

INSTALL INSTRUCTIONS

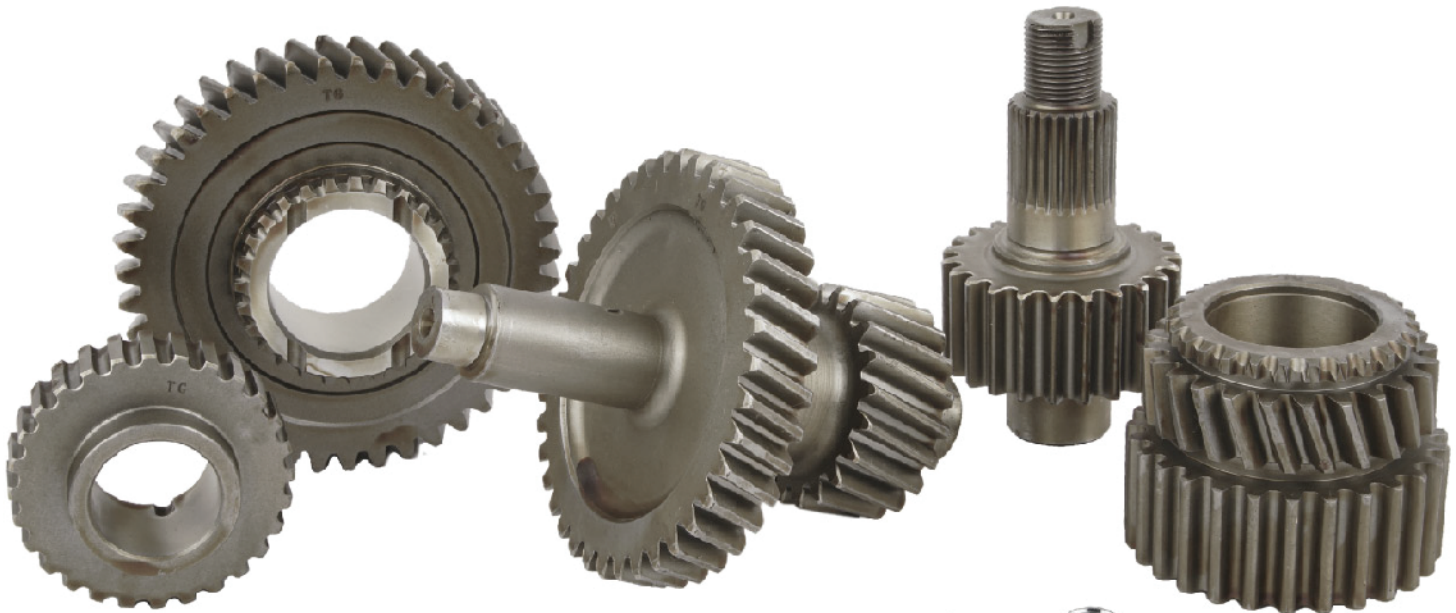


SUZUKI JIMNY ELECTRIC/PUSH-BUTTON TRANSFER CASE GEARS

304088-3-KIT (17% HIGH RANGE REDUCTION, 87% LOW RANGE REDUCTION)

TGI-308359 (15% HIGH RANGE REDUCTION, 104% LOW RANGE REDUCTION, AUTOMATIC TRANSMISSION)

KIT CONTENTS



INCLUDED



Note for 304088-3-KIT only: If your Jimny has an automatic transmission, you will need to replace your transfer case chain with Suzuki t-case chain P/N 29225-84A00 (not included).

Speedo gear is calibrated for 29"-30" [736-762mm] tire sizes. If you have a different tire size, your speedometer may not be accurate.

Note for TGI-308359 only: Speedo gear not included.

304505-3-INS



RECOMMENDED TOOLS

Safety Glasses	Ball Peen Hammer
Rubber Mallet	Flat Head Screwdriver
Metric Ratchet & Socket Set	Metric Wrench Set
Die Grinder or Angle Grinder	Floor Jack
Snap Ring Pliers	Transmission Jack
Jack Stands	Razor Blade or Gasket Scraper
Arbor Press	Seal/Bearing Driver Set
Seal Puller	Bearing Splitter
Torque Wrench	Allen Wrench Set
Wheel Bearing Grease	Drift Punch
Drain Pan	Degreasing Compound (e.g. Brake Cleaner)
Threadlocking Compound (Loctite 242 or equivalent)	Large Adjustable Pin Wrench (Suzuki P/N 09930-40113 or equivalent)
API GL4 SAE 75W-90 Gear Oil (Approximately 1.2 quarts/1.13 L)	Case Separator Tool (Suzuki P/N 09912-34510 or equivalent)
Pin or Alignment Punch (Suzuki P/N 09922-89810 or equivalent)	



INSTALL INSTRUCTIONS (CONT'D.)



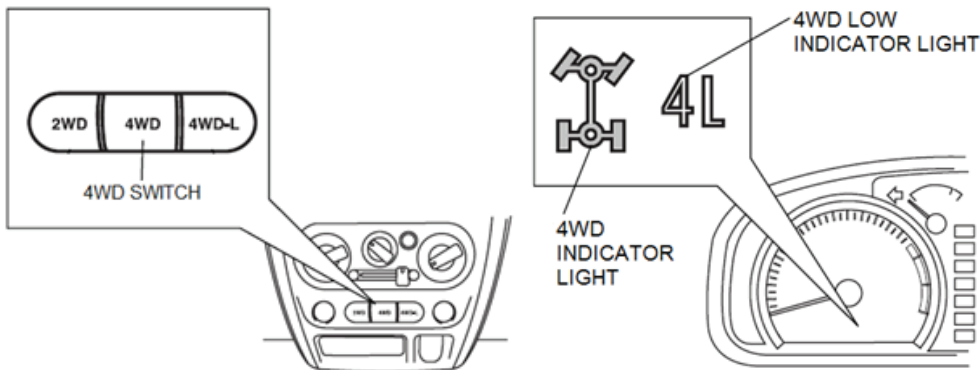
CAUTION

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 vehicles. Some vehicles may vary. If necessary, refer to the proper Suzuki Factory Service Manual for the year and model of your vehicle.

	CAUTION Flying Object Hazard. Fluid Splash Hazard. Wear safety glasses at all times when working on vehicle.		NOTICE Read instructions completely before installing this product. Refer back to the instructions frequently during installation.
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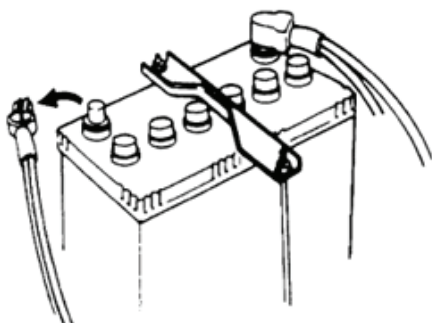
STEP 1

Press the 4WD switch to put the transfer case in 4WD high. The 4WD indicator light should be lit, and the 4WD Low indicator light should be off.



STEP 2

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

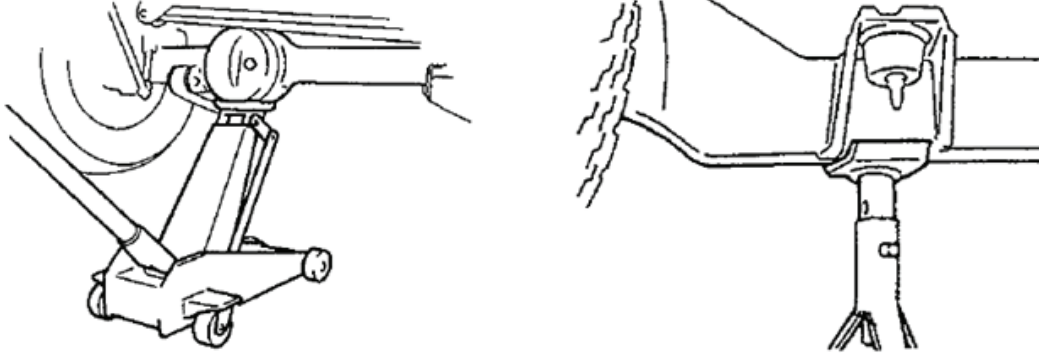


INSTALL INSTRUCTIONS (CONT'D.)



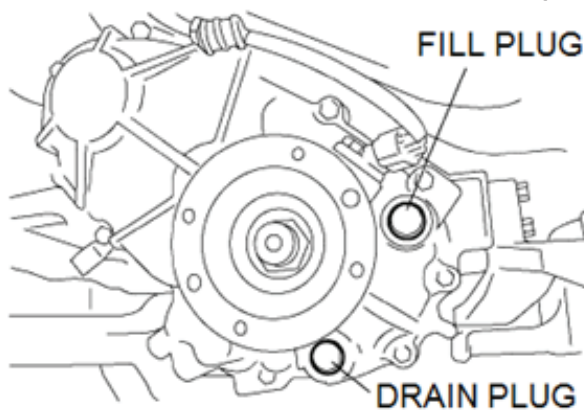
STEP 3

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.



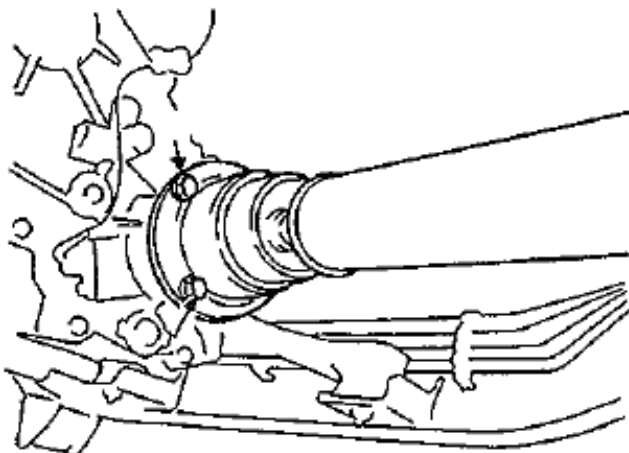
STEP 4

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 driveline u-joint. Repeat for the front drivelines.

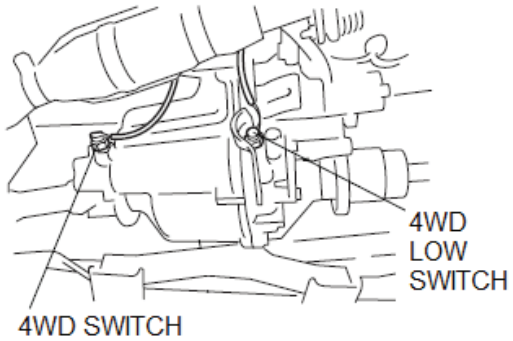


INSTALL INSTRUCTIONS (CONT'D.)



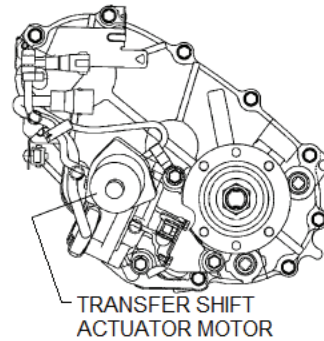
STEP 6

Disconnect the 4WD switch connector (gray) and the 4WD low switch connector (white).



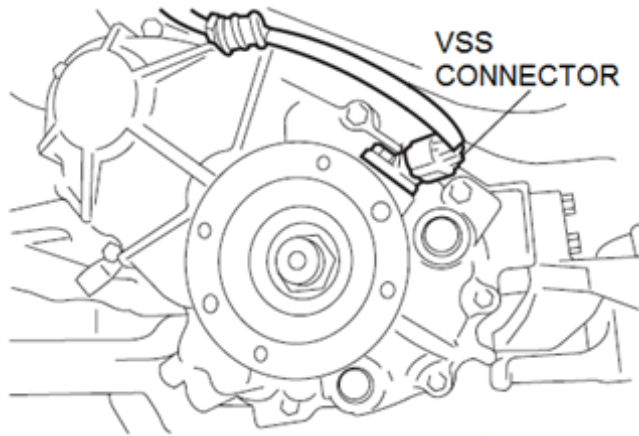
STEP 7

Disconnect the transfer shift actuator motor connector and unclamp the harness.



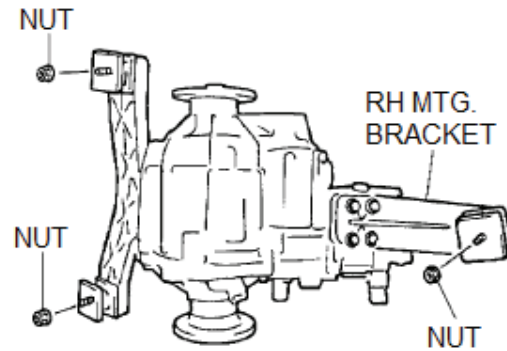
STEP 8

Disconnect the Vehicle Speed Sensor (VSS) connector.



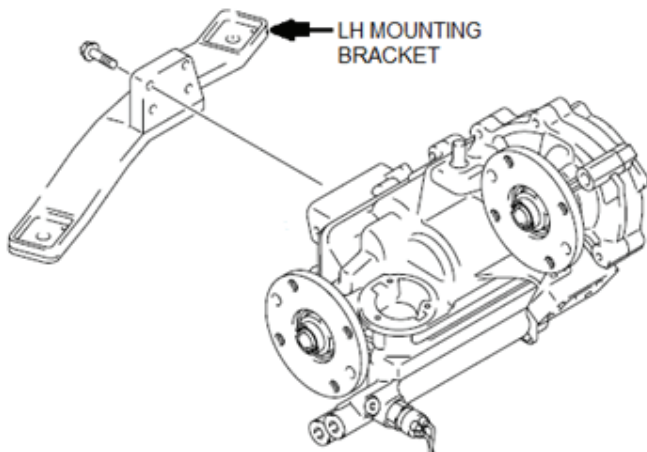
STEP 9

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.



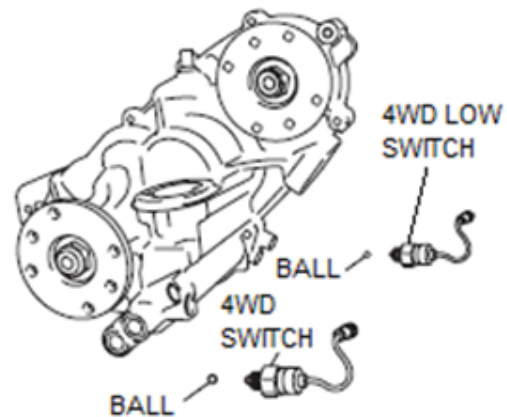
STEP 10

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 11

Remove the 4WD switch & 4WD Low switch from the transfer case. Using a magnetic removal tool, remove the (2) steel balls from the transfer case. Save the switches and steel balls for reinstallation.

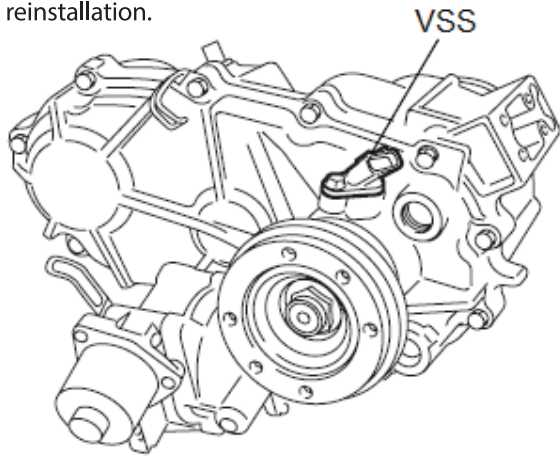


INSTALL INSTRUCTIONS (CONT'D.)



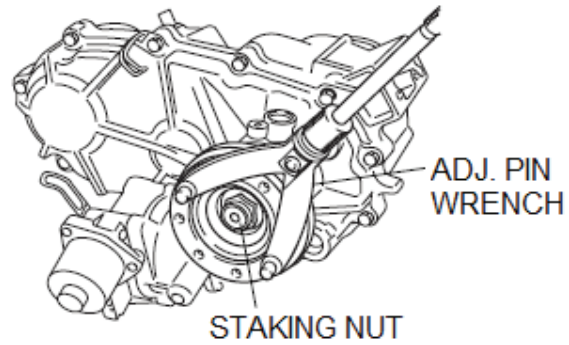
STEP 12

Remove the VSS from the transfer case. Save the VSS for reinstallation.



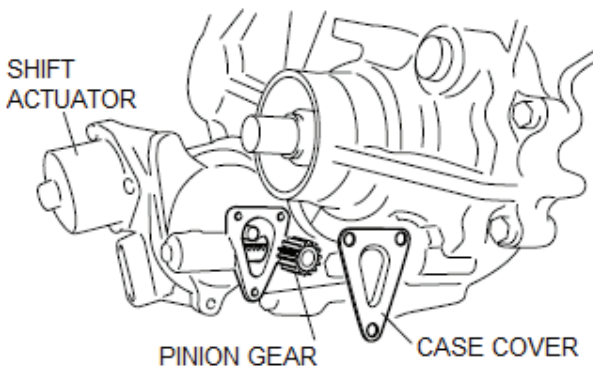
STEP 13

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.



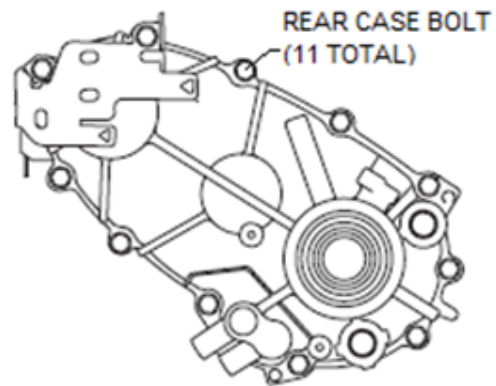
STEP 14

Remove the case cover and pinion gear. Then remove the transfer shift actuator. Save all parts for reinstallation.



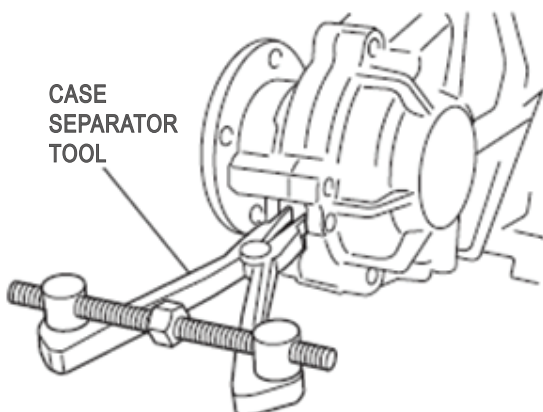
STEP 15

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



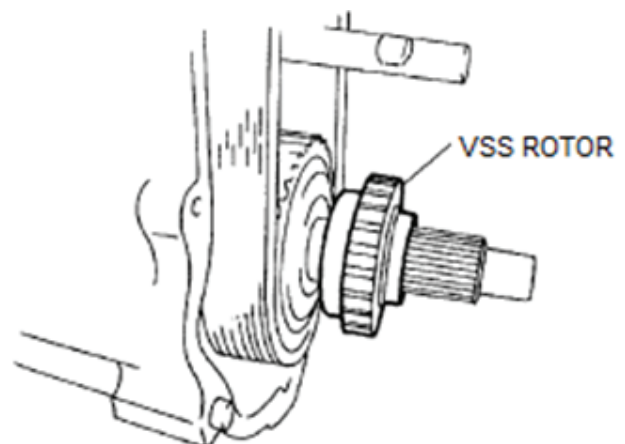
STEP 16

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 17

Remove the VSS rotor and steel ball. Discard the stock VSS rotor (304088-3-KIT only). Save the steel ball for reinstallation.

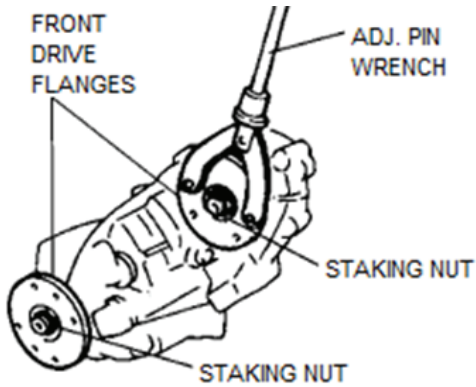


INSTALL INSTRUCTIONS (CONT'D.)



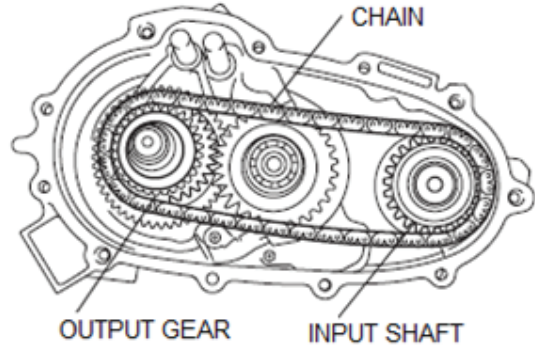
STEP 18

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.



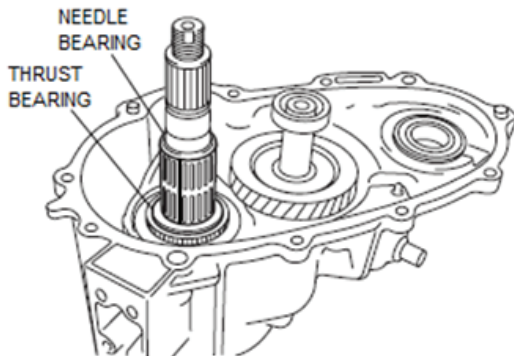
STEP 19

Remove the drive chain, input shaft, and sprocket output gear. Discard the sprocket output gear. Retain all other parts for reinstallation.



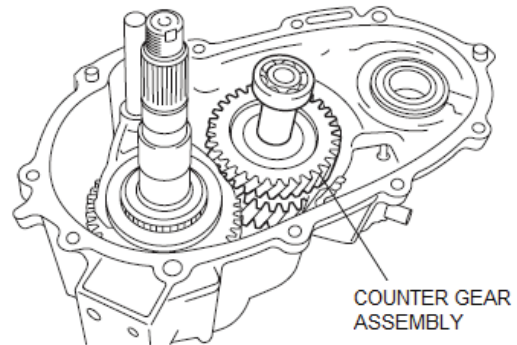
STEP 20

Remove the needle roller bearings and thrust bearing. Retain all parts for reinstallation.



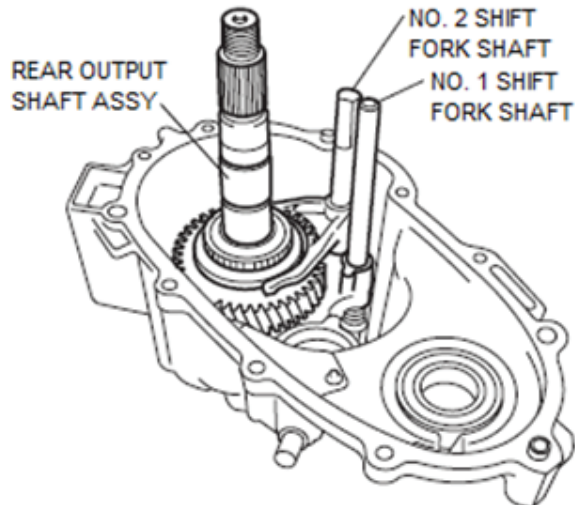
STEP 21

Remove the counter gear assembly from the front case. Retain all parts for reinstallation.



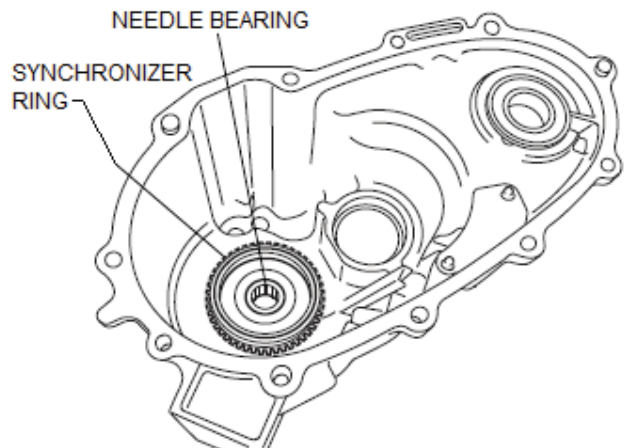
STEP 22

Remove the rear output shaft assembly and both shift fork shafts. All (3) items must be removed together. Retain all parts for reinstallation.



STEP 23

Remove the needle roller bearing and synchronizer ring from the front case. Retain all parts for reinstallation.

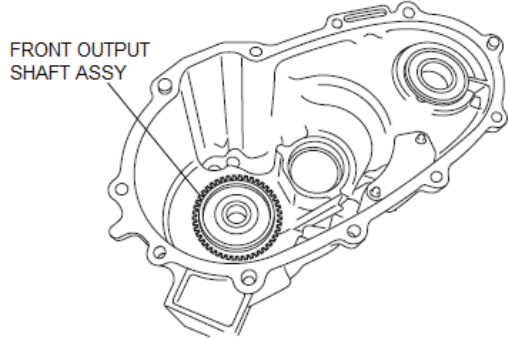


INSTALL INSTRUCTIONS (CONT'D.)



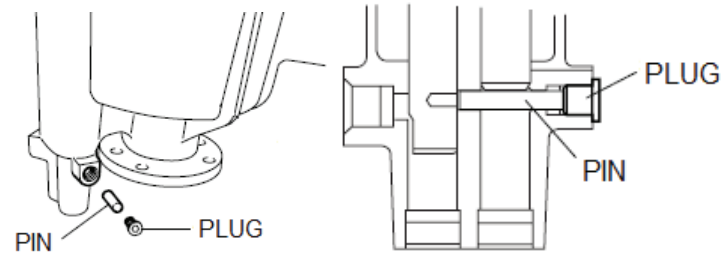
STEP 24

Remove the front output shaft assembly from the front case. Retain all parts for reinstallation.



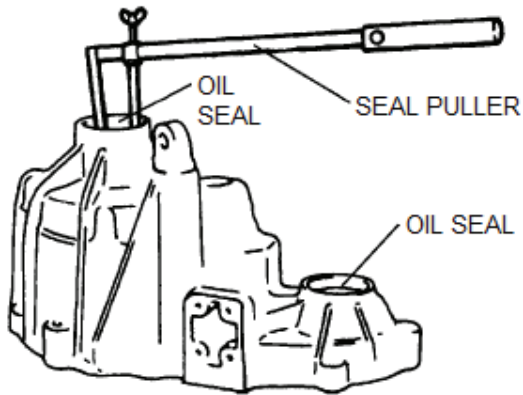
STEP 25

Remove the plug and pin from the front case. Retain all parts for reinstallation.



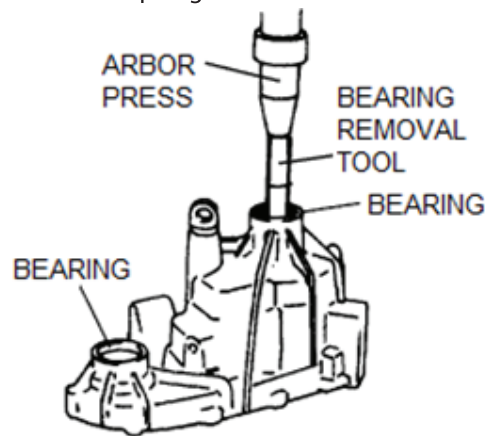
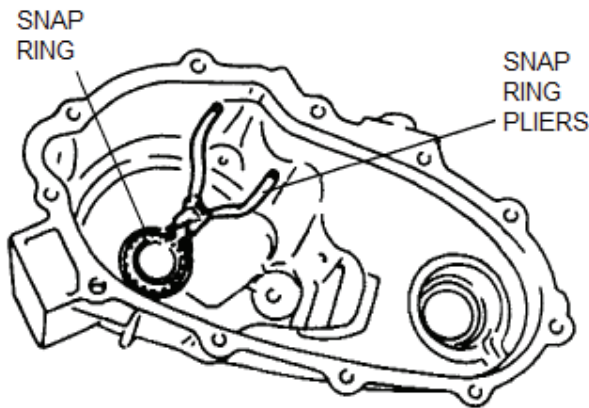
STEP 26

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



STEP 27

Using snap ring pliers, remove the bearing retention snap ring from the front case. Remove both bearings from the front case using a bearing removal tool and an arbor press. Retain the snap ring for reinstallation.

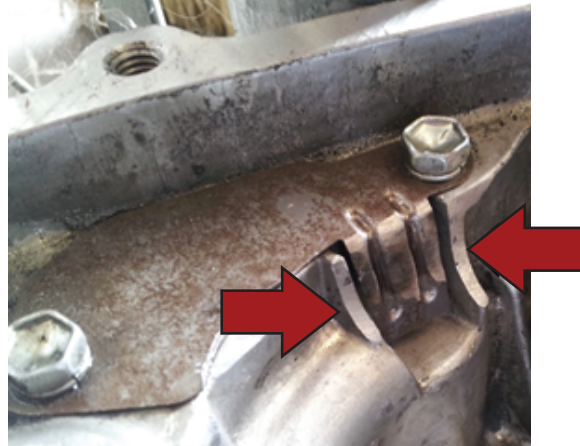
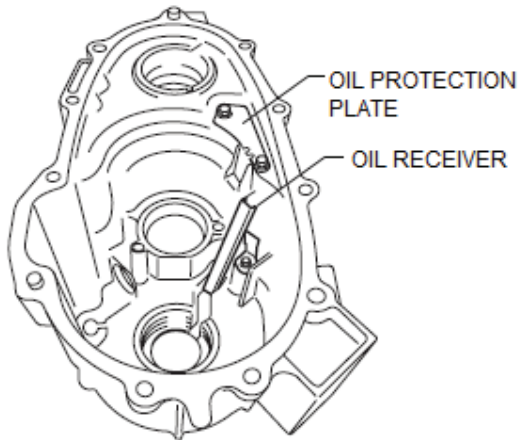


INSTALL INSTRUCTIONS (CONT'D.)



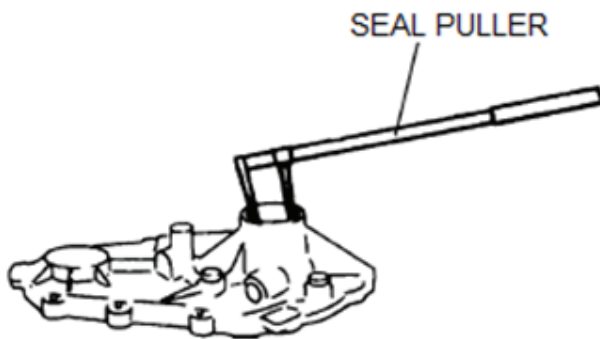
STEP 28

Using a die grinder or an angle grinder, clearance the gussets in the front case in the area between the oil protection plate and the oil receiver. After clearancing, the gussets should be almost completely removed as shown in the photograph below. Make sure to clean the case thoroughly after cutting to remove all metal chips and particles.



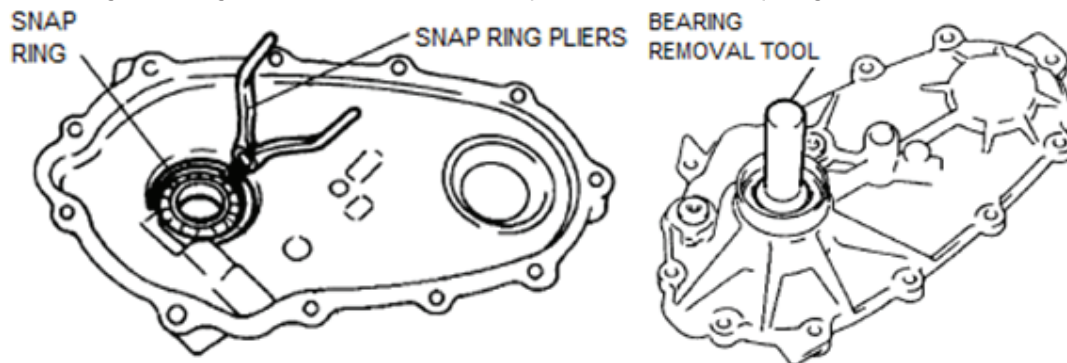
STEP 29

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



STEP 30

Using snap ring pliers, remove the bearing retention snap ring from the rear case. Remove the bearing from the rear case using a bearing removal tool and an arbor press. Retain the snap ring for reinstallation.

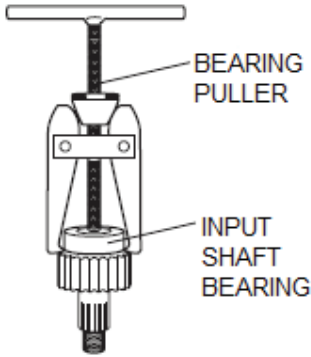


INSTALL INSTRUCTIONS (CONT'D.)



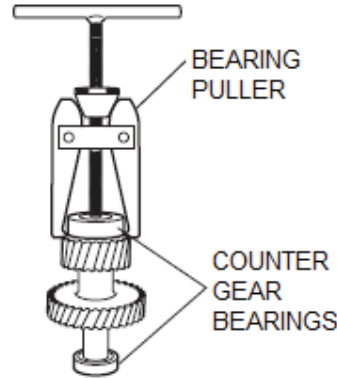
STEP 31

Using a bearing puller, remove the bearing from the input shaft. Discard the input shaft and save the bearing for reinstallation.



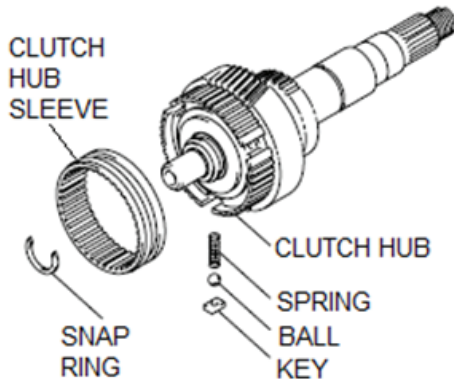
STEP 32

Using a bearing puller, remove the bearings from the counter gear. Discard the counter gear and save the bearings for reinstallation.



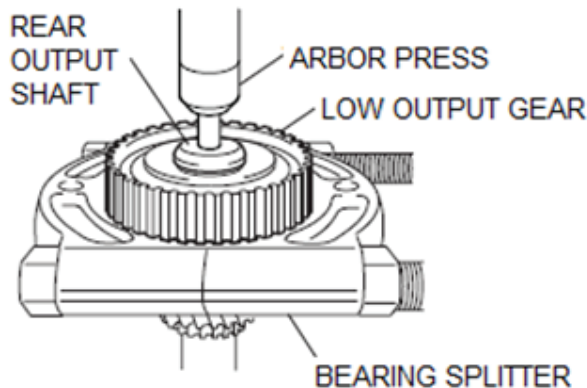
STEP 33

Remove the clutch hub sleeve from the drive clutch hub gradually while holding down the steel balls in order to prevent the steel balls and springs from flying out. Using snap ring pliers, remove the snap ring from the rear output shaft. Save all components for reinstallation.



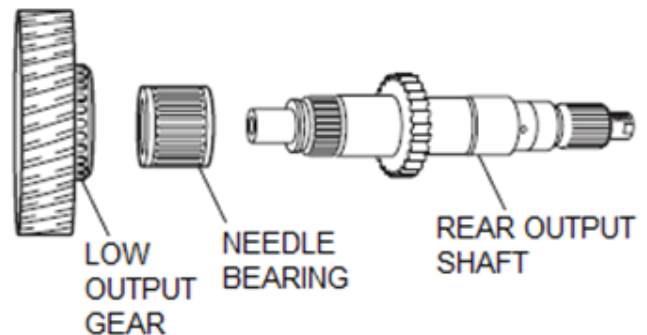
STEP 34

Press off the low output gear from the rear output shaft using a bearing splitter and an arbor press.



STEP 35

Remove the low output gear and needle bearing from the rear output shaft. Discard the low output gear. Save all other components for reinstallation.



INSTALL INSTRUCTIONS (CONT'D.)

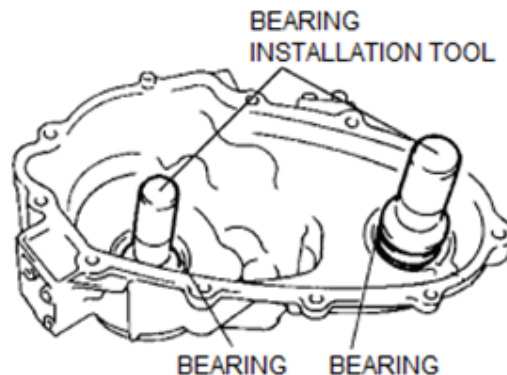


STEP 36

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.

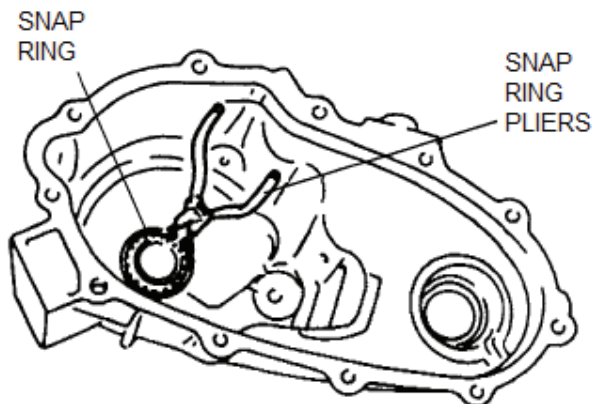
STEP 37

Using a bearing installer, reinstall the (2) bearings removed in Step 27 into the front case.



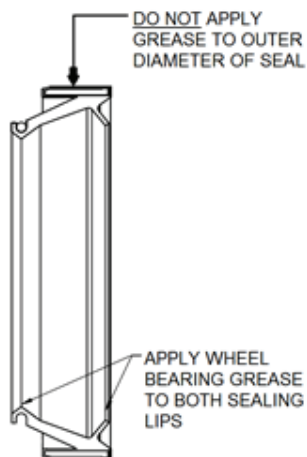
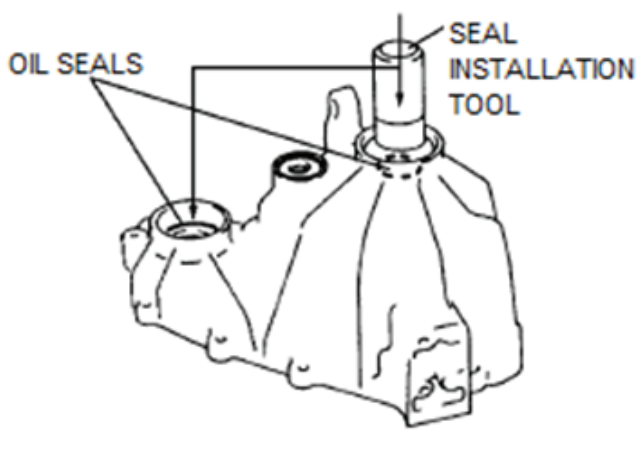
STEP 38

Using snap ring pliers, reinstall the snap ring removed in Step 27 into the front case.



STEP 39

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.

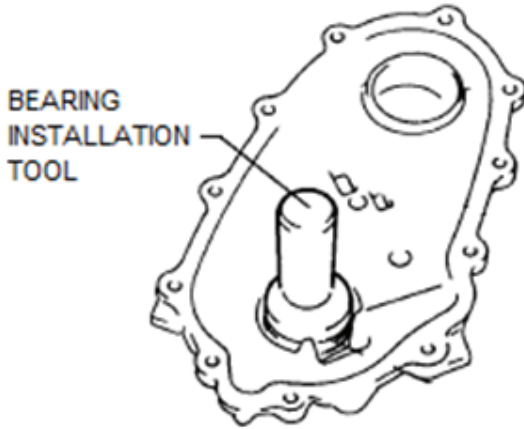


INSTALL INSTRUCTIONS (CONT'D.)



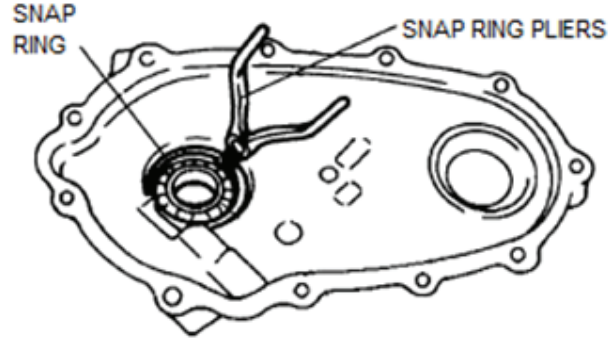
STEP 40

Using a bearing installer, reinstall the bearing removed in Step 30 into the rear case.



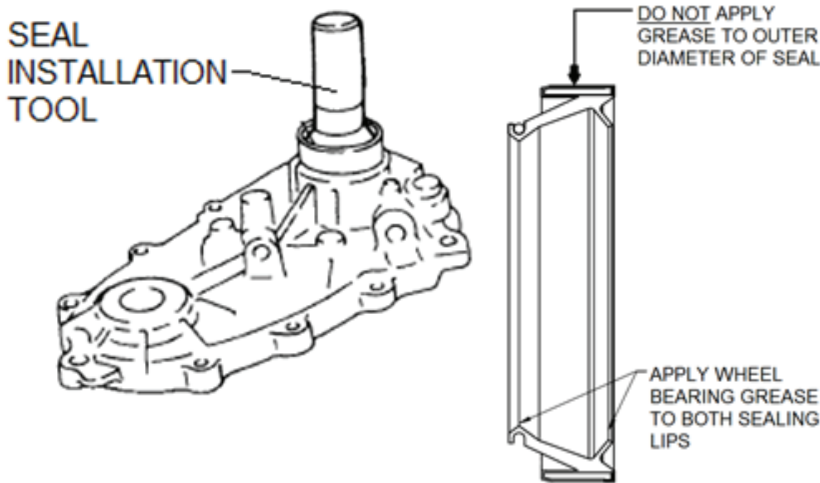
STEP 41

Using snap ring pliers, reinstall the snap ring removed in Step 30 into the rear case.



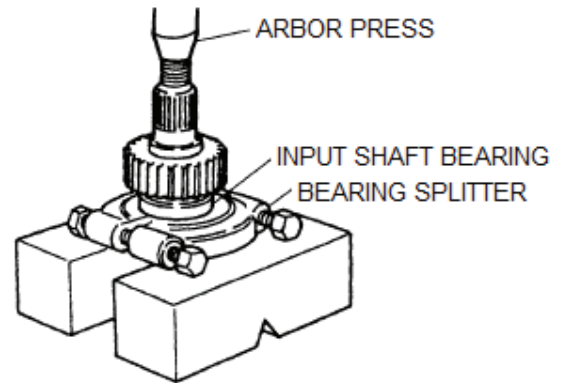
STEP 42

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



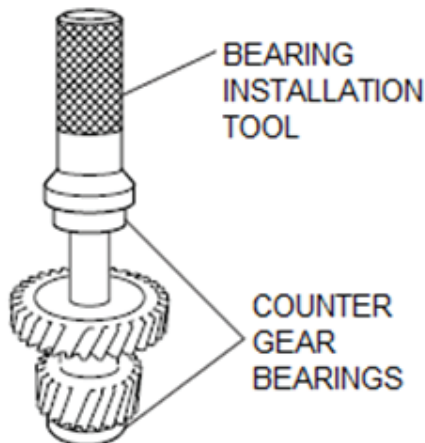
STEP 43

Using an arbor press and bearing splitter, press-fit the input bearing removed in Step 31 onto the new input shaft provided in this kit. 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 44

Using an arbor press and a bearing installation tool, press-fit the counter gear bearings removed in Step 32 onto the new counter gear provided in this kit. 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.

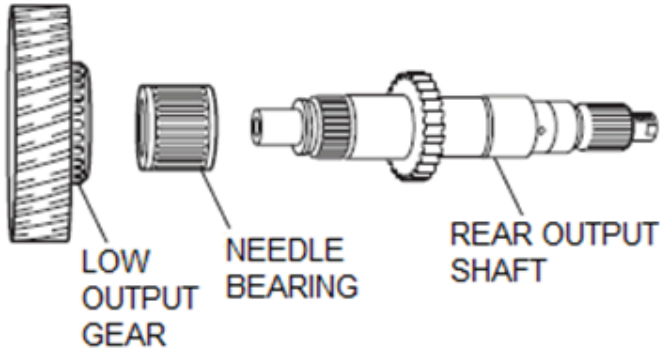


INSTALL INSTRUCTIONS (CONT'D.)



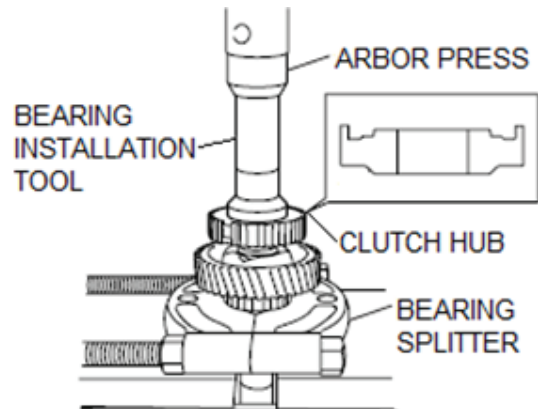
STEP 45

Install the new low output gear provided in this kit and the needle bearing removed in Step 35 onto the rear output shaft.



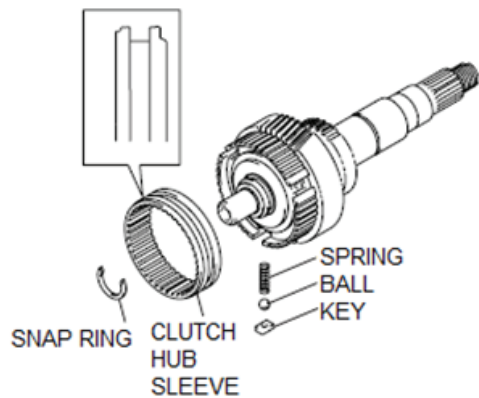
STEP 46

Press-fit the front drive clutch hub onto the rear output shaft using an arbor press and a bearing installation tool. Make sure to install the front drive clutch hub in the proper orientation as shown in the image below. Make sure to support the low output gear with the flat side of the bearing splitter to avoid damage to the gear teeth.



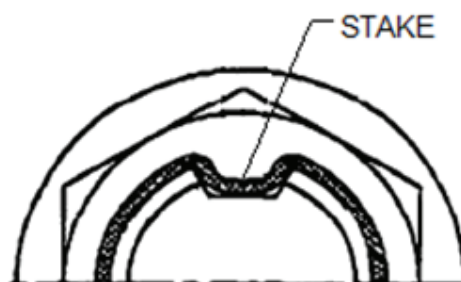
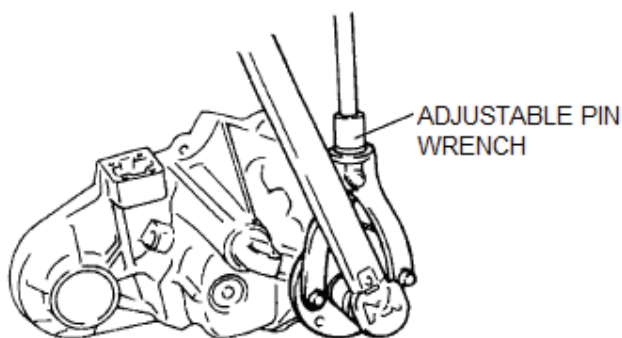
STEP 47

Install the front drive clutch hub sleeve onto the front drive clutch hub, then reinstall the springs, steel balls, and keys removed in Step 33. Make sure to install the front drive clutch hub sleeve in the proper orientation as shown in the image below. Reinstall the snap ring using snap ring pliers. Make sure each gear moves smoothly after assembly.



STEP 48

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 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.

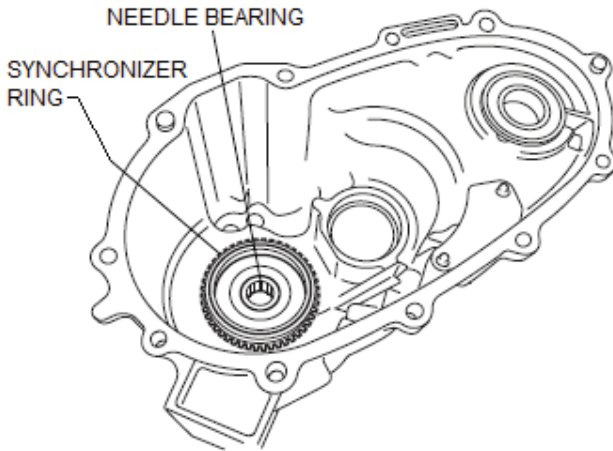


INSTALL INSTRUCTIONS (CONT'D.)



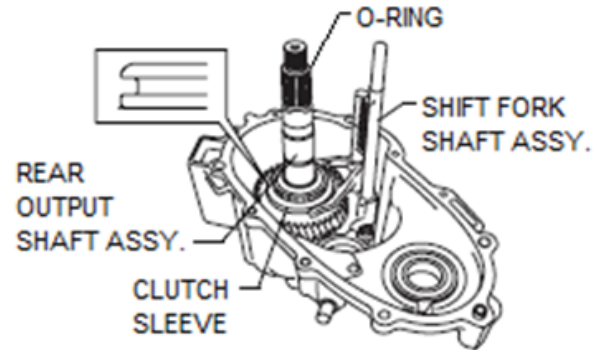
STEP 49

Apply gear oil to the needle bearing and the synchronizer ring. Install both onto the front output shaft.



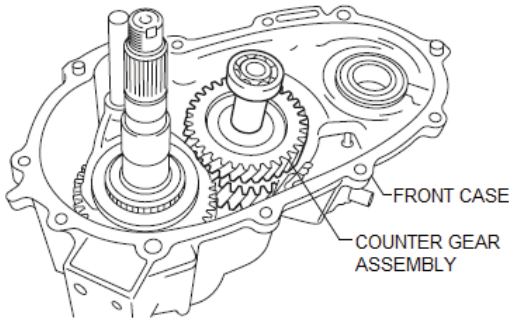
STEP 50

Assemble the rear output shaft assembly, shift fork shaft assembly, and reduction clutch sleeve together. Make sure the clutch sleeve is installed in the proper orientation as shown below. Install them into the front case. Apply wheel bearing grease to the output shaft O-ring and install the O-ring onto the rear output shaft.



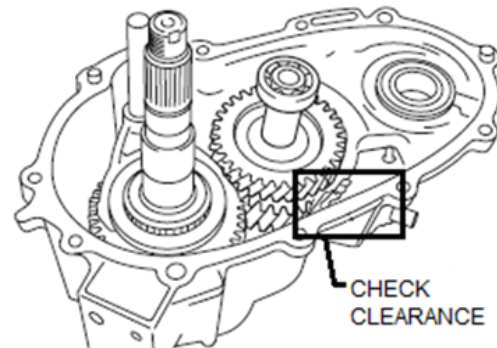
STEP 51

Reinstall the counter gear assembly into the front case.



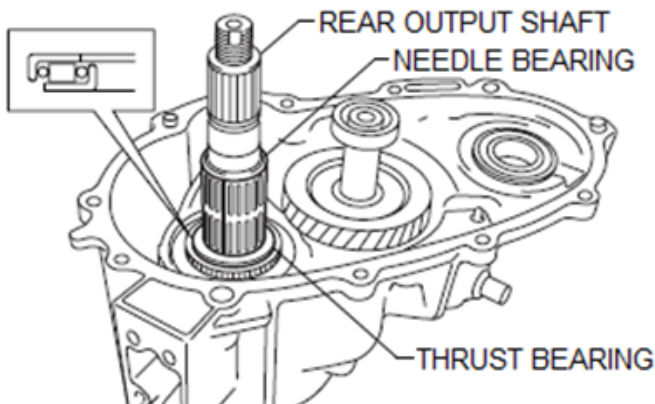
STEP 52

Verify that the new counter gear does not hit the transfer case. If there is not enough clearance, go back to Step 28 and clearance as needed.



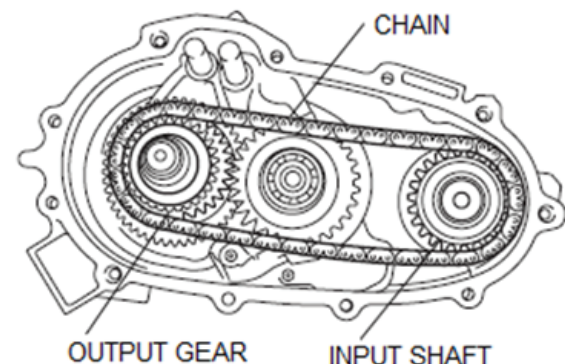
STEP 53

Apply gear oil to the thrust bearing and needle roller bearing. Install them onto the rear output shaft as shown. Make sure to install the thrust bearing in the correct orientation as shown below.



STEP 54

Install the input shaft assembly, chain, and the new sprocket gear provided in this kit onto the front case as a single assembly.

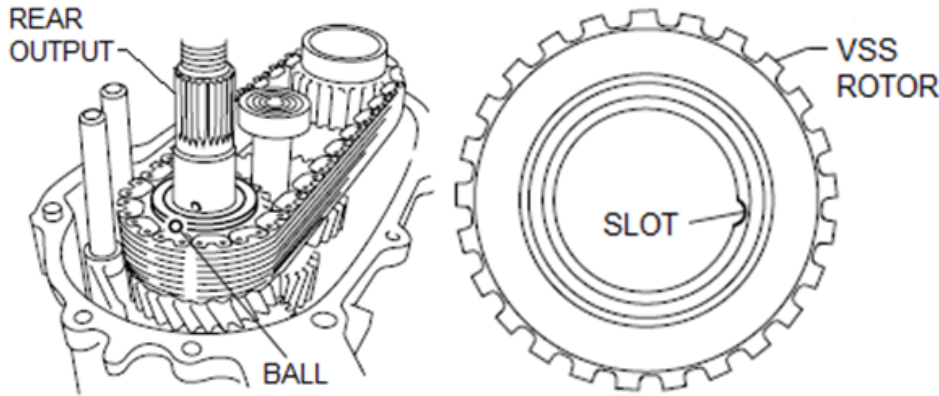


INSTALL INSTRUCTIONS (CONT'D.)



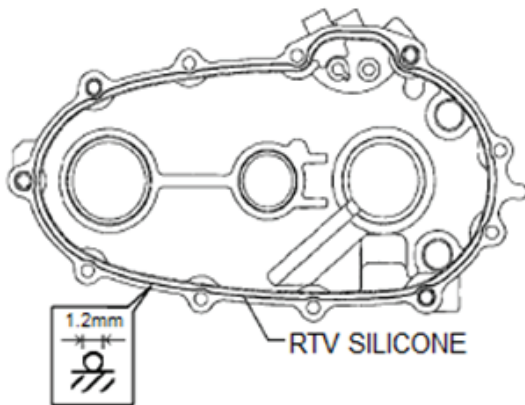
STEP 55

Reinstall the steel ball onto the rear output shaft. If you have purchased 304088-3-KIT, install the new VSS rotor provided in this kit onto the rear output shaft. Otherwise, reinstall the stock VSS rotor. Make sure to align the slot in the VSS rotor with the steel ball. Make sure the VSS rotor will rotate with the rear output shaft.



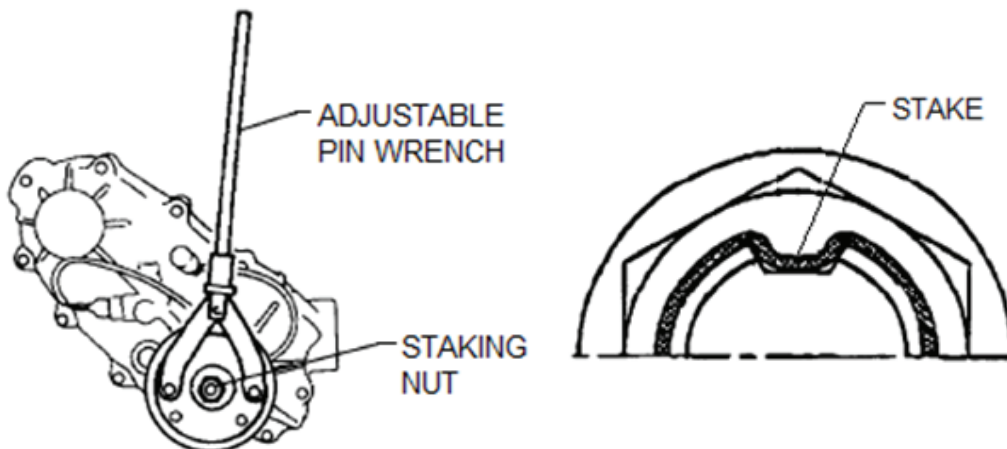
STEP 56

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 57

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 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.

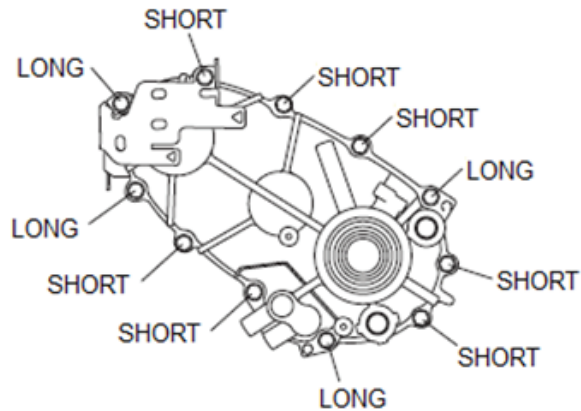


INSTALL INSTRUCTIONS (CONT'D.)



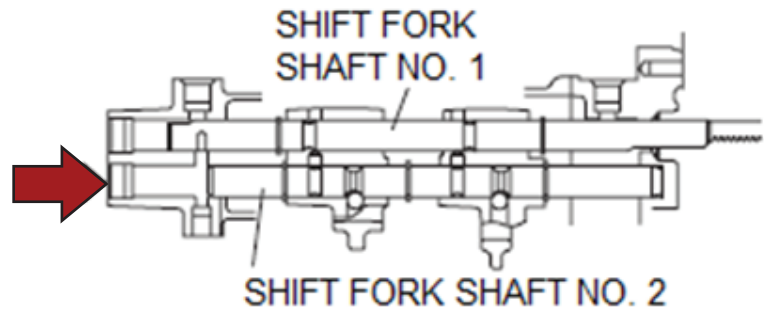
STEP 58

Reinstall the transfer case bolts. Note the location of the long and short bolts. Torque each bolt to 13 ft-lbs (18 N-m).



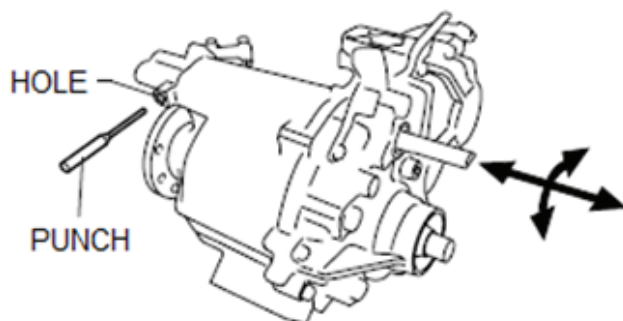
STEP 59

Set the No. 2 shift fork in the 4H position by pushing it in the direction shown.



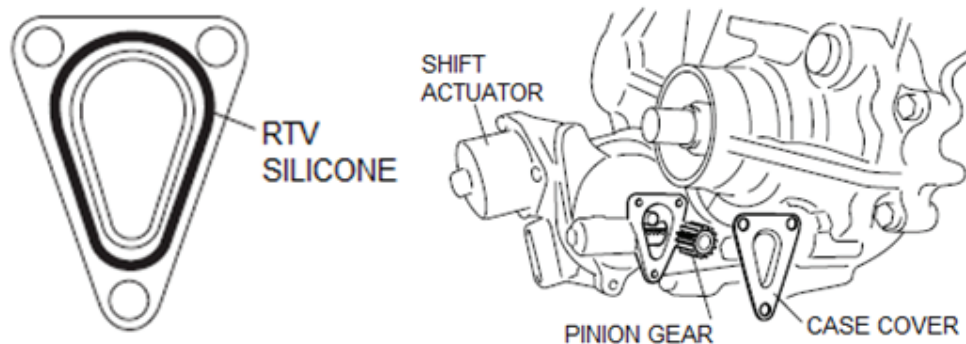
STEP 60

Insert a drift or alignment punch into the hole in the transfer case to hold shift fork shaft No. 1 in place. Move the shaft in the directions shown below while pushing on the punch to find the hole in the shaft.



STEP 61

Make sure the transfer shift actuator is in the 4H position. Reinstall the transfer shift actuator onto the transfer case. Reinstall the pinion gear. Clean the mating surfaces of the shift actuator and the case cover with a degreasing solvent. Apply a bead of the RTV silicone included with this kit neatly and evenly on the mating surface of the case cover. The bead should be about 0.05" (1.2mm) in diameter. Reinstall the (3) case cover bolts and tighten the bolts to 14.5 ft-lbs (20 N-m).

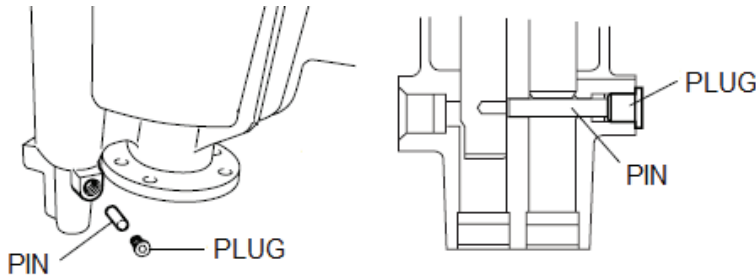


INSTALL INSTRUCTIONS (CONT'D.)



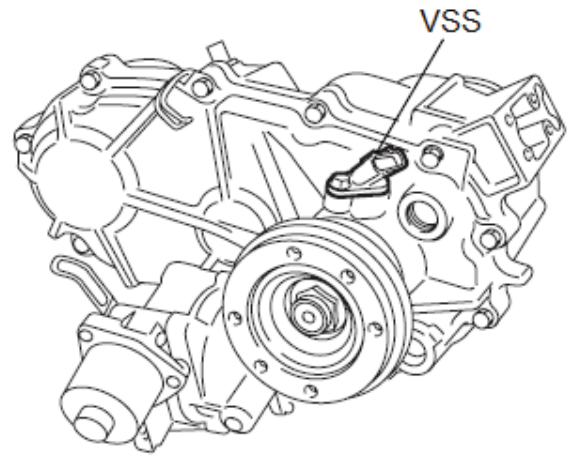
STEP 62

Remove the alignment punch from the transfer case. Reinstall the straight pin and the straight pin plug. Torque the straight pin plug to 18 ft-lbs (25 N-m).



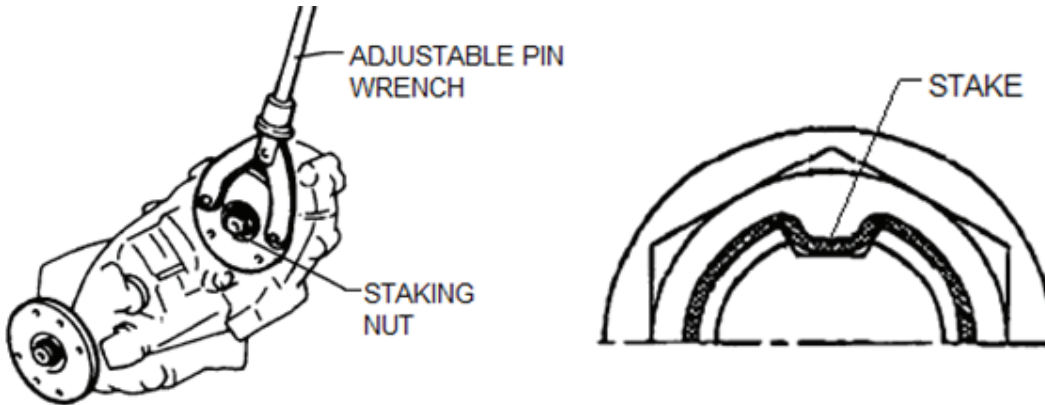
STEP 63

Reinstall the VSS onto the transfer case. Torque the bolts to 3.5 ft-lbs (5 N-m).



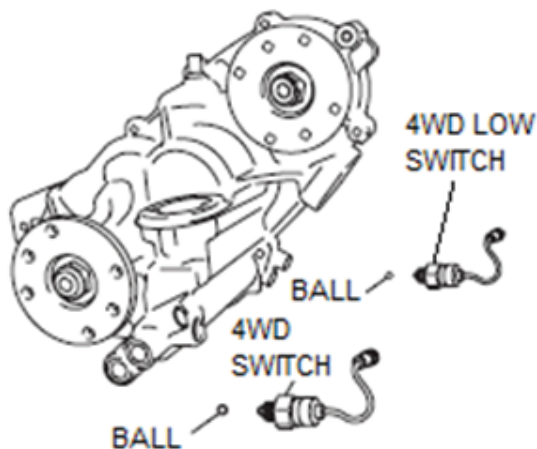
STEP 64

Install 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.



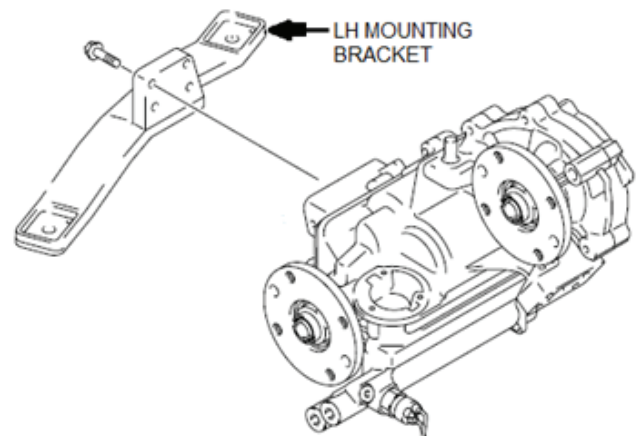
STEP 65

Reinstall the steel balls into the transfer case, then reinstall the 4WD switch and the 4WD low switch. Torque both switches to 14 ft-lbs (19 N-m).



STEP 66

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).

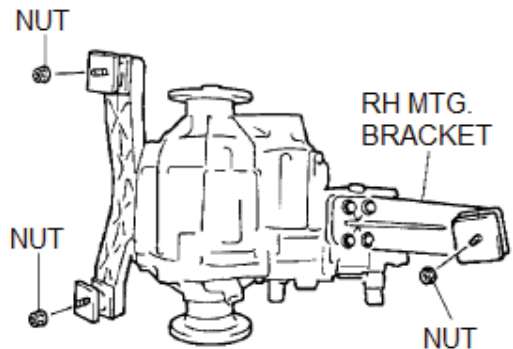


INSTALL INSTRUCTIONS (CONT'D.)



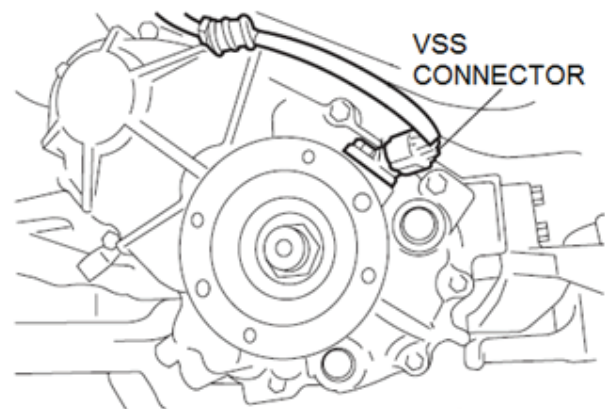
STEP 67

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 9. Torque each nut to 22 ft-lbs (30 N-m).



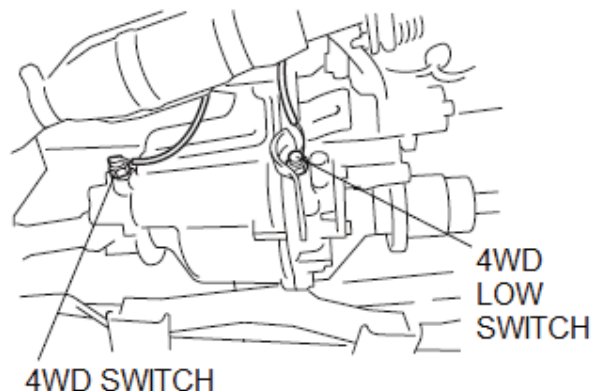
STEP 68

Plug the VSS connector onto the VSS.



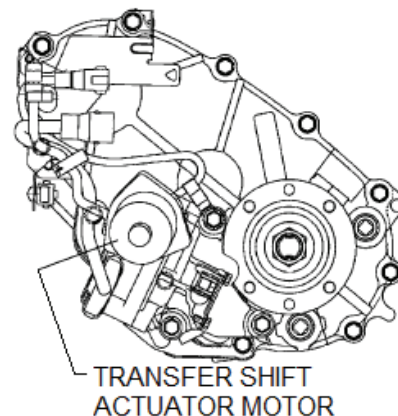
STEP 69

Reconnect the 4WD switch connector (gray) and the 4WD low switch connector (white).



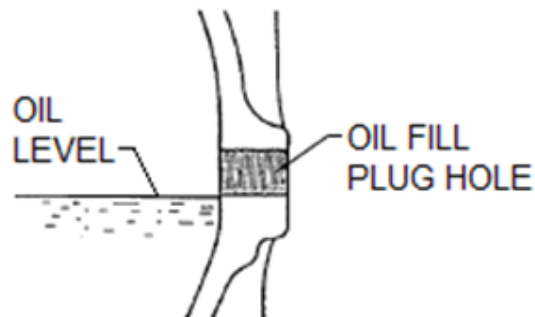
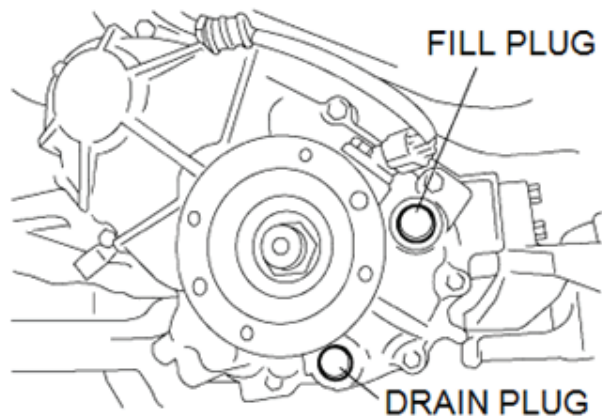
STEP 70

Clamp the transfer shift actuator motor harness onto the transfer case. Reconnect the transfer case actuator connector to the transfer shift actuator motor.



STEP 71

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).

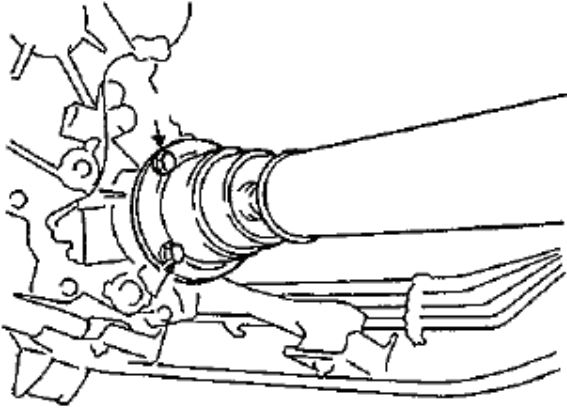


INSTALL INSTRUCTIONS (CONT'D.)



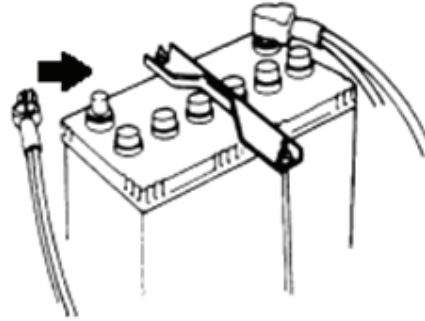
STEP 72

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.



STEP 73

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



STEP 74

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.

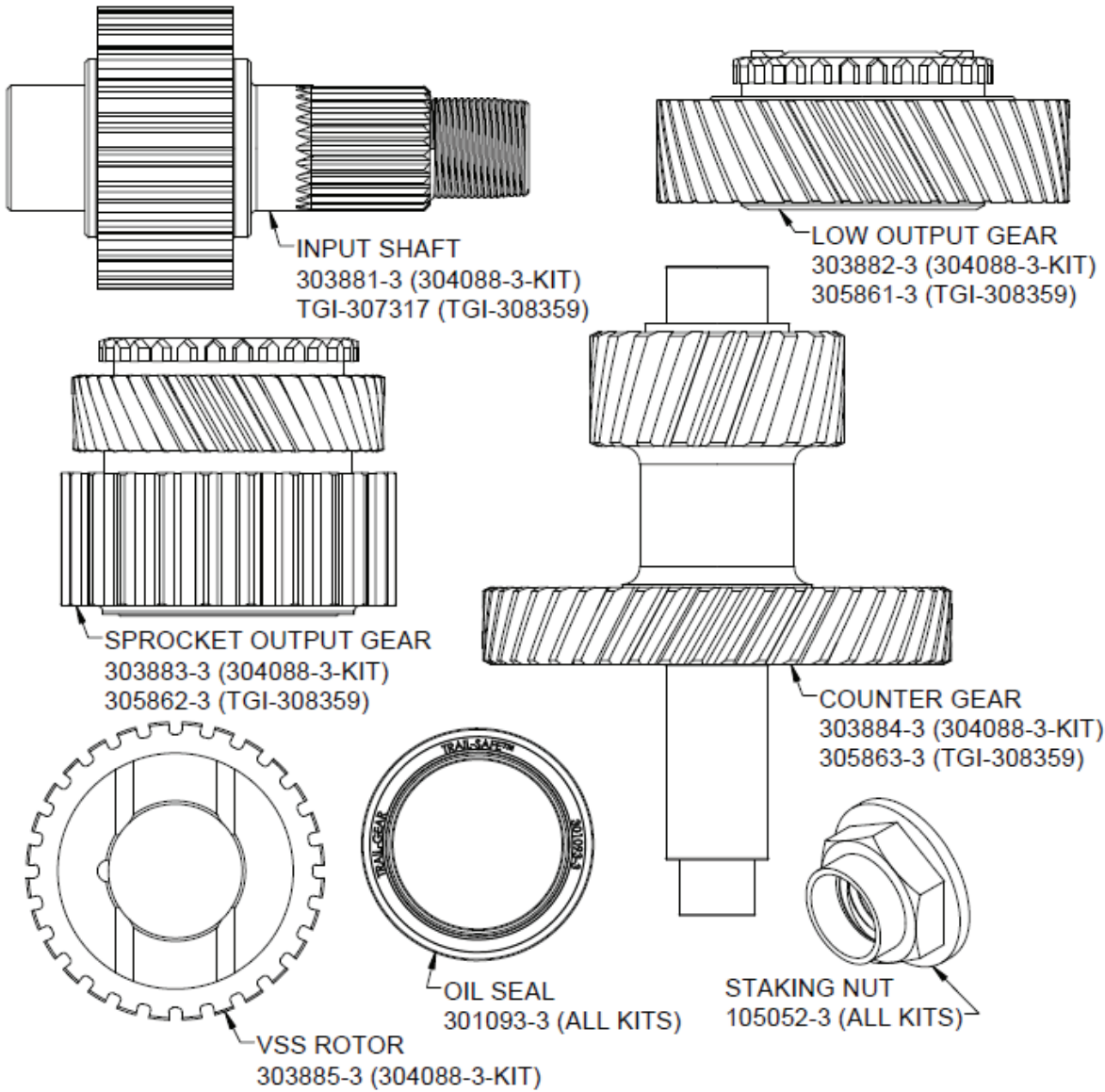
MAINTENANCE

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