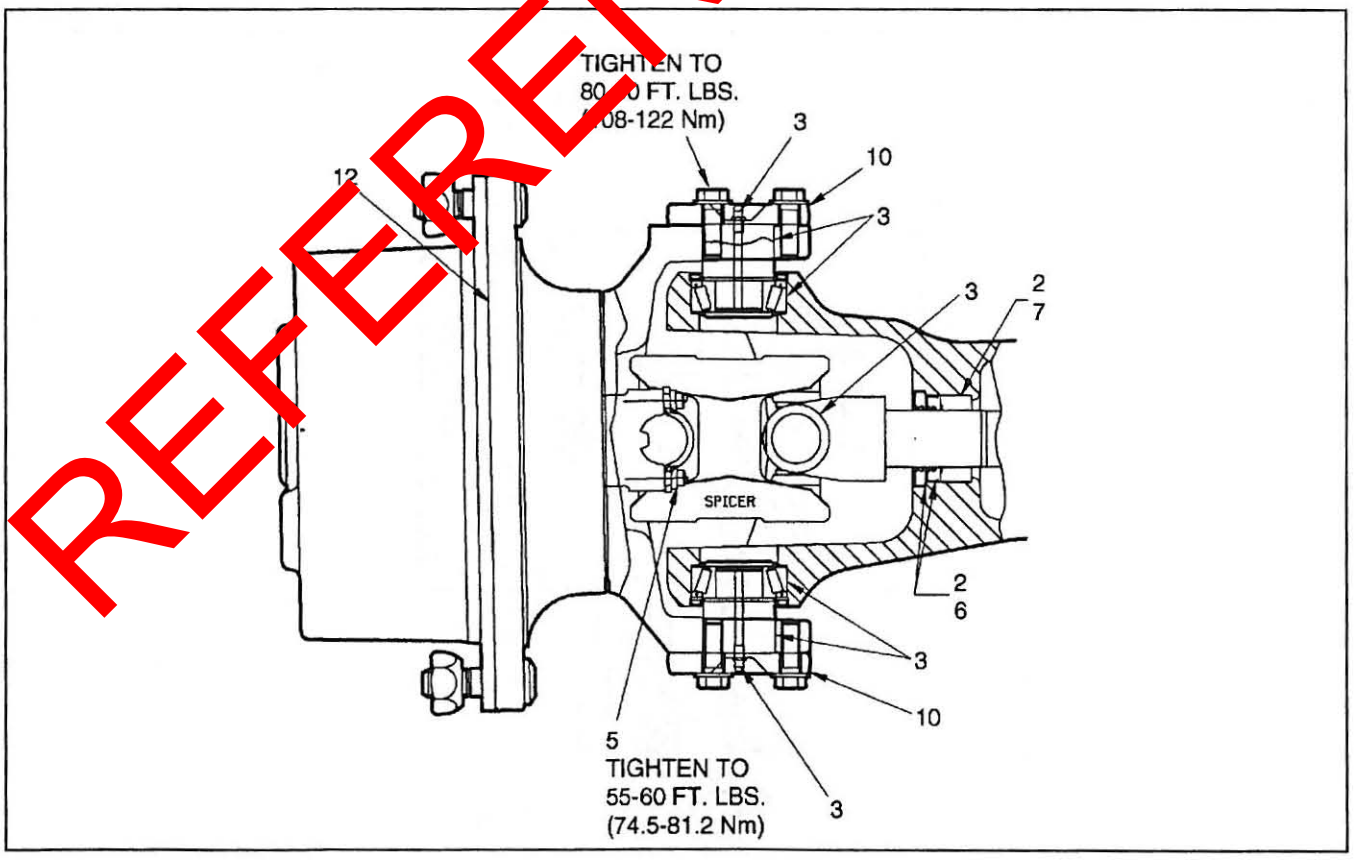
1. Surface must be dry and free from sealing compounds, nicks, burrs, and rust.
2. Coat with E.P. lithium grease Grade 2 (MS107C).
3. Coat with E.P. lithium grease Grade 2 (MS017D).
4. Coat with E.P. lithium grease Grade 1 (MS107B).
5. Use with Loctite 271 threadlocker.
6. Use Permatex #2 sealer.
7. Apply Loctite 609 on bushing o.d.
8. Tighten pinion nut to 220/280 ft-lbs (**298-380 Nm**) to obtain rolling torque of 20-40 in-lbs (**2.25 – 4.5 Nm**). Rotate the pinion 3 complete revolutions to seat the bearings, during fourth revolution take highest reading as measured torque.
9. Adjust nuts to obtain proper differential case position - .004-.008 backlash. Torque nuts to 85 ft-lbs (**115 Nm**) to preload bearings, install lock clip.
10. Shim top and bottom equally to obtain 8-15 ft-lbs (**10.8-20 Nm**) of effort required to rotate the knuckle at the king pin. With the tie rod assemby attached an effort of 15-25 ft-lbs (**20-34 Nm**) is required.
11. Install shims between knuckle and retainer to achieve 50-90 in-lbs (**5.6-10.1 Nm**) rotating torque without oil seal installed.
12. Apply continuous bead of Loctite 515 inside wheel bolt circle. Clamp wheel end assembly for a least 15 minutes in 4 locations around bolt circle.
13. Torque to 221 ft-lbs (**299 Nm**).
14. Torque to 192-207 ft-lbs (**269-280 Nm**).
15. If a thermal assembly aid is being used, (expanding by heating to 275°F ±25°F [135°C ±3.90°C]) a check must be made after parts have reached the same temperature within 20°F [-6, 7°C] of ambient to be sure the bearing is positioned solidly against it's respective shoulder. Check by attempting to slip a .002" feeler gage between the bearing and the mating part.

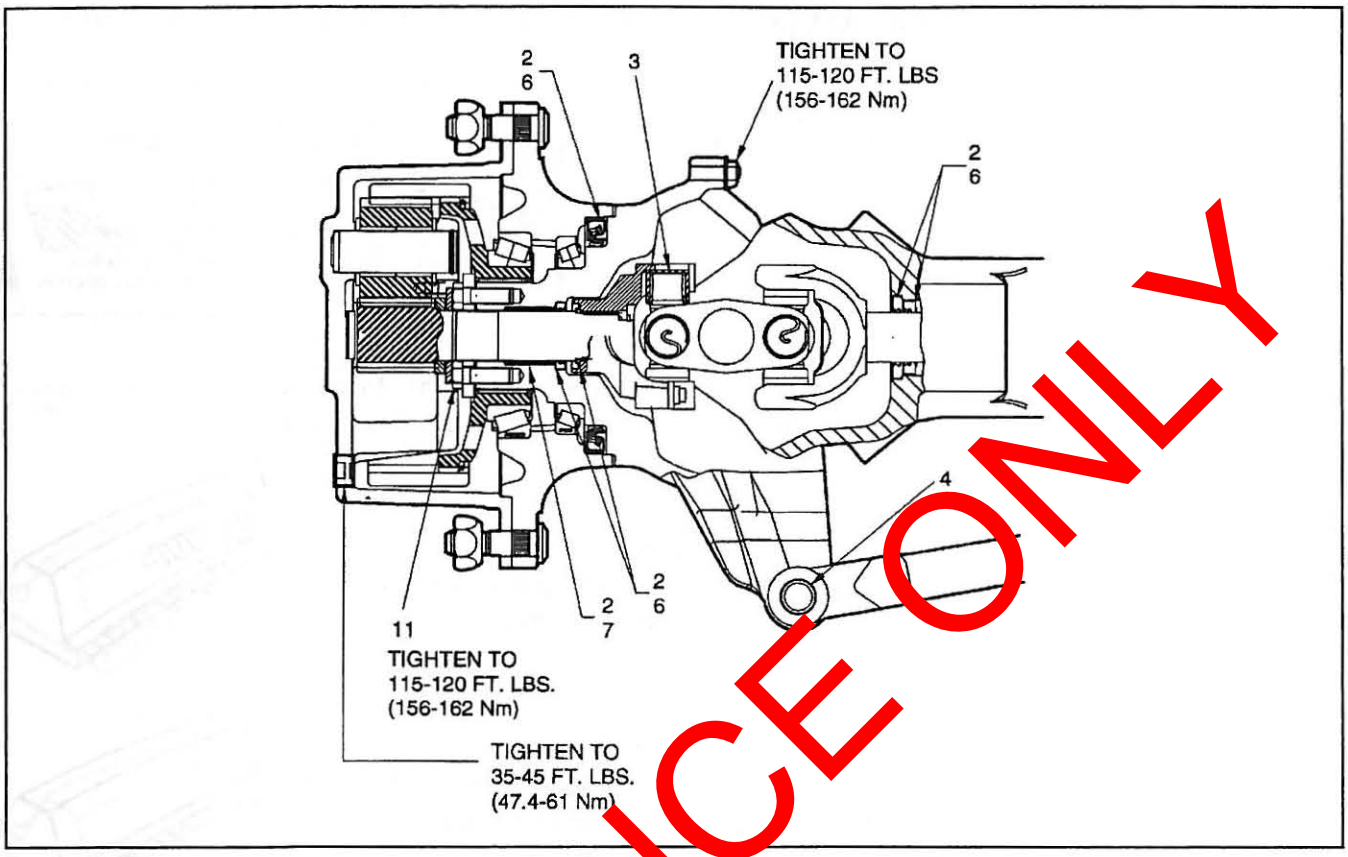







**Refer to page 15 for reference number identification.**



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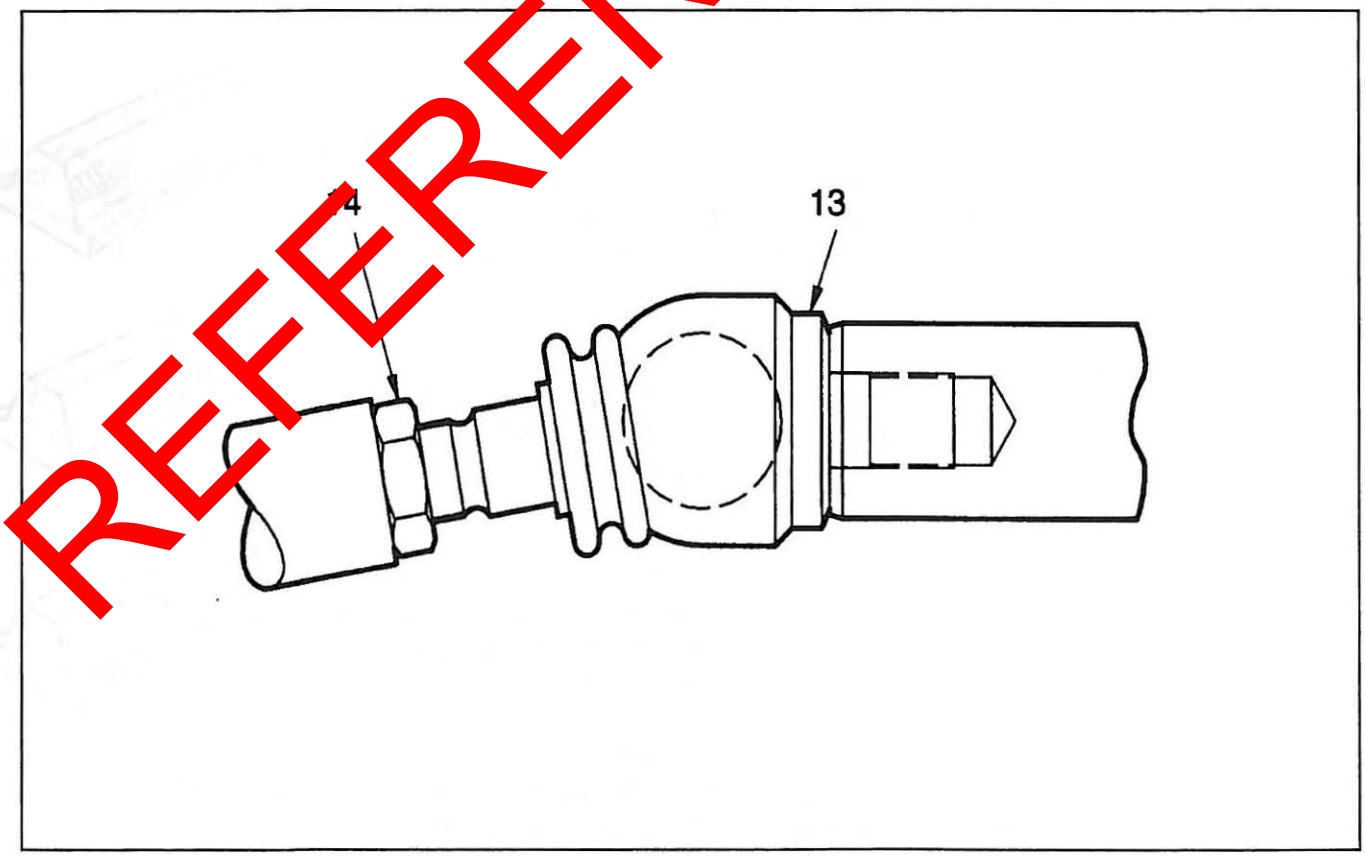
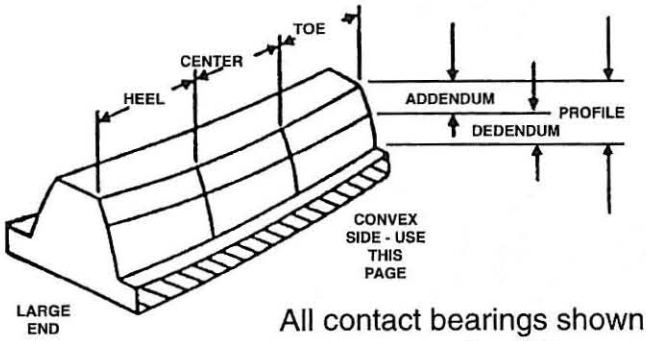
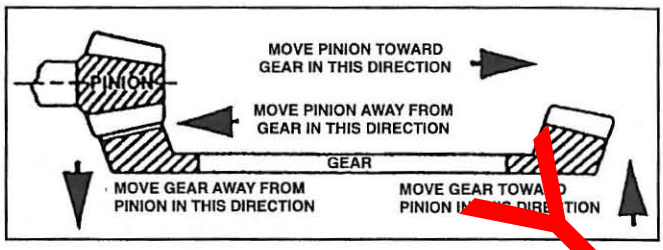
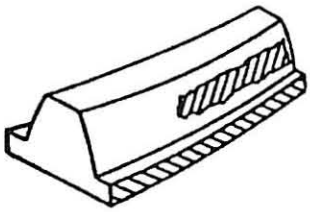


# Spiral Bevel and Hypoid Tooth Bearing Contact Chart




All contact bearings shown below are on **Right Hand** spiral ring gear - the drive is on the convex side of the tooth.



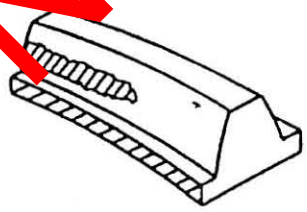
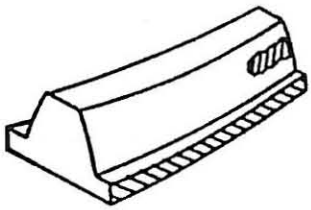


**Fig. 1**
Typical preferred bearing on both sides of tooth while under a light load.



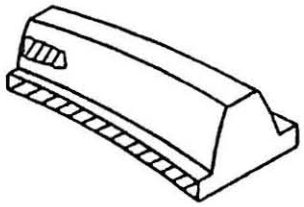
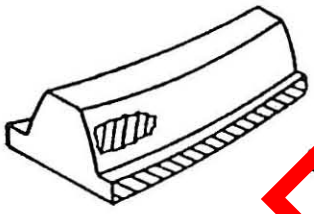


**Fig. 2**
Toe bearing on both sides of tooth - gear set noisy. To move bearing toward heel increase backlash within limits by moving gear away from pinion.



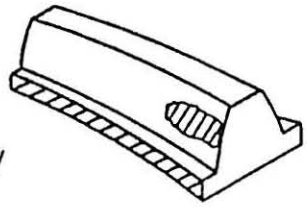
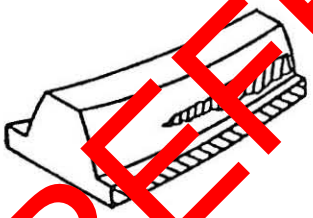


**Fig. 3**
Heel bearing on both sides of tooth - gear set noisy and could result in early gear failure. To move bearing toward toe decrease backlash within limits by moving gear toward pinion.



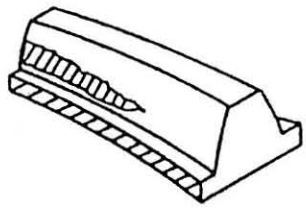
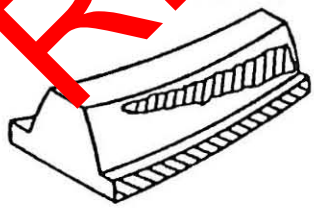


**Fig. 4**
Low bearing on gear and high bearing on pinion. Correct by pulling pinion away from gear (increase mounting distance).



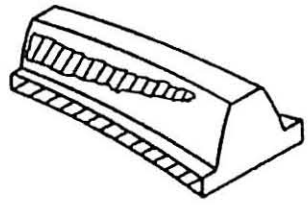


**Fig. 5**
High bearing on gear and low bearing on pinion. Correct by moving pinion toward gear (decrease mounting distance).

**Backlash**

Backlash should be measured with a dial indicator rigidly mounted with the stem perpendicular to the tooth surface at the extreme heel.

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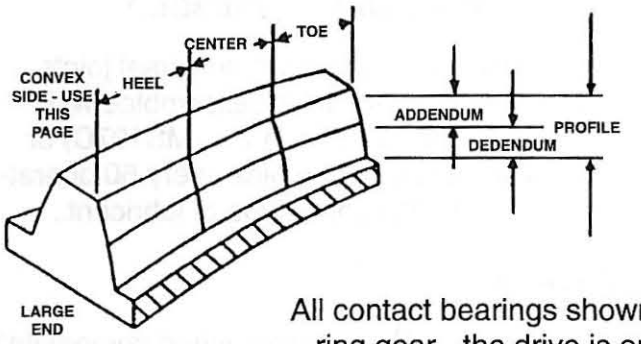


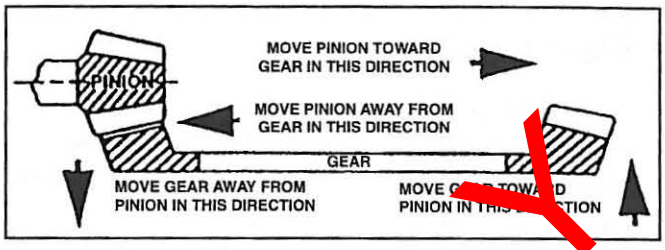


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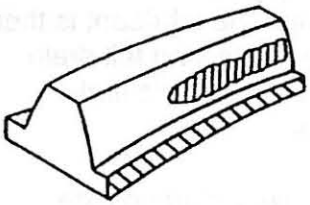

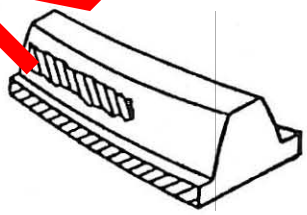

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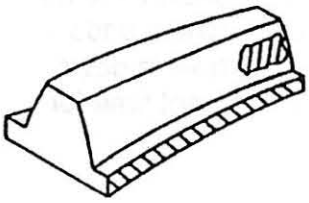

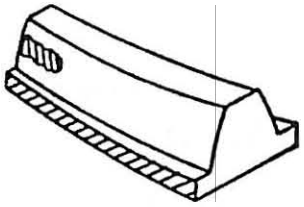

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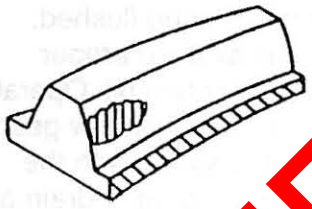

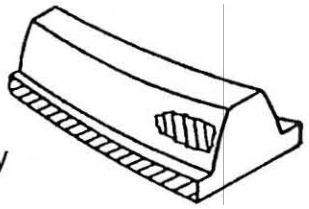

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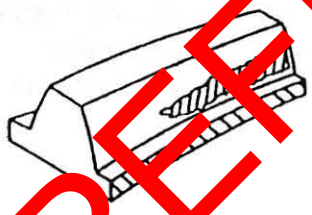

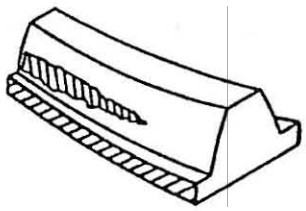

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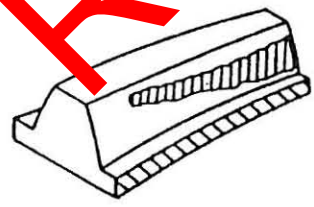

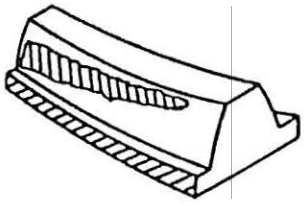

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**Backlash**

Backlash should be measured with a dial indicator rigidly mounted with the stem perpendicular to the tooth surface at the extreme heel.

# Maintanance Intervals and Procedures

## Checking Oil Level in Drive Steer Axles

For off-highway operation, check lubricant level after each 250 hours of operation. Always maintain lubricant level to bottom of filler plug hole. Drain oil every 1000 operating hours or one year, whichever comes first.

To check oil levels in axles with differential drive and planetary wheel ends, the axles should be run first, then allowed to stand for a minimum of five minutes on a level surface. This procedure will allow the oil to drain back to it's normal level. After the five minute interval proceed as follows; remove oil filler plug in rear of axle housing for oil level inspection. If the oil level is not to the bottom of the filler hole add lubricant as needed.

## Checking and Filling Planetary Wheel Ends

Always check lubricant level in the wheel end with the wheel hub filler/drain plug hole at 3 or 9 o'clock. Remove the filler/drain plug; if the oil level is below the fill hole add lubricant as necessary. Reinstall the plug.

## Filling Drive Steer Axles

Fill axle housing through filler hole until lubricant is at bottom of filler hole. Axles with planetary wheel ends; follow procedure in "checking and filling planetary wheel ends."

## Drive Steer Joint Lubrication

Lubricate the axle shaft universal joints every time the units are disassembled with E.P. lithium grease, Grade 2 – (MS107D) or equivalent. Grease king pins every 50 operating hours with the same type of lubricant.

## Draining

Draining is best accomplished immediately after vehicle has been operated a short time or completed a short trip. The lubricant is then warm and will flow freely, allowing full drainage in minimum time. This is particularly desirable in cold weather.

Housing – remove lower plug on axle housing cover and allow sufficient time for lubricant to drain. Planetery wheel ends – rotate wheel until filler/drain hole is down. Remove plug and allow sufficient time for draining.

## Flushing

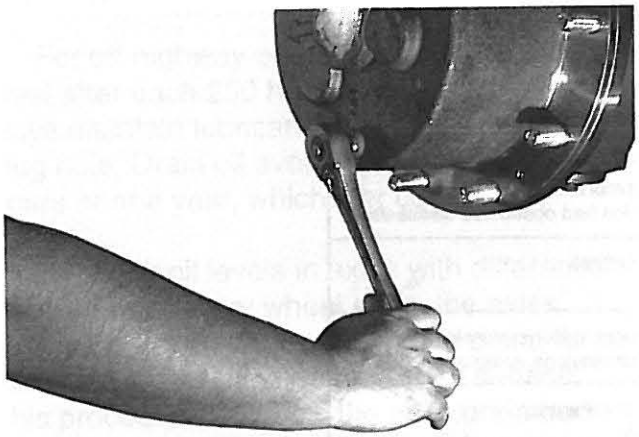
After draining, axles should be flushed. Replace drain plug and fill axles to proper lever with a light fushing oil or fuel oil. Operate the axle for a short period of time in low gear at 1000 to 1500 rpm engine speed with the vehicle on a level surface. Be sure to drain all flushing oil before refilling with new oil. Inspect the magnetic drain plug for metal or other foreign matter indicative of wear or possible problems.

# Symbols

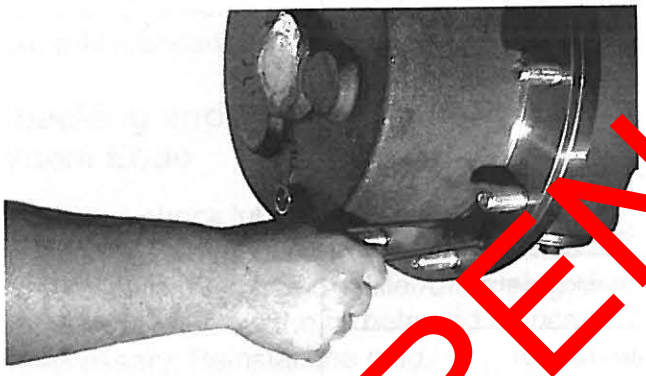
| |
|---|
| Smontaggio di sottogruppi<br>Disassembly of assembly groups |
| Montaggio di sottogruppi<br>Reassemble to form assembly group |
| Smontaggio di particollari ingombranti<br>Remove obstruction parts |
| Montaggio di particollari ingombranti<br>Reinstall - remount parts which had obstructed disassembly |
| Attenzione, indicazione importante<br>Attention! Important Notice |
| Controllare regolare p.e. coppie, misure, pressione etc.<br>Check - adjust e.g. torque, dimensions, pressures etc. |
| T = Attrezzature speciali P = Pagina<br>T = Special tool P = Page |
| Rispettare direzione di montaggio<br>Note direction of installation |
| Controllare esaminare controllo visivo<br>Visual inspection |
| Eventualimente riutilizzabile (sostituire se necessario)<br>Possibly still serviceable, renew if necessary |
| Sostituire con ogni montaggio<br>Renew at each reassembly |
| Togliere - mettere la sicura<br>Unlock - lock e.g. split pin, locking plate, etc. |
| Mettere la sicura, incollare (mastice liquido)<br>Lock - secure (liquid sealant) |
| Evitare danni ai materiali, danni ai pezzi<br>Protect against material damage, damage to parts |
| Marchiari prima dello smontaggio (per il montaggio)<br>Mark before disassembly, observe marks when reassembled |
| Carricare riempire (olio - lubrificante)<br>Filling - topping up - refilling e.g. oil, cooling water, etc. |
| Scarricare olio, lubrificante<br>Drain off oil, lubricant |
| Tendere<br>Tighten - clamp; tightening a clamping device |
| Insere pressione nel circuito idraulico<br>Apply pressure into hydraulic circuit |
| Pulire<br>To clean |

# Model 25S34 Disassembly

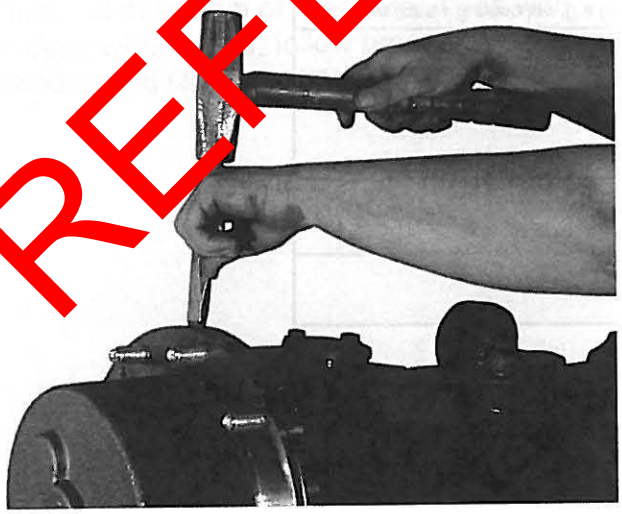
## Removal of Wheel Ends



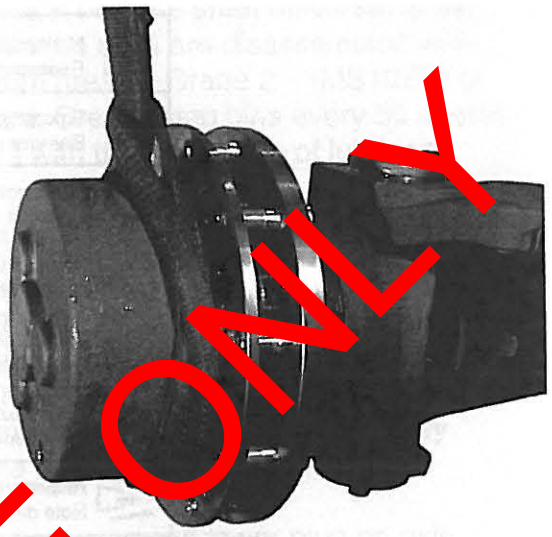
1. Remove planetary drain plug and drain oil from axle.



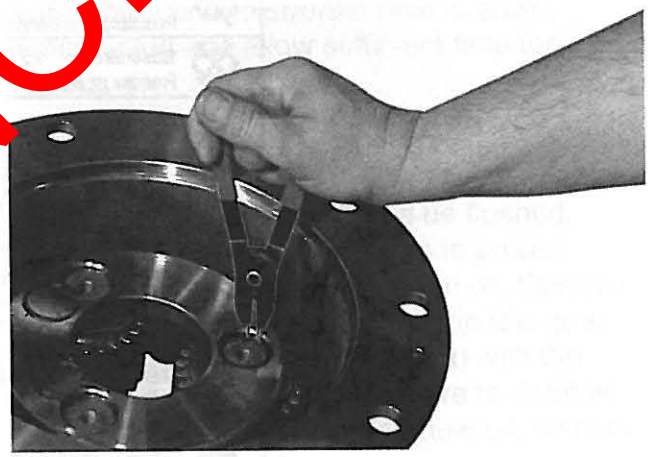
2. Remove planetary retaining screws (2) places.



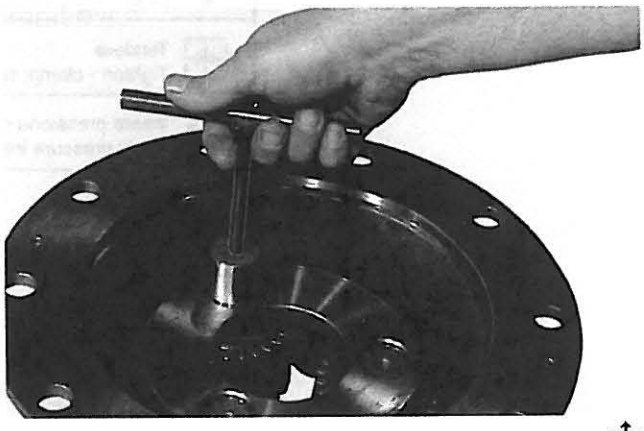
3. Using the proper tool, separate the drive flange from the hub.



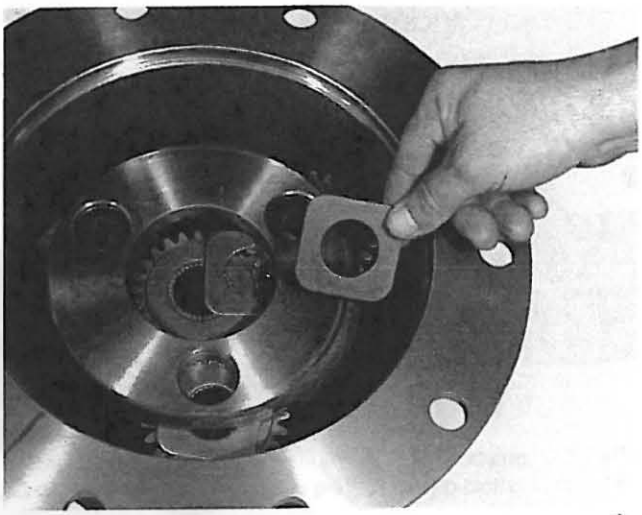
4. Use strap and proper lifting device to support wheel and during removal.



5. Remove planet shaft retaining snap rings.

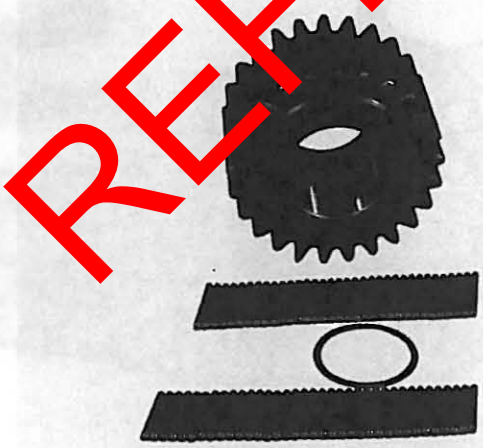


6. Remove planet shafts.



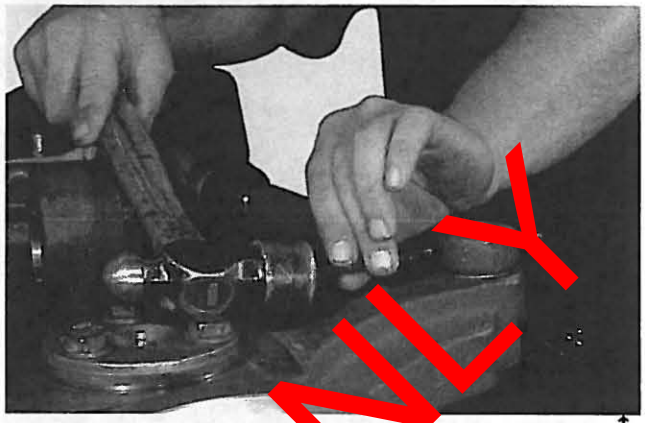
7. Remove planet thrust washers.

8. Remove planet gear assemblies. Place planet gears on shop cloth to prevent damage to gear teeth.

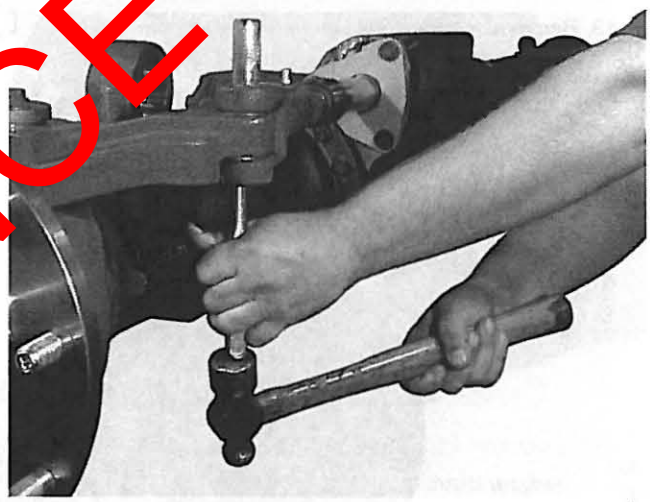


9. Planet gear, needle bearing and spacer removed.

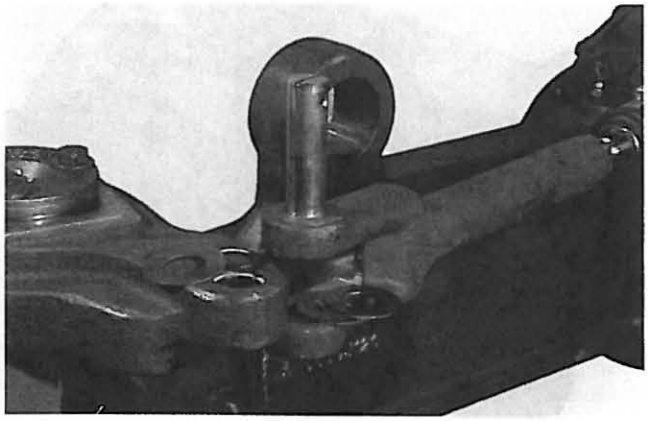
## Removal of Drive Flange



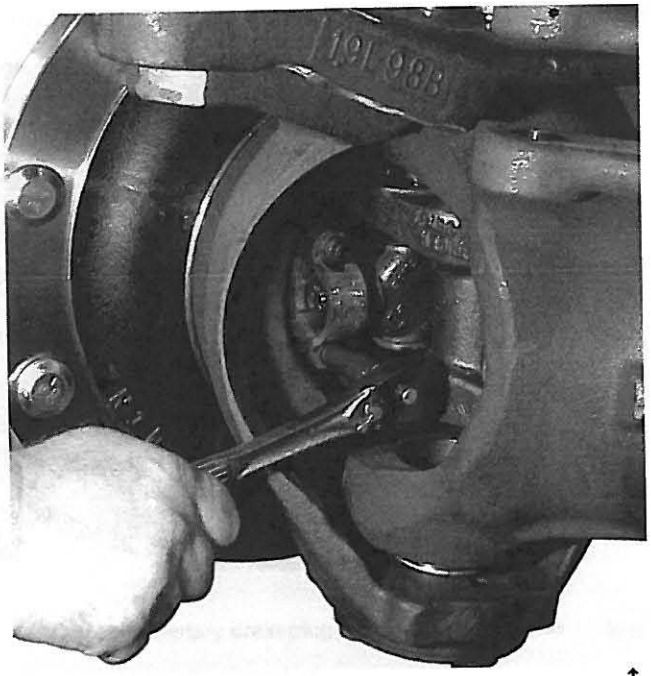
10. Remove roll pin from steer cylinder clevis.



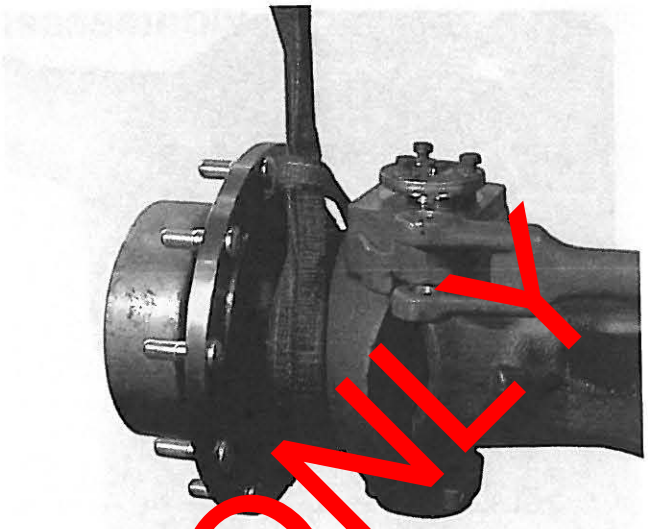
11. Drive steer cylinder clevis pin from steer arm.



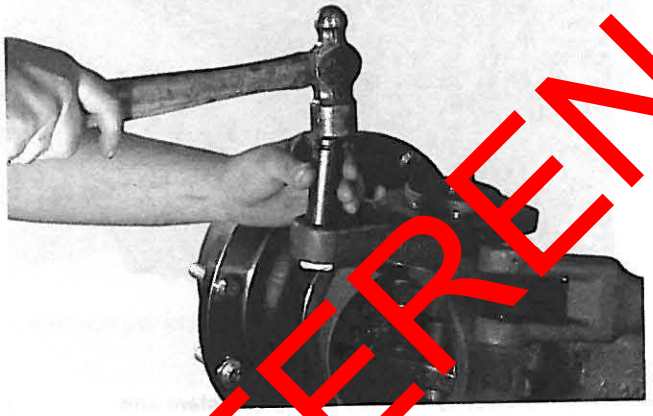
12. Remove shims and O-rings from steer arm. Discard O-rings.



13. Remove screws and caps from drive yoke.

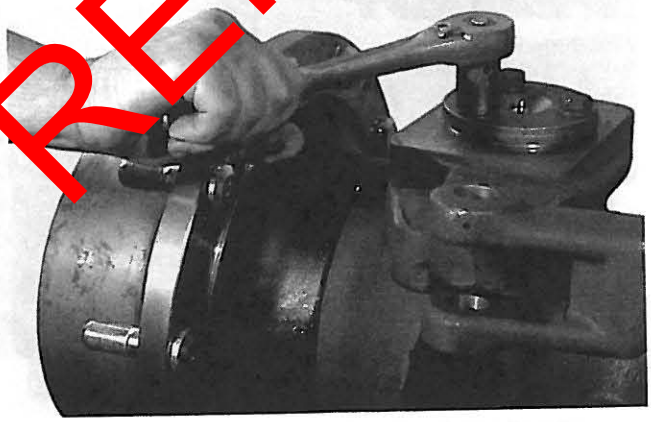


***NOTE: To prevent personal injury and damage to equipment support drive flange and knuckle assembly with strap and proper lifting device before removing king pins.***

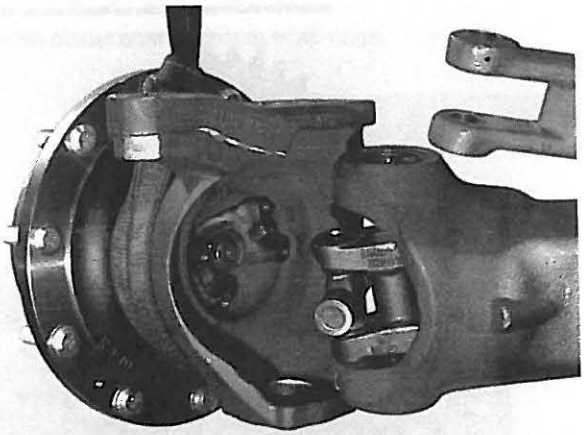


14. Remove clevis pin bushing from steer arm.

16. Remove upper and lower king pins and shims.

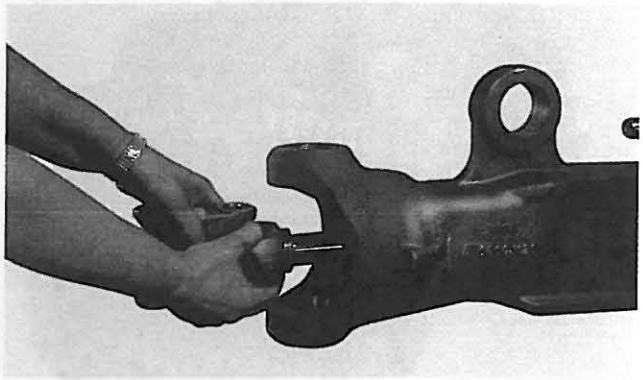


15. Remove top kingpin retaining screws.

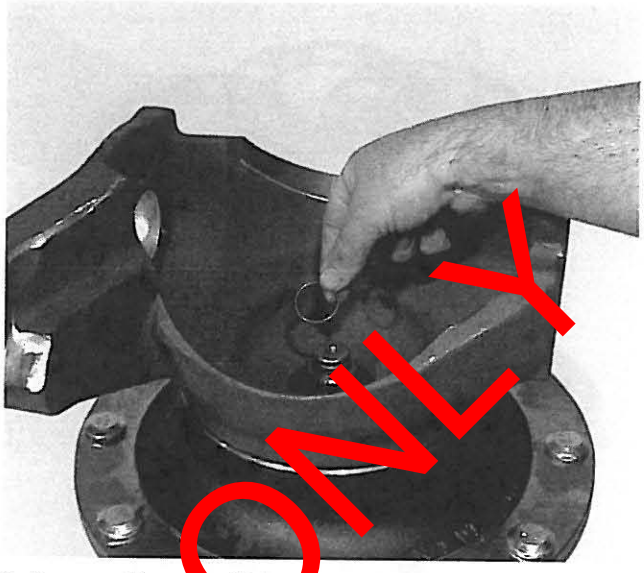


17. Remove drive flange and knuckle assembly from axle housing.

## Removal of Axle Assembly



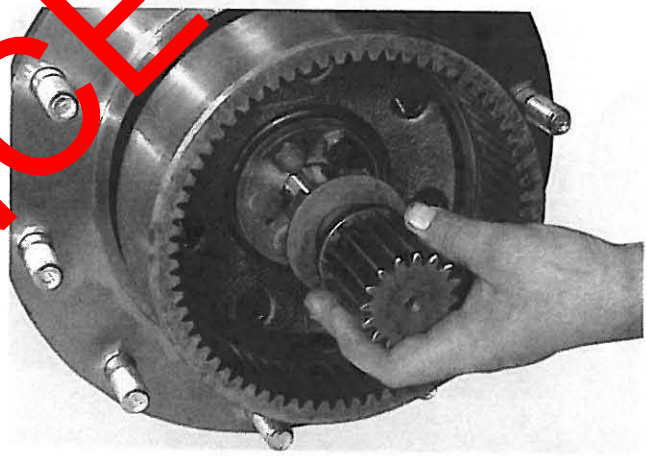
18. Remove axle shaft assembly from axle housing. To prevent damage to splines place on shop cloth.



3. Remove drive yoke O-ring

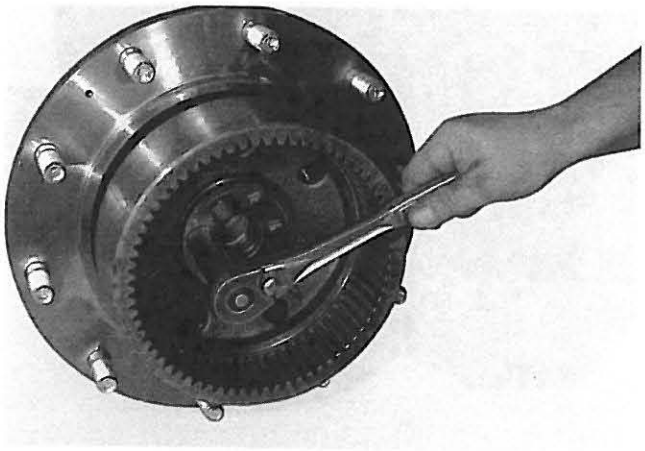
## Disassembly of Drive Flange and Steer Knuckle.

1. Remove drive yoke retaining ring from steering knuckle.

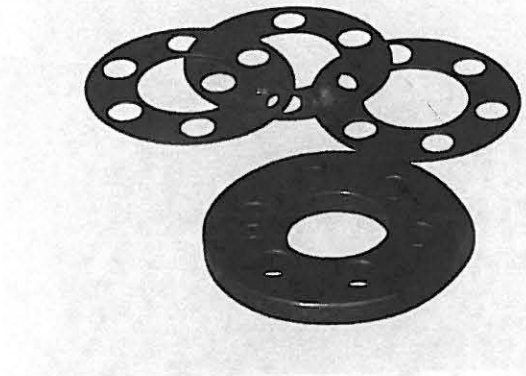


4. Remove axle sun gear assembly and thrust washer.

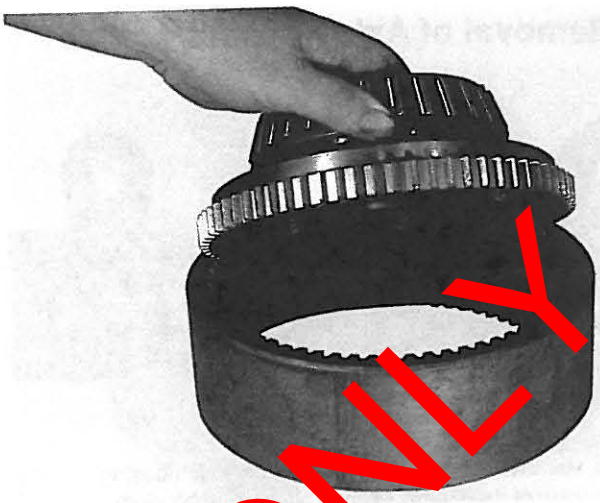
2. Remove drive yoke.



5. Remove retaining plate cap screws.

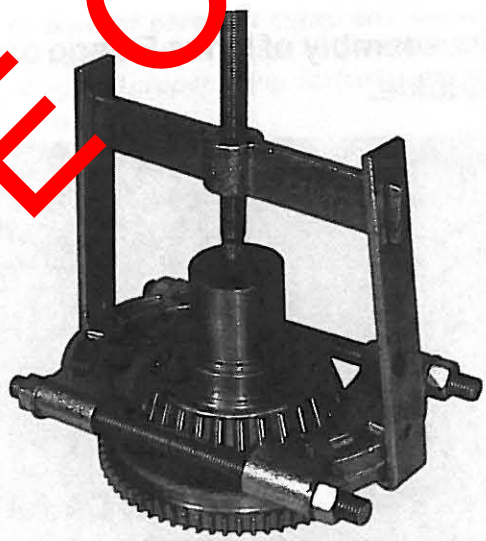


6. Retaining plate and shims.

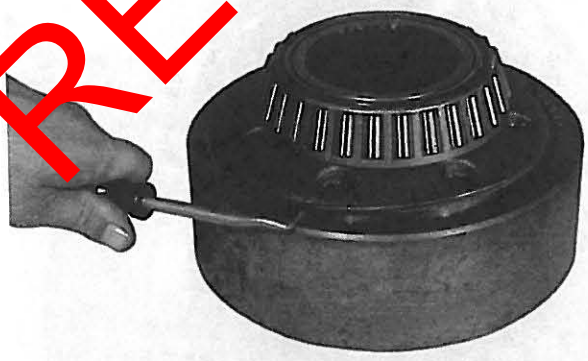


9. Remove hub from planetary ring gear.

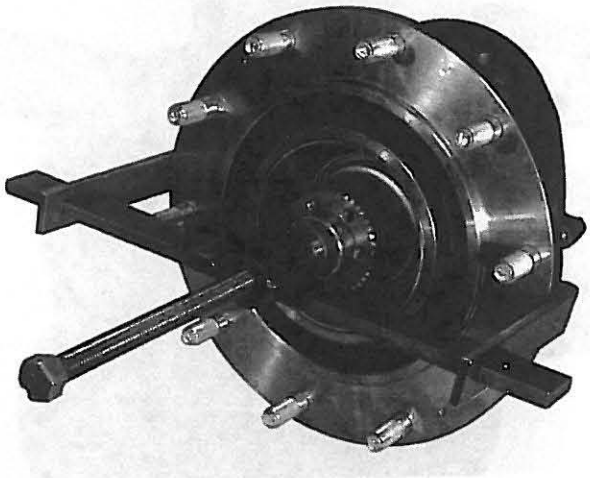
7. Remove planetary ring gear assembly.



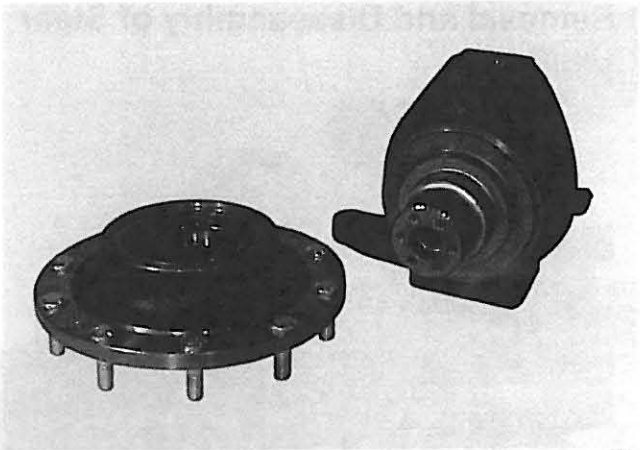
10. Remove outer bearing cone from hub.



8. Remove ring gear hub retaining snap ring.



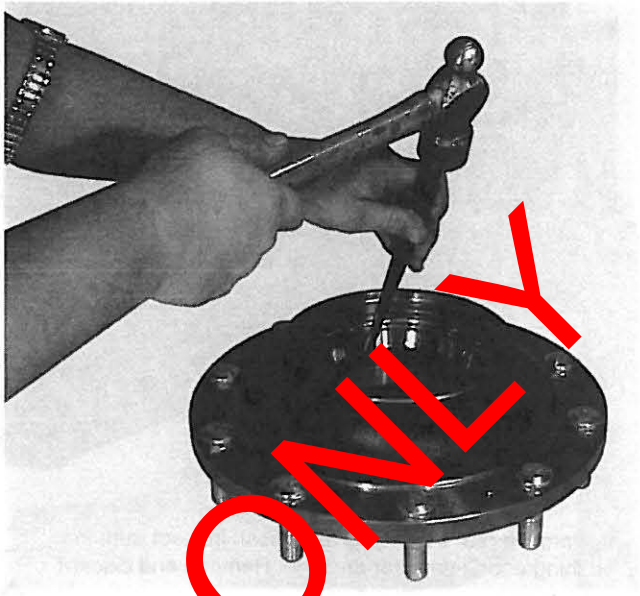
11. Remove wheel hub from spindle using proper puller.



12. Hub removed from steering knuckle assembly.

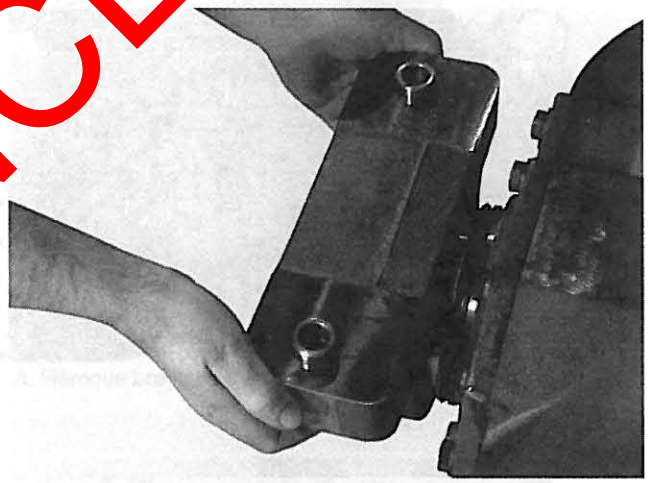
13. Pry seal from hub and discard.

14. Remove inner bearing cone.

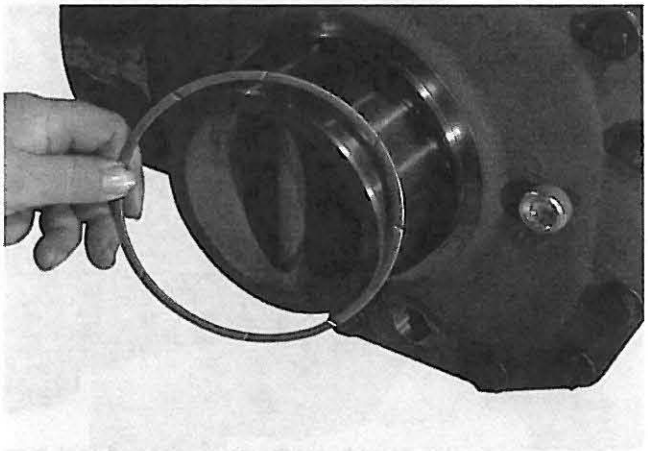


15. Remove inner and outer bearing cups.

## Removal and Disassembly of Front and Rear Trunnions

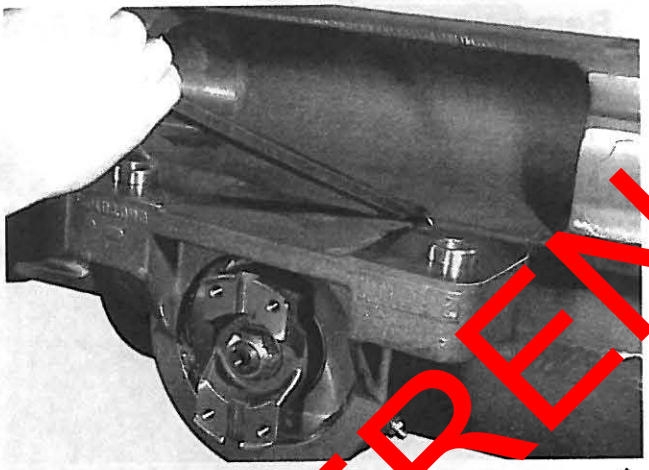


1. Remove rear trunnion beam.

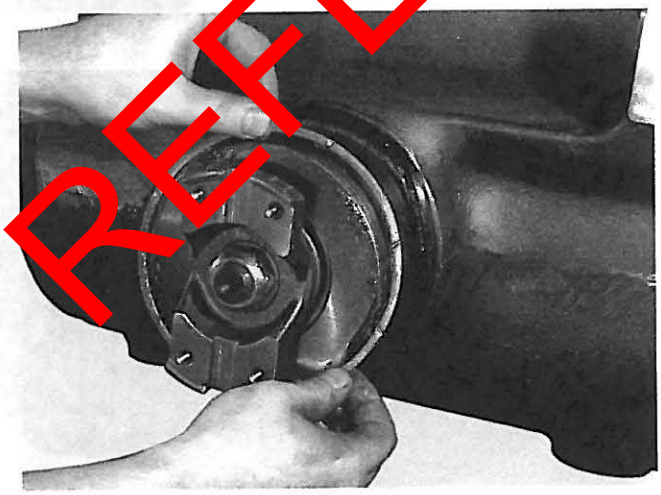


2. Remove rear trunnion beam thrust washer.

3. Remove rear trunnion grease seal. Inspect trunnion bushing and O-rings for damage. Remove and discard if damaged.



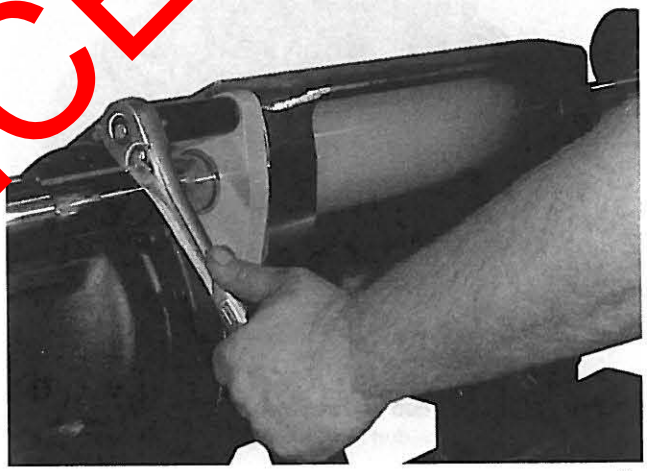
4. Remove front trunnion beam.



5. Remove front trunnion beam thrust washer and seal. Inspect and discard if damaged.

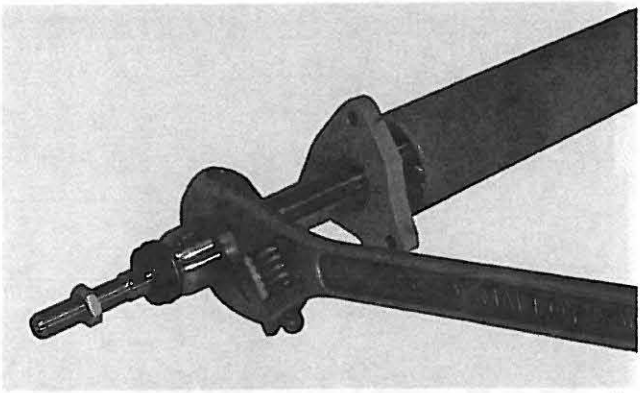
## Removal and Disassembly of Steer Cylinder

1. Loosen jam nut on socket assembly to remove steering arm.

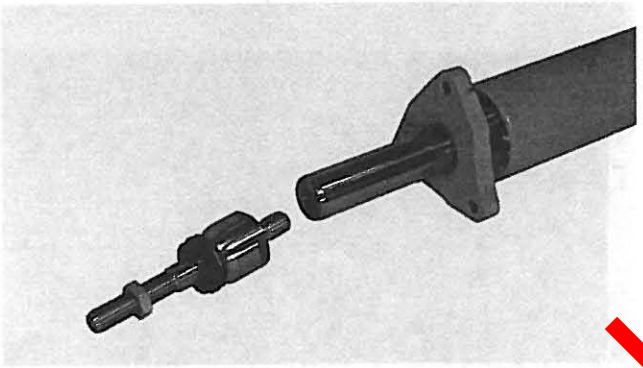


2. Remove steer cylinder retaining screws.

3. Remove steer cylinder from carrier housing.



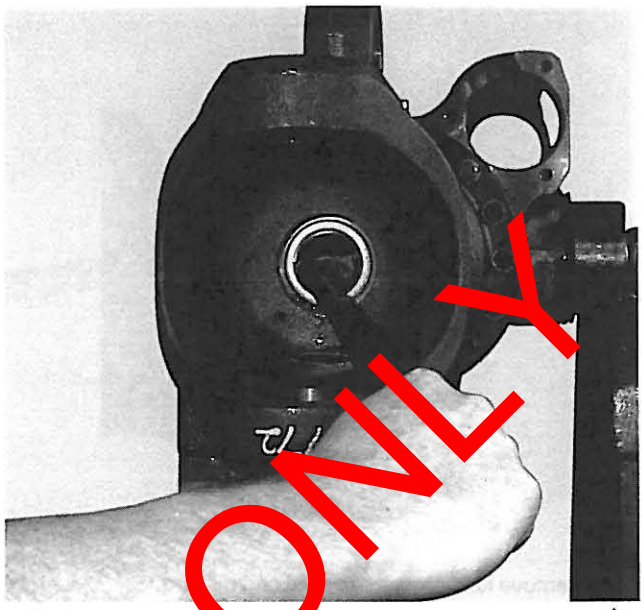
4. Loosen socket assembly.



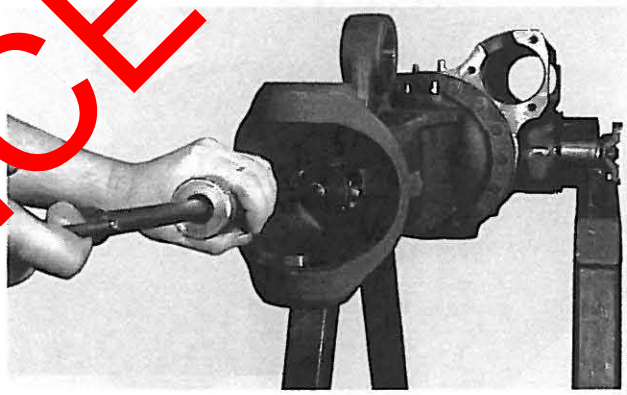
5. Remove socket assembly from steer cylinder.

## Removal of Seals and Bushings from Axle Housing.

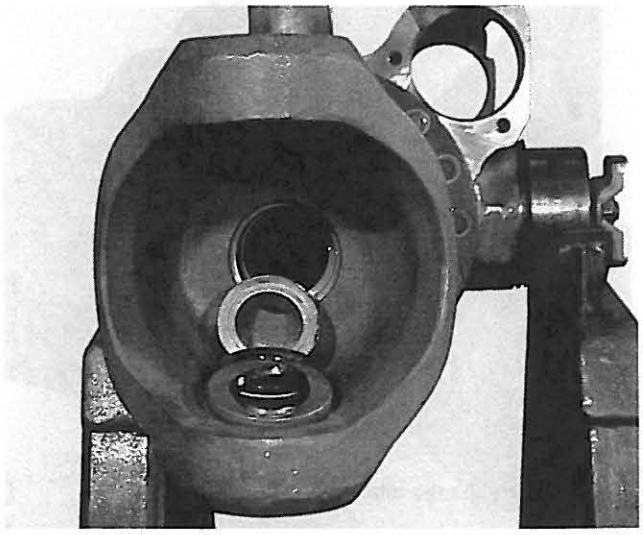
1. Remove outer seal from axle housing and discard.



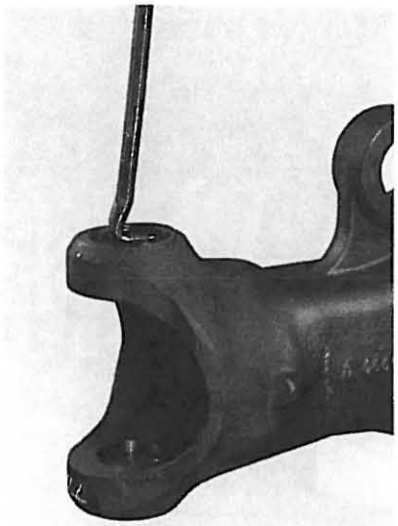
2. Remove inner seal from axle housing and discard.



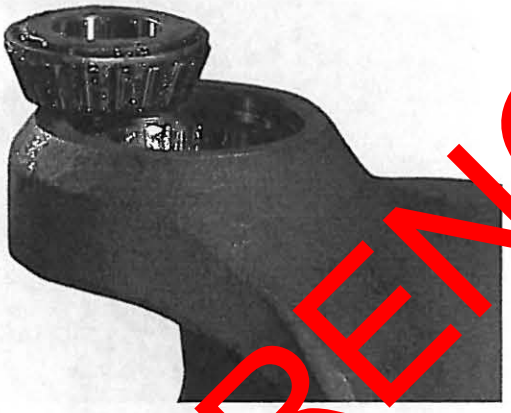
3. Remove brass bushing from axle housing and discard.



4. Seals and bushings removed.

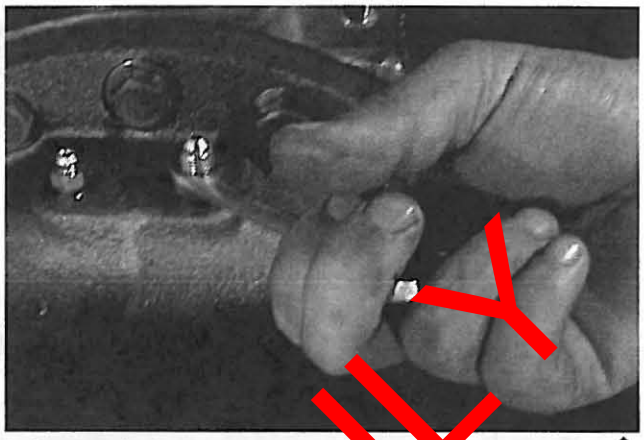


5. Remove king pin grease seal and discard.



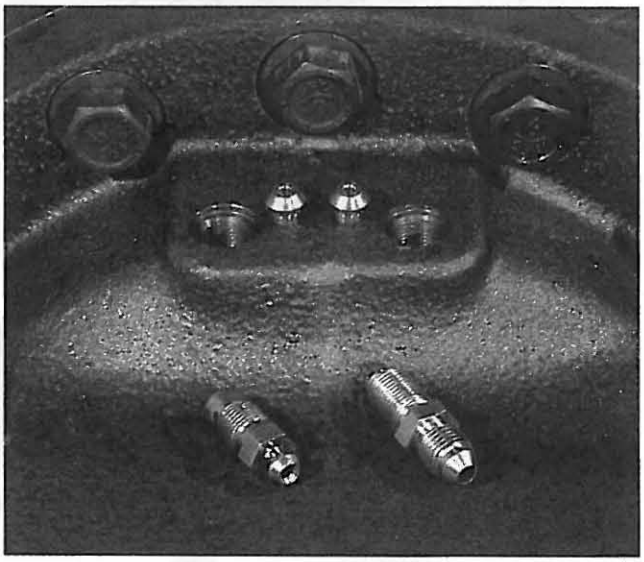
6. Remove king pin bearing cone.

7. Remove grease retainer and bearing cup.



8. Remove brake apply pressure fitting.

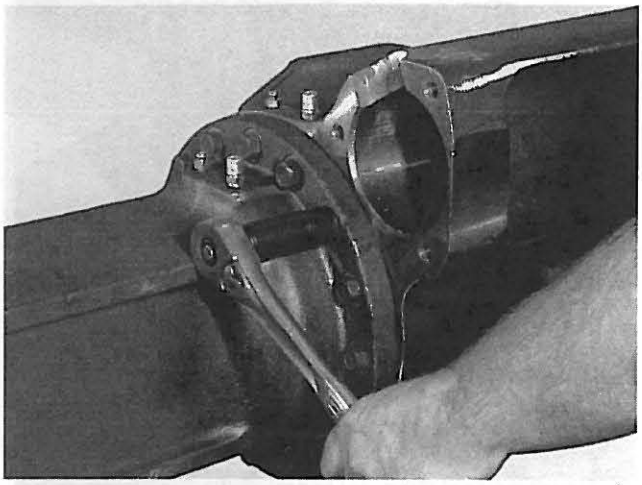
9. Remove brake service bleeder fitting.



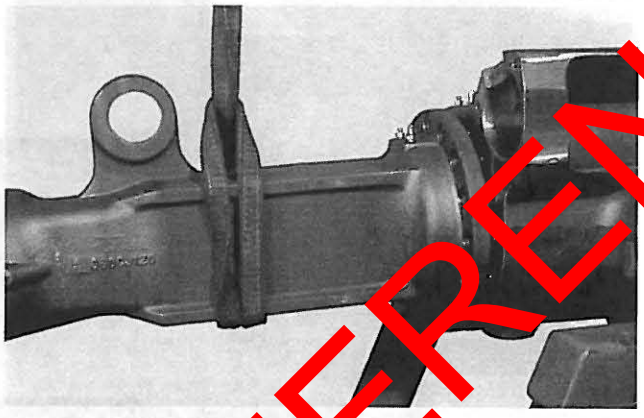
10. Remove brass seats from ports.

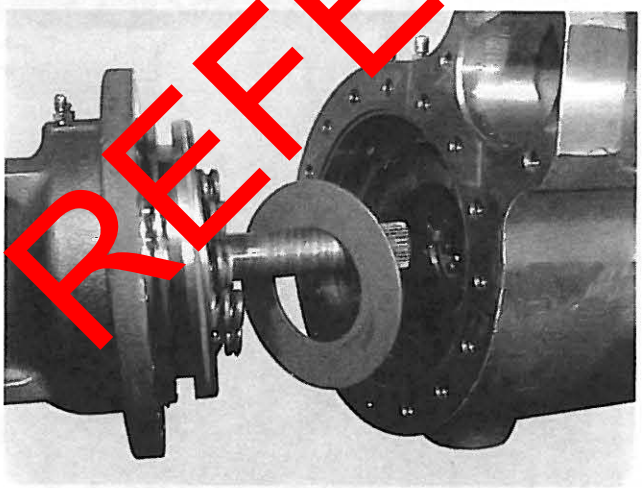
## Removal of Axle Housings.

***NOTE : To prevent personal injury and damage to axle housing a lift strap and proper lifting device must be used to support axle housing.***

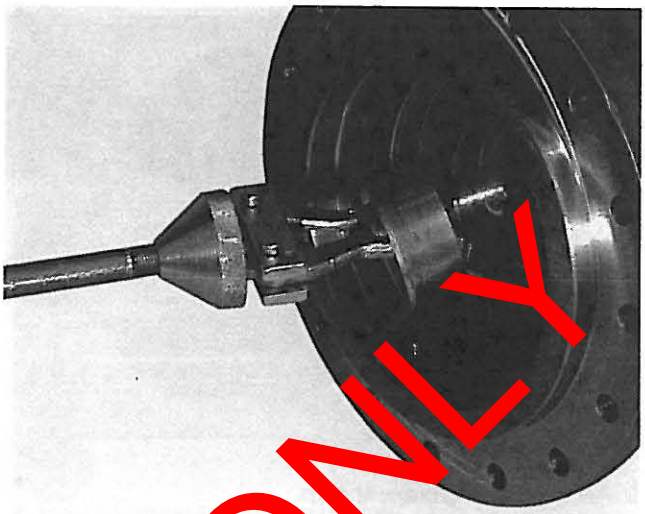


1. Remove axle housing retaining screws.

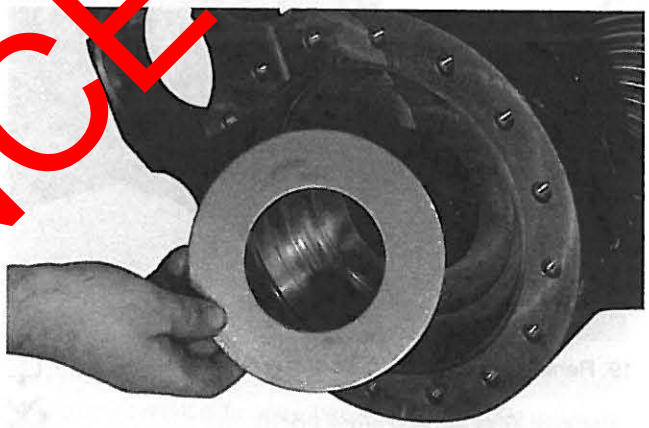




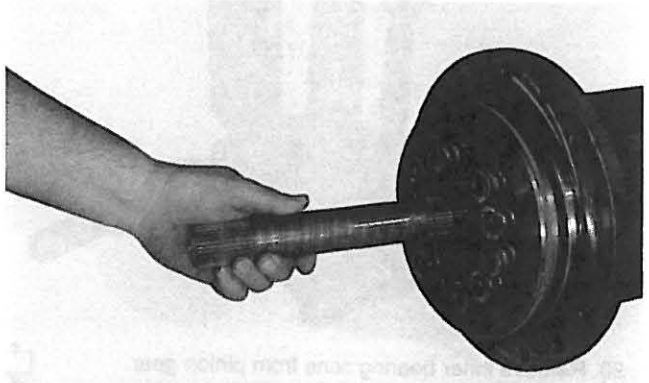
2. Using lifting device slowly swing axle housing away from carrier housing as brake springs, piston, shaft and disc may fall out. **Caution: springs may be under pressure.**



3. Remove brass bushing from axle housing.



4. Remove spring backing plate.



5. Remove axle shaft.

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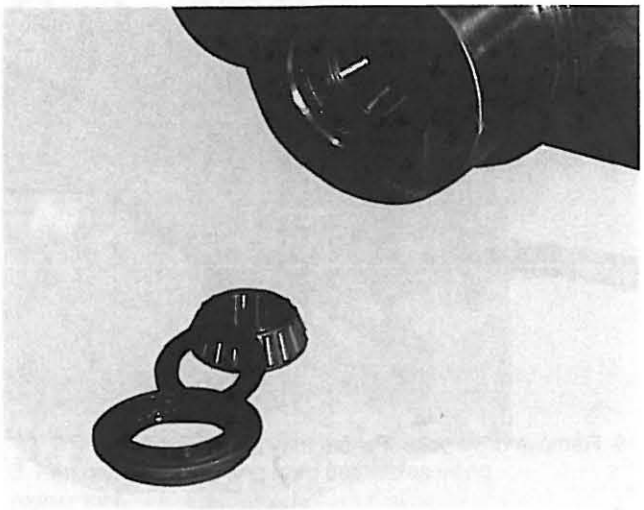
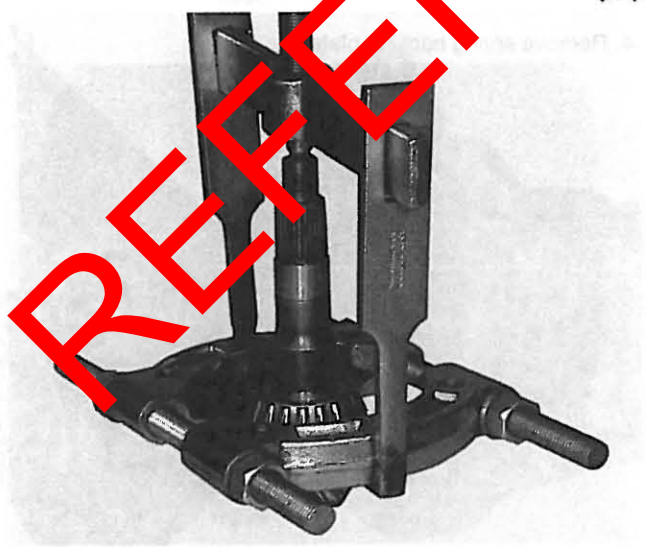


18. Remove oil seal, thrust washer and outer bearing cone.

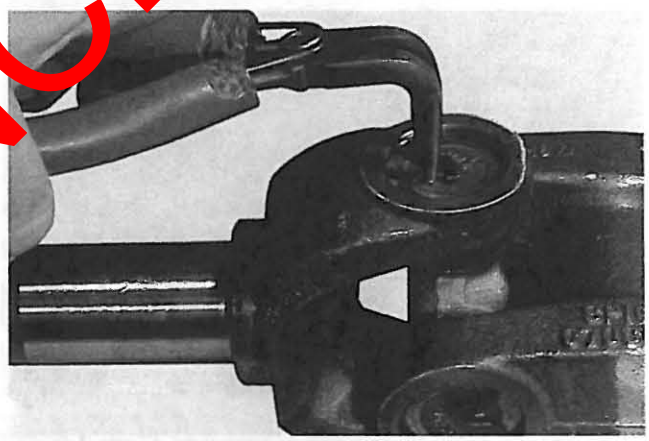
19. Remove inner and outer bearing cups.



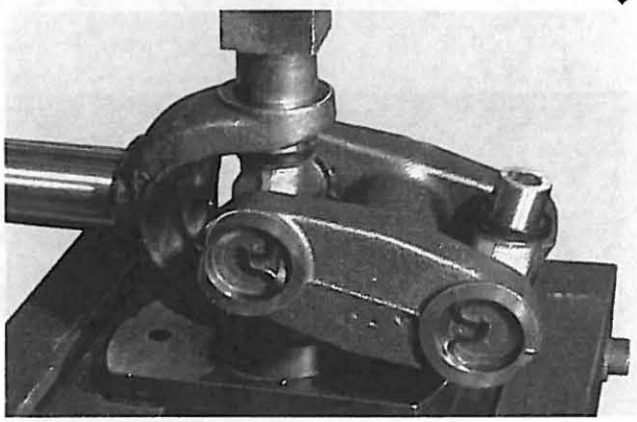
20. Remove inner bearing cone from pinion gear.

21. Remove pinion mounting height shims.

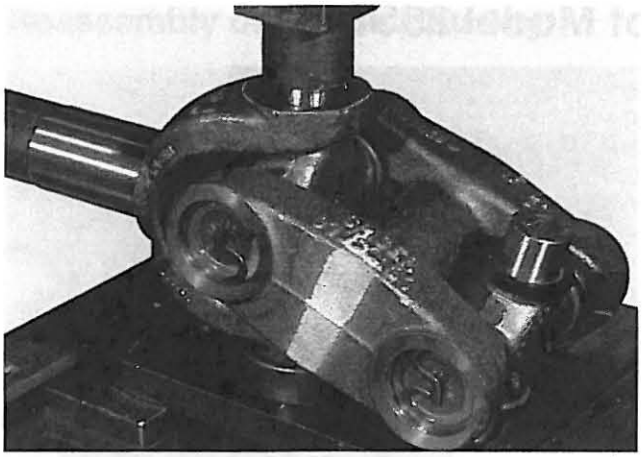
## Disassembly of Inner Yoke and Shaft Assembly



1. Remove retaining rings.



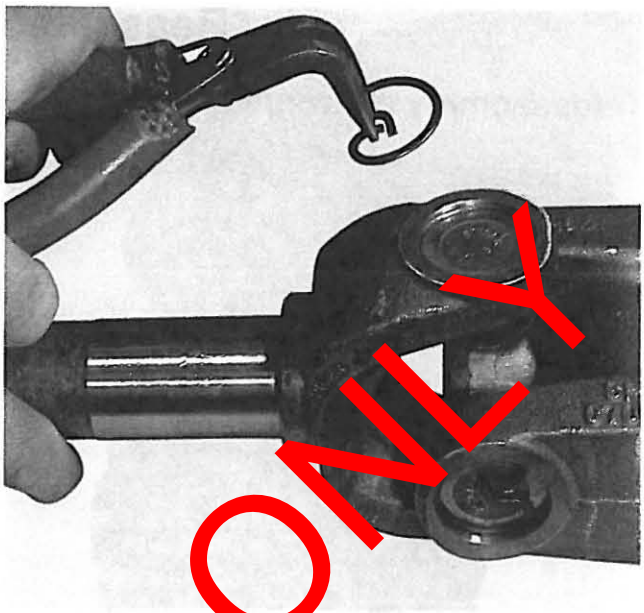
2. Place shaft assembly in fixture. Press bearing cup down until bearing cup on bottom side can be removed. Make sure there is clearance for bottom bearing.



3. Turn over the axle shaft assembly. Supporting the center yoke, press on the shaft ear to drive up the bearing cup. Make sure there is clearance for bearing cup beyond the surface of the yoke.

4. Separate the axle shaft from the center yoke. Repeat the previous steps separating the outer yoke from the center yoke.

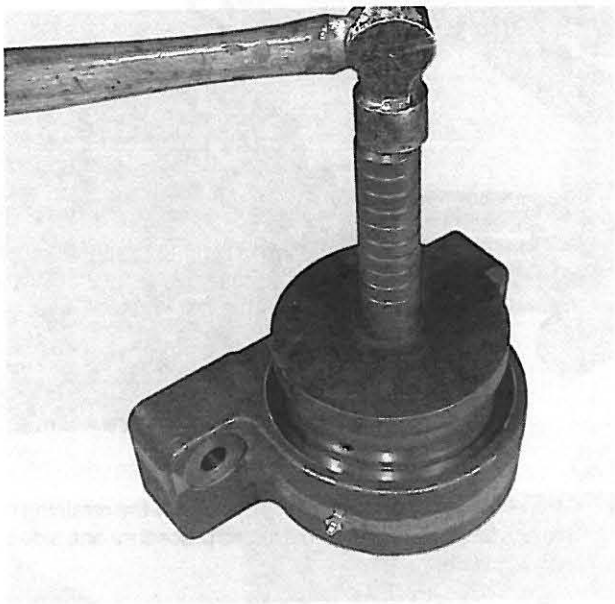
5. Installation is the reverse of disassembly. Use a press and drive the bearing cups to the surface of the yoke. Grease bearings if necessary.



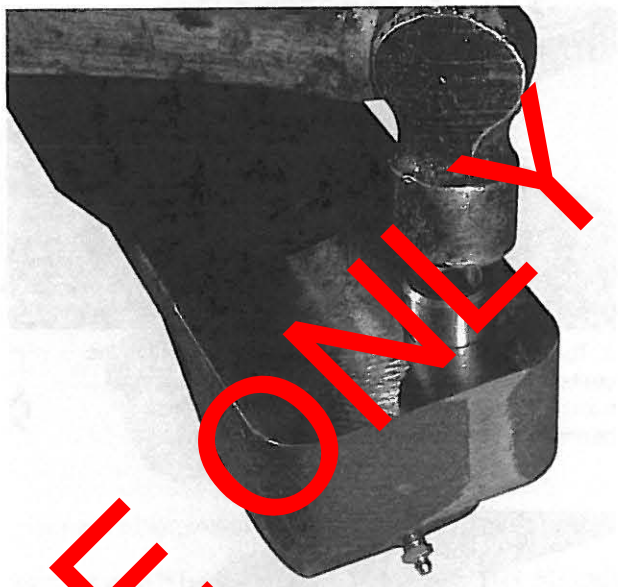
6. Use a driver to press the bearing cup below the retaining ring groove and install retaining ring. Do this procedure one side at a time until complete.

# Reassembly of Model 25S34

## Reassembly of Trunnions



1. When replacing trunnion bushing use proper installation tool as not to damage bushing.



3. If locator pins are to be replaced, twist to remove. Install new pins by tapping until seated.

2. If trunnion bushing is to be replaced, remove grease fitting and align hole in bushing with grease fitting hole in trunnion. Reinstall grease fitting.

4. Install new O-ring if required.

## Reassembly of Carrier Housing

1. Install new inner and outer bearing cups.

2. Install mounting distance shim(s) on pinion shaft. If new ring and pinion are to be installed, refer to Pinion Shim Selection Instructions Chart on pages 40/41.

3. Install new inner bearing cone on pinion shaft.

4. Press new inner bearing cone on pinion gear shaft.

5. Install pinion from rear of carrier housing and install the preload spacer. Install new spacer at each overhaul.

## Pinion Shim Selection

- ✔ Carrier housing pinion measurement is written inside the carrier housing.
- ✔ The nominal pinion measurement is 6.426 inches.
- ✔ On the pilot end of the pinion several numbers are listed.
- ✔ Gearset i.d. numbers – to insure the ring and pinion are matched. If the numbers on the new gearset do not match – **DO NOT** use this gearset! The i.d. numbers **MUST** match to insure compatibiity.
- ✔ Etched on the pinion will be a plus (+) sign and a number, a minus (–) sign and a number or a zero (0). This number represents the amount in thousandths of an inch added or subtracted from the nominal pinion measurement to properly locate the pinion shaft.
- ✔ (+) 2 requires a .002 thicker shim be added between the inner bearing cone and the pinion shaft than a shaft marked 0.
- ✔ (–) 2 requires a .002 thinner shim be added between the inner bearing cone and pinion shaft than a shaft marked 0.
- ✔ The required thickness shim will be selected from the pinion shim selection chart listed in the specifications section.

## Using the Pinion Shim Selection Chart

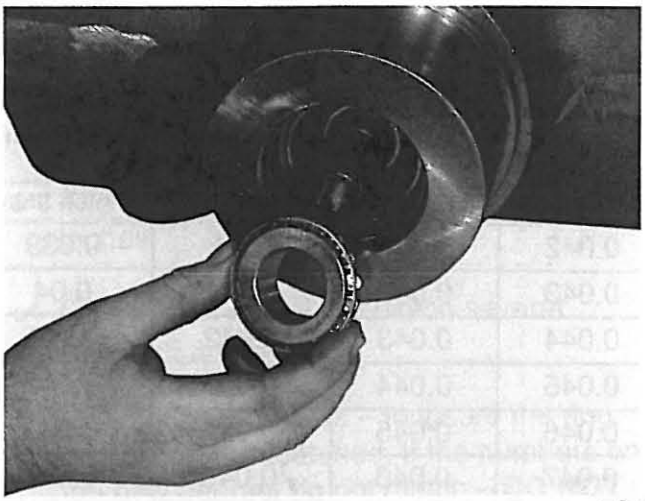
1. Locate the gage room measurement written inside the carrier housing.
2. Determine the pinion nominal measurement (on chart).
3. Locate the pinion adjustment number on the pinion pilot – listed as a plus number, minus number, or a 0.
4. Scan across from the gage room measurement to the appropriate pinion adjustment column.
5. The shim thickness listed at this location should be installed between the inner pinion bearing and the pinion shaft.
6. Follow the pinion reloading instructions listed under Assembly Instruction Notes #8.

# Pinion Shim Selection Chart

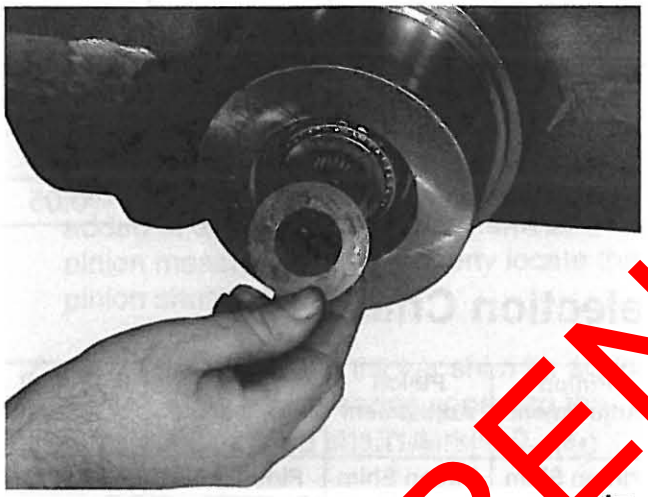
| Gage Room Measurement | Pinion Nominal & Bearing | Pinion Adjustment (-2) | Pinion Adjustment (-1) | Pinion Adjustment (+0) | Pinion Adjustment (+1) | Pinion Adjustment (+2) | Pinion Adjustment (+3) |
|---|---|---|---|---|---|---|---|
| | | Pinion Shim | Pinion Shim | Pinion Shim | Pinion Shim | Pinion Shim | Pinion Shim |
| 6.468 | 6.426 | 0.044 | 0.043 | 0.042 | 0.041 | 0.04 | .039 |
| 6.469 | 6.426 | 0.045 | 0.044 | 0.043 | 0.042 | 0.041 | .04 |
| 6.47 | 6.426 | 0.046 | 0.045 | 0.044 | 0.043 | 0.042 | 0.041 |
| 6.471 | 6.426 | 0.047 | 0.046 | 0.045 | 0.044 | 0.043 | 0.042 |
| 6.472 | 6.426 | 0.048 | 0.047 | 0.046 | 0.045 | 0.044 | 0.043 |
| 6.473 | 6.426 | 0.049 | 0.048 | 0.047 | 0.046 | 0.045 | 0.044 |
| 6.474 | 6.426 | 0.05 | 0.049 | 0.048 | 0.047 | 0.046 | 0.045 |
| 6.475 | 6.426 | 0.051 | 0.05 | 0.049 | 0.048 | 0.047 | 0.046 |
| 6.476 | 6.426 | 0.052 | 0.051 | 0.05 | 0.049 | 0.048 | 0.047 |
| 6.477 | 6.426 | 0.053 | 0.052 | 0.051 | 0.05 | 0.049 | 0.048 |
| 6.478 | 6.426 | 0.054 | 0.053 | 0.052 | 0.051 | 0.05 | 0.049 |
| 6.479 | 6.426 | 0.055 | 0.054 | 0.053 | 0.052 | 0.051 | 0.05 |

# Pinion Shim Selection Chart

| Gage Room Measurement | Pinion Nominal & Bearing | Pinion Adjustment (+4) | Pinion Adjustment (+5) | Pinion Adjustment (+6) | Pinion Adjustment (+7) | Pinion Adjustment (+8) | Pinion Adjustment (+9) |
|---|---|---|---|---|---|---|---|
| | | Pinion Shim | Pinion Shim | Pinion Shim | Pinion Shim | Pinion Shim | Pinion Shim |
| 6.468 | 6.426 | 0.038 | 0.037 | 0.036 | 0.035 | 0.034 | 0.033 |
| 6.469 | 6.426 | 0.039 | 0.038 | 0.037 | 0.036 | 0.035 | 0.034 |
| 6.47 | 6.426 | 0.04 | 0.039 | 0.038 | 0.037 | 0.036 | 0.035 |
| 6.471 | 6.426 | 0.041 | 0.04 | 0.039 | 0.038 | 0.037 | 0.036 |
| 6.472 | 6.426 | 0.042 | 0.041 | 0.04 | 0.039 | 0.038 | 0.037 |
| 6.473 | 6.426 | 0.043 | 0.042 | 0.041 | 0.04 | 0.039 | 0.038 |
| 6.474 | 6.426 | 0.044 | 0.043 | 0.042 | 0.041 | 0.04 | 0.039 |
| 6.475 | 6.426 | 0.045 | 0.044 | 0.043 | 0.042 | 0.041 | 0.04 |
| 6.476 | 6.426 | 0.046 | 0.045 | 0.044 | 0.043 | 0.042 | 0.041 |
| 6.477 | 6.426 | 0.047 | 0.046 | 0.045 | 0.044 | 0.043 | 0.042 |
| 6.478 | 6.426 | 0.048 | 0.047 | 0.046 | 0.045 | 0.044 | 0.043 |
| 6.479 | 6.426 | 0.049 | 0.048 | 0.047 | 0.046 | 0.045 | 0.044 |

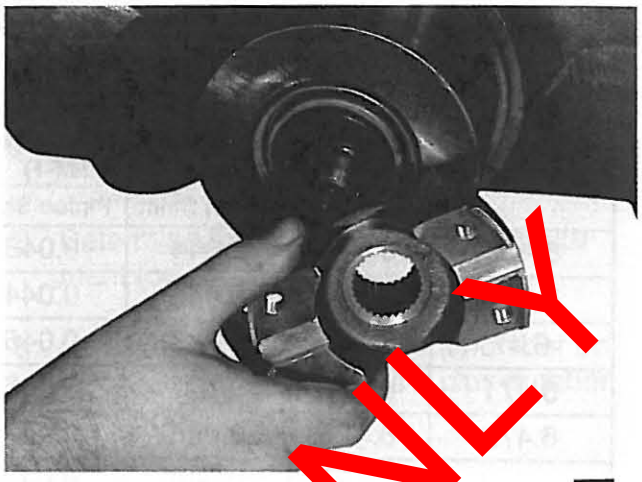


6. Install new bearing cone onto pinion shaft.



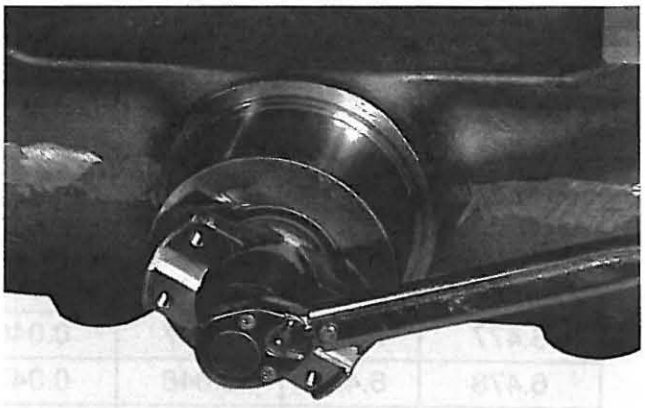
7. Install thrust washer onto pinion shaft.

8. Install new end yoke seal.

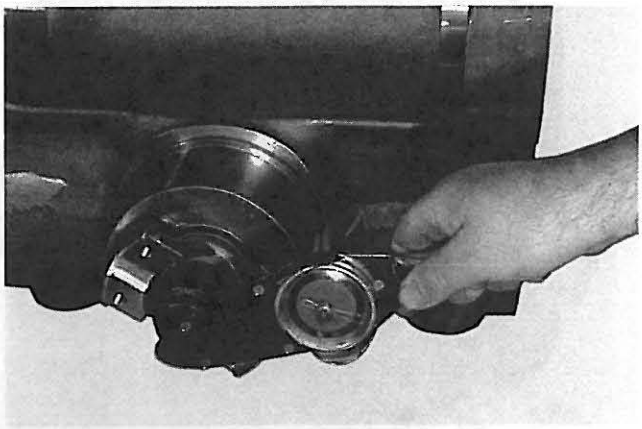


9. Install end yoke.

10. Install the retaining washer and nut.



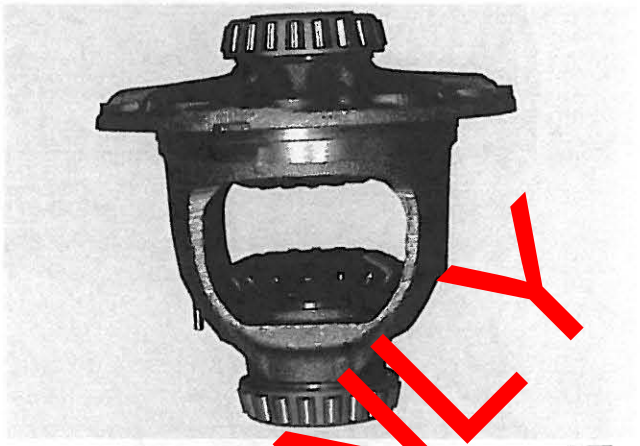
11. Tighten retaining nut to specified torque. (220-280 Ft-Lbs) (298-380 Nm). See Assembly Instruction Note 8.



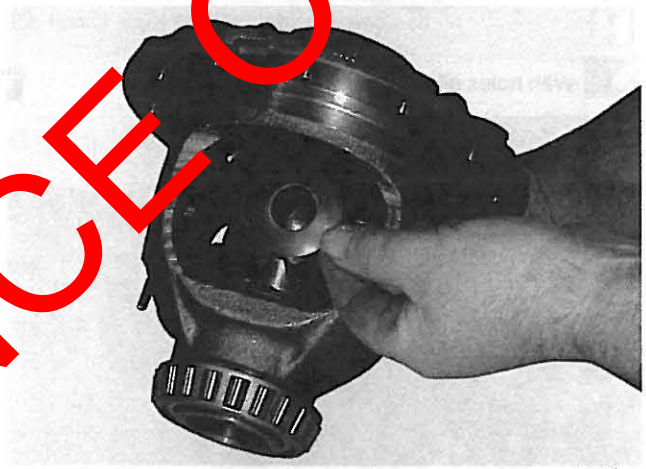
12. Using an inch/pound torque wrench take a reading to determine rolling torque. 20-40 In-Lbs. (2.25-4.5 Nm).

13. Press new bearing cones onto di[illegible]ial case.

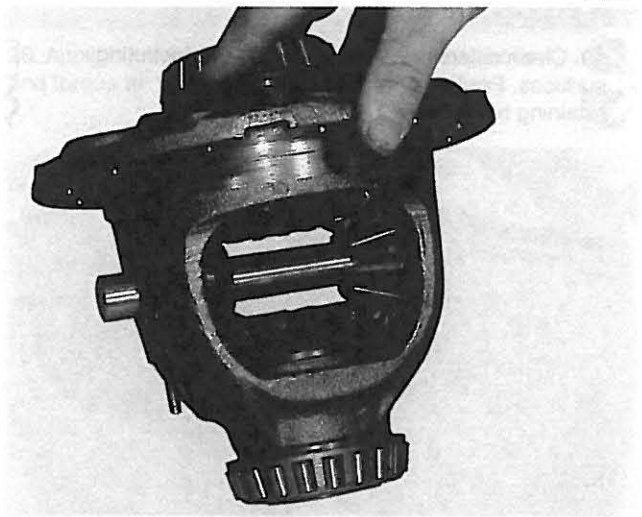
14. Install thrust washers, top and bottom side gear into differential case.



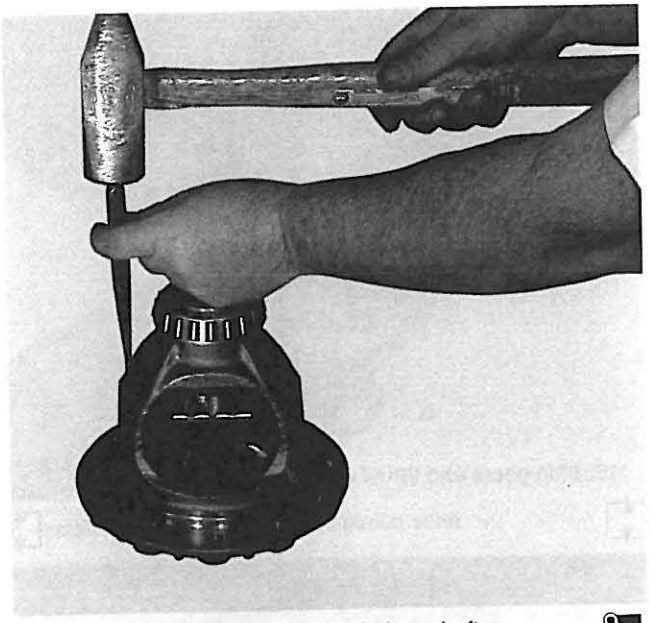
15. Side gears and thrust wa[illegible]er insta[illegible]



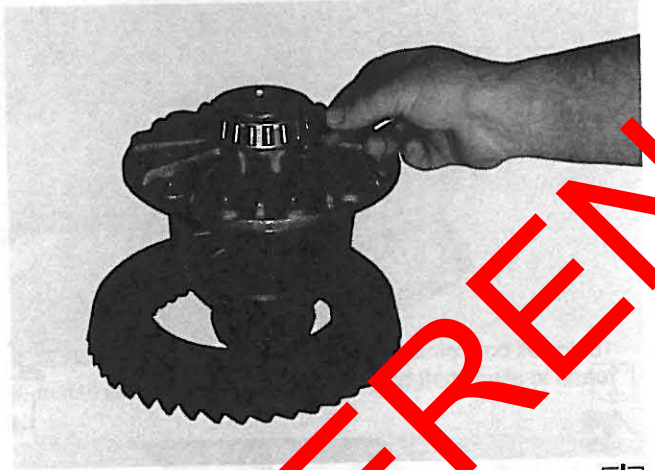
16. Install both pinion gears and thrust washer then rotate to align shaft bore with gears and washers.



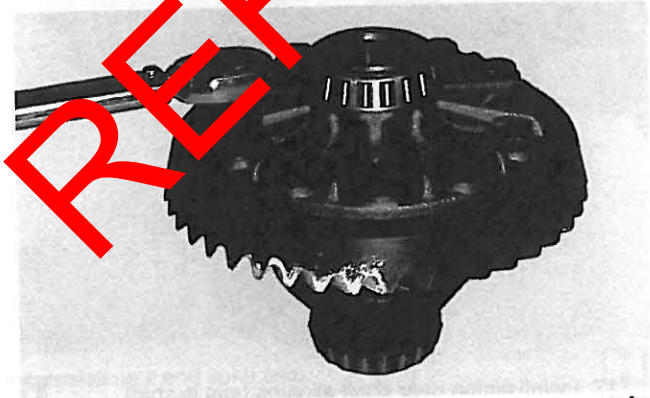
17. Install pinion gear shaft aligning hole in shaft with roll pin hole in differential case.



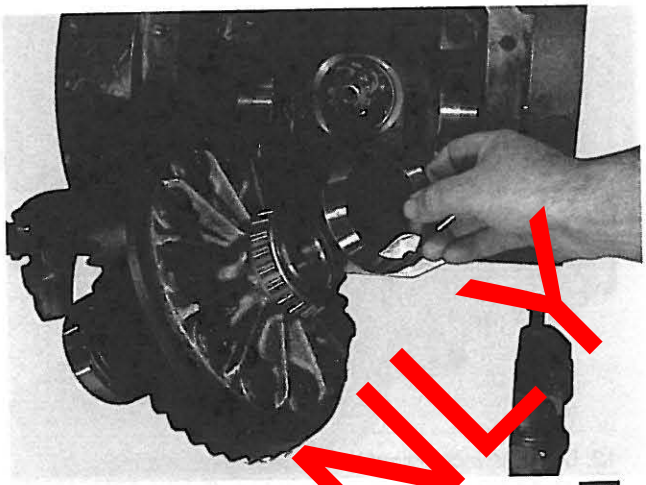
18. With holes aligned, drive roll pin into shaft.



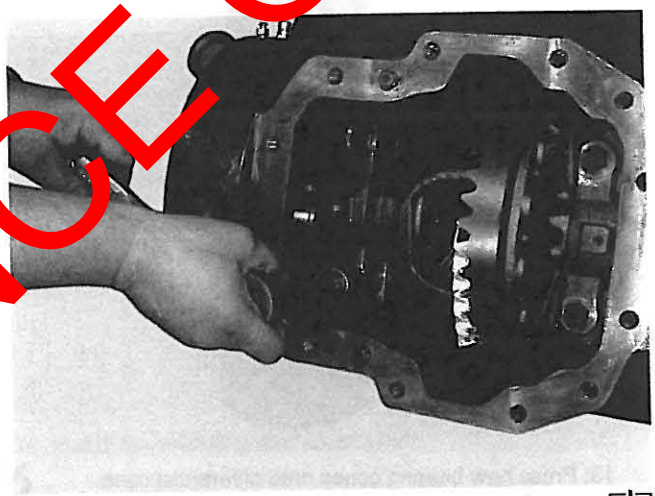
19. Clean differential case and ring gear mounting surfaces. Position ring gear and install new retaining bolts.



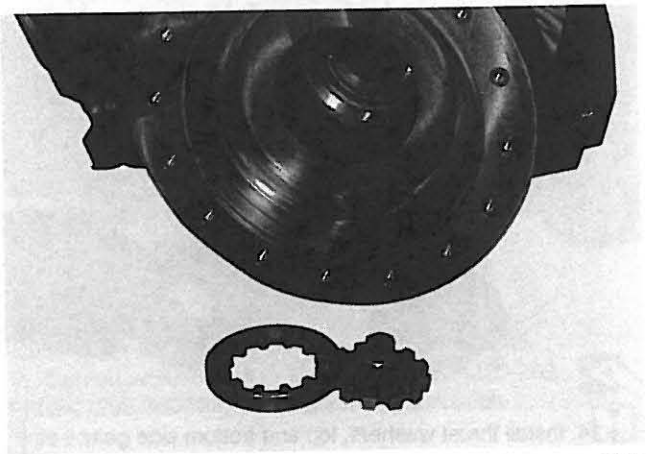
20. Torque bolts to 90-100 Ft. Lbs. (122-135 Nm).



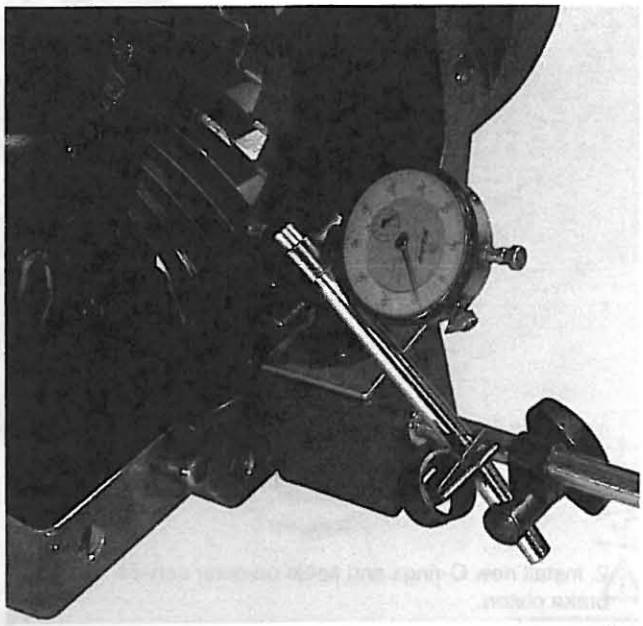
21. Assemble bearing cups on differential bearing cones.



22. Install differential case into carrier housing and install retaining caps, torque to 75-90 Ft. Lbs. (101-122 Nm).

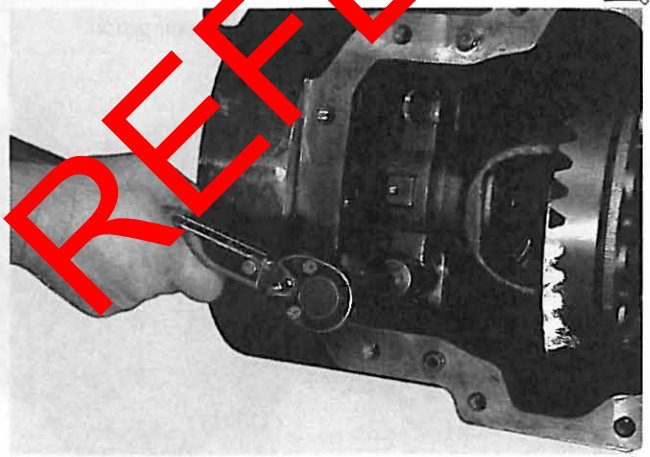


23. Install adjusting rings.

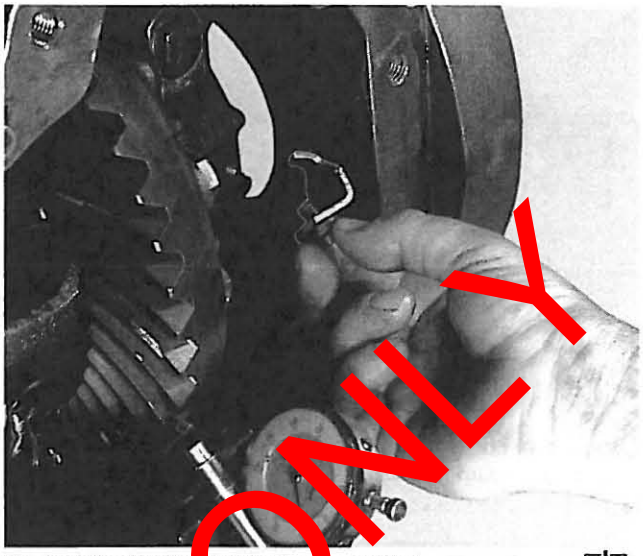


24. Position dial indicator gauge to adjust ring gear backlash.

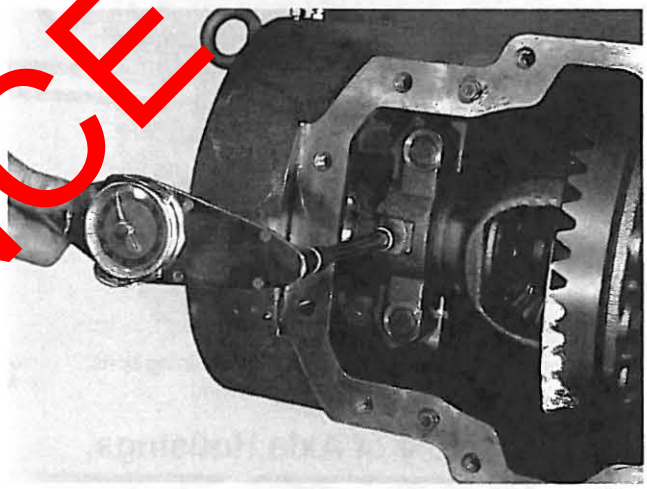
25. Turn adjusting ring clockwise to adjust backlash and turn opposite end to decrease backlash. Tighten to specified torque. See Assembly Instruction Note 9.



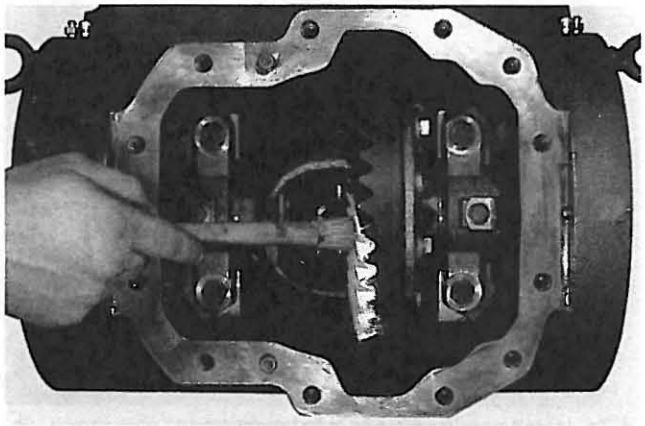
26. Apply Loctite 271 to bearing cap retaining bolt threads and torque to 75-90 Ft. Lbs. (102-122 Nm). Recheck backlash.



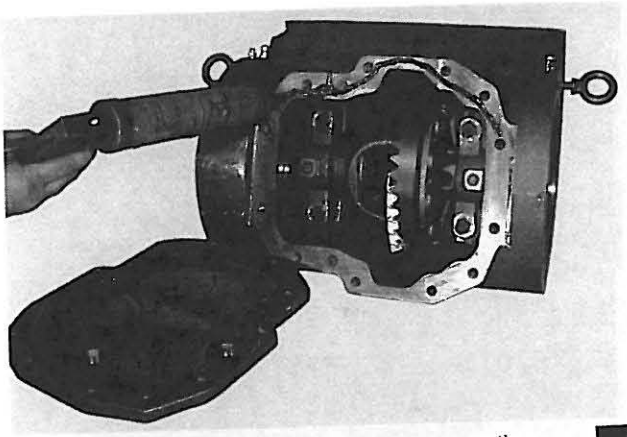
27. Install adjusting ring lock clip and bolt.



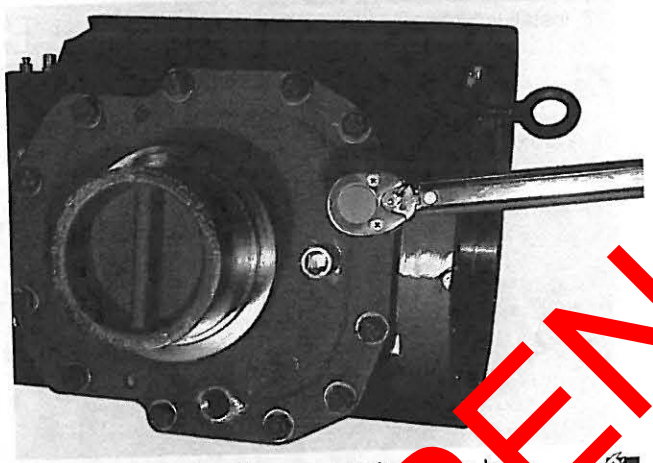
28. Apply Loctite 271 to adjusting ring lock clip bolts and torque to 15-17 Ft. Lbs. (20-23 Nm).



29. Apply paste or compound to allow ring and pinion gear contact pattern to be inspected. Refer to Tooth Contact Chart for correct pattern.



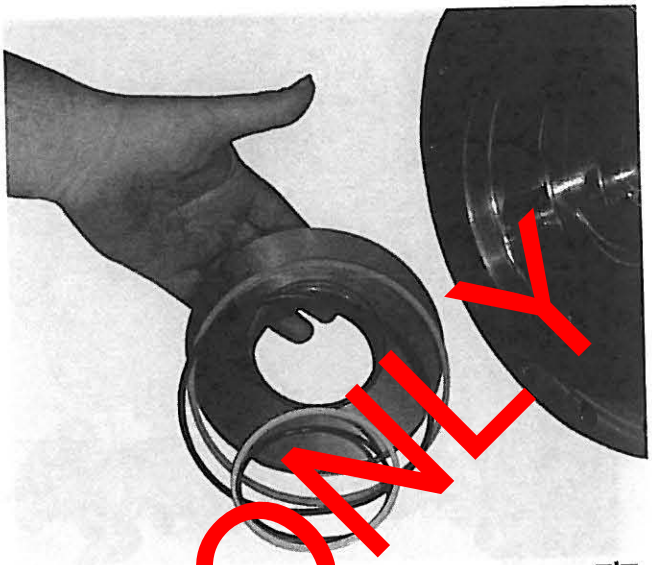
30. Apply Loctite 515 sealer to rear cover mounting surface of carrier housing.



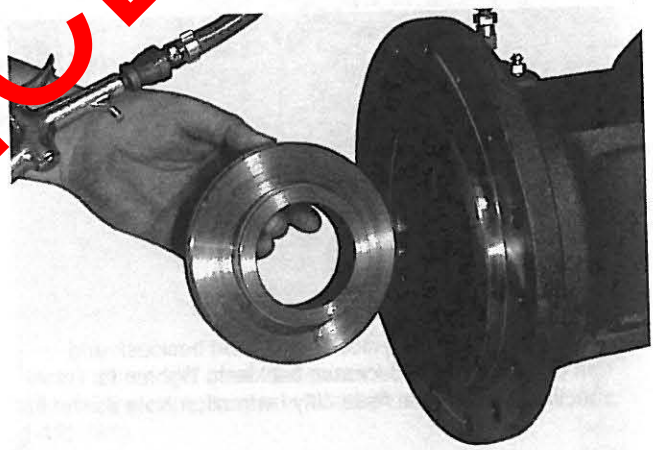
31. Install carrier housing cover and retaining bolts. Torque to 115-120 Ft. Lbs. (156-162 Nm).

## Reassembly of Axle Housings.

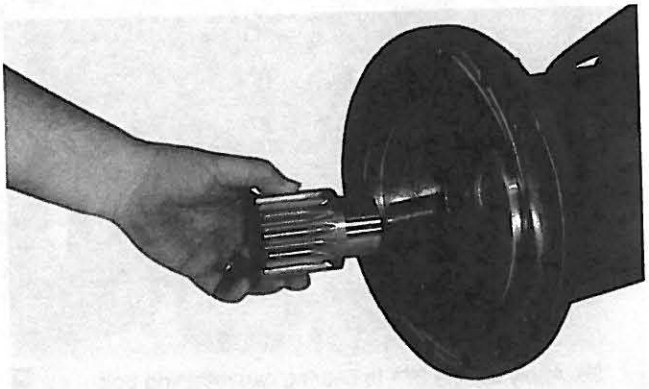
1. Install new bushing in axle housings.



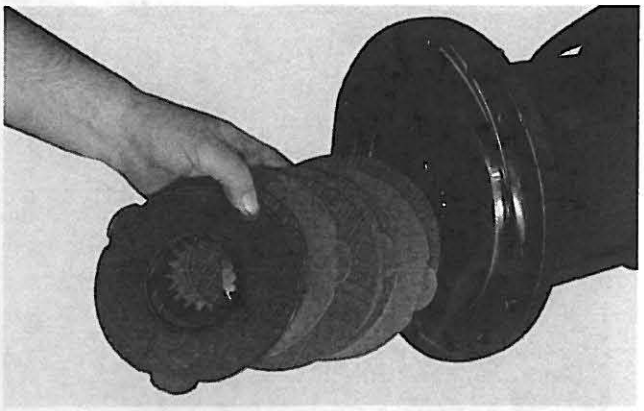
2. Install new O-rings and seals on outer service brake piston.



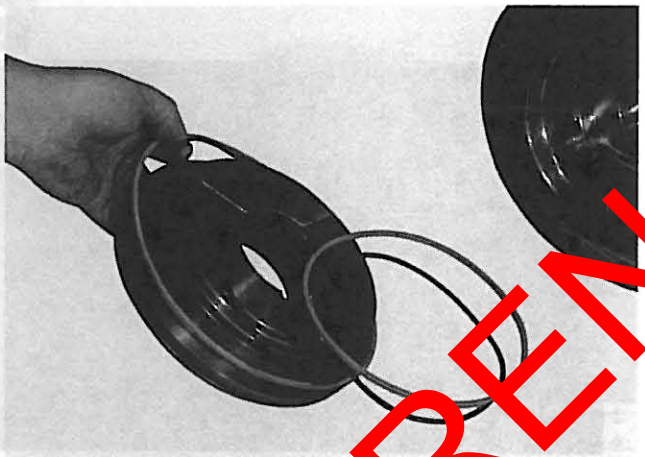
3. Disconnect pressure line and install outer piston.



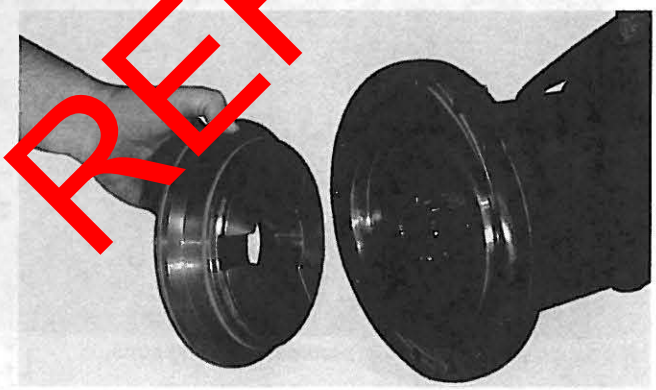
4. Install brake disc coupling.



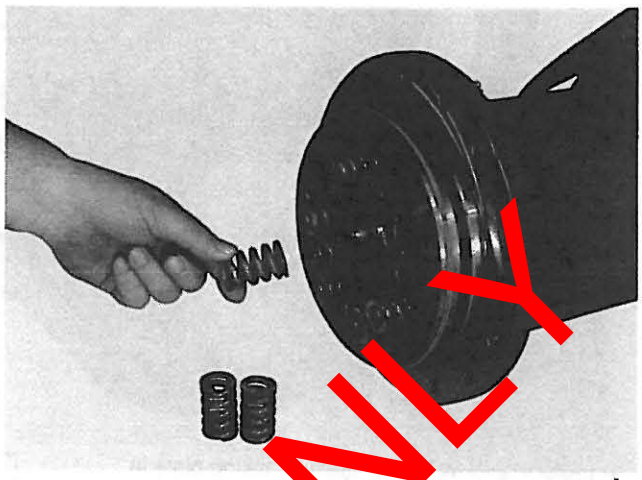
5. Install brake disc in axle housing starting with a steel disc and alternating with (4) four friction disc.



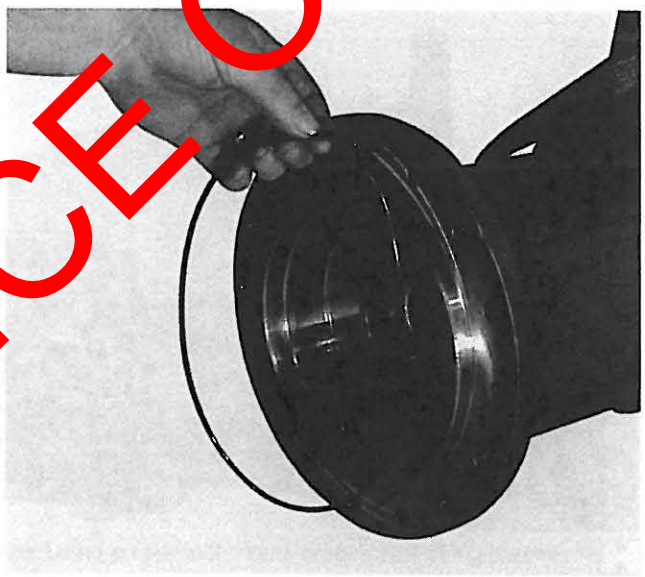
6. Install new O-rings and seals on inner parking brake piston.



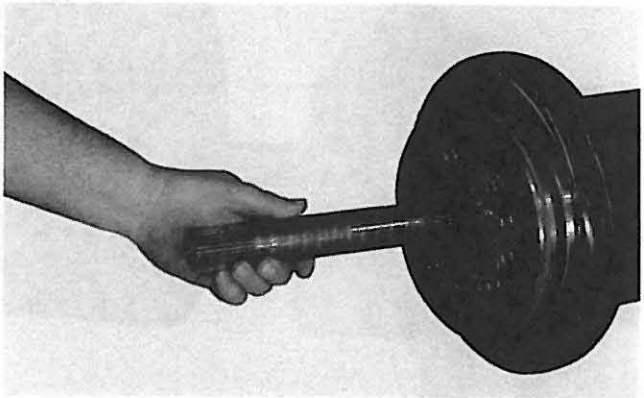
7. Install inner parking brake piston.



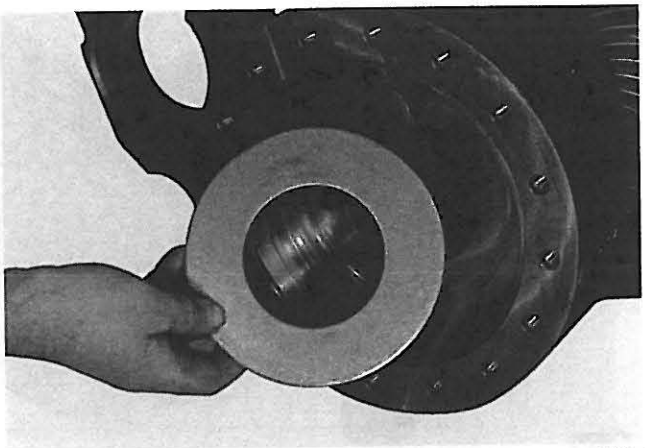
8. Install parking brake springs



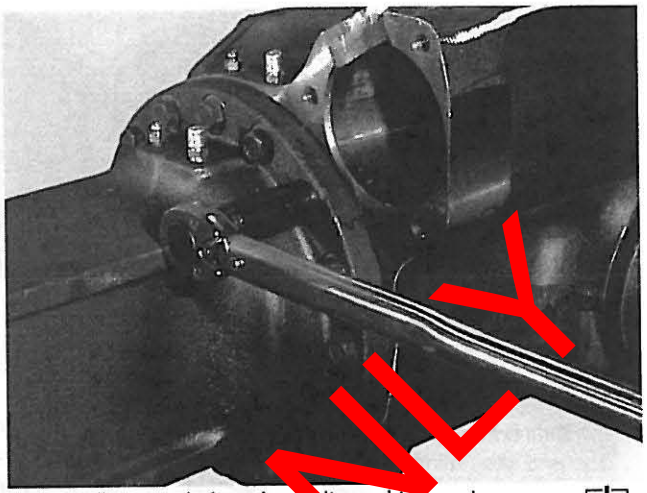
9. Install new O-ring to axle housing.



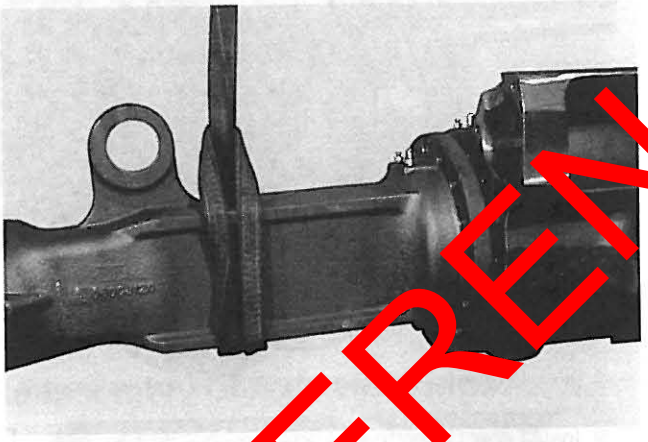
10. Install axle shaft into axle housing. Be sure to install on correct side.

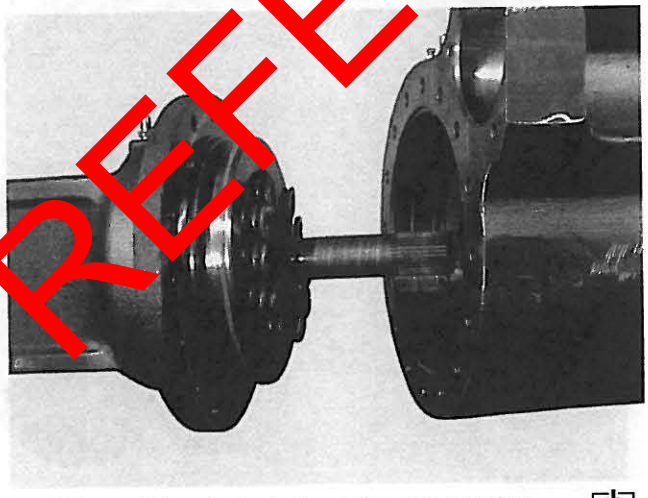


11. Install parking brake spring backing plate in carrier housing.

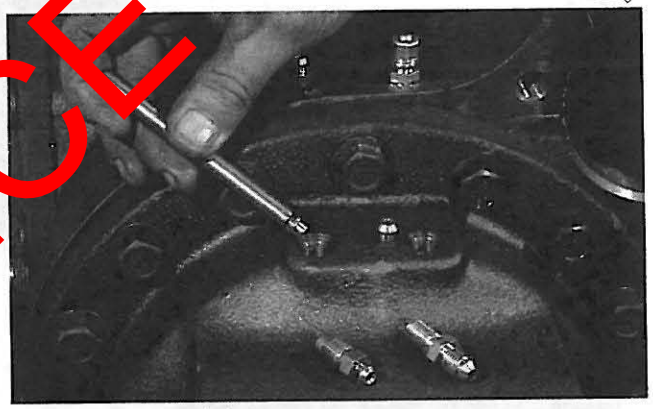


13. Install new axle housing bolts and torque to 110-120 Ft. Lbs. (149-162 Nm).

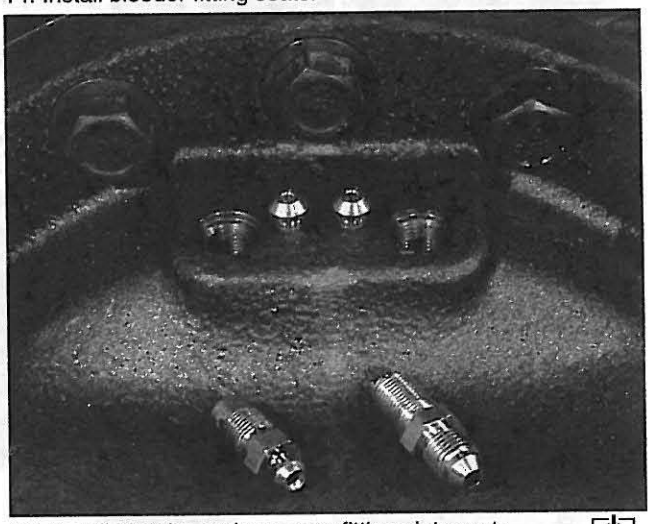




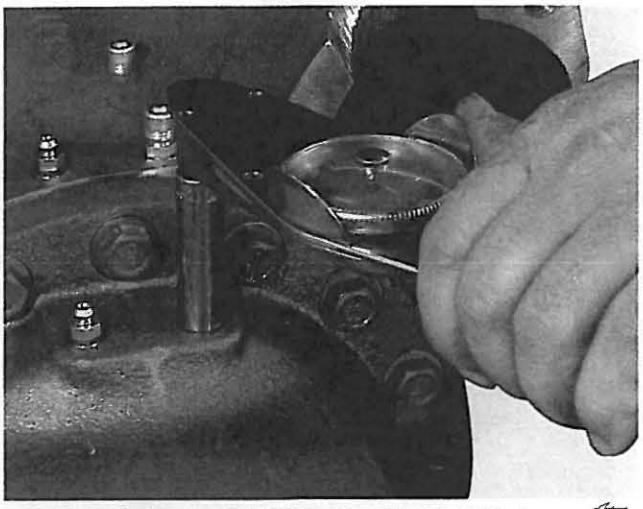
12. Using a lifting device balance the axle housing and install into carrier housing.



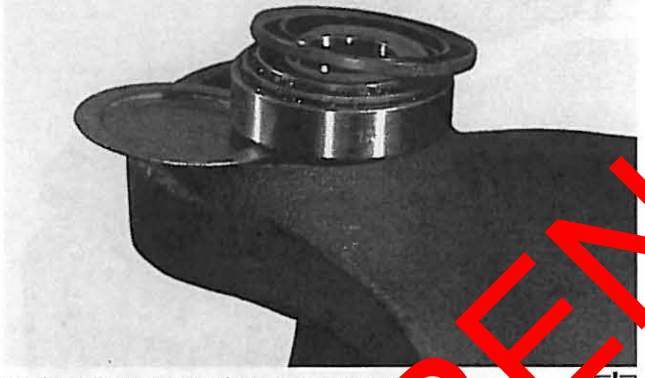
14. Install bleeder fitting seats.



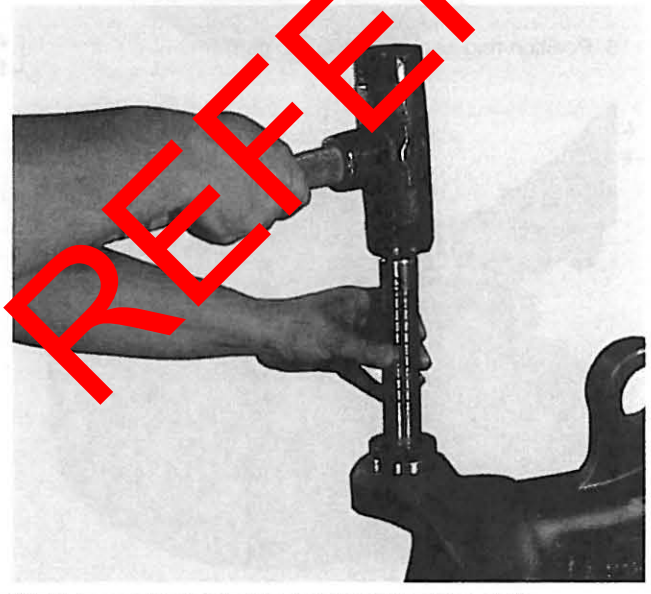
15. Install bleeder and pressure fittings into ports.



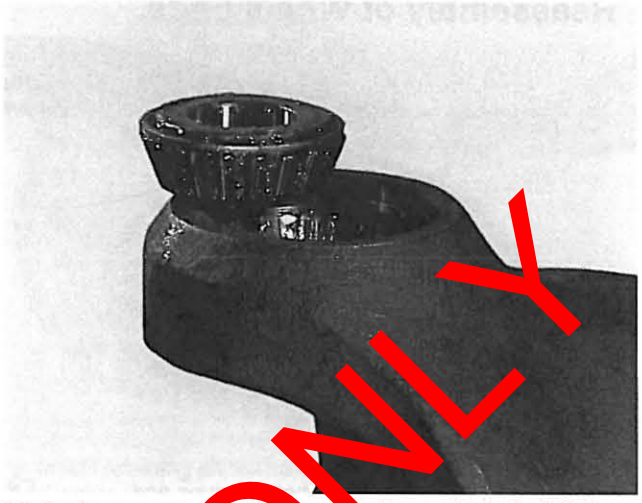
16. Torque fittings to 84-120 In. Lbs. (9.5-13.5 Nm).



17. Install grease retainer, cup, cone and se

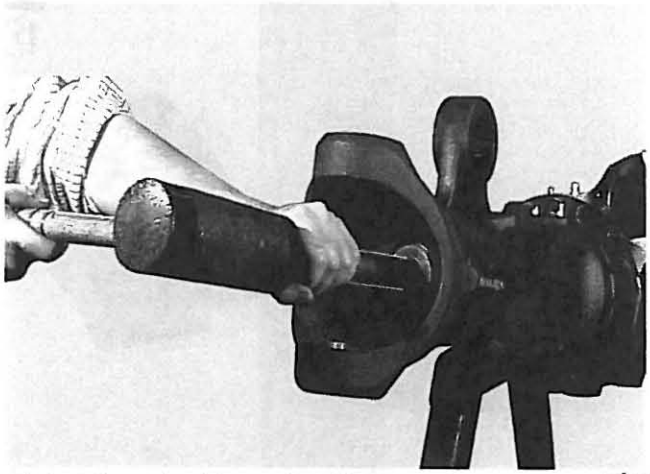


18. Using proper tool, drive bearing cup down until seated properly.



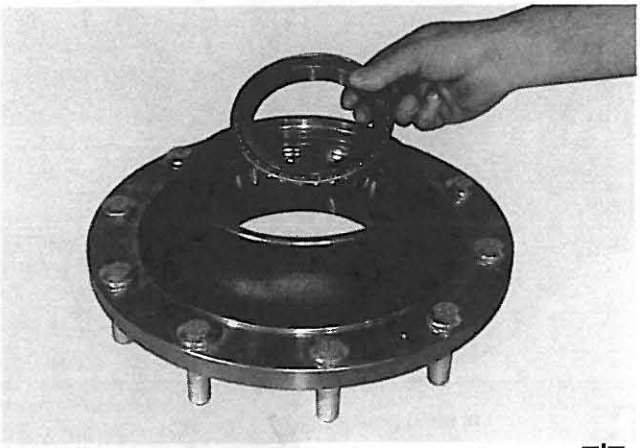
19. Apply grease to bearing cone and cup prior to installation.

20. Using proper tool, install grease seal being careful not to damage seal.

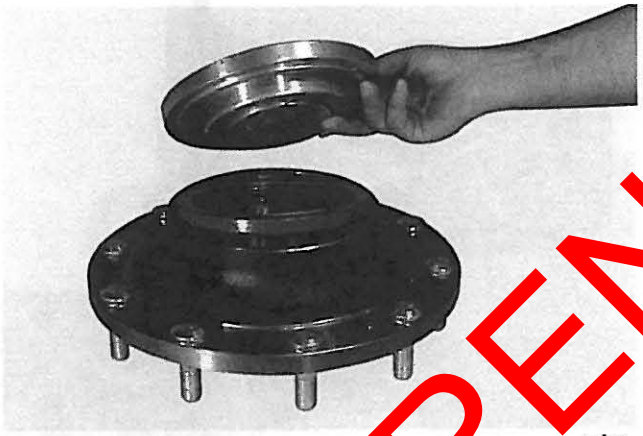


21. Install new bushing and seal into end of axle housing.

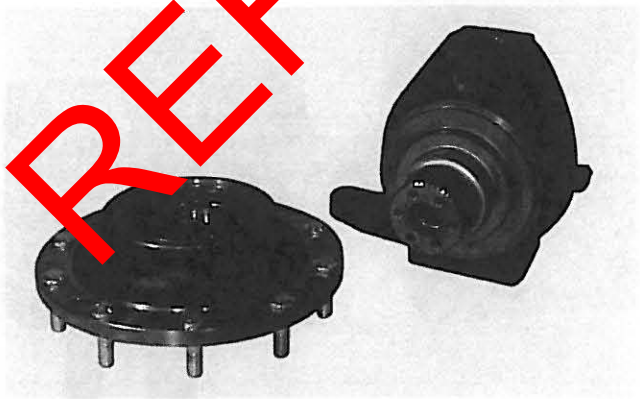
## Reassembly of Wheel Ends.



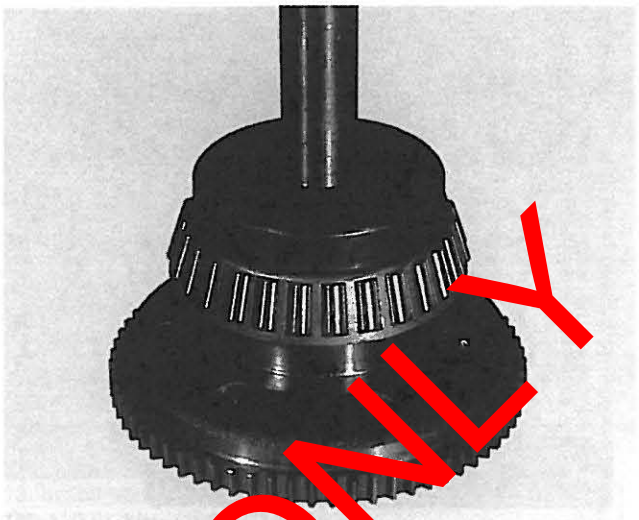
1. Install new inner and outer bearing cups and cones in hub.



2. Install new hub seal using proper driver.

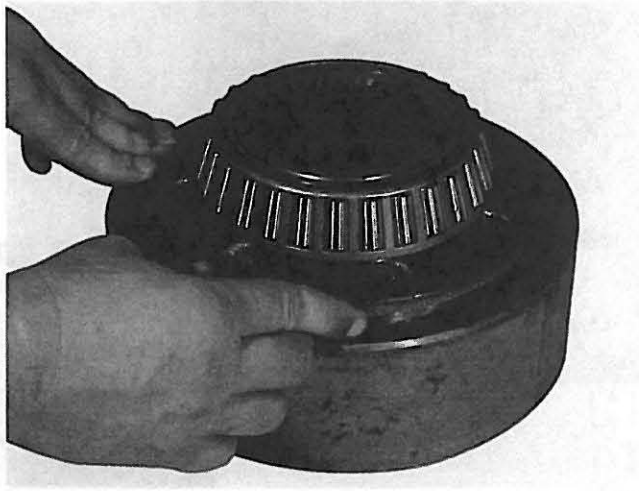


3. Assemble wheel end onto knuckle.

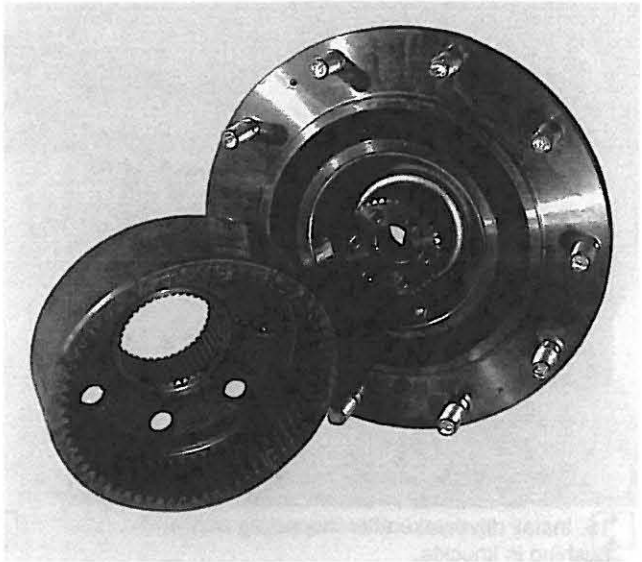


4. Press new outer bearing onto ring gear hub. Heating bearing may ease installation. (Do not exceed 275 degrees). See Assembly Instruction Note 15 (pg. 15).

5. Position ring gear hub into ring gear.

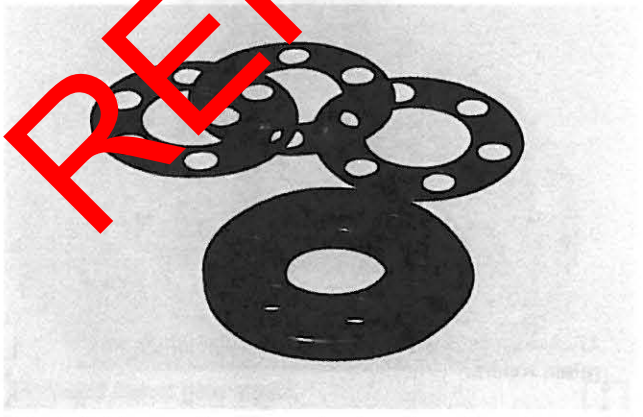


6. Install hub retaining ring into gear assembly.

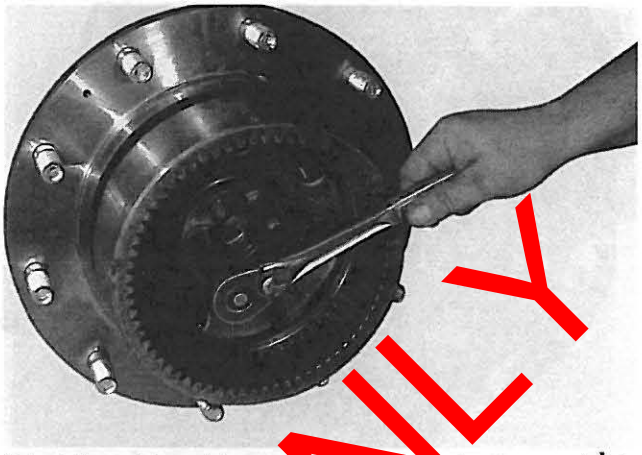


6. Position planetary ring gear, knuckle and hub.

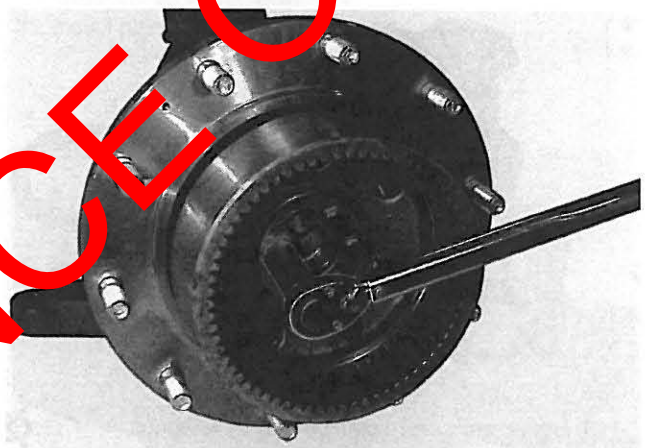
7. Assemble ring ge[illegible] on [illegible]plines of knuckle.



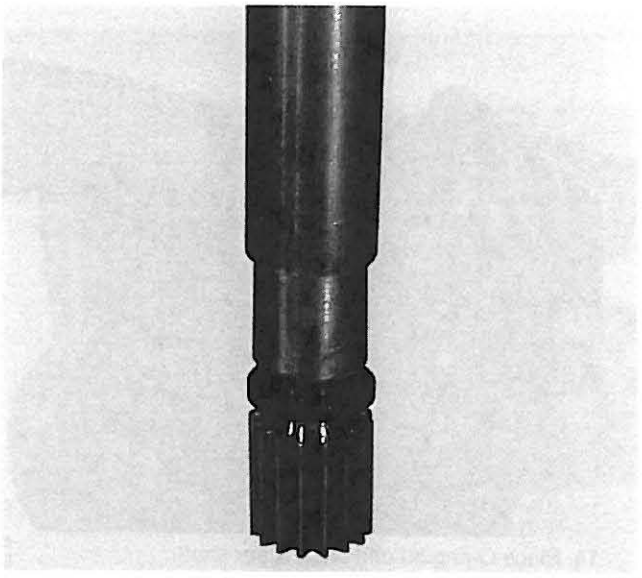
8. Install shims and bearing preload retainer plate. See Assembly Instruction Note 11.



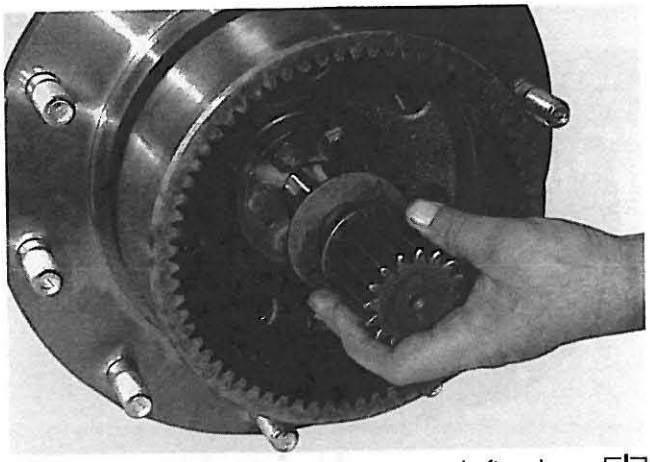
9. Install retaining plate cap s[illegible]ews wit[illegible]ctite 271 and tighten.



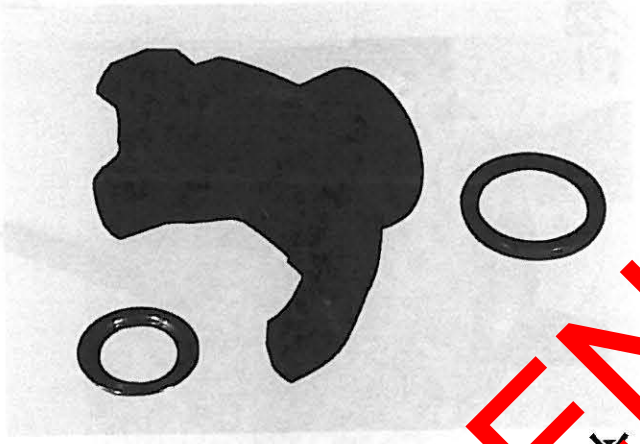
10. Check rolling torque on wheel after torquing bolts to 115/120 Ft. Lbs. (156-162 Nm).



11. Press a new thrust washer on sun gear shaft if required.

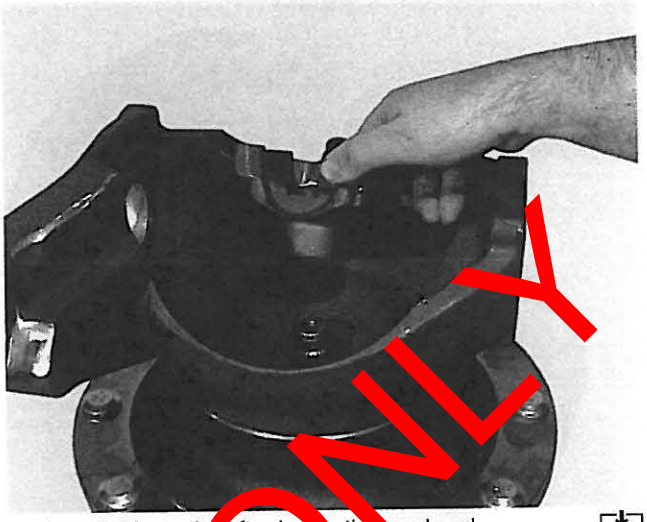


12. Install large thrust washer on sun gear shaft and insert shaft in knuckle bore.

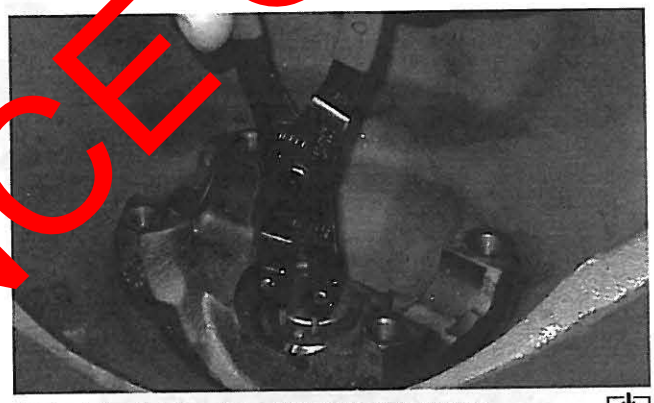


13. Install new grease seal and press washer in drive yoke.

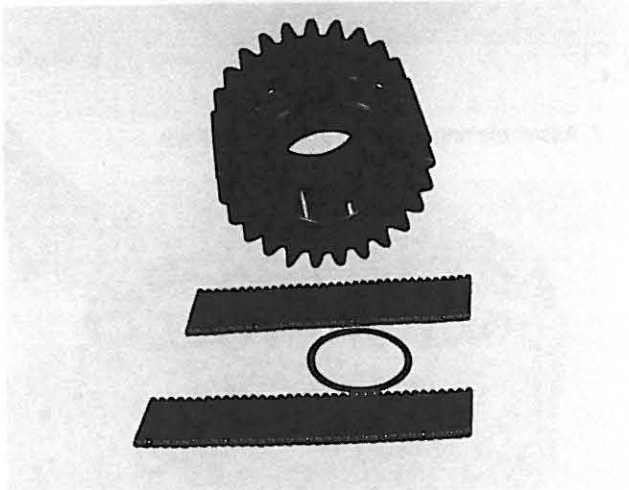
14. Place O-ring on end of sun gear shaft.



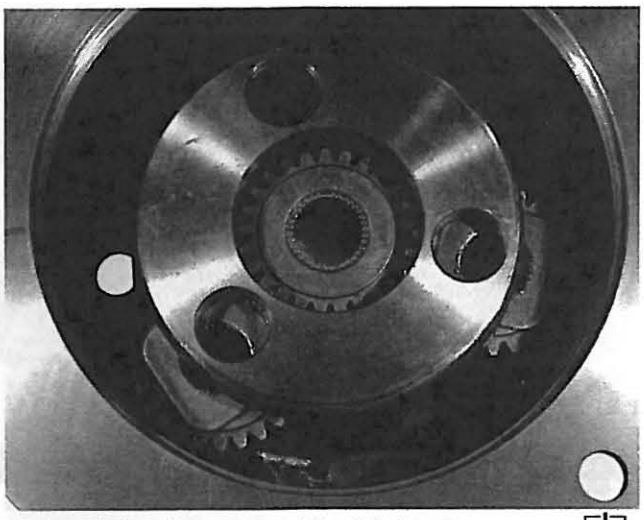
15. Install drive yoke after inspecting seal and bushing in knuckle.



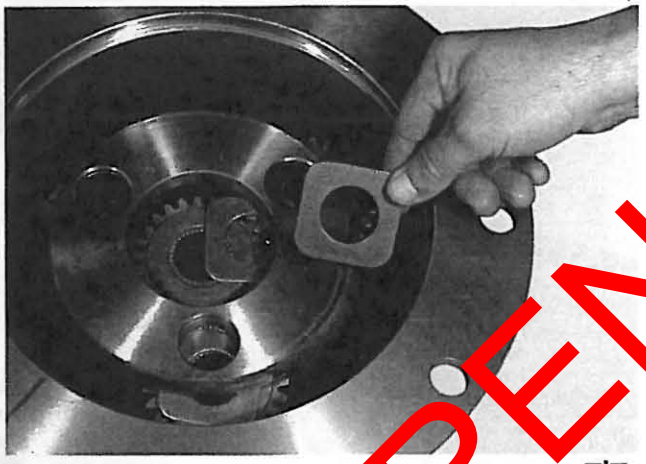
16. Install retaining ring with sharp corners out.



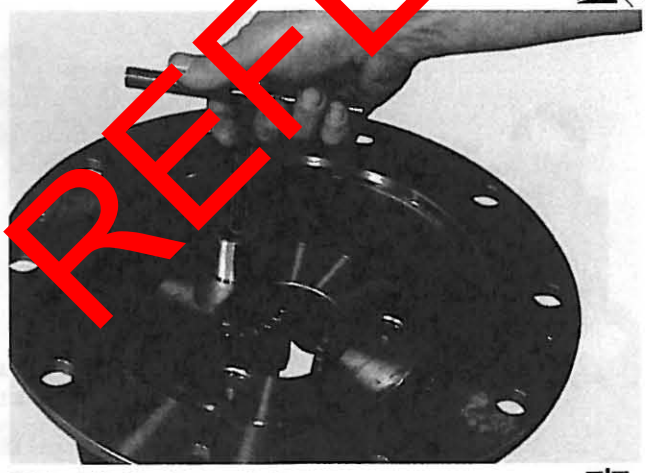
17. Assemble the rollers and spacer using grease to retain rollers.



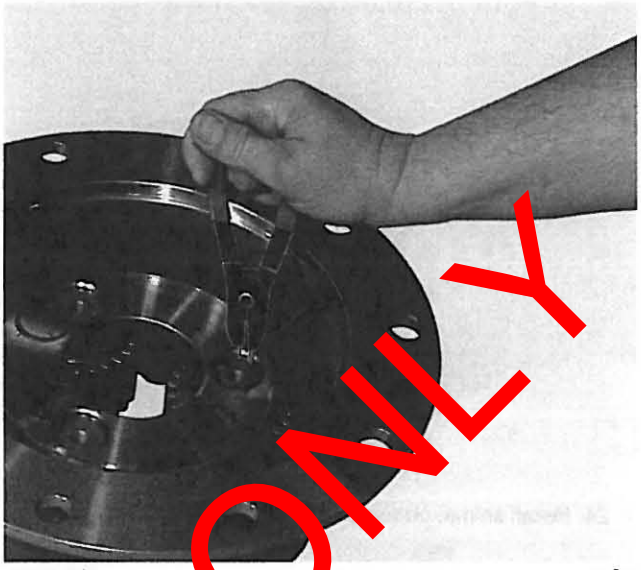
18. Install planet gear assemblies into housing.



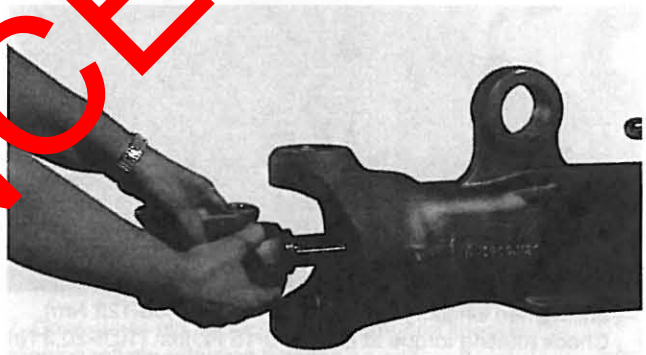
19. Install planet gear thrust washers and [illegible] gears for shafts.



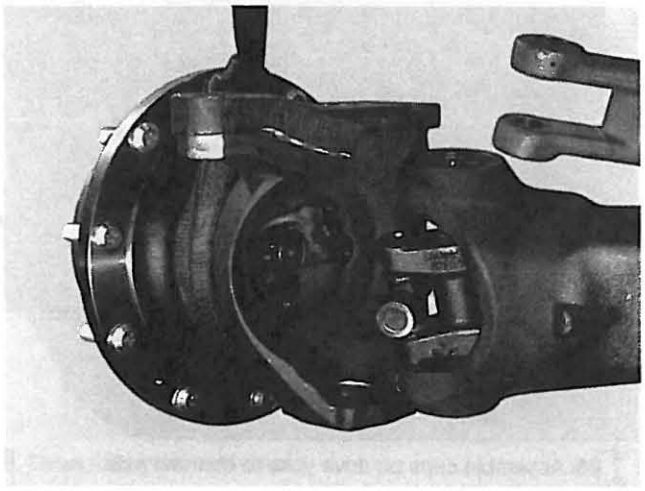
20. Install planet gear shafts.



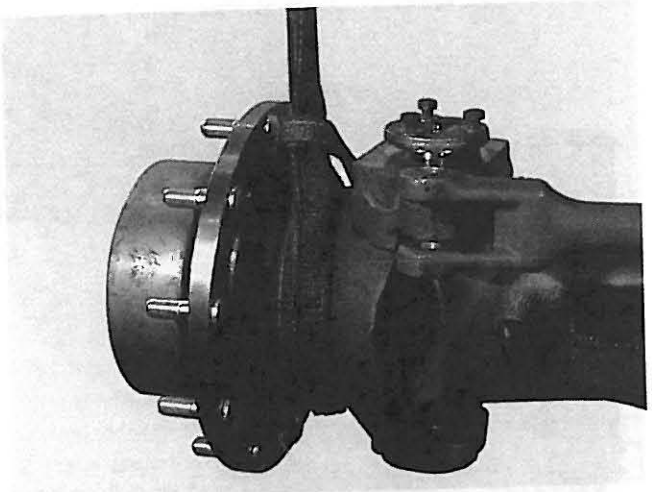
21. Install planet shaft retaining rings.



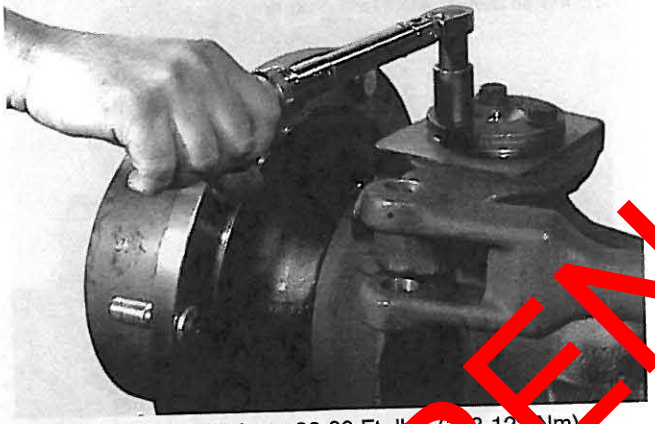
22. Install axle shaft and cross assembly.



23. Position knuckle and hub assembly onto axle housing.

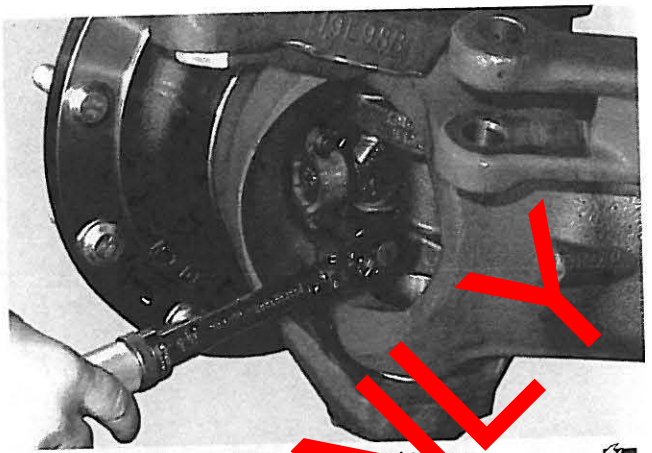


24. Install shims, on top and bottom kingpins.



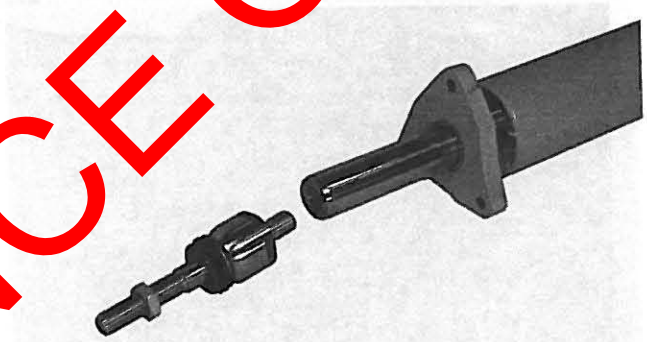
25. Tighten kingpin bolts to 80-90 Ft.-lbs. (1[illegible]-122 Nm)
Check rotating torque at kingpin 8-[illegible] Ft.-lbs. (10.8-2[illegible] Nm).

26. Assemble caps on drive yoke to connect axle shaft assembly.



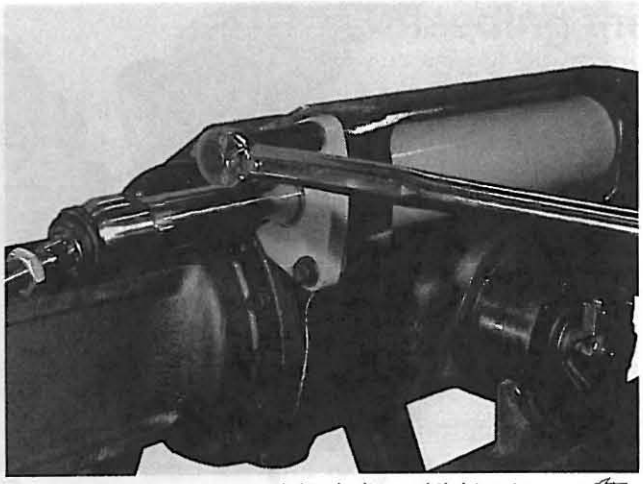
27. Tighten yoke cap bolts to [illegible]ue.
55-60 Ft. lbs. (74.5-81.3 Nm).

## Reassembl[illegible] of Ste[illegible]r Cylinder.

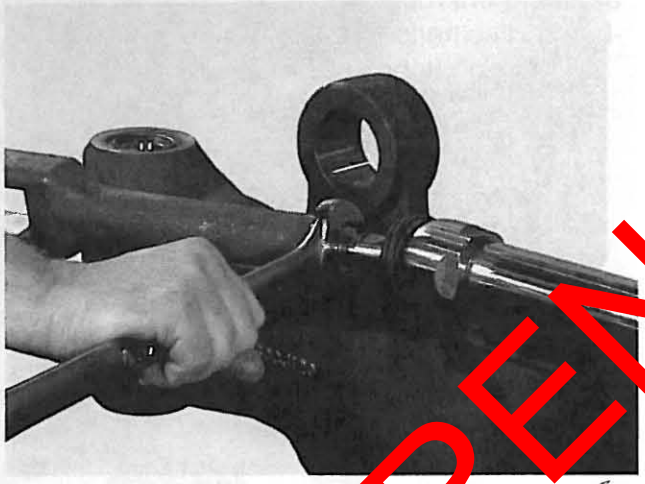


1. Assemble socket assembly to steer cylinder.
Apply Loctite 271 and torque to 192-207 Ft. Lbs.
(260-280 Nm).

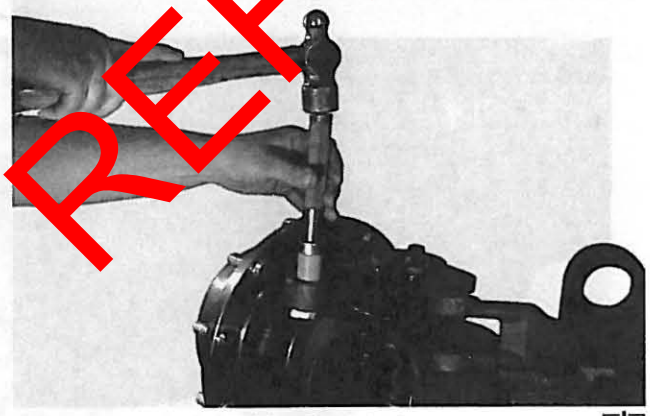
2. Install steer cylinder into axle housing cradle.



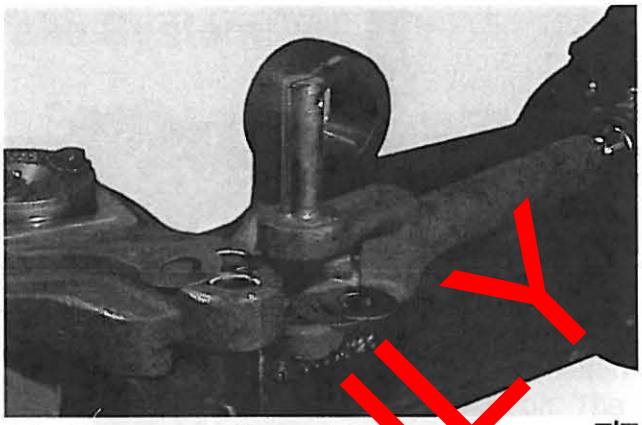
3. Install steer cylinder retaining bolts and tighten to specified torque. 80-90 Ft.-Lbs. (108-122 Nm).



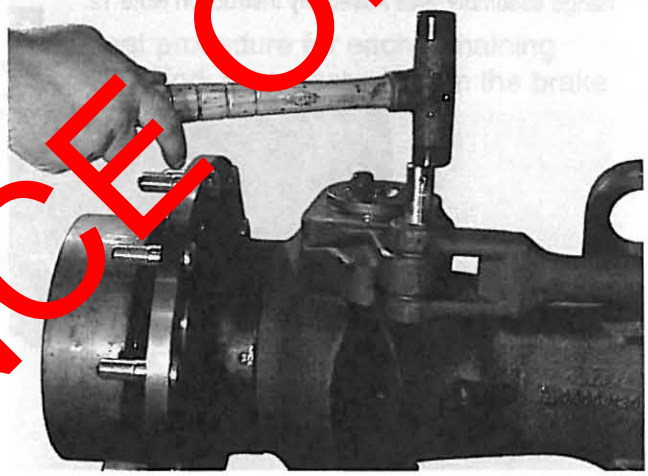
4. Install steering arm and torque to 221Ft. (299 Nm).



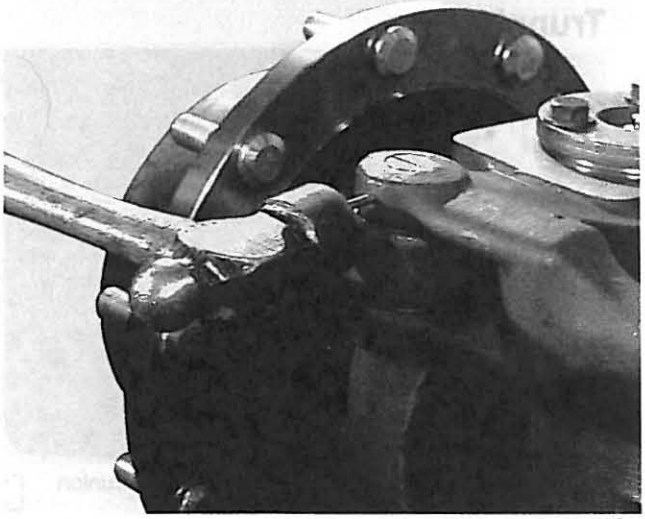
5. Install new clevis bushing if required.



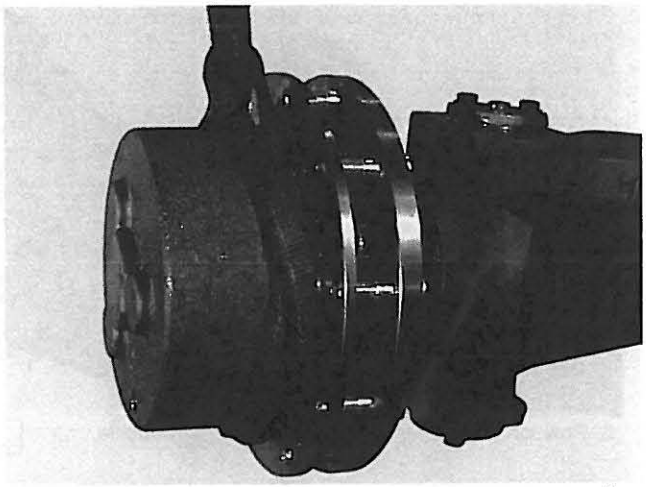
6. Position steer arm, shims and O-ring on knuckle.



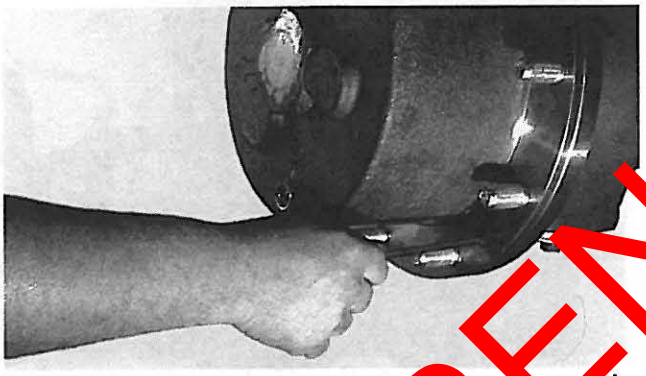
7. Drive clevis pin through bore of arm and knuckle, aligning roll pin retaining holes.



8. Drive roll pin into clevis pin.



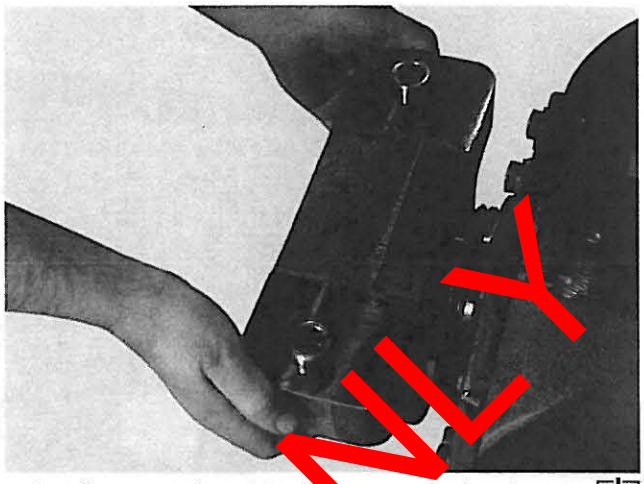
9. Apply loctite 515 on face of hub and install drive flange assembly. See Assembly Instruction Note 12.



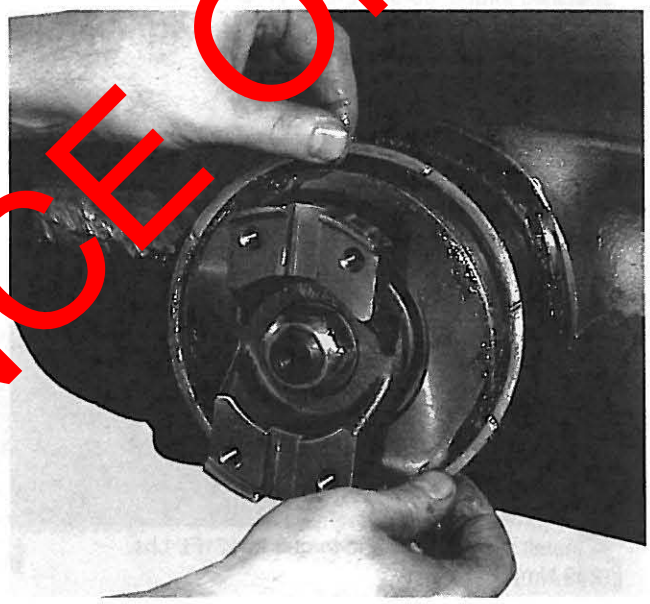
10. Install planetary retaining bolt two (2) places. Torque to 40-45 Ft.-Lbs. (54-61 Nm). See Assembly Instruction Note 12.

## Installation of Front and Rear Trunnions.

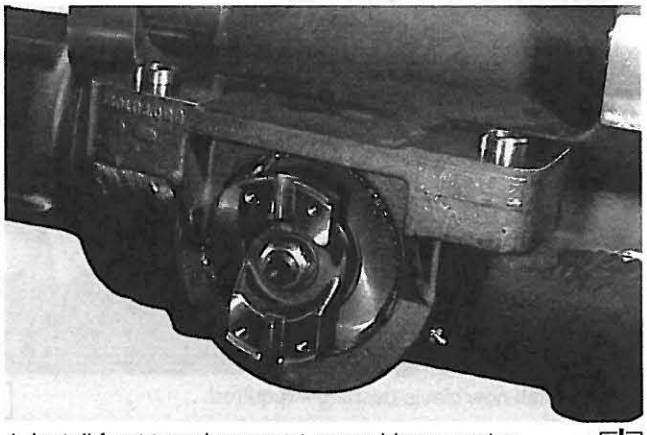
1. Install V-ring seal and thrust washer on rear trunion mount. Grooves are to face out.



2. Install rear trunnion assembly onto carrier housing.



3. Install front trunnion V-ring and thrust washer. Grooves to face out.



4. Install front trunnion mount assembly on carrier housing.

# Bleeding the Brake System

1. Fill the master cylinder reservoir with approved fluid before starting the bleeding operation. Keep the reservoir at least half full of fluid at all times during the bleeding operation. (**Note:** if the master cylinder is drained at any time during the bleeding operation, air will enter the system and rebleeding will be necessary).

2. Start the brake bleeding operation at the brake head with the **longest** line to the master cylinder.

3. While applying pressure from the pressure bleeder tank (or when mechanically bleeding, depress the brake pedal) open the bleeder screw and observe the flow of fluid. The pressure will move the fluid through the system and out the open bleeder screw carrying with it any air (evidenced by bubbles in the flow of fluid) that was trapped in the line and cylinder.

   **NOTE:** The bleeder screw must remain closed until the brake pedal has been fully depressed to prevent air from entering the system. After bleeding, the bleeder screw must be closed before the pedal is released.

4. Close the bleeder screw when the flow of fluid appears free of bubbles and flows solid. Reopen screw momentarily, then tighten.

   **NOTE:** Fluid drained during the bleeding operation shall not be re-used because of possible contamination during the bleeding operation. The fluid level in the master cylinder should be replenished after each bleeding sequence.

5. Repeat procedure for each remaining brake. Work progressively from the brake with the **longest** line.

# NOTES

**APPLICATION POLICY**

Capability ratings, features and specifications vary depending upon the model type of service. Applications approvals must be obtained from Spicer Off-Highway Products Division. We reserve the right to change or modify our product specifications, configurations, or dimensions at any time without notice.

DANA

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