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PAGE 1 OF 14 Page Rev. Date: 07-28-16
P/N: 48-4721 & 48-4723

TOYOTA LOW GEAR 4.7:1 21 or 23 SPL. INPUTS For Gear-Driven Transfer Cases ONLY

The installation of this gear set requires you to almost completely disassemble the transfer case. We have provided illustrative assembly and disassembly instructions. If your transfer case is in need of a rebuild, now would be the time to do it.

Here are a couple of points to keep in mind that will make the installation much easier if you've never disassembled a Toyota transfer case:

- 1.) Keep all bolts separated into groups as you remove them and label their container.
- 2.) Keep all small parts in separate containers and label as to location and origin.
- 3.) Make sure you have plenty of time and a clean, spacious area to perform the installation.
- 4.) You might want to have a qualified machine shop remove and install the bearings and seals on the new gears, input shaft and in the case.
- 5.) The Sumo Gear instructions are to be used as a guide. The official Toyota shop manual is strongly recommended for your particular application. **See Pages 3 & 4 on this instruction sheet to identify your style transfer case & see what modifications are needed to your transfer case.**

TOOLS YOU WILL NEED:

12mm, 14mm and 30mm Metric sockets and ratchet driver
6mm Allen (hex) head wrench
Snap-ring pliers
3/16" (4mm) drift / roll pin punch
Plastic soft blow hammer
Bearing / gear puller with long fingers
Bearing press device
Die grinder

SPECIAL NOTE: The components packaged in this kit have been assembled and machined for specific type of conversions. Modifications to any of the components will void any possible warranty or return privileges. If you do not fully understand modifications or changes that will be required to complete your conversion, we strongly recommend that you contact our sales department for more information. This instruction sheet is only to be used for the assembly of Advance Adapter components. We recommend that a service manual pertaining to your vehicle be obtained for specific torque values, wiring diagrams and other related equipment. These manuals are normally available at automotive dealerships and parts stores.



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SNAP RING LIST:

This is a list of Toyota snap rings that may be needed for your installation should your stock snap rings become distorted during disassembly or assembly. These snap rings are stock Toyota parts and can be obtained at a Toyota parts dealership. Advance Adapters does not carry these components.

36221C

90520-28242 1.50-1.55mm
90520-28248 1.60-1.65mm

36223A

90520-30215 2.10mm
90520-30217 2.20mm

36231F

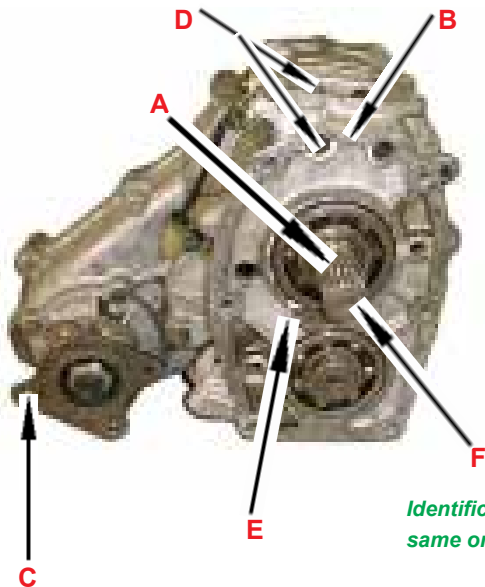
90520-71221 1.65mm with 71.1mm ID
90520-36250 2.40-2.45mm
90520-36251 2.45-2.50mm
90520-36252 2.50-2.55mm
90520-36253 2.55-2.60mm
90520-36254 2.60-2.65mm
90520-36255 2.65-2.70mm

36212D

90520-72001 1.45mm
90520-72002 1.50mm
90520-72003 1.55mm
90520-72004 1.60mm
90520-72005 1.65mm

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1979-80 4SP TRANSFER CASE

- A. Extended splines on input shaft.
- B. Short Case (.400).
- C. 8.125 Front driveline bolts.
- D. Transfer case shifter in top of T-case. Short shift rails.
- E. Noisy run gears (no front retainer clip).
- F. 21 spline input shaft.

Modification Notes:

This transfer case will require modifications to the shift forks. Refer to Assembly Step A-12 of the in the Toyota Truck Instruction Manual.

The transfer case reduction box may need to be relieved due to core shift. Refer to Assembly Step A-11 of the in the Toyota Truck Instruction Manual.

Identification points on this transfer case are the same on the transfer cases below.

1981 to (April) 1983 5SP TRANSFER CASE

- B. Short Case (.400).
- C. 8.125 Front driveline bolts.
- D. Transfer case shifter in top of T-case. Short shift rails.
- E. Noisy run gears (no front retainer clip).
- F. 21 spline input shaft.

Modification Notes:

This transfer case will require modifications to the shift forks. Refer to Assembly Step A-12 of the in the Toyota Truck Instruction Manual.

The transfer case reduction box may need to be relieved due to core shift. Refer to Assembly Step A-11 of the in the Toyota Truck Instruction Manual.



1984-88 CARBURETED 5SP TRANSFER CASE

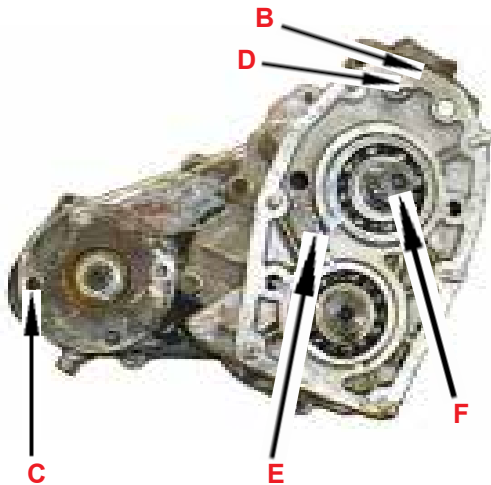
- B. Tall Case (.580).
- C. 10.125 Front driveline bolts.
- D. Transfer case shifter in top of transmission with forward shift rails.
- E. Quiet run gears (front retainer clip).
- F. 21 spline input shaft.

Modification Notes:

The transfer case reduction box may need to be relieved due to core shift. Refer to Assembly Step A-11 of the in the Toyota Truck Instruction Manual.

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TOYOTA LOW GEAR 4.7:1 21 or 23 SPL. INPUTS For Gear-Driven Transfer Cases ONLY



1985-88 E.F.I. 5SP TRANSFER CASE

- B.** Tall Case (.580).
- C.** 10.125 Front driveline bolts.
- D.** Transfer case shifter in top of T-case. Short shift rails with low-range shifter rod protruding out approximately .500.
1985 to August 1988 Carbureted T-cases had shifter in transmission.
- E.** Quiet run gears (front retainer clip).
- F.** 21 spline input shaft.

Modification Notes:

This transfer case will require modifications to the shift forks. Refer to Assembly Step A-12 of the in the Toyota Truck Instruction Manual.
The transfer case reduction box may need to be relieved due to core shift. Refer to Assembly Step A-11 of the in the Toyota Truck Instruction Manual.

Identification points on this transfer case are the same on the transfer cases below.

1989-95 E.F.I. 5SP TRANSFER CASE

- B.** Tall Case (.580)
- C.** 10.125 Front driveline bolts.
- D.** Transfer case shifter in top of transmission with forward shift rails. The shifter rods are 1/2" shorter than the 1984-88 Carbureted T/C.
- E.** Quiet run gears (front retainer clip).
- F.** 21 spline input shaft.

Modification Notes:

The transfer case reduction box may need to be relieved due to core shift. Refer to Assembly Step A-11 of the in the Toyota Truck Instruction Manual.



1986-87 TURBO E.F.I. 5SP TRANSFER CASE 1988-95 V6 5SP TRANSFER CASE

- B.** Tall Case (.580)
- C.** 10.125 Front driveline bolts.
- D.** Transfer case shifter in top of transmission with forward shift rails.
- E.** Quite run gears (front retainer clip).
- F.** 23 spline input shaft.

Modification Notes:

The transfer case reduction box may need to be relieved due to core shift. Refer to Assembly Step A-11 of the in the Toyota Truck Instruction Manual.

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TOYOTA LOW GEAR 4.7:1 21 or 23 SPL. INPUTS For Gear-Driven Transfer Cases ONLY

Installation Tips: For those who do not have access to a mill, here is an easy way to clearance your reduction housing. This procedure requires only some marking fluid and a small angled grinder. This should take you about 1 hour, but remember to take your time and do it slowly. If you do not feel comfortable making these modifications, we offer P/N 51-5911. This is a heavy duty housing that has been pre-cleared for these gear sets.



First, test fit your new gear set into your reduction housing. You will notice that the gears will interfere with the casting in multiple locations. Lightly tap the gear into the casting. This will score the casting at the interference locations. Now using marking fluid (paint pen, permanent marker, etc.), take the time to carefully mark all locations where contact is made.



Now that all your marks have been made, it's time to start slowly removing material from the casting. Using the grinder equipped with a 50 grit disc, begin to work away at your marked areas. Remember to take mental note of how much each section of the casting was contacting the gear. Take special care at this point not to remove too much material.



After the marked areas have been ground away, go ahead and re-test fit the gears back into the housing. Make sure to rotate the gear and that it has 360 degree clearance with all areas of the housing. At this point, it may be necessary to re mark areas where the gear is still contacting the housing. Repeating this procedure a few times will insure proper fit and you will avoid the possibility of grinding a hole through the casting.



With all the grinding done, test fit the gear set one last time making sure that every thing spins freely and that there are no hang ups or tight spots. In addition to the case, also remember that the shift rails will require some modifications due to gear interference. This would be the optimal time to complete this procedure as well. Make sure that the shift detents are installed to insure proper shift location for modifications to be made.

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TOYOTA TRANSFER CASE

ASSEMBLY & DISASSEMBLY PROCEDURES

These gears are ideal for the avid Toyota Truck rock crawler. These gears are designed for the Toyota Truck gear-driven transfer case. Depending on the model of your transfer case, some additional modifications may be required. Please refer to the Transfer Case information section for proper transfer case identification and possible modifications.

The installation of the Toyota gear sets requires you to almost completely disassemble the transfer case. We have provided illustrative disassembly and assembly instructions to assist you. These instructions are to be used as a guide. The official Toyota shop manual is strongly recommended for additional information. If your transfer case is in need of a rebuild, now would be the time to do it.

DISASSEMBLY



(Step D-1)

- (1) **The transfer case must be in 2WD High before starting the disassembly procedures.** Remove the nut with a 30mm socket and then remove the flange.



(Step D-2)

- (2) Remove the 7 bolts that retain the rear extension housing with a 14mm metric socket. **HINT:** Keep these bolts in a separate container. This will reduce the chances of placing the bolts in the wrong location on reassembly.

(Step D-3)

- (3) With the rear extension housing removed, you will see the oil pump and speedometer drive gears. Slide the gears off of the rear output shaft. Take note of the orientation of the oil pump and the speedometer gear. **NOTE:**

There is a small ball bearing under the speedometer drive gear. Make sure you store it in a bag or some other kind of container. These little parts can walk away.



(Step D-4)

- (4) Remove the rear output shaft bearing.



(Step D-5)

- (5) Remove outer bearing C-clip by reaching inside case and pushing up on gear, while lightly tapping on the case with a plastic soft blow mallet.



(Step D-6)

- (6) Remove the 10 bolts retaining the rear case cover with a 14mm socket. Retain these separately to avoid any confusion during assembly. **Some bolts are different lengths. Note their location before removal!**



(Step D-7)

- (7) Pull case off. Remove the two lubrication tubes located on either side of the main shaft. **Note their orientation!**



(Step D-11)

- (11) Remove the thick spacer found behind the front wheel drive gear and be aware of the small ball bearing underneath it.



(Step D-8)

- (8) Using a 3/16" (4mm) punch, drive the roll pin out that holds the front wheel drive shift fork.



(Step D-12)

- (12) Use a 12mm socket to remove the four bolts that retain the shift fork cover. With a 5mm Allen wrench, remove the shift detent screw plugs found on both sides of the case.



(Step D-9)

- (9) Slide the fork and clutch sleeve off the shift rail.



(Step D-13)

- (13) With the screw plugs removed, the shift ball and spring assemblies can be removed from both sides.



(Step D-10)

- (10) Remove the front wheel drive gear and its caged needle roller bearing assembly.

(Step D-14)

- (14) Drive the roll pin out that retains the high/low shift fork using a 3/16" (4mm) punch. Occasionally the pin will fall into the case. Don't worry. You will be able to retrieve the pin later. On 1979-83 and 1985-88 fuel injected model transfer cases, **DO NOT REMOVE** roll pin.





(Step D-15)

(15) Remove the shift rails, being careful not to lose the interlock pin that might fall out. This interlock pin is located

between the two shift rail detent assembly chambers.



(Step D-16)

(16) Remove the 4WD indicator switch with a 22mm wrench.

(Step D-17)

(17) Remove the interlock pin from the shifter detent chamber, if you haven't already done so in Step #D-15.



(Step D-18)

(18) Use a 14mm socket to remove the 4 bolts that retain the front case to the reduction case. Split the cases. Now you can retrieve the roll pin that might have fallen in as noted on Step #D-14.



(Step D-19)

(19) Remove the high/low shift fork with the clutch sleeve and needle bearing from the input shaft.



(Step D-20)

(20) Here are the gears that you will be replacing with the new Trail Tamer set.



(Step D-21)

(21) Remove the output shaft from the front case by removing the 4 bolts with a 12mm socket. Remove the bearing retainer and snap ring.



(Step D-22)

(22) Remove the snap rings that retain the input shaft and cluster gear bearings and remove the two from the case. You might have to use a slight tap from a soft plastic hammer to help them fall out.



(Step D-23)

(23) Remove the low range gear by removing the snap ring that retains the roller bearing onto the rear shaft. Press the roller bearing off of the shaft.



(Step D-24)

(24) Now that the roller bearing is removed, you will see a spacer. Remove the spacer, **being careful not to lose the ball bearing underneath it**. Remove the low range gear and needle bearing. You will be replacing this gear with the new low gear.

ASSEMBLY



(Step A-1)

(1) Notice that the cluster / counter gear does not incorporate the stock sub-gear and spring washer. These are not used!



(Step A-4)

(4) Install the ball bearing and spacer. Use a drop of assembly lube to hold the small ball bearing in place during assembly.



(Step A-2)

(2) Install the cage needle bearing on the output shaft. Use assembly lube provided in the kit!



(Step A-5)

(5) Reinstall the original roller bearing on the output shaft. **Note snap ring groove orientation on bearing!**



(Step A-3)

(3) Install the new low range gear. Apply a small amount of assembly lube to the caged roller bearing.



(Step A-6)

(6) Install the snap ring that retains the output shaft bearing in place.



(Step A-7)

- (7) Install the output shaft assembly into the case. You might have to tap it in gently with a *soft plastic hammer*.



(Step A-8)

- (8) Install a new snap ring (provided in the kit) that holds in the bearing for the output shaft.



(Step A-9)

- (9) Install the bearing retainer into its original position. Apply Loctite 242 and install the 4 bolts removed earlier. Torque evenly to 13 ft./lbs.



(Step A-10)

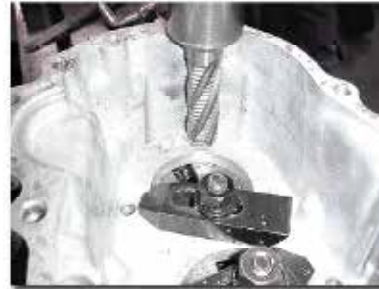
- (10) Press on the cluster / counter gear and input gear bearings. Be sure to install new snap rings that retain the bearings on the shafts.



4.77 cluster interference

(Step A-11)

- (11) Install the cluster and input gears into the reduction case. A slight tap from a *soft plastic hammer* should be all it takes to get them seated. Note: On the 4.77 & 5.0 gears, the case must be machined to provide clearance for the cluster gear. On some 4.0 cluster gears, we have found that the case will need to be relieved due to core shift. Spin the cluster gear to check for interference.



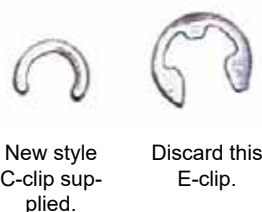
You can grind the necessary clearance; however, it is recommended to machine the case for this clearance. We used a 1" coarse pitch roughing end mill and took approximately .050" off the inside case wall. (We also offer a new front housing that has the proper gear clearance, [P/N 51-5911](#))



(Step A-12)

- (12) If your case uses the large E-clip, remove and replace with the new C-clip (supplied in kit). **See Photo A-12a.** The shift fork/rail assembly should be test fit before proceeding with the assembly. Some grinding on the fork rail boss may be required to clear the larger gear. See **Photo A-12b** for grinding locations.

As a final check, reinstall shift rails/fork assembly over new gear and temporarily install mating case so that the shift rails are indexed into the case. The gear should rotate easily with no interference. Now remove case half and go on to Step 13.



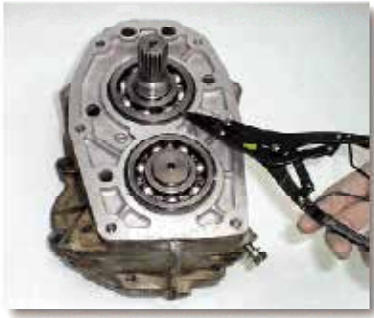
New style C-clip supplied.

Discard this E-clip.



Photo A-12a

Photo A-12b



(Step A-13)

(13) Install new snap rings that retain the cluster / counter and input gear assemblies in place.



(Step A-14)

(14) Install the output shaft "pocket" needle bearing. Apply assembly lube!

(Step A-15)

(15) Install the clutch sleeve and the high/low shift fork set into position.



(Step A-16)

(16) Before mating the surfaces of the reduction box and the front case, apply a **few thin dabs** of RTV blue silicon sealant to the new gasket that installs between them.



(Step A-17)

(17) Apply Loctite 242 to the 4 bolts that secure the reduction case to the front case. Torque them evenly to 29 foot/pounds using a 14mm socket.



(Step A-18)

(18) Install the high/low range shift rail. Use assembly lube!



(Step A-19)

(19) The shifter must be in 4WD High to install the interlock pin. Make sure it slides freely into place. Use that assembly lube!



(Step A-20)

(20) Install the roll pin that retains the high/low shift fork in place on the shift rail.



(Step A-21)

(21) Notice that the cluster / counter gear does not incorporate the stock sub-gear and spring washer. These are not used!



(Step A-22)

(22) Install the detent plugs (with Loctite 242), spring and ball assembly on both sides of the assembly cases. This will position the shift rails once the retaining plugs are installed. Torque the detent plugs to 9 ft./lbs. Use assembly lube!



(Step A-23)

(23) Apply a drop of assembly lube on the tip of the 4WD indicator switch and install it into its original position on the reduction case.



(Step A-24)

(24) Install the small ball bearing in the machined pocket on the output shaft. Use a drop of assembly lube to hold it in place.



(Step A-25)

(25) Install the spacer onto the output shaft.



(Step A-26)

(26) Install the 2 caged needle roller bearings on the output shaft. Use assembly lube.



(Step A-27)

(27) Install the transfer gear onto the output shaft. Use assembly lube!



(Step A-28)

(28) Before proceeding, make sure you have installed these snap rings!



(Step A-29)

(29) Install the shift fork and shift hub sleeve onto the output shaft.



(Step A-30)

(30) Install the roll pin that holds the front wheel drive shift fork in place.



(Step A-31)

(31) Install the clutch hub onto the output shaft.



(Step A-32)

(32) Install the bearing onto the output shaft.



(Step A-33)

(33) Install the drive gear for the speedometer onto the output shaft. Make sure the orientation is correct. The hardened side goes against the bearing.



(Step A-34)

(34) Install the ball bearing onto the pocket on the output shaft using a drop of assembly lube to hold it in place. Install the oil pump drive gear.



(Step A-35)

(35) Install the two lubrication tubes into the case. Note the orientation shown in the photo above.



(Step A-36)

(36) Apply a very thin coat of silicone gasket sealant to the rear case gasket, and position the rear case. Apply Loctite 242 to the threads and install the 10 bolts that retain the case with a 14mm socket **loosely**. You will tighten these later, after the centering of the case is performed in the following procedures.



(Step A-37)

(37) Replace the outer seal in the rear tail housing. Apply a thin film of assembly lube to sealing lip of seal.

(Step A-38)

(38) Apply a **few thin dabs** of silicone gasket sealant to the rear tail extension gasket and position the rear tail extension. Apply Loctite 242 to the threads and install **loosely** the 7 bolts that retain the tail extension with a 14mm socket. You will also tighten these later, after the centering of the case is performed.



(Step A-39)

(39) Insert the rear drive shaft flange. This will center the cases on the seals in the rear tail extension. Use assembly lube where seal rides on driveshaft flange.



(Step A-40)

(40) Now, with the seals centered on the rear shaft, torque the bolts to 34 ft./lbs.



(Step A-41)

(41) Install the speedometer drive assembly and the retainer.



(Step A-42)

(42) Apply a thin film of RTV sealant to the cover plate mating surface. Install the 4 bolts that hold it in place and tighten firmly. **We do not recommend using the stock gasket in this location.** On occasion we have found this gasket to slip out of position and cause a serious leak.



(Step A-43)

(43) Clean and apply a bead of RTV black silicone sealant to about the middle of the spline area and slide the rear drive shaft flange into position. Install the retainer nut and torque to 90 ft./lbs. Using a chisel and hammer, fold the lip of the nut to lock it in place.