

INSTALL INSTRUCTIONS



TRAIL-CREEPER FJ80 3.11 T-CASE GEARS

303846-1-KIT 1990-1997 TOYOTA LAND CRUISER FJ80
1995-1997 LEXUS LX 450
1998-2007 TOYOTA LAND CRUISER FJ100
1998-2007 LEXUS LX 470

KIT CONTENTS



303851-1-INS



5356 PINE AVE • FRESNO, CA • 93727
USA TOLL FREE: 877.4X4.TOYS • WORLDWIDE: 559.252.4950
WWW.TRAIL-GEAR.COM

RECOMMENDED TOOLS

Screwdriver	Snap Ring Pliers
Ball Peen Hammer	API GL5 SAE 75W-90 Gear Oil (~1.5 quarts)
Rubber Mallet	Transmission Jack
Safety Glasses	Magnetic Removal Tool
Metric Ratchet & Socket Set	Wheel Bearing Grease
Metric Wrench Set	Threadlocking Compound (Loctite 242 or equivalent)
Arbor Press	Razor Blade
Bearing Separator	Degreasing Compound
Cut-off Wheel or Die Grinder	Plastic Hammer
Brass Bar	Toyota Replacer Pipe SST 09316-00010
T40 Torque Wrench	T40 Torx Bit

CAUTION

1. Read all instructions completely and carefully before you begin. If anything is not clear, please call our tech support line at 1.877.4X4.TOYS or 559.252.4950 before proceeding.
2. Check to make sure the kit is complete and that no parts are missing (refer to the Kit Contents Section on the first page of these instructions). If anything is missing, please contact Trail-Gear at 1.877.4X4.TOYS or 559.252.4950.
3. Park vehicle on a clean, dry, flat, level surface and block the tires so the vehicle cannot roll in either direction.
4. This product is for off-road use only. It is recommended that the installation steps below be performed by a competent mechanic. Buyers and users of this product hereby expressly assume all risks associated with the installation and use of this product.
5. This installation is typical for most FJ80/FJ100 Toyota Land Cruisers. Some vehicles may vary. If necessary, refer to the proper Factory Service Manual for the year and model of your vehicle.

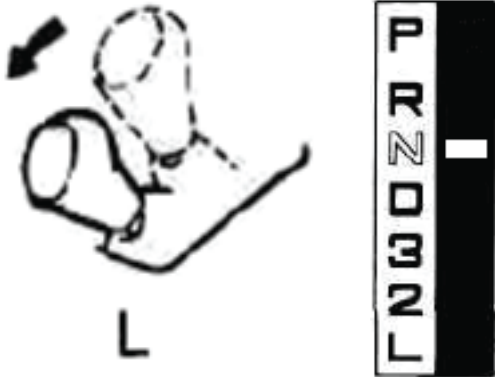


INSTALL INSTRUCTIONS (CONT'D.)



STEP 1

Shift your vehicle into 4WD low and place the transmission in Neutral.



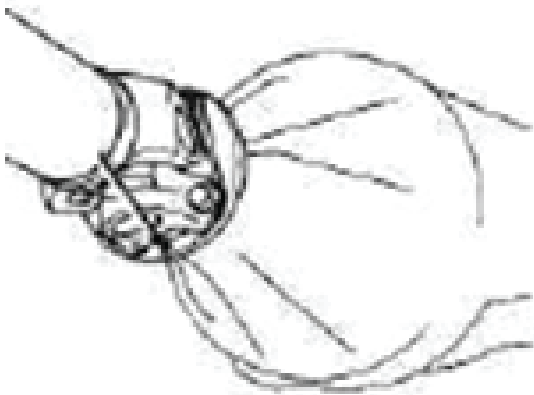
STEP 2

Remove the transfer case drain plug and drain the oil. Discard the used oil in accordance with all local laws. Many auto parts stores will accept used oil for little or no cost. Save the drain plug for reinstallation.



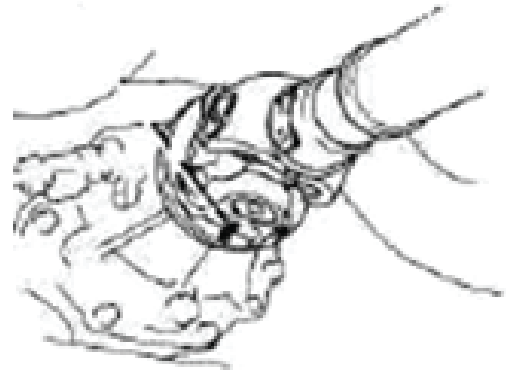
STEP 3

Place match marks on the rear differential driveline flanges. Loosen and remove the (4) driveline nuts and bolts. Save the (4) nuts and bolts for reinstallation.



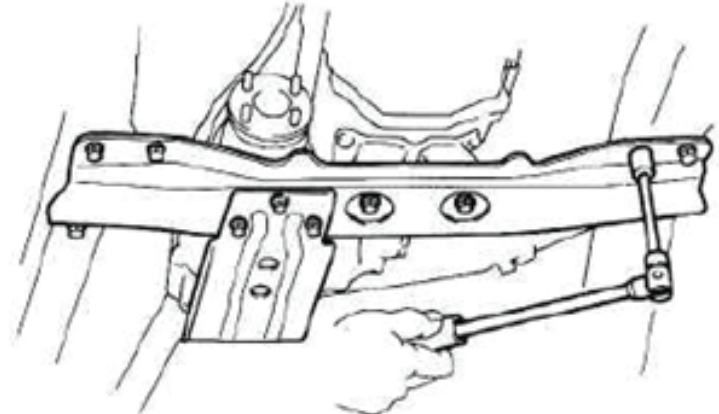
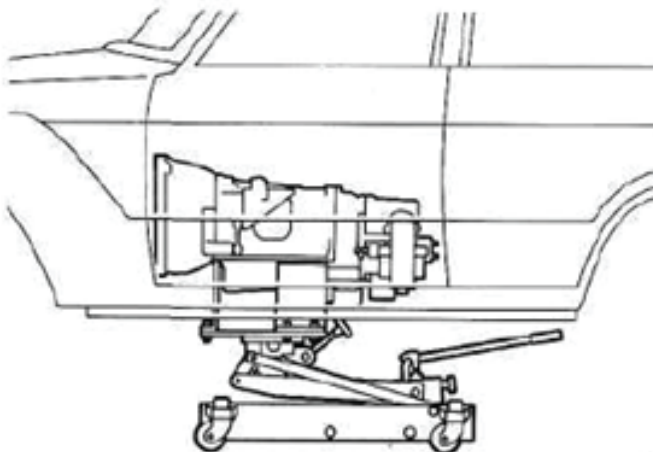
STEP 4

Place match marks on the rear transfer case driveline flanges. Loosen and remove the (4) driveline nuts and bolts. Remove the rear driveline. Save the driveline and the (4) nuts and bolts for reinstallation.



STEP 5

Place a transmission jack underneath the transmission. Unbolt the crossmember and carefully lower the drivetrain 2-3 inches. Save the crossmember and the mounting hardware for reinstallation.

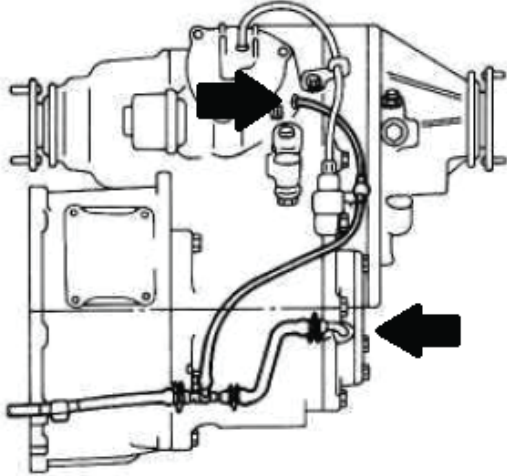


INSTALL INSTRUCTIONS (CONT'D.)



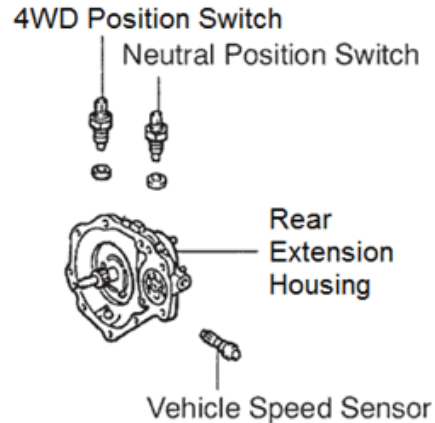
STEP 6

Disconnect the breather hose from the rear transfer case housing.



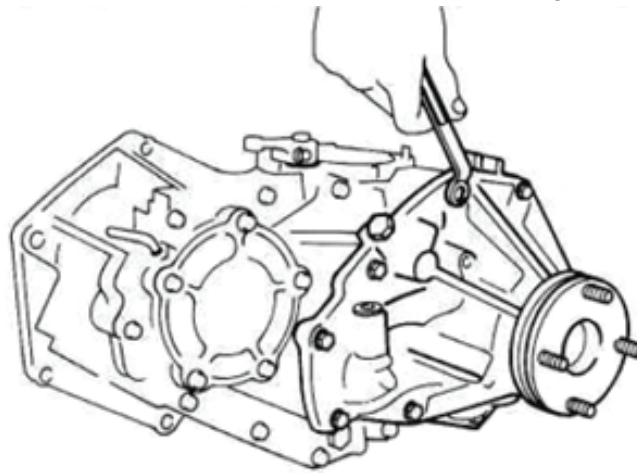
STEP 7

Disconnect the 4WD position switch electrical plug, the neutral position switch electrical plug, the speedometer cable, and the ground wire from the rear extension housing.



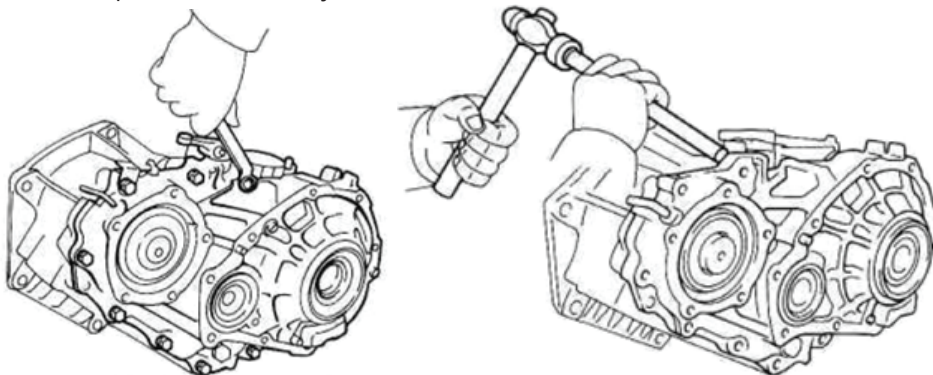
STEP 8

Loosen and remove the (9) bolts from the rear extension housing. Save the (9) bolts for reinstallation. If needed, tap the rear extension housing with a rubber mallet to break the RTV on the sealing flanges. Remove the rear extension housing and save for reinstallation. Note: Not all of the bolts are the same length, so mark the position of each bolt.



STEP 9

Remove the (8) bolts on the rear transfer case housing. Save the (8) bolts for reinstallation. If needed, tap the rear transfer case housing with a brass bar to break the RTV on the sealing flanges. Remove the rear transfer case housing and save for reinstallation. Note: The input shaft assembly will still be attached to the rear transfer case housing.



INSTALL INSTRUCTIONS (CONT'D.)

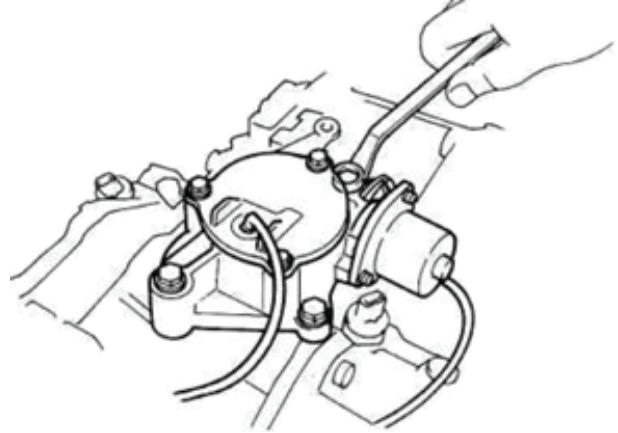


STEP 10

Disconnect the low range shift linkage from the transfer case shift handle pivot. Save the hardware for reinstallation.

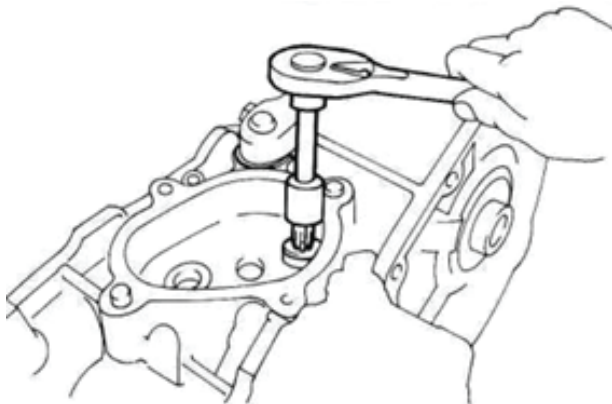
STEP 11

Remove the (4) bolts on the transfer case motor actuator. Save the (4) bolts for reinstallation. Remove the motor actuator and save for reinstallation.



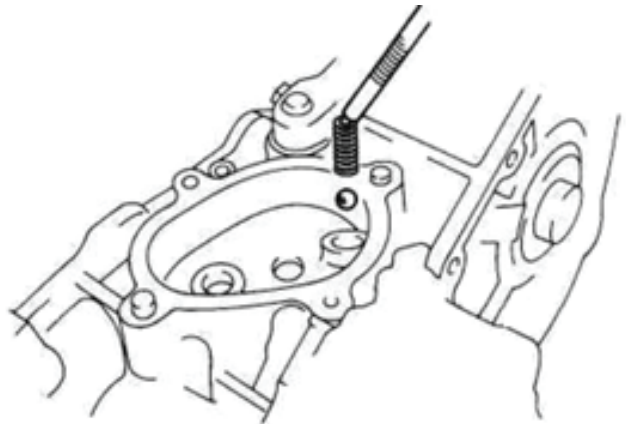
STEP 12

Using a T40 Torx bit, remove the screw plug. Save the plug for reinstallation.



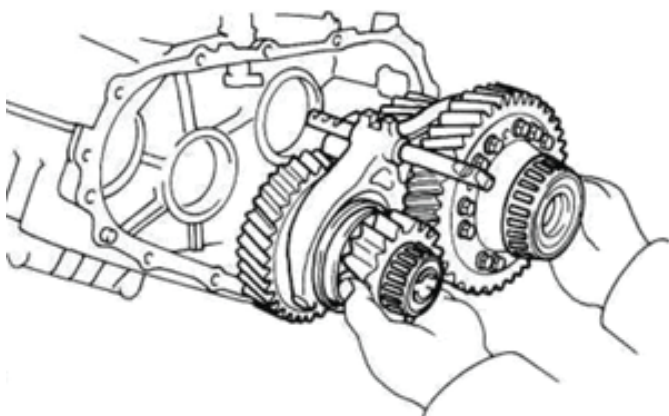
STEP 13

Using a magnetic removal tool, remove the shift spring and ball. Save the spring & ball for reinstallation.



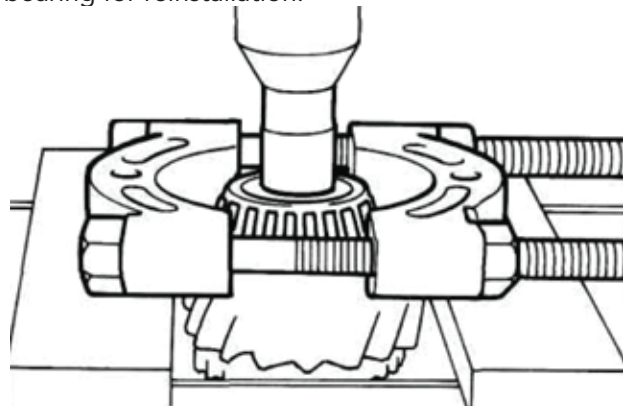
STEP 14

Remove the complete idler gear/center differential/high & low shift fork assembly.



STEP 15

Remove the idler gear assembly from the idler gear/center differential/high & low shift fork assembly removed in Step 14. Using a bearing separator, remove the rear taper roller bearing. Save the bearing for reinstallation.

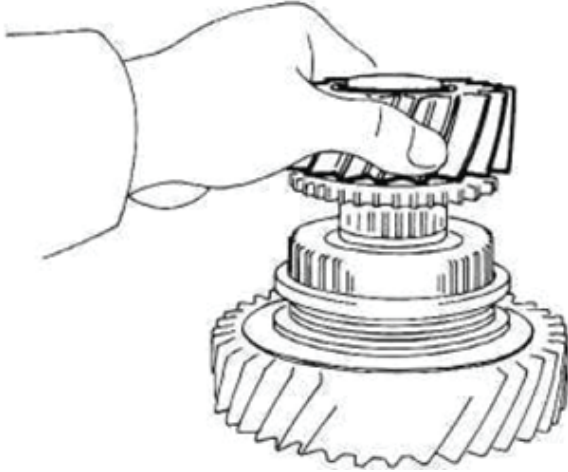


INSTALL INSTRUCTIONS (CONT'D.)



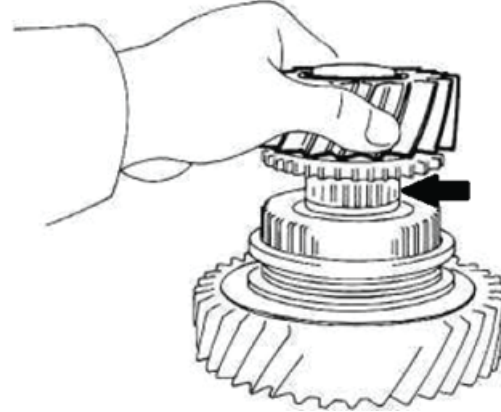
STEP 16

Remove and discard the stock idler gear.



STEP 17

Apply gear oil to the needle roller bearing and install the new idler gear. Make sure to install the gear in the correct orientation.

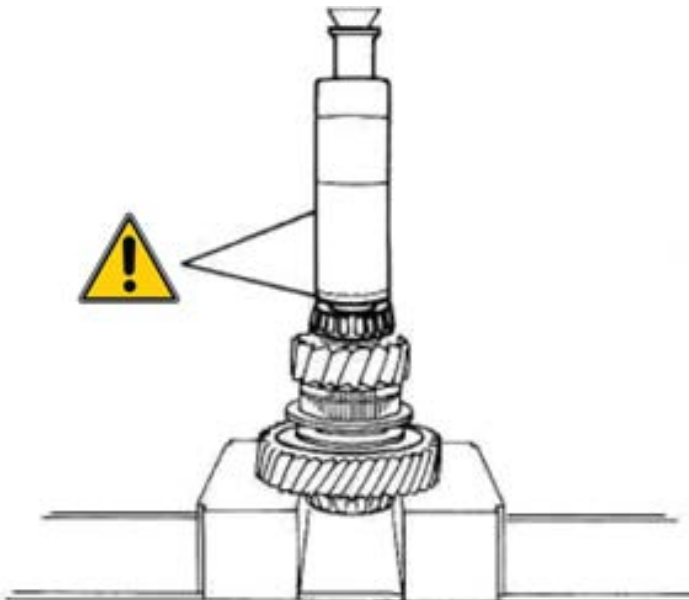


STEP 18

Carefully press the rear taper bearing back onto the idler gear assembly. Make sure to install the bearing in the proper orientation.

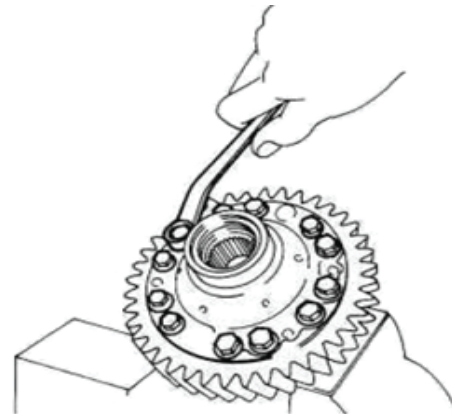


Note: Make sure to apply pressure to the inner race only. DO NOT apply pressure to any other part of the bearing, as it will damage the bearing. Toyota recommends Special Service Tool 09316-00010 for this, however, a similar size piece of pipe or socket will work as long as it contacts the inner bearing race only.



STEP 19

Remove the center differential assembly from the idler gear/center differential/high & low shift fork assembly removed in Step 14. Loosen and remove the (12) bolts from the center differential assembly. Remove the differential rear case. Save the (12) bolts and the differential rear case for reinstallation.



STEP 20

Remove the rear side gear and thrust washer. Save the rear side gear and thrust washer for reinstallation. Note: Make sure to keep the thrust washer with the rear side gear.

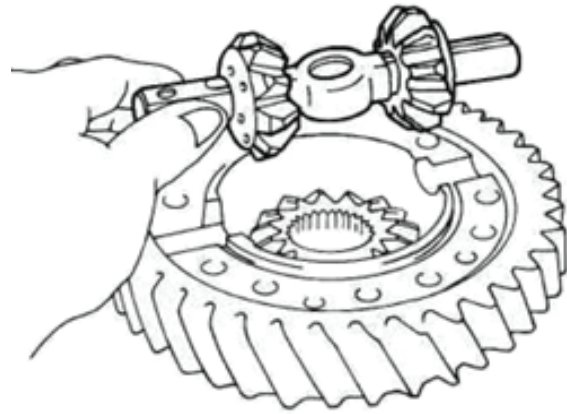
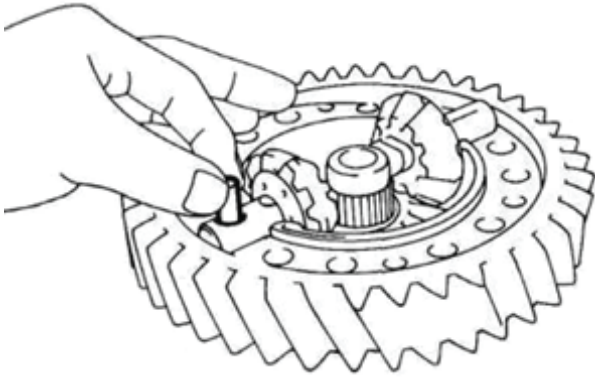


INSTALL INSTRUCTIONS (CONT'D.)



STEP 21

Remove the pinion shaft pin. Remove the pinion shaft, pinion gears, and thrust washers. Save the pinion shaft pin, pinion shaft, pinion gears, and thrust washers. Note: Make sure to keep the each pinion thrust washer with the corresponding pinion gear.



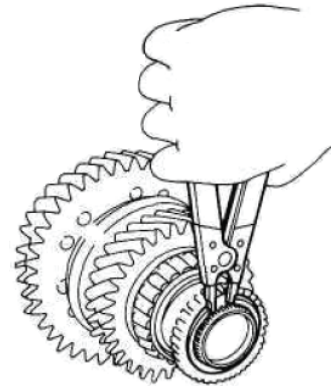
STEP 22

Remove the front side gear and thrust washer. Save the front side gear and thrust washer for reinstallation. Note: Make sure to keep the thrust washer with the front side gear.



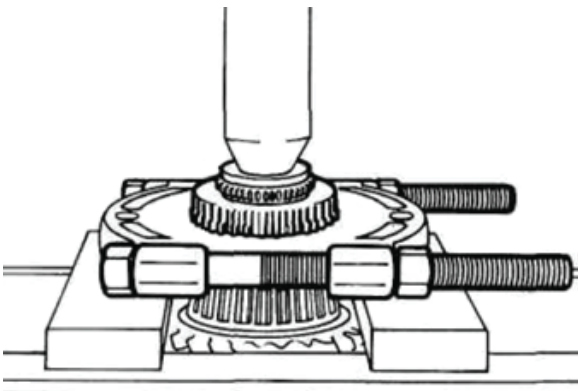
STEP 23

Flip the assembly over to the opposite side. Using snap ring pliers, remove the snap ring from the front drive gear. Save the snap ring for reinstallation.



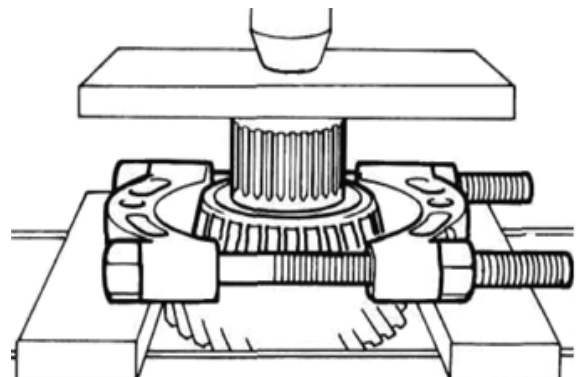
STEP 24

Using a bearing separator, press off the front drive gear. Save the front drive gear for reinstallation.



STEP 25

Using a bearing separator, press off the front taper roller bearing. Save the front taper roller bearing for reinstallation.

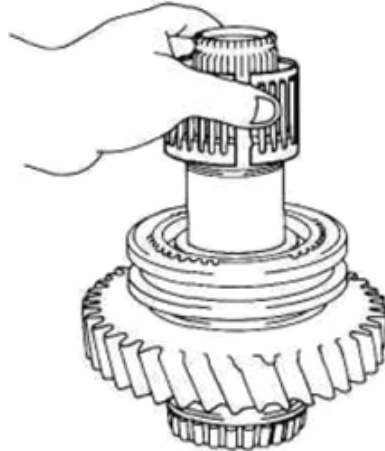
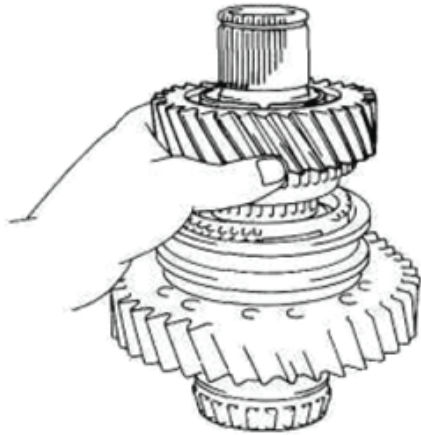


INSTALL INSTRUCTIONS (CONT'D.)



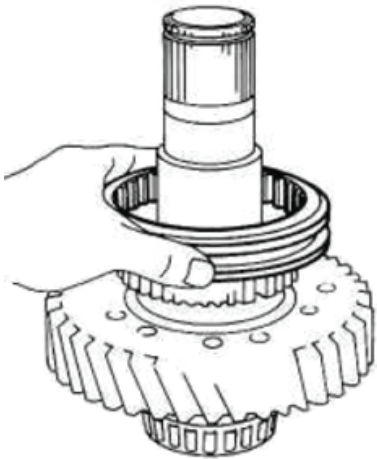
STEP 26

Remove the high-speed output gear and the synchronizer ring. Remove the needle roller bearing. Save all parts for reinstallation.



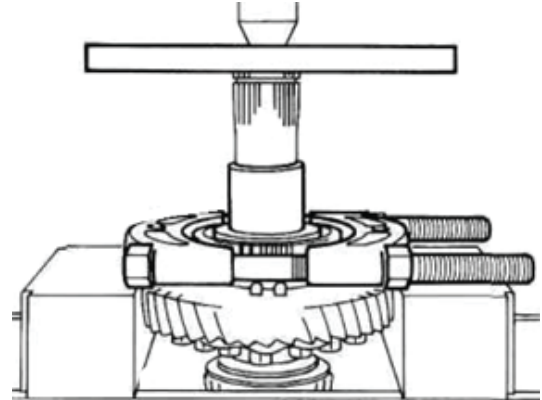
STEP 27

Remove the high/low clutch sleeve. Save the clutch sleeve for reinstallation.



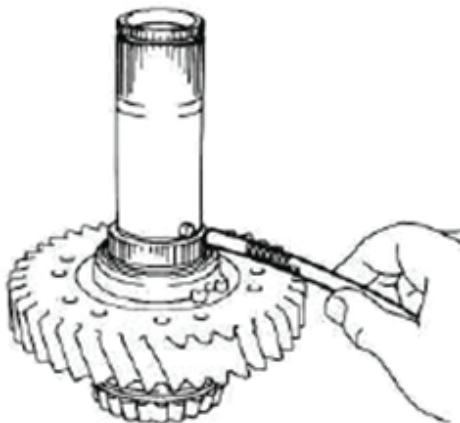
STEP 28

Using a bearing separator, press off the high speed output gear bushing, clutch hub, and shifting key retainer. Note the orientation of the clutch hub and shifting key retainer. Save all parts for reinstallation.



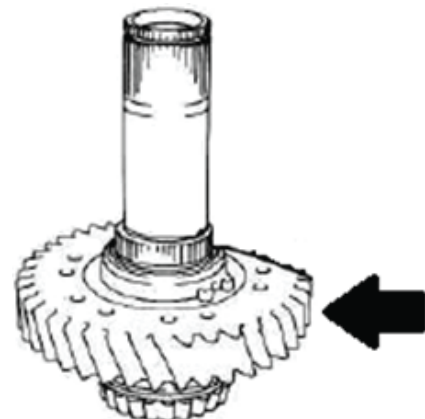
STEP 29

Using a magnetic removal tool, remove the (2) straight pins. Save the (2) pins for reinstallation.



STEP 30

Remove the stock low speed gear from the front differential case. Install the new low speed gear onto the front differential case. Discard the stock low speed gear.



INSTALL INSTRUCTIONS (CONT'D.)



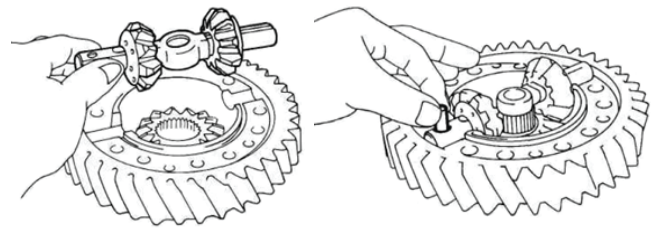
STEP 31

Coat the front side gear and thrust washer with gear oil. Reinstall the front side gear and thrust washer into the differential front case.



STEP 32

Coat the pinon shaft, pinion gears, and thrust washers with gear oil. Reinstall the assembly into the differential front case. Reinstall the straight pin.



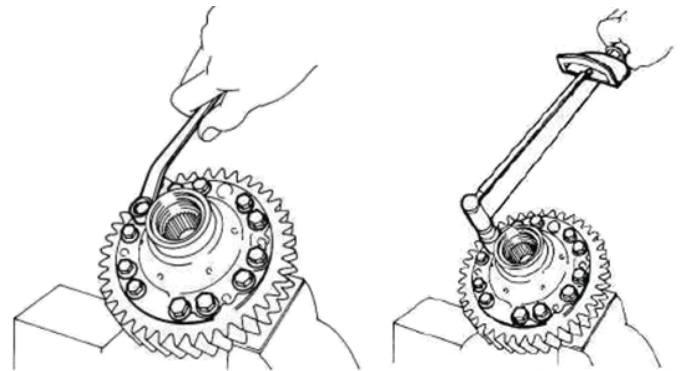
STEP 33

Coat the rear side gear and thrust washer with gear oil. Reinstall the rear side gear and thrust washer into the differential front case.



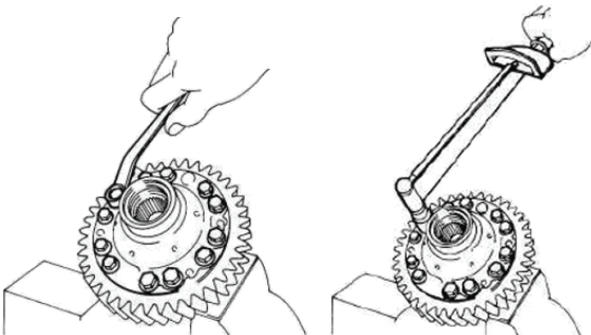
STEP 34

Reinstall the differential rear case onto the differential front case. Reinstall the (12) bolts removed in Step 21. Tighten the bolts. Using a torque wrench, tighten the bolts to 65 ft-lbs (88 N-m).



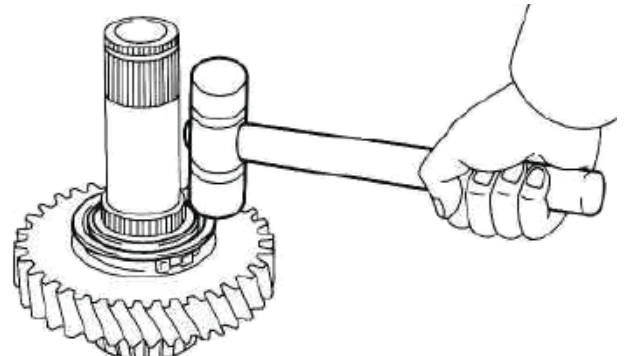
STEP 35

Loosen all (12) bolts. Using a torque wrench, retighten the (12) bolts to 72 ft-lbs (98 N-m).



STEP 36

Using a plastic hammer, tap the shifting key retainer back onto the differential rear case.

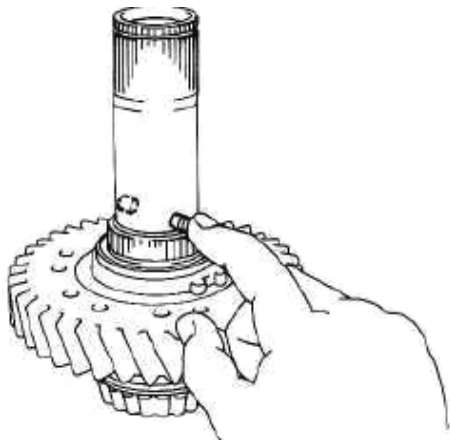


INSTALL INSTRUCTIONS (CONT'D.)



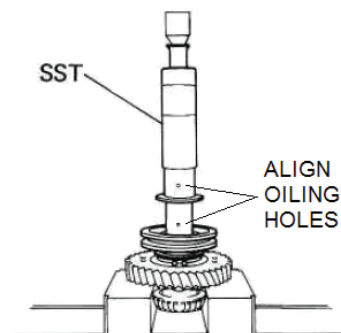
STEP 37

Apply wheel bearing grease to the straight pins removed in Step 29. Reinstall the pins into the differential rear case.



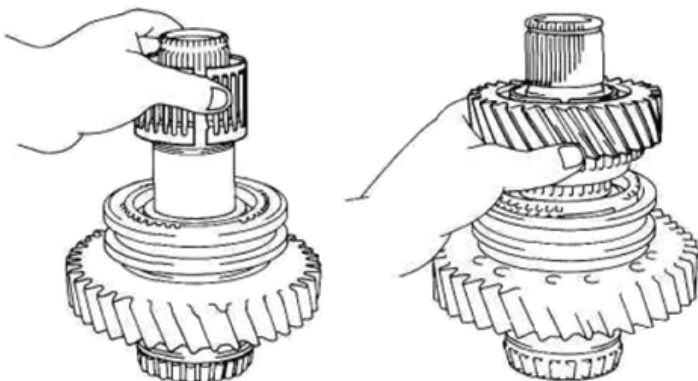
STEP 38

Using an installation tool and a press, reinstall the clutch sleeve assembly and high speed output gear bushing. Before pressing, align the oiling holes on the bushing and shaft so that the pin on the shaft will align with the slot on the bushing. Note: Toyota recommends Special Service Tool 09316-00010 for this, however, a similar size piece of pipe or socket will work.



STEP 39

Apply wheel bearing grease to the rollers on the needle roller bearing. Place the synchronizer ring on the gear and reinstall the high speed output gear and the needle roller bearing.

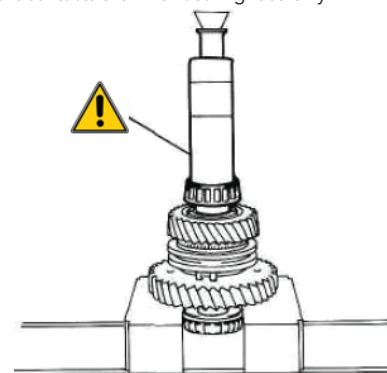


STEP 40

Reinstall the front taper roller bearing.

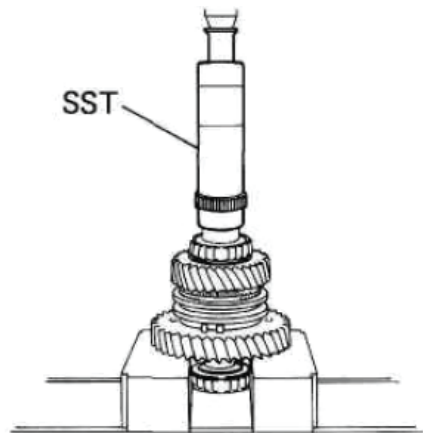


Note: Make sure to apply pressure to the inner race only. DO NOT apply pressure to any other part of the bearing, as it will damage the bearing. Toyota recommends Special Service Tool 09316-00010 for this, however, a similar size piece of pipe or socket will work as long as it contacts the inner bearing race only.



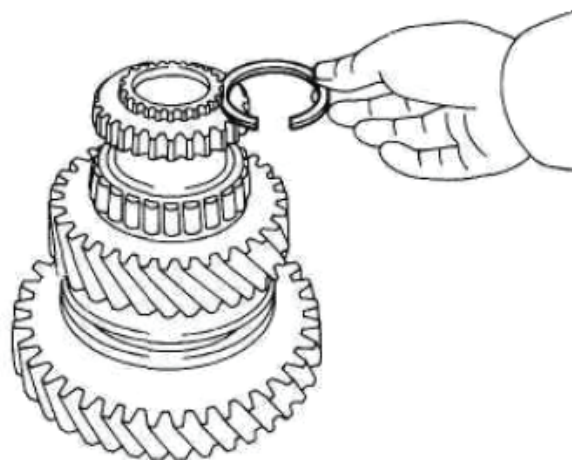
STEP 41

Reinstall the front drive gear piece. Note: Toyota recommends Special Service Tool 09316-00010 for this, however, a similar size piece of pipe or socket will work.



STEP 42

Using snap ring pliers, reinstall the snap ring.



INSTALL INSTRUCTIONS (CONT'D.)



STEP 43

Clearance the rear case as shown below.



STEP 44

Using a cut-off wheel, remove the lip from the oil slinger in both the front case and the rear case. Note: Clean both cases thoroughly after cutting.

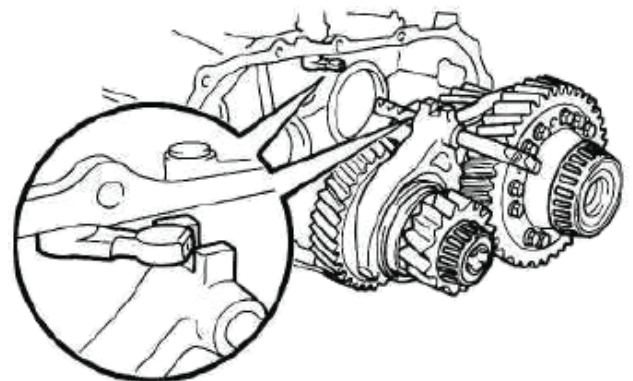


STEP 45

Using a razor blade, remove the RTV and/or gasket remnants from all sealing surfaces on the transfer case housing components. Degrease the flanges with a suitable degreasing agent (e.g. brake cleaner). Make sure all flanges are clean and free of oil.

STEP 46

Reinstall the complete idler gear/center differential/high & low shift fork assembly.

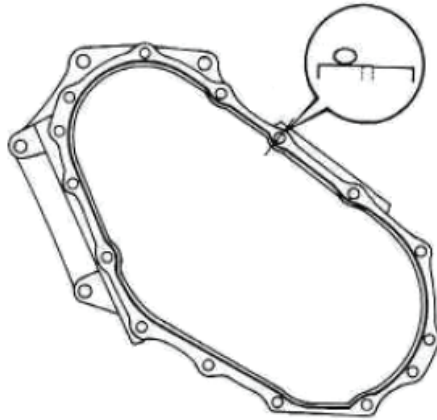


INSTALL INSTRUCTIONS (CONT'D.)



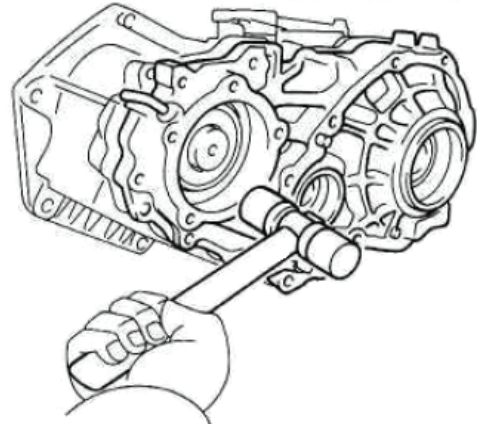
STEP 47

Apply an even bead of RTV silicone around the perimeter of the front case flange.



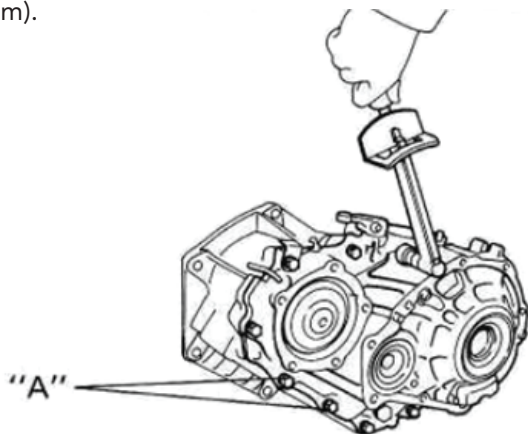
STEP 48

Install the rear case onto the front case. Using a plastic hammer, tap on the rear case to fully seat it.



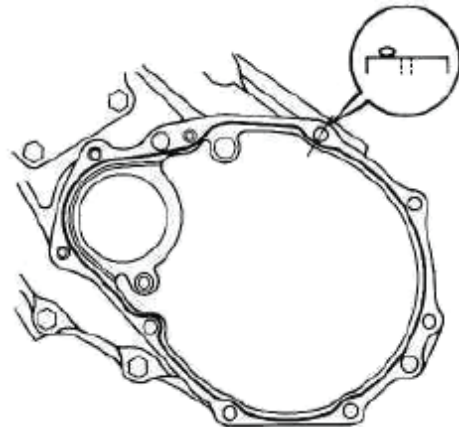
STEP 49

Reinstall the (8) bolts removed in Step 9. Apply blue threadlocker to the (2) bolts marked "A" in the diagram below. Torque the bolts to 27 ft-lbs (37 N-m).



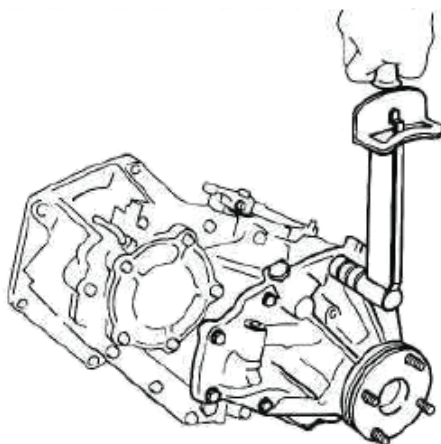
STEP 50

Apply an even bead of RTV silicone around the perimeter of the rear extension housing flange on the rear case.



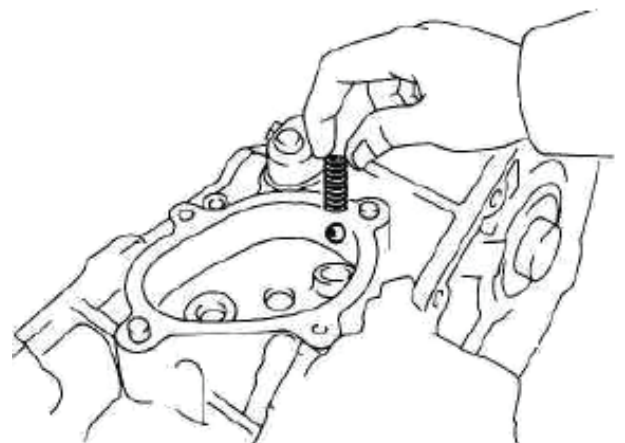
STEP 51

Reinstall the (9) bolts removed in Step 8. Torque each bolt to 27 ft-lbs (37 N-m).



STEP 52

Reinstall the ball and spring removed in Step 13.

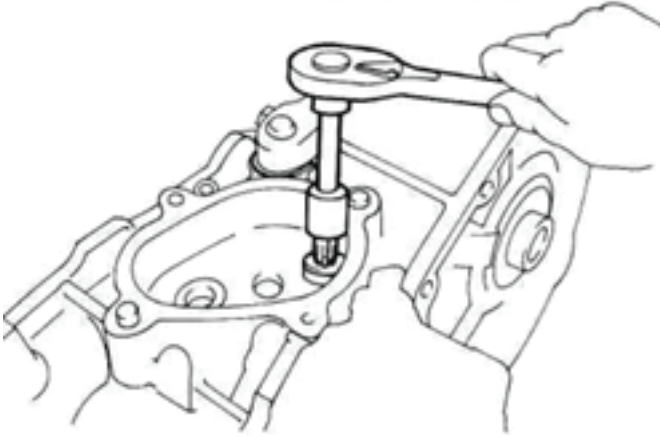


INSTALL INSTRUCTIONS (CONT'D.)



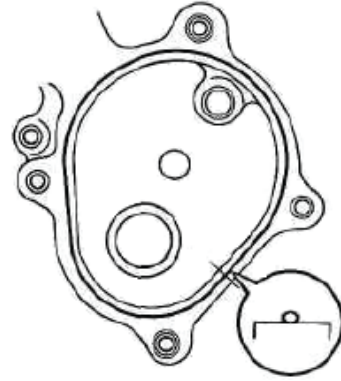
STEP 53

Apply blue Loctite to the threads of the plug removed in Step 12. Using a T40 Torx socket, torque the plug to 14-ft-lbs (19 N-m).



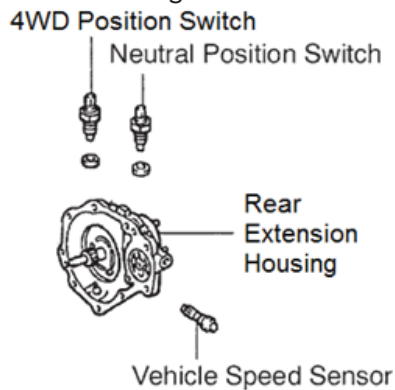
STEP 54

Apply an even bead of RTV silicone around the perimeter of the rear extension housing flange on the front case.



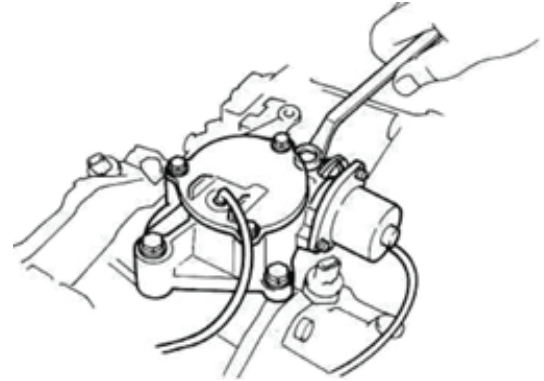
STEP 55

Connect the 4WD position switch electrical plug, the neutral position switch electrical plug, the speedometer cable, and the ground wire from the rear extension housing.



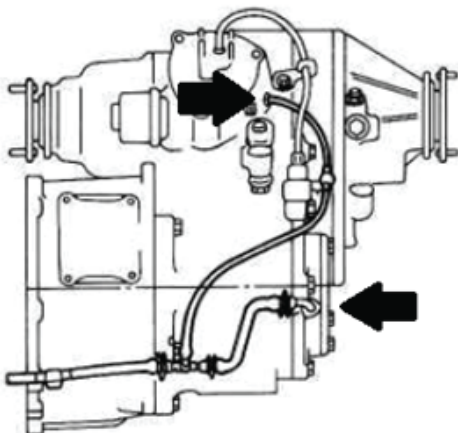
STEP 56

Set the motor actuator to the differential lock position. Reinstall the motor actuator onto the front case. Reinstall the (4) bolts removed in Step 11 and torque the bolts to 14 ft-lbs (19 N-m).



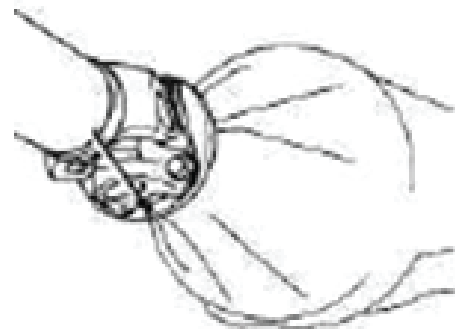
STEP 57

Reinstall the breather hoses.



STEP 58

Reinstall the driveline onto the rear differential. Make sure the match marks you put in Step 3 align. Reinstall the (4) driveline bolts and nuts and torque to 65 ft-lbs (88 N-m).



INSTALL INSTRUCTIONS (CONT'D.)



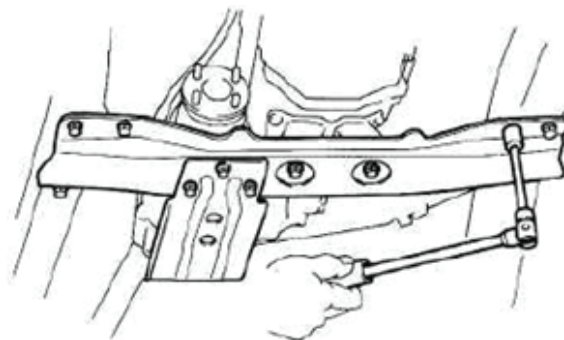
STEP 59

Reinstall the driveline onto the rear of the transfer case. Make sure the match marks you put in Step 4 align. Reinstall the (4) driveline bolts and nuts and torque to 65 ft-lbs (88 N-m).

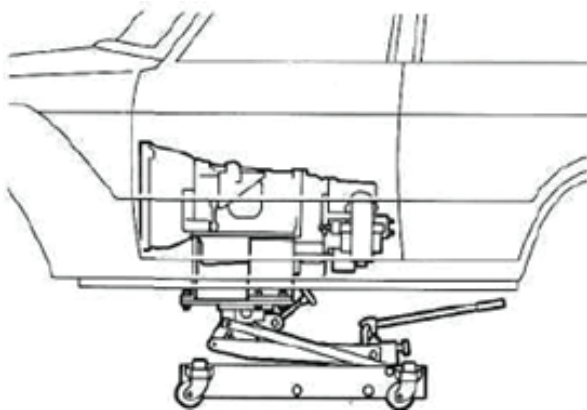


STEP 60

Raise the transmission and reinstall the crossmember. Torque the bolts to 45 ft-lbs (61 N-m) and the nuts to 54 ft-lbs (74 N-m). After all the crossmember bolts are reinstalled and torqued, remove the transmission jack.



STEP 60 CONTINUED



STEP 61

Reinstall the transfer case drain plug. Remove the fill plug and fill the transfer case with the API GL-5 SAE 75W-90 gear oil or the gear oil recommended in your Land Cruiser Owner's Manual. Reinstall the fill plug.

STEP 62

Verify all bolts have been reinstalled and torqued. Verify all wiring plugs and hoses have been reconnected. Take the vehicle for a short test drive and verify shift lights and speedometer function. After the transfer case cools, recheck the gear oil level.

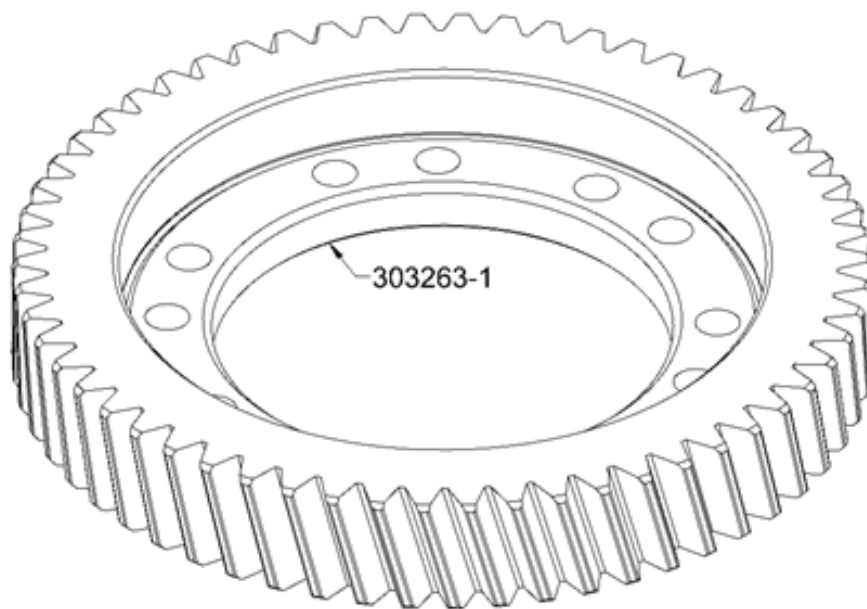
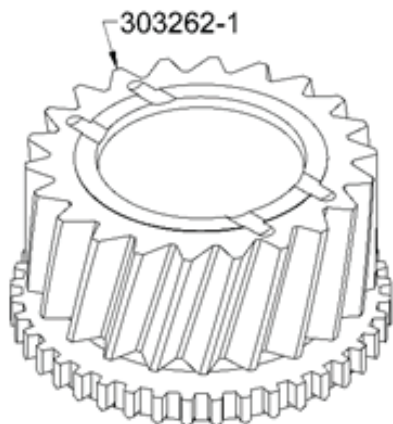
MAINTENANCE

Change the gear oil after the first 1,000 miles or after the first trail ride, whichever comes first. After the initial oil change, change the gear oil once a year or every 10,000 miles, whichever comes first. Check the gear oil level every time the engine oil is changed.

INSTALL INSTRUCTIONS (CONT'D.)



REPLACEMENT PARTS



181004