

# INSTALL INSTRUCTIONS



## TRAIL-CREEPER SUZUKI SAMURAI T-CASE GEARS

303760-3-KIT	1986-1995 SUZUKI SAMURAI 4WD (4.16:1)
303761-3-KIT	1986-1995 SUZUKI SAMURAI 4WD (4.90:1)
105004-3-KIT	1986-1995 SUZUKI SAMURAI 4WD (6.50:1)
303924-3-KIT	SUZUKI JIMNY JA11/JA12/JA71 (4.16:1)
303925-3-KIT	SUZUKI JIMNY JA11/JA12/JA71 (4.90:1)

## KIT CONTENTS



Part Number: 105004-3-KIT



Part Number: 303760-3-KIT & 303761-3-KIT



Part Number: 303924-3-KIT & 303925-3-KIT

**105004-3-INS**

## RECOMMENDED TOOLS

Screwdriver	Wheel Bearing Grease
Ball Peen Hammer	Ultra Grey RTV Silicone
Rubber Mallet	Razor Blade or Gasket Scraper
Safety Glasses	Degreasing Compound (e.g. Brake Cleaner)
Metric Ratchet & Socket Set	Torque Wrench
Metric Wrench Set	Allen Wrench Set
3/16" Pin Punch	Adjustable Wrench
Die Grinder	API GL5 SAE 75W-90 Gear Oil (Approx. 1 quart)
Snap Ring Pliers	Transmission Jack
Arbor Press	Needle Nose Pliers
Seal Driver	

## 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 Suzuki Samurai vehicles. 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.)



In these instructions, we refer to the different transfer case housing sections by name. The photo below shows each of the housing and it's name.



Rear Housing



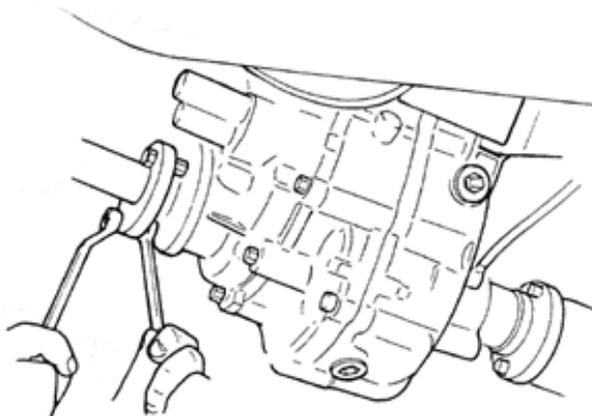
Center Housing



Front Housing

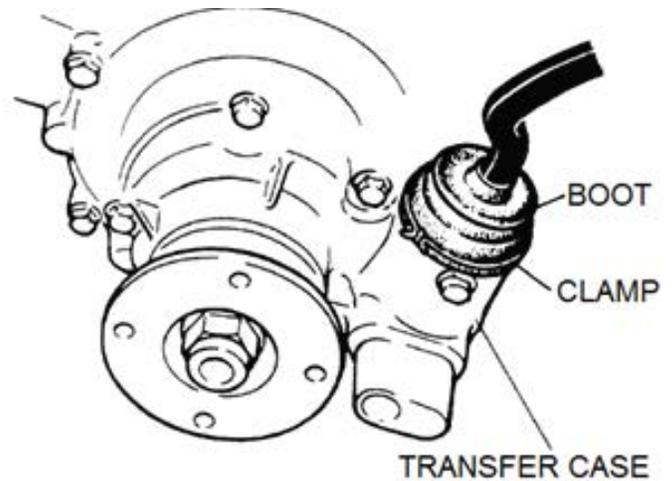
## STEP 1

Loosen and remove the (4) bolts and nuts from each of the (3) driveline flanges on the transfer case. Save the (12) bolts and nuts from the transfer case.



## STEP 2

Remove the clamp and boot from the transfer case. Save for reinstallation.



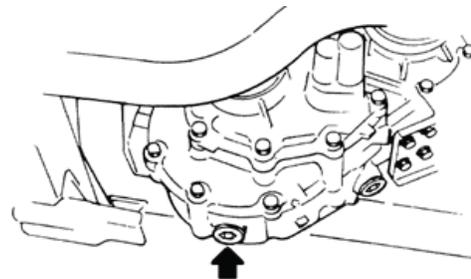
## STEP 3

Remove the control lever from the transfer case by twisting the control lever guide counterclockwise while pushing it down. Save for reinstallation.



## STEP 4

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.



	<b>NOTICE</b> Dispose of used gear oil in accordance with all local laws.
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# INSTALL INSTRUCTIONS (CONT'D.)



## STEP 5

Disconnect the speedometer drive cable from the transfer case.

## STEP 7

Place a transmission jack under the transfer case. Loosen and remove the (3) nuts securing the transfer case to the chassis. Save the (3) nuts for reinstallation. Remove the transfer case from the vehicle. Make sure all mounting brackets and crossmembers have been removed from the transfer case.

## STEP 8

Remove the 4wd indicator light using a 21 mm wrench.



## STEP 6

Disconnect the 4WD position switch electrical plug.

## STEP 9

Turn the transfer case over and collect the 4wd indicator ball as it falls out of the hole for the 4wd indicator. This steel ball is larger than the other two balls removed later.



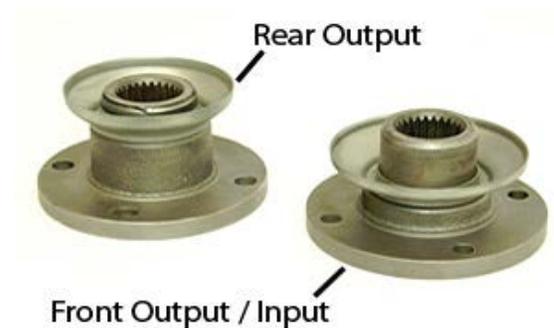
## STEP 10

Using a 1 1/6" or 28mm socket, remove all three flange nuts and the flanges. A bearing puller may be needed to pull the flanges off.



## STEP 11

Notice that the rear output flange is different than the front output and input flanges.



## STEP 12

On the bottom of the transfer case, remove the detent plug using a 6 mm allen wrench.



## STEP 13

Remove the detent spring using a small screwdriver or punch. Flip the case over and remove the detent ball.



# INSTALL INSTRUCTIONS (CONT'D.)



## STEP 14

Remove the speedometer output bolt.



## STEP 15

Remove the speedometer output.



## STEP 16

Remove the 7 bolts holding the front housing on. Note the position of each bolt and return each bolt to the same position when reassembling.



## STEP 17

Remove the front housing.



## STEP 18

Remove the lock tab and bolt that holds the counter shaft.



## STEP 19

Remove the eleven (11) bolts holding the center and rear housings together.



# INSTALL INSTRUCTIONS (CONT'D.)



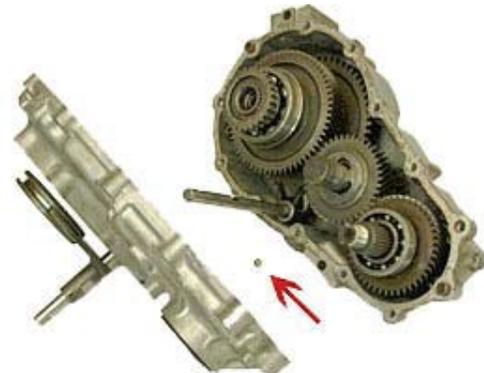
## STEP 20

Using a small hammer, tap the center and rear housing cases apart.



## STEP 21

As the cases come apart, be sure to catch the steel ball. This ball will be reinstalled near the end. It may be necessary to tap lightly on the housing to dislodge the ball.



## STEP 22

Remove the counter shaft gear and shim from the rear housing.



## STEP 23

Remove the input gear and bearing assembly.



## STEP 24

Remove the counter shaft, bearings and shim.



## STEP 25

Remove the shift fork assembly as shown.



# INSTALL INSTRUCTIONS (CONT'D.)



## STEP 26

Remove the output gear assembly from the rear housing. Hold the rear housing and press down on the housing to dislodge the output. It may be necessary to lift and drop the housing on a flat surface to get it apart.



## STEP 27

Remove the snap ring from the end of the output gear.



## STEP 28

Remove the gear as shown.



## STEP 29

Using a press, press the output gear through the bearing as shown.



## STEP 30

Remove the output bearing.



## STEP 31

Remove the spacer from the low output gear.



# INSTALL INSTRUCTIONS (CONT'D.)



## STEP 32

Remove the high speed output gear.



## STEP 33

Remove the needle bearing assembly from the shaft.



## STEP 34

Remove the shift collar.



## STEP 35

Turn the gear assembly upside down and press the output shaft through the low speed gear.



## STEP 36

Remove the bearing keeper.



## STEP 37

Remove the bearing.



# INSTALL INSTRUCTIONS (CONT'D.)



## STEP 38

Remove the drive gear.



## STEP 39

Remove the shim.



## STEP 40

Remove the low speed gear.



## STEP 41

Remove the cage bearing. Clean the cage bearings, shafts and housings.



## STEP 42

Reinstall the cage bearing on the output shaft.



## STEP 43

Install the new low speed gear onto the output shaft.



# INSTALL INSTRUCTIONS (CONT'D.)



## STEP 44

Reinstall the spacer.



## STEP 45

Reinstall the drive gear.



## STEP 46

Using a piece of tubing, press or hammer the drive gear down onto the shaft.



## STEP 47

Reinstall the bearing onto the shaft.



## STEP 48

Press the bearing into place.



## STEP 49

Reinstall the collar.



# INSTALL INSTRUCTIONS (CONT'D.)



## STEP 50

Press the collar into place.



## STEP 51

Flip over the output shaft to assemble the other side. Slide the shift collar into place.



## STEP 52

Reinstall the bearing onto the shaft.



## STEP 53

Apply grease to the bearing.



## STEP 54

Install the new high speed output gear.



## STEP 55

Reinstall the shim.



# INSTALL INSTRUCTIONS (CONT'D.)



## STEP 56

Reinstall the bearing and press it into place.



## STEP 57

Install the gear as shown.



## STEP 58

Reinstall the snap ring.



## STEP 59

Using a press, remove the bearings from both ends of the input shaft.



## STEP 60

A socket that is smaller than the shaft size works well for pressing out the bearings. We suggest a 14mm, 3/8" drive socket.



## STEP 61

Once the first bearing is removed, flip the gear over to press off the second bearing.



# INSTALL INSTRUCTIONS (CONT'D.)



## STEP 62

Strips of 1/4" plate steel work well for getting in between the input gear and the bearing on the drive flange end of the shaft.



## STEP 63

Discard the original input shaft. The new input shaft is shown above.



## STEP 64

Reinstall the bearing on the end of the shaft as shown.



## STEP 65

Using a socket and press or hammer, press bearing into place.



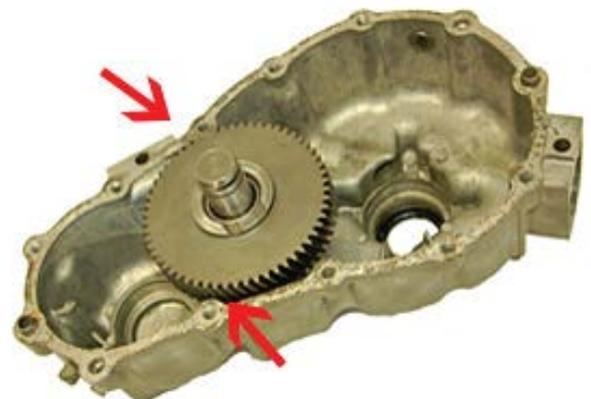
## STEP 66

Install the bearing on the other side of the input shaft and press the bearing into place.



## STEP 67

Temporarily install the new counter shaft, counter shaft gear and bearings. Look for the gear rubbing at the points above.



# INSTALL INSTRUCTIONS (CONT'D.)



## STEP 68

Grind as needed with a Dremel® rotary tool to prevent gear interference with the case.



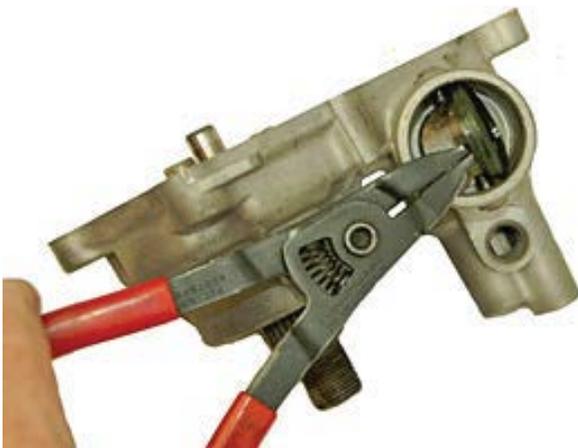
## STEP 69

Both sides of the case may need to be cleared. Spin the gear in place to ensure that it does not grind on the case. Remove the counter shaft and gear when grinding is complete.



## STEP 70

Remove and inspect the shifter seat.



## STEP 71

Check to see that there are no cracks or missing material. If there is any sign of wear, replace the seat with a new one.



## STEP 72

Remove the old rear output seal from the rear housing. Discard the used seal.



## STEP 73

Install the new rear seal provided with the kit. Apply wheel bearing grease to the ID of the new seal.



# INSTALL INSTRUCTIONS (CONT'D.)



## STEP 74

Remove the old front input seal. Discard the used seal.



## STEP 75

Install the new front input seal provided with the kit. Apply wheel bearing grease to the ID of the new seal.



## STEP 76

Remove the old front output seal. Discard the used seal.



## STEP 77

Install the new front output seal provided in the kit. Apply wheel bearing grease to the ID of the new seal.



## STEP 78

Install the steel ball in the center housing as shown above. This is the ball that was removed in step #22.



## STEP 79

Adjust the shift rail until the ball drops into the slot and nearly out of view as shown.



# INSTALL INSTRUCTIONS (CONT'D.)



## STEP 80

Slide the high/low shift rail onto the output gear assembly.



## STEP 81

Slide the gear assembly into the center housing.



## STEP 82

Install the front output shift collar onto the shift fork



## STEP 83

Tap the output assembly into place using a rubber hammer.



## STEP 84

Apply the grease to the counter shaft shim face on the center housing.



## STEP 85

Apply the new shim provided in the kit. Note the position of the tab in the shim. Make sure the tab fits into the notch in the housing.



# INSTALL INSTRUCTIONS (CONT'D.)



## STEP 86

Replace the rubber seal on the counter shaft. The rubber seal should rest in the groove cut into the shaft.



## STEP 87

Place the counter shaft gear onto the shim.



## STEP 88

Slide the counter shaft through the counter shaft gear and shim.



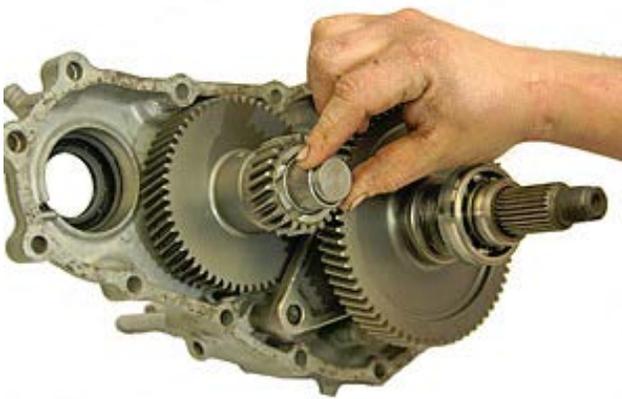
## STEP 89

Apply grease to the new counter shaft bearing provided and slide it into the center of the counter shaft gear.



## STEP 90

Slide the bearing spacer into place as shown.



## STEP 91

Apply the grease to the second new counter shaft bearing provided and slide it into the center of the counter shaft gear.



# INSTALL INSTRUCTIONS (CONT'D.)



## STEP 92

Slide the input gear assembly into place.



## STEP 93

Apply grease in the counter shaft hole in the rear housing.



## STEP 94

Place the new counter shaft shim over the hole in the rear housing. Note the position of the tab on the shim. Make sure the tab fits into the notch in the housing as shown.



## STEP 95

Apply Permatex® Ultra Grey® Silicon to both sides of the gasket and lay the gasket over the rear housing.



## STEP 96

Slide the rear housing on top of the center housing section. Make sure not to pinch or damage the gasket. The counter shaft must fit into the center of the shim.



## STEP 97

Tap the center and rear housings together with a rubber hammer.



# INSTALL INSTRUCTIONS (CONT'D.)



## STEP 98

Turn the counter shaft with pliers so that the lock tab slot lines up with the tab hole. Install the lock tab and bolt.



## STEP 99

Install the eleven (11) bolts that hold the center and rear sections together. Note: Be sure to install the bolts in the same places they were removed from. Not all of the bolts are the same size.



## STEP 100

Apply Permatex® Ultra Grey® Silicon to both sides of the front housing gasket. Place the gasket over the front housing.



## STEP 101

Install the front housing section onto the center housing.



## STEP 102

Install the 7 bolts holding the front housing. Note: Be sure to install the bolts in the same places as they were removed from. Not all of the bolts are the same size.



## STEP 103

Install the front output flange. Install the flange nut and re-stake the nut into position.



# INSTALL INSTRUCTIONS (CONT'D.)



## STEP 104

Install the input flange. Install the flange nut and re-stake the nut into position.



## STEP 105

Install the rear output flange. Note that the rear output flange is the tall flange and is different than the other two flanges. Install the flange nut and restake the nut into position.



## STEP 106

Reinstall the steel ball in the bottom of the case.



## STEP 107

Install the spring into the bottom of the case.



## STEP 108

Install the detent plug into the bottom of the case.



## STEP 109

Install the speedometer drive unit.



# INSTALL INSTRUCTIONS (CONT'D.)



## STEP 110

Install the speedometer drive bolt.



## STEP 111

Install the 4wd indicator ball (removed in step #3) as shown.



## STEP 112

Install the 4wd indicator switch as shown.



## STEP 113

Place the transfer case back onto the transmission jack and raise the transfer case into the vehicle. Secure the transfer case to the chassis using the (3) nuts removed in Step 7. Using a torque wrench, torque the nuts to 18.5-25 ft-lbs (25-35 N-m).

## STEP 114

Reconnect the 4WD position electrical switch.

## STEP 115

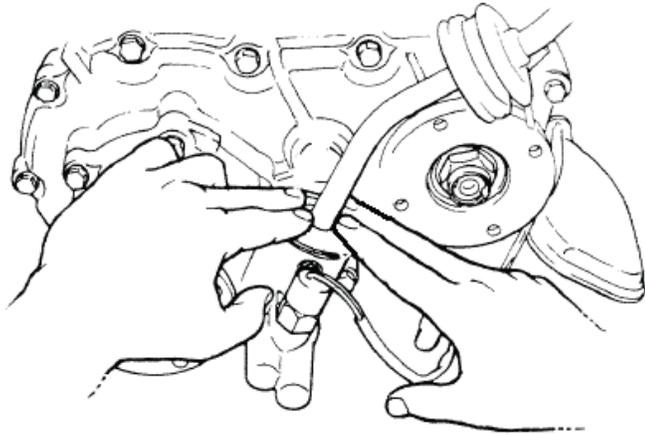
Reconnect the speedometer drive cable to the transfer case.

# INSTALL INSTRUCTIONS (CONT'D.)



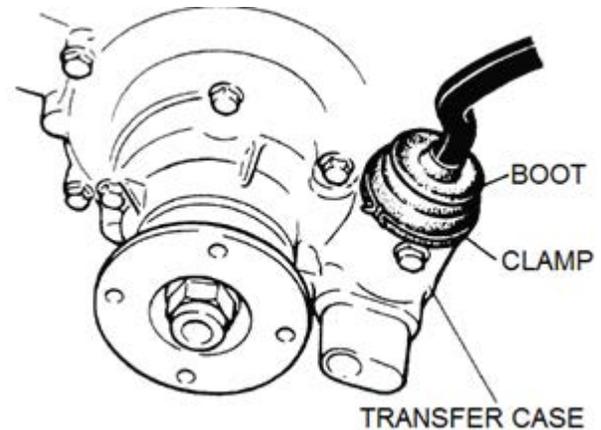
## STEP 116

Reconnect the control lever to the transfer case.



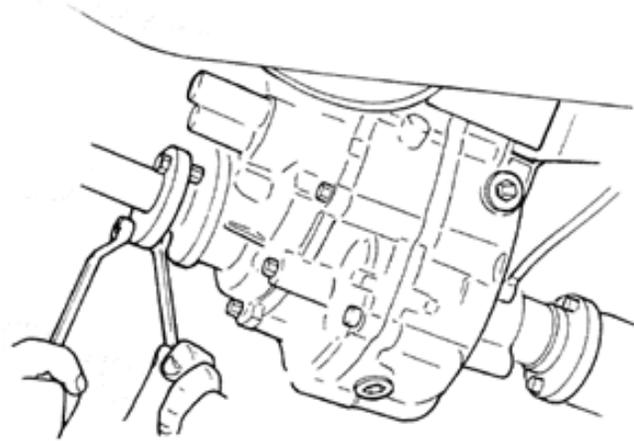
## STEP 117

Reinstall the clamp and boot back onto the transfer case.



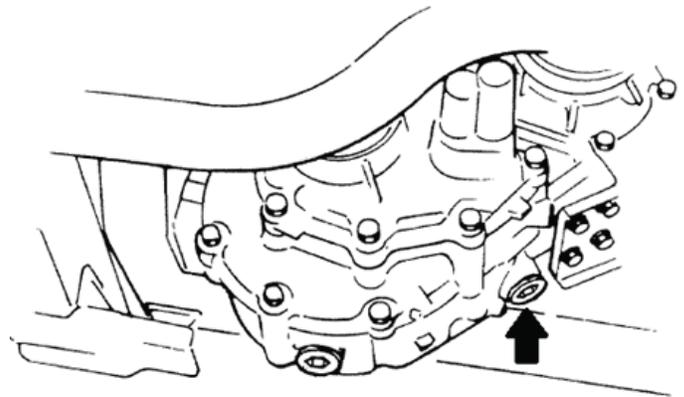
## STEP 118

Reinstall all (3) drivelines onto the transfer case driveline flanges using the (12) nuts and bolts removed in Step 1. Using a torque wrench, torque to nuts and bolts 17–21.5 ft-lbs (23-30 N-m).



## STEP 119

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 Suzuki Samurai Owner's Manual. Reinstall the fill plug. Using a torque wrench, torque both plugs to 13.5-20



## STEP 120

Verify all bolts have been reinstalled and torqued. Verify all wiring plugs and cables 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 top off as necessary. After the first 10 miles of driving, recheck the gear oil level and top off as necessary.

## 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

