

INSTALL INSTRUCTIONS



SUZUKI JIMNY JB23/33/43/SN413/SN415 MANUAL TRANSFER CASE GEARS

304087-3-KIT (24% HIGH RANGE REDUCTION/84% LOW RANGE REDUCTION)

304956-3-KIT (0% HIGH RANGE REDUCTION/60% LOW RANGE REDUCTION)

304957-3-KIT (24% HIGH RANGE REDUCTION/24% LOW RANGE REDUCTION)

KIT CONTENTS



304087-3-KIT

304956-3-KIT



304957-3-KIT

304955-3-INS

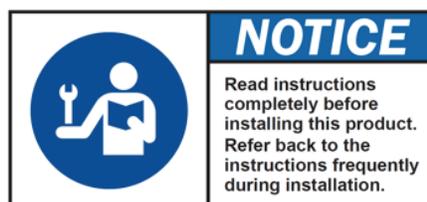


RECOMMENDED TOOLS

Ball Peen Hammer	Bearing Splitter
Safety Glasses	Seal Puller
Metric Ratchet & Socket Set	Arbor Press
Retaining Ring Pilers	Jack Stands
Wheel Bearing Grease	Bearing/ Seal Driver Set
Torque Wrench	Allen Wrench Set
Floor Jack	Drain Pan
Screwdriver Set (Flat & Philips)	Metric Wrench Set
Transmission Jack	Razor Blade or Gasket Scraper
Degreasing Compound (e.g. Brake Cleaner)	Drift Punch
Threadlocking Compound (Loctite 242 or equivalent)	Rubber Mallet
API GL4 SAE 75W-90 Gear Oil (Approximately 1 quart/1 L)	Snap Ring Pliers
Pin or Alignment Punch (Suzuki P/N 09922-85811 or equivalent)	
Large Adjustable Pin Wrench (Suzuki P/N 09930-40113 or equivalent)	
Case Separator Tool (Suzuki P/N 09912-34510 or equivalent)	

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 or email tech@trail-gear.com 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 or email tech@trail-gear.com.
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 Suzuki Jimny SN413/SN415 vehicles. Some vehicles may vary. If necessary, refer to the proper Suzuki Factory Service Manual for the year and model of your vehicle.

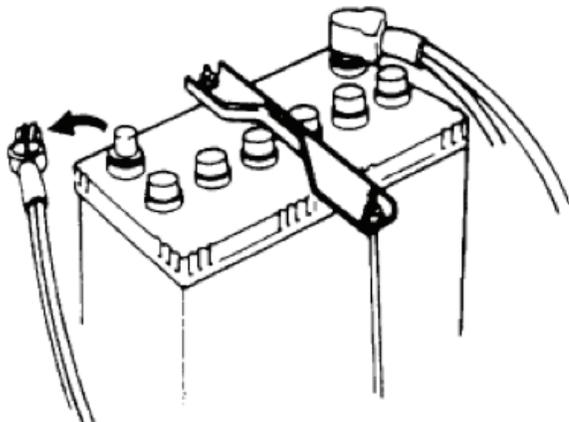


INSTALL INSTRUCTIONS (CONT'D.)



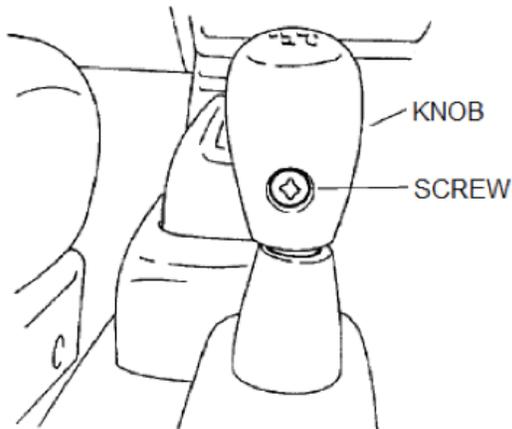
STEP 1

1. Open the hood and disconnect the negative (-) terminal from the battery.



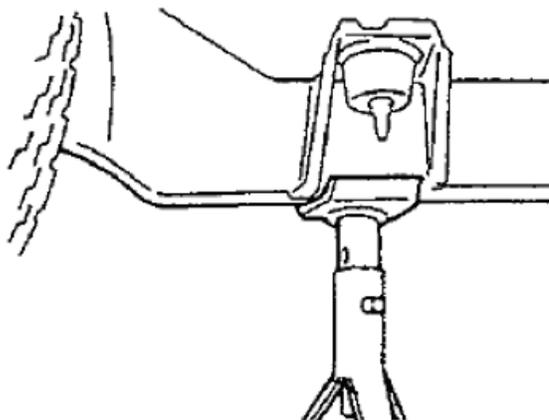
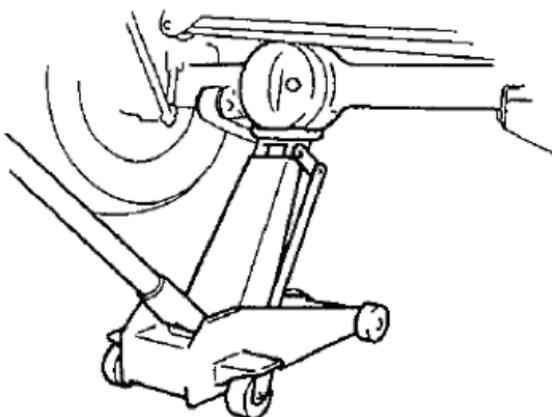
STEP 2

Loosen and remove the transfer case shifter knob screw. Remove the transfer case shifter knob. Save the transfer case shifter knob & screw for reassembly.



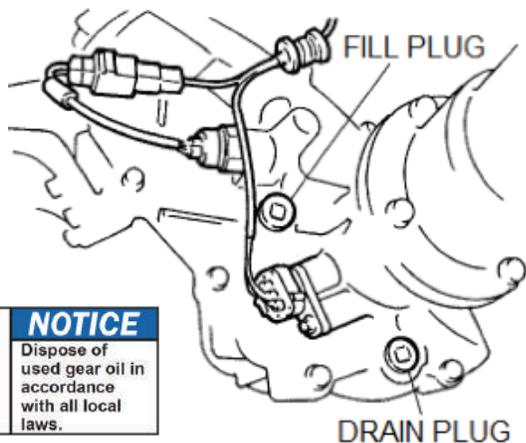
STEP 3

Lift up the front end of the vehicle with a floor jack and place jack stands under the front end on both sides of the frame. Repeat for the rear end of the vehicle.



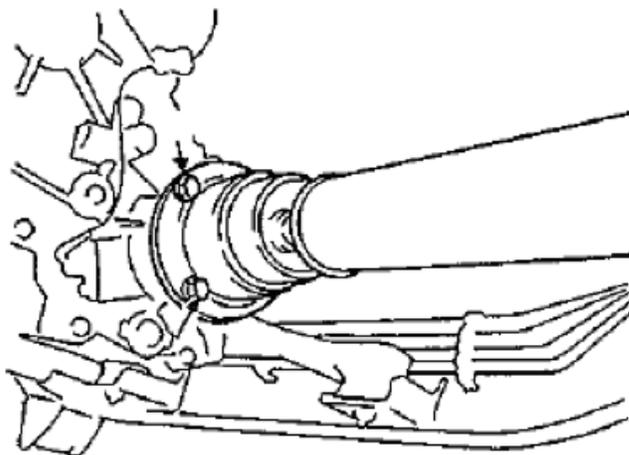
STEP 4

Place a drain pan underneath the transfer case. Remove the fill plug. Remove the drain plug and allow the transfer case to drain completely. Save both plugs for reinstallation. Discard the used oil in accordance with all local laws. Many auto parts stores will accept used oil for little or no cost.



STEP 5

Remove the (4) driveline nuts & bolts from the rear transfer case drive flange and save for reinstallation. Suspend the driveline from the frame with a hook or stout wire to avoid putting strain on the on the driveline u-joint. Repeat for the front drivelines.

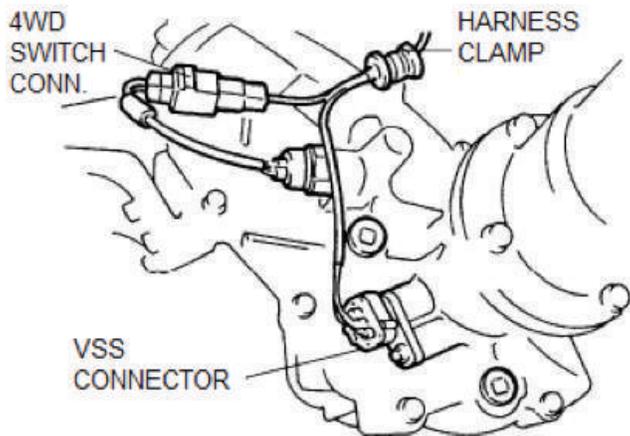


INSTALL INSTRUCTIONS (CONT'D.)



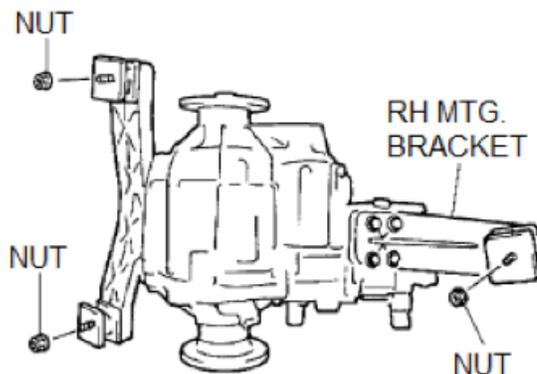
STEP 6

Disconnect the 4WD switch connector and the vehicle speed sensor (VSS) connector. Unclamp the wiring harness.



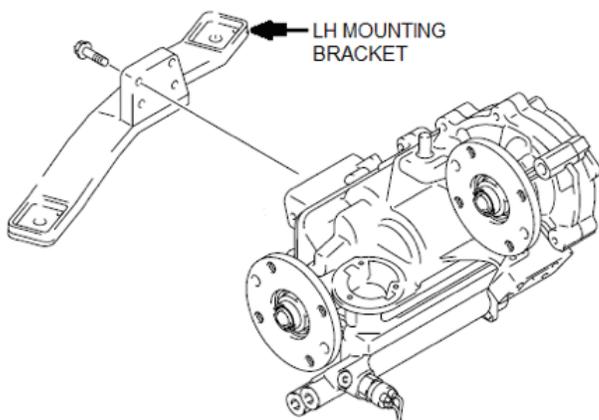
STEP 7

Place a transmission jack under the transfer case and use it to support the transfer case. Remove the (3) mounting nuts. Unbolt and remove the right-hand mounting bracket from the transfer case. Save the bracket and all hardware for reinstallation.



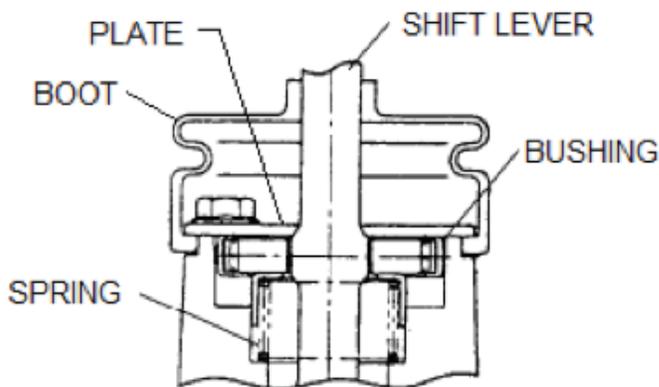
STEP 8

Lower the transfer case. Unbolt and remove the left-hand mounting bracket from the transfer case. Save the bracket and all hardware for reinstallation.



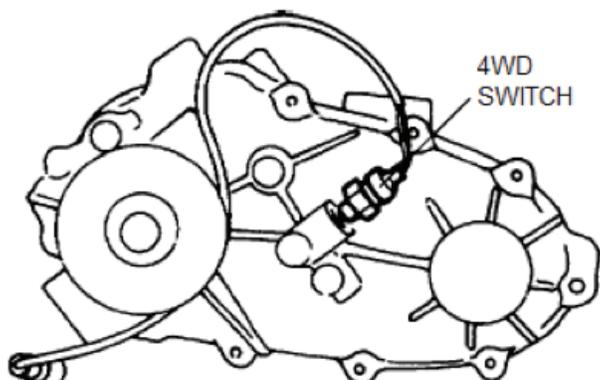
STEP 9

Remove the shift lever boot & plate, then remove the shifter bushing and spring. Disconnect the shift lever. Save all parts for reinstallation.



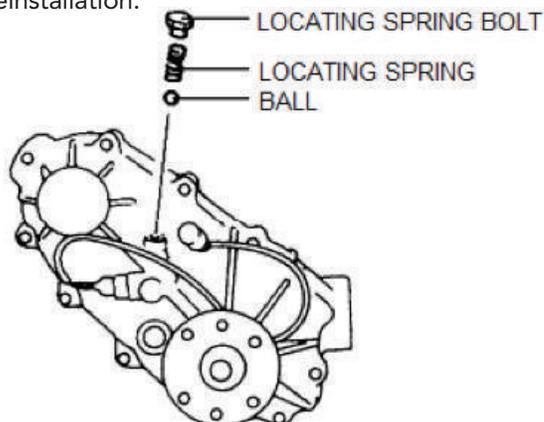
STEP 10

Remove the 4WD switch & steel ball from the transfer case. Save the switch and steel ball for reinstallation.



STEP 11

Remove the locating spring bolt and the locating spring from the transfer case. Using a magnetic removal tool, remove the steel ball from the transfer case. Save all parts for reinstallation.

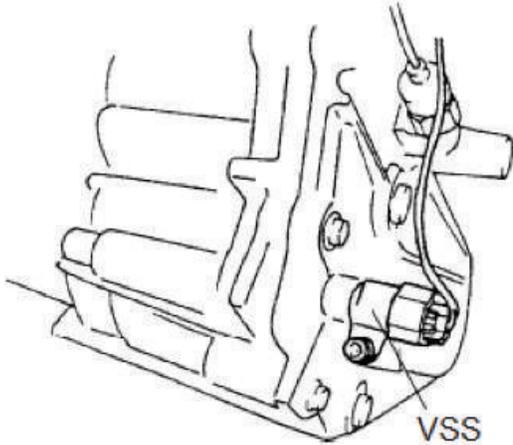


INSTALL INSTRUCTIONS (CONT'D.)



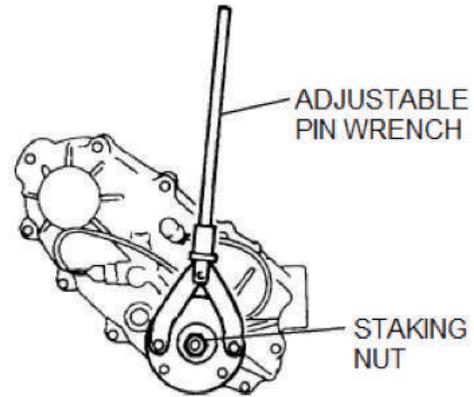
STEP 12

Unbolt & remove the vehicle speed sensor (VSS) from the transfer case. Save the VSS & bolt for reinstallation.



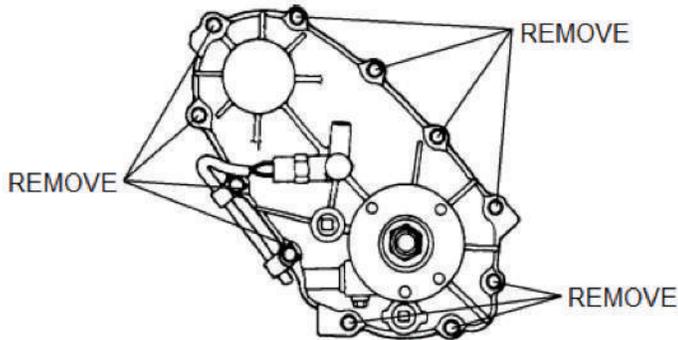
STEP 13

Remove the rear drive flange staking nut using a large removable pin wrench to hold the flange in place. Remove the rear drive flange and save for reinstallation. Discard the staking nut.



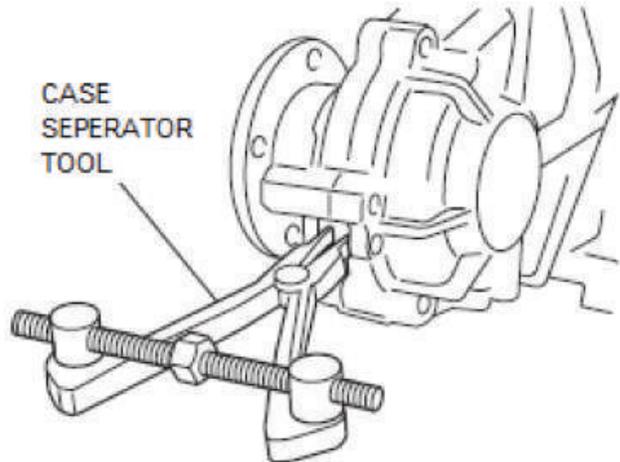
STEP 14

Remove the (11) rear transfer case bolts. Save all parts for reinstallation.



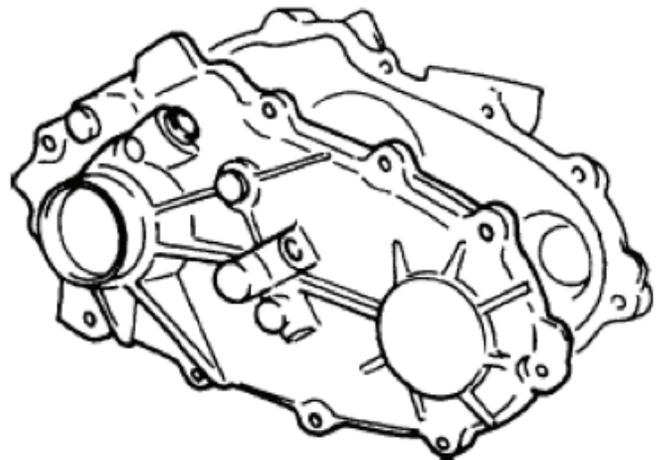
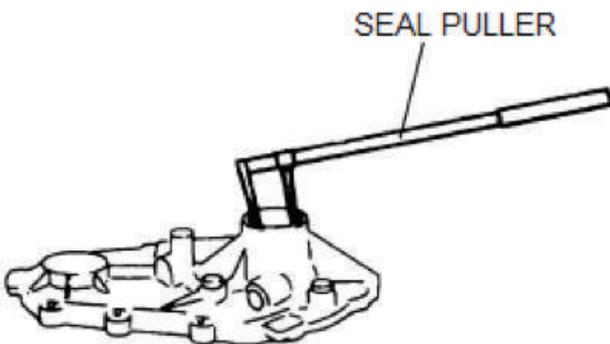
STEP 15

Separate the front case from the rear case using a case separator. Alternatively, a large flat head screwdriver may be carefully used to separate the cases.



STEP 16

Using a seal puller, remove the oil seal from the rear case. Discard the oil seal.

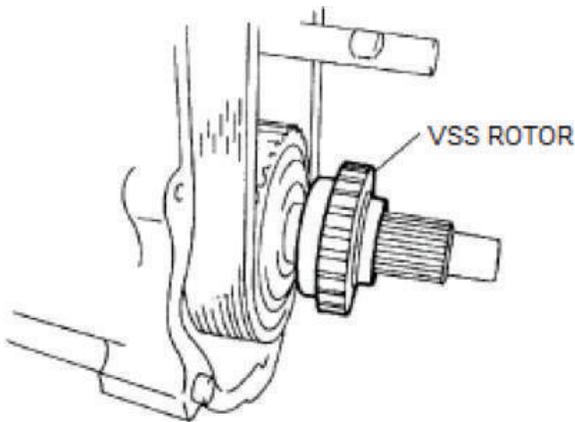


INSTALL INSTRUCTIONS (CONT'D.)



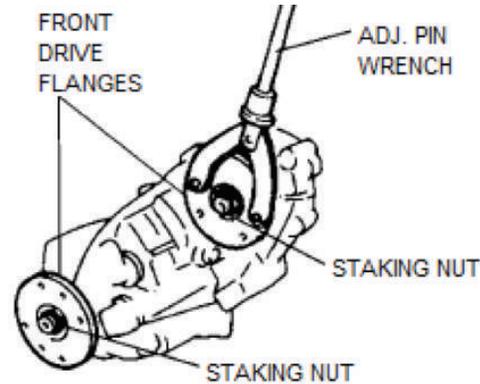
STEP 17

Remove the VSS rotor. Save the rotor for reinstallation.



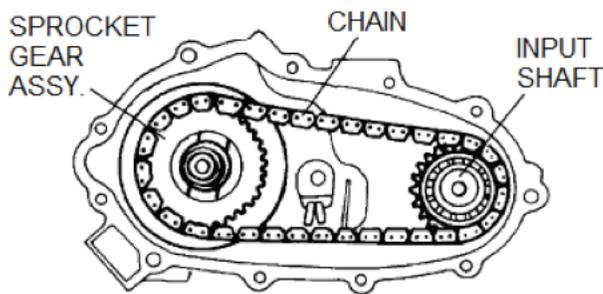
STEP 18

Remove the front drive flange staking nuts using a large adjustable pin wrench to hold the flange in place. Remove the front drive flanges and save for reinstallation. Discard the staking nuts.



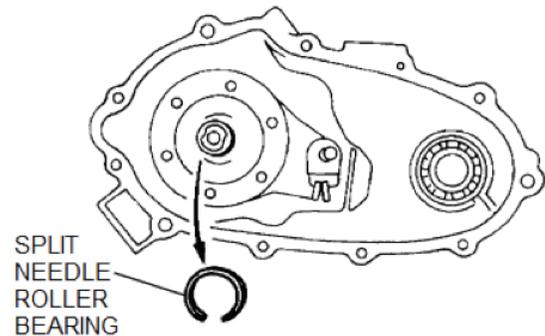
STEP 19

Remove the drive chain, input shaft, and ring/sprocket gear assembly. All (3) items must be removed together. Retain all other parts for reinstallation.



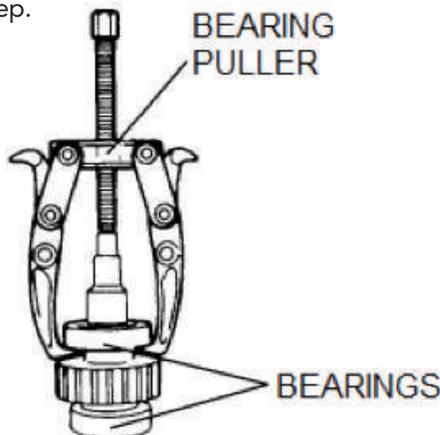
STEP 20

Carefully remove the split needle roller bearing from the shaft. Retain the bearing for reinstallation.



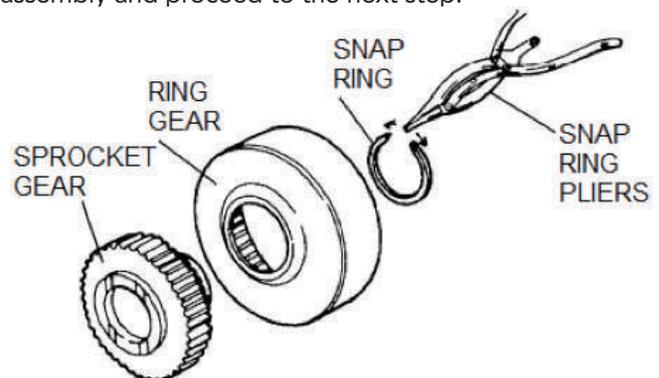
STEP 21

If your kit came with a new input shaft, remove the bearings from the input shaft using a bearing puller. Discard the input shaft and retain the bearings for reinstallation. If your kit does not include a new input shaft, retain the stock input shaft assembly and skip to the next step.



STEP 22

If your kit does not include both the new planetary gear and a new sprocket gear, remove the ring gear from the sprocket gear by removing the snap ring using snap ring pliers. Save the parts for reinstallation. If your kit includes both the new planetary gear and a new sprocket gear, discard the entire sprocket gear/ring gear assembly and proceed to the next step.

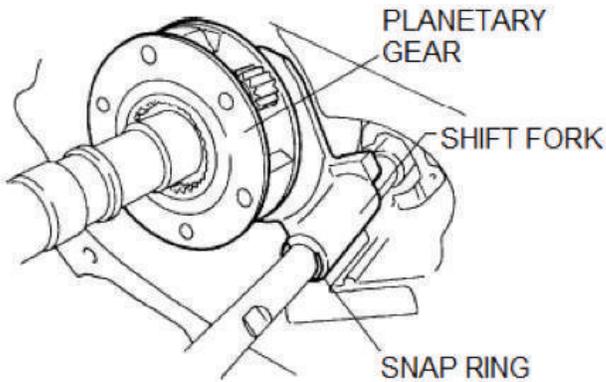


INSTALL INSTRUCTIONS (CONT'D.)



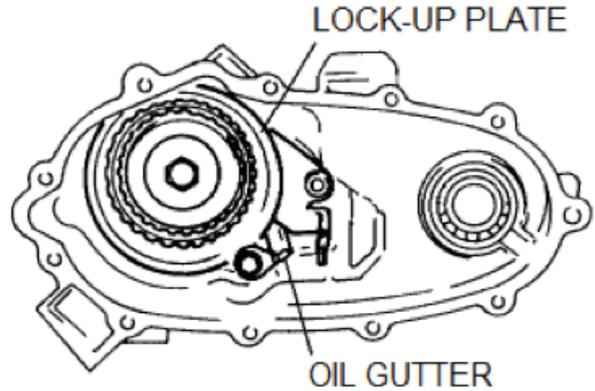
STEP 23

Remove the snap ring from the shift fork shaft. Remove the Hi-Lo shift fork and the planetary gear assembly. The shift fork/planetary gear assembly must be removed as a single assembly. If your kit does not include a new planetary gear, retain all parts for reinstallation. If your kit does include a new planetary gear, discard the stock planetary gear and retain all other parts.



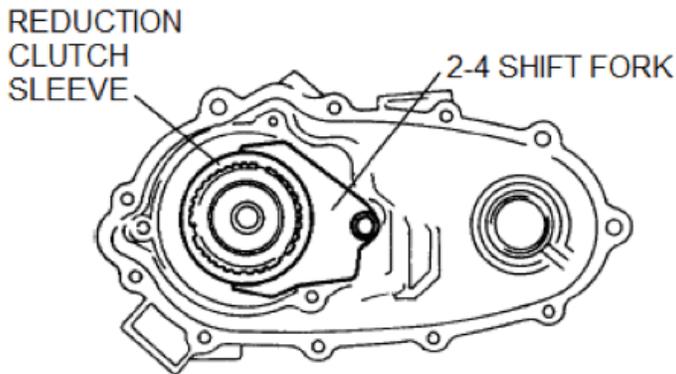
STEP 24

Unbolt and remove the lock-up plate and oil gutter. Retain all parts for reinstallation.



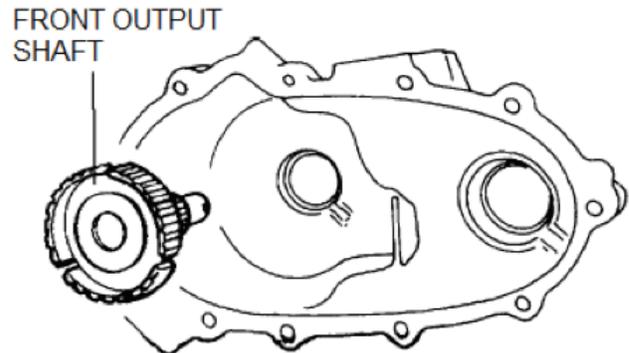
STEP 25

Remove the rear output shaft, shift shaft, reduction clutch sleeve, and 2-4 shift fork as an assembly. Retain all parts for reinstallation.



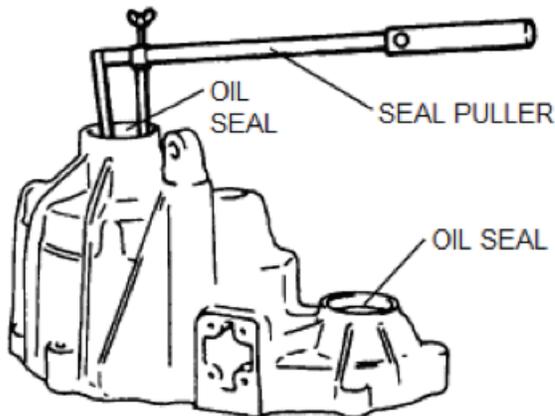
STEP 26

Remove the front output shaft. Retain all parts for reinstallation.



STEP 27

Using a seal puller, remove both oil seals from the front case. Discard both oil seals.



STEP 28

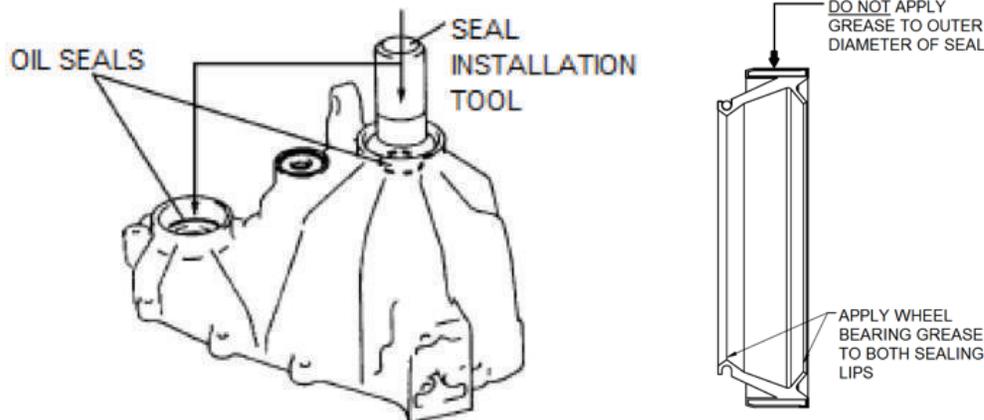
Using a razor blade, carefully remove the remaining gasket material from the flanges of both the front and rear cases. Clean the mounting flanges and the inside of both cases thoroughly with degreasing solvent. Make sure all metal particles and other debris are removed from both cases.

INSTALL INSTRUCTIONS (CONT'D.)



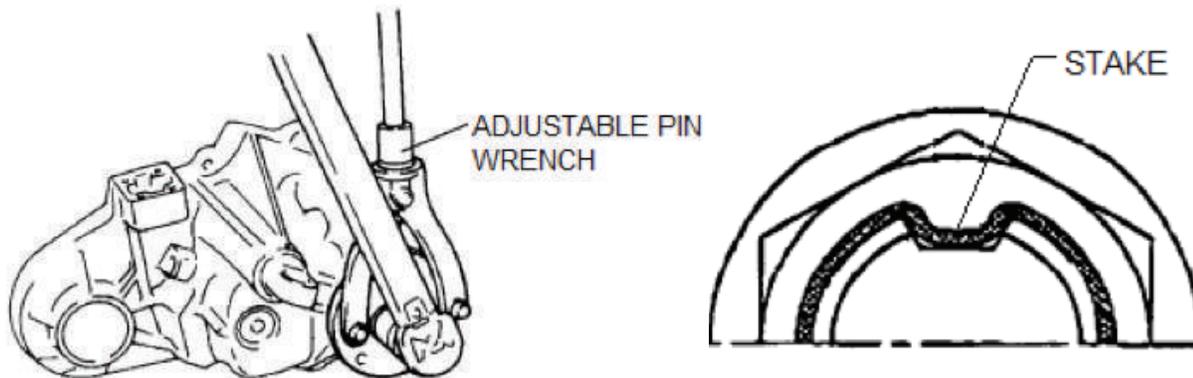
STEP 29

Using a seal installer, install (2) of the oil seals provided in this kit into the front case. Apply wheel bearing grease all around the sealing lips of both seals.



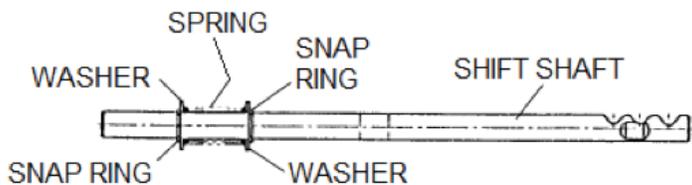
STEP 30

Reinstall the front output shaft into the front case. Install the front output flange onto the front output shaft. Apply threadlocking compound to the threads of (1) of the new staking nuts and install onto the threads of the front output shaft. Using an adjustable pin wrench and a torque wrench, tighten the staking nut to 94 ft-lbs (130 N-m). Stake the nut onto the front output shaft using a drift punch and a ball peen hammer.



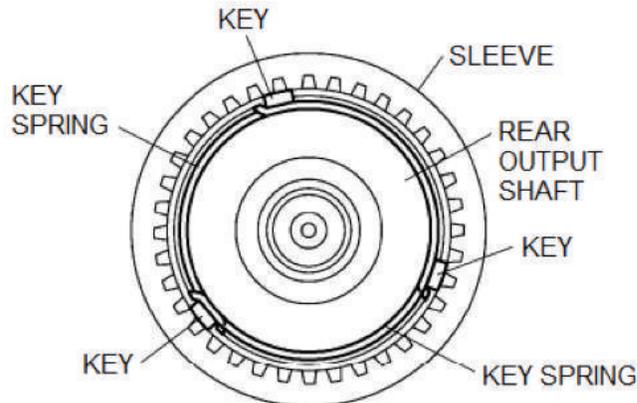
STEP 31

Reassemble the shift shaft into the front case with the spring, washers, and snap rings assembled as shown below.



STEP 32

Reassemble the rear output shaft as shown in the diagram below. Note: When reinstalling the key springs, stagger the openings so they are not in line with each other.

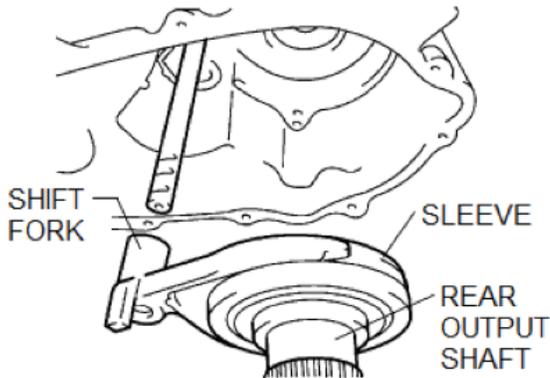


INSTALL INSTRUCTIONS (CONT'D.)



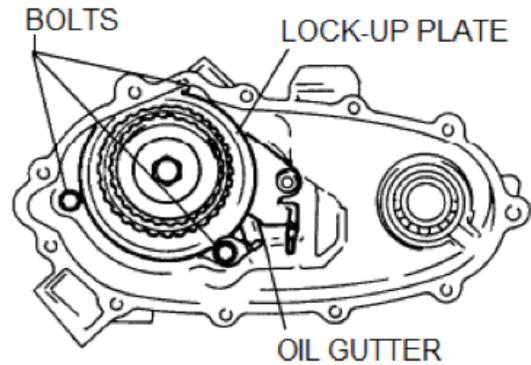
STEP 33

Reinstall the rear output shaft, sleeve, and 2-4 shift fork onto the shift shaft as a single assembly.



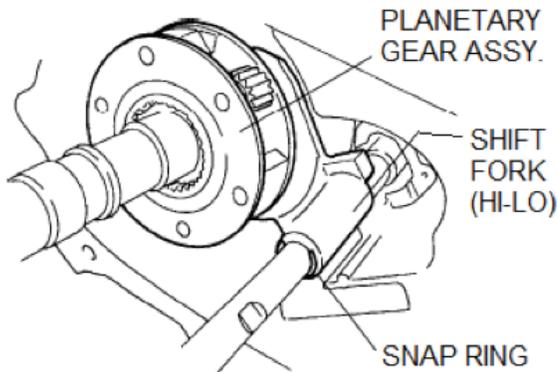
STEP 34

Reinstall the lock-up plate and oil gutter using the (3) bolts removed in Step 24. Torque each bolt to 20.5 ft-lbs (28 N-m). Note: The chamfer on the lock-up plate must face towards the rear.



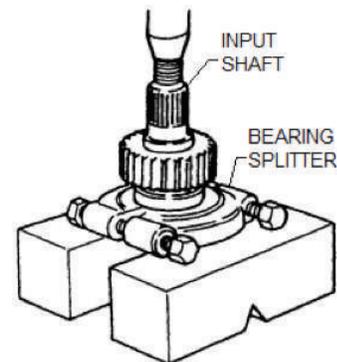
STEP 35

If your kit came with a new planetary gear assembly, install the new planetary gear assembly. Otherwise, reinstall the planetary gear removed in Step 23



STEP 36

If your kit came with a new input shaft, install the bearing removed in Step 21 onto the new input shaft using a press and a bearing splitter as shown below. If your kit did not include a new input shaft, skip this step and proceed to the next step. 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.



STEP 37

If your kit came with a new planetary gear and new sprocket gear, install the new sun gear onto the new sprocket gear. Install the provided retaining ring onto snap ring groove on the sprocket gear to fasten the assembly together. If your kit did not come with a new planetary gear and new sprocket gear, skip to the next step.



INSTALL INSTRUCTIONS (CONT'D.)



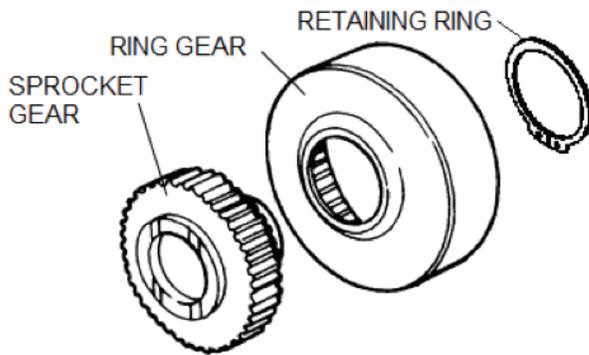
STEP 38

If your kit came with a new planetary gear but did not come with a new sprocket gear, install the new sun gear onto the stock sprocket gear. This might be a tight fit, so you may have to tap on the sprocket gear with a rubber mallet to fit the gears together. Install the provided retaining ring onto snap ring groove on the sprocket gear to fasten the assembly together. Discard the stock ring gear and snap ring. If your kit did not come with a new planetary gear, skip to the next step.



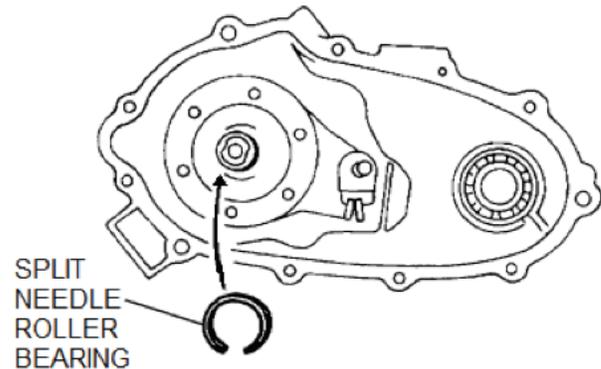
STEP 39

If your kit did not come with a new planetary gear, assemble the new sprocket gear onto the stock ring gear using the retaining ring provided with this kit. Discard the stock sprocket gear and snap ring



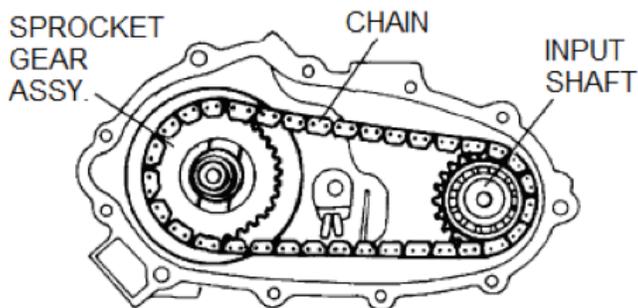
STEP 40

Carefully reinstall the split needle roller bearing removed in Step 20 back onto the output shaft.



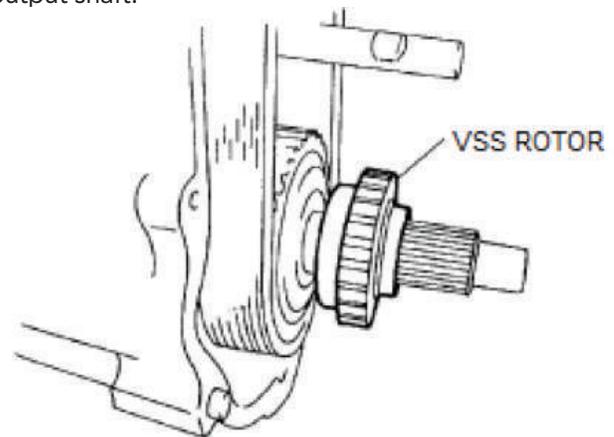
STEP 41

Reinstall the input shaft, sprocket gear assembly, and drive chain back into the front case as a single assembly.



STEP 42

Reinstall the VSS rotor removed in Step 17 back onto the output shaft.

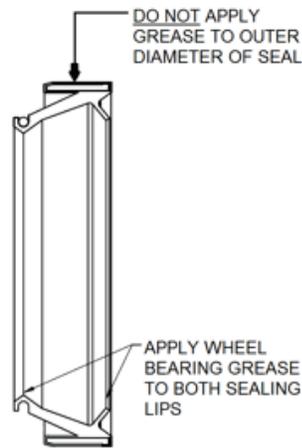
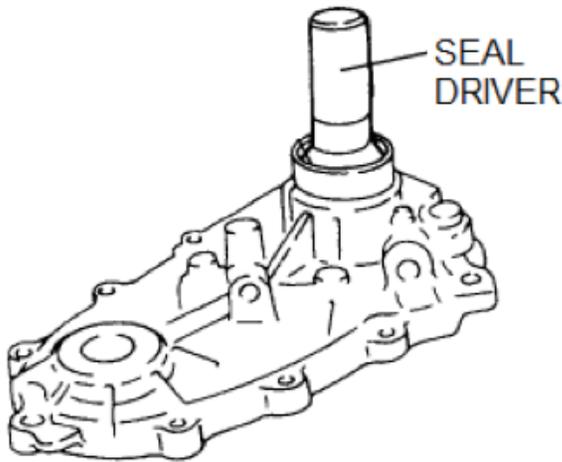


INSTALL INSTRUCTIONS (CONT'D.)



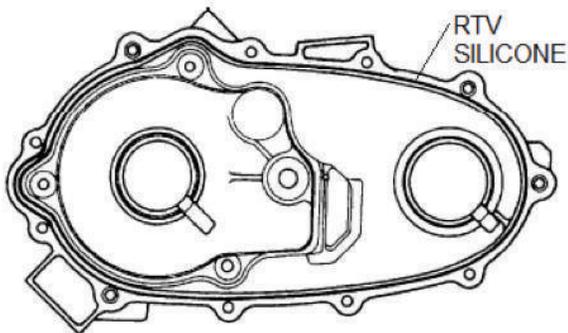
STEP 43

Using a seal installer, install the remaining oil seal into the rear case. Apply wheel bearing grease all around the sealing lips of the seals.



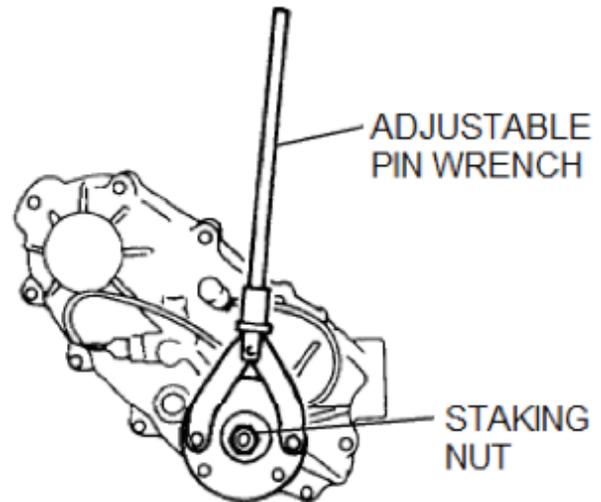
STEP 44

Make sure the mating surfaces of the both cases are still clean. Apply a bead of the RTV silicone included with this kit neatly and evenly on the mating surface of the front case. The bead should be about 0.05" (1.2mm) in diameter.



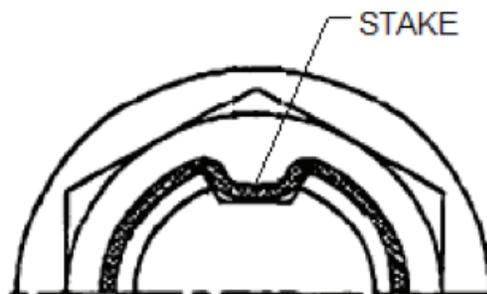
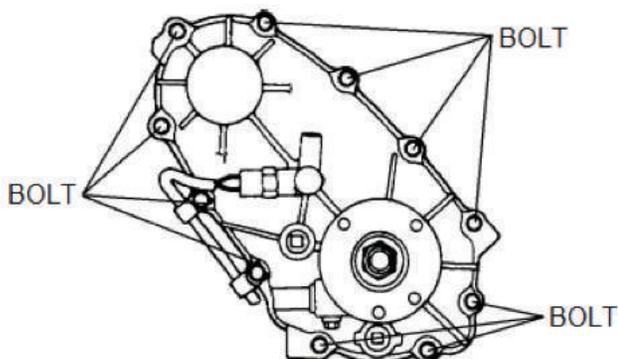
STEP 45

Align the front and rear cases and assemble them together. Install the rear flange onto the rear output shaft. Apply blue Loctite to the threads of (1) of the new staking nuts and install onto the threads of the rear output shaft. Using an adjustable pin wrench and a torque wrench, tighten the staking nut to 94 ft-lbs (130 N-m). Stake the nut onto the rear output shaft using a drift punch and a ball peen hammer.



STEP 46

Reinstall the transfer case bolts removed in Step 14. Torque each bolt to 13 ft-lbs (18 N-m).

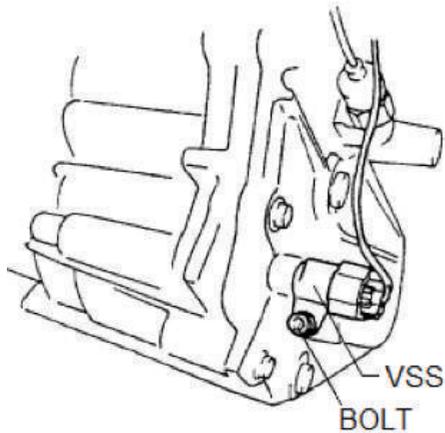


INSTALL INSTRUCTIONS (CONT'D.)



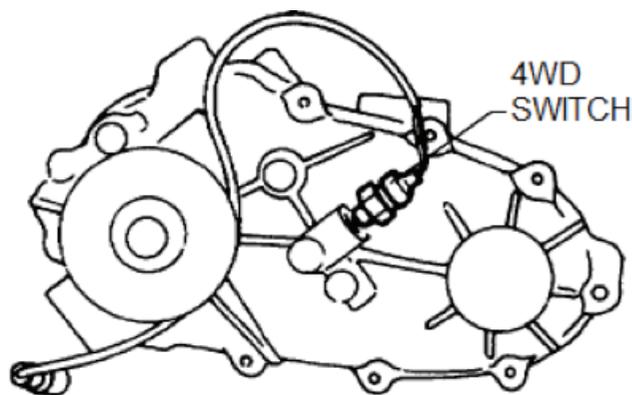
STEP 47

Reinstall the VSS removed in Step 12. Torque the bolt to 7.5 ft-lbs (10 N-m).



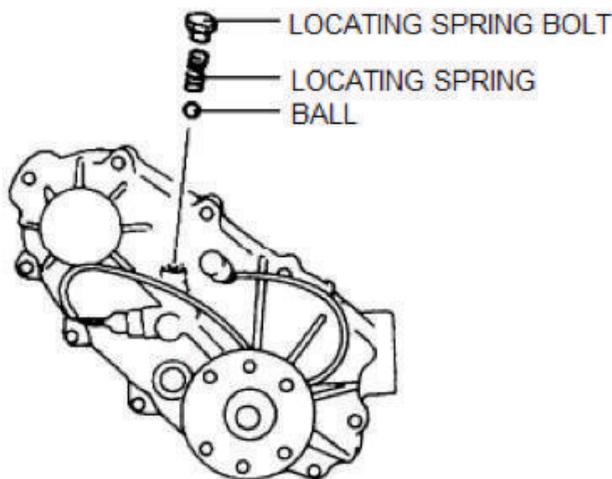
STEP 49

Reinstall the steel ball removed in Step 10 back into the transfer case, then reinstall the 4WD switch. Torque the switch to 14 ft-lbs (19 N-m).



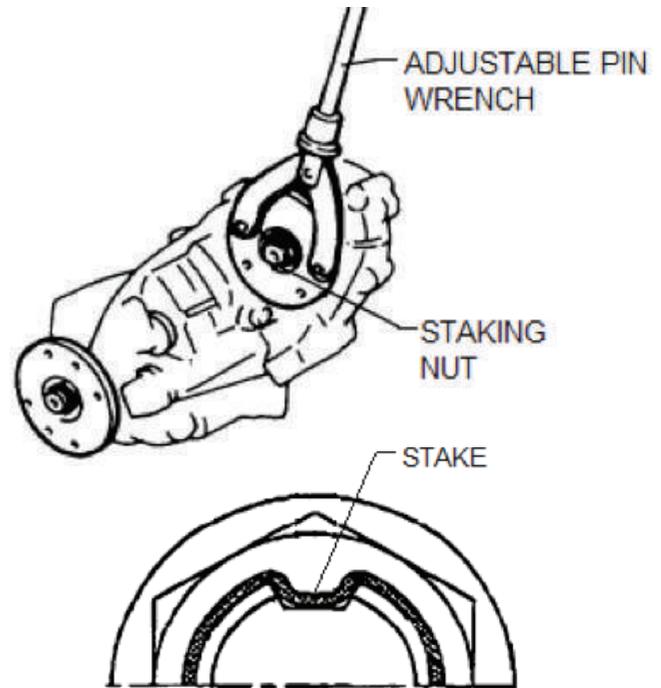
STEP 50

Reinstall the steel ball, locating spring, & locating spring bolt removed in Step 11 back into the transfer case. Torque the bolt to 18 ft-lbs (25 N-m).



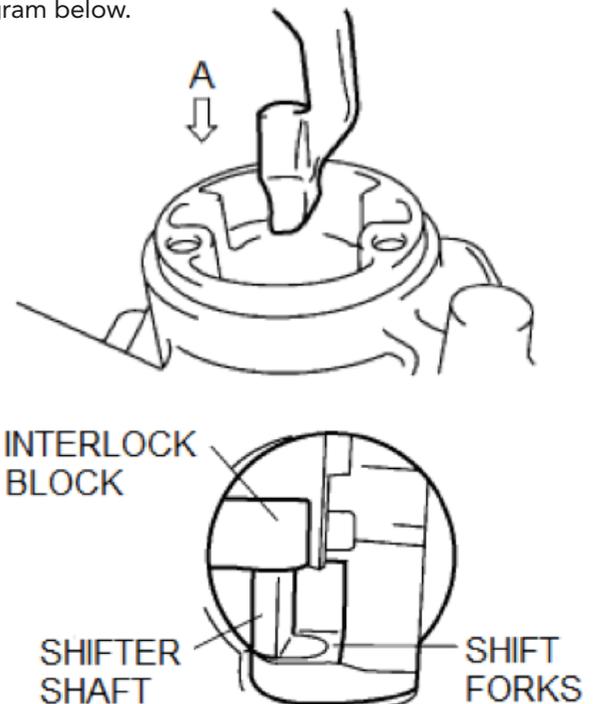
STEP 48

Reinstall the front input flange onto the transfer case. Apply blue Loctite to the threads of the remaining staking nut and install onto the threads of the front input shaft. Using an adjustable pin wrench and a torque wrench, tighten the staking nut to 94 ft-lbs (130 N-m). Stake the nut onto the front input shaft using a drift punch and a ball peen hammer.



STEP 51

Set the shifter shaft, 2-4 shift fork, and the Hi-Lo shift fork position in the 2H shift position as shown in the diagram below.

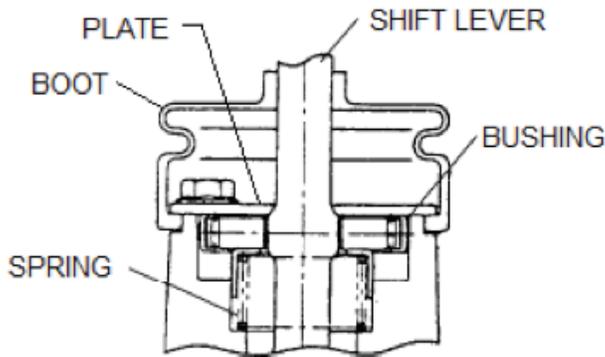


INSTALL INSTRUCTIONS (CONT'D.)



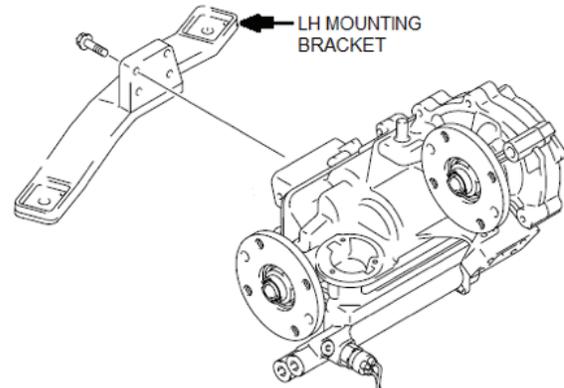
STEP 52

Fully install the shift lever through the spring. Reinstall the cover and torque the cover bolts to 13 ft-lbs (18 N-m).



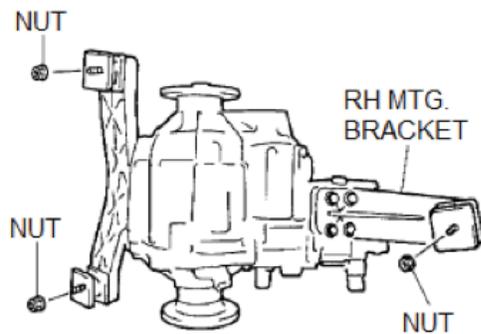
STEP 53

Reinstall the left-hand mounting bracket and the (4) mounting bolts onto the transfer case. Torque each bolt to 17 ft-lbs (23 N-m).



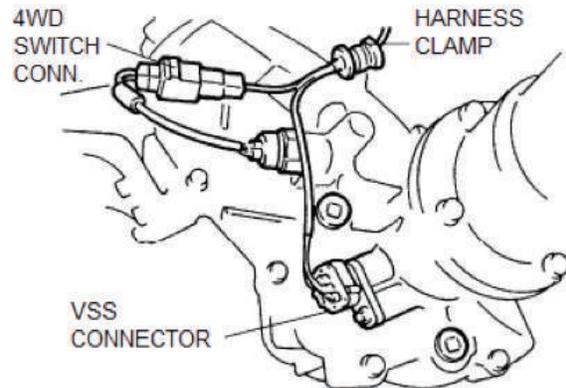
STEP 54

Place the transfer case on a transmission jack. Reinstall the right-hand mounting bracket and the (4) mounting bolts onto the transfer case. Torque each bolt to 17 ft-lbs (23 N-m). Mount the transfer case to the vehicle using the (3) nuts removed in Step 7. Torque each nut to 22 ft-lbs (30 N-m).



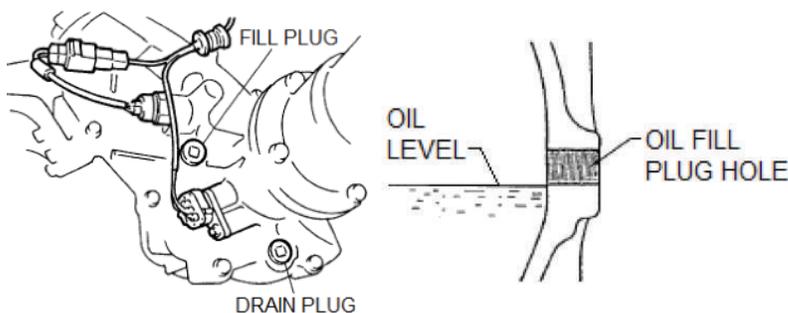
STEP 55

Reconnect the 4WD switch connector and the VSS connector. Secure the wiring harness to the transfer case using the harness clamp.



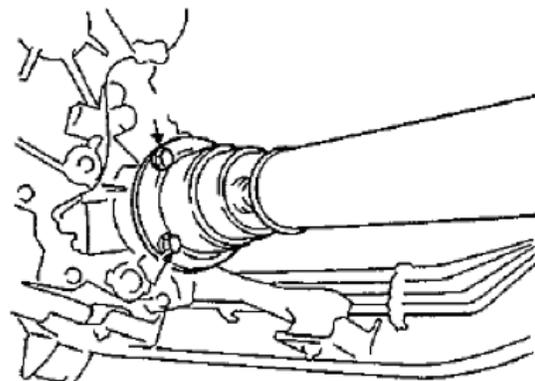
STEP 56

Reinstall the drain plug and torque to 17 ft-lbs (23 N-m). Fill the transfer case with API GL-4 75W-90 gear oil or the gear oil recommended in your Owner's Manual. Fill the transfer case until the oil level reaches the bottom of the oil fill plug hole. Reinstall the fill plug and torque to 17 ft-lbs (23 N-m).



STEP 57

Reinstall the rear driveline to the rear output flange using the nuts and bolts removed in Step 5. Torque to 36.5 ft-lbs (50 N-m). Repeat for the front drivelines

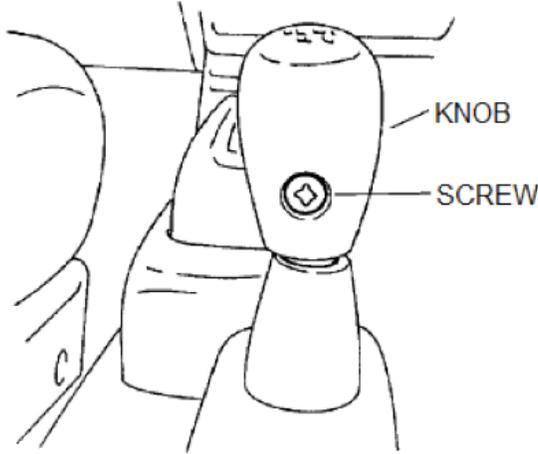


INSTALL INSTRUCTIONS (CONT'D.)



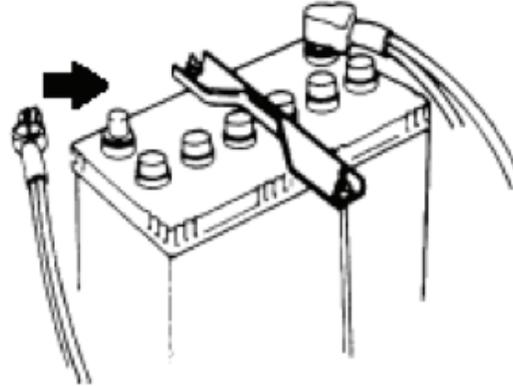
STEP 58

Reinstall the shift knob onto the shifter shaft using the screw removed in Step 2



STEP 59

Reconnect the negative (-) terminal to the battery and close the hood.



STEP 60

Lower the vehicle. Verify all bolts have been reinstalled and torqued. Verify all wiring plugs 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 and add gear oil if needed. After the first 10 miles of driving, recheck the gear oil level and top off as needed.

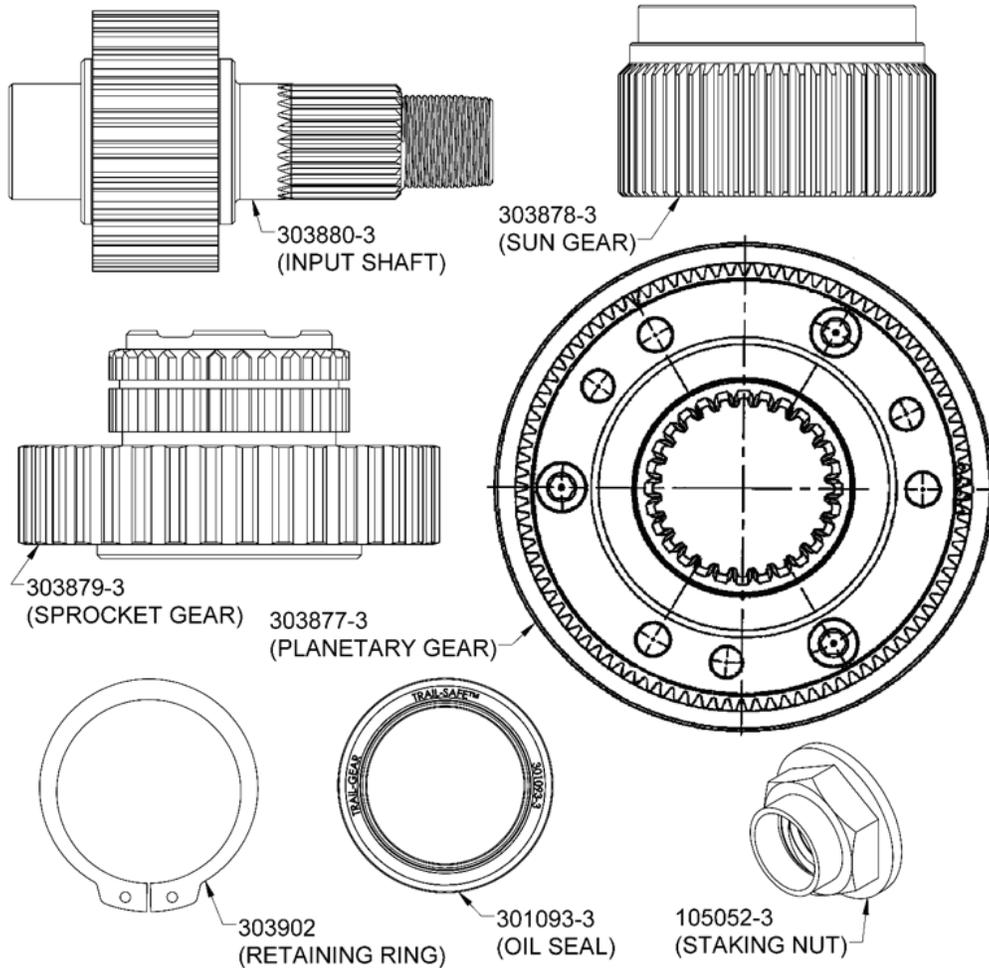
MAINTENANCE

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. Also check the gear oil level whenever the vehicle rolls over, as gear oil may leak out.

INSTALL INSTRUCTIONS (CONT'D.)



REPLACEMENT PARTS



181004