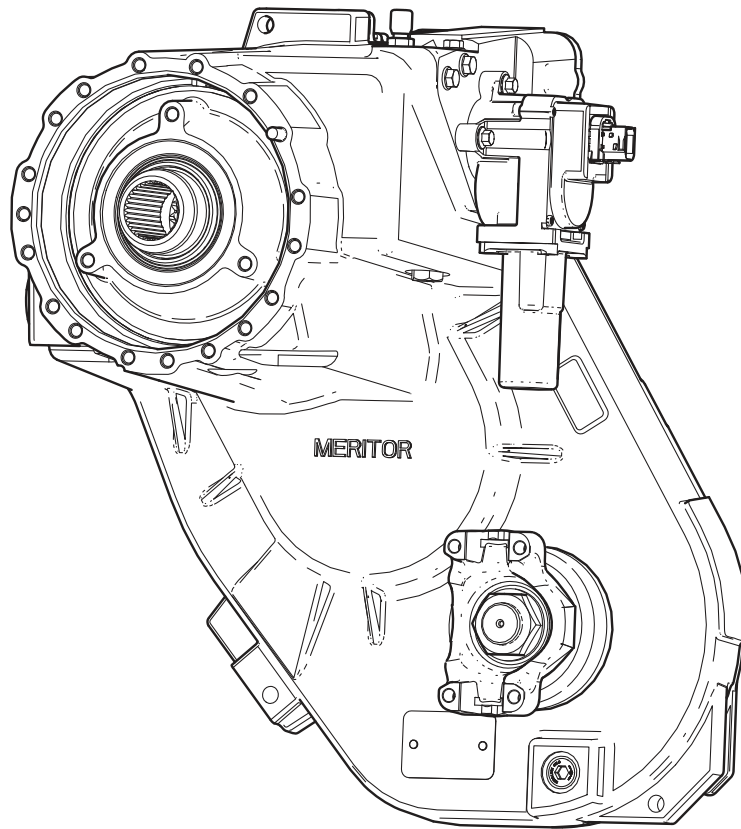


January 2021

MTC-3203-AD02-100-300 SERIES TRANSFER CASE



About This Manual

This manual provides service and repair procedures for the Meritor MTC-3203-AD02-100-300 Series Transfer Case.

Before You Begin

1. Read and understand all instructions and procedures before you begin to service components.
2. Read and observe all hazard alert messages in this publication. They provide information that can help prevent serious personal injury, damage to components, or both.
3. Follow your company's maintenance and service, installation, and diagnostics guidelines.
4. Use special tools when required to help avoid serious personal injury and damage to components.

Hazard Alert Messages

DANGER

A DANGER INDICATES A PROCEDURE THAT YOU MUST FOLLOW EXACTLY OR IT WILL CAUSE DEATH OR SERIOUS INJURY.

WARNING

A WARNING ALERTS YOU TO AN INSTRUCTION OR PROCEDURE THAT YOU MUST FOLLOW EXACTLY TO AVOID SERIOUS PERSONAL INJURY AND DAMAGE TO COMPONENTS.

CAUTION

A CAUTION ALERTS YOU TO AN INSTRUCTION OR PROCEDURE THAT YOU MUST FOLLOW EXACTLY TO AVOID DAMAGE TO COMPONENTS.



THIS SYMBOL ALERTS YOU TO TIGHTEN FASTENERS TO A SPECIFIED TORQUE VALUE.

How to Obtain Additional Maintenance and Service Information

Visit Literature on Demand at meritor.com to access and order additional information. Additional information is also available at meritorbullpen.com.

Contact the OnTrac™ Customer Call Center at 866-668-7221 (United States and Canada); 001-800-889-1834 (Mexico); or email OnTrac@meritor.com.

If Parts, Tools, and Supplies are Specified in this Manual

Contact Meritor's Commercial Vehicle Aftermarket at 888-725-9355.

For assistance with parts, you may also contact the Meritor Parts Center in Florence, KY at CustCareCntr.Florence@Meritor.com or 859-525-3500.

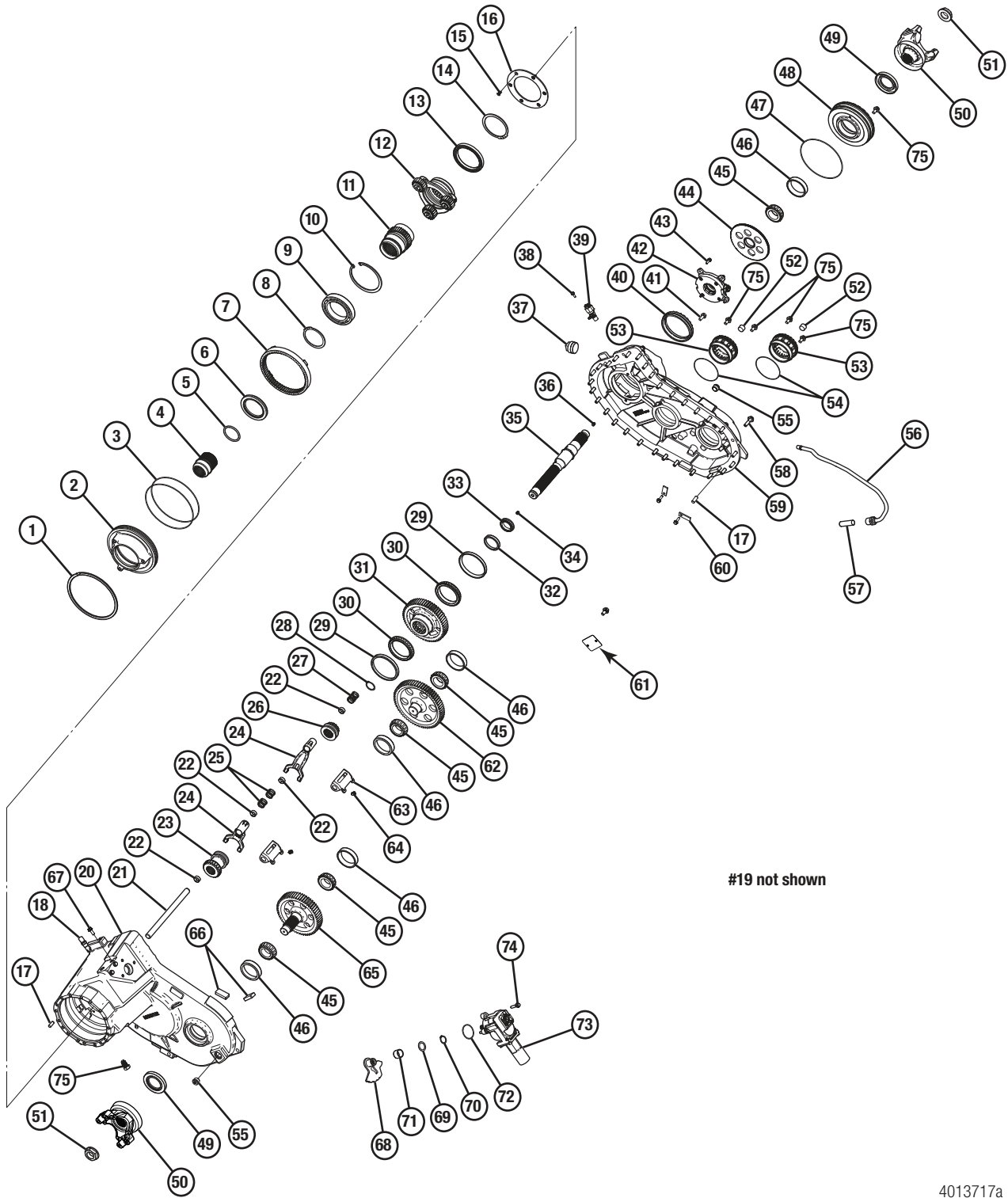
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1 Exploded Views

Exploded Views



Item	Description	Item	Description
1	Snap Ring	39	Sensor Assembly
2	Bearing Cage	40	Bearing Cup
3	O-ring	41	Screw
4	Adapter	42	Transfer Case Pump
5	O-ring	43	Flange Head Capscrew
6	Seal	44	Tooth Wheel
7	Planetary Ring Gear	45	Bearing Cone
8	Snap Ring	46	Bearing Cup
9	Bearing	47	O-ring
10	Snap Ring	48	Bearing Cage
11	Sun Gear Shaft	49	Seal
12	Planetary Pinion Carrier	50	Yoke
13	Bearing	51	Lock Pinion Nut
14	Snap Ring	52	Plug
15	M6x1 Flat Head Screws	53	Bearing Cage
16	Bearing Retainer Plate	54	O-ring
17	Dowel Pin	55	Plug
18	Breather Assembly	56	Oil Pump Tube
19	Hex Flange Bolt (Not Shown)	57	Filter Screen
20	Transfer Case Half	58	Hex Flange Screw
21	Shifter Shaft	59	Cover
22	Plastic Bushing	60	Bracket
23	Clutch Collar	61	Nameplate
24	Shift Fork	62	Idler Gear
25	Return Spring	63	Bracket
26	Clutch Collar	64	Cam Follower
27	Return Spring	65	Driven Gear
28	Snap Ring	66	Magnet
29	Bearing Cup	67	Detent Assembly
30	Bearing Cone	68	Cam
31	Input Gear	69	Bushing
32	Bearing Cup	70	Flat Washer
33	Bearing Cone	71	Snap Ring
34	Plug	72	O-ring
35	Input Shaft	73	Actuator
36	Expansion Plug	74	Hex Flange Screw
37	Pipe Plug	75	Hex Flange Bolt
38	Special Screw		

Introduction

Model Nomenclature

Meritor Transfer Case — Model Nomenclature

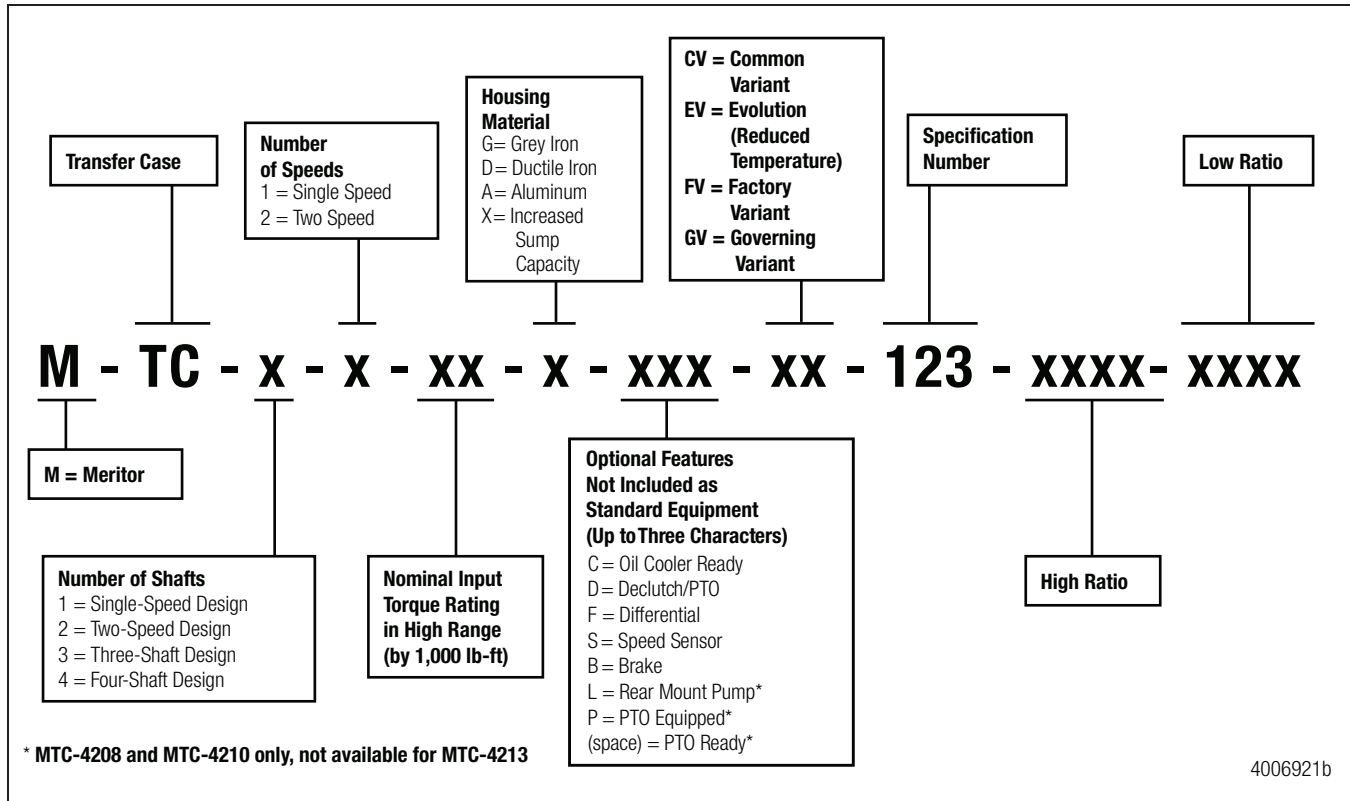


Figure 2.1

Transfer case model nomenclature is illustrated in the following example:

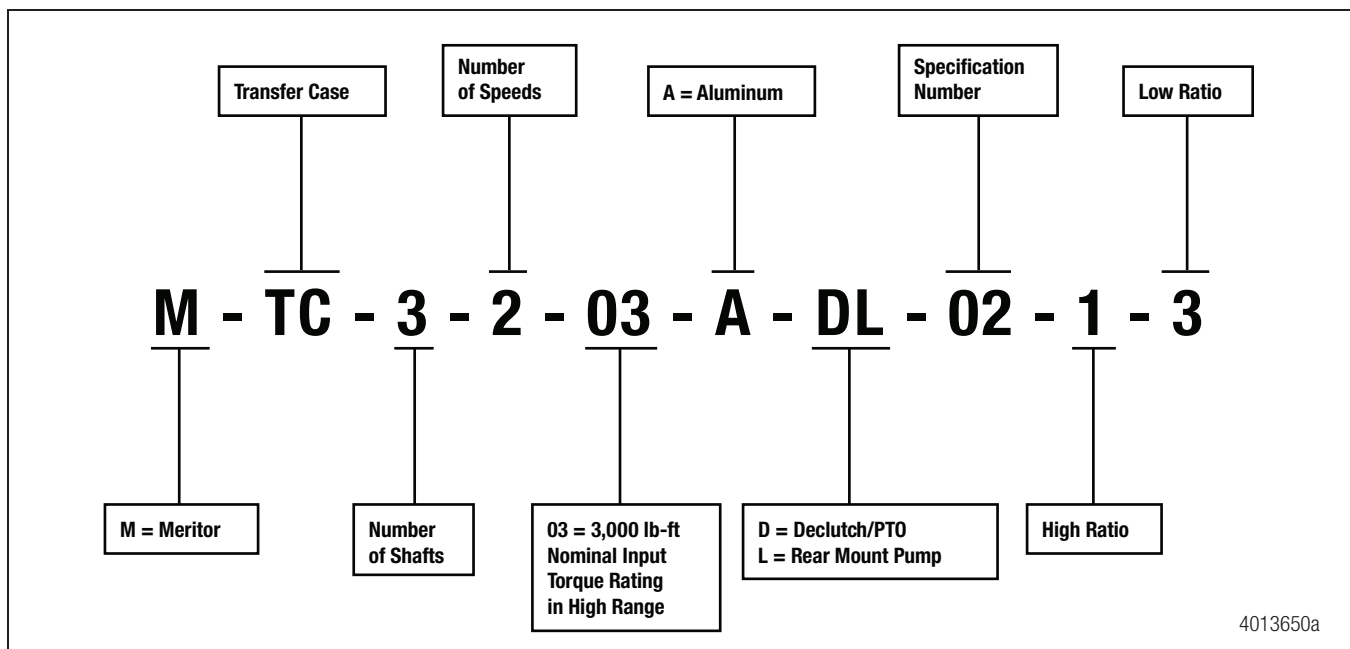


Figure 2.2

Description

The Meritor MTC-3203-AD02-100-300 Series Transfer Case is a three-shaft design with a two-speed front and rear output having a 1:1 ratio in high range and a 3:1 ratio in low range for use with part-time 4x4. The transfer case is designed specifically for use in 4x4 vehicles as part of the Meritor medium-duty 4x4 drive system. Figure 2.3.

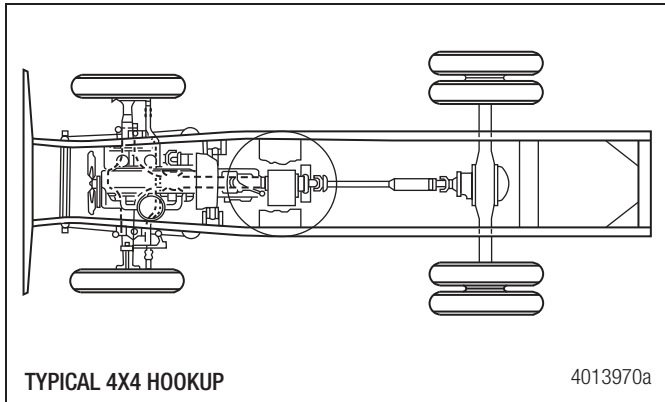


Figure 2.3

The electric front-axle declutch, and high and low shifter are controlled from the cab. An electric switch, usually mounted on the instrument panel, engages or disengages a mechanical clutch in the transfer case.

An optional speed sensor measures transfer case output driveline rpm. Optional switches indicate when the front axle declutch is fully engaged or disengaged.

These transfer cases provide for two-speed output (high range and low range) and a neutral position.

The front axle declutch permits shifting from part-time 4x4 operation to rear-wheel drive (RWD). You will know that engagement occurs by hearing it, noticing improved vehicle performance, or observing the optional indicator light in the cab.

Operation

Front Axle and 4x4 Declutch

⚠ WARNING

DO NOT ENGAGE THE FRONT AXLE DECLUTCH WHEN THE VEHICLE'S WHEELS ARE SLIPPING OR WHEN MOVING UP OR DOWN A STEEP HILL OR GRADE, WHICH CAN CAUSE THE VEHICLE TO LOSE STABILITY. SERIOUS PERSONAL INJURY AND DAMAGE TO COMPONENTS CAN RESULT.

OPERATION OF THE FRONT AXLE SHOULD OCCUR ONLY ON OFF-ROAD OR POOR TRACTION CONDITIONS. ENGAGING THE DECLUTCH AFFECTS THE VEHICLE'S TURNING AND STEERING RESPONSIVENESS. DO NOT ENGAGE THE DECLUTCH OR LOW GEAR RANGE UNDER NORMAL OPERATING CONDITIONS. SERIOUS PERSONAL INJURY AND DAMAGE TO COMPONENTS CAN RESULT.

The front axle declutch, and high and low shifter are controlled from the cab. An electric switch, usually mounted on the instrument panel, engages or disengages the mechanical clutch.

Engage the declutch when the vehicle is stationary or operating at constant low speed, below 10 mph or 4 km/h.

NOTE: Front engagement can take place when the wheels are slipping, but a 150 rpm driveline differential speed guideline must be adhered to. Special ECU programming is required.

HIGH-LOW SHIFTING

Shift the transfer case into low from high gear or from high to low gear when the vehicle is stationary. Apply the parking brake with the transmission in Neutral on automatic or manual transmissions.

If the transfer case does not fully engage the selected range:

Turn the steering wheel in one direction and rock the vehicle back and forth until engagement occurs.

You will know that engagement occurs by hearing it, noticing improved vehicle performance, or observing the optional indicator light in the cab.

3 Removal

Removal

Hazard Alert Messages

Read and observe all hazard alert messages in this publication. They provide information that can help prevent serious personal injury, damage to components, or both.

⚠ DANGER

PARK THE VEHICLE ON A LEVEL SURFACE. BLOCK THE WHEELS TO PREVENT THE VEHICLE FROM MOVING. SUPPORT THE VEHICLE WITH SAFETY STANDS. NEVER WORK UNDER A VEHICLE SUPPORTED ONLY BY JACKS. JACKS CAN SLIP AND FALL OVER. SERIOUS PERSONAL INJURY AND DAMAGE TO COMPONENTS CAN RESULT.

⚠ WARNING

TO PREVENT EYE INJURY, ALWAYS WEAR EYE PROTECTION WHEN PERFORMING VEHICLE MAINTENANCE OR SERVICE.

Remove the Transfer Case Assembly

1. Wear eye protection.
2. Verify the transfer case has been shifted into 2WD high range position.
3. Park the vehicle on a level surface. Place chocks under the wheels not being raised to keep the vehicle from moving.
4. Raise the vehicle so that the area to be serviced is off the ground. Support the vehicle with safety stands.
5. Place a large container under the transfer case.
6. Remove the magnetic drain plug from the front transfer case cover. Drain and discard the oil correctly. Clean the magnetic drain plug. Figure 3.1.

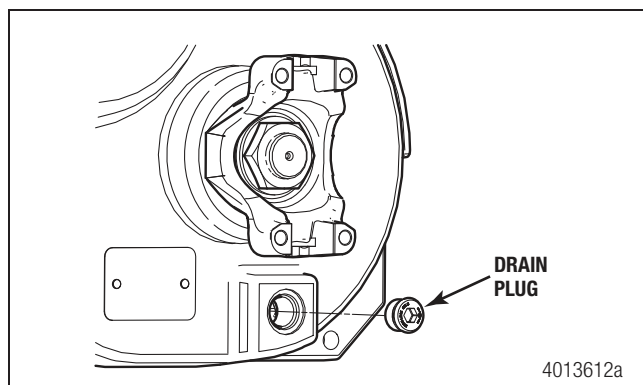


Figure 3.1

7. Disconnect the driveline from the output yokes on the transfer case.
8. Disconnect the wire harness from the electric shift unit.
9. Disconnect the harness from the speed sensor.
10. Use a hydraulic roller jack to support the transfer case.
11. Remove the bolts securing the transfer case to the transmission. If equipped, remove the mounting bolts that hold the transfer case to the vehicle. Figure 3.2.

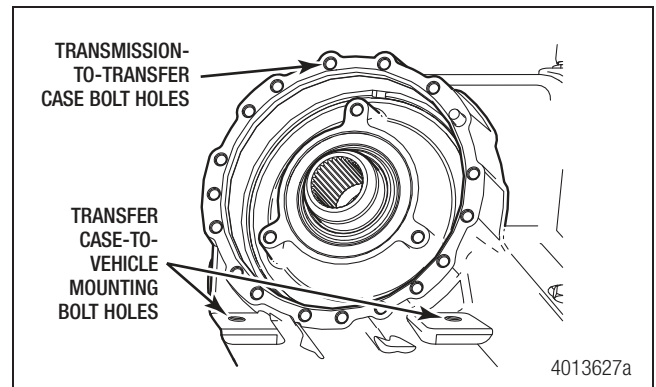


Figure 3.2

12. Carefully remove the transfer case with the hydraulic jack.

⚠ CAUTION

CLOSE OR COVER ALL OPENINGS, INCLUDING THE BREATHER, OIL DRAIN AND SPEED SENSOR, BEFORE STEAM CLEANING THE OUTSIDE OF THE TRANSFER CASE. STEAM CAN DAMAGE COMPONENTS.

13. Close or cover all openings before steam cleaning. These openings include the breather, oil drain and speed sensor.
14. If needed, steam clean the outside of the transfer case to remove heavy amounts of dirt.
15. Construct suitable mounting brackets or similar fixtures. Attach the brackets to the front half of the transfer case by installing bolts through the mounting holes in the transfer case.

16. Install a single 3/8-16 UNC lifting hook in the threaded boss on top of the transfer case. Figure 3.3.

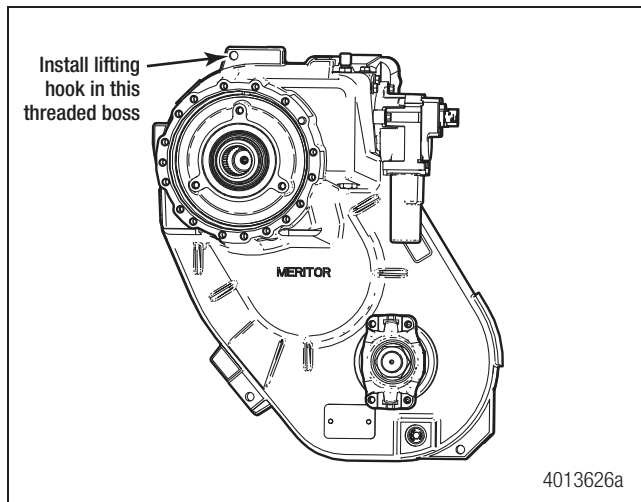


Figure 3.3

⚠ DANGER

SUPPORT THE TRANSFER CASE WITH A LIFTING STRAP BEFORE MOUNTING THE TRANSFER CASE INTO THE REPAIR STAND. A TRANSFER CASE THAT IS NOT SUPPORTED CORRECTLY CAN FALL. SERIOUS PERSONAL INJURY AND DAMAGE TO COMPONENTS CAN RESULT.

TAKE CARE WHEN USING LIFTING DEVICES DURING SERVICE AND MAINTENANCE PROCEDURES TO AVOID SERIOUS PERSONAL INJURY AND DAMAGE TO COMPONENTS. INSPECT A LIFTING STRAP TO ENSURE IT IS NOT DAMAGED. NEVER SUBJECT THE LIFTING STRAPS TO SHOCKS OR DROP-LOADING.

17. Attach a suitable lifting device to the lifting hook. Support the transfer case with lifting straps. Lift the transfer case and install it in a rotating repair stand or holding fixture. Use suitable brackets as necessary to mount the case securely. Refer to "Vehicle Towing Instructions" on page 59 for stand support bracket tool drawings.

NOTE: The transfer case filled with oil weighs approximately 186 lbs (84 kg).

Disassembly

Hazard Alert Messages

Read and observe all hazard alert messages in this publication. They provide information that can help prevent serious personal injury, damage to components, or both.

⚠ WARNING
TO PREVENT EYE INJURY, ALWAYS WEAR EYE PROTECTION WHEN PERFORMING VEHICLE MAINTENANCE OR SERVICE.

Disassemble the Transfer Case

Disassembly procedures should be performed with the transfer case installed on a rotating repair stand or holding fixture. If not already done so, install the transfer case in a suitable stand. Refer to "Tools" on page 60 for stand support bracket tool drawings.

Split the Case Halves and Remove Parts

1. Rotate the transfer case so the rear case half is accessible.
2. Use a yoke retaining tool to prevent the yoke from turning. Remove the yoke locknut from the rear output shaft. Figure 4.1.

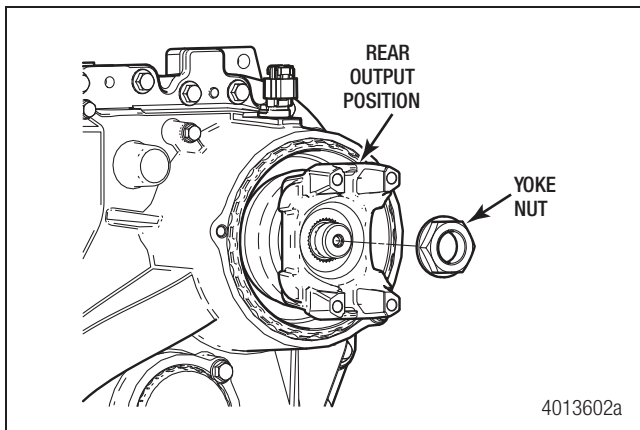


Figure 4.1

3. Use a two-jaw puller, Snap-on part number CG270-2, to remove the yoke from the shaft. Refer to "Tools" on page 60 for tool information. Do not remove the deflector from the yoke unless it is damaged. Figure 4.2.

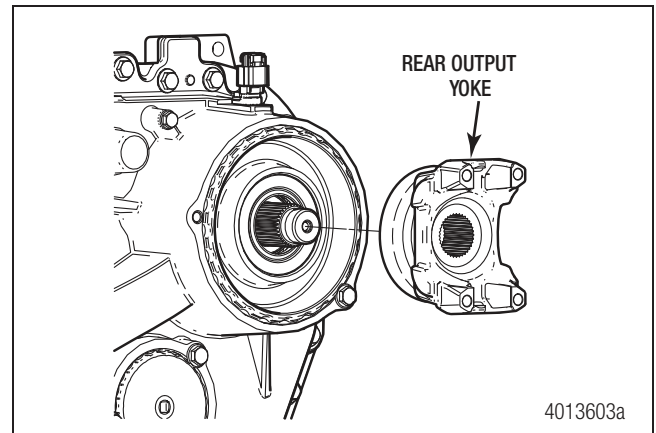


Figure 4.2

4. Remove the adjusting ring retaining bolt from the bearing cage opening. Figure 4.3.

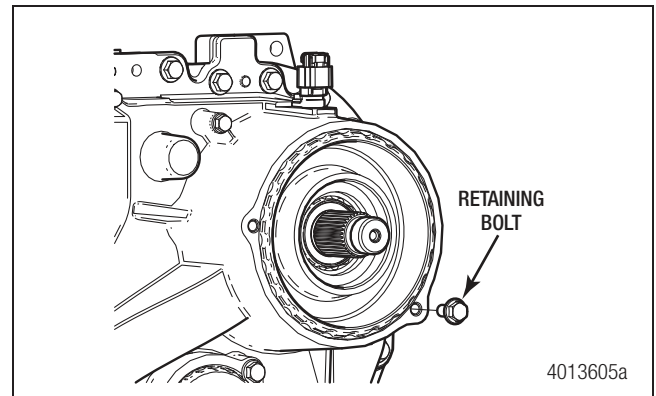


Figure 4.3

5. Remove the adjusting ring bearing cage using the correct removal tool. Refer to "Tools" on page 60. Figure 4.4.

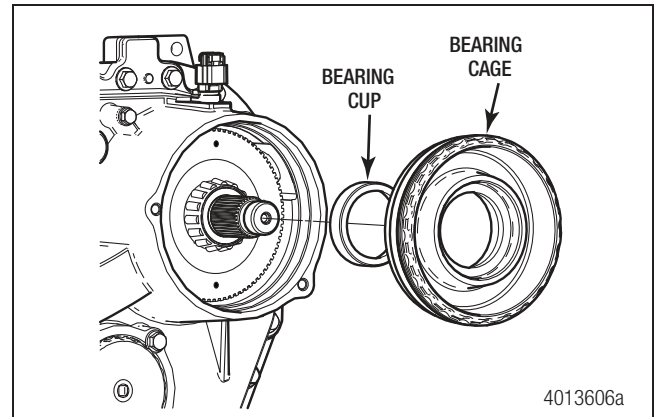


Figure 4.4

- Remove the o-ring from the adjusting ring bearing cage. Discard the o-ring. Figure 4.5.

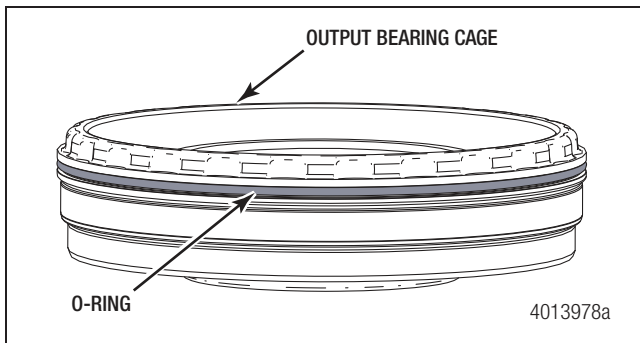


Figure 4.5

- Remove the tapered roller bearing cone from the shaft. Figure 4.6.

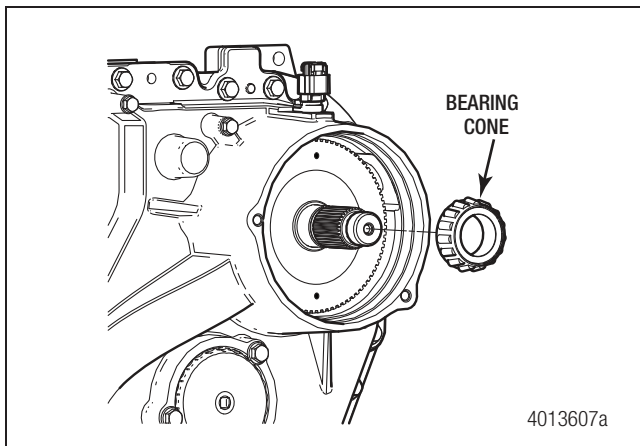


Figure 4.6

- Use a bearing separator and press, small gear puller, or other suitable tool to remove the speed sensor tooth wheel from the shaft. Refer to "Tools" on page 60. Figure 4.7.
NOTE: The original design tooth wheel is shown. The new design has two small M8x1.0 holes which can be used with a small gear puller for removal.

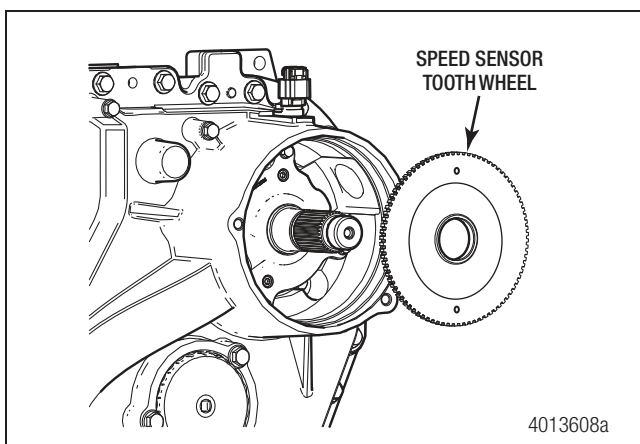


Figure 4.7

- Install a long zip tie (10-14") on the oil line as shown. This will keep the plastic shroud from falling into the housing. Figure 4.8.

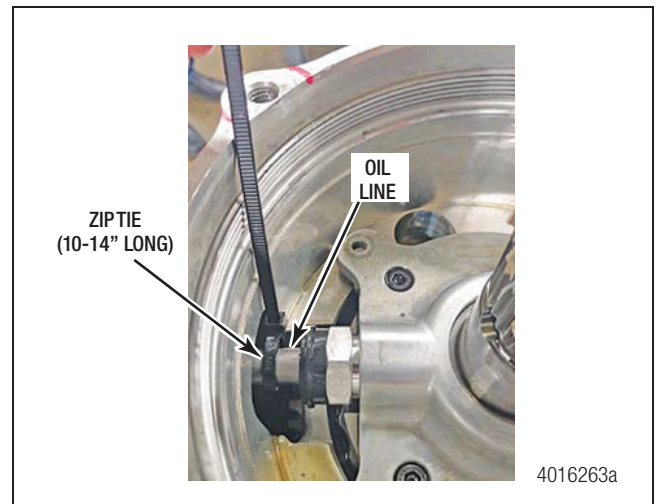


Figure 4.8

- Move back the plastic shroud from the oil line fitting and remove the E-clip from the groove. Figure 4.9.

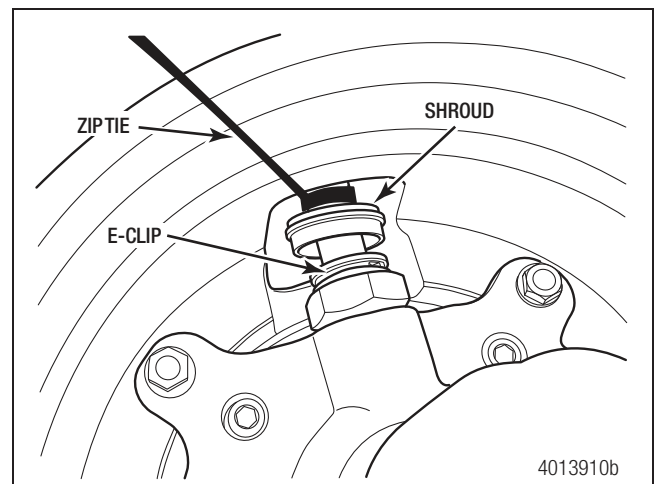


Figure 4.9

- Disconnect the oil line from the oil pump assembly. Use pliers, if necessary, to grip the oil line and pull it back into the housing until it clears the fitting.

4 Disassembly

12. Remove the four capscrews and remove the oil pump assembly from the shaft. Figure 4.10 and Figure 4.11.

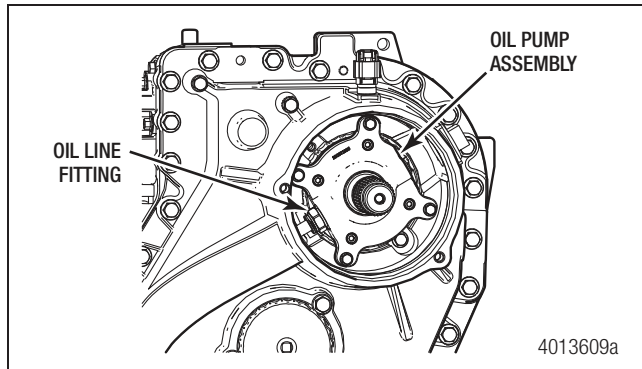


Figure 4.10

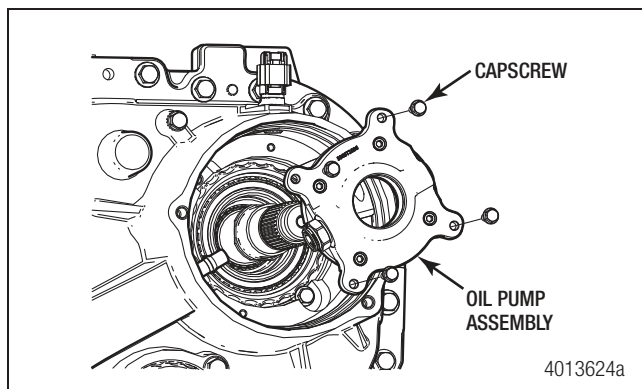


Figure 4.11

13. Remove the o-rings from the inside of the oil pump assembly. Discard the o-rings.
14. Rotate the transfer case in the stand to access the front case half. Remove the snap ring from the end of the input shaft. Figure 4.12.

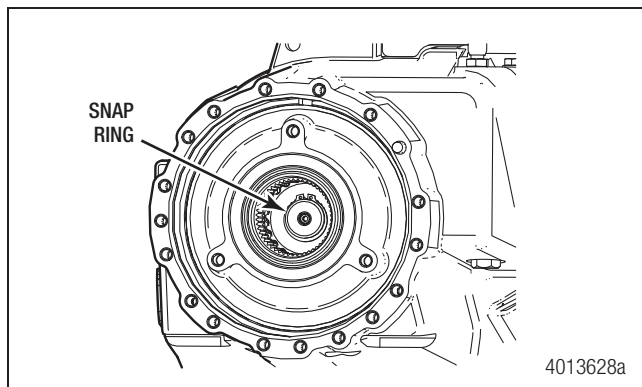


Figure 4.12

15. Turn the transfer case horizontal in the stand so the rear case is facing up.
16. Remove the input shaft from the drive gear, shift components and planetary gear assembly. This will require you to rotate the shaft back and forth to dislodge the shaft splines from the internal splines of the drive gear, shift collars and the planetary gear. You may also remove components as necessary to free the shaft. Figure 4.13.

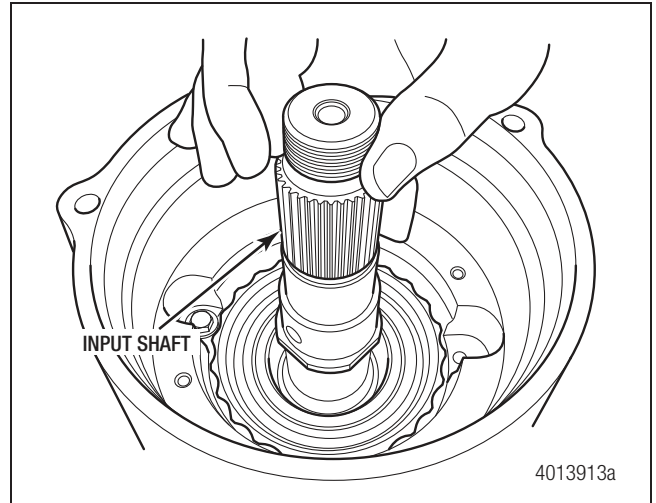


Figure 4.13

17. Remove the case capscrews from the rear case half. Figure 4.14

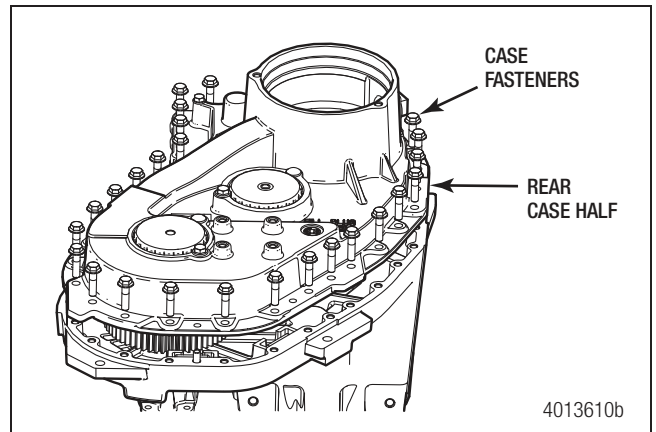


Figure 4.14

18. Separate the case halves. Use a pry tool at the case flanges to help loosen the rear case. Figure 4.15.

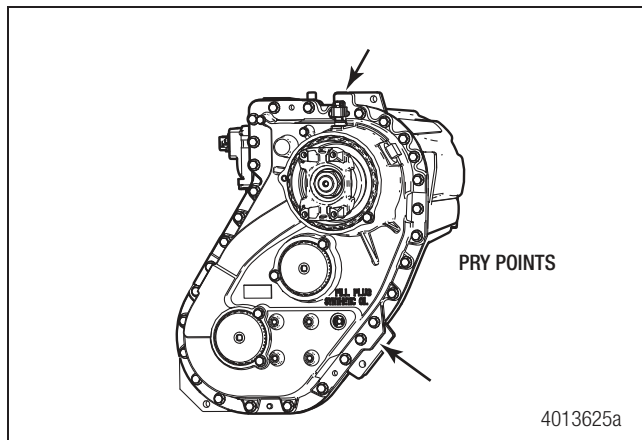


Figure 4.15

⚠ DANGER

TAKE CARE WHEN USING LIFTING DEVICES DURING SERVICE AND MAINTENANCE PROCEDURES TO AVOID SERIOUS PERSONAL INJURY AND DAMAGE TO COMPONENTS. INSPECT A LIFTING STRAP TO ENSURE IT IS NOT DAMAGED. NEVER SUBJECT THE LIFTING STRAPS TO SHOCKS OR DROP-LOADING.

19. Use a pry bar to separate the case halves. Lift up and remove the rear case from the front case. Figure 4.16.

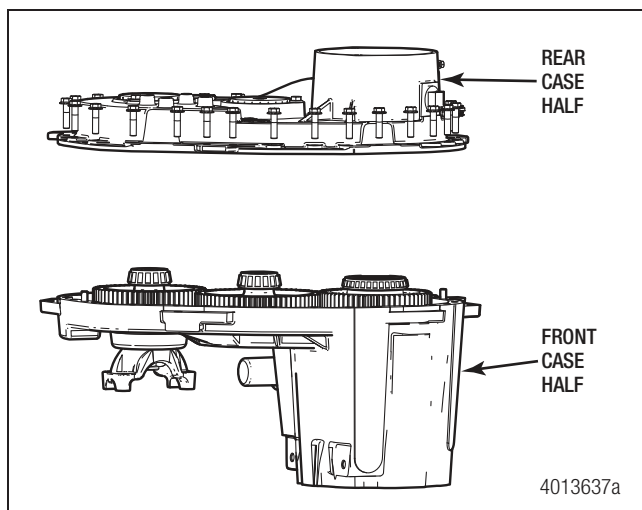


Figure 4.16

20. Remove the input (drive) gear assembly from the case. Figure 4.17.

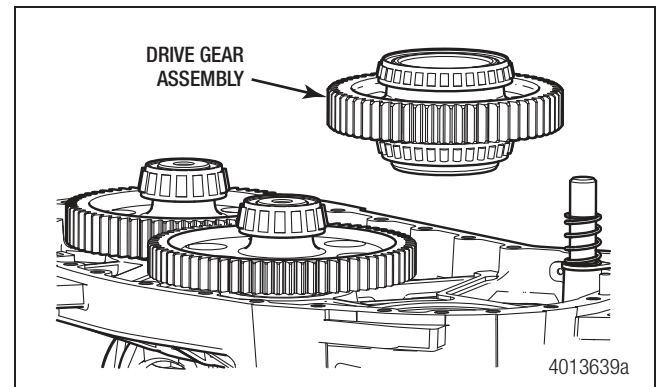


Figure 4.17

21. Remove the idler gear shaft from the front case half. Figure 4.18.

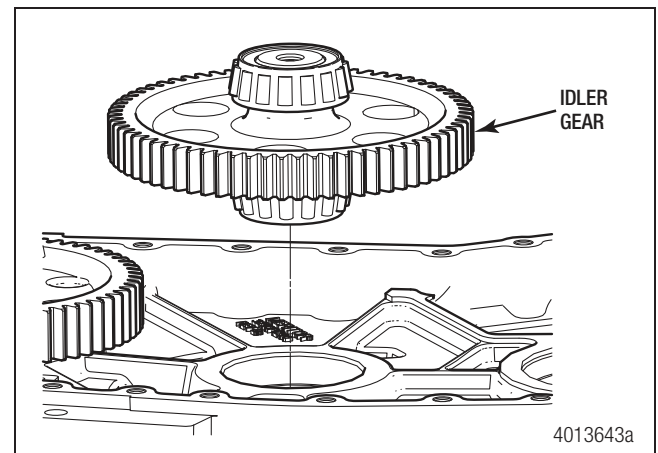


Figure 4.18

22. Remove the spring from the shift shaft. Figure 4.19.

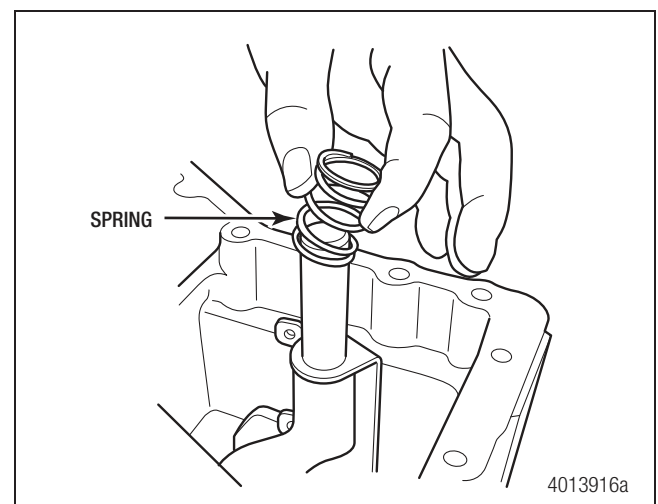


Figure 4.19

4 Disassembly

23. Remove the outer clutch collar. Figure 4.20.

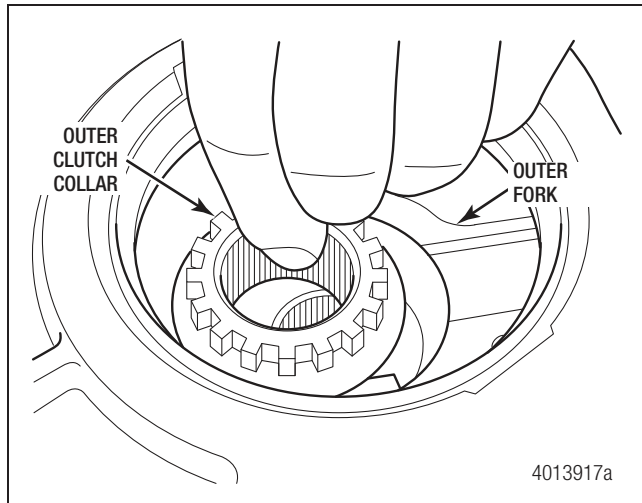


Figure 4.20

24. Pull up and remove the shift shaft. Figure 4.21.

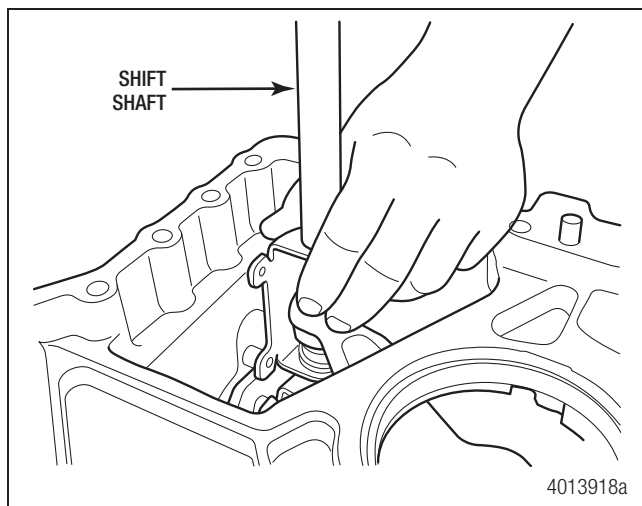


Figure 4.21

NOTE: Before removal, label the shift forks “outer” and “inner” to ensure they are not reassembled with the wrong shift parts.

25. Rotate and remove the outer shift fork assembly from the housing. Figure 4.22.

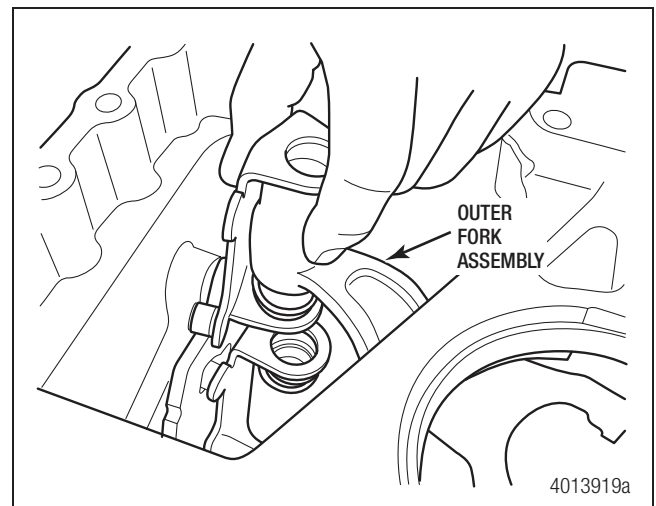


Figure 4.22

26. Rotate and remove the inner shift fork assembly from the housing. Figure 4.23.

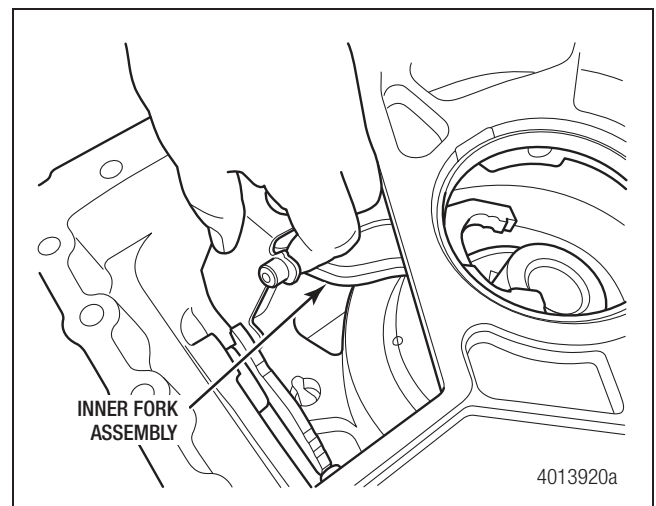


Figure 4.23

27. Remove the inner clutch collar from the housing. Figure 4.24.

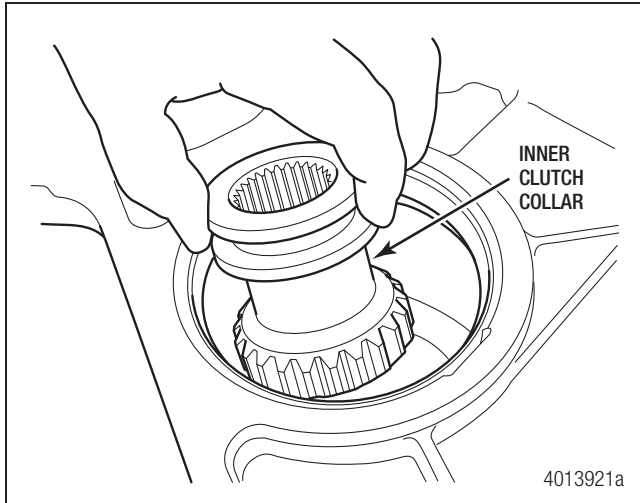


Figure 4.24

⚠ CAUTION

WHEN REMOVING THE LARGE SPIRAL SNAP RING, USE CARE TO AVOID SCRATCHING THE ALUMINUM HOUSING BORE. IF THE BORE BECOMES SCRATCHED OR DAMAGED, USE EMERY CLOTH OR STEEL WOOL TO GENTLY SMOOTH OUT THE SURFACE.

28. Position the front case half in a stand with the bearing cage facing up. Remove the large spiral snap ring from the front of the bearing cage. If the bore becomes scratched or damaged when the snap ring is removed, use emery cloth or steel wool to gently smooth out the surface. Figure 4.25.

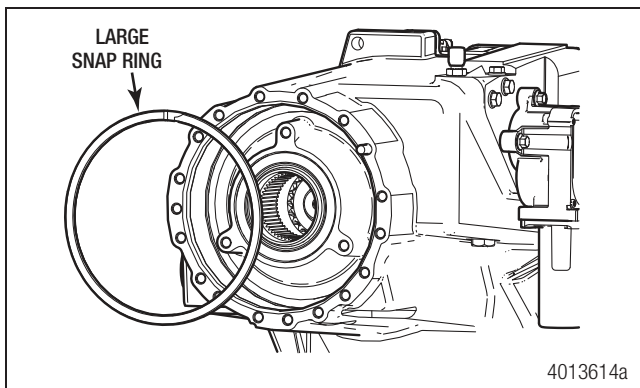


Figure 4.25

29. Use a suitable three-bolt flange puller to remove the input bearing cage assembly from the input opening. Refer to "Tools" on page 60. Figure 4.26.

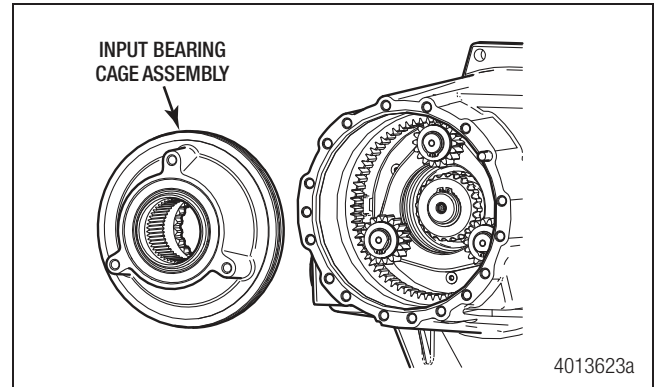


Figure 4.26

30. Remove the o-ring from the input bearing cage assembly. Discard the o-ring.

4 Disassembly

Remove the Planetary Carrier Assembly

1. Remove the input bearing cage assembly from the front transfer case half. Refer to the steps in the case split/input shaft removal procedure on page 7.
2. Remove the six hex-bit screws securing the planetary carrier plate to the transfer case. You will need to rotate the carrier assembly around to access all of the screws. NOTE: Do not use an impact wrench or you may strip the internal threads of the top of the screw. Figure 4.27.

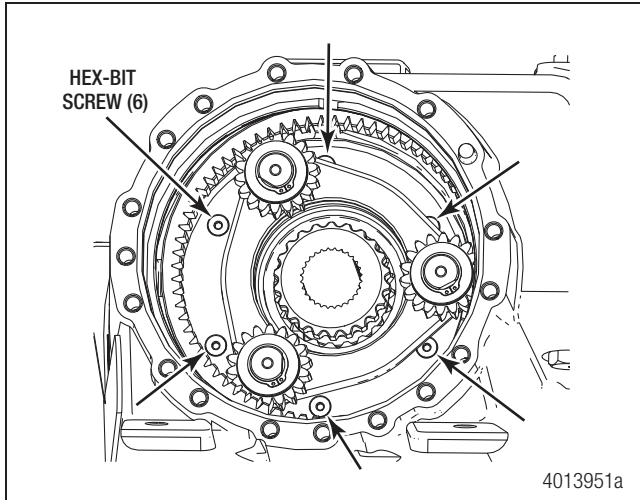


Figure 4.27

3. Rotate the front case half in the stand to a vertical position. From inside of the case, use a mallet and drift to carefully tap out the planetary carrier assembly. Once it is loosened, rotate the case to a horizontal position and remove the planetary carrier assembly from the housing. Figure 4.28 and Figure 4.29.

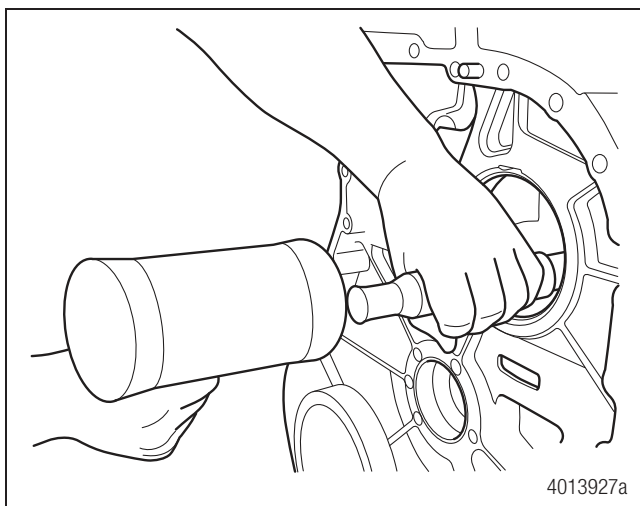


Figure 4.28

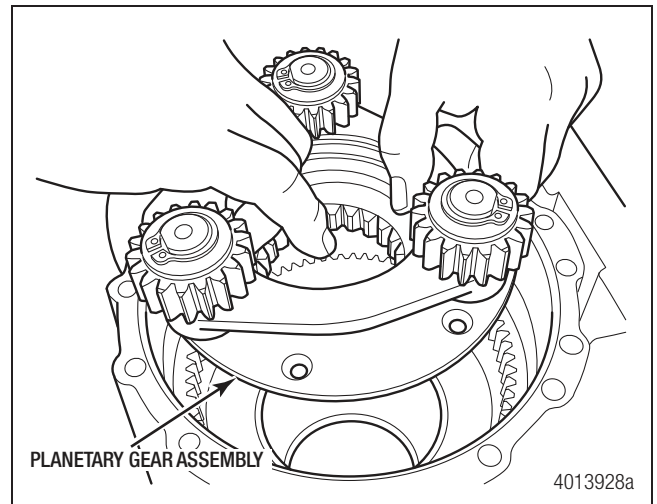


Figure 4.29

Remove the Front Output Shaft Gear Assembly

1. Use a yoke holder to secure the yoke from turning. Remove the yoke locknut from the front output shaft. Figure 4.30.

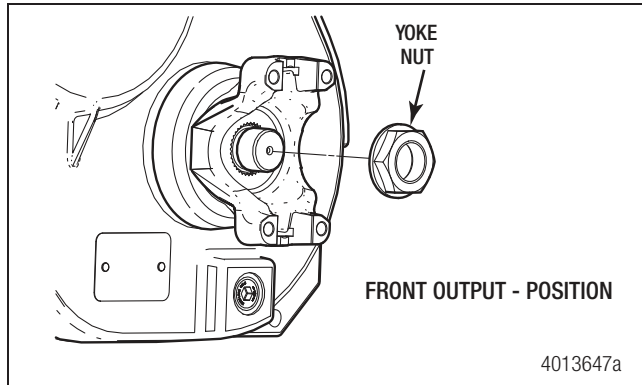


Figure 4.30

2. Use a yoke puller to remove the yoke from the shaft. Do not remove the deflector from the yoke unless it is damaged. Figure 4.31.

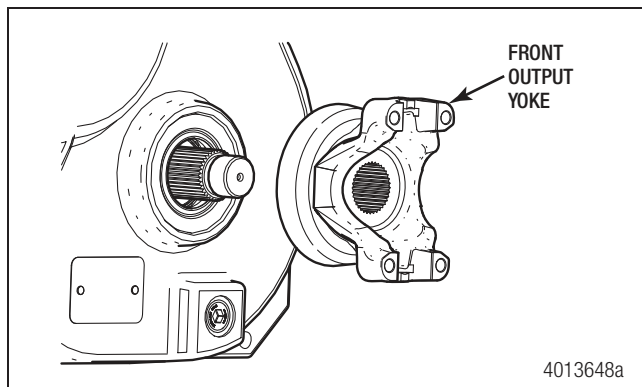


Figure 4.31

3. Remove the oil seal assembly from the case bore. Discard the oil seal. Figure 4.32.

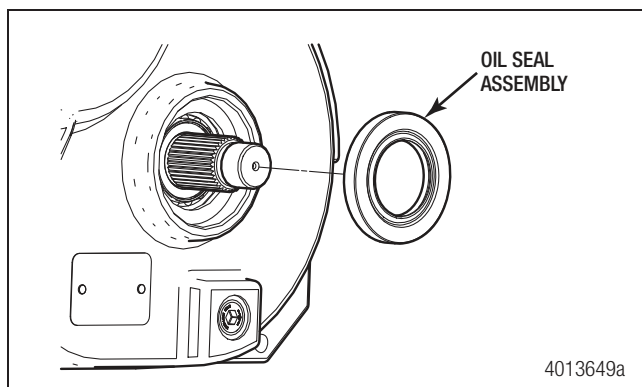


Figure 4.32

4. Remove the front output shaft and gear assembly from the case half. Figure 4.33.

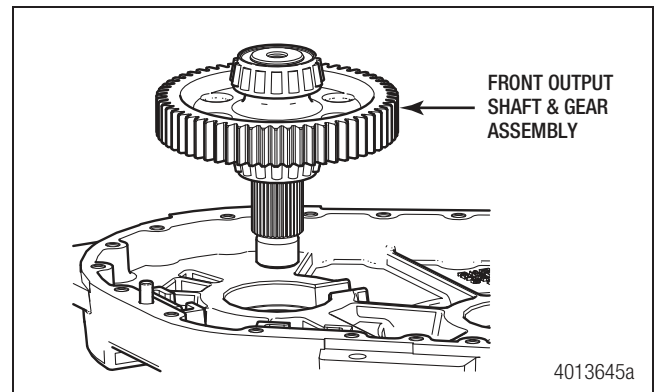


Figure 4.33

4 Disassembly

Remove Electric Shift Motor

1. Verify the shift mechanism is in the 2WD high (home) position. The shift motor will not be able to be removed if the shift components inside the housing are not in the correct position.
2. Disconnect the wiring harness connector from the electric shift unit. Figure 4.34.

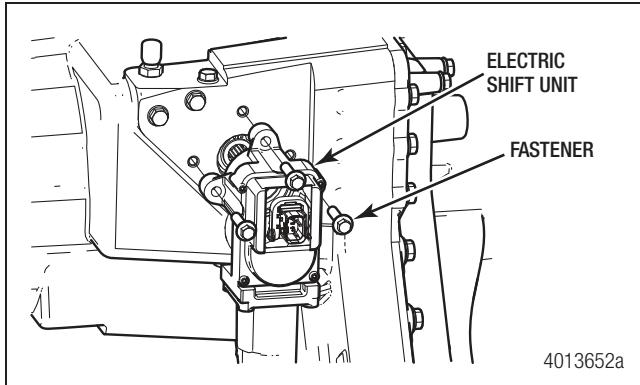


Figure 4.34

3. Remove the three flanged capscrews and remove the electric shift unit from the front case.
4. Inspect and, if necessary, replace the o-ring.

Remove the Speed Sensor

1. Disconnect the wiring harness connector from the speed sensor.
2. Remove the flanged capscrew from the speed sensor bracket. Figure 4.35.

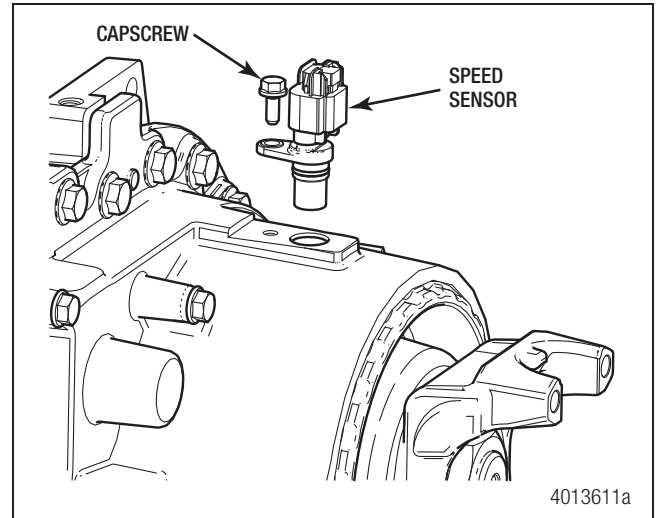


Figure 4.35

3. Remove the speed sensor from the rear case half.
4. To remove the speed sensor tooth wheel, follow Steps 1 through 9 in "Split the Case Halves and Remove Parts" on page 7.

Remove the Shift Plate

1. With the electric shift unit removed, remove the snap ring and washer from the boss at the end of the shift plate. Figure 4.36.

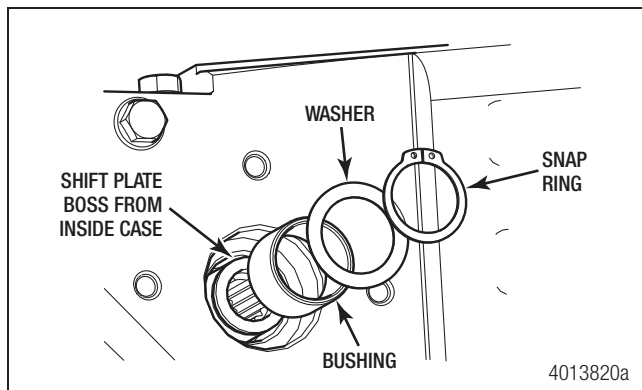


Figure 4.36

NOTE: The “Selector Cam Bushing Driver” on page 66 can be used for removing/ reinstalling selector cam bushings, if needed.

2. From the outside of the front case, loosen the shift position bolt. Figure 4.37.

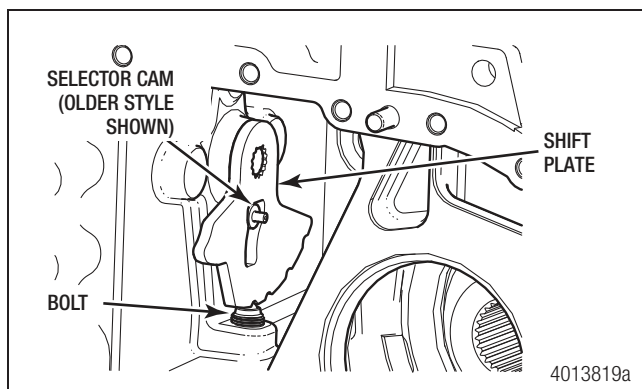


Figure 4.37

3. Remove the shift plate from inside the housing.

Prepare Parts for Assembly

Hazard Alert Messages

Read and observe all hazard alert messages in this publication. They provide information that can help prevent serious personal injury, damage to components, or both.

⚠ WARNING
TO PREVENT EYE INJURY, ALWAYS WEAR EYE PROTECTION WHEN PERFORMING VEHICLE MAINTENANCE OR SERVICE.

IMPORTANT NOTE
Perform these inspections prior to performing bench procedures. Do not disassemble components unless it is deemed necessary.

Clean and Dry Parts

Clean Ground and Polished Parts

⚠ WARNING
SOLVENT CLEANERS CAN BE FLAMMABLE, POISONOUS, AND CAUSE BURNS. EXAMPLES OF SOLVENT CLEANERS ARE CARBON TETRACHLORIDE, AND EMULSION-TYPE AND PETROLEUM-BASE CLEANERS. READ THE MANUFACTURER'S INSTRUCTIONS BEFORE USING A SOLVENT CLEANER, THEN CAREFULLY FOLLOW THE INSTRUCTIONS. ALSO FOLLOW THE PROCEDURES BELOW.

- **Wear eye protection.**
- **Wear clothing that protects the skin.**
- **Work in a well-ventilated area.**
- **NEVER use gasoline or solvents that contain gasoline. Gasoline can explode.**
- **Hot solution tanks or alkaline solutions must be used correctly. Read the manufacturer's instructions before using hot solution tanks and alkaline solutions. Then carefully follow the instructions.**

⚠ CAUTION
NEVER USE HOT SOLUTION TANKS OR WATER AND ALKALINE SOLUTIONS TO CLEAN GROUND OR POLISHED PARTS. DAMAGE TO PARTS CAN RESULT.

IF REQUIRED, USE A SHARP KNIFE TO REMOVE GASKET MATERIAL FROM PARTS. BE CAREFUL NOT TO DAMAGE THE GROUND OR POLISHED SURFACES.

1. Use a cleaning solvent to clean ground or polished parts or surfaces, such as bearings, gears, shafts, and oil pump components. **NEVER USE GASOLINE.**
2. Remove gasket material from the parts. Take care not to damage the ground surfaces.
3. **NEVER** clean ground or polished parts in a hot solution tank, water, steam, or alkaline solution to avoid damaging the surfaces.

Clean Rough Parts

1. Clean rough parts with the same method as cleaning ground and polished parts.
2. Use a cleaning solvent or a hot solution tank with a weak alkaline solution to clean parts with a rough finish.
3. Leave the parts in the hot solution tank until they are completely cleaned and heated. When the parts are clean, remove them from the tank.
4. Wash the parts with water until the alkaline solution is completely removed.
5. Clean the three internal magnets attached to the bottom of the front case.
6. Remove and clean the magnetic drain plug.

Clean Transfer Case Assemblies

⚠ CAUTION
CLOSE OR COVER ALL OPENINGS BEFORE STEAM CLEANING. STEAM CAN CAUSE COMPONENT DAMAGE.

1. Before steam cleaning the transfer case, close or put a cover over all openings in the case.
2. Steam clean transfer cases on the outside to remove heavy amounts of dirt.
3. Remove any remaining sealant from the transfer case halves using a suitable scraper or wire wheel.

Dry Cleaned Parts

⚠ CAUTION
DRY BEARINGS WITH CLEAN PAPER OR RAGS. NEVER USE COMPRESSED AIR, WHICH CAN CAUSE ABRASIVE PARTICLES TO CONTAMINATE THE BEARINGS. DAMAGE TO THE COMPONENTS AND REDUCED LINING LIFE CAN RESULT.

Immediately after cleaning, use clean paper, cloth rags, or compressed air, if necessary, to dry the parts.

Prevent Corrosion

NOTE: Parts must be clean and dry before lubricating them.

1. If parts are being assembled immediately after cleaning, ensure they are dry and lubricate them with grease to prevent corrosion.
2. If the parts are being stored after cleaning, apply a corrosion-preventive material to all machined surfaces. Store the parts in a special paper or other material that prevents corrosion.

5 Prepare Parts for Assembly

Oil Seals and O-rings

Discard all oil seals and o-rings. Replace with new parts.

Inspect Parts

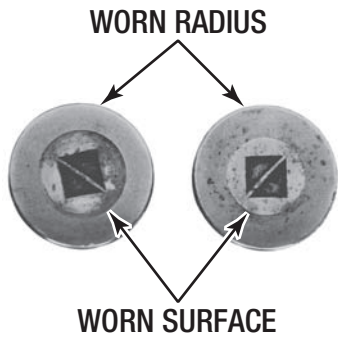
It is very important to inspect all parts carefully and completely before the transfer case is assembled. Check all parts for wear and stress. Replace all damaged parts to avoid costly downtime at a future date.

IMPORTANT NOTE

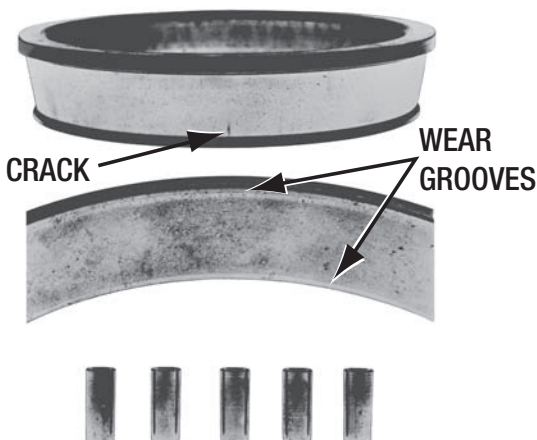
Perform inspections with bearings still on shafts. Do NOT remove bearings to inspect them.

After inspection, bearings and cups may be removed ONLY IF NECESSARY as directed by inspection procedure.

1. Inspect the cup, cone, rollers, and cage of all tapered roller bearings in the assembly. If any of the following conditions exist, the bearing must be replaced:
 - The center of the large diameter end of the rollers is worn level with or below the outer surface.
 - The radius at the large diameter end of the rollers is worn to a sharp edge.



- A visible roller groove is worn in the inner race surfaces of the cup or cone. The groove can be seen at the small or large diameter end of both parts.
- Deep cracks or breaks appear in the surfaces of the cup, cone, inner race, or rollers.



- Bright wear marks appear on the outer surface of the roller cage.



- The rollers and surfaces of the cup and cone inner race touching the rollers are damaged.



- The cup and cone inner race surfaces touching the roller are damaged.



2. Inspect the gears for wear or damage. Replace worn or damaged gears.
3. Inspect the housing.
 - a. Remove all dirt from the housing and oil lubrication passages, troughs, slots, and holes.
 - b. Inspect machined surfaces for cracks and damage. Repair or replace damaged parts.
4. Inspect all shafts, flanges and yokes for wear, stress, and cracks at the splines, shaft, and yoke ears. Replace worn or cracked shafts, flanges, and yokes.
5. Verify oil passages in the shafts are clean and free of debris.

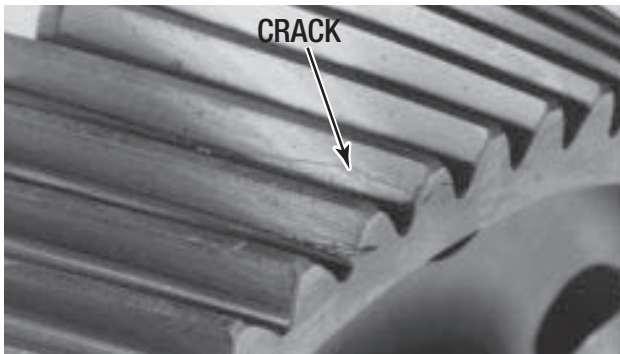
5 Prepare Parts for Assembly

6. Inspect the declutch and output shaft components, if applicable:
 - a. Inspect the clutch collar internal splines, external declutch teeth and shift for grooves. Replace worn, cracked, or damaged collars.
 - b. Inspect the collar pads of the shift fork for wear. If the pads are worn, replace the shift fork.
 - c. Inspect the declutch shaft and yoke for wear, stress and cracks at the splines, shaft and yoke ears. Replace worn or cracked shafts and yokes.
 - d. Inspect the declutch or PTO push rod and piston for wear or damage. Replace worn or damaged parts.
7. Inspect the rotor, housing, and idler of the oil pump, if equipped, for scoring. Inspect the drive tab of the rotor assembly. Inspect the splines on the pump inner rotor for cracks along the spline area. Also, check for excessive wear. Replace the pump if these conditions exist.
8. Remove and inspect the plug at the end of the input shaft. Verify the orifice is clear of debris.

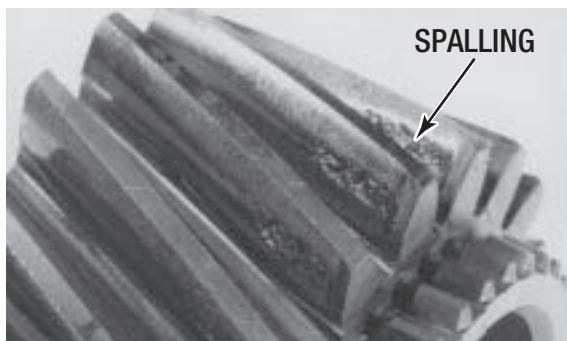
Helical Gears

Inspect the helical gear teeth, splines and journals. If any of the following conditions exist, replace the gear.

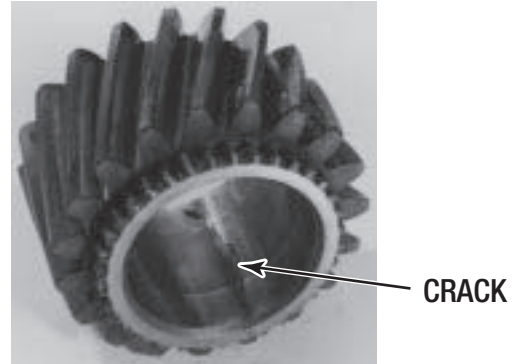
- A crack in the root of a tooth or along the tooth flank.



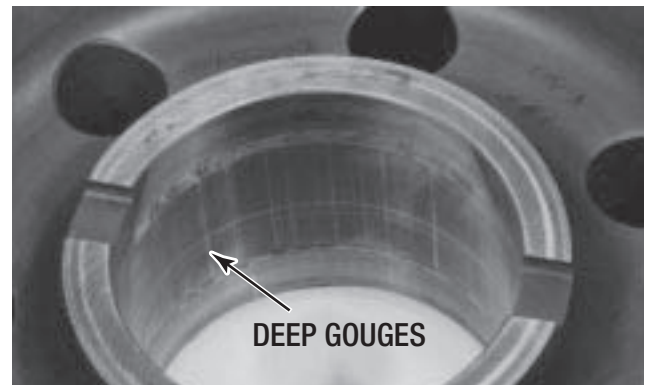
- Severe scoring or fretting on the surface of a tooth. Gears with scoring and fretting on the teeth, but without cracks, may continue to operate satisfactorily with higher noise.



- Cracks along the internal journal of the input gears.



- Deep gouges or metal transfer along the input gear journals.



- Chipped or severely worn shifting splines on the input gears.
- Chipped or cracked splines on the output gears.

Shafts

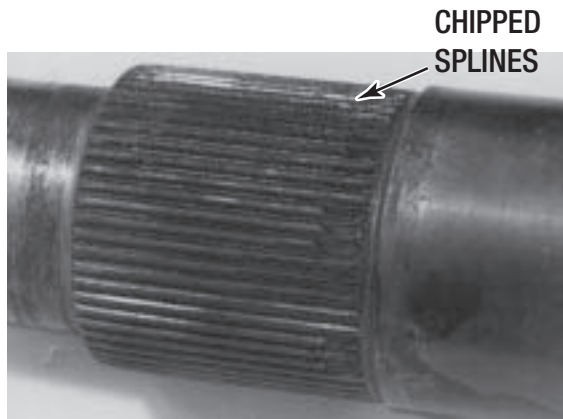
Inspect the input and output shafts for damage to the gear journals, shifting splines, threads and gear retaining splines. If any of the following conditions exist, replace the shaft.

- Deep gouges or metal transfer along the input shaft journals.



- Chipped or worn shifting splines on the input shaft.

- Chipped or cracked splines on the output shaft.



- Cracks along the yoke splines, bearing journal abutments, or cross-drilled holes. Magnaflux may be necessary to see small cracks.

PTO Components

Inspect the PTO housing, shaft, taper bearings, shift collar, shift fork, and sensors for damage. If any of the following conditions exist, replace the component.

- Cracks in the housing.
- Cracks along the shaft yoke spline or ball bearing abutment. Magnaflux may be necessary to see small cracks.
- Chipped or cracked shifting splines on the shift collar or shaft.
- The rollers of the taper bearings do not roll easily or lack lubrication. The raceway is cracked or dented.
- Cracked or missing tangs on the shift fork arms.
- The sensor ball sticks or does not return to its resting position. The sensors do not complete a circuit when tested with a volt-ohm meter (VOM).
- Check all shift forks and slots in sliding clutches for wear or discoloration due to heat.

High & Low Shifting Components

Inspect the shift collar, shift fork, shift shaft, retaining pins, shift cylinder, piston, o-ring and case halves for damage. If any of the following conditions exist, replace or repair the component.

- Cracked or missing tangs on the shift fork arms.
- Chipped or cracked shifting splines on the shift collar.
- Cracks or deep gouges on the shift shaft.
- The retaining pins in the shift shaft are not 0.100" (2.54 mm) above the shaft diameter. Remove and set to the correct position.
- Gouges on the inside of the shift cylinder.
- Torn or feathered areas on the o-ring.
- Deep gouges in the shifting bores of the case halves.

Oil & Lubrication System

The lubrication system is extremely important to the performance of the transfer case. Inspect all parts closely for excessive wear or damage. Perform the following checks.

1. Inspect the oil for metal shavings, dirt, and consistency. Perform an analysis if the oil appears contaminated.
2. Check the magnets for metal shavings. A small amount of metal shavings is normal. However, excessive build-up indicates gear and bearing damage. Thoroughly remove all metal shavings from the magnets. The magnets must be firmly fastened to the case.
3. Check the sump screen. Remove any material that may restrict oil flow through the mesh.
4. Inspect the seals closely. Look for nicks and tears on all sealing lips. Any damage is likely to result in a seal leak.
5. Check the pump for easy rotation. If the internal gear does not spin easily or jams when rotating the crescent plate, replace the pump. Also inspect for signs of heat/discoloration.
6. Check the oil line for damage. Replace if it is dented or kinked.
7. Inspect the input shaft and oil pump splines for damage.
8. Verify the relief valve spring and bushing are in good condition and replace, if necessary.

Transfer Case Halves

Inspect the case halves for cracks and internal wear. If any of the following conditions exist, replace the damaged parts.

- A crack in either case half.
- Deep gouges in the shifting bores.
- Signs of bearing cup rotation.

Preparing the Case & Cover for Seal Replacement

1. Pry out all oil seals using a suitable pry bar.
2. As necessary, use a suitable puller to remove the bearing cups pressed into the transfer case halves.
3. Clean and inspect the transfer case and cover for cracks, worn threaded holes or other wear or damage. Clean the gasket surfaces of both transfer case halves using a suitable gasket scraper or wire wheel.
4. Press new bearing cups into the case halves as necessary. Refer to "Assembly" for bearing setting procedures.
5. Inspect the bearing end play to ensure that it's within specification. Adjust the end play, if required. Refer to "Assembly".
6. Install new oil seals into the case halves. Use the correct Meritor seal driver and seal. Refer to "Lubrication" for more information. Refer to the Service Notes page on the front inside cover of this manual to obtain any special tools needed.

Bench Disassembly & Assembly

Hazard Alert Messages

Read and observe all hazard alert messages in this publication. They provide information that can help prevent serious personal injury, damage to components, or both.

⚠ WARNING

TO PREVENT EYE INJURY, ALWAYS WEAR EYE PROTECTION WHEN PERFORMING VEHICLE MAINTENANCE OR SERVICE.

OBSERVE ALL WARNINGS AND CAUTIONS PROVIDED BY THE PRESS MANUFACTURER TO AVOID DAMAGE TO COMPONENTS AND SERIOUS PERSONAL INJURY.

Bench Procedures

Remove the Input Shaft Bearing Cone

NOTE: Do not remove the bearing unless it is deemed necessary after inspection.

1. Install a bearing separator on the input shaft underneath the bearing cone.

⚠ WARNING

OBSERVE ALL WARNINGS AND CAUTIONS PROVIDED BY THE PRESS MANUFACTURER TO AVOID DAMAGE TO COMPONENTS AND SERIOUS PERSONAL INJURY.

2. Place the input shaft in a press and support it with blocks as shown. Press the input shaft down and out of the bearing cone. Figure 6.1.

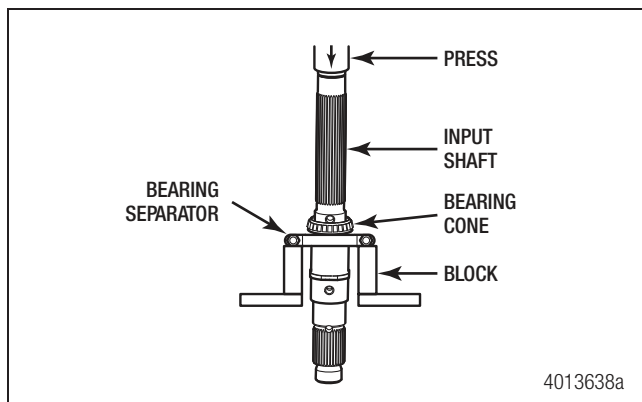


Figure 6.1

Remove the Input Shaft Gear Assembly Bearing Cup and Cones

1. Remove the input shaft bearing cup from inside the drive gear assembly. Figure 6.2.

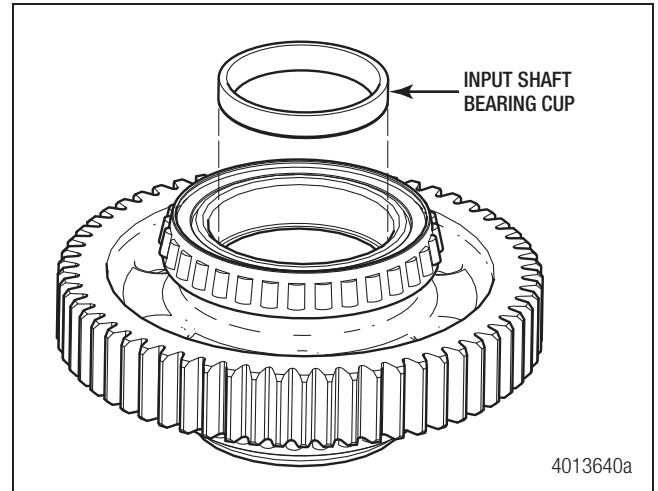


Figure 6.2

2. If necessary, use a bearing puller to remove the bearing cones from the drive gear. Figure 6.3.

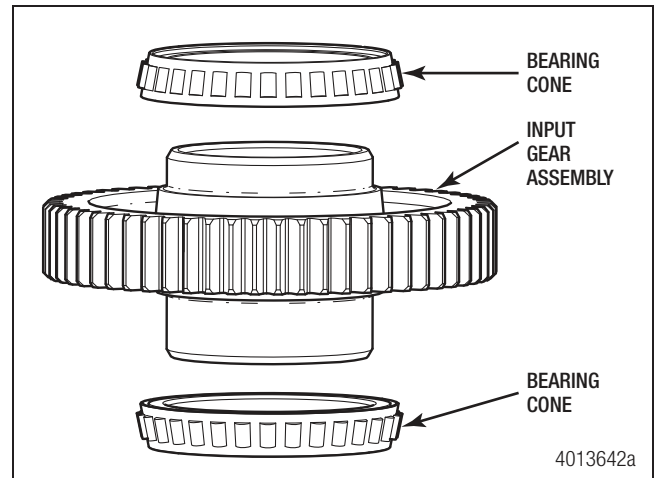


Figure 6.3

Remove the Front Output Shaft Gear Assembly Bearing Cones

NOTE: Do not remove the bearings unless it is deemed necessary after inspection.

1. Install a bearing puller on the bearing cone under the front output gear. Figure 6.4.

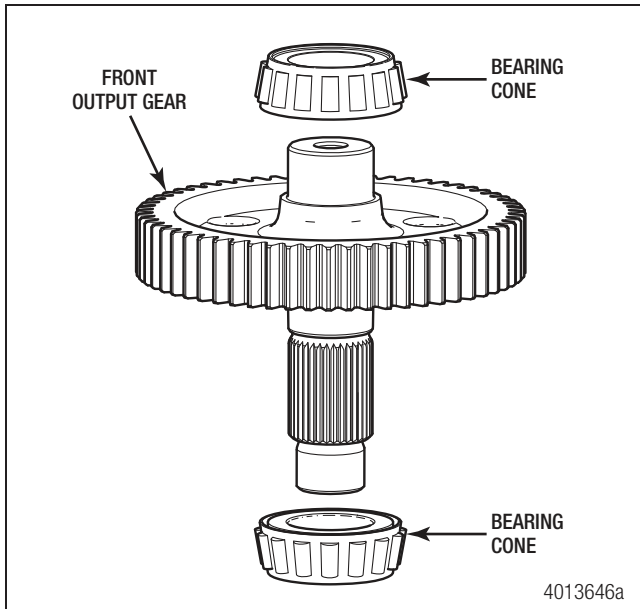


Figure 6.4

2. Tighten down the nut on the tool to remove the bearing cone from the shaft.
3. To remove the bearing cone on the other end of the shaft, install a bearing separator on the front output shaft gear assembly under the bearing cone.
4. Place the shaft in a press and support it with blocks. Press down on the end of the shaft and out of the bearing cone.

Remove the Idler Shaft Gear Assembly Bearing Cones

NOTE: Do not remove the bearings unless it is deemed necessary after inspection.

1. Install a bearing puller on the bearing cone. Figure 6.5.

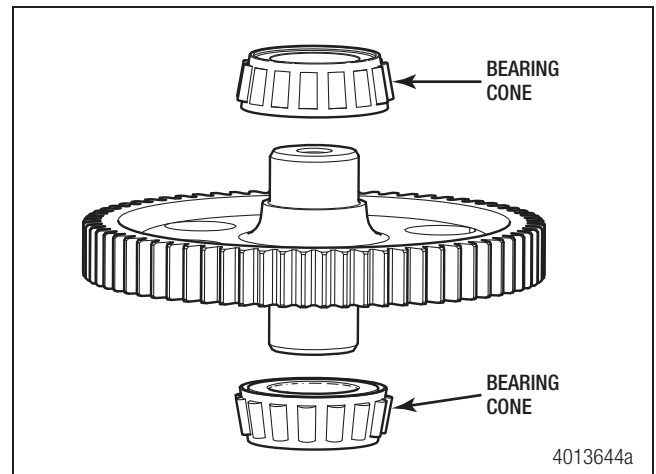


Figure 6.5

2. Tighten down the nut on the tool to remove the bearing cone from the idler shaft gear.
3. Turn the shaft over and use the bearing puller to remove the bearing cone on the other end.

6 Bench Assembly & Disassembly

Disassemble the Input Bearing Cage

1. Place the bearing cage upside down on a workbench. Use snap ring pliers to remove the large snap ring that secures the sun gear to the bearing cage. Separate the sun gear and bearing from the cage. Figure 6.6 and Figure 6.7.

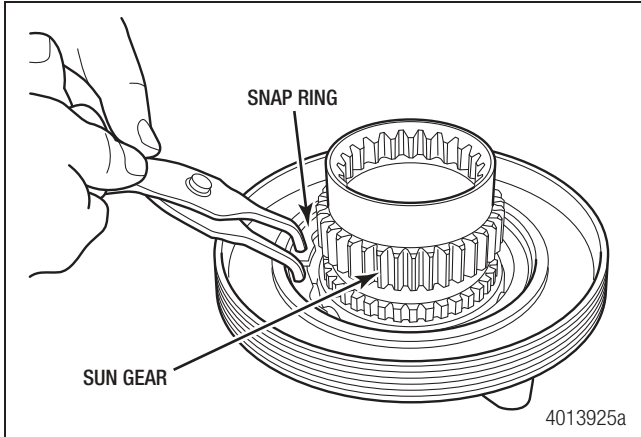


Figure 6.6

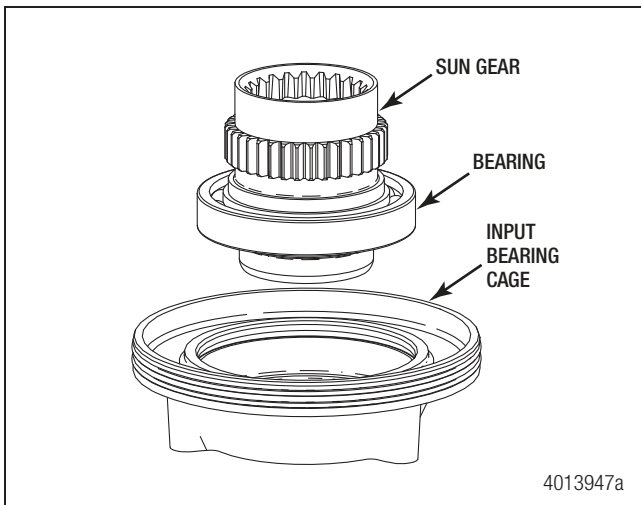


Figure 6.7

2. Remove the small snap ring and remove the bearing from the sun gear. Figure 6.8 and Figure 6.9.

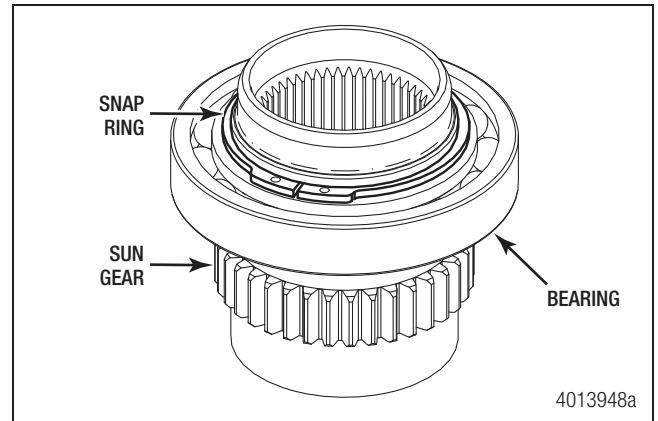


Figure 6.8

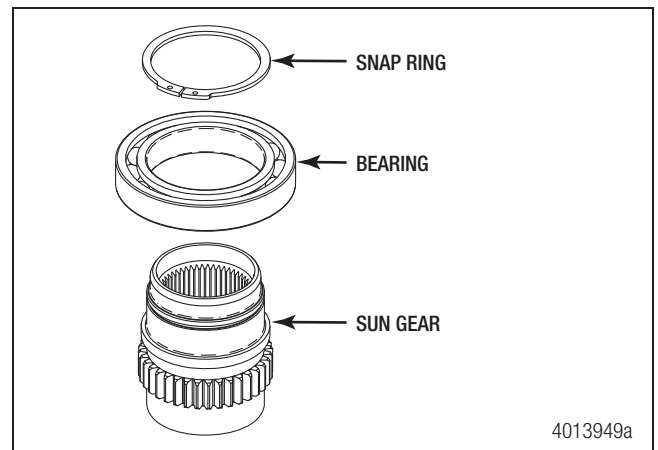


Figure 6.9

3. Remove the oil seal assembly from the bearing cage. Figure 6.10.

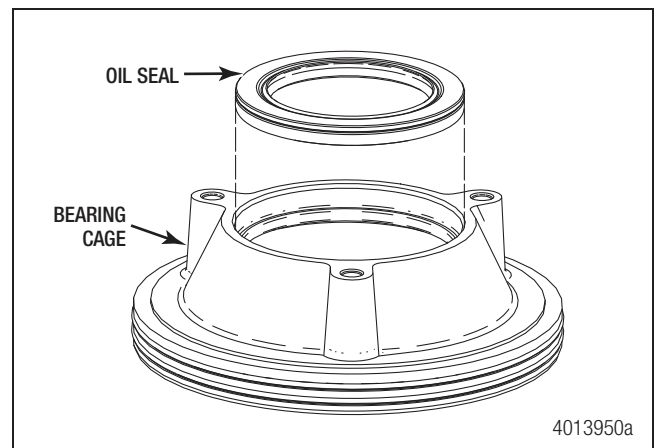


Figure 6.10

Disassemble the High/Low and 4x4 Shift Components

NOTE: Before removal, label the shift forks “outer” and “inner” to ensure they are not reassembled with the wrong shift parts.

1. To disassemble the inner shift fork assembly, remove the spring, two bushings and shift fork from the shift bracket as shown. Label the parts and keep the shift fork assembly parts separate to avoid confusion during reassembly. Figure 6.11.

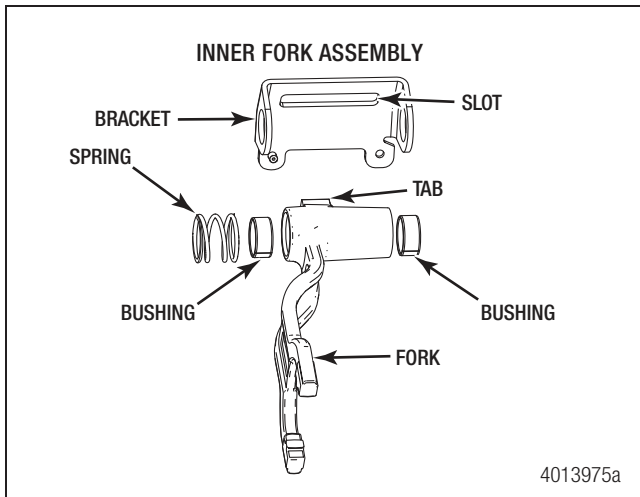


Figure 6.11

2. To disassemble the outer shift fork assembly, remove the spring, two bushings and shift fork from the shift bracket as shown. Label the parts and keep the shift fork assembly parts separate to avoid confusion during reassembly. Figure 6.12.

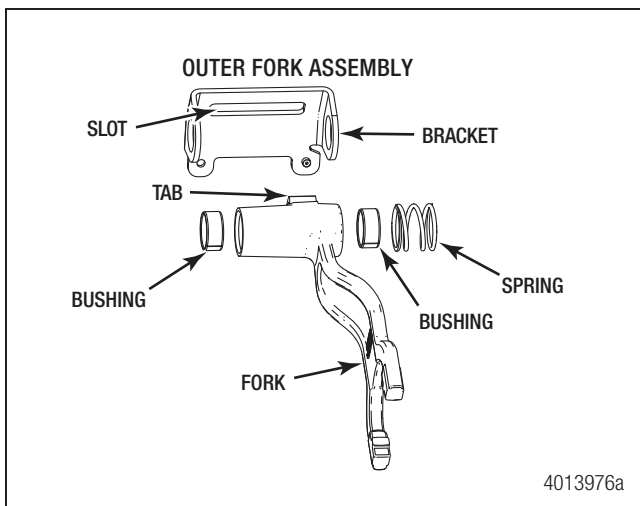


Figure 6.12

Remove the Front Case Half Bearing Cups

NOTE: If the bearing cones must be replaced, you must replace the bearing cones and the adjuster rings as a set.

1. Correctly support the front case half.
2. Use a two-jaw bearing cup puller and an impact hammer to remove the input, output and idler bearing cups from the bores inside the case half. Figure 6.13.

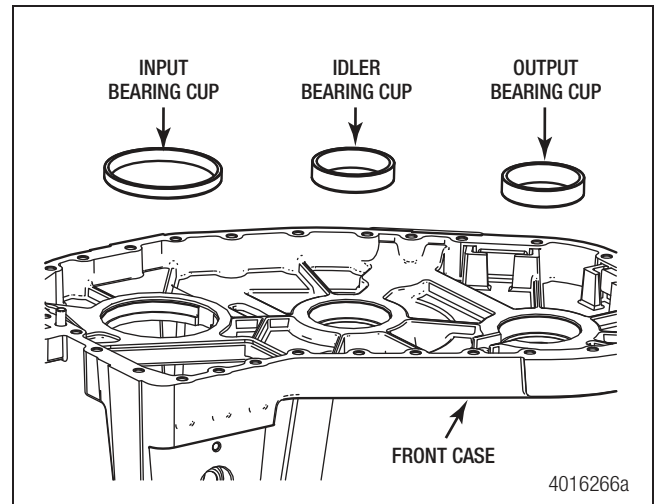


Figure 6.13

6 Bench Assembly & Disassembly

Remove the Oil Pump Line

1. Remove the output yoke, bearing cage, speed sensor tooth wheel and oil pump assembly. Refer to the procedures in this section for complete instructions.
2. Separate the transfer case halves. Refer to the procedure in this section for instructions.
3. From the inside of the case, remove the two fasteners from the oil line retainers. Figure 6.14.

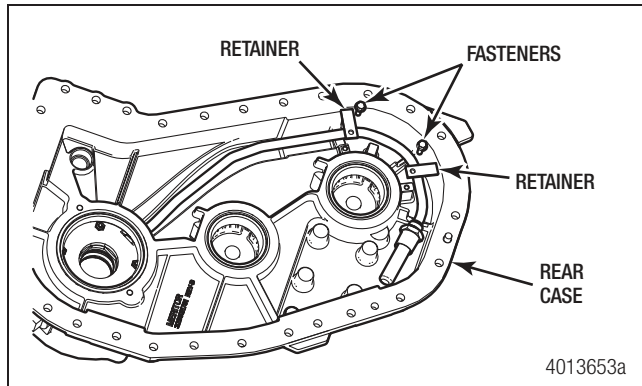


Figure 6.14

4. Remove the oil line from the rear case half. Figure 6.15.

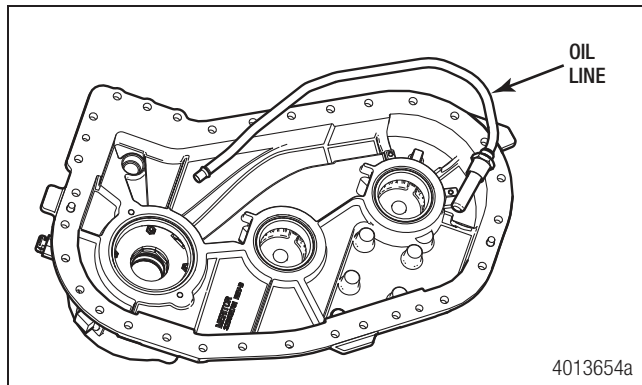


Figure 6.15

Remove the Rear Case Half Adjuster Ring and Cups

NOTE: If the bearing cones must be replaced, you must replace the bearing cones and the adjuster cups as a set. The new adjuster cups will come pre-installed with new bearing cups.

1. Correctly support the rear case half.
2. Remove the flange bolts from the output and idler positions, and at the input position if not already removed. Figure 6.16.

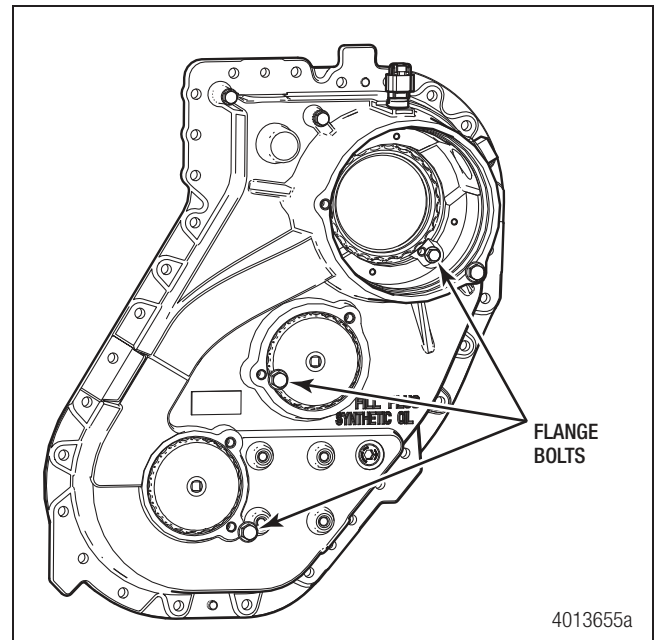


Figure 6.16

3. Remove the bearing adjuster ring and cups from the rear case half. Figure 6.17.

NOTE: The bearing cups installed inside the adjuster cups are not removable.

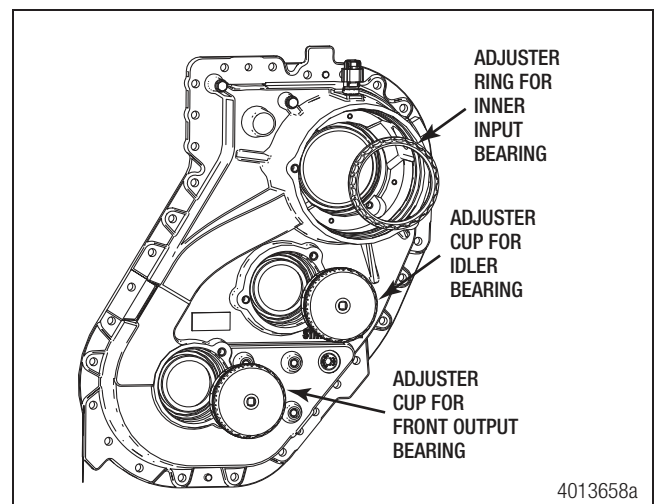


Figure 6.17

Assemble the High/Low and 4x4 Shift Components

1. If disassembled, reassemble the inner fork assembly with one spring and two bushings in the bracket as shown in Figure 6.18. Make sure the tab on the end of the fork is engaged in the slot on the bracket when installed in the case. Figure 6.19.

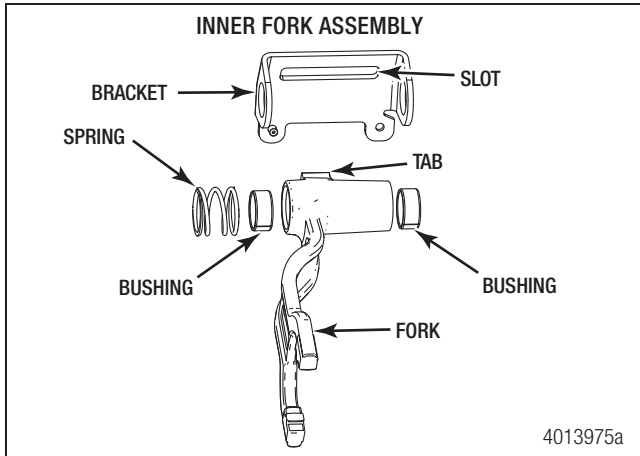


Figure 6.18



Figure 6.19

2. If disassembled, reassemble the outer fork assembly with one spring and two bushings in the bracket as shown in Figure 6.20. Make sure the tab on the end of the fork is engaged in the slot on the bracket when installed in the case.

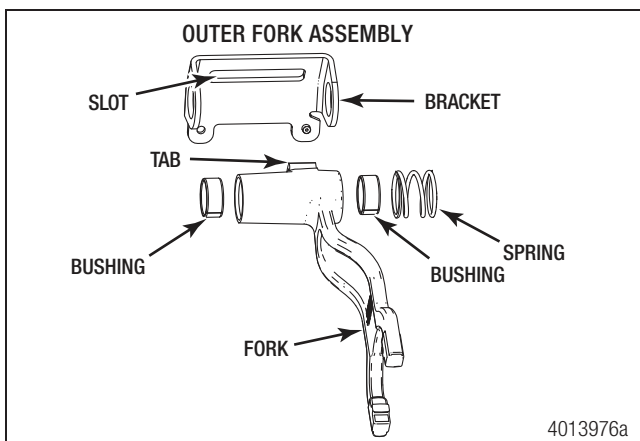


Figure 6.20

Install the Oil Line

1. Place the oil line in the rear case half. Figure 6.21.

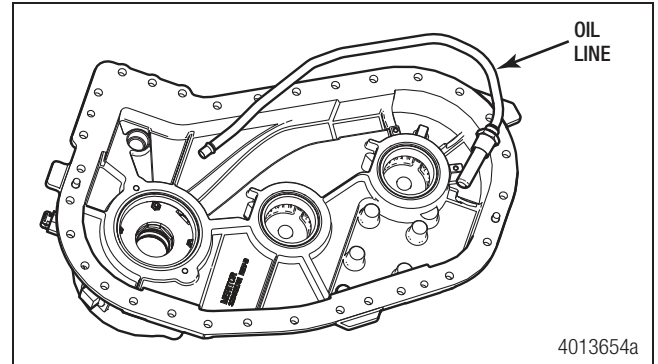


Figure 6.21

2. Install the two retainers and fasteners to secure the line in position. Figure 6.22.

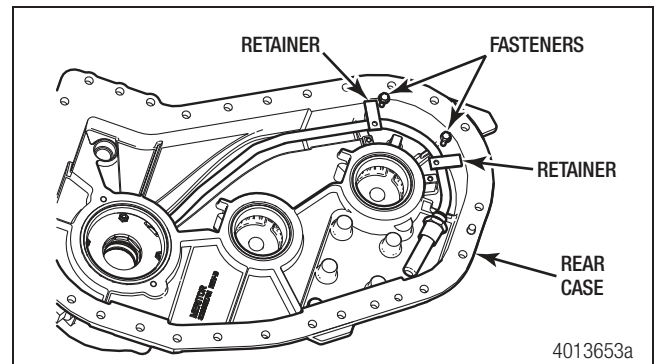


Figure 6.22

6 Bench Assembly & Disassembly

Assemble the Output Shaft Assembly

1. Install the front output shaft assembly into a press and support it correctly.
2. Place the bearing cone onto the end of the shaft assembly with the appropriate end facing UP. Use driver #3 and a press to push the bearing cone DOWN until it is fully seated. Refer to "Tools" on page 60 for a tool drawing. Only press on the inner race of the bearing cone. Ensure the bearing cone is correctly seated. Figure 6.23.

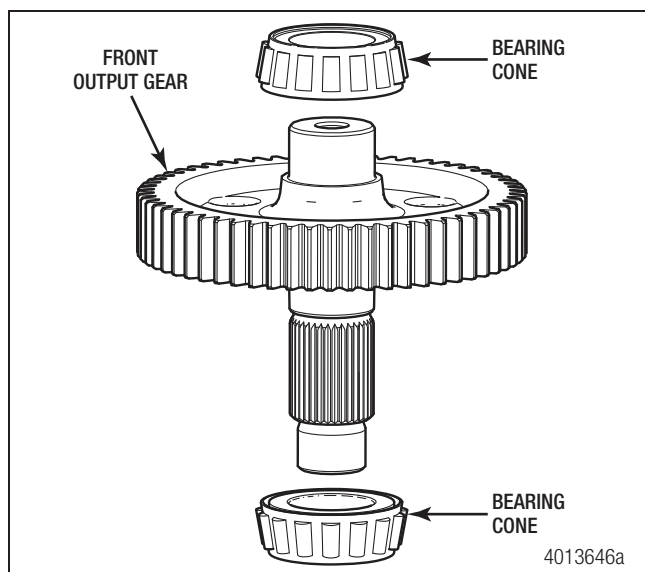


Figure 6.23

3. Turn the shaft assembly over and install the bearing cone on the other end using Steps 1 and 2.

Assemble the Idler Shaft Assembly

1. Install the idler shaft assembly into a press and support it correctly.
2. Place the bearing cone onto the end of the shaft assembly with the appropriate end facing UP. Use driver #3 and a press to push the bearing cone DOWN until it is fully seated. Refer to "Tools" on page 60 for a tool drawing. Only press on the inner race of the bearing cone. Ensure the bearing cone is correctly seated. Figure 6.24.

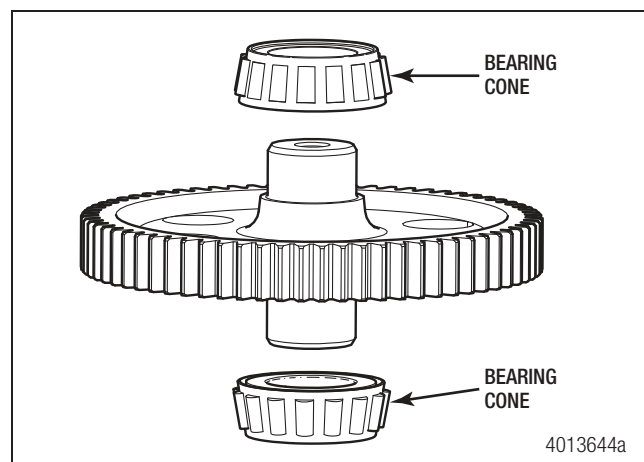


Figure 6.24

3. Turn the shaft assembly over and install the bearing cone on the other end using Steps 1 and 2.

Assemble the Input Gear Assembly

1. Install the input shaft assembly into a press and support it correctly.
2. Place the bearing cone onto the end of the input gear assembly with the appropriate end facing UP. Use driver #5 and a press to push the bearing cone DOWN until it is fully seated. Refer to "Tools" on page 60 for a tool drawing. Only press on the inner race of the bearing cone. Ensure the bearing cone is correctly seated. Figure 6.25.

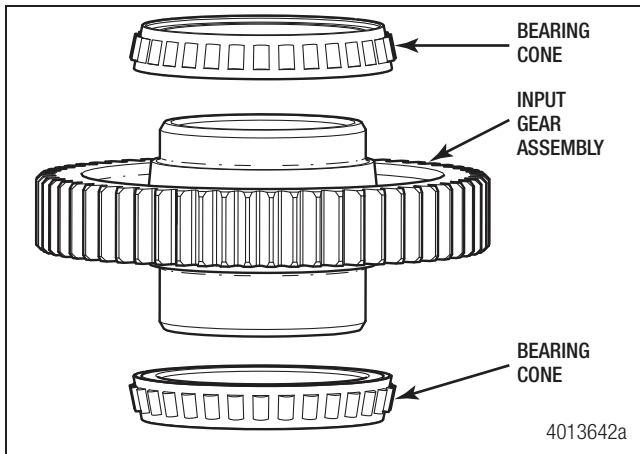


Figure 6.25

3. Turn the input gear assembly over and install the bearing cone on the other end using Steps 1 and 2.
4. If the bearing cone was removed, install the input shaft into a press and support it correctly.
5. Place the bearing cone onto the input shaft with the appropriate end facing UP. Use driver #1 and a press to push the bearing cone DOWN until it is fully seated against the shoulder. Refer to "Tools" on page 60 for a tool drawing. Only press on the inner race of the bearing cone. Ensure the bearing cone is correctly seated. Figure 6.26.

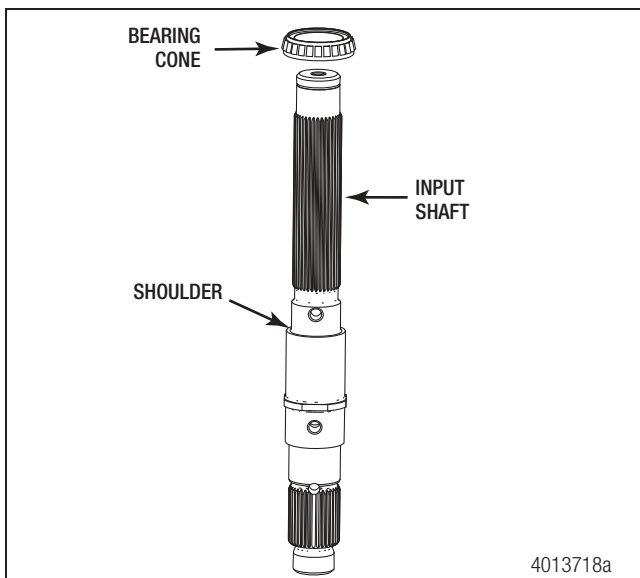


Figure 6.26

Assemble the Input Bearing Cage

1. Install the bearing on the sun gear and secure it with the small snap ring. Figure 6.27.

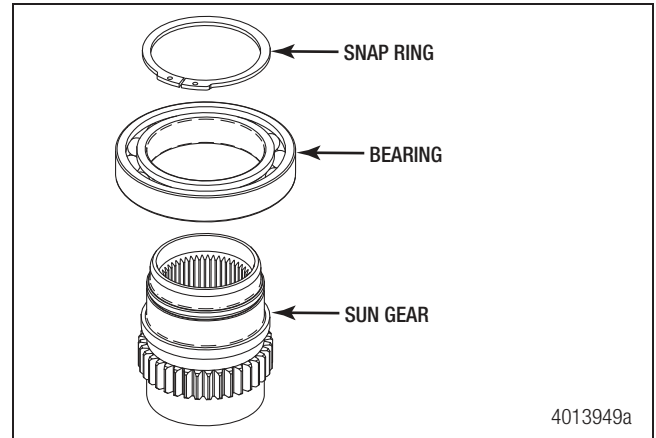


Figure 6.27

2. Install the sun gear and bearing into the bearing cage. Tap it in until it is seated in the bore. Figure 6.28.

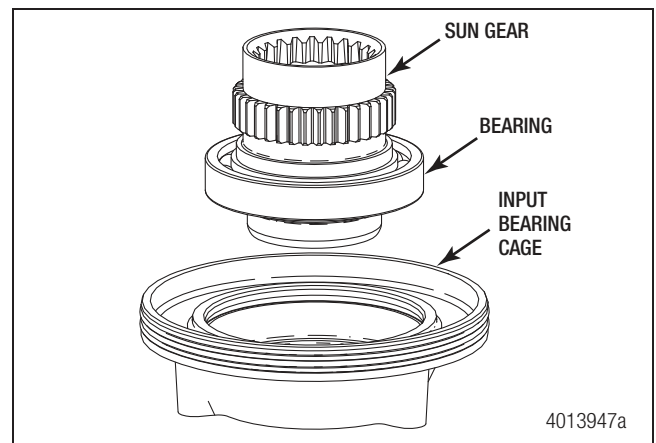


Figure 6.28

6 Bench Assembly & Disassembly

- Use snap ring pliers to install the large snap ring in the groove on the bearing cage and ensure it is correctly seated. Figure 6.29 and Figure 6.30.

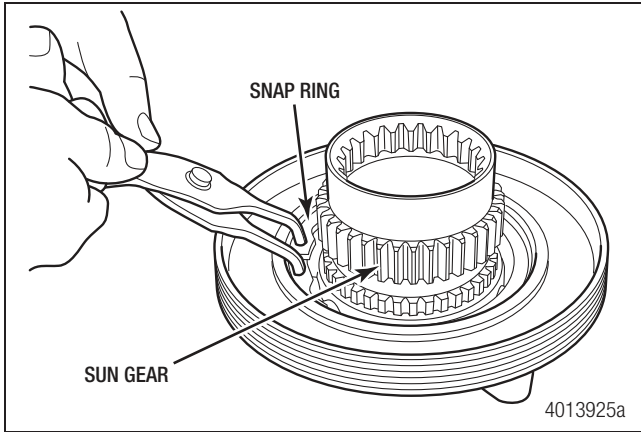


Figure 6.29

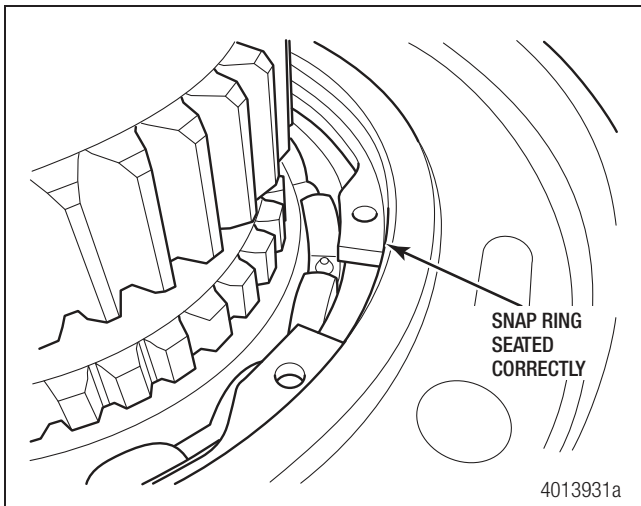


Figure 6.30

- If removed, use the correct driver to install the oil seal so that it is flush with the bearing cage. Refer to "Tools" on page 60. Figure 6.31.

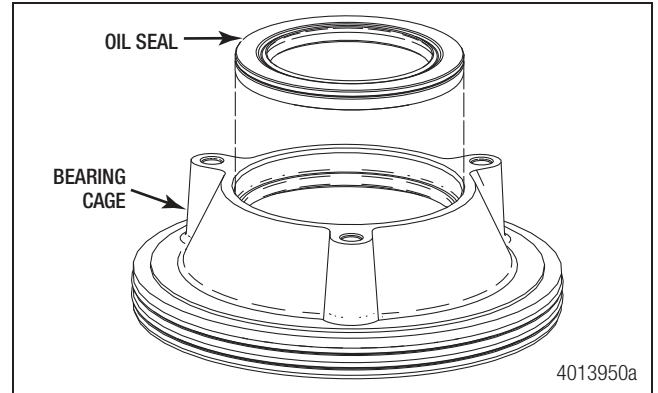


Figure 6.31

- Lubricate and install two new o-rings. Figure 6.32.

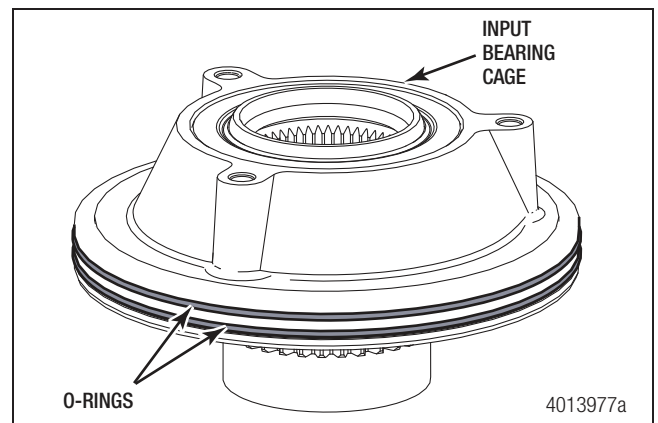


Figure 6.32

Assembly

Hazard Alert Messages

Read and observe all hazard alert messages in this publication. They provide information that can help prevent serious personal injury, damage to components, or both.

⚠ WARNING
TO PREVENT EYE INJURY, ALWAYS WEAR EYE PROTECTION WHEN PERFORMING VEHICLE MAINTENANCE OR SERVICE.

WHEN APPLYING SOME SILICONE GASKET MATERIALS, A SMALL AMOUNT OF ACID VAPOR IS PRESENT. TO PREVENT SERIOUS PERSONAL INJURY, ENSURE THE WORK AREA IS WELL-VENTILATED. READ THE MANUFACTURER'S INSTRUCTIONS BEFORE USING A SILICONE GASKET MATERIAL, THEN CAREFULLY FOLLOW THE INSTRUCTIONS. IF A SILICONE GASKET MATERIAL GETS INTO THE EYES, FOLLOW THE MANUFACTURER'S EMERGENCY PROCEDURES AND GET CHECKED BY A PHYSICIAN AS SOON AS POSSIBLE.

TAKE CARE WHEN USING LOCTITE® ADHESIVE TO AVOID SERIOUS PERSONAL INJURY. READ THE MANUFACTURER'S INSTRUCTIONS BEFORE USING THIS PRODUCT. FOLLOW THE INSTRUCTIONS CAREFULLY TO PREVENT IRRITATION TO THE EYES AND SKIN. IF LOCTITE ADHESIVE MATERIAL GETS INTO THE EYES, FOLLOW THE MANUFACTURER'S EMERGENCY PROCEDURES AND GET CHECKED BY A PHYSICIAN AS SOON AS POSSIBLE.

Install the Planetary Assembly

1. Place the planetary carrier assembly into the front transfer case housing and line up the planetary gears with the ring gear. Install the planetary assembly and use an appropriate tool to gently tap the assembly to seat it flat. Rotate the gear assembly around to ensure it moves smoothly. Figure 7.1.

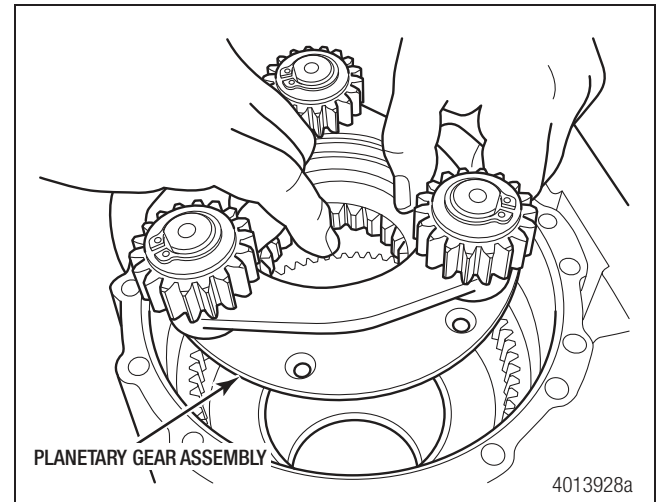


Figure 7.1

2. Apply Loctite 242 threadlocker to the six hex-bit screws. Install the six hex-bit screws securing the planetary carrier plate to the transfer case. You will have to rotate the flange around to access all of the bolt holes. Refer to "Torque Specifications" on page 57. Figure 7.2.

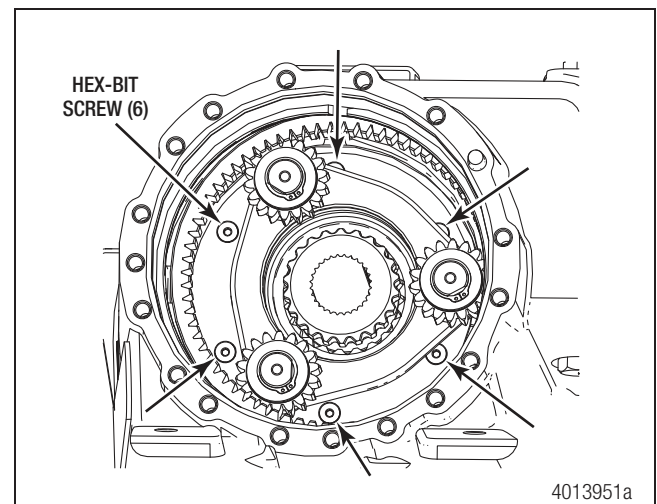


Figure 7.2

Install the Input Bearing Cage

1. Lubricate the seal bore in the front case half opening. Place the bearing cage into the front case half opening and line up the sun gear with the planetary gears. Install the bearing cage until completely seated. You will know the cage is installed to the correct depth when the snap ring groove in the housing is visible. Figure 7.3.

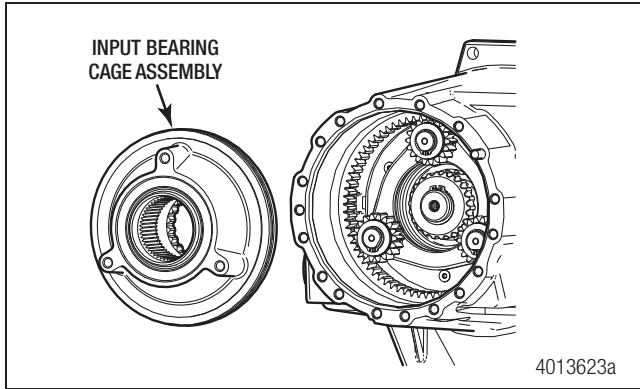


Figure 7.3

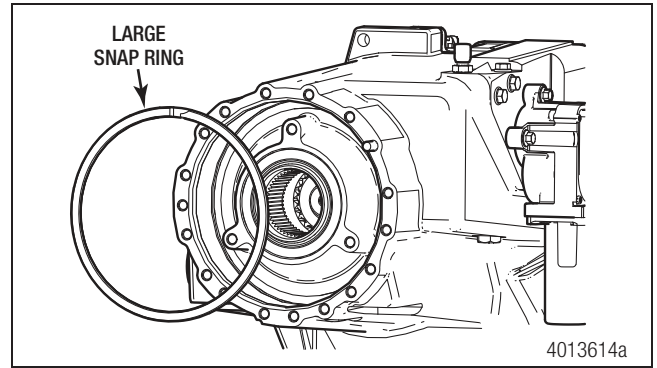


Figure 7.5

⚠ CAUTION

USE CARE TO AVOID SCRATCHING OR GOUGING THE ALUMINUM HOUSING BORE WHEN YOU INSTALL THE LARGE SNAP RING. IF IT BECOMES SCRATCHED OR GOUGED, USE EMERY CLOTH OR STEEL WOOL TO GENTLY SMOOTH OUT THE SCRATCH/GOUGE.

2. Start the end of the spiral snap ring in the groove in the housing and run your finger around it until it snaps into the groove completely. Figure 7.4 and Figure 7.5.

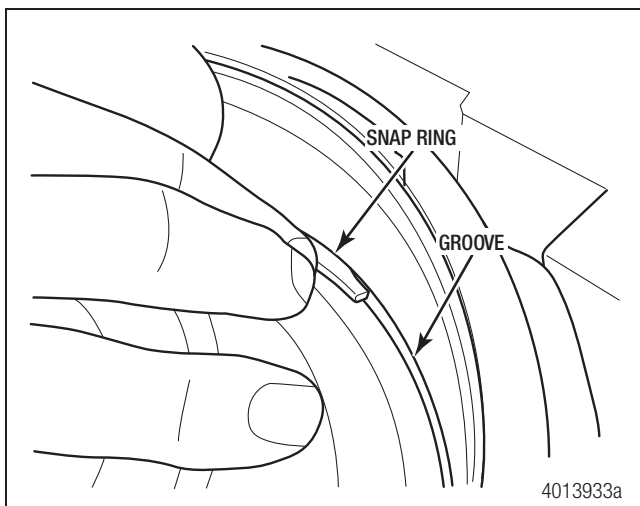


Figure 7.4

Install the High/Low & 4x4 Shift Assemblies

1. If removed, install the shift plate through the hole in the front case. Figure 7.6.

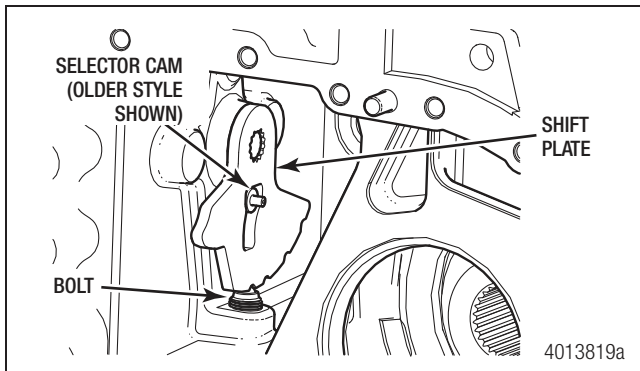


Figure 7.6

2. Secure install the bushing, washer and snap ring on the shift plate boss. Driver #2 in "Tools" on page 60 can be used to install the selector cam bushings. Figure 7.7.

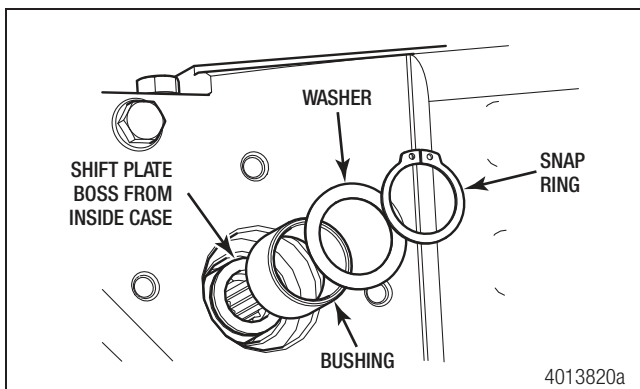


Figure 7.7

3. Lower the inner clutch collar into the front case half. Figure 7.8.

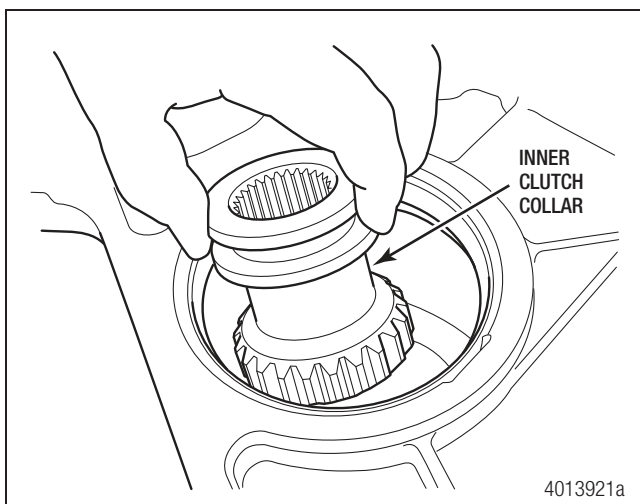


Figure 7.8

4. Lower the inner fork assembly down into the front case half and capture the clutch collar in the fork. Engage the clutch collar gear teeth with the sun gear teeth and install the clutch collar in the case. Figure 7.9 and Figure 7.10.

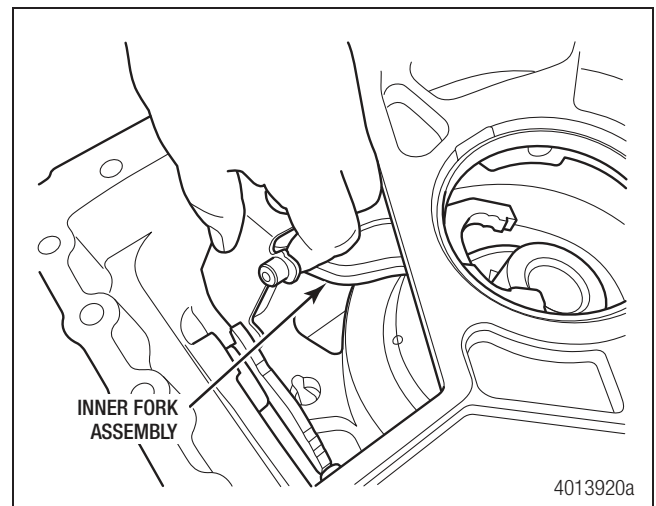


Figure 7.9

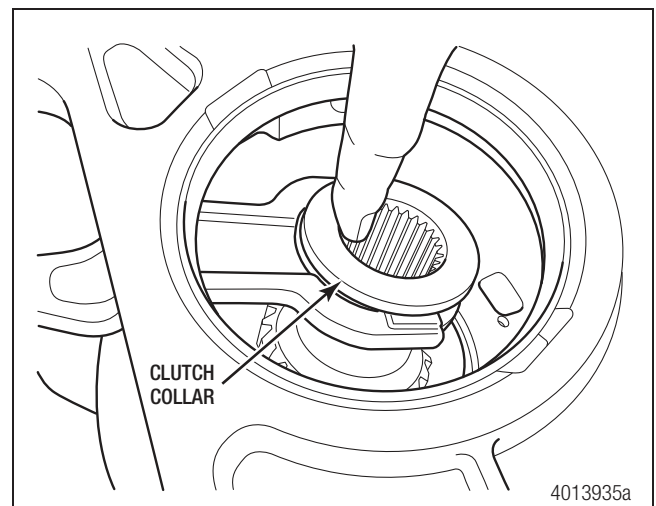


Figure 7.10

7 Assembly

5. Install the inner fork assembly on the bracket, making sure the selector cam is seated in the slot on the shift plate. Figure 7.11 and Figure 7.12.

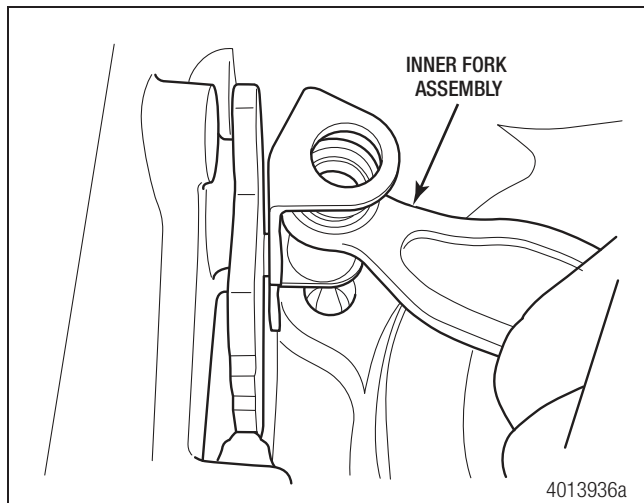


Figure 7.11

6. Lower the outer clutch collar and outer fork assembly down into the housing and capture the clutch collar in the fork. Figure 7.13 and Figure 7.14.

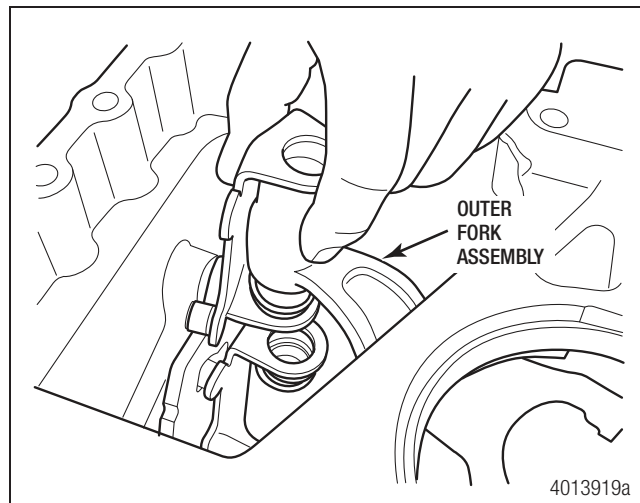


Figure 7.13

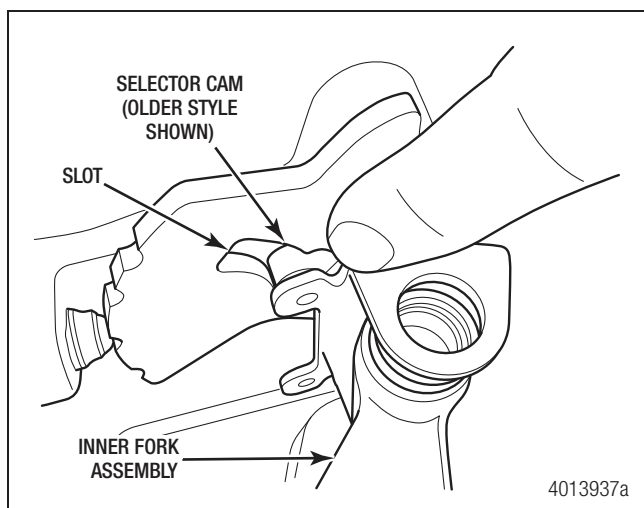


Figure 7.12

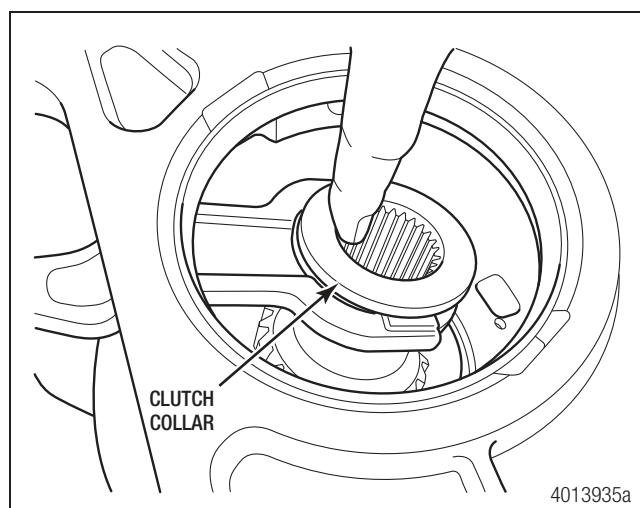


Figure 7.14

7. Install the outer fork assembly in the housing, making sure the selector cam is positioned correctly on the detent on the shift plate. Figure 7.15.

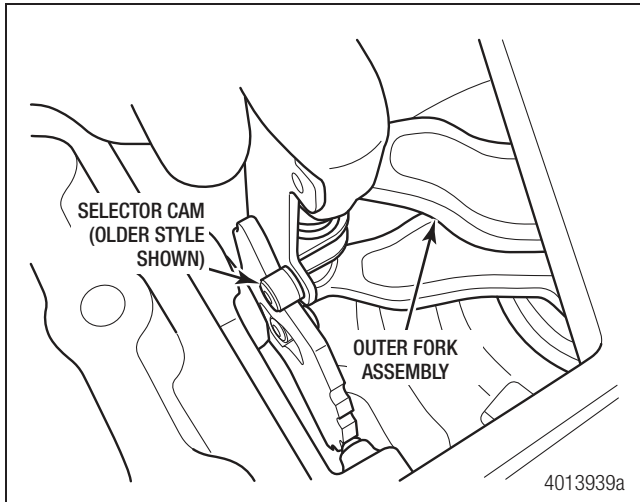


Figure 7.15

8. Align the fork assemblies as necessary and install the shift shaft until it bottoms out in the housing. Figure 7.16.

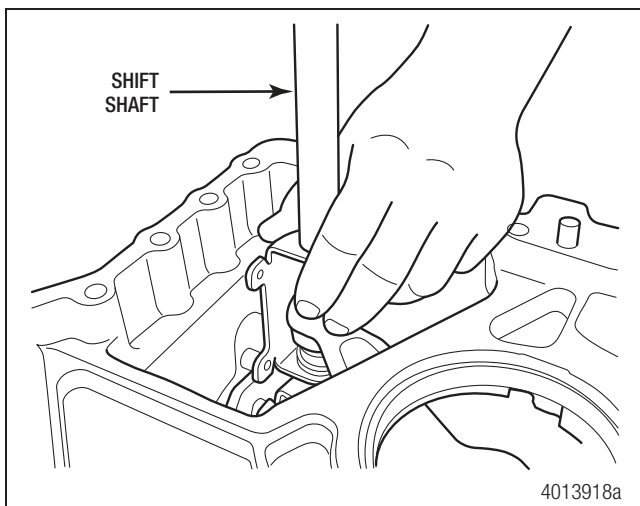


Figure 7.16

9. Install the spring over the shift shaft. Figure 7.17.

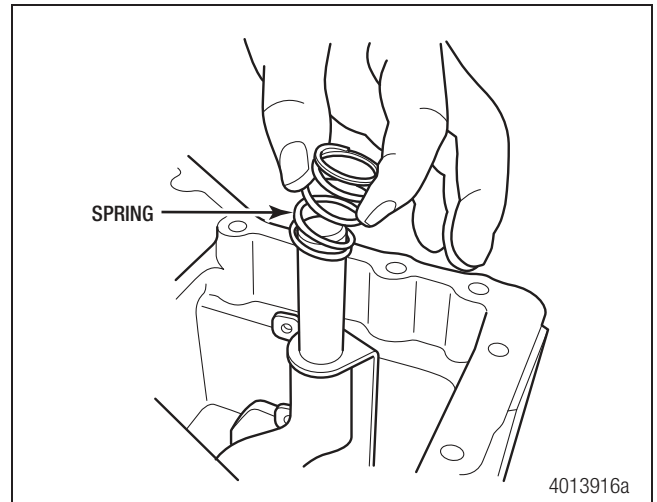


Figure 7.17

10. Check to ensure all shift parts are lined up, engaged and seated correctly.

Install the Front Output Gear Shaft & Idler Gear Assemblies

1. Install the output gear assembly in the front case half. Figure 7.18.

NOTE: Make sure all of the gear assemblies are installed with the threaded hole on the inside of the gear assembly facing UP.

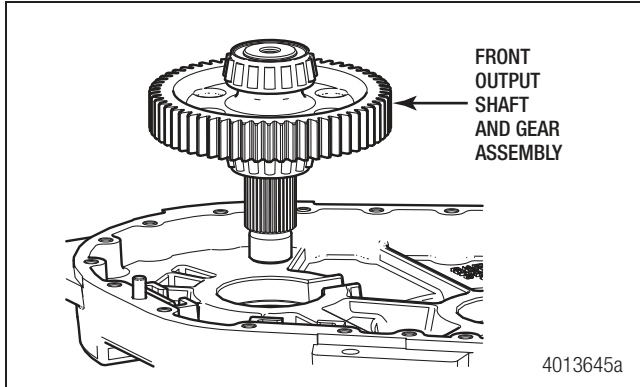


Figure 7.18

2. Install the idler gear assembly in the front case half. Figure 7.19.

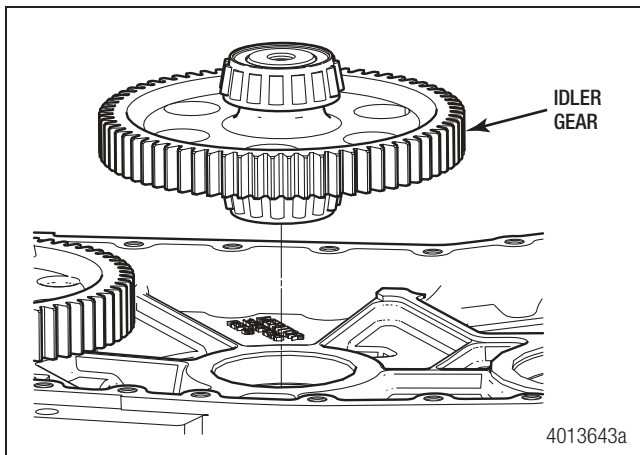


Figure 7.19

Assemble the Case Halves and Install the Input Drive Gear Assembly, Input Shaft Assembly, Oil Pump, Tooth Wheel, Bearing, & Output Bearing Cage

1. Line up the internal gear teeth on the input drive gear assembly with the gear teeth on the clutch collar and install the gear assembly in the front case half. Figure 7.20 and Figure 7.21.

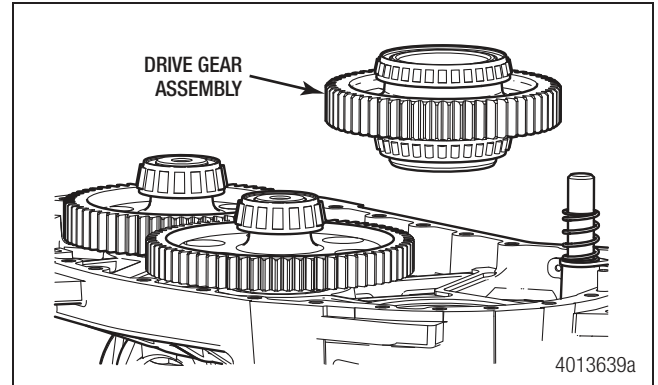


Figure 7.20

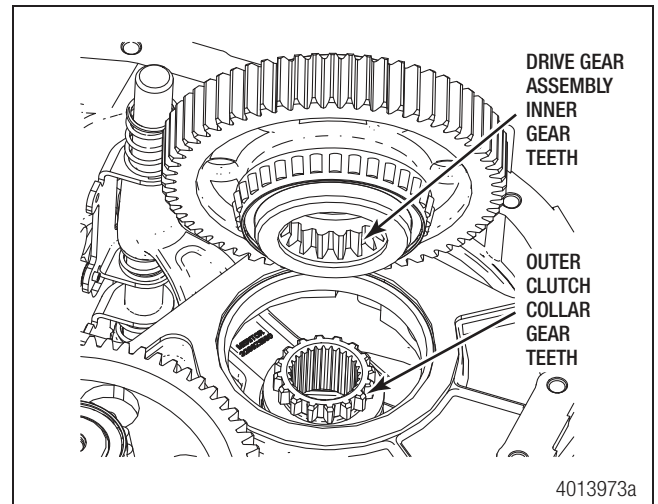


Figure 7.21

2. If removed, apply 1/8" (3 mm) of Loctite 638 threadlocker to the first 1/4 of the dowels and reinstall them on the front case flange.

3. Apply a 1/8" (3 mm) bead of Loctite 518 sealant around the entire front case flange between each bolt hole making sure to encircle each hole. Figure 7.22.

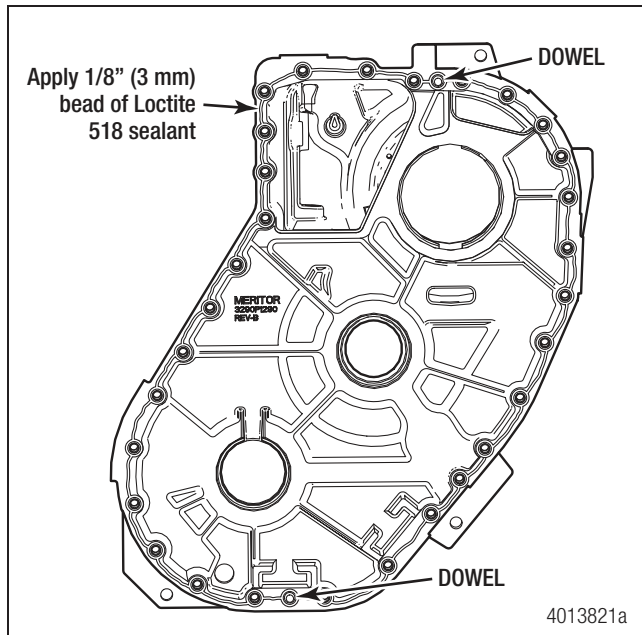


Figure 7.22

⚠ DANGER

TAKE CARE WHEN USING LIFTING DEVICES DURING SERVICE AND MAINTENANCE PROCEDURES TO AVOID SERIOUS PERSONAL INJURY AND DAMAGE TO COMPONENTS. INSPECT A LIFTING STRAP TO ENSURE IT IS NOT DAMAGED. NEVER SUBJECT THE LIFTING STRAPS TO SHOCKS OR DROP-LOADING.

4. Attach a suitable lifting device to the rear case. Secure the rear case correctly with lifting straps.
5. Lower the rear case and install it on the front case. Use the dowels on the front case to help align the bolt holes. Figure 7.23.

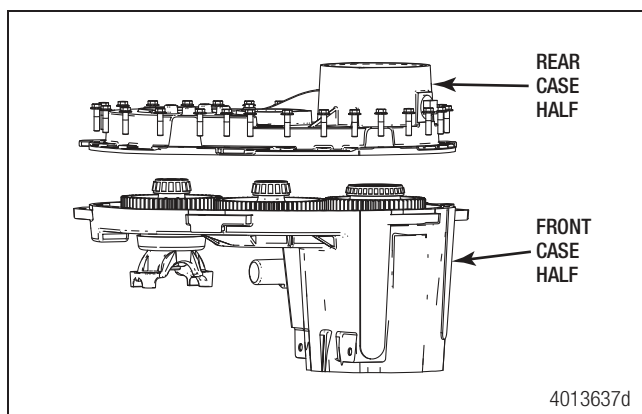


Figure 7.23

6. If the capscrews are not pre-covered, apply Loctite 242 threadlocker to the transfer case capscrews.
7. Install the transfer case capscrews and tighten evenly to specification using a criss-cross pattern. Figure 7.24.

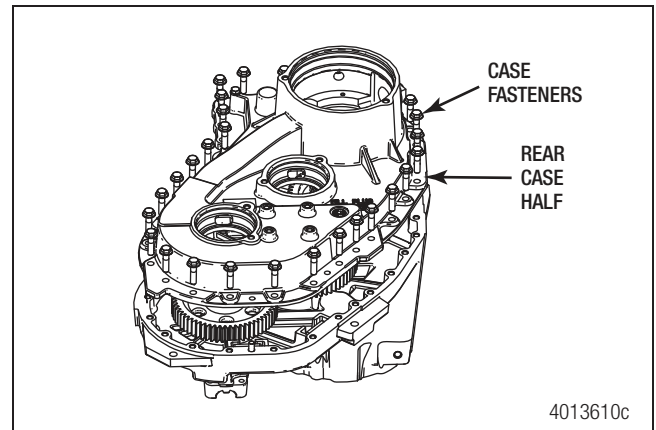


Figure 7.24

⚠ CAUTION

USE CARE NOT TO CROSS THREAD THE BEARING ADJUSTER RING AND CUPS OR DAMAGE CAN RESULT.

8. Start all of the bearing adjusters (ring and cups) in the transfer case by hand, making sure not to cross thread. Figure 7.25.

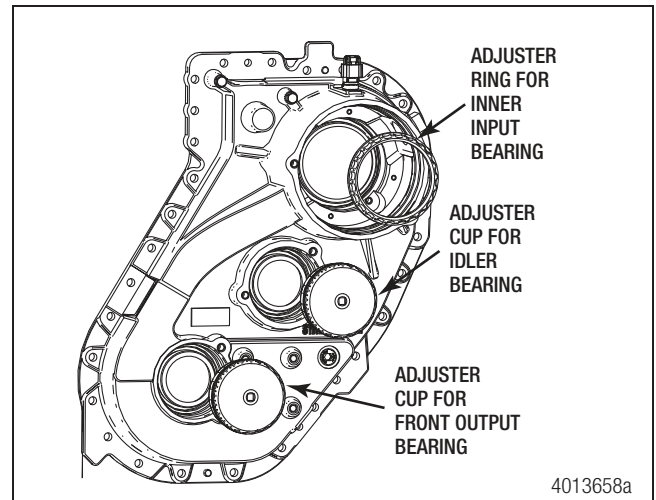


Figure 7.25

7 Assembly

9. With the input bearing adjuster ring installed, adjust as necessary using the following steps. Refer to "Tools" on page 60 for adjusting ring tool information. Once the bearing is adjusted, apply Loctite 242 threadlocker to the flange bolt threads and install the bolt to secure the bearing adjusting ring in place. Figure 7.26.

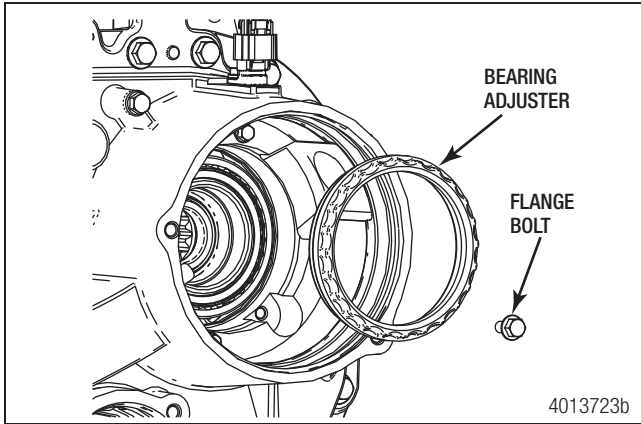


Figure 7.26

- a. A. Set dial indicator on input gear as shown, and use Meritor Special Tool "MER1234" as shown to lift the input gear. Tighten the adjuster ring as necessary until the end play is within the 0.002-0.006" range. Figure 7.27 and Figure 7.28.

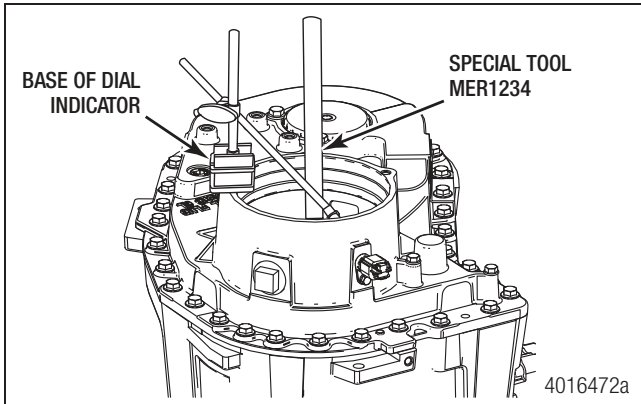


Figure 7.27

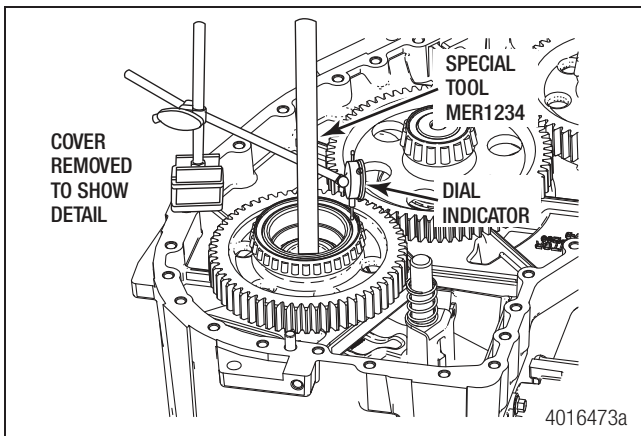


Figure 7.28

- b. Once the initial end play has been obtained, use the adjuster ring to set preload as necessary per Table A on page 41.
10. Install the input shaft assembly into the transfer case. Move the input shaft around as necessary to line up the clutch collars and internal gears until the input shaft is completely seated. Figure 7.29.

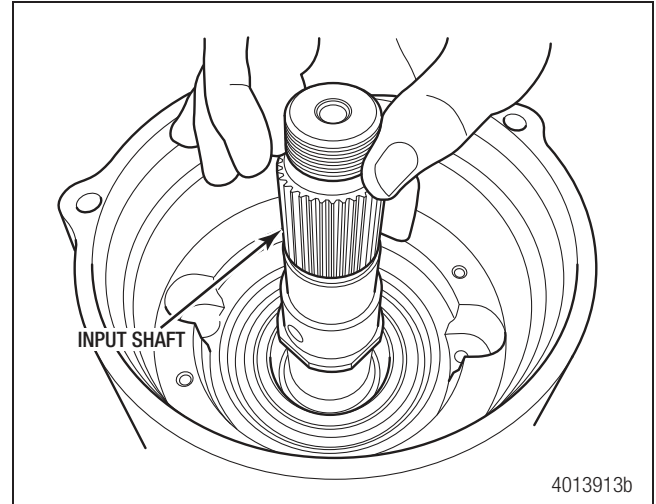


Figure 7.29

11. Hold the input shaft by hand so it does not fall out of place and rotate the transfer case in the stand to access the front case opening. Install the snap ring on the end of the input shaft. Figure 7.30.

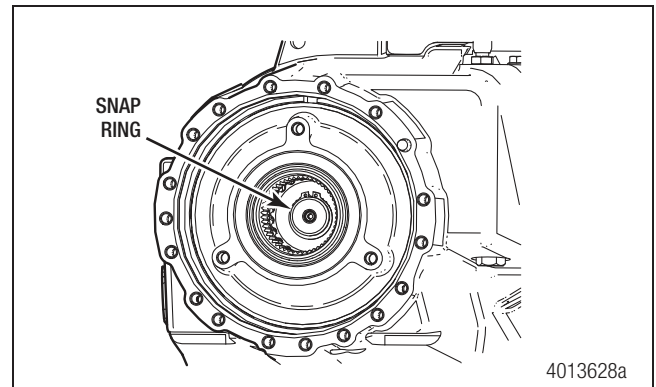


Figure 7.30

12. Install the square seals inside the oil pump assembly.

13. Wrap plastic film (McMaster-Carr brown plastic 12x24" shim sheet, 0.01" thick, part number 9513K119) around the input shaft prior to installing the oil pump assembly. The film is used to ensure the pump seals stay in place and do not get damaged when the oil pump is installed on the input shaft. Refer to "Tools" on page 60 for more information about this film. Figure 7.31.

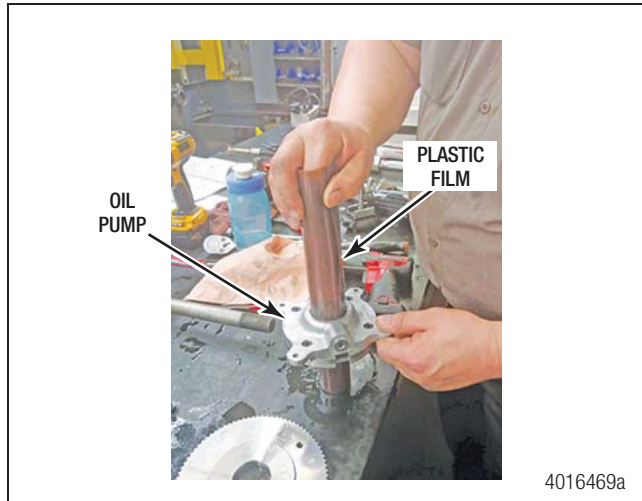


Figure 7.31

14. Slide the oil pump assembly down over the input shaft assembly and line up the bolt holes. Remove the plastic film from the input shaft. Figure 7.32.

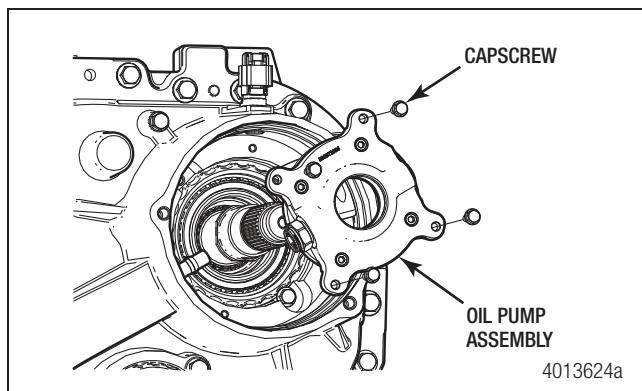


Figure 7.32

15. Install the oil line into the pump fitting. The line must be installed into the fitting far enough to align the E-clip grooves. Use pliers or another suitable tool to pull the line into the fitting until correctly aligned. Once the line is in position, install the E-clip to secure the line to the fitting. Slide the shroud back over the fitting. Cut and remove the zip tie from the oil line. Figure 7.33 and Figure 7.34.

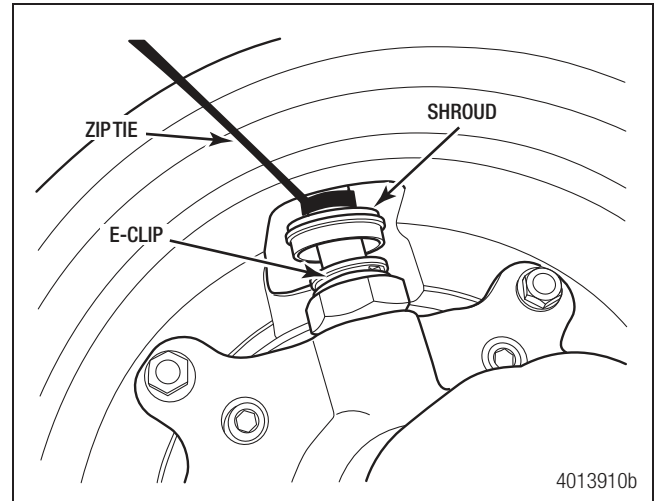


Figure 7.33

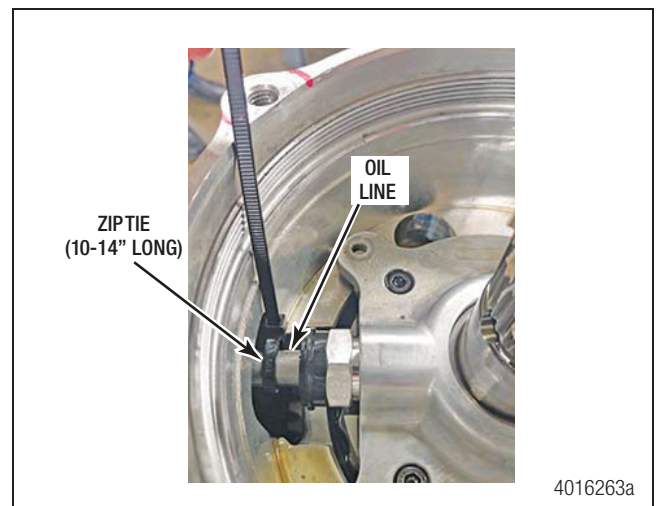


Figure 7.34

7 Assembly

16. Install the four pump mounting screws and tighten to specification. Figure 7.35.

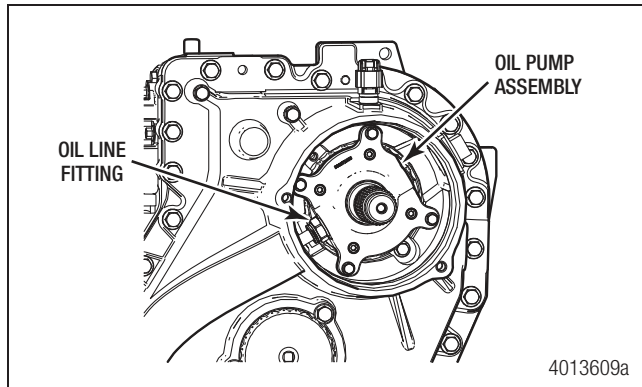


Figure 7.35

17. Use a suitable tool to install the speed sensor tooth wheel on the input shaft and make sure it is correctly seated. Figure 7.36.

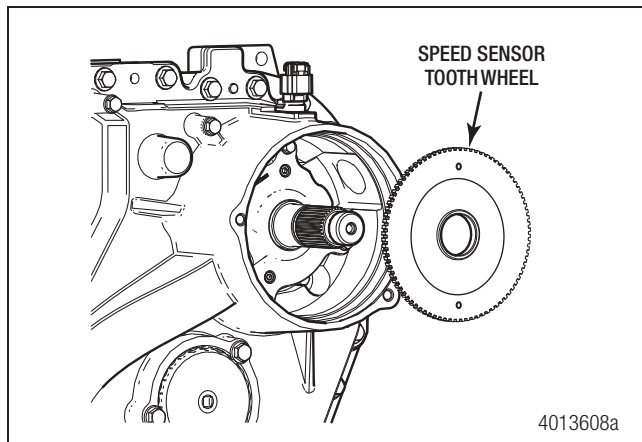


Figure 7.36

18. Install the outer bearing cone on the input shaft. Figure 7.37.

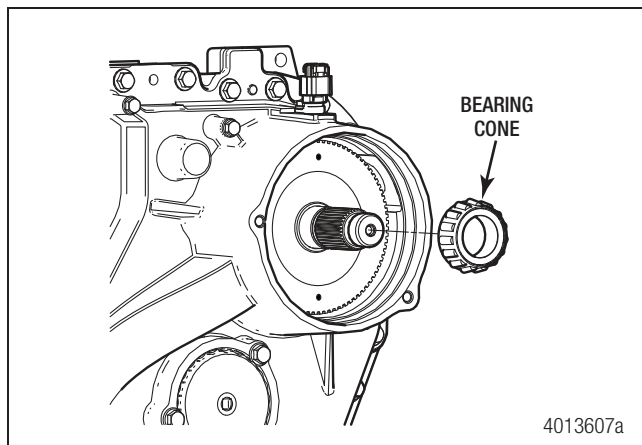


Figure 7.37

19. If removed, install the bearing cup into the outer bearing cage.
20. Install and lubricate a new o-ring on the outer bearing cage. Lubricate the o-ring on the outer bearing cage prior to installation of the bearing cage. Figure 7.38.

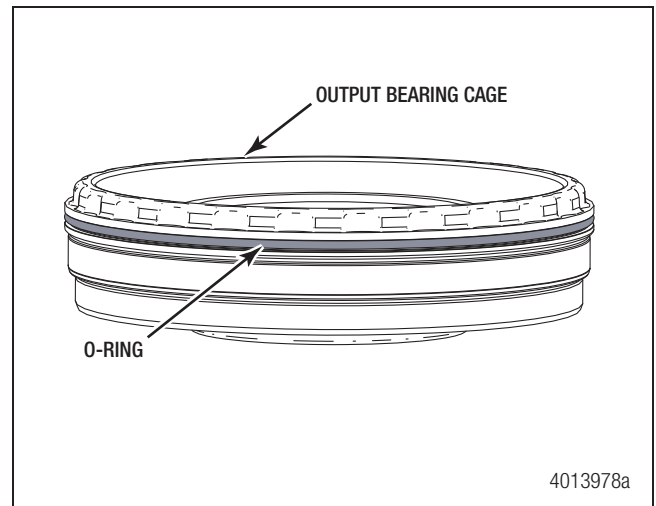


Figure 7.38

⚠ CAUTION

USE CARE TO AVOID CROSS-THREADING THE OUTER BEARING CAGE IN THE TRANSFER CASE HOUSING.

21. Start the outer bearing cage in the transfer case housing by hand, making sure not to cross thread. Then, use the special tool to continue installing the outer bearing cage further into the housing. Refer to "Tools" on page 60. Figure 7.39.

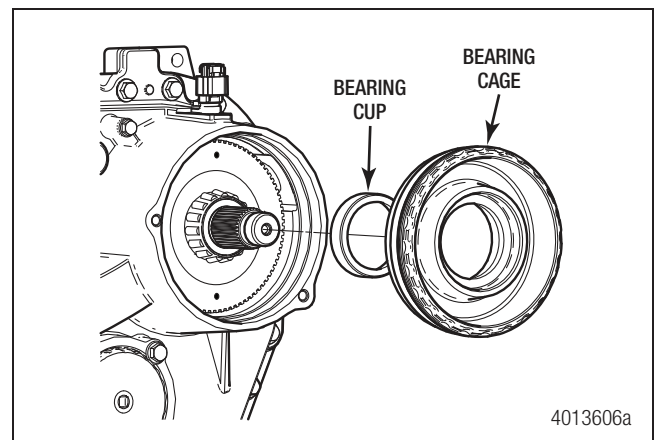


Figure 7.39

- Temporarily install the yoke nut to use as a lifting surface when checking the end play. Figure 7.40.

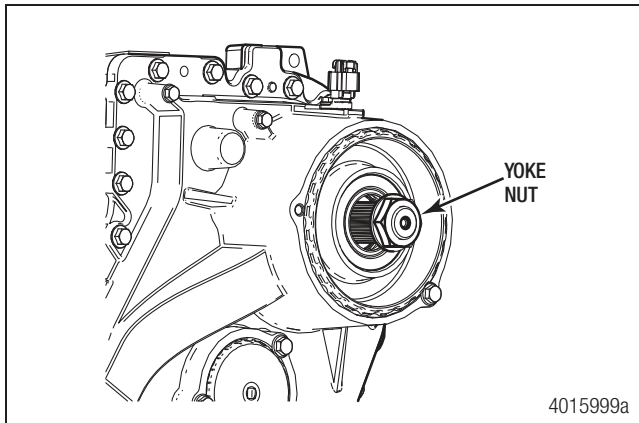


Figure 7.40

- Adjust the bearing cage end play as necessary per the adjustment procedure in this section. Once the bearing cage is adjusted, follow the steps in the adjustment procedure for final installation of the yoke nut and retaining bolt.

Install the Electronic Shift Unit

- Verify the shift mechanism is in the 2WD high (home) position. The shift unit will not be able to be installed correctly if the shift components inside the housing are not in the correct position.
- Align the shift unit shaft with the gear teeth inside the housing. Figure 7.41.

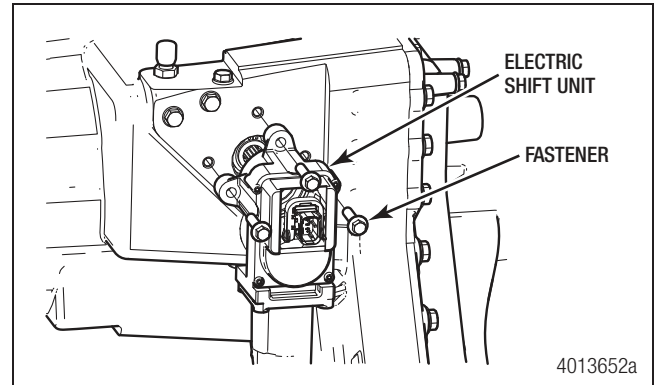


Figure 7.41

- Install the shift unit on the front case half. Install the three fasteners and tighten to specification.

Check and Adjust Preload Adjustment

TABLE A: ADJUSTMENT

Initial End Play	# Full Notches	Resulting Preload
0.001"	1	-0.002"
0.002"	1	-0.001"
0.003"	1.5	-0.002"
0.004"	2	-0.003"
0.005"	2	-0.002"
0.006"	2	-0.002"

After preload is achieved, measure to ensure no end play is present. If end play is found, start the process again and refer to Table A.

Rear Output Shaft End Play

1. Rotate the output shaft several times to seat the bearings.
2. Use a dial indicator to check output shaft bearing end play. To mount the magnetic base of the dial indicator, install a steel plate on the housing as shown and secure it with a bolt. Center the dial indicator over the shaft. NOTE: For accuracy, place a ball bearing into the recess found on the end of the shaft, then place the tip of the dial indicator on top of the ball bearing. Figure 7.42 and Figure 7.43.

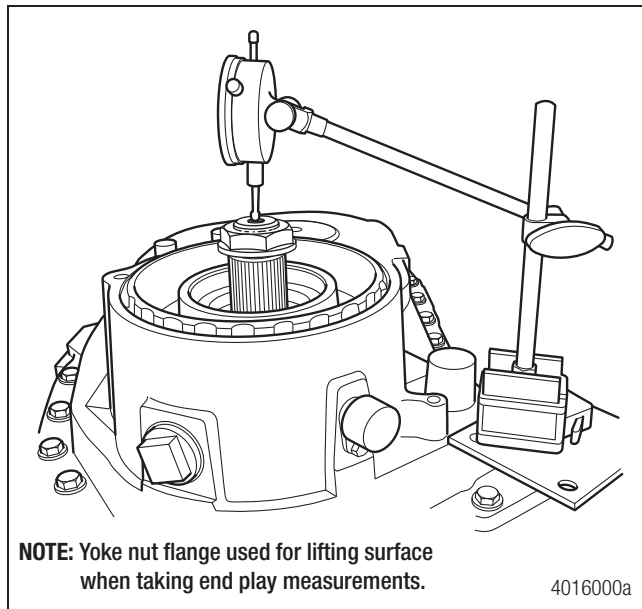


Figure 7.42

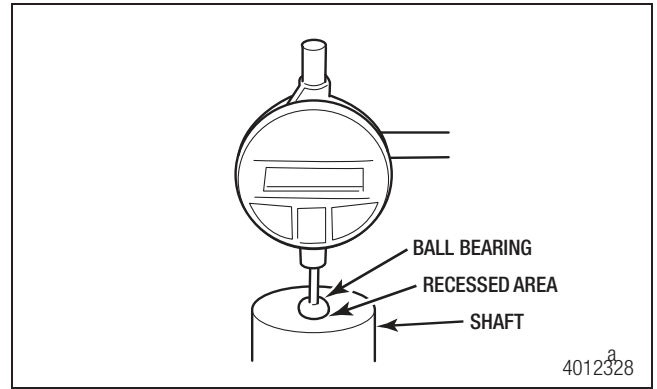


Figure 7.43

3. Use a pry bar to lift the yoke nut and measure the end play. Perform this operation two or three times, rotating the shaft in between measurements, to obtain a consistent and averaged reading. Record the reading and adjust the end play as necessary until it is in the acceptable initial range as specified in Table A on page 41. Refer to "Tools" on page 60 for adjusting ring tool information. Once end play has been achieved, perform the required adjustment shown in Table A to set the appropriate bearing preload. Figure 7.44.

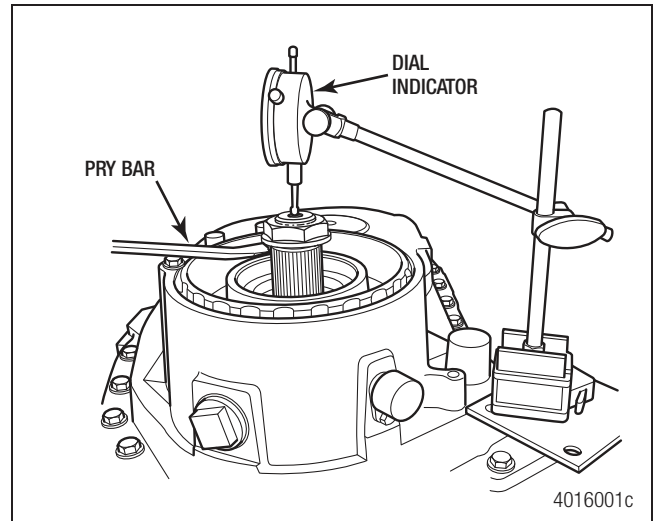


Figure 7.44

4. Once the correct preload is achieved, remove the temporary yoke nut.

5. Apply Loctite 242 to the flange bolt threads and install the bolt to secure the bearing cage in place. Figure 7.45.

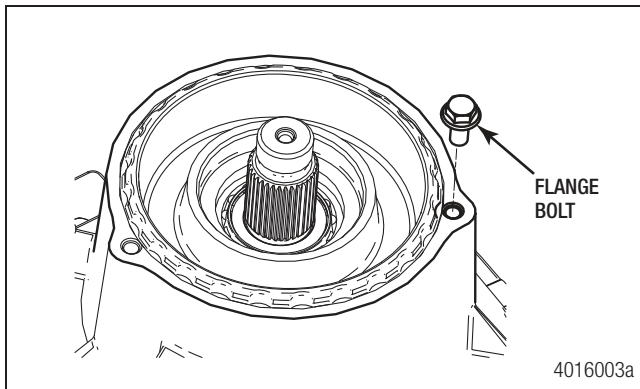


Figure 7.45

6. Use the appropriate driver and hammer to install the oil seal assembly on the bearing cage. Figure 7.46.

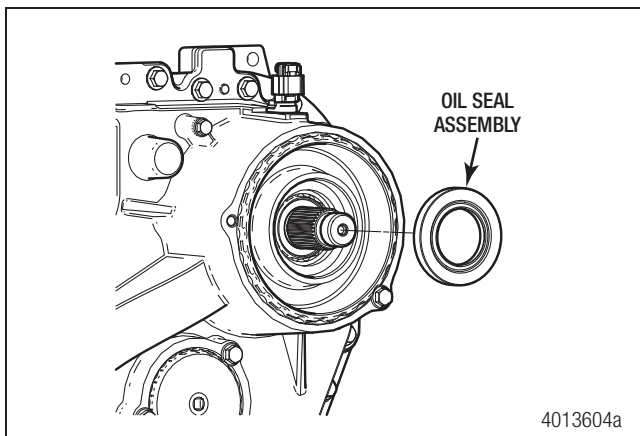


Figure 7.46

7. Install the rear output yoke on the input shaft. Figure 7.47.

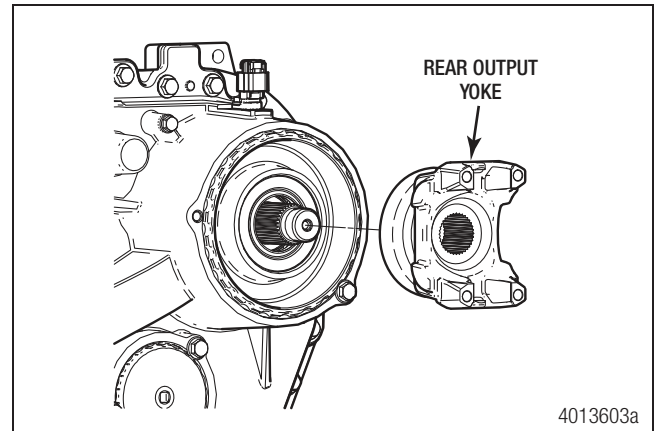



Figure 7.47

8. Apply sealant to the new yoke nut and install it on the input shaft. Tighten the yoke nut to 500-700 lb-ft (678-949 N-m). Figure 7.48. 

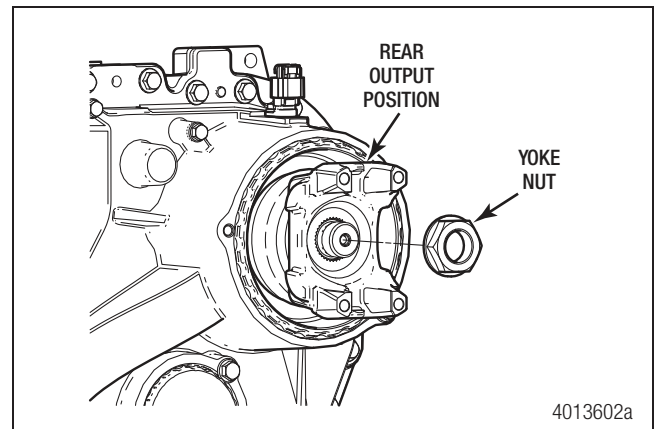


Figure 7.48

7 Assembly

Front Output Shaft End Play

1. Install the yoke nut on the front output shaft and tighten it hand tight.
2. Rotate the output shaft several times to seat the bearings.
3. Turn the transfer case over in the stand so the rear case is facing DOWN.
4. Set up the dial indicator as shown to check the output shaft bearing end play. Place a metal plate in a suitable position on the housing and secure it with a fastener. Mount the magnetic base of the dial indicator on top of the metal plate. Center the dial indicator on the face of the output shaft. Zero the indicator.

NOTE: For accuracy, place a ball bearing into the recess found on the end of the shaft, then place the tip of the dial indicator on top of the ball bearing. Figure 7.49.

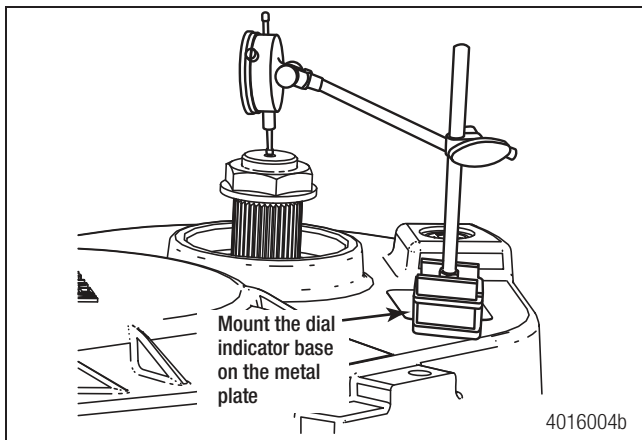


Figure 7.49

5. Use a pry bar to lift the yoke nut as shown and measure the end play. Perform this operation two or three times to obtain a consistent and averaged reading. Record the reading and adjust the end play as necessary until it is in the acceptable initial range as specified in Table A on page 41. Refer to "Tools" on page 60 for adjusting ring tool information. Once end play has been achieved, perform the required adjustment shown in Table A to set the appropriate bearing preload. Figure 7.50.

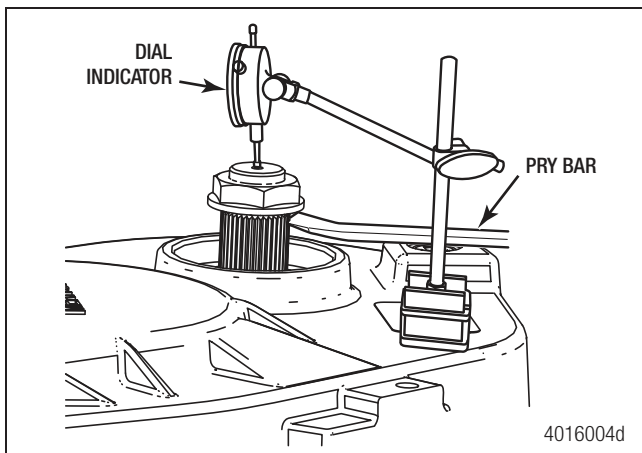


Figure 7.50

6. Turn the transfer case over in the stand so the rear case is facing UP.
7. Apply Loctite 242 threadlocker to the flange bolt threads. Install the flange bolt to secure the adjuster in place and tighten to specification. Figure 7.51.

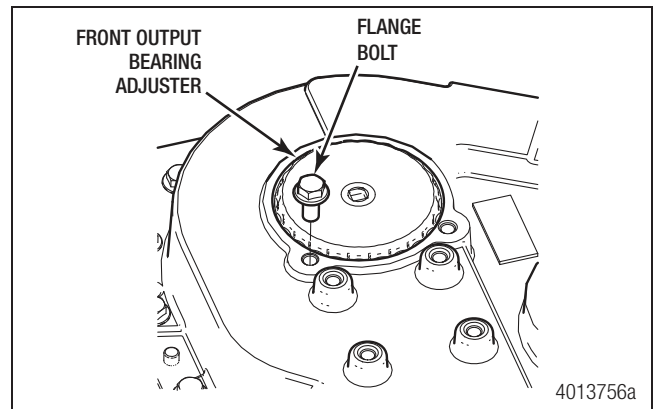


Figure 7.51

Install the Front Output Yoke and Nut

1. Remove the yoke nut used for end play check.
2. Install the oil seal assembly in the front output case bore. Drive the output seal assembly in until it stops, below flush of the bore. Figure 7.52.

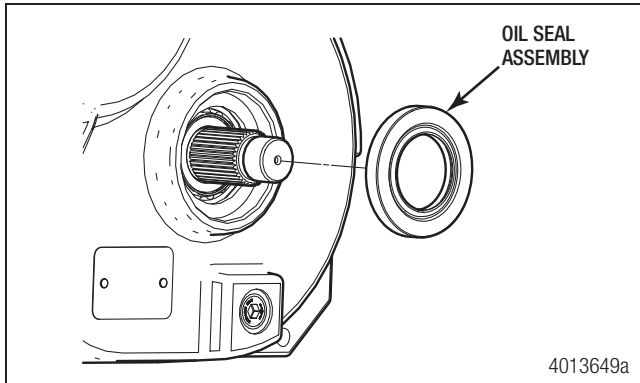


Figure 7.52

3. Install the yoke on the front output shaft. Figure 7.53.

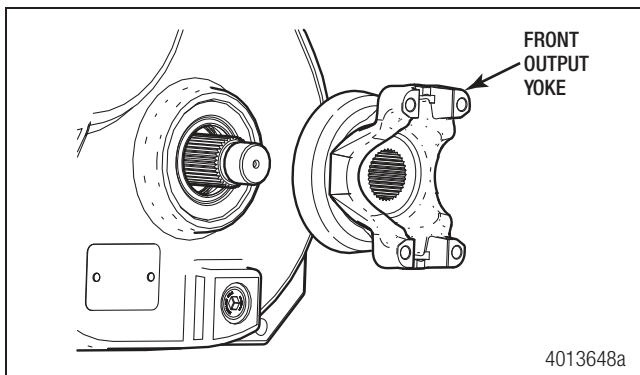



Figure 7.53

4. Apply silastic to the yoke nut. Install the yoke nut and tighten to 500-700 lb-ft (678-949 N·m). Figure 7.54. 

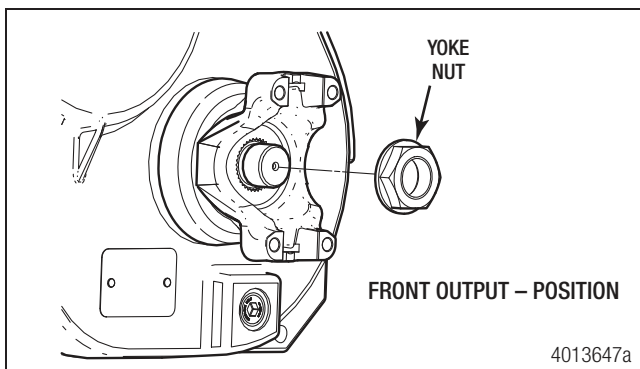


Figure 7.54

Idler Shaft End Play

1. Rotate the transfer case so that the front of the case faces UPWARD.
2. Remove the pipe plug at the shaft location on the rear case half. Figure 7.55.

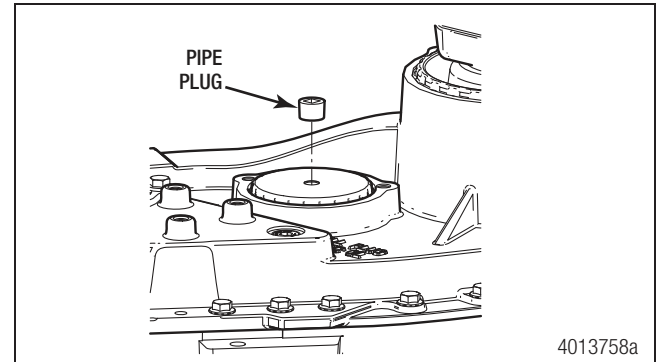


Figure 7.55

3. To prepare to check shaft bearing end play, thread a 3/8-16 bolt into the shaft through the pipe plug hole, until the bolt is fully seated. The bolt should extend out of the transfer case enough for you to use it to lift the idler shaft.
4. Tighten the bolt so that it bottoms in the shaft for an accurate end play measurement.
5. Rotate the idler shaft several times to help seat the bearing cones.
6. Set up the dial indicator to check the idler shaft bearing end play as shown. To mount the dial indicator, bolt a steel plate onto the case and place the magnetic base on it. Center the dial indicator on the bolt head. Zero the indicator. Figure 7.56.

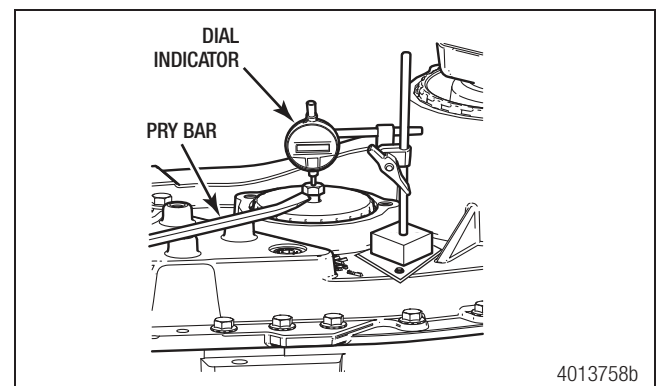


Figure 7.56

7. Use a pry bar to lift the bolt head and measure the end play. Perform this operation two or three times to obtain a consistent and averaged reading. Record the reading and adjust the end play as necessary until it is in the acceptable initial range as specified in Table A on page 41. Refer to "Tools" on page 60 for adjusting ring tool information. Once end play has been achieved, perform the required adjustment shown in Table A to set the appropriate bearing preload.

7 Assembly

- Remove the bolt from the shaft. Apply Loctite 592 threadlocker to the pipe plug. Install the plug and tighten to specification. **T**
- Apply Loctite 242 threadlocker to the flange bolt threads. Install the flange bolt to secure the adjuster in place and tighten to specification. Figure 7.57.

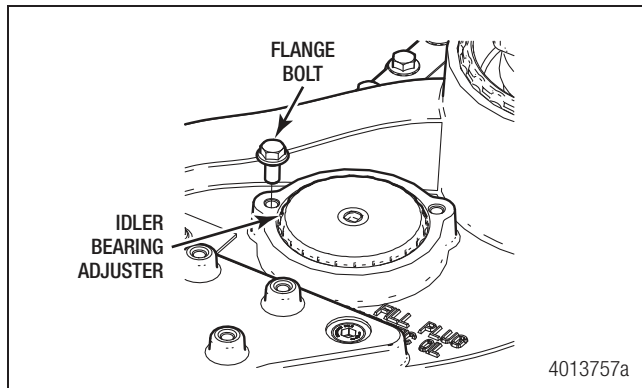


Figure 7.57

Install the Speed Sensor

- Place the speed sensor in position on the front housing and align the bolt hole. Figure 7.58.

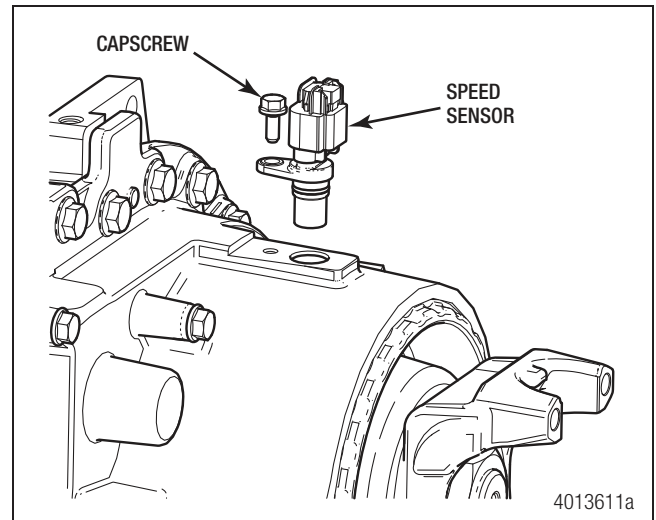


Figure 7.58

- Install the capscrew and tighten to specification.
- Connect the electrical connector to the sensor.

Installation

Hazard Alert Messages

Read and observe all hazard alert messages in this publication. They provide information that can help prevent serious personal injury, damage to components, or both.

⚠ WARNING
TO PREVENT EYE INJURY, ALWAYS WEAR EYE PROTECTION
WHEN PERFORMING VEHICLE MAINTENANCE OR SERVICE.

Install the Transfer Case

⚠ DANGER

SUPPORT THE TRANSFER CASE WITH A LIFTING DEVICE BEFORE MOVING THE TRANSFER CASE. A TRANSFER CASE THAT IS NOT SUPPORTED CORRECTLY CAN FALL. SERIOUS PERSONAL INJURY AND DAMAGE TO COMPONENTS CAN RESULT.

TAKE CARE WHEN USING LIFTING DEVICES DURING SERVICE AND MAINTENANCE PROCEDURES TO AVOID SERIOUS PERSONAL INJURY AND DAMAGE TO COMPONENTS. INSPECT A LIFTING STRAP TO ENSURE IT IS NOT DAMAGED. NEVER SUBJECT THE LIFTING STRAPS TO SHOCKS OR DROP-LOADING.

1. Secure the transfer case with lifting straps. Use a suitable lifting device to move the transfer case from the repair stand to a suitable hydraulic roller jack. If used, remove the temporary eye-bolts and mounting brackets from the transfer case housing.
2. Move the transfer case into position under the vehicle with the hydraulic roller jack.
3. Install the transfer case into the vehicle with the mounting bolts. Tighten the bolts to the torque specification supplied by the vehicle manufacturer. Figure 8.1.

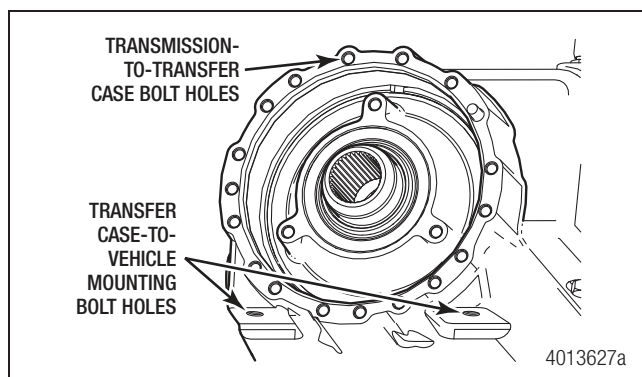


Figure 8.1

4. Connect the drivelines to the output yokes of the transfer case. Refer to the vehicle manufacturer's recommended procedure.
5. Connect any switch or speed sensor wiring.
6. Fill the transfer case with the correct quantity of specified lubricant.

Diagnostics

Troubleshooting

Transfer Case Lubrication Diagnostics

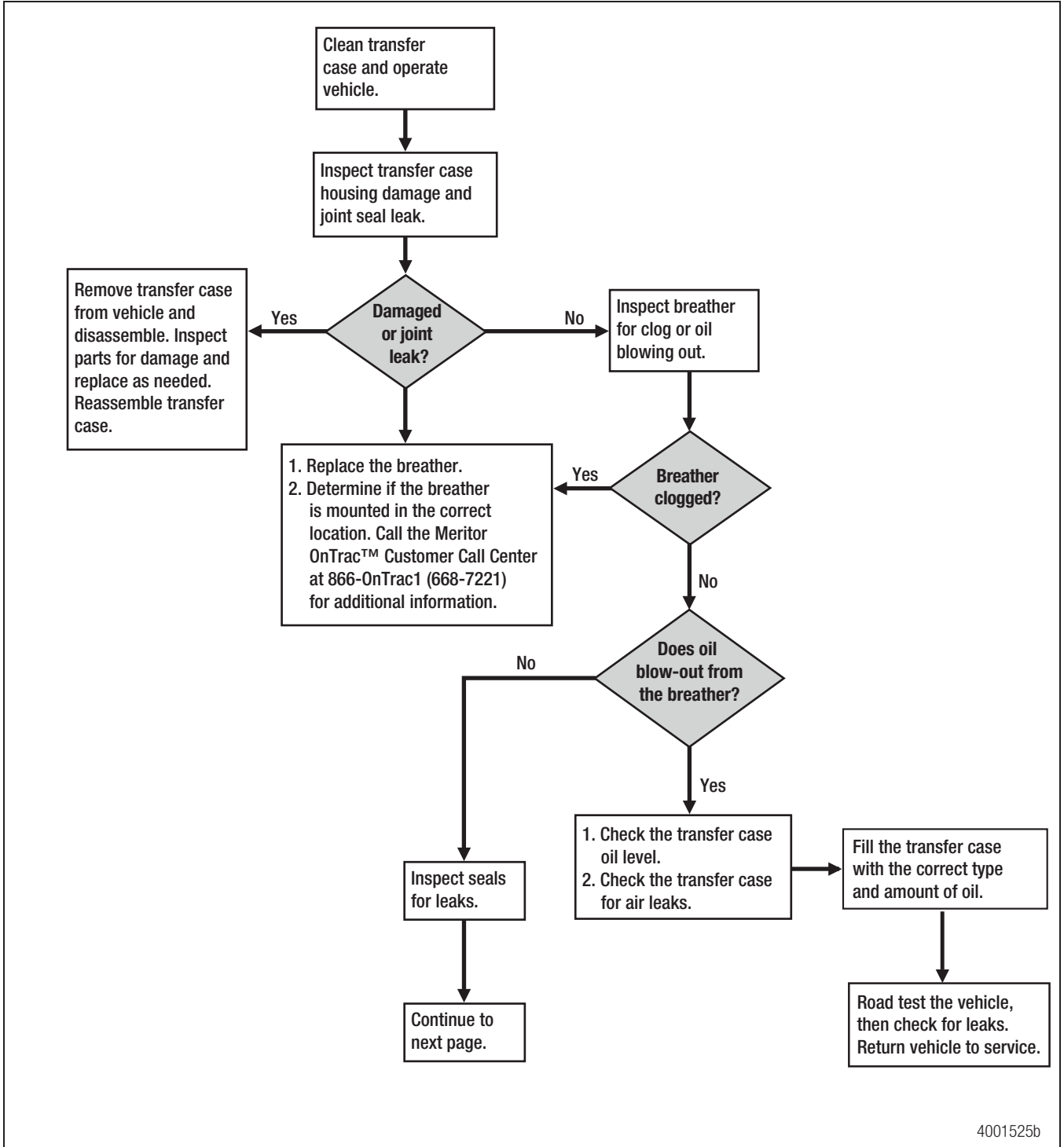
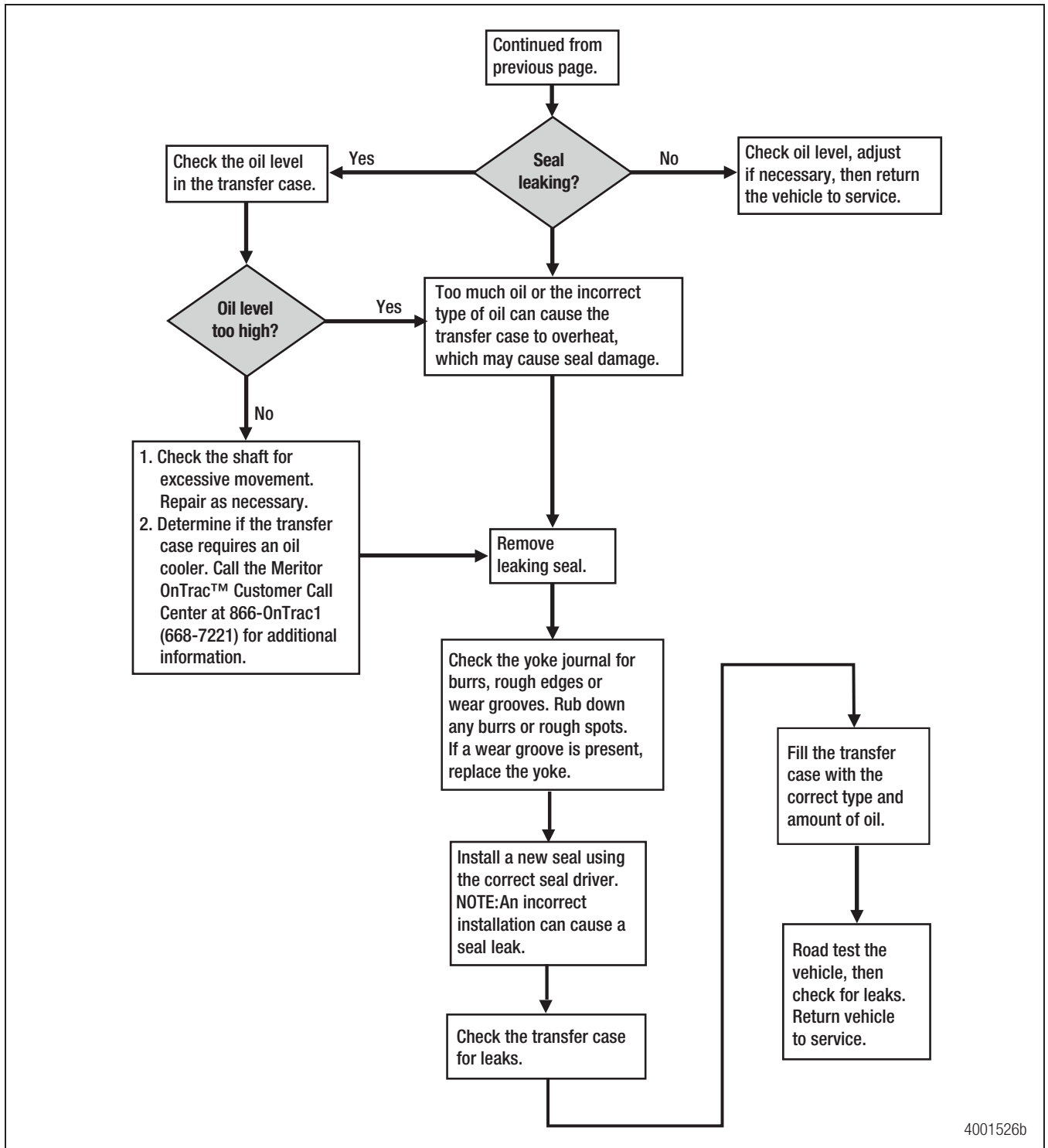


Figure 9.1

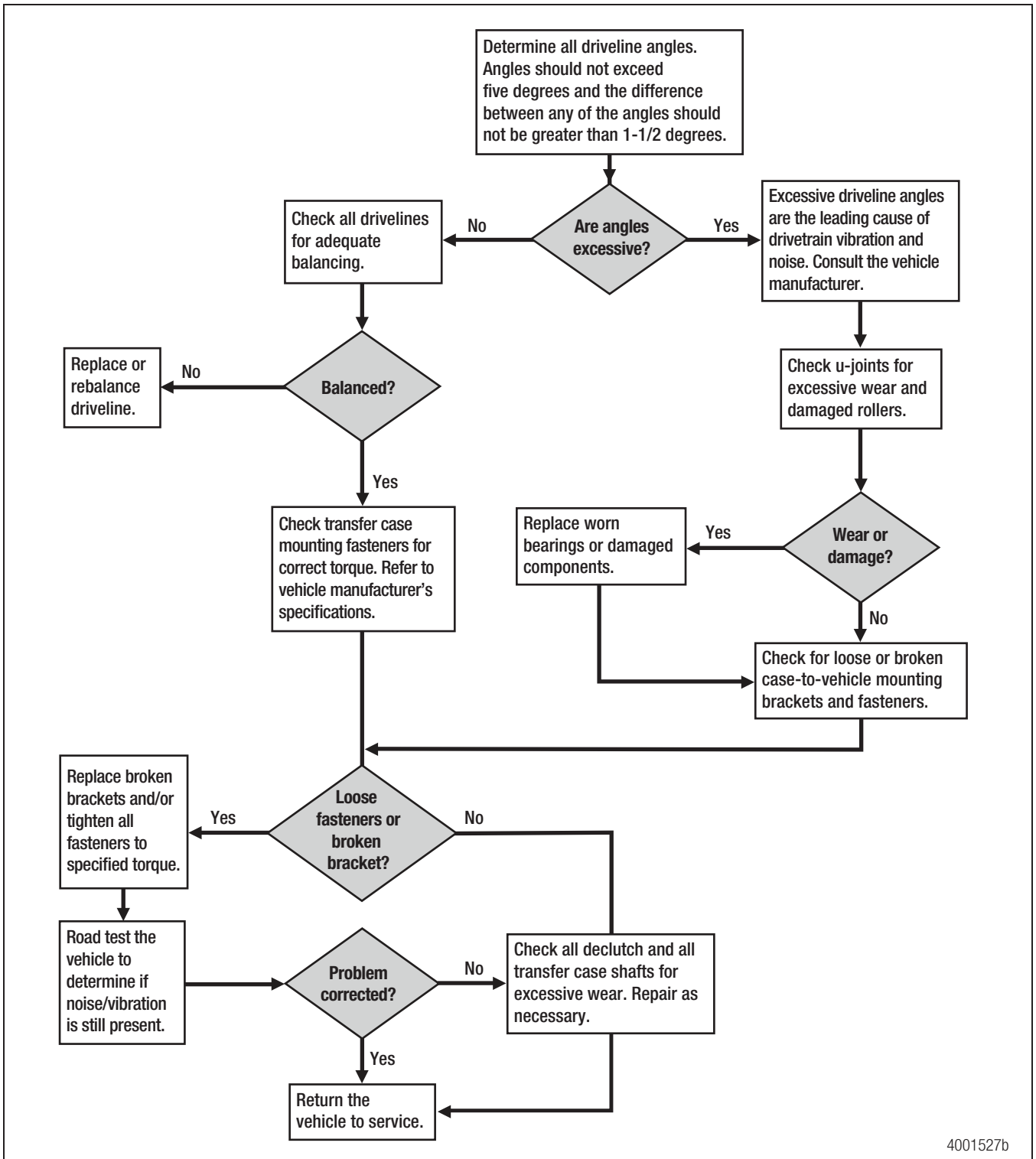
4001525b



4001526b

Figure 9.2

Excessive Noise and Vibration Diagnostics



4001527b

Figure 9.3

Lubrication & Maintenance

Hazard Alert Messages

Read and observe all hazard alert messages in this publication. They provide information that can help prevent serious personal injury, damage to components, or both.

WARNING

TO PREVENT EYE INJURY, ALWAYS WEAR EYE PROTECTION WHEN PERFORMING VEHICLE MAINTENANCE OR SERVICE.

How to Obtain Additional Maintenance, Service, & Product Information

For complete lubrication information for Meritor's transfer cases, refer to MM1 - Preventive Maintenance and Lubrication. To obtain a copy of this publication or access it on Meritor's website, refer to the Service Notes page on the inside front cover of this manual.

Lubricant Temperatures

CAUTION

MERITOR MTC-3203 SERIES TRANSFER CASES MAY OPERATE WITH AN OIL TEMPERATURE ABOVE 250°F (121°C). HOWEVER, IF THE OIL TEMPERATURE REACHES 300°F (148°C), STOP THE VEHICLE IMMEDIATELY. CHECK FOR THE CAUSE OF OVERHEATING TO PREVENT DAMAGE TO COMPONENTS.

Meritor MTC-3203 series transfer cases may operate with an oil temperature above 250°F (121°C). However, if the oil temperature reaches 300°F (148°C), stop the vehicle immediately and check for the cause of overheating. Oil temperatures at this range should only occur in linehaul or utility applications that operate under high speed for long periods of time.

Do Not Install API GL-5 Oils

CAUTION

MERITOR DOES NOT APPROVE PETROLEUM-BASED AND MULTI-VISCOSITY OIL. DO NOT INSTALL API GL-5 OILS, WHICH CONTAIN EXTREME-PRESSURE (EP) ADDITIVES. THESE ADDITIVES CAN FORM SLUDGE AT NORMAL OPERATING TEMPERATURES. DAMAGE TO COMPONENTS CAN RESULT. USE ONLY SAE GRADE FULL-SYNTHETIC 40W OIL, MERITOR SPECIFICATION O-81, IN THE TRANSFER CASE.

Use only SAE Grade full-synthetic 40W oil, Meritor specification O-81, in the transfer case.

Do not install API GL-5 oils in a transfer case. This specification contains extreme pressure (EP) additives that can form sludge at normal operating temperatures and damage transfer case components.

Petroleum-Base and Multi-Viscosity Oils

Meritor does not approve the use of petroleum-base and multi-viscosity motor oils. Refer to MM-1 - Preventive Maintenance and Lubrication; or TP-90114 - Transmission Lubricant Specifications, for a list of approved oils. Meritor does approve the use of synthetic-base oils.

Operating Information

Magnets and Magnetic Drain Plugs

Most Meritor transfer cases are equipped with magnetic drain plugs with a minimum pick-up capacity of 20 ounces (0.57 kg) of low carbon steel. Replace the magnetic drain plug each time you change the oil. Use the correct part. If you use a pipe plug instead of a drain plug, the pipe plug will leak.

Breather

⚠ CAUTION

COVER THE BREATHER WHEN STEAM CLEANING THE HOUSING. IF THE BREATHER IS NOT COVERED, WATER CAN ENTER THE HOUSING AND CONTAMINATE THE OIL.

The breather releases pressure that builds up inside the transfer case during vehicle operation. Figure 10.1.

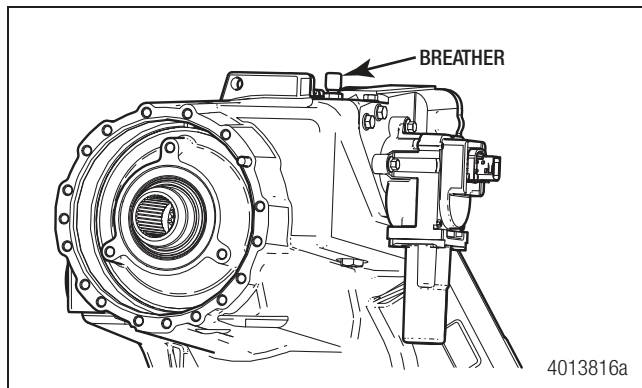


Figure 10.1

Seals

⚠ CAUTION

ALWAYS USE THE CORRECT TOOLS AND PROCEDURES WHEN YOU REPLACE A SEAL. A SEAL THAT IS NOT CORRECTLY INSTALLED CAN LEAK. DAMAGE TO COMPONENTS CAN RESULT.

Seals keep lubricant in and dirt out of a component. When they are worn or damaged, seals leak and produce low lubricant levels which may damage components.

Always replace unitized seals after yokes have been removed. Multiple-lip seals (MLS) may be reused if they are not damaged or leaking.

Multiple-lip, unidirectional seals are used at the input position on the transfer case. Figure 10.2. Unitized seals are used at the front and rear output positions. Figure 10.3 and Figure 10.4.

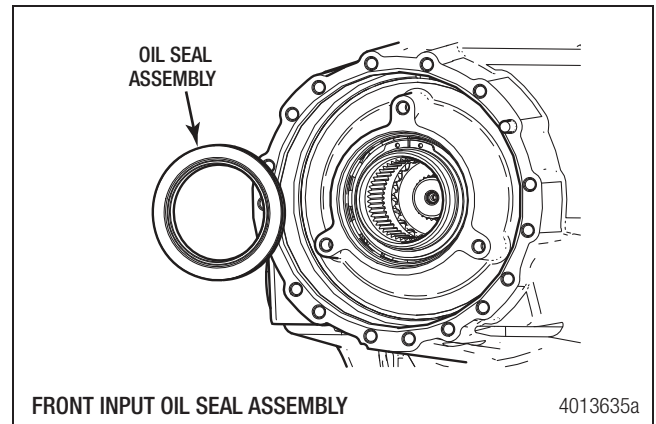


Figure 10.2

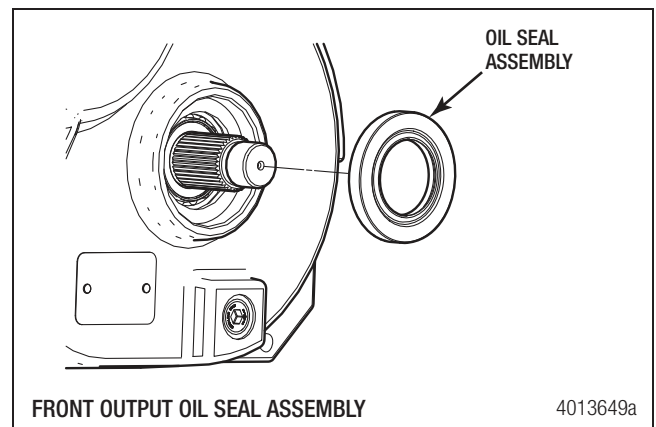


Figure 10.3

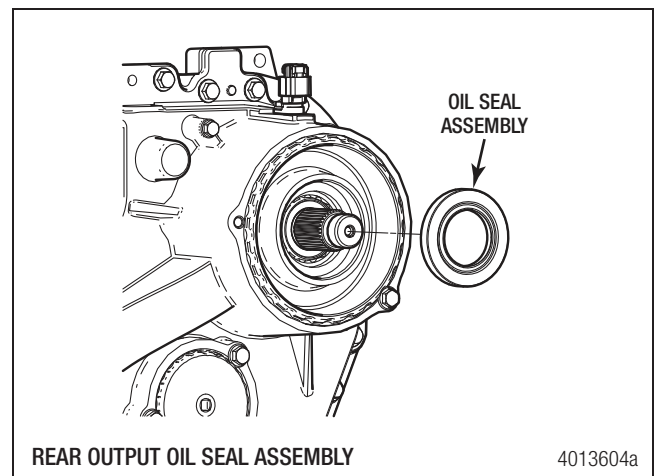


Figure 10.4

⚠ CAUTION

ONLY INSTALL THE MULTIPLE-LIP UNIDIRECTIONAL SEALS AT THE INPUT POSITION. IF YOU INSTALL THE MULTIPLE-LIP SEAL IN EITHER THE REAR OUTPUT POSITION OR FORWARD OUTPUT POSITION, LOSS OF LUBRICANT AND DAMAGE TO COMPONENTS CAN OCCUR.

Check your application carefully before installing the multiple-lip seal.

Drain and Replace the Oil

⚠ CAUTION

ONLY USE NEW LUBRICANT WHEN CHANGING OR ADJUSTING THE OIL IN THE TRANSFER CASE. NEVER REUSE LUBRICANT, WHICH CAN CONTAIN METALLIC PARTICLES AND OTHER CONTAMINANTS. DAMAGE TO COMPONENTS CAN RESULT.

MERITOR DOES NOT APPROVE PETROLEUM-BASED AND MULTI-VISCOSITY OIL. DO NOT INSTALL API GL-5 OILS, WHICH CONTAIN EXTREME-PRESSURE (EP) ADDITIVES. THESE ADDITIVES CAN FORM SLUDGE AT NORMAL OPERATING TEMPERATURES. DAMAGE TO COMPONENTS CAN RESULT. USE ONLY SAE GRADE FULL-SYNTHETIC 40W OIL, MERITOR SPECIFICATION O-81, IN THE TRANSFER CASE.

NEVER OPERATE THE TRANSFER CASE IF THE OIL LEVEL IS BELOW THE BOTTOM OF THE FILL HOLE, WHICH MAY BE AN INDICATION THAT THE TRANSFER CASE IS LEAKING. DAMAGE TO COMPONENTS CAN RESULT. IF THE TRANSFER CASE IS LEAKING, REPAIR THE LEAK. ADJUST THE OIL LEVEL BEFORE RETURNING THE TRANSFER CASE TO SERVICE.

WHEN SERVICING THE TRANSFER CASE, ADD THE SPECIFIED LUBRICANT UNTIL THE OIL LEVEL IS EVEN WITH THE BOTTOM OF THE FILL HOLE. DO NOT OVERFILL THE TRANSFER CASE, WHICH CAN CAUSE THE TRANSFER CASE TO OVERHEAT. DAMAGE TO COMPONENTS CAN RESULT.

1. Park the vehicle on a level surface. Place a large container under the transfer case.
2. Remove the magnetic drain plug from the front of the transfer case. Drain and discard the oil correctly. Clean the plug. Figure 10.5.

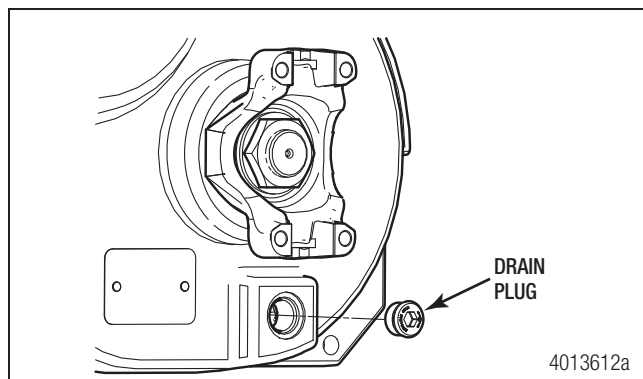


Figure 10.5

3. Install and tighten the drain plug to 42-48 lb-ft (57-65 N·m). 

4. Clean the area around the fill plug. Remove the fill plug from the transfer case. Figure 10.6.

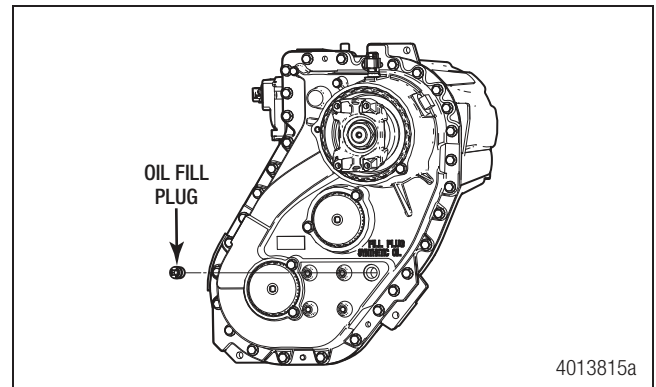




Figure 10.6

5. Add SAE Grade full-synthetic 40W oil, Meritor specification O-81, into the transfer case until the oil level is even with the bottom of the fill plug hole. Install and tighten the fill plug to 42-48 lb-ft (57-65 N·m). 
6. Test drive the vehicle for at least one mile (1.6 km). Allow the oil to settle for five minutes and recheck the fluid level. Top off the oil level by adding oil to the fill opening. Reinstall and tighten the fill plug to 42-48 lb-ft (57-65 N·m). 

Transfer Case Inspection

Visually inspect the transfer case daily for any leaks. The oil level should be inspected every 1,000 miles (1069 km), 100 hours or every month, whichever comes first. In addition, the transfer case should be inspected for leaks and the correct oil level before and after extended time high speed road trips. Areas to inspect are:

- All fittings
- Seals
- Breather
- Fill and drain plugs
- O-rings
- During the inspection visually check to ensure the transfer case oil level is to the bottom of the oil fill hole.

Operation	Frequency
Inspect for oil leaks	Daily
Check oil level	1,000 miles (1609 km), 100 hours or every month, whichever occurs first
Check oil level	Before and after extended time high speed road trips
Initial oil change	2,500 miles (4000 km) or 125 hours, whichever occurs first
Synthetic oil change	Every 50,000 miles (80 000 km), 2,500 hours or every 24 months, whichever occurs first

TABLE B: TRANSFER CASE OIL SPECIFICATIONS

Oil Description ^{1 2}	Full-Synthetic Oil ³	A.P.I. GL-5 (Axle Lube) ⁴
Meritor Specification	0-81	DO NOT USE IN TRANSFER CASES
A.P.I. Specification	—	
SAE Grade	40W	
Outside Temperature	Above -40°F (-40°C)	

1 Do not mix or switch oil types. Use the same oil that initially filled the transfer case.

2 Do not use multi-viscosity oils.

3 Meritor-approved full-synthetic oil for Meritor manual transmissions is also approved for Meritor transfer cases. Refer to publication TP-90114, Transmission Lubricant Specifications, for a list of approved distributors. Use synthetic oil only if the transfer case was initially filled with synthetic oil.

4 Do not use multi-viscosity (i.e., 80/90W) GL-5 Gear Oil, axle lube.

TABLE C: TRANSFER CASE OIL CAPACITY

Model	Pints (Liters)
MTC-3203	6.0 (2.84)

TABLE D: DRY WEIGHT

Unit	Weight lbs (kg)
Base Model	180 (81.6)

TABLE E: TRANSFER CASE SEALS AND DRIVERS

Seal Position	Seal Service Part Number	Seal Driver	Sleeve Driver
Input Shaft	A-1205G2867	76360	2728T2
Forward and Rear Output	A-1205S1527	AXL-08-5218	NA

Field Procedures

Remove the Adjustable Bearing Carriers

1. Thoroughly clean the rear side of the transfer case prior to any disassembly.
2. Using a 10 mm Allen-head wrench, remove the magnetic drain plug from the front transfer case cover and completely drain the oil. Figure 11.1.

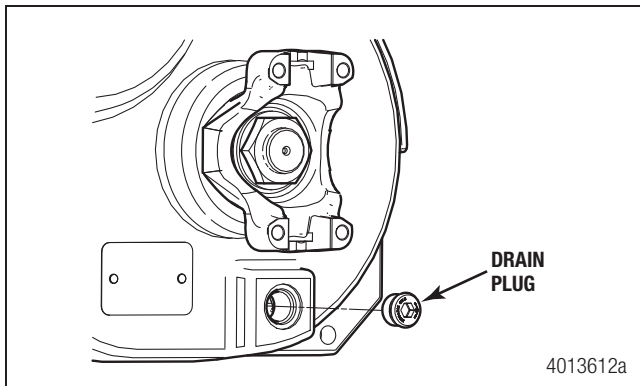



Figure 11.1

3. Clean the magnetic drain plug using a clean cloth. Reinstall the plug using a 10 mm Allen-head wrench and tighten to 42-48 lbs-ft (57-65 N·m). 
4. Beginning with the front output adjustable bearing carrier, mark the exact notch/position of the case and carrier where the 13 mm retaining flange bolt is located. With the carrier to case position marked, remove the 13 mm retaining flange bolt. DO NOT rotate the carrier until AFTER the reference mark has been made. Figure 11.2.

NOTES:

- If a mark is not made, refer to the original witness mark where the 13 mm flange bolt was previously installed.
- The purpose of this step is to mark the orientation of the adjustable carrier to the case so it may be installed in the same position during reassembly.
- Bearing preload is set by Meritor using the adjustable bearing carriers. It is critical to proper repair that the removed carrier is threaded back to its exact original location upon reassembly.

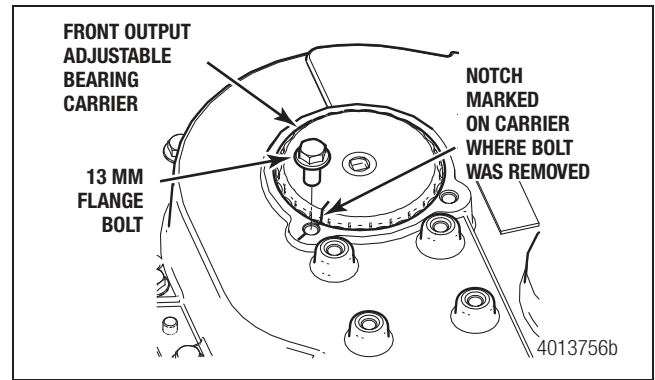


Figure 11.2

5. Using the back of a Vernier caliper as a depth gauge, measure the distance the adjustable bearing carrier is standing off the case surface. This measurement will be used as a secondary reference during reinstallation to make sure the adjustable bearing carrier is threaded back into the same location. Figure 11.3.

NOTE: Measurement must be obtained from the same location on the carrier/case upon reassembly.

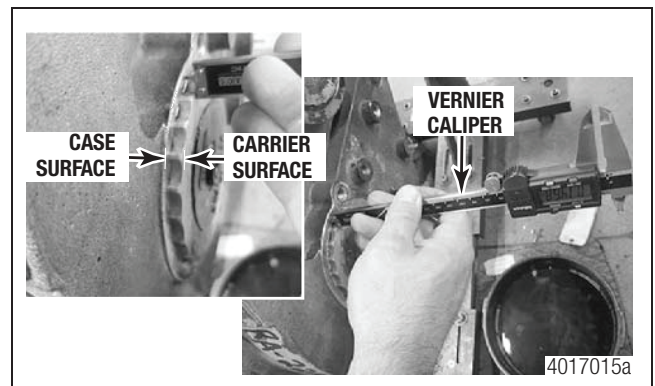


Figure 11.3

11 Field Procedures

6. With the original orientation of the adjustable bearing carrier clearly marked, place the "Idle & Forward Output Adjusting Ring" tool (see page 69) in Figure 17 on the face of the bearing carrier. Do NOT rotate the pipe plug yet. Figure 11.4. Alternately a 3/8" square drive inserted into the pipe plug on the face of the bearing carrier can be used. Figure 11.5.

NOTE: If the pipe plug breaks free before the bearing carrier begins to rotate, contact the vehicle manufacturer.

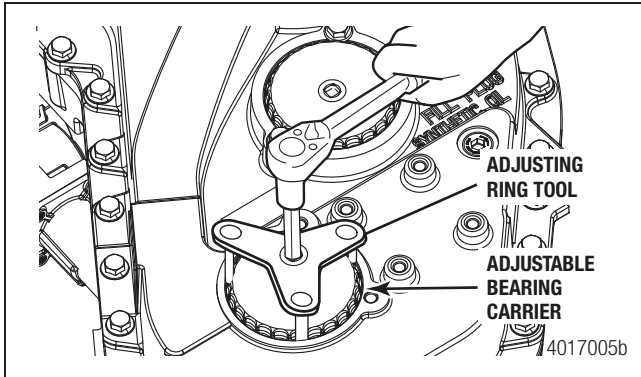


Figure 11.4

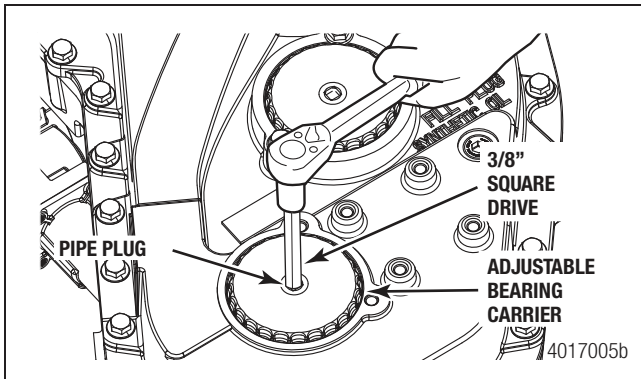


Figure 11.5

7. With the tool in Figure 11.4, slowly begin to rotate the adjustable bearing carrier counter-clockwise while counting the full revolutions past your original starting mark. Figure 11.6.

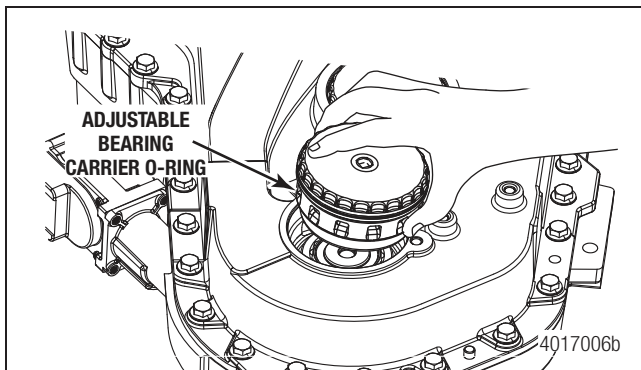


Figure 11.6

8. Remove and discard the original o-ring from the adjustable bearing carrier. Figure 11.6.
9. With a clean cloth, clean and inspect the case bore and adjustable bearing carrier for any damage from corrosion or debris. Figure 11.7 and Figure 11.8.

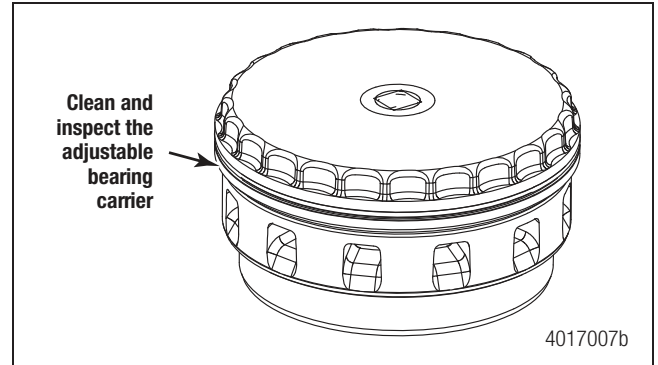


Figure 11.7

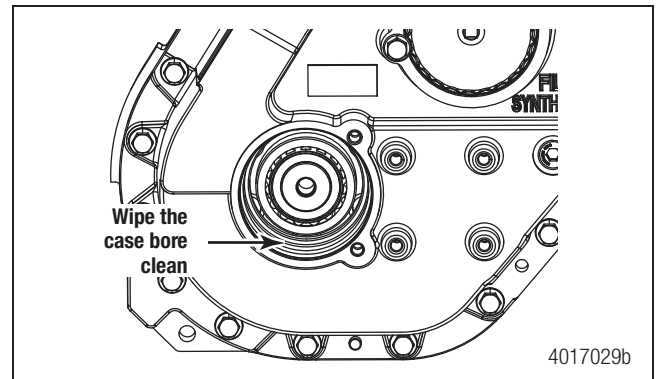


Figure 11.8

Install the O-ring & Adjustable Bearing Carrier

- Carefully install the new o-ring, part number 5X1508, into the o-ring groove on the adjustable bearing carrier. Use a small amount of SAE 40W oil as lubricant for reassembly. Figure 11.9.

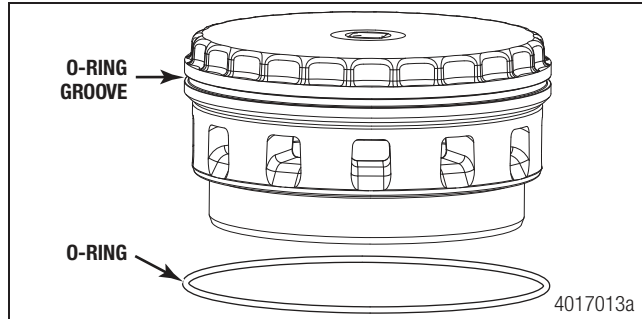


Figure 11.9

CAUTION
USE CARE WHEN INSTALLING THE ADJUSTABLE BEARING CARRIER TO AVOID DAMAGING THE O-RING.

NOTE: You must count the rotations of the carrier during installation to return it to its originally installed position.

- In the clockwise direction, carefully start the threads of the adjustable bearing carrier back into the case bore, using caution to not damage the o-ring. Once the carrier threads are engaged in the case, begin to thread the carrier clockwise while counting the rotations until the carrier stops rotating past your original reference mark. Note the bearing carrier will only rotate slightly past the original reference mark. At this time, the carrier should be returned to a preloaded state. Rotate the carrier counter-clockwise slightly until the original reference mark on the carrier is lined up to your original reference mark on the case. Figure 11.4 & Figure 11.5.

NOTE: Bearing preload is set by Meritor using the adjustable bearing carriers. It is critical to proper repair that the removed carrier is threaded back to its exact original location when installed.

- At this time use the Vernier caliper to verify the carrier depth measurement is within 0.039" (1 mm) of the original reference measurement. If the out of specification, remove the adjustable bearing carrier and reinstall. Figure 11.10.

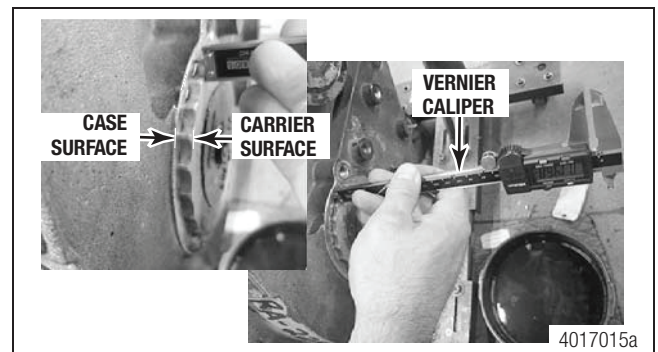


Figure 11.10

- Once the adjustable bearing carrier is installed back to its original location, apply a 0.125" (3 mm) bead of Loctite 242 threadlocker around the retaining flange bolt threads approximately 0.25" (6 mm) from the end. Apply a 0.125" (3 mm) bead of Loctite 242 threadlocker across the length of the threads. Figure 11.11.

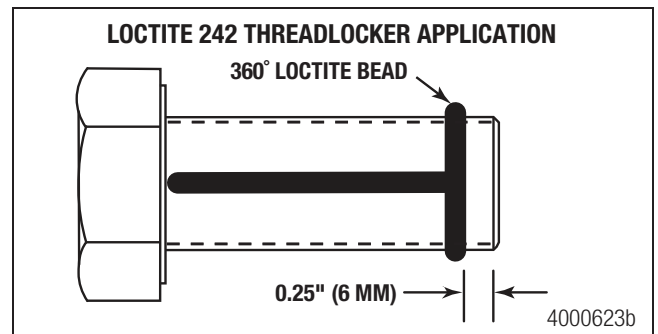


Figure 11.11

- After the threadlocker is applied, reinstall the flange bolt and tighten to 43-57 lbs-ft (58-77 N-m). Figure 11.12. **T**
- Once the o-ring replacement procedure has been completed for the front output adjustable bearing carrier location, repeat the exact repair procedure for the adjustable bearing carrier at the idler location.
- Using a 10 mm Allen-head wrench, remove the transfer case fill plug and fill with new SAE 40W synthetic oil. Reinstall the fill plug and tighten to 42-48 lbs-ft (57-65 N-m). **T**

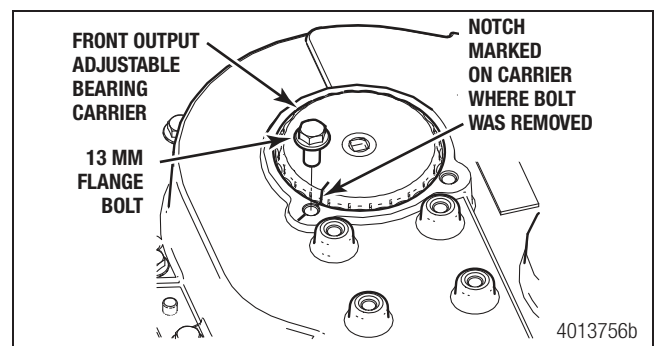
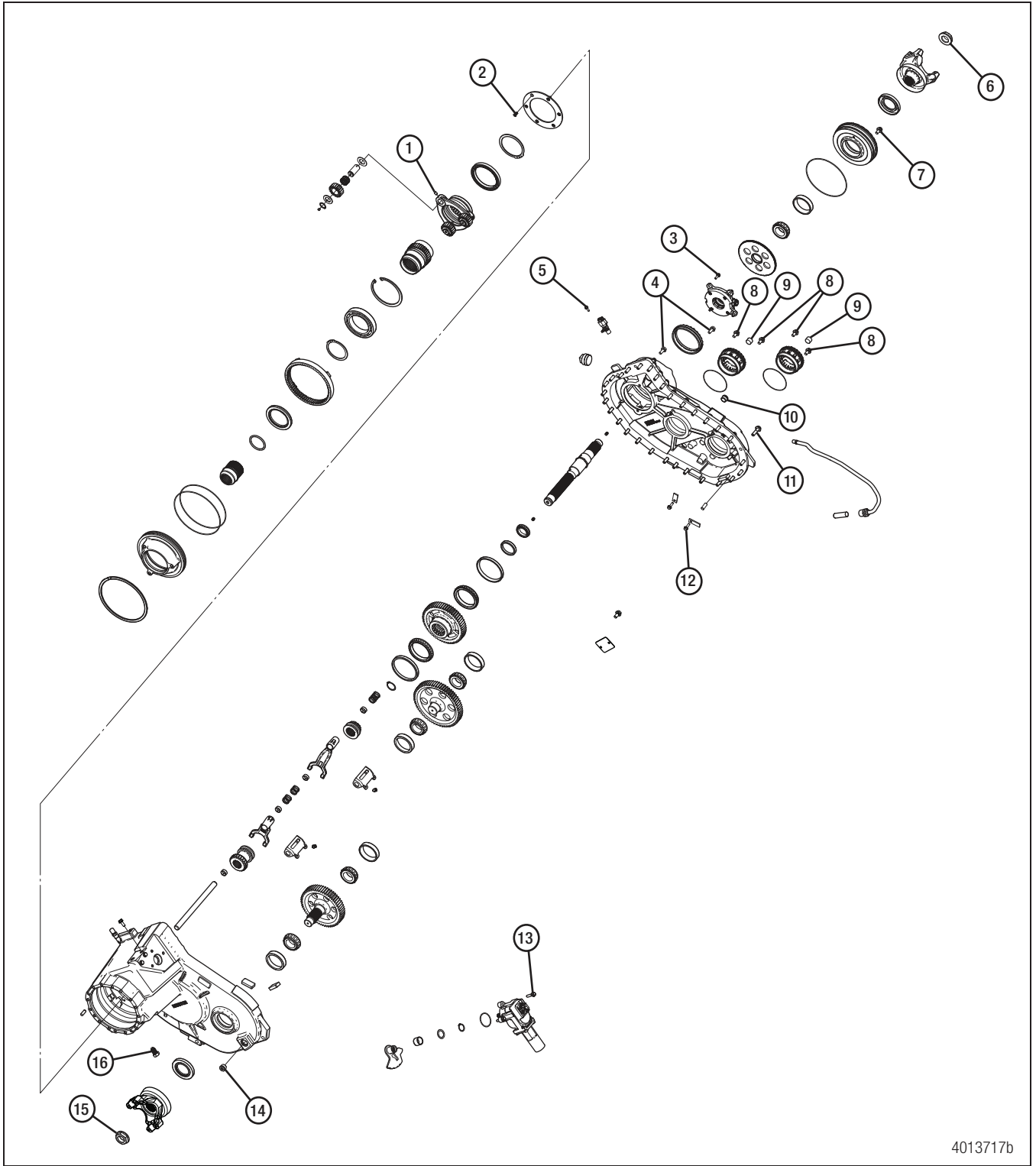


Figure 11.12

Torque Specifications



4013717b

Figure 12.1

Item	Description	Torque lb-ft (N·m)
1	Set Screw	7-11 (9-15)
2	M6x1 Flat Head Screw	7-11 (9-15)
3	Pump Mounting Bolt	9-12 (12-16)
4	Output Bearing Adjuster Bolt	43-57 (58-77)
5	Speed Sensor Mounting Bolt	7-11 (9-15)
6	Rear Output Yoke Nut	500-700 (678-949)
7	Output Bearing Cage Bolt	44-55 (60-75)
8	Bearing Adjuster Bolt 1	43-57 (58-77)
9	Plug 2	42-48 (57-65)
10	Oil Fill Plug, M10 Socket Head	42-48 (57-65)
11	Case Capscrews 3	44-55 (60-75)
12	Oil Line Bracket Bolt	
13	Electric Shift Unit Mounting Bolt	44-55 (60-75)
14	Oil Drain Plug, M10 Socket Head	42-48 (57-65)
15	Front Output Yoke Nut	500-700 (678-949)
16	Hex Nut	20 (27)

1 Apply Loctite threadlocker, Meritor specification 12297W5431.

2 Apply Loctite 592 threadlocker.

3 Apply Loctite 242 threadlocker.

Vehicle Towing Instructions

Guidelines

CAUTION

FOLLOW TOWING PROCEDURES RECOMMENDED BY MERITOR TO PREVENT INTERNAL DAMAGE TO THE TRANSFER CASE.

Meritor recommends that you use one of the two methods below when towing a vehicle equipped with an MTC-3203 transfer case to prevent damage to the transfer case.

NOTE: For complete towing information and instructions on axle shaft removal, refer to Technical Bulletin TP-9579, Driver Instruction Kit.

METHOD 1:

Remove both axle shafts from the axles that will remain on the road when the vehicle is transported.

METHOD 2:

Remove the drive shafts from axles that contact the ground.

Tools

Yoke Removal Tool — Obtain Snap-on 2-Jaw Puller, Part Number CG270-2

Plastic Film for Oil Pump Installation — Obtain McMaster Carr Brown Plastic 12x24" Shim Sheet, 0.01" Thick, Part Number 9513K119

How to Make a Yoke Bar

⚠ WARNING

WEAR SAFE CLOTHING AND EYE PROTECTION WHEN YOU USE WELDING EQUIPMENT. WELDING EQUIPMENT CAN BURN YOU AND CAUSE SERIOUS PERSONAL INJURY. FOLLOW THE OPERATING INSTRUCTIONS AND SAFETY PROCEDURES RECOMMENDED BY THE WELDING EQUIPMENT MANUFACTURER.

1. To make the box section, cut and weld one-inch x two-inch mild steel square stock according to the dimensions shown in Figure 14.1.

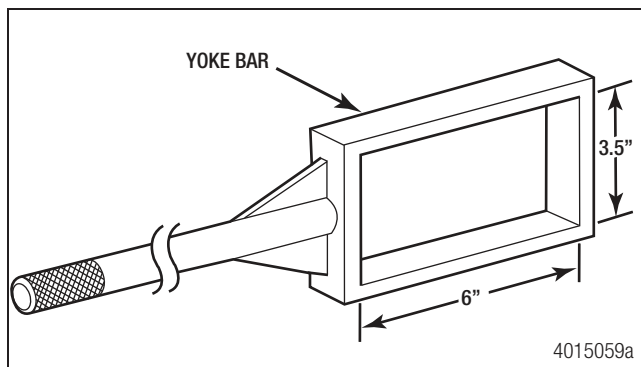


Figure 14.1

2. Cut a four-foot x 1.25-inch piece of mild steel round stock to make the yoke bar handle. Center weld this piece to the box section. Figure 13.1.
3. To increase yoke bar rigidity, weld two angle pieces onto the handle. Figure 13.1.

Stand Support Bracket (04D-08-00113-004)

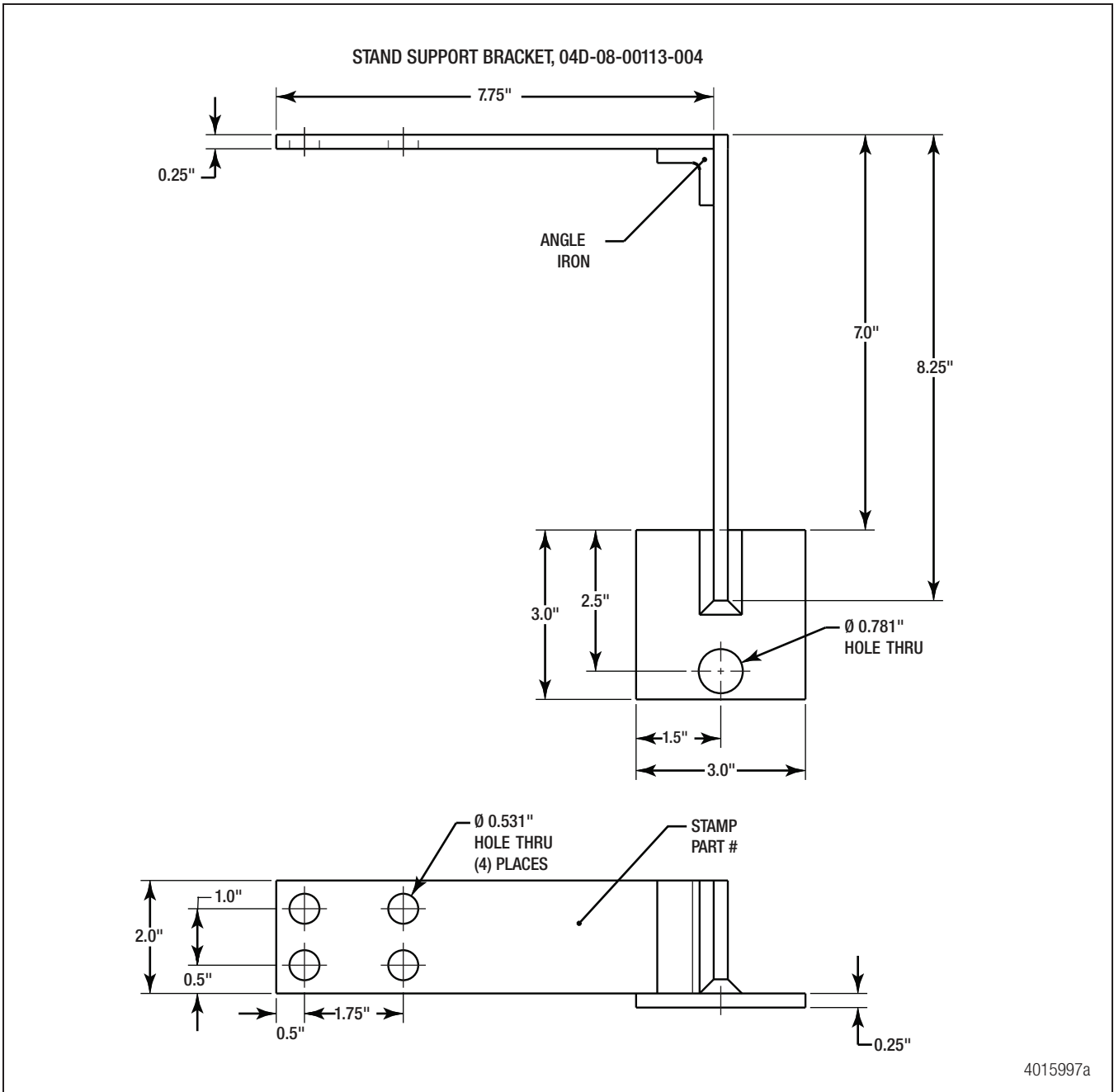


Figure 14.2

Stand Support Bracket (04D-08-00113-004A)

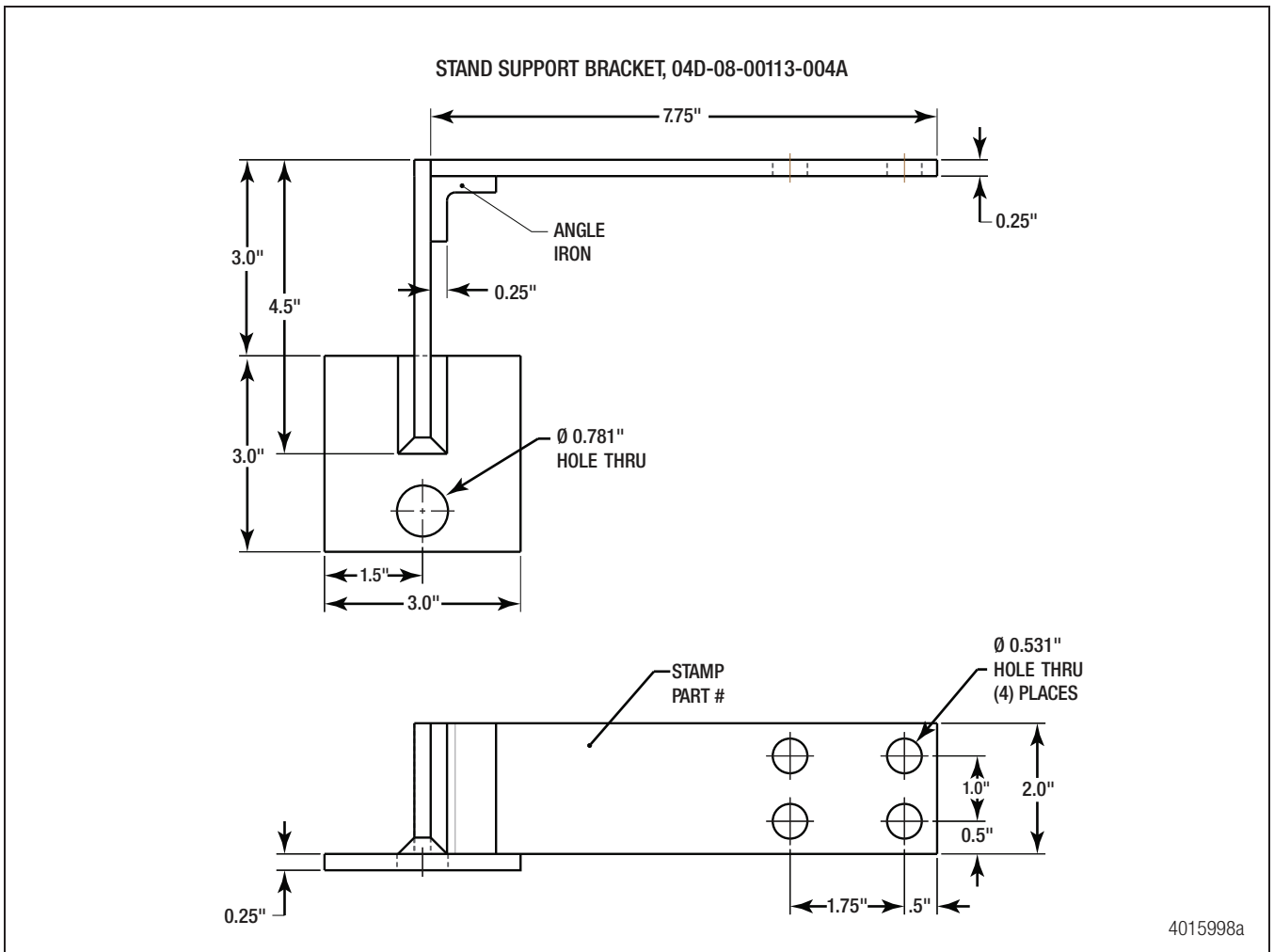


Figure 14.3

Input Seal Driver (76360)

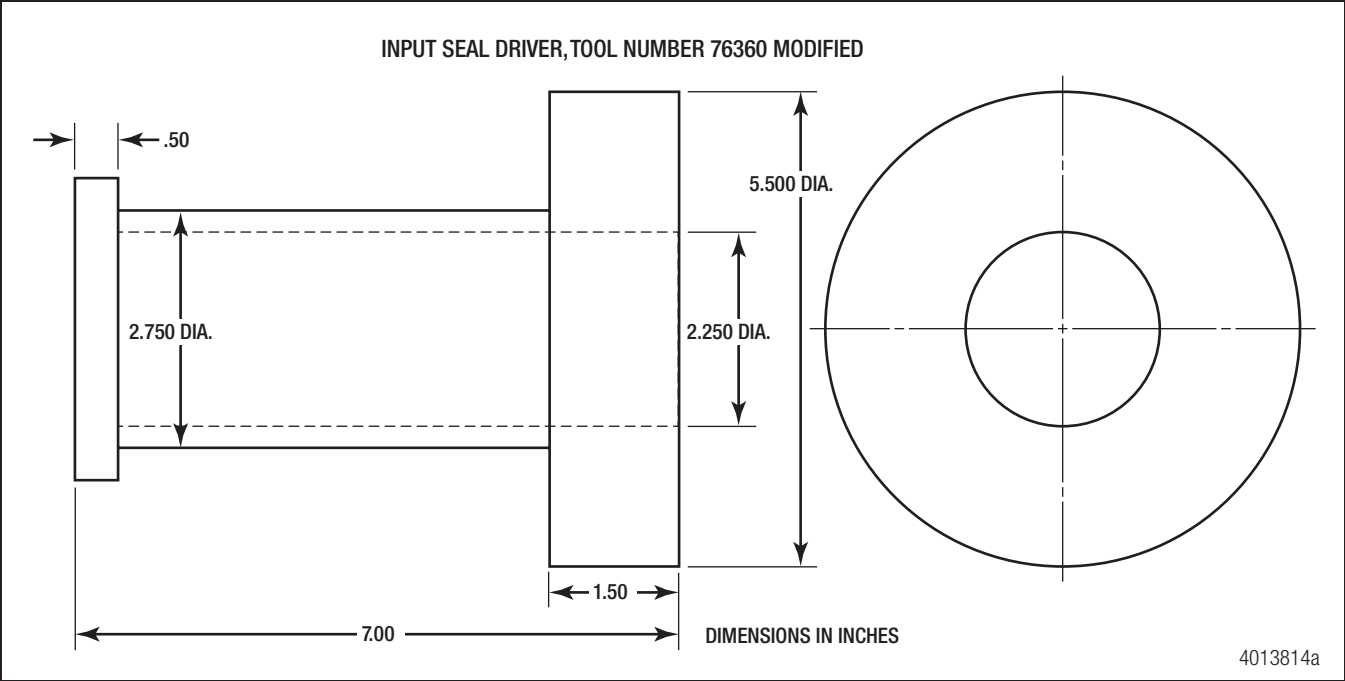


Figure 14.4

Forward & Rear Output Seal Driver (A-1205S1527)

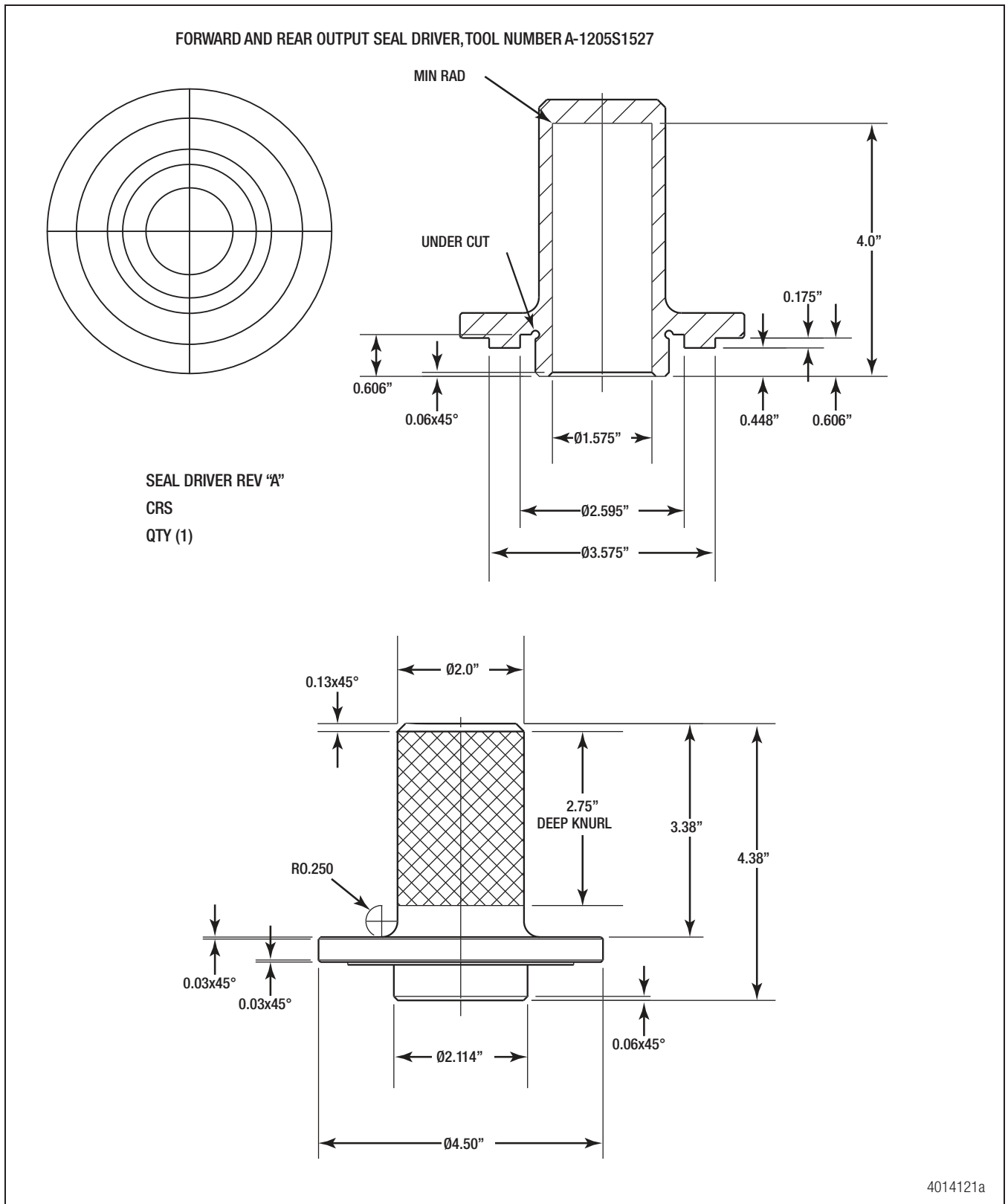


Figure 14.5

Input Shaft Bearing Driver

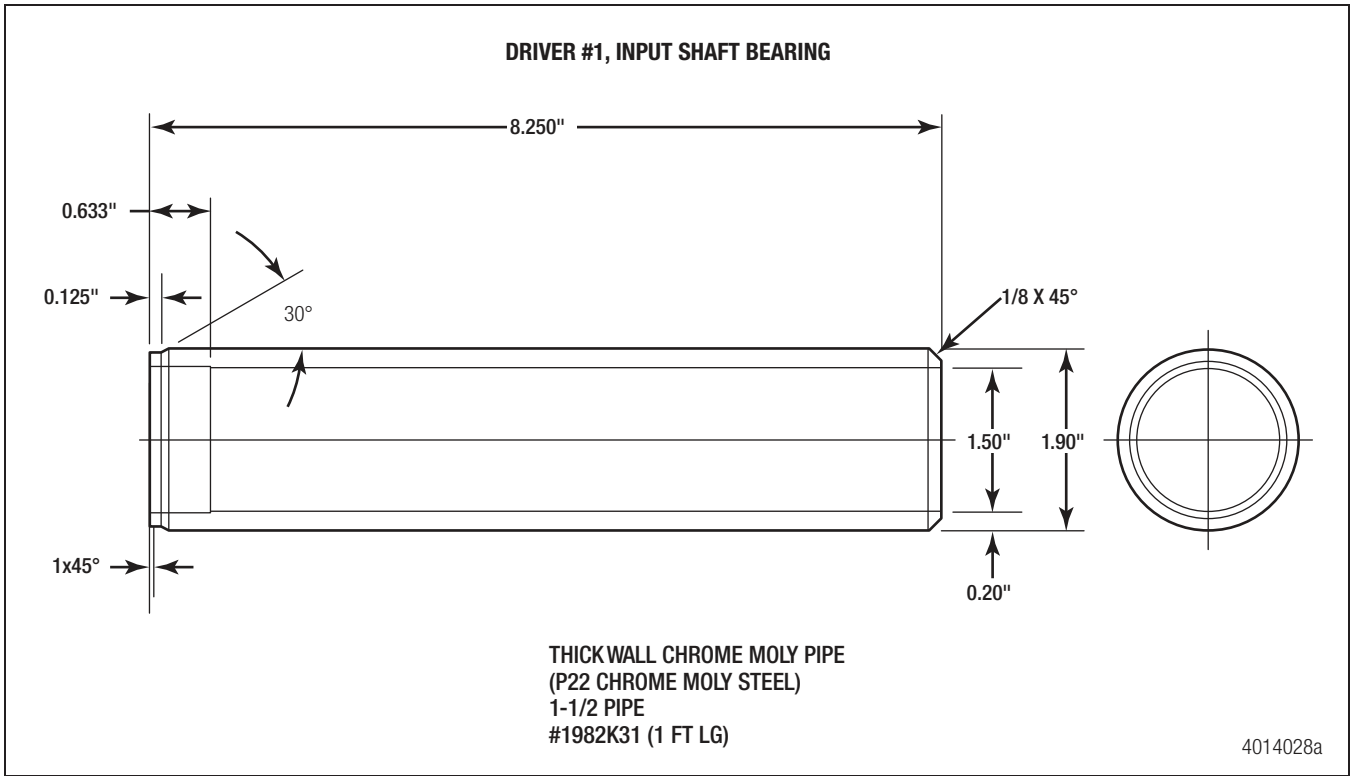


Figure 14.6

Selector Cam Bushing Driver

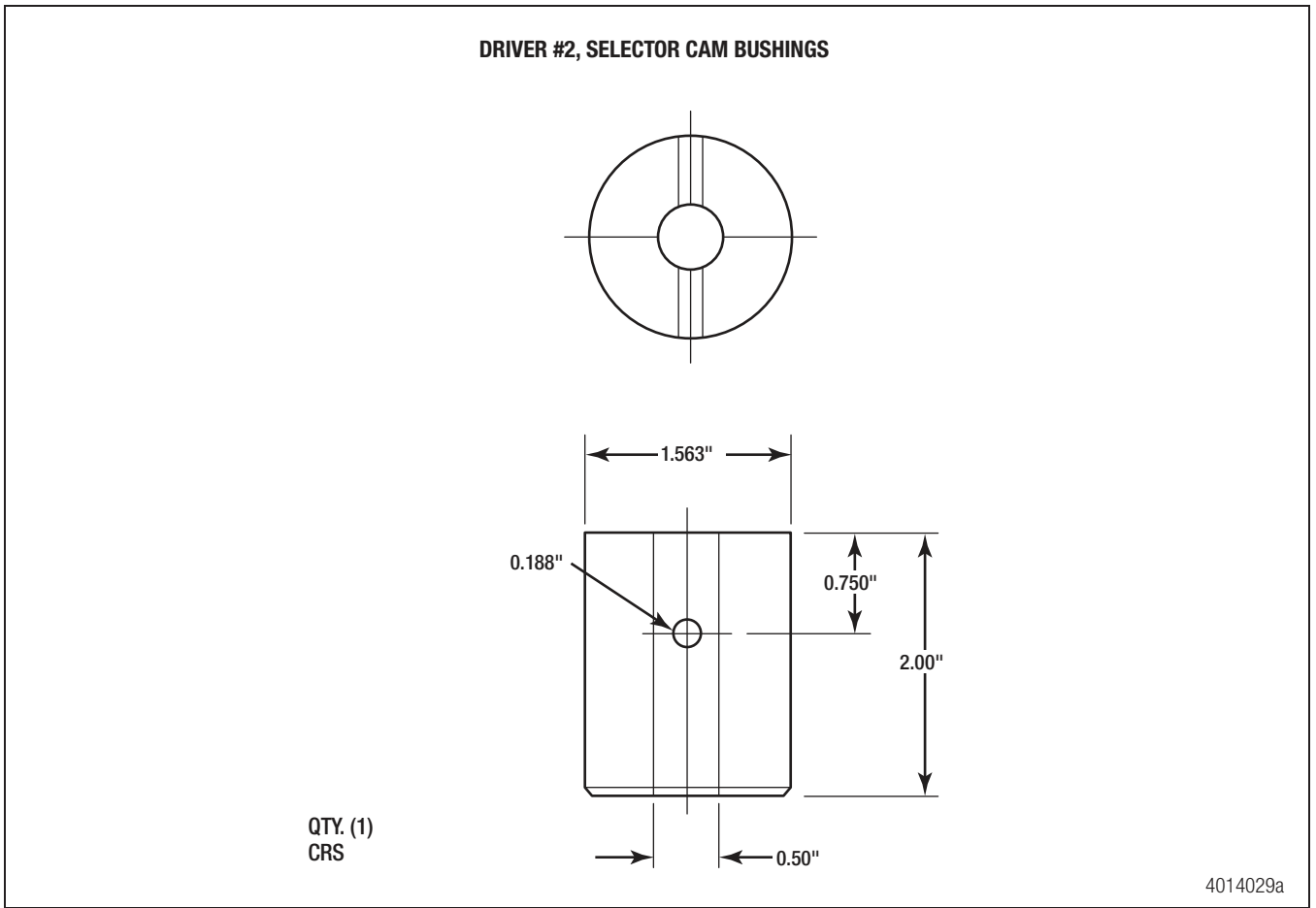


Figure 14.7

Idler Shaft Bearing Driver

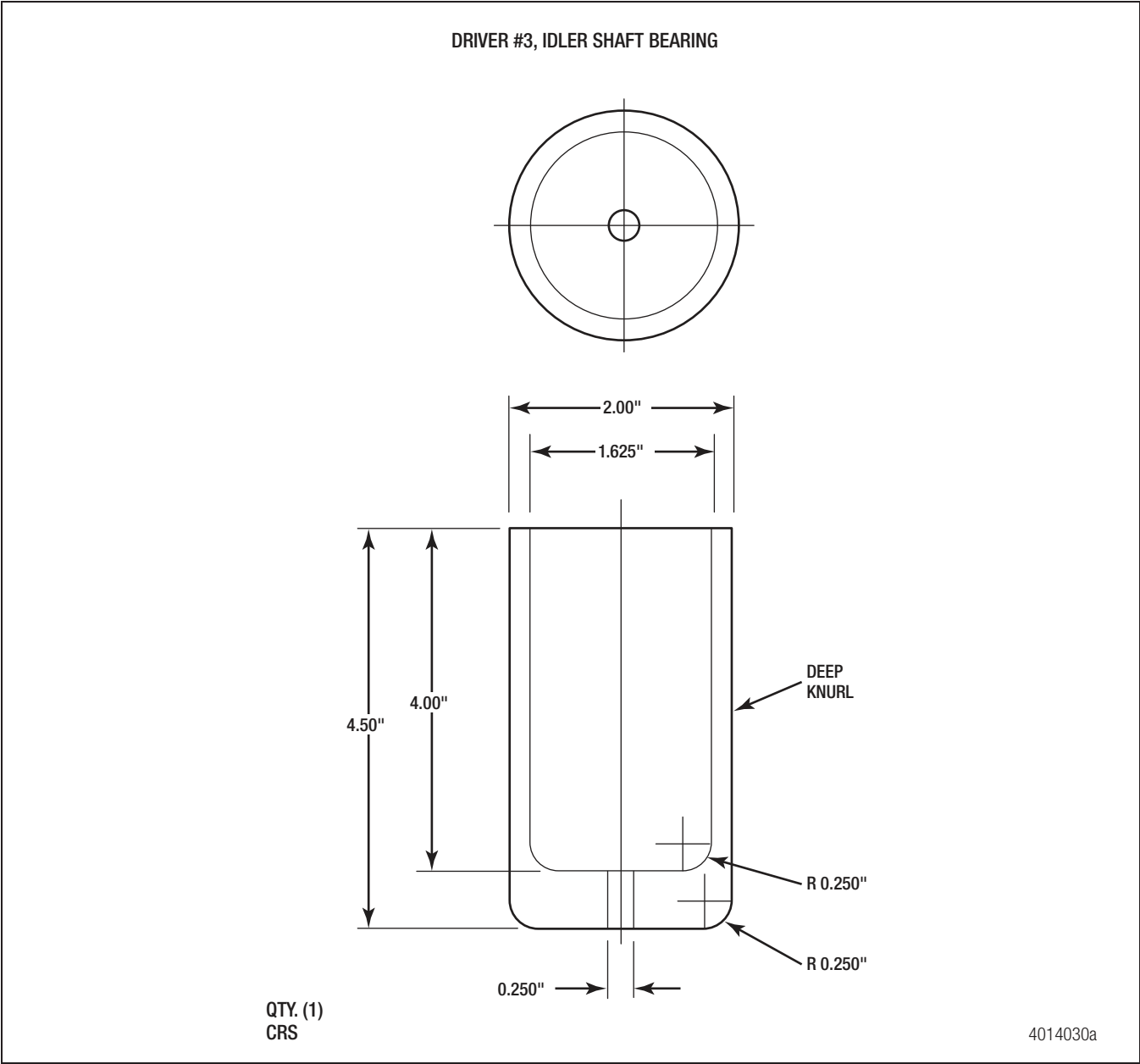


Figure 14.8

Input Gear Bearing Driver

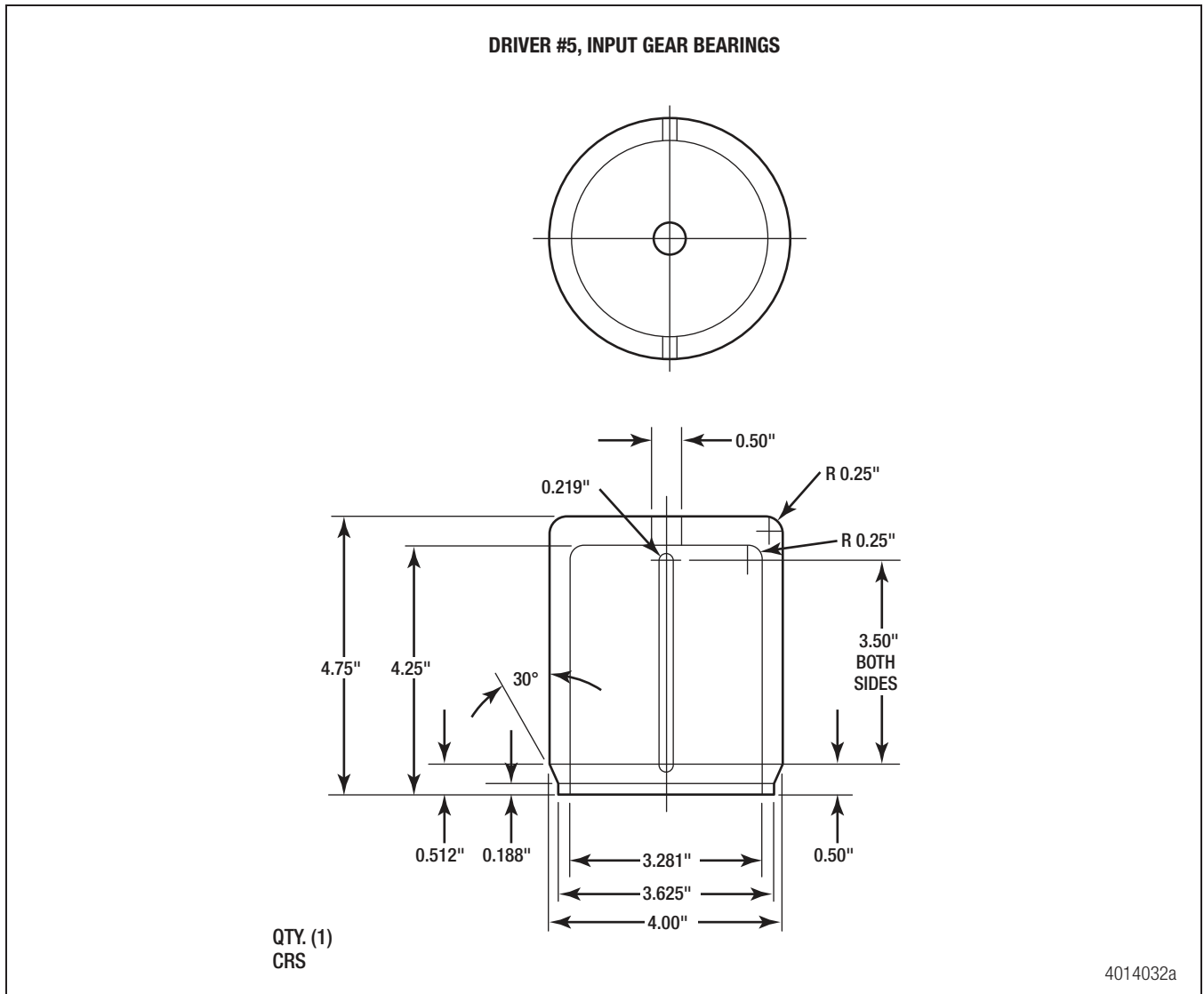


Figure 14.9

Idler & Forward Output Adjusting Ring

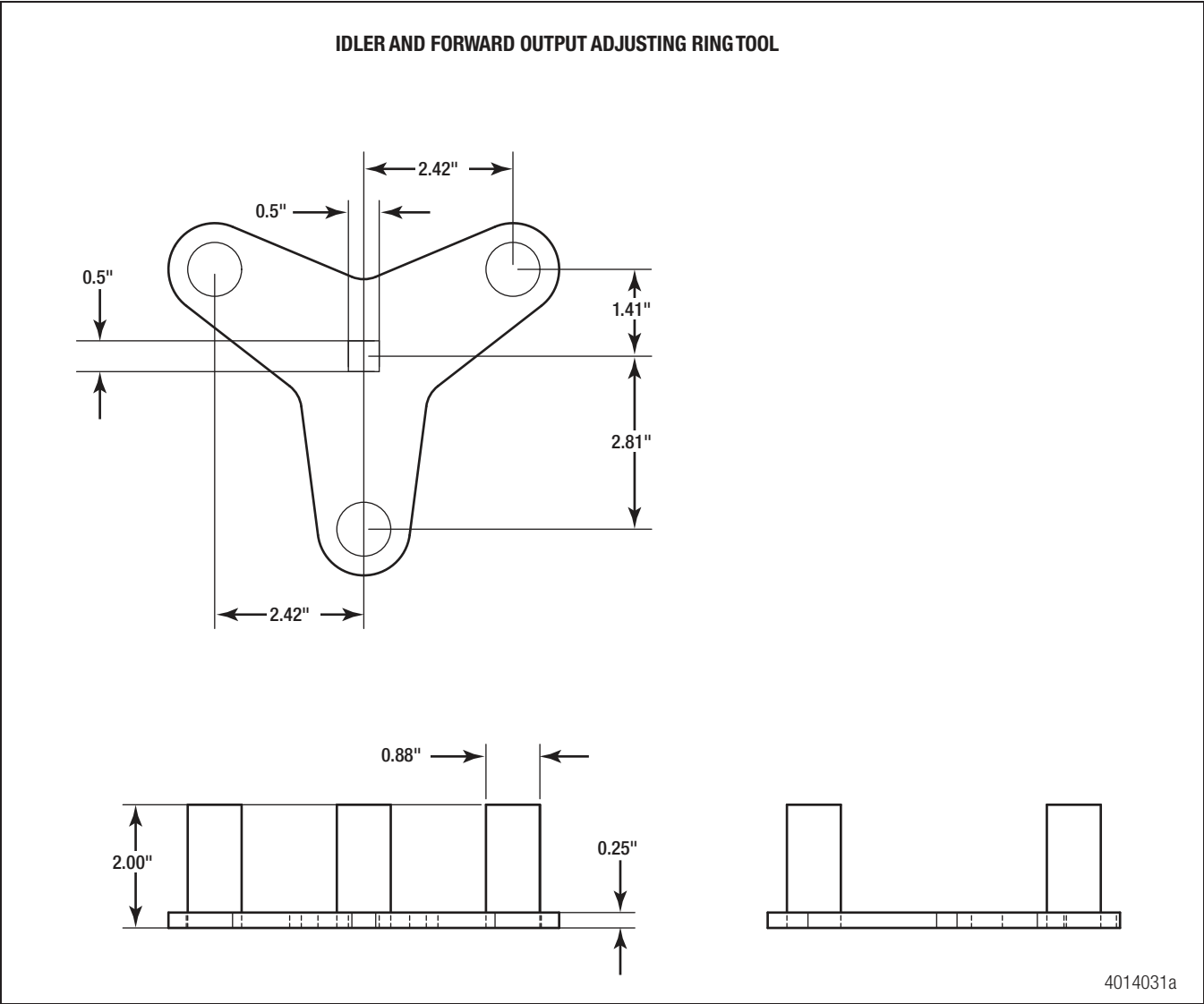


Figure 14.10

Rear Output Bearing Cage Adjusting Ring

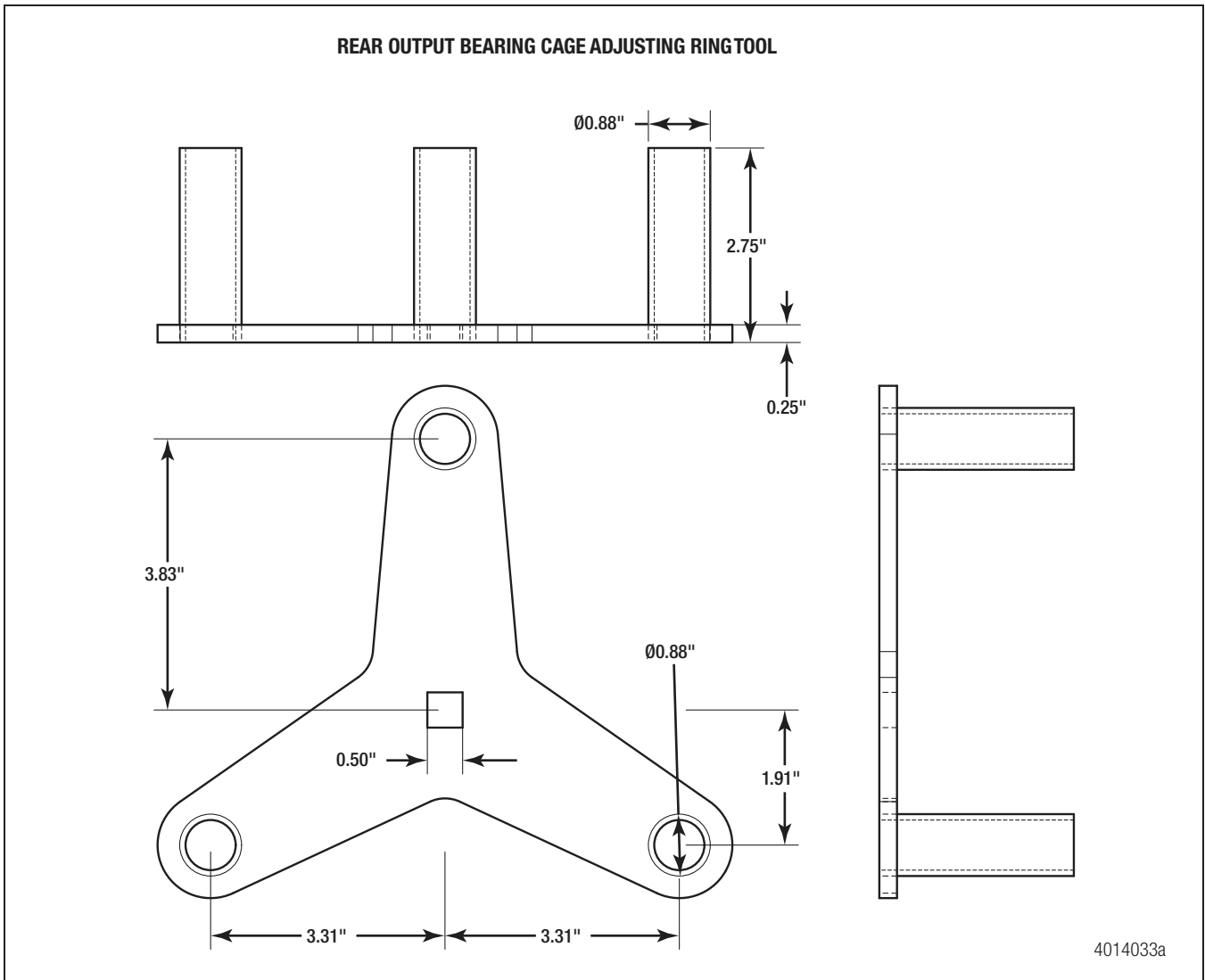


Figure 14.11

Input Gear (Internal) Adjusting Ring

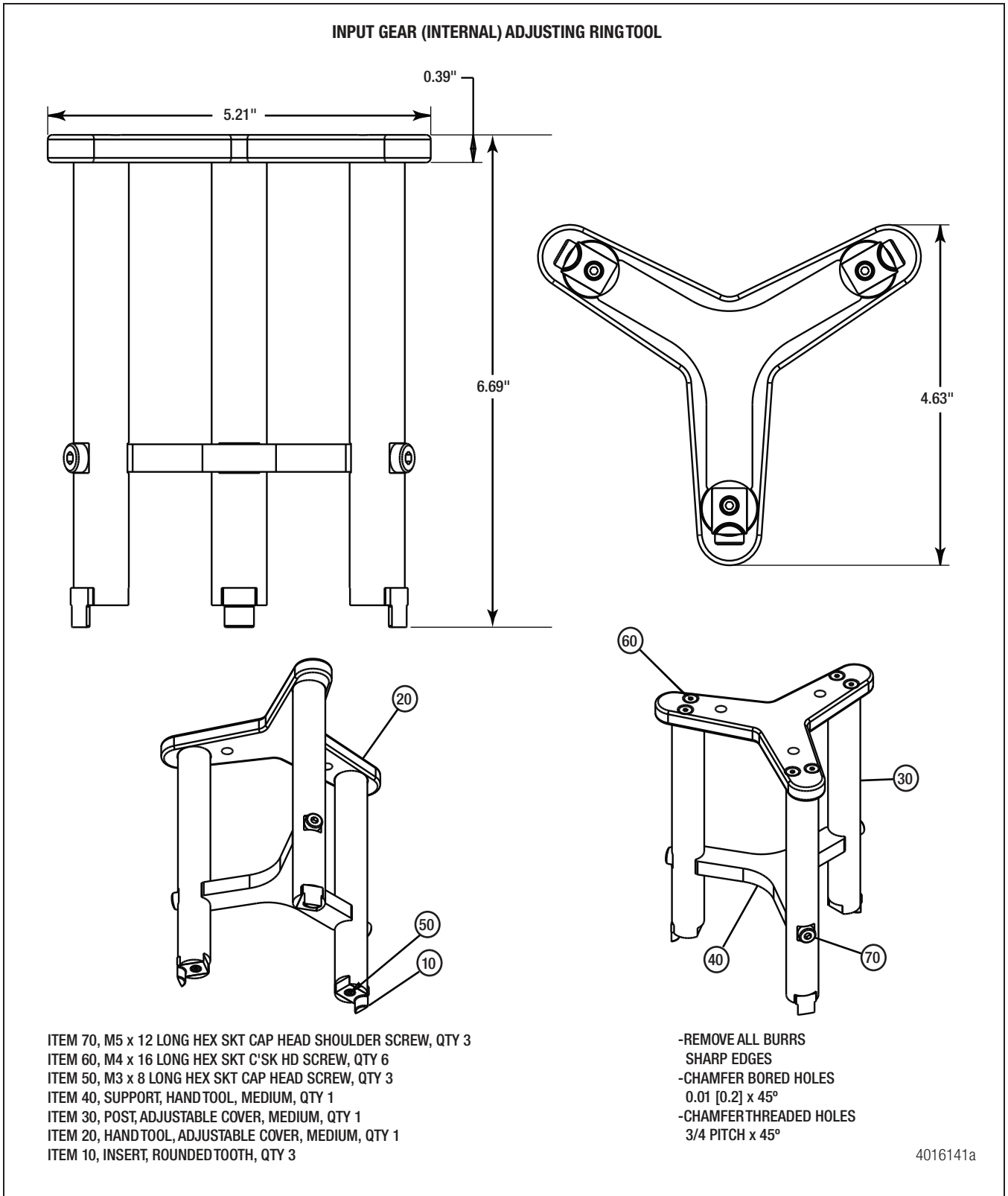


Figure 14.12

Input Gear Manual End Play Tool

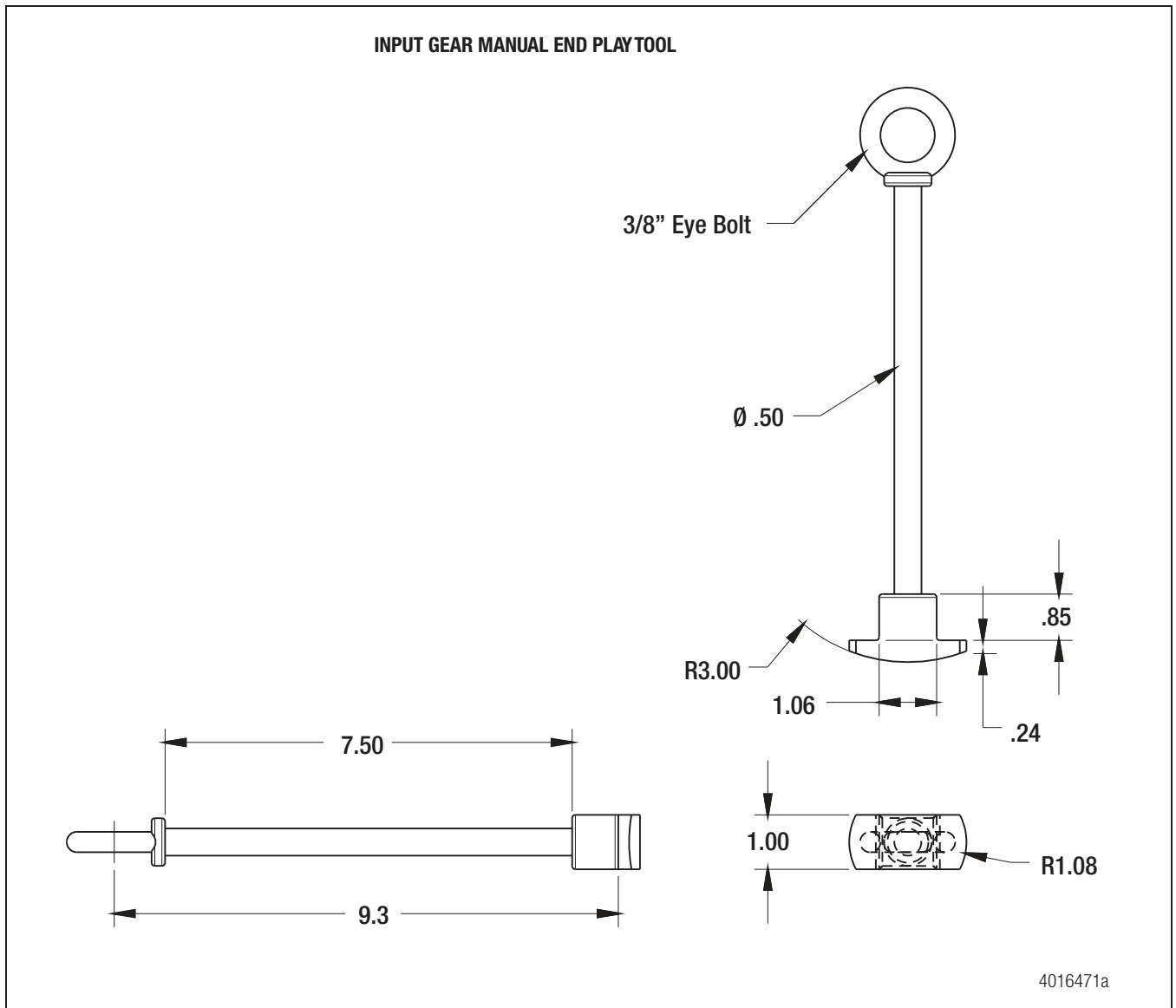


Figure 14.13

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