

Suzuki Sidekick / Tracker Full Twin Stick Kit (SKU# KTC-FTSK)

Installation Instructions



CAUTION: Safety glasses should be worn at all times when working with vehicles and related tools and equipment.



FOR ADDITIONAL COPIES OF THESE AND OTHER INSTRUCTIONS GO TO:
www.lowrangeoffroad.com and click on the "INSTRUCTIONS" tab.

Suggested Tools:

- Twin Post Lift
- Under Hoist Jack Stand
- Pry Bar
- Torx® Socket: T40
- Phillips Screwdriver, #2
- Upholstery Tool: Fork Style
- Latex Gloves: Several Pair
- Brake Cleaner
- Sockets: 12 & 14mm
- Deep Socket: 12mm
- Universal Impact Sockets: 10, 12 and 14 mm
- Allen Socket: 5 & 8mm
- Allen Wrench: 5mm
- Impact Wrench
- Ratchet: 3/8"
- Extension: 3/8"
- Combination Wrenches: 10,12, 14, 21 & 24mm
- Torque Wrench: able to Torque 10 - 50 Ft. Lbs.
- 3/8 Electric (or pneumatic) Drill
- Angle Grinder W/Flap Disc
- Vice Grip Pliers
- Dead Blow Hammer
- Ball Peen Hammer
- Permanent Marker: White
- Diagonal Cutting Pliers
- Snap Ring Pliers – External
- Razor Blade or Gasket Scraper
- Cleaning Cloths
- Small Magnetic Pickup Tool
- Pin Punch: 3/16"
- Wheel Bearing Grease
- Standard Screwdriver: Large
- 2 - 2X4 blocks of wood

Removing the Transfer Case Shifter



Step 1

Place the transfer case shifter in the "4L" position.



Step 2

Loosen the Torx® set screw using a T40 Torx® socket and remove the shift knob.



Step 3

Place the shifter in the "N" position.



Removing the Console & T-Case Shifter



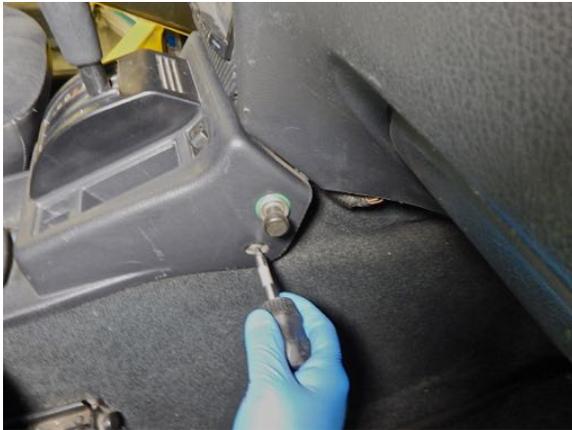
Step 4

Place the park brake lever in the "applied" or up position.



Step 5

Remove the driver side Phillips screw located toward the front of the console.



Step 6

Remove the passenger side Phillips screw.



Step 7

Remove the driver side upholstery clip using an upholstery tool. See the next Tech Tips to see how these upholstery clips are removed.





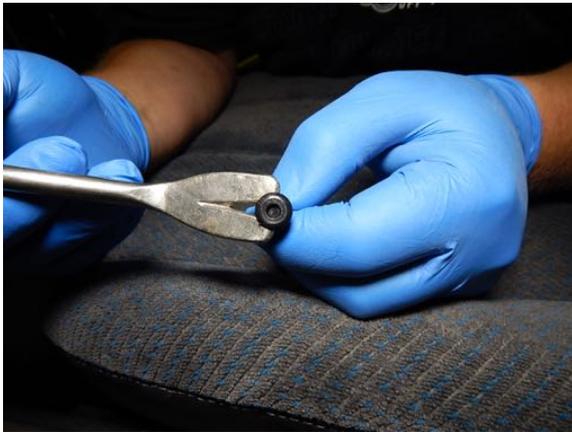
Tech Tip 7

This shows the upholstery clip as it is when installed in the console.



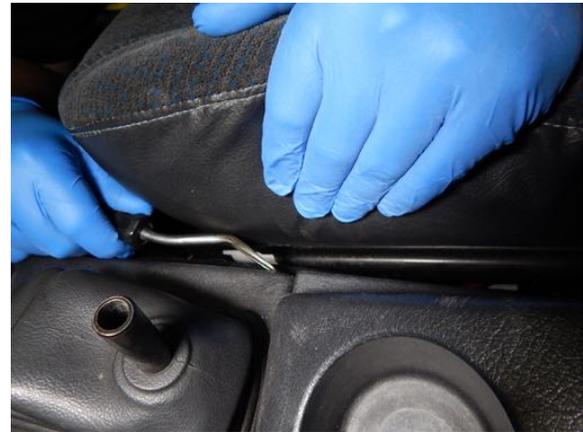
Tech Tip 7 (Continued)

The first step in removing this style clip, is to push the center button in with a pick tool or small screwdriver.



Tech Tip 7 (Continued)

With the center button pushed in, insert the upholstery tool under the head of the clip as shown and pry the clip out. Be careful not to drop the clip behind the seat. You will need it during reassembly.



Step 8

Remove the passenger side upholstery clip in the same way as before.



Step 9

Lift up slightly on the front of the rear console section while at the same time, lift up on the rear of the front console section



Step 10

Continue lifting the rear of the front console until it clears the transmission and transfer case shifters.



Step 11

Leave all the wires connected and lay the console on the passenger side floor board.



Step 12

Remove the (6) screws securing the upper shifter boot using a phillips screwdriver.



Step 13

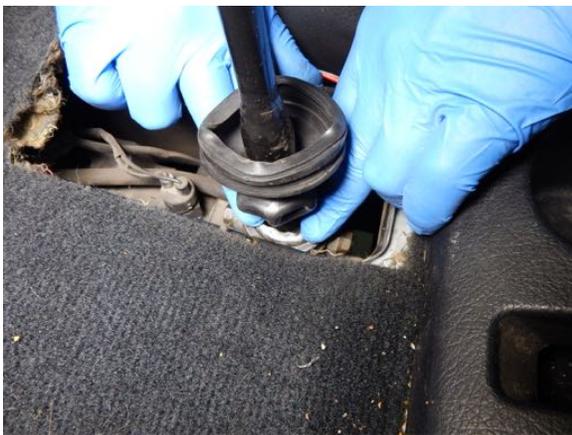
Remove the upper transfer case shifter boot.



Step 14

Peel the lower transfer case shifter boot up exposing the shifter lock.

Note: Make sure the shifter is still in the "N" position.



Step 15

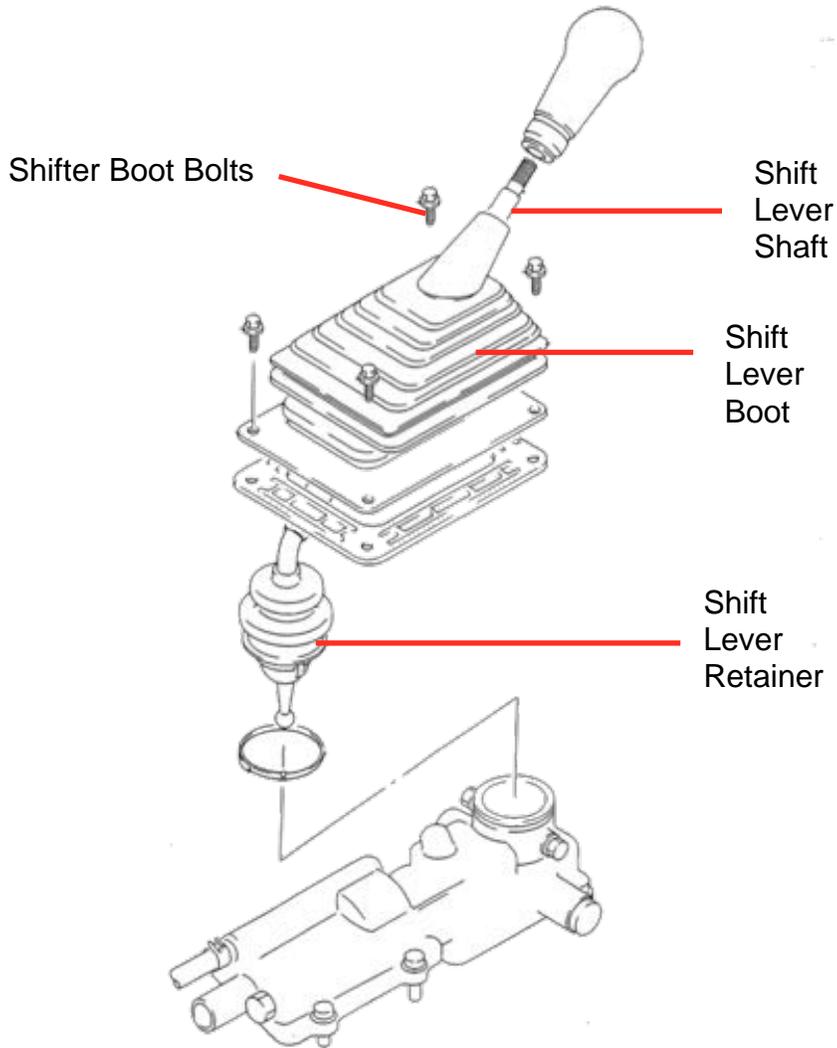
Using two fingers, press down on the shifter lock and rotate it counter clockwise about 1/4 turn. Then release finger pressure allowing spring tension push the lock upward.



Step 16

With the shifter lock released, lift the shifter out of the transfer case.

Note: It may be a good idea to stuff a cloth in the shifter hole to keep dirt out of the transfer case.



Tech Tip 16

If you have a 5 speed standard transmission you will need to remove the transmission shift lever. This is done by performing these steps:

1. Remove the (4) shifter boot bolts.
2. Slide the boot up the shift lever shaft.
3. Depress and twist the shift lever retainer 1/8 turn in a counter clockwise direction. (The same method used in Step 15)

Removing the Drive Lines



Step 17

Raise the vehicle on a twin post lift according to the vehicle manufacturer and the lift safety guidelines.



Step 18

Disconnect the front drive line from the front differential flange using two 14mm combination wrenches.

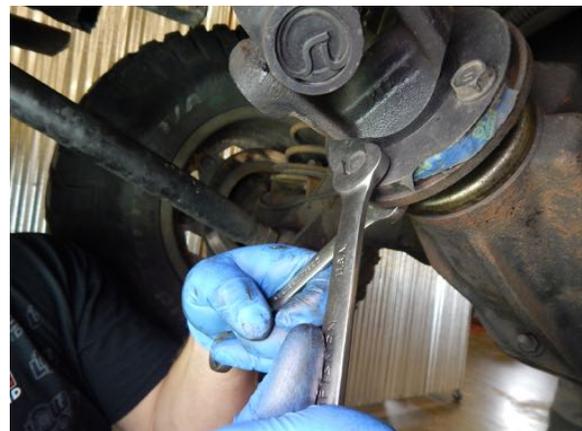
Note: The vehicle we are working on is a highly modified X90 that has a solid front axle. Your drive line may be different.



Step 19

Disconnect the driveline from the transfer case and set it aside.

Note: This driveline was bolted to a transfer case flange. Yours may be a slip yoke. (See Figure A on next page) If it is you will need to place a drain pan under the transfer case as fluid will likely run out.



Step 20

Disconnect the rear drive line the same way as the front.

Suzuki Sidekick/X90/Geo Tracker Drive Lines

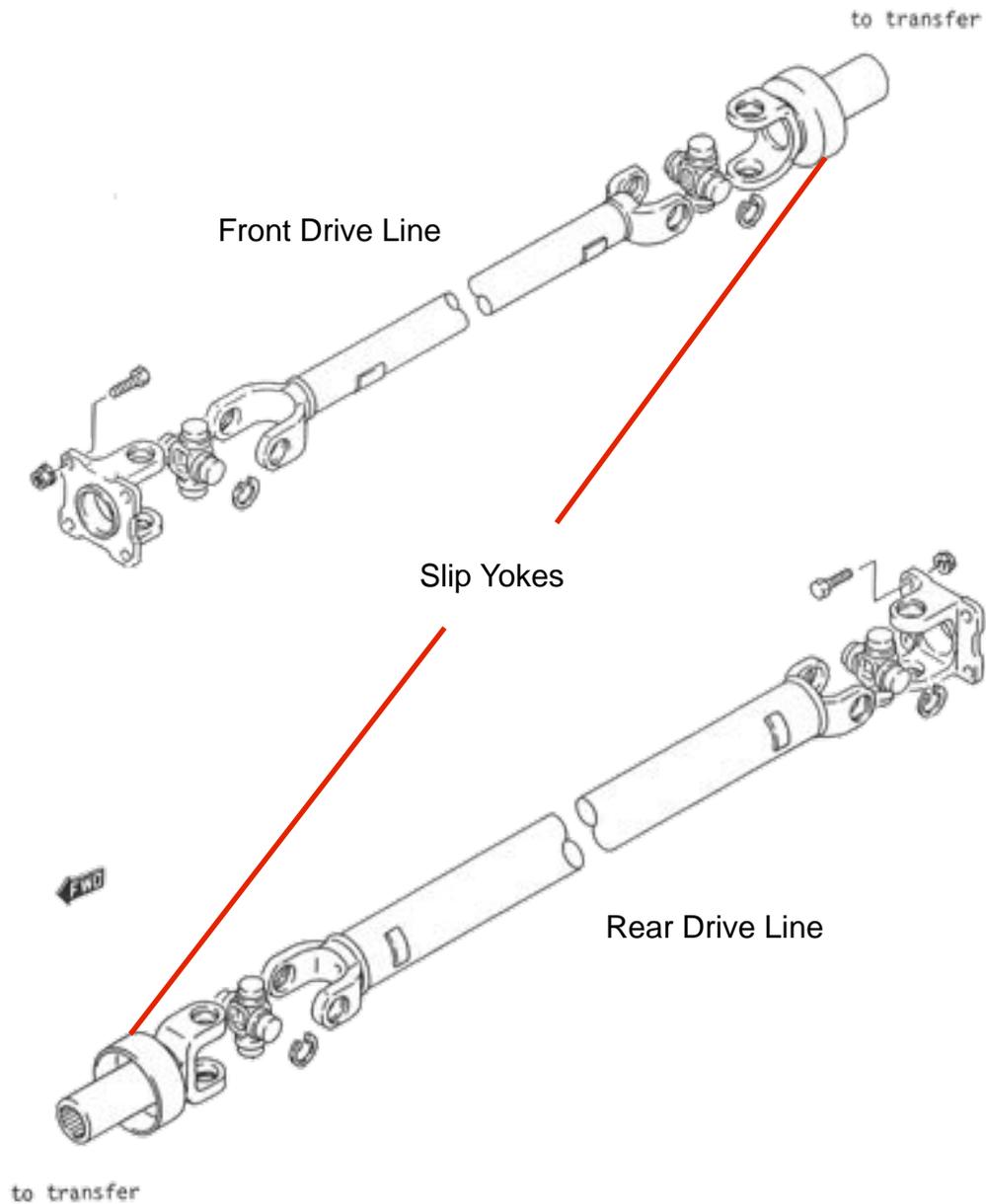


Figure A



Removing the Transfer Case



Step 21

Begin disconnecting the speedometer cable by unscrewing the sleeve in a counter clockwise direction using small channel lock pliers.



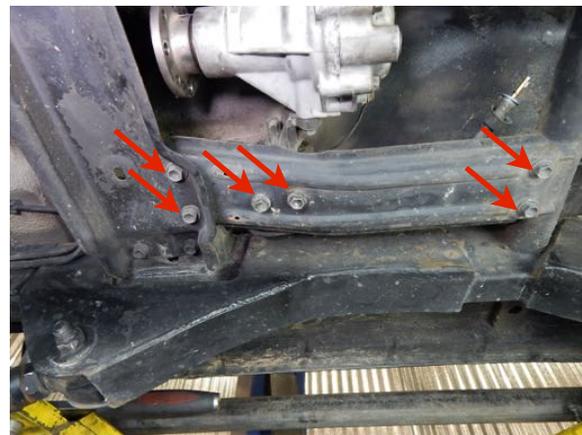
Step 22

Once the sleeve is loose, remove the cable by pulling it out of the transfer case.



Step 23

Place a block of wood (2X4X8" approximately) under the transmission oil pan and place an under hoist jack stand under the block of wood. Lift the transmission slightly until the crossmember is relieved of any weight.



Step 24

Remove the transfer case brace by removing the (6) bolts using an impact wrench and a 14mm impact socket.



Step 25

Set the transfer case brace aside.



Step 26

Remove the (6) transmission cross member bolts using an impact wrench and a 14mm impact socket.



Step 27

Let the cross member drop down slightly.



Step 28

Disconnect the exhaust support by pushing it forward with a pry bar.



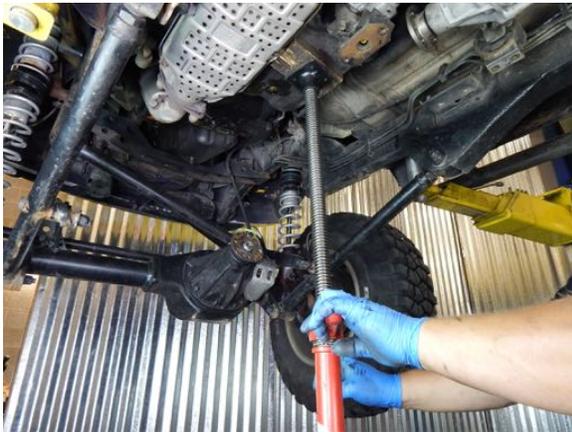
Step 29

Unclip the O2 sensor wire from the wiring bracket.



Step 30

Remove the transmission cross member and set it aside.



Step 31

Lower the transmission an 3 to 4 inches using the under hoist jack stand.



Step 32

Disconnect these two connectors. Simply depress the lock tab and pull the two halves apart.



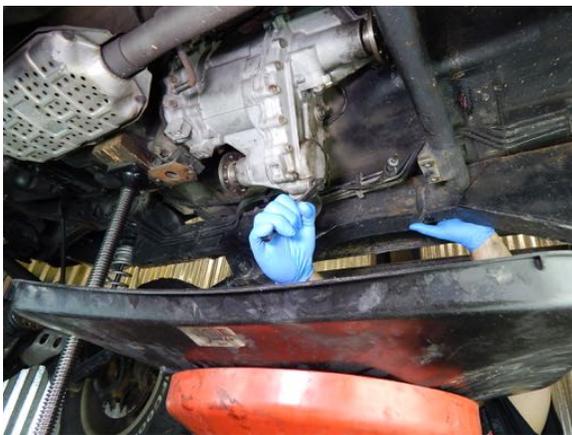
Step 33

Disconnect the transfer case vent tube from the transfer case by pulling it forward away from the shifter tower.



Tech Tip 33

Vent tube disconnected.



Step 34

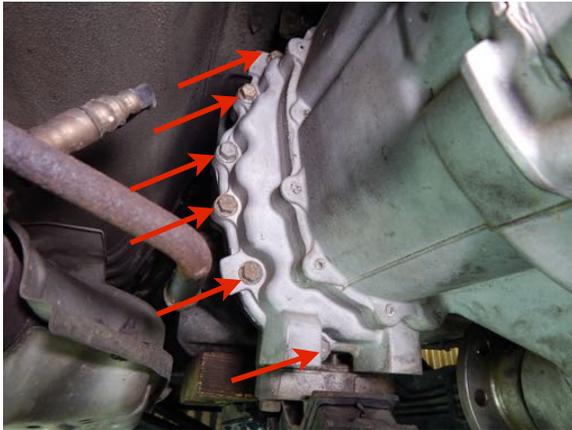
Place a drain pan under the transfer case and remove the drain plug using a 3/8 breaker bar or 3/8" ratchet. Let all the fluid drain out and reinstall the plug.



Step 35

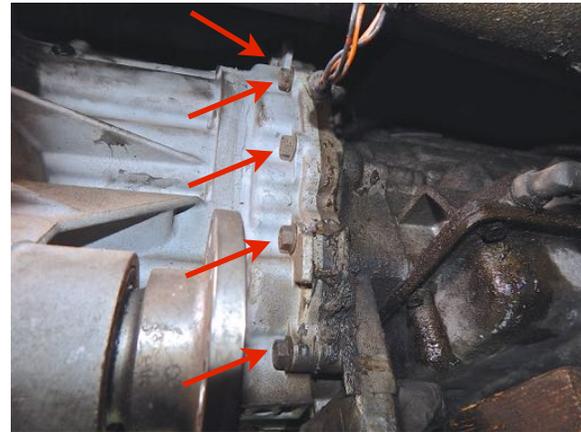
Begin separating the transfer case from the transmission by removing the (12) transfer case bolts using a 12mm universal impact socket and a 12mm combination wrench.





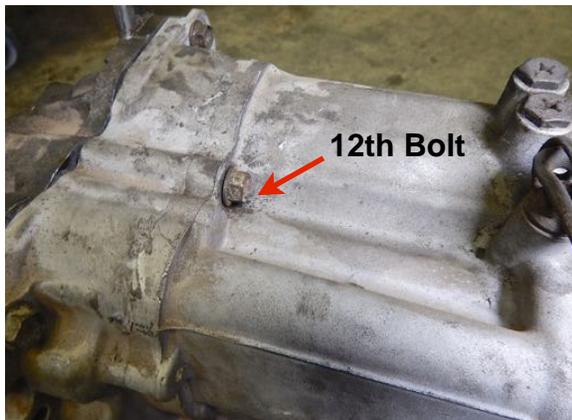
Tech Tip 35A

This shows 6 of the 12 bolts that are located on the driver side.



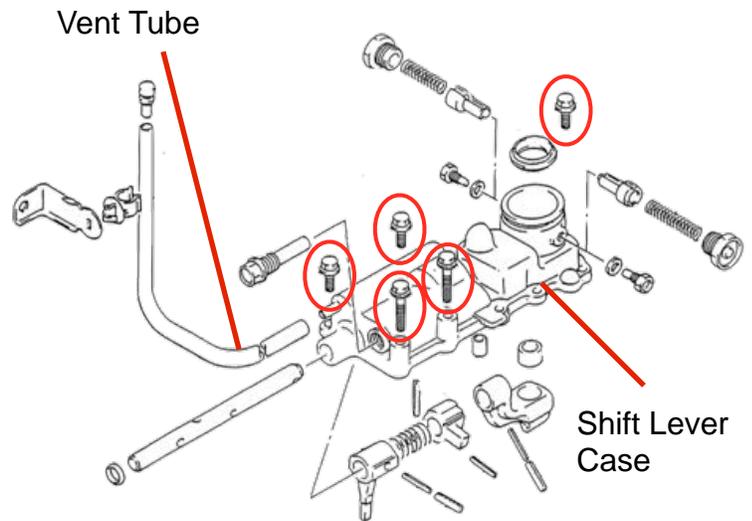
Step 35 Continued

This shows 5 of the 12 bolts That are located on the passenger side.



Step 35 Continued

This is one of the 12 bolts that is easily overlooked. It is longer than the other 11 bolts and is accessible only from above the transfer case and transmission.



Tech Tip 35B

If you have a 5 speed standard transmission you will need to remove the shift lever case in order to access the 12th bolt shown in the previous step. To remove the shift lever case, remove the (5) bolts shown here, unplug the vent tube and remove the case. It may be necessary to jar the case loose using a ball peen hammer.



Step 36

Work the transfer case rearward until the transmission output splines are free.



Step 37

Lower the transfer case to the floor.

Note: Some people would prefer to use an under hoist transmission jack for lowering the transfer case. But, it is up to you.



Transfer Case Shifter Parts

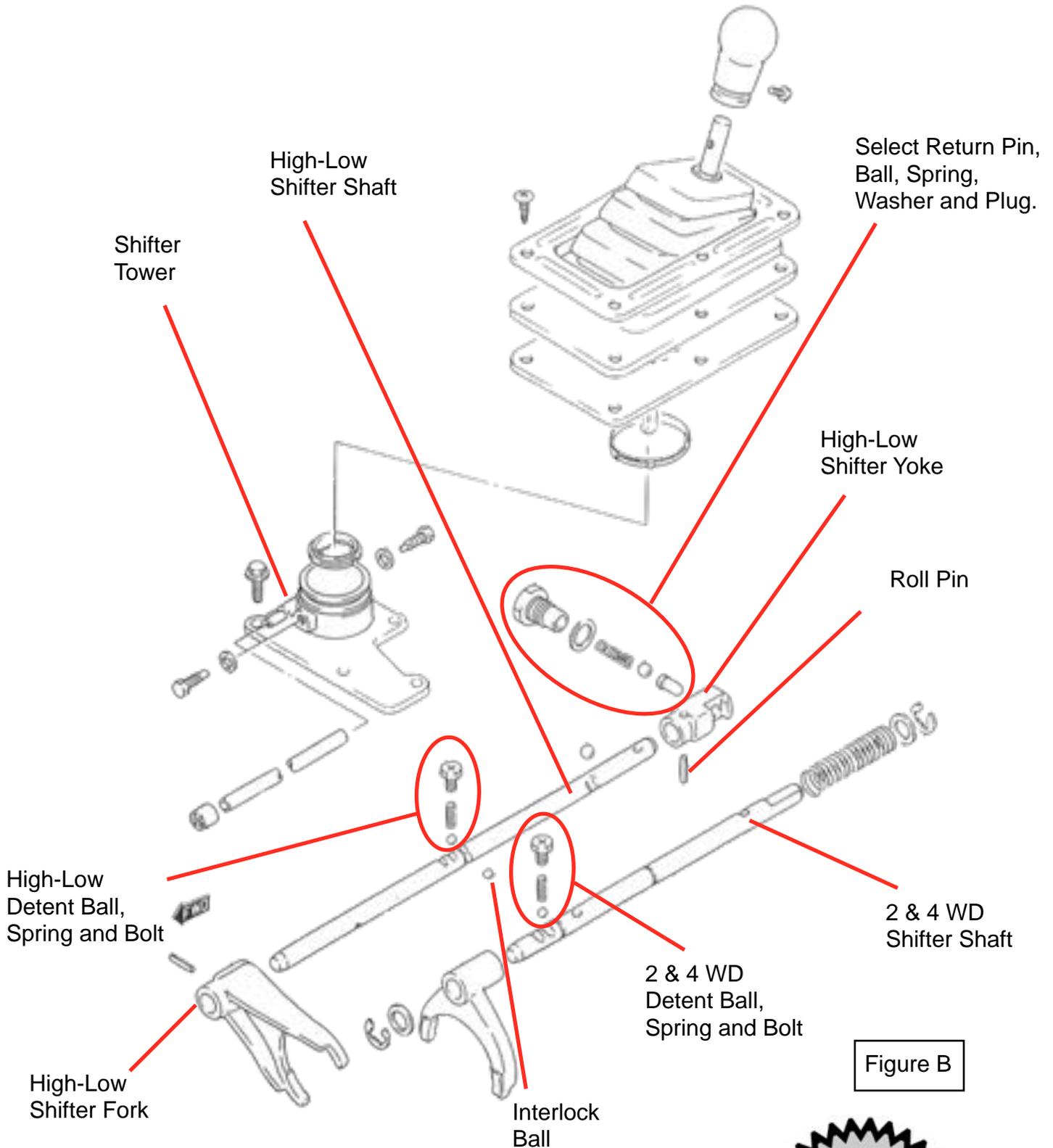


Figure B

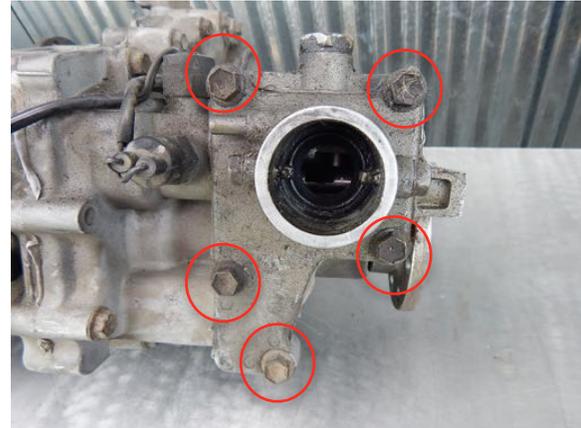


Removing the Shifter Tower



Step 38

Place the transfer case on a suitable work bench.



Step 39

Remove these (5) bolts using a 12 mm socket.



Step 40

After the bolts are removed, jar the shifter tower loose by tapping on it with a ball peen hammer.



Step 41

Once the tower is loose, set it aside.



Step 42

Remove the select return plug using a 24mm box end wrench.



Step 43

Remove the select return spring.



Step 44

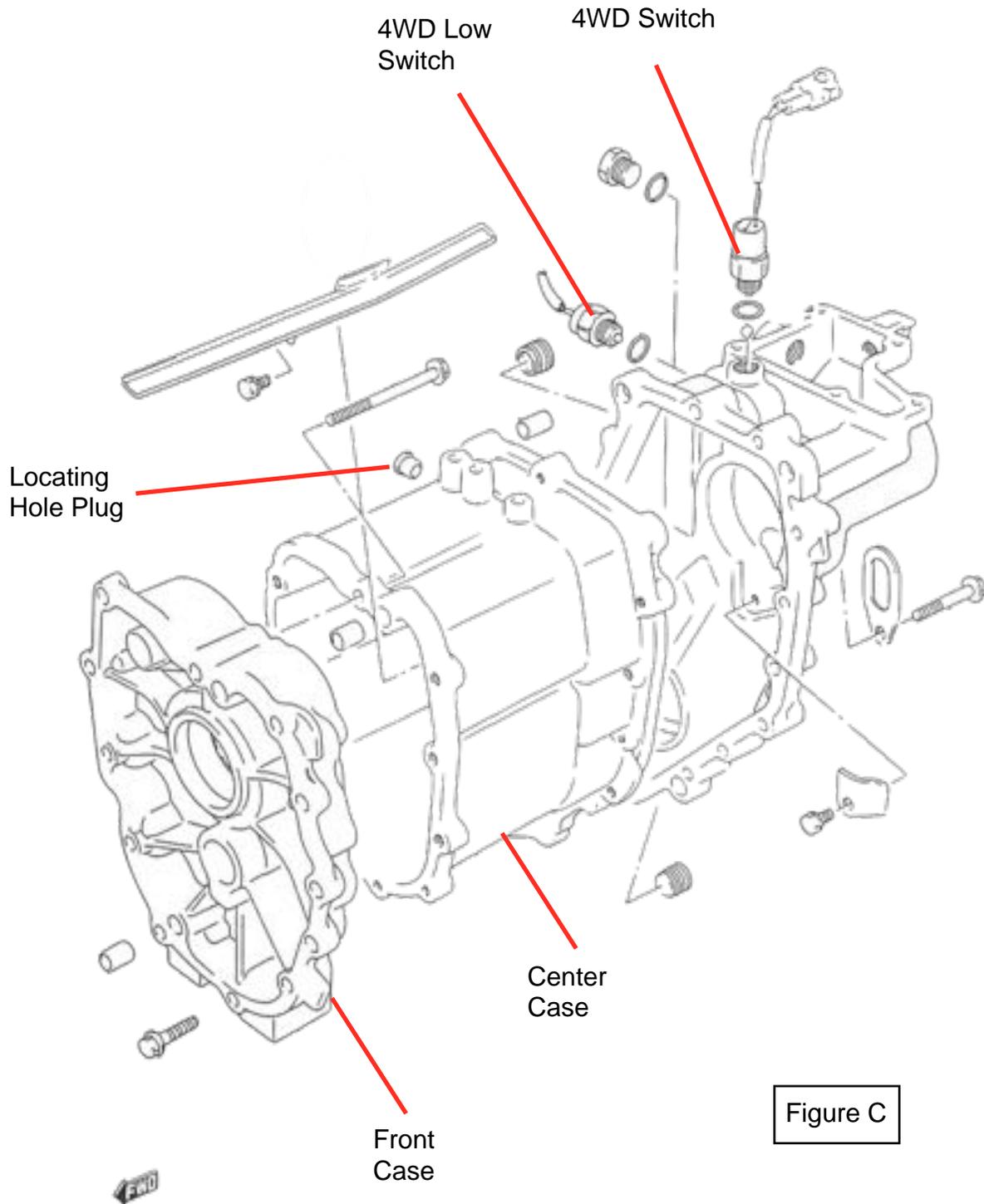
Remove the select return ball using a magnet.



Step 45

Remove the select return pin by pushing it up with your finger and lifting it out with a magnet.

Transfer Case Components and External Parts





Step 46

Remove the 4WD switch using a 21mm open end wrench. (See Figure C)



Step 47

Remove the 4WD ball using a magnet.



Step 48

Remove the 4WD Low switch using a 24mm open end wrench.

Note: There is no ball under this switch.



Step 49

Remove the High-Low Detent bolt using a 14mm socket.



Step 50

Remove the High-Low Detent spring using a magnet.



Step 51

Remove the High-Low Detent ball using a magnet.



Step 52

Remove the 2 & 4 WD:

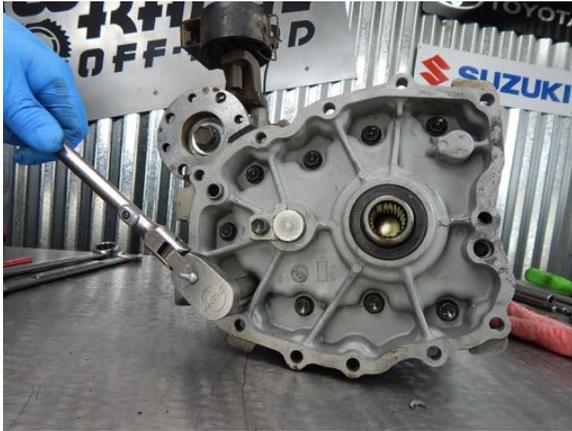
- detent plug
- detent spring
- detent ball



Step 53

Remove the locating hole plug using a small standard screwdriver.

Removing the Interlock Ball



Step 54

Remove the (9) front case bolts using a 12 mm socket.



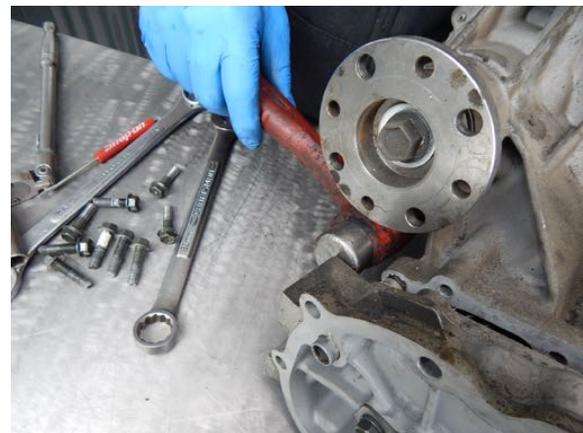
Tech Tip 55

This shows all the bolts to be removed.



Step 56

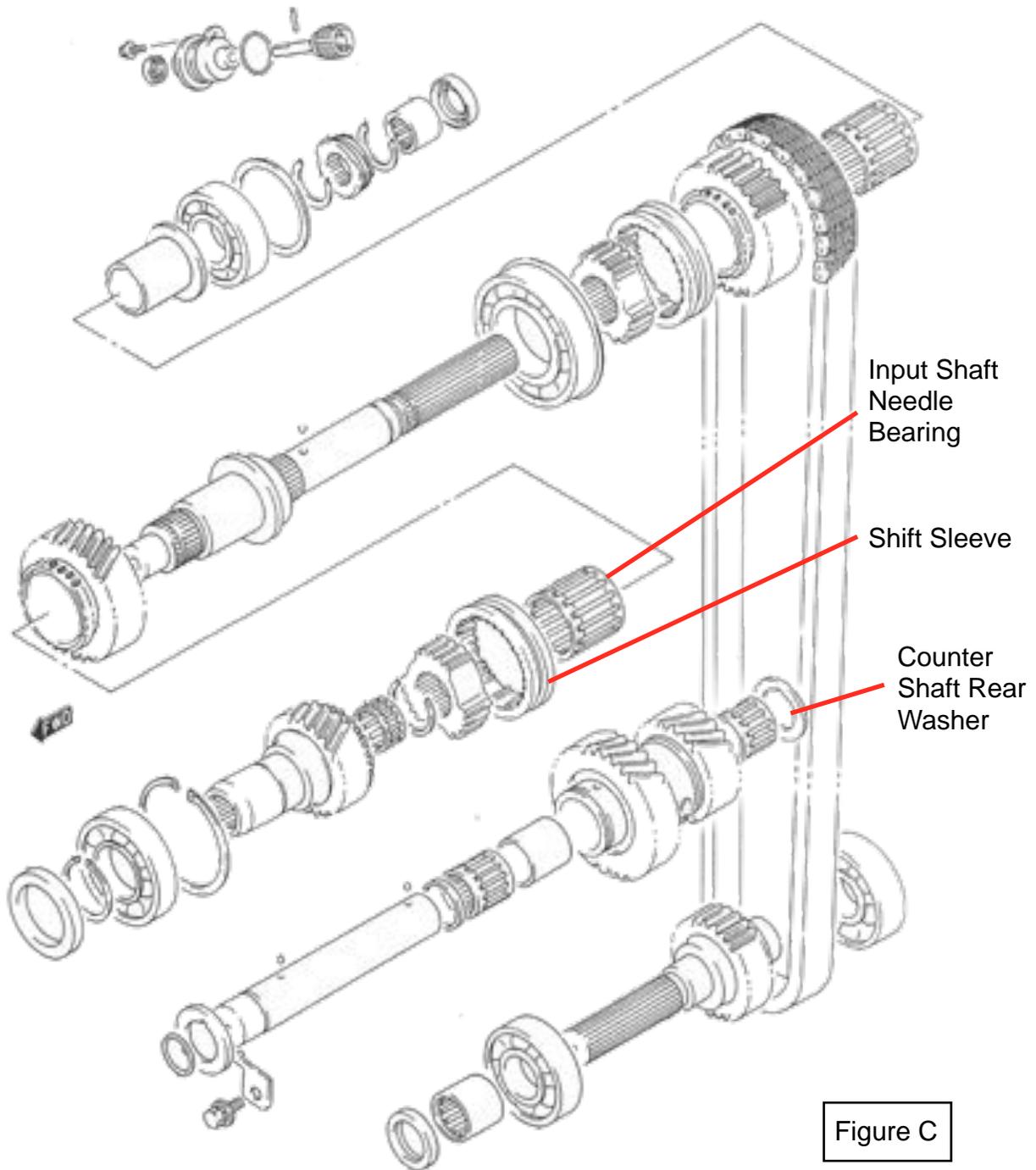
Once all the bolts have been removed, tap on the front case, as shown, using a ball peen hammer. Tap gently! This should not take a lot of force. If it does not break loose easily, double check to see that all the bolts are out.



Step 57

Once the first side of the case is loose, tap on the other side of the case as shown.

Transfer Case Internal Parts





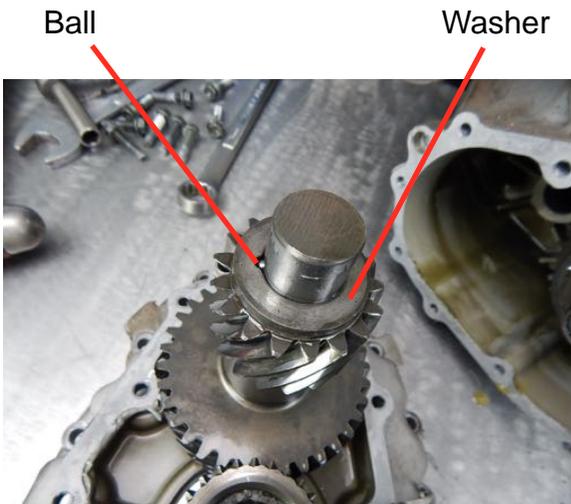
Step 58

Once both sides of the case are loose, continue working the front case away from the center case.



Step 59

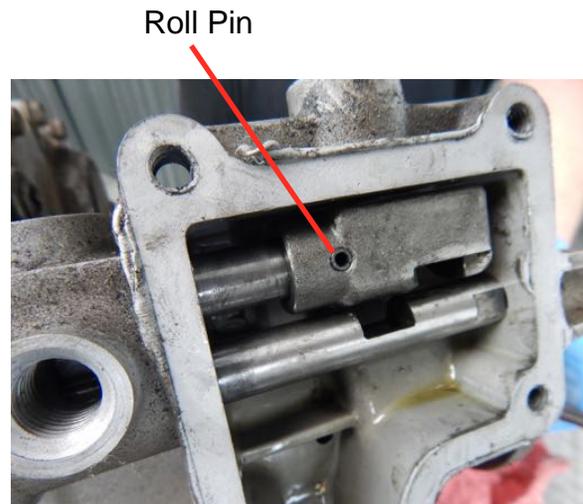
Once the front case is free, lay it on the work bench as shown.



Step 60

Be sure the counter shaft rear washer and ball is positioned as shown and not left in the center case.

Note: See that the groove of the washer is located on the ball of the shaft.



Step 61

The next step is to remove shifter yoke roll pin.

Caution: Be sure to follow these instructions carefully so as not to let this roll pin fall down inside the center case. If this pin drops down inside the center case you may have to completely disassemble the transfer case to retrieve it.



Step 62

Using a 3/16" pin punch and ball peen hammer, drive the pin about 1/2 way out of the yoke.



Step 63

Once the pin is about 1/2 way out of the yoke, tip the transfer case on end and continue driving the pin out. The pin should fall out of the case onto the work bench. If you are unable to retrieve the roll pin at this point you can do it later after the High-Low Shifter shaft and yoke has been removed. (See Step 66)



Step 64

Remove the High-Low shifter sleeve, shifter fork and shifter shaft. (See Figure B)



Tech Tip 64

Continue working the shifter assembly (sleeve, fork and shaft) out of the transfer case as a unit.



Step 65

Once the High-Low shifter yoke has come off the shaft, remove the yoke and set it aside.



Step 66

If you were unable to retrieve the roll pin earlier, remove it now.



Step 67

Completely remove the High-Low shifter shaft, yoke and sleeve.



Step 68

Now that the High-Low shifter shaft has been removed, you can remove the Interlock ball using a magnet. This ball is **NOT** to be reinstalled.

Reassembling the Transfer Case



Step 69

Remove any gasket material from the center case gasket surface using a razor blade (or suitable gasket scraper).

Caution: Be careful not gouge or mar the aluminum as it could cause a leak.



Step 70

Remove any gasket material from the front case using a razor blade (or gasket scraper) being careful not to damage the gasket surface.

Caution: Be sure that none of the old gasket material falls inside the case.



Step 71

While holding the High-Low shifter yoke in position with one hand, install the High-Low shifter shaft, fork and sleeve back in the center case. Be sure the shifter shaft is engaging the shifter yoke properly.



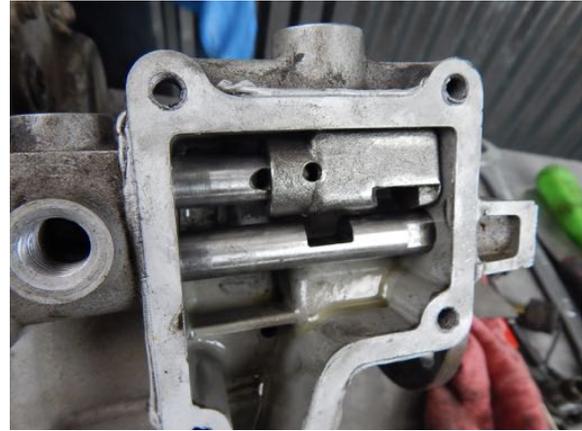
Step 72

This shows the shifter shaft engaging the shifter yoke properly.



Step 73

This shows the shifter sleeve properly positioned. Once the shifter sleeve is positioned properly, continue sliding the shifter shaft and yoke until it stops.



Step 74

Simply leave the yoke as shown here for now. You will install the roll pin later.



Reinstalling the Front Case



Step 75

Apply a thin bead (about 1/16" wide) of the supplied Permatex Gear Oil RTV Gasket Maker to the gasket surface of the front cover.



Tech Tip 75

This shows where to apply the Gasket Maker.



Step 76

Spread the Gasket Maker evenly across the gasket surface with your finger. A thin layer is all that is needed. Wipe off any excess.



Step 77

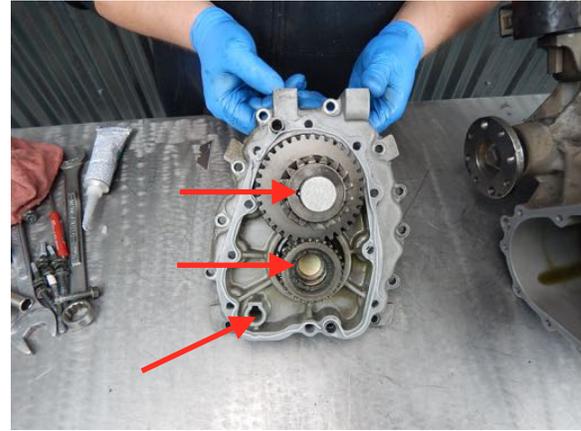
Check to see that the input shaft needle bearing is in place.





Step 78

Check to see that counter shaft rear washer and locating ball is in place. It may be helpful to put a little bearing grease on the ball and washer to keep them in place during reassembly.



Tech Tip 78

As you reinstall the front case assembly onto the center case, there are three things to align. This shows these three things.



Step 79

Position the front case on the center case, while at the same time, aligning the three components indicated in the previous Tech Tip.



Step 80

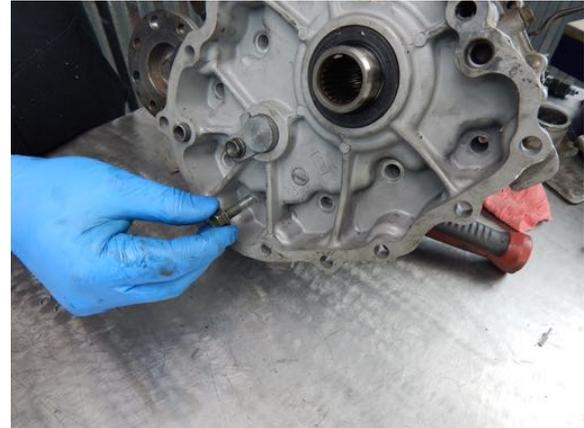
Continue bringing the front and middle cases together. Be sure this is done evenly and without much force. If a lot of force is needed, remove the front case and check to see that all internal components are positioned properly and try again.





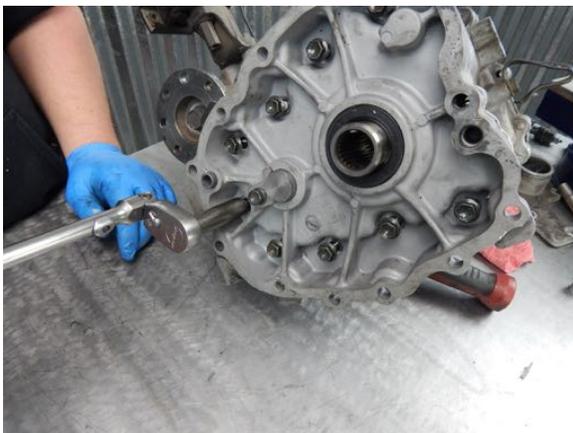
Step 81

Once the front and middle cases have come together



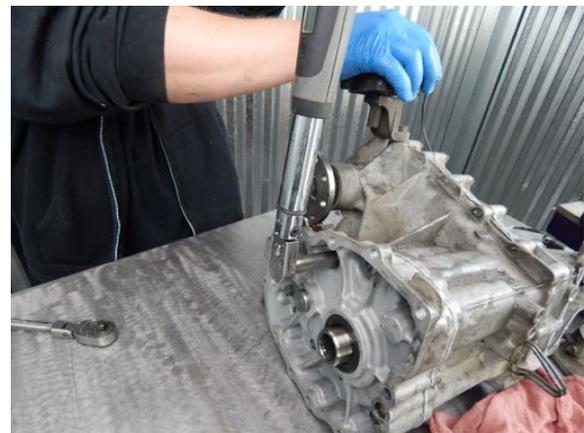
Step 82

. . . start the 9 front case bolts by hand.



Step 83

Snug these bolts in a progressively tighter criss-cross pattern using a 14mm socket.



Step 84

After the bolts are snug, continue tightening them in a progressively tighter criss-cross pattern until 20 ft. lbs. is reached.



Step 85

Clean off any old gasket material from the locating plug hole using razor blade.



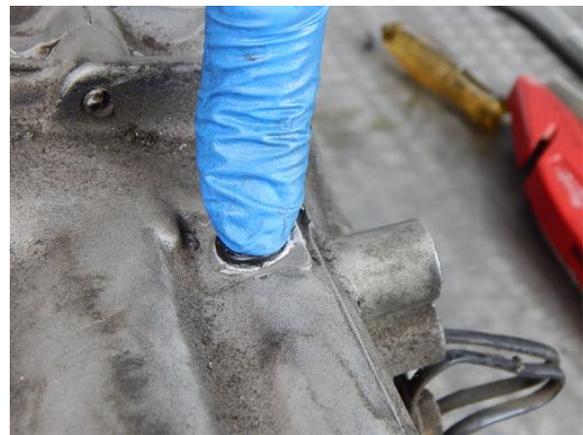
Step 86

Clean off any old gasket sealer or grease from the locating hole plug.



Step 87

Apply a thin film of Permatex Gasket Maker to the locating hole plug.



Step 88

Install the locating hole plug.





Step 89

Stand the transfer case up and support it with two 2X4 blocks.



Step 90

Slide the High-Low Shifter yoke into place with a standard screwdriver and . . .



Step 91

. . . align the holes using a 3/16" pin punch.



Step 92

Position the roll pin and . . .





Step 93

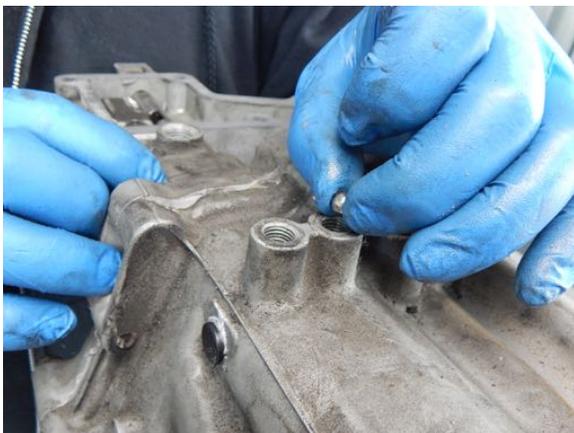
. . . tap it into place using a ball peen hammer.



Step 94

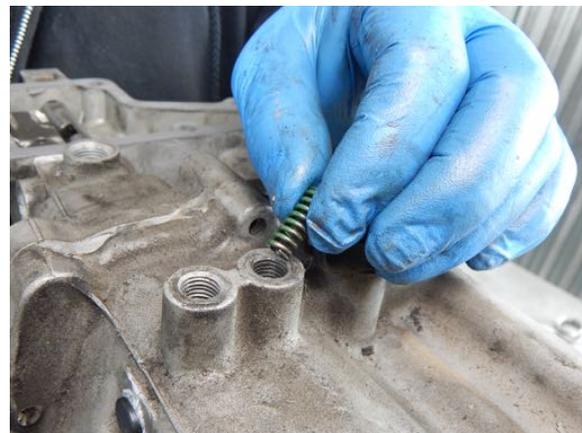
Clean off any residual gasket material using a razor blade. Be careful not to gouge or damage the gasket surface.

Caution: Do not let any of the gasket material fall down into the shifter cavity.



Step 95

Install the 2 & 4 WD Detent ball in the hole shown here.



Step 96

Install the 2 & 4 WD Detent spring.



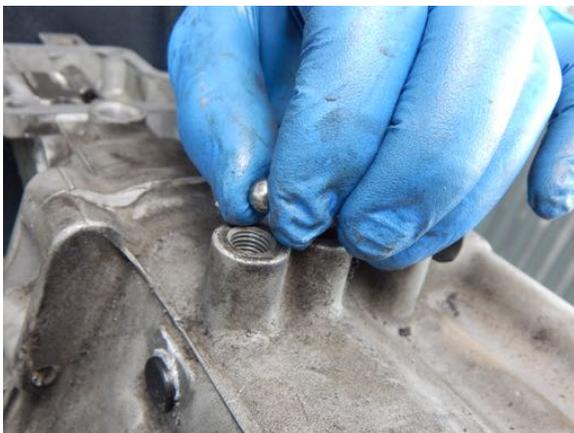
Step 97

Install the 2 & 4 WD Detent bolt.



Step 98

Tighten the bolt and torque it to 10 ft. lbs.



Step 99

Install the High-Low detent ball, spring and bolt in the exact same order you did the 2 & 4 WD detent, ball spring and bolt. Torque the bolt to 10 ft. lbs.



Step 100

Install the 4WD switch and tighten it.

Caution: This switch does not need to be very tight. An estimated 10 ft. lbs. is sufficient.



Step 101

Install the 4WD Low Switch and snug it to about 10 ft. lbs.



Step 102

Install the select return plug and washer only.



Tech Tip 102

In order for the twin sticks to work properly, these (3) parts **MUST** be left out of the assembly.



Step 103

Reinstall the transfer case in reverse order of removal.

Important Notice

The rest of these instructions are shown with the transfer case on the workbench. This is done to give you a better view of each step. However, you will be performing these steps with the transfer case in the vehicle.



Step 104

Insure that the shifter tower gasket surface and cavity is still clean.



Step 105

Apply a thin bead of Permatex Gear Oil RTV Gasket Maker to the shift tower mounting surface.



Step 106

Spread the gasket maker to a thin even coat using your finger.



Step 107

Position the supplied shifter plate on the shifter tower mounting surface.



Step 108

Install the (5) supplied allen head counter sink bolts.



Step 109

Snug these bolts in a progressively tighter criss-cross pattern until 20 ft. lbs is reached using a 5mm allen socket.



Step 110

Remove both of the Trail-Gear shift knobs.



Step 111

Install both of the supplied Low Range shift knobs as shown here.



Tech Tip 111A

Be sure to install a supplied adjustment nut under each Low Range Shift knob.



Tech Tip 111B

This is a closer view of the correct Low Range shift knob orientation.



Step 112

Position the supplied gasket as shown.



Step 113

Position the supplied shifter tower and align the holes.



Step 114

Install the (4) supplied shifter tower bolts.



Step 115

Tighten these bolts in a progressively tighter criss-cross pattern until 10 ft. lbs is reached using a 12mm socket.



Step 116

While sitting in the drivers seat check to see that each shifter works properly. Check the passenger side shifter to see that it goes into Low, Neutral and High. Then check the driver side shifter to see that goes into 4WD, Neutral and 2WD.



Step 117

Install the supplied shifter boot in place of the single shifter boot removed earlier.

Note: Use the supplied self drilling screws to make this installation.



Step 118

Install all interior parts in reverse order of removal.



Congratulations!

You have successfully installed twin sticks in your Sidekick/Tracker/X90. We hope these instructions have been helpful. If you have suggestions on how to make these instructions (or products) better, please email us at: sales@lowrangeoffroad.com



As always, If you experience any difficulty during the installation of this product please contact Inchworm Gear Technical Support at 530-677-8111 M-F 8:00am-5:00pm MST. Thank you for purchasing from Low Range Off-Road.



These instructions are designed as a general installation guide. Installation of many Low Range Off-Road products require specialized skills such as metal fabrication, welding and mechanical trouble shooting. If you have any questions or are unsure about how to proceed, please contact our shop at 530-677-8111 or seek help from a competent fabricator. Using fabrication tools such as welders, torches and grinders can cause serious bodily harm and death. Please operate equipment carefully and observe proper safety procedures.

Rock crawling and off-road driving are inherently dangerous activities. Some modifications will adversely affect the on-road handling characteristics of your vehicle. All products sold by Low Range Off-Road are sold for off road use only. Any other use or application is the responsibility of the purchaser and/or user. Some modifications and installation of certain aftermarket parts may under certain circumstances void your original dealer warranty. Modification of your vehicle may create dangerous conditions, which could cause roll-overs resulting in serious bodily injury or death. Buyers and users of these products hereby expressly assume all risks associated with any such modifications and use.

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