

TERAFLEX

INSTALLATION GUIDE

Instruction Guide for the 18 3.15:1 Low Range Gear Conversion Kit Part #002111018 (LOW18)

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Before installation make sure that your kit contains all of the proper parts and quantities.

Each LOW18 kit should include the following items:

- 1- TL20A- main drive gear (6 spline)
- 1- TL20B- intermediate gear
- 1- TL20C- front output gear (26 spline)
- 1- TL20D- sliding gear (12 spline)
- 1- 942115K- Intermediate shaft/needle bearings
- 1- D18GS- gasket kit

Special Instructions:

Shift Rod -

It is necessary to shorten the shift rod (#29) approximately 1/2" off the inside end so that it will clear the intermediate gear.

Case Requirements -

Because the Low18 conversion kit fits only the larger Model 18 cases, CJs older than 1965 will require a case from one of the following vehicles in order to use it:

- 1966-71 CJ
- 1963-79 Wagoneer or pickup 20
- 1972-79 CJ 20

The Dana 20 case will interchange with the 18 components and still allow output shaft locations to remain offset.

Disassembly

1. Drain transmission and transfer case and replace drain plugs.
2. Disconnect the brake cable.
3. Disconnect front and rear propeller shafts at the transfer case.
4. Disconnect speedometer cable at transfer case.
5. Disconnect the transfer case shift levers. Loosen set screw and remove pivot pin. Use a screw driver to pry shift lever springs away from shift levers. Lift levers from transfer case.
6. Remove cover plate on rear face of transfer case. Remove cotter key, nut and washer from transmission main shaft.
7. If possible, remove the transfer case main drive gear, from the transmission main shaft. If not possible, see step 10.
8. Remove transfer case mounting bracket bolt and nut.
9. Remove transmission to transfer case bolts.
10. Remove transfer case. If the transfer case main drive gear has not been removed in step 7 above, proceed as follows: Brace the end of the transmission main shaft so that it cannot move in the transmission, pull the transfer case to the rear to loosen the gear and remove the gear. When separating the two housings, use care that the transmission main shaft bearing, which bears in both housings, remains in the transmission.

Transfer Case Disassembly

1. Remove output shaft nuts and washers. Remove rear output shaft companion flange with brake drum (if so equipped) and front output shaft yoke.
2. Remove cover bolts, lock washers, and bottom cover.
3. Remove the lock plate screw, lock washer, and lock plate.
4. Use a brass punch to drive out the intermediate shaft to the rear of the case. Do not lose the thrust washers located at each end of the gear shaft.
5. Remove the intermediate gear, two thrust washers, needle bearings, and spacers, through the bottom of the case.
6. Remove the poppet plugs, springs, and balls on both sides of front bearing cap. Shift front wheel shift lever into engaged position.
7. Remove the screws, lock washers, holding the front bearing cap. Remove the cap as an assembly including the clutch shaft, bearing, clutch gear, fork, and shift rod. Use care not to lose the interlock which floats between the shift rods.
8. Remove the screws, lock washers holding the brake backing plate assembly (if so equipped) and rear output cap with speedometer gear assembly. Remove entire unit as an assembly.
9. Use a rubber mallet to drive against the front end of the output shaft to drive the rear bearing cup from the case. Wedge front bearing cone and roller assembly from its seat on the shaft. Use a rubber mallet to drive against the rear end of the output shaft to remove front bearing cup from the case. Remove snap ring and slide it forward on the shaft. Drive the shaft through the rear of the case. As the shaft is removed, gears, snap ring and thrust washer will remain in the case and can be removed from the bottom. Remove rear bearing cone and roller assembly from the shaft by striking the end of the shaft lightly against a wooden block.
10. Remove the set screw in sliding gear shift fork. Remove shift rod.

Front Bearing Cap Disassembly

1. Remove the output shaft yoke. Remove the poppet balls and move the front wheel drive shift rod forward.
2. Remove yoke oil seal. Remove shift rod oil seals.
3. Remove the front bearing cap assembly.
4. Remove the set screw from shifting fork and shifting rod. The clutch gear and shifting fork can be removed together.
5. Remove output clutch shaft assembly by carefully pressing it through the bearing.
6. Remove bearing retainer snap ring and the bearing.

Rear Bearing Cap Disassembly

1. Remove the output shaft rear end yoke or companion flange. Separate the brake drum and companion flange by removing bolts, lock washers, and nuts.
2. Remove the oil seal.
3. Remove speedometer driven gear assembly.
4. Remove the cap screws attaching the cap and brake backing plate to the case. Take precautions not to lose or damage bearing adjusting shims placed between the cap and the transfer case housing.
5. Separate the rear cap and brake backing plate assembly.
6. Remove speedometer driving gear.

Assembly

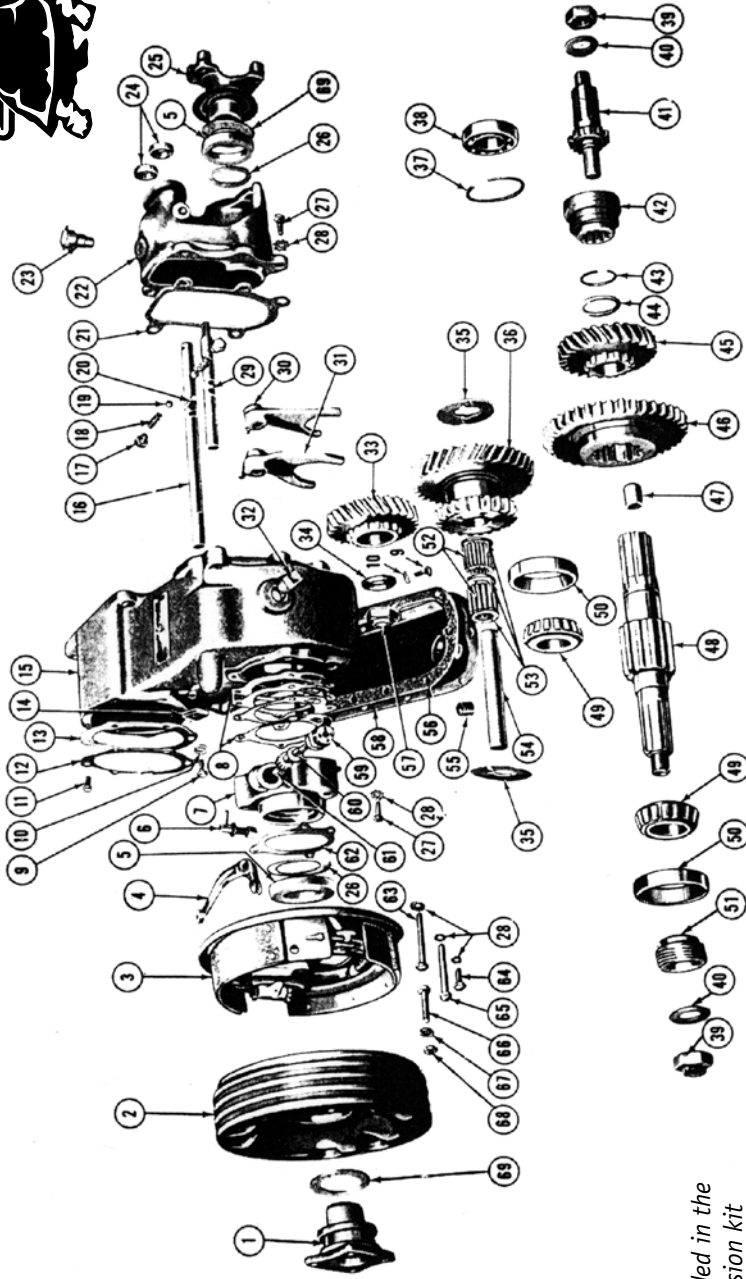
Reassembly of the transfer case is reverse of the order in which it was disassembled.

1. Use a thimble and driver type tool when installing the snap ring on the output shaft.
2. To prevent damage to the assemblies, use a piece of tubing when installing the cone and roller assemblies on the output shaft.
3. Late production transfer cases were equipped with a 1 1/4" diameter intermediate shaft, and bearings consisting of individual rollers and spacers. A dummy shaft is required to install the intermediate shaft. The dummy shaft should be smaller in diameter than the intermediate shaft and a little shorter than the width of the intermediate gear. To install the intermediate gear, first load the bearing rollers and spacers in the gear using the dummy shaft. Then supporting the front thrust washer with your fingers, install the intermediate shaft, driving out the dummy shaft.
4. Check the end movement of the main shaft when the rear bearing cap is installed. This will determine the adjustment of the tapered roller bearings. The shaft end play must be within the specified range for the bearing to be properly adjusted. The shaft should have .004" to .008" of end play. Adjustment is made by selective shim installation between the cap and the case. Do not install the rear cap oil seal until the bearings are correctly adjusted.
5. Install both front and rear oil seals.
6. When installing the end yokes on the output shafts make sure that the felt seals are installed in the oil seal guards.
7. When installing the shift rail oil seals in the front bearing cap, it is necessary to protect the seals against damage when passing over the shift rail notches. Protect them with a thimble tool.

Exploded view of the Dana 18 transfer case



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Items circled are included in the Tera Low18 gear conversion kit

- 1. Companion Flange and Oil Seal Guard
- 2. Emergency Brake Drum
- 3. Emergency Brake
- 4. Brake Operating Lever
- 5. **Bearing Cap Oil Seal - J0923896, #450185, CR#15635**
- 6. Brake Operating Lever Stud
- 7. Rear Bearing Cap
- 8. Rear Bearing Cap Shim Set - A6753
- 9. Bolt
- 10. Lockwasher
- 11. Bolt
- 12. Transfer Case Rear Cover
- 13. **Rear Gasket Cover - A1509**
- 14. Intermediate Shaft Lock Plate
- 15. Transfer Case
- 16. Shift Rod
- 17. Poppet Plug

- 18. Poppet Spring
- 19. Poppet Ball
- 20. Shift Rod Interlock
- 21. **Bearing Cap Gasket - A957**
- 22. Front Bearing Shaft Cup
- 23. Breather
- 24. **Shift Rod Oil Seal - B131674 #4500095**
- 25. End Yoke
- 26. **Oil Gasket Seal**
- 27. Bolt
- 28. Lockwasher
- 29. Shift Rod
- 30. Front Wheel Drive Shift Fork
- 31. Underdrive and Direct Shift Fork
- 32. Filler Plug
- 33. **Main drive gear (TL20A)**
- 34. Mainshaft Washer
- 35. **Thrust Washer - 8121813**

- 36. **Intermediate Gear (TL20B)**
- 37. **Bearing Shaft Snap Ring**
- 38. Output Clutch Shaft Bearing
- 39. Companion Flange Nut
- 40. Plain Washer
- 41. Output Clutch Shaft
- 42. Output Clutch Shaft Gear
- 43. Output Shaft Gear Snap Ring
- 44. Thrust Washer
- 45. **Front Output Gear (TL20C)**
- 46. **Output Shaft Sliding Gear (TL20D)**
- 47. Pilot Bushing
- 48. Output Shaft
- 49. Cone and Rollers
- 50. Output Shaft Bearing Cup
- 51. Speedometer Drive Gear (6-T)
- 52. **Needle Bearing - 809294**
- 53. **Bearing Spacer**

- 54. **Intermediate Shaft**
- 55. Drain Plug
- 56. **Bottom Cover Gasket**
- 57. Mainshaft Nut
- 58. Transfer Case Bottom Cover
- 59. Speedometer Driven Gear Sleeve
- 60. Speedometer Driven Gear (15-T)
- 61. Speedometer Driven Gear Bushing
- 62. Backing Plate Gasket
- 63. Bolt
- 64. Bolt
- 65. Bolt
- 66. Bolt
- 67. Lockwasher
- 68. Nut
- 69. **Output Shaft Felt Seal**

TERAFLEX **PRODUCT INFORMATION**

MAINTENANCE INFORMATION:

It is the buyer's responsibility to have all suspension, drivetrain, steering, and other components checked for proper tightness and torque after the first 100 miles and every 3000 miles after that.

NOTICE TO INSTALLER:

The enclosed "Warning to Driver" sticker must be installed in the vehicle in driver's view. This sticker is to act as a constant safety reminder when operating the vehicle. It is your responsibility as the equipment installer to install the provided sticker and to forward the product instructions to the vehicle's owner for review. If a "Warning to Driver" sticker or product installation guide were not included in the kit, FREE replacement stickers and instructions are available by request. It is the installer's duty to ensure a safe and controllable vehicle after the modifications have been performed.

WARNING:

Neither the seller nor the manufacturer will be liable for any loss, damage, or injury directly or indirectly arising from the use of or inability to determine the use of these products. Before using, the user shall determine the suitability of the products for its intended use, and the user shall assume all responsibility and risk in connection therewith.

WARNING TO DRIVER:

This vehicle has been modified to enhance off road performance and has unique handling characteristics. Use in harsh environments can cause extreme stress on the components. Vehicle should be inspected after being off road to make sure that all the components are in working order and safe to travel on the highway. All fasteners should be checked so that they are at the correct torque specifications as the vibration and stresses from off roading may cause critical fasteners to work loose. Extra care should be taken to inspect the critical components, steering, and brake systems. During each oil change components such as arms, tie rod ends, etc should be greased and checked for excessive wear. Any worn components should be replaced. When returning to the pavement always set or restore tire air pressure to the factory recommendation and connect or engage any disabled sway bar mechanisms. Because of the higher center of gravity and larger tires, this vehicle handles and reacts differently than many passenger cars, both on and off road. You must drive it safely! Extreme care should be taken to prevent vehicle rollover or loss of control, which can result in serious injury or death. Avoid sudden sharp turns or abrupt maneuvers. Generally, braking performance and capabilities are decreased when significantly larger/heavier tires are used, especially when used in combination with transfer case low-range reduction kits. Take this into consideration while driving. Do not add, alter or fabricate any factory or aftermarket parts to increase vehicle height over the intended height of the TeraFlex product purchased. Mixing component brand is not recommended. TeraFlex Inc. will not be responsible for any altered product or any improper installation or use of our products. We will be happy to answer any questions concerning the design, function, and correct use of our products. It is ultimately the buyer's responsibility to have all bolts/nuts checked for tightness after the first 100 miles and then every 3000 miles. Wheel alignment, steering system, suspension and drive line systems must be inspected by a qualified professional mechanic at least every 3000 miles.

TERAFLEX PRODUCT WARRANTY:

Tera Manufacturing warrants TeraFlex Suspension products to the original retail purchaser to be free of defects in material and workmanship for as long as the original purchaser owns the vehicle on which products were originally installed. Failure to complete regular maintenance (grease every 3000 miles) on TeraFlex FlexArms will void this warranty. All other conditions of the standard TeraFlex product warranty apply.

All TeraLow products are covered by TeraFlex's two (2) year warranty to be free of defects in material and workmanship for two years from date purchased.

Tera axles are covered by a 12-month warranty to be free of defects in materials and workmanship.

This warranty does not cover or include product finish, improperly installed or applied products, improperly maintained products, products or components used for racing or competition or damage due to abuse or neglect, products that fail due to the use of larger tire and wheel combinations.

All returns must be accompanied by an original invoice. It is the customer's responsibility to remove the product from the vehicle. Shipping charges are the responsibility of the customer. Tera Manufacturing will pay the return freight if the product meets the terms of warranty.

This warranty is for the replacement or repair of defective TeraFlex products only and does not include freight charges, labor charges for removal of or installation of TeraFlex or related products or components, costs incurred due to down time of the vehicle, or lost profits due to vehicle down time.

A returned goods authorization number (RGA#) must accompany any returned products. For more information please contact a TeraFlex customer service representative.

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