

INSTALLATION INSTRUCTIONS



Trail-Creeper Pro HD 4.70 Transfer Case Gear Kit

TGI-313825 (21-Spline) | TGI-313826 (23-Spline)

Kit Contents:



**COMPONENTS ARE NOT TO SCALE.

TGI-313854

TRAIL-GEAR

TGI-313854-INS

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NOTES

The transfer case input gear is the gear that slides into the transmission. V6 and turbo transmission use a 23-spline gear that is slightly larger than the 21-spline gear used on 4-cylinder transmissions. On a single transfer case you must use the gear type that matches the transmission.

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In a dual transfer case with 21-spline gears in both cases the weak spot and most common failure point is the input gear to the rear case. A dual transfer case built with 21-spline gears in the front case and 23-spline gears in the rear case is stronger and now the most likely point of failure becomes the rear output shaft. If you're purchasing both a dual adapter and 4.70 gears for the rear case, order both in 23-spline. There is no cost difference building with 23-spline parts if you order both the dual adapter and gears in 23-spline configurations.

In these instructions we refer to different transfer case housing sections by number. The pictures below show each housing and its corresponding number.



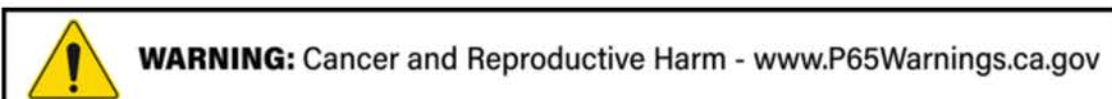


Recommended Tools:

- Ratchet, 12mm, 14mm, and 30mm sockets
- Air Wrench
- Needle Nose Pliers
- Hammer
- Grinder
- 3/16" Diameter Pin Punch
- Snap Ring Pliers
- 6mm Allen Wrench
- Gasket Scraper
- Flat Blade Screwdriver
- Adjustable Wrench
- Permatex® Ultra Grey® Silicon
- Axle Grease

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 e-mail 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 e-mail 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 Toyota Pickup/4Runner vehicles. Some vehicles may vary. If necessary, refer to the proper Factory Service Manual for the year and model of your vehicle.



INSTALLATION INSTRUCTIONS (CONT.)



STEP 1

Remove the 30mm rear output flange nut and slide the flange off the output splines



STEP 2

Remove the speedometer sender bolt.



STEP 3

Remove the speedometer sender.



STEP 4

Remove the 7 bolts holding housing #4. Pull the housing off and remove it.



STEP 5

Using snap ring pliers, remove the outer snap ring from the 4WD idler shaft bearing.



STEP 6

Remove the 10 bolts holding housing #3 and slide the housing out.



INSTALLATION INSTRUCTIONS (CONT.)



STEP 7

Remove the 2 oil galleys by gently pulling them straight out.



STEP 8

Remove the front output idler gear.



STEP 9

Remove the speedometer drive gear.



STEP 10

Remove the oil pump gear and the lock ball.



STEP 11

Remove the 63/28N bearing from the rear main shaft.



STEP 12

Shift into 2WD high. Remove the 2WD/4WD shift fork roll pin with a 3/16" pin punch.



INSTALLATION INSTRUCTIONS (CONT.)



STEP 13

Remove the 2WD/4WD shift hub.



STEP 14

Remove the 2WD/4WD shift collar & fork.



STEP 15

Slide off the front output gear from the output shaft.



STEP 16

Remove the pair of cage bearings from the output shaft.



STEP 17

Remove the thrust washer and locking ball.



STEP 18

Remove the front output 30mm nut and the flange.



INSTALLATION INSTRUCTIONS (CONT.)



STEP 19

Remove the 4 bolts holding housing #5. Slide housing #5 off.



STEP 20

Remove the snap ring from the front output bearing.



STEP 21

Remove the front output gear.



STEP 22

Unbolt and remove the shifter base or block offplate depending on the model.



STEP 23

Remove the 4WD light switch.



STEP 24

Using an Allen wrench, remove the detent plugs from both sides of the case. Rotate the case on its side, and tap the case lightly to allow the spring and ball to fall out.



INSTALLATION INSTRUCTIONS (CONT.)



STEP 25

Remove the 2 bolts holding housing #1 on the passenger side of the case.



STEP 26

Remove the last 2 remaining bolts holding housing #1 on the driver side of the case.



STEP 27

Remove the snap ring from the input shaft bearing.



STEP 28

Remove the snap ring from the idler shaft bearing.



STEP 29

Using a pin punch, drive out the roll pins from each of the shift rails. Let the pins fall into the case.



STEP 30

Slide housing #1 forward and remove. Retrieve the two shift fork roll pins from the bottom of the housing.



INSTALLATION INSTRUCTIONS (CONT.)



STEP 31

Remove the input gear.



STEP 32

Remove the countershaft gear.



STEP 33

Remove the pocket bearing from the inside of the main shaft.



STEP 34

Remove the 2WD/4WD shift fork.



STEP 35

Remove the HI/LO shift fork along with the shift collar.



STEP 36

Turn the transfer case upside down and remove the shift fork interlock pin from the detent plug hole.



INSTALLATION INSTRUCTIONS (CONT.)



STEP 37

Remove the 4 bolts holding the main shaft bearing cover. Remove the cover.



STEP 38

Remove the snap ring on the main shaft bearing.



STEP 39

Slide housing #2 off of the main shaft.



STEP 40

Remove the snap ring from the main shaft.



STEP 41

Remove the 6208N main shaft bearing using a gear puller or press.



STEP 42

Remove the thrust washer and lock ball from the main shaft.



INSTALLATION INSTRUCTIONS (CONT.)



STEP 43

Remove the low-speed gear from the main shaft. Discard the low-speed gear.



STEP 44

Remove the cage bearing from the main shaft.



STEP 45

Remove the snap ring from the input gear. Discard the bearing and the input gear.



STEP 46

Remove the snap ring countershaft gear. Discard the bearing and the countershaft gear.



STEP 47

Using an end mill or hand grinder clearance case as required to accept the new 4.70 countershaft.



STEP 48

Install the countershaft and bearing into the housing and spin to verify the clearance between the gear and housing.



INSTALLATION INSTRUCTIONS (CONT.)



STEP 49

Using a hand grinder, remove about 1/8" of aluminum from housing #1 near the oil galleys.



STEP 50

Apply bearing grease to the bottom of the main shaft and then install the low-speed needle bearing. Apply another layer of grease on to the outside of the needle bearings.



STEP 51

Slide the new 4.70 low-speed gear onto the main shaft and over the needle bearings.



STEP 52

Apply grease to the lower main shaft ball hole. Insert the ball into the hole.



STEP 53

Apply axle grease to the top face of the low-speed gear as shown above.



STEP 54

Slide the thrust washer into place, lining up the notch in the washer with the lock ball from the previous step.



INSTALLATION INSTRUCTIONS (CONT.)



STEP 55

Slide the 6308N down onto the thrust washer. Press the bearing down until it contacts the thrust washer and the snap ring groove is visible. Install the snap ring above the bearing on the main shaft.



STEP 56

Slide Housing #2 onto the main shaft and seat housing on the 6308N bearing.



STEP 57

Install the snap ring onto the outside of the 6308N bearing.



STEP 58

Slide the bearing retainer over the main shaft and into place.



STEP 59

Install the 4 retainer bolts and torque to 10 ft/lbs.



STEP 60

Using a grinder or file, clearance the shift fork and block as shown.



INSTALLATION INSTRUCTIONS (CONT.)



STEP 61

Insert the roll pin into the low range shift fork. The shaft can go in two ways, install as shown above. Notice the position of the notches on the shift rail during assembly.



STEP 62

Place the clutch sleeve into the shift fork and slide the fork into place.



STEP 63

Grease the HI/LO pocket bearing inside and out. Insert the bearing into the main shaft.



STEP 64

Grease both the countershaft and idler bearings as shown



STEP 65

Install the countershaft gear/bearing assembly as shown.



STEP 66

Install the input gear/bearing assembly into the main shaft.



INSTALLATION INSTRUCTIONS (CONT.)



STEP 67

Place the new gasket onto housing section #2.



STEP 68

Slide housing #1 into place and install the bolts as shown. Using a rubber hammer, apply gentle pressure to seat the housing.



STEP 69

Turn the transfer case around and install two more bolts on the other side.



STEP 70

Install the outer snap ring on the input gear bearing.



STEP 71

Install the inner snap ring onto the input gear bearing.



STEP 72

Install the outer snap ring on the countershaft bearing.



INSTALLATION INSTRUCTIONS (CONT.)



STEP 73

Install the inner snap ring onto the countershaft gear bearing.



STEP 74

Insert the interlock pin into the driver side detent hole. If installing a twin stick shifter skip this step. Turn the case on its side to assist in getting the pin to drop into place.



STEP 75

Make sure the interlock pin is all the way into position. Here the end of the pin can still be seen through the shift fork hole. Adjust the position of the shift fork until the pin can go all the way out of view.



STEP 76

Install the shift rail and shift block. On models with a C-clip replace the clip with the one provided. Install the clip as shown.



STEP 77

Use a 3/16" pin punch to drive the high low shift fork pin into place.



STEP 78

Reinstall the front output gear with the bearing into housing #2.



INSTALLATION INSTRUCTIONS (CONT.)



STEP 79

Install the snap ring on the front output bearing.



STEP 80

Replace the seal and felt on housing #5. Grease the inside of the rubber seal surface.



STEP 81

Place the front output gasket onto the face of housing #2.



STEP 82

Slide the housing #5 onto the front output shaft and install the four bolts. Torque to 10 ft/lbs.



STEP 83

Apply the grease to the ball hole on the main shaft.



STEP 84

Place the ball into the ball hole on the main shaft.



INSTALLATION INSTRUCTIONS (CONT.)



STEP 85

Align the thrust washer with the lock ball and slide it into place over the ball. Add grease to the face of the thrust washer once in place.



STEP 86

Grease the inside and outside of the output shaft cage bearings. Slide bearings into position on the main shaft.



STEP 87

Install the front output drive gear onto the main shaft.



STEP 88

Grease the outer face of the front output drive gear.



STEP 89

Slide the clutch hub into place on the main shaft.



STEP 90

Place the clutch sleeve into the shift fork. Slide the shift fork and clutch sleeve into the case.



INSTALLATION INSTRUCTIONS (CONT.)



STEP 91

Using a 3/16" pin punch, drive the shift fork roll pin down until it is flush with the fork.



STEP 92

Reinstall the front drive idler gear.



STEP 93

Install the output shaft rear support bearing.



STEP 94

Using a screwdriver, remove and replace the oil pump seal inside the oil pump drive gear.



STEP 95

Slide the oil pump drive gear onto the main shaft until it seats on the bearing.



STEP 96

Apply grease to the ball hole. Place the ball into the hole.



INSTALLATION INSTRUCTIONS (CONT.)



STEP 97

Align the notch in the speedometer drive gear with the ball on the main shaft. Slide the speedometer drive gear onto the main shaft.



STEP 99

Apply grease to the cage bearing in the back of housing #3.



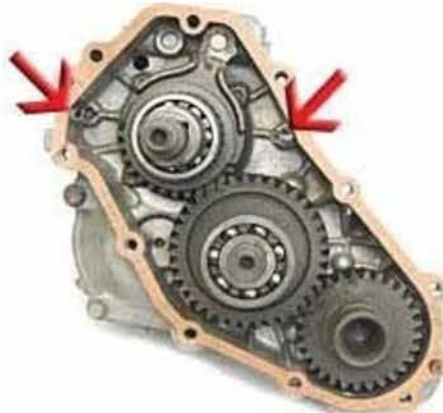
STEP 101

Install the outer snap ring on the idler bearing.



STEP 98

Place the new gasket onto the back of housing #2. Reinstall the oil delivery tubes at the arrows.



STEP 100

Install housing #3 onto the back of housing #2. Align the oil transfer tubes with the slots in the back of housing #3. Install 10 bolts into cover #3. Torque to 30 ft/lbs.



STEP 102

Place the new paper gasket onto the back of housing #3



INSTALLATION INSTRUCTIONS (CONT.)



STEP 103

Remove the old output seal on housing #4. Install the new seal and apply grease to the inner lip.



STEP 104

Install housing #4 onto the back of housing #3. Install 7 bolts into housing #4. Torque to 30 ft/lbs.



STEP 105

Using a screwdriver, remove and replace the speedometer sender seal. Apply grease to the plastic speedometer drive gear.



STEP 106

Slide the speedometer sender into housing #4. Install the speedometer lock tab and bolt, torque to 10 ft/lbs.



STEP 107

Rotate the case so it is on its side. Drop in one detent ball.



STEP 108

Next drop in one detent spring.



INSTALLATION INSTRUCTIONS (CONT.)



STEP 109

Apply a small amount of silicon to the threads of the detent plug and install. Flip the case over onto the other side and install the ball, spring and plug as above.



STEP 110

Install the 4WD shift light switch into housing #1.



STEP 111

Apply Permatex® Ultra Grey® silicon to the inside splines of both angles. Slide the angles into place on the transfer case.



STEP 112

Install the main shaft nuts and washers. Tighten each nut to 90 ft/lbs. Using a punch, stake the nuts into the main shaft as shown.



TRANSFER CASE OIL

After any major internal work to the transfer case, we recommend that the oil be changed after the first 1,000 miles or after the first trail ride (whichever comes first) to remove debris suspended in the oil. After the initial change, the oil should be change once each year or each 10,000 miles (whichever comes first). The fluid level in the case should also be checked each time the engine oil is changed. The fluid level should be checked after a roll-over as it is possible for fluid to leak out of the transfer case when the truck is on its side or is inverted.



WARNING