

Transfer Case General

The gear console unit supports the transmission gear lever and the transfer case gear lever in the centre forward position of the driver's cab.

The transfer case gears are operated through a link rod to an effort advantage lever pivoted off the transfer case mounting bracket connected to the transfer selector.

IMPORTANT NOTE: When shifting the transfer shift from 2wd to 4wd high or 4wd low and 4wd low to 4wd high or 2wd it is important to have the vehicle moving at a walking pace on an unsealed surface. This is to eliminate transmission wind-up affecting gear selecting.

Dismantle (Transfer Shift)

With the gear change consol on the bench, (Refer - Section 9B page 1 for gear consol removal) to remove the transfer shift assembly from the housing refer to the following procedure:

1. Remove the pinch bolt 4 from the transfer shift lever (3 fig. 2.).
2. Remove the woodruff key from the shift lever (7 Fig. 2.) and withdraw the shift lever from housing.

Note: The areas to be checked for wear are as follows:-

- a) The bush, (9, Page 136) two of and:
- b) The shaft (7, Page 136) at the clevis pin end.
- c) Clevis pin (11, Page 136)

Assembly

The assembly is the reverse of the dismantle procedure.

Transfer Shift Link Rod & Lever Assembly

Removal of Link Rod

The transfer shift link rod is easily removed from the under side of the vehicle. The engine hatch is to be open drivers seat removed and driver's side inspection cover removed.

1. Remove the nut (15, Page 136) from lever (17) and remove the link rod assembly from the lever.
2. Remove the clevis pin (11, Page 136) and the transfer link rod can be removed.

Removal of Lever

1. Remove the lever (17 Fig. 2) from the transmission bracket by removing split pin (20) and pin pivot (19).
2. Remove the two bushes (18) from the lever (17).

Notes: The areas to be checked for wear are as follows:

- a) Rose joint (14 Fig. 2)
- b) Bush and pin (18 & 19 Fig. 2)

Installation

The reinstallation is the reverse of the removal procedure with the addition of the following procedure.

1. It is important when installing the link rod that it is located in the guide on the chassis.

TRANSFER BOX CONTROLS

1. KNOB LEVER
2. KNOB DECAL
3. TRANSFER LEVER
4. SETSCREW
5. SPRING WASHER
6. KEY
7. SHAFT & LEVER
8. FLAT WASHER
9. BUSH
10. TRANSFER LINK
11. PIN
12. FLAT WASHER
13. SPOT PIN
14. ROD END
15. NUT
16. SPRING WASHER
17. LEVER
18. BUSH
19. PIVOT PIN
20. SPOT PIN
21. TRANSFER SHIFT LINK

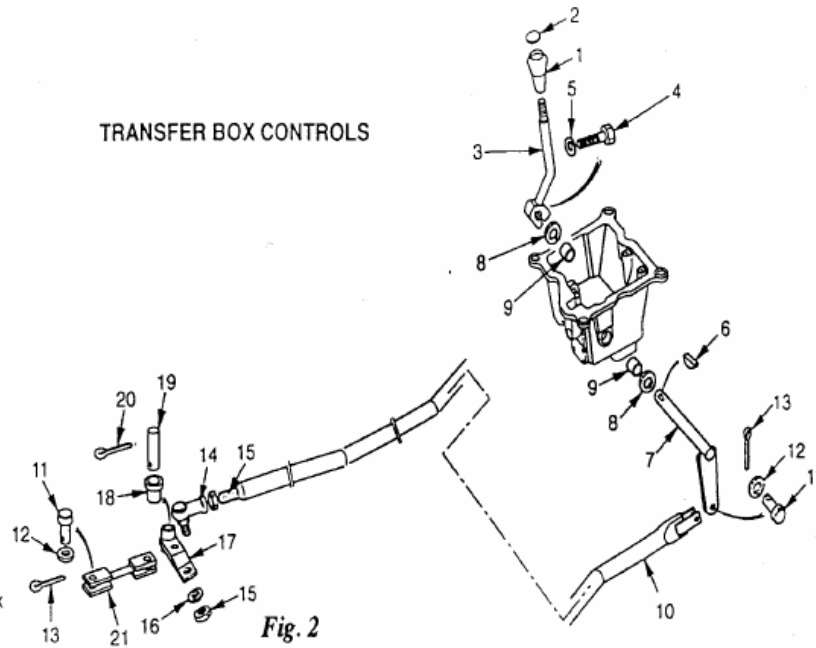
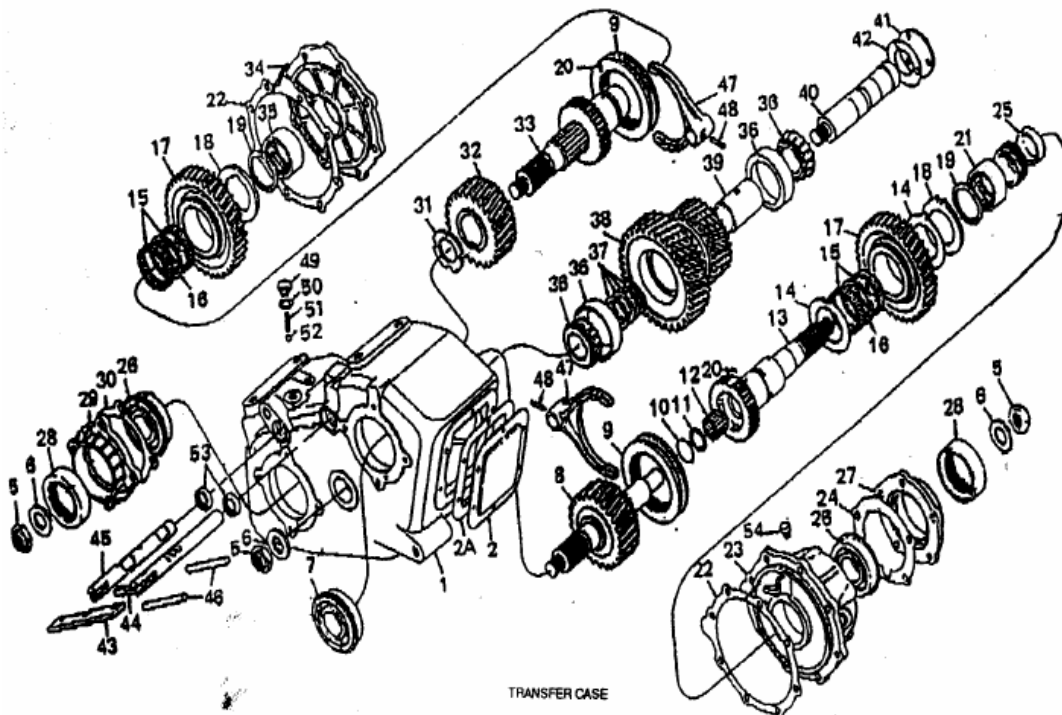


Fig. 2



TRANSFER CASE

1. CASE
2. COVER PTO
3. YRING INPUT SHAFT
4. SNAP RING INPUT SHAFT
5. NUT
6. WASHER
7. BEARING INPUT
8. GEAR INPUT
9. CLUTCH INPUT & F/OUTPUT
10. SNAP RING R/OUTPUT
11. WASHER R/OUTPUT
12. BEARING R/OUTPUT
13. SHAFT R/OUTPUT

14. THRUST WASHER
15. ROLLERS F & R/OUTPUT
16. SPACER
17. GEAR F & R/OUTPUT
18. THRUST WASHER
19. RETAINER
20. PIN THRUST WASHER
21. BEARING
22. GASKET
23. CAP
24. GASKET
25. SPACER (SPEEDO GEAR)
26. BEARING OUTPUT

27. CAP *NOT USED*
28. OIL SEAL
29. CAP F/OUTPUT
30. GASKET F/OUTPUT
31. THRUST WASHER
32. GEAR F/OUTPUT
33. SHAFT F/OUTPUT
34. CAP
35. BEARING F/OUTPUT
36. BEARING IDLER
37. SHIMS
38. GEAR IDLER
39. SPACER IDLER

40. SHAFT IDLER
41. CAP IDLER
42. GASKET IDLER
43. LINK, SHIFT ROD
44. SHIFT ROD 2 SPD
45. SHIFT ROD F/OUTPUT
46. PLUNGER INTERLOCK
47. SHIFT FORK
48. PIN
49. SCREW CAP
50. GASKET
51. SPRING
52. BALL
53. OIL SEAL

New Process 205 Transfer Case

Removal/Installation

1. Raise the vehicle with a jack and place it on jack stands.
2. Place a suitable container under the transfer case, remove the drain plug and drain the transfer case lubricant
3. On (XT Series), disconnect the front drive shaft and rear drive shaft at the transfer case.
4. On (XT Series), remove the bolts holding the transfer case to the adapter.
5. Remove and discard the cotter pin holding the shift rod clevis to the shift lever. Remove the washers and clevis pin. Separate the clevis from the shift lever.
6. Disconnect the speedometer cable at the transfer case.
7. Position a transmission jack under the transfer case. Secure the case to the jack with a chain.
8. Unbolt the transfer case bracket to frame rail bracket fasteners. Unbolt the stabilizer bar-to-bracket fasteners, if so equipped.
9. Pull the transfer case to the rear until it clears the transmission output shaft.
10. Lower the transfer case to the floor with the jack and remove it from under the vehicle.
11. Installation is the reverse of removal plus the following:
 - a) Tighten all fasteners to specifications (Page 142).
 - b) Fill the transfer case to the proper level with the recommended lubricant.
 - c) Adjust the shift linkage as described in this chapter.
 - d) Test-drive the vehicle and shift the transfer case through its range to check proper operation.

Transfer Case Disassembly

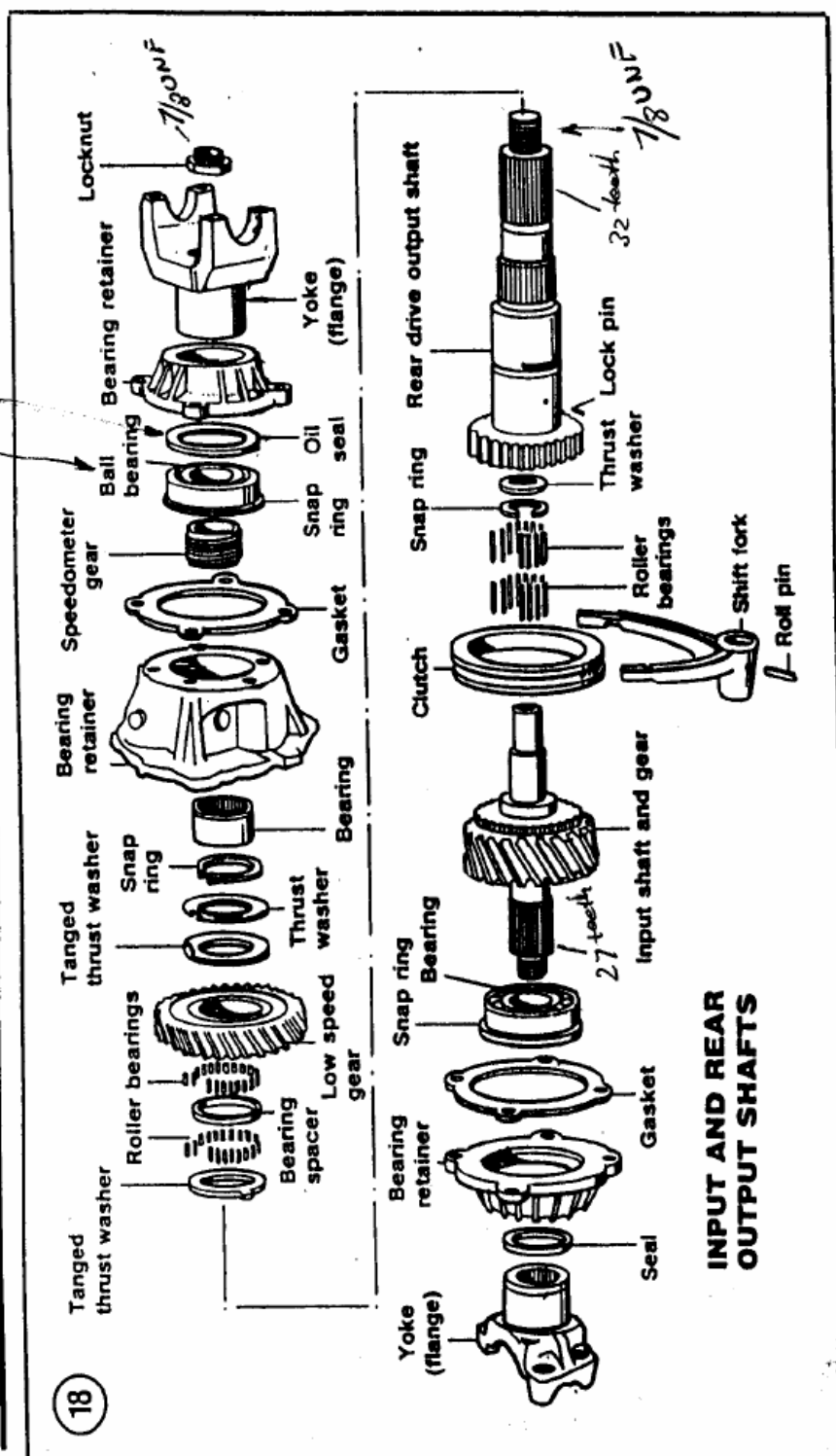
1. Clean all dirt and grease from the outside of the transfer case and install in a suitable holding fixture.
2. Use a flange-holding tool and loosen the front and rear output shaft flange nuts. Remove the nuts.

On XT series repeat this step to remove the input shaft flange nut.

3. Install a suitable puller to the front output shaft flange and remove the flange. Repeat this step to remove the rear output shaft flange (XT Series) and the input shaft flange.
4. Unbolt and remove the- front and rear output shaft rear bearing retainers and drive flange.
5. Tap the front output shaft with a soft-faced hammer and remove the shaft assembly from the transfer case.
6. Remove the sliding clutch, high gear, washer and bearing from the transfer case.
7. Remove the rear output shaft housing, bearing retainer and speedometer gear.
8. Carefully remove the rear output shaft from the case to prevent loss of the 15 needle roller bearings.
9. Drive the 2 shift rail pin through the: hole into, the transfer case with a blunt punch.
10. Remove the 2 shift rail detent nuts and springs from the case. Remove the 2 detent bails with. A pencil-type magnet.
11. Move both shift rails to their neutral position, then, use a long punch to remove the shift fork roll pins.
12. Remove and discard the cotter pin holding 1 of the 2 shift rail-to-link clevis pins. Remove the clevis pin.
13. Remove the short (range) shift rail, then the long (4-wheel) shift rail.
14. Remove the cup plugs and rail pins from the transfer case.
15. Remove the idler gear shaft locknut and rear cover.
16. Remove the idler gear shaft with a dummy shaft and soft-faced hammer.
17. Move the idler gear to the front output shaft hole and remove it from the case.
18. Clean and inspect all components as described in this chapter.

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TRANSFER CASE 9C-4



Rear Output Shaft Disassembly/Assembly

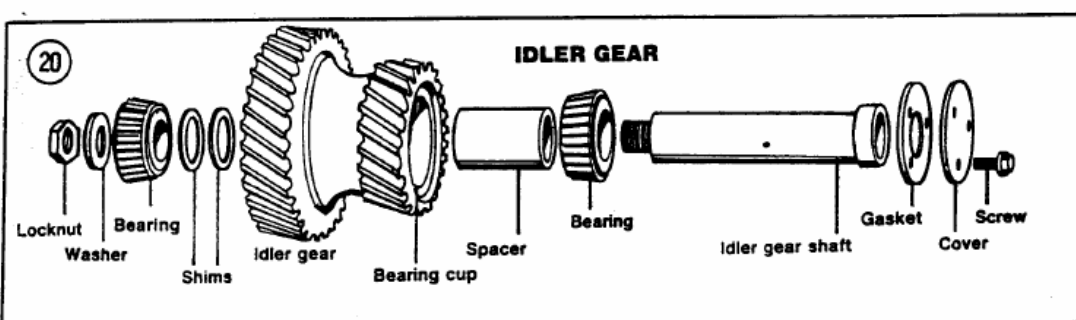
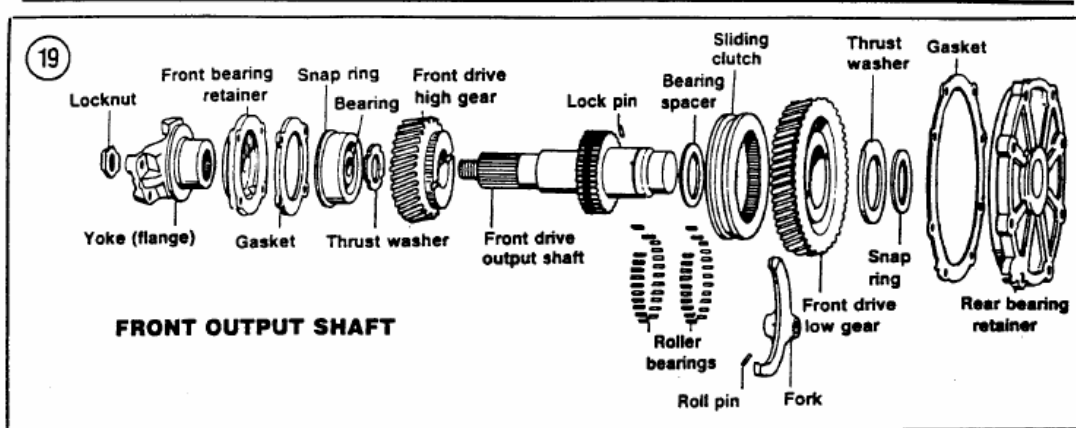
(Refer to Figure 18 page 138 for this procedure.)

1. Expand and remove the snap ring from the rear of the shaft.
2. Remove the thrust washer and washer positioning pin.
3. Remove the tanged thrust washer. Slide the low gear off the shaft and catch the needle roller bearings and spacer.
4. Remove the remaining tanged thrust washer.
5. Compress and remove the snap ring in the shaft pilot bore. Remove the washer, needle roller bearings and spacer.

NOTE: Remove the caged roller bearing from the bearing housing only if replacement is required.

6. Remove the rear bearing retainer and ball bearing from the bearing housing.
7. Clean and inspect all components as described in this chapter.
8. Pry the oil seal from the bearing retainer. Install a new seal with a suitable installer.
9. If the retainer caged roller bearing was removed, install a new one with a suitable installer.
10. Wipe the shaft pilot bore with petroleum jelly and a row of 32 needle roller bearings, the spacer and a second row of 32 bearings in the bore.
11. The tanged thrust washer on the output shaft. The tang should index with the clutch teeth groove.
12. Wipe the low gear bore with petroleum jelly. Fit the gear on the output shaft and install a row of 32 needle roller bearings, the spacer and a second row of 32 bearings in the gear.
13. Install the other tanged thrust washer. The tang should face away from the gear.
14. Install the positioning pin and thick thrust washer on the shaft. Rotate the thick washer until the tang on the washer installed in Step 13 fits into its slot 90° from the positioning pin.

15. Install a new snap ring. Check the clearance between the snap ring and thick thrust washer with a flat feeler gauge. If clearance is not 0.002 / 0.027" install a new thick thrust washer.
16. Fit the shaft assembly in the bearing housing. Install the speedometer gear and rear ball bearing.
17. Install the rear bearing retainer with a new gasket Tighten the cap screws to specifications (Page 142).



Front Output Shaft

Disassembly/Assembly

(Refer to Figure 19 for this procedure.)

1. Expand and remove the shaft snap
2. Remove the thrust washer and positioning pin from the shaft
3. Slide the low gear off the shaft and catch the needle roller bearings.
4. Clean and inspect all components as described in this chapter. If the rear bearing retainer roller bearing requires replacement, replace the retainer and bearing as a unit.
5. Wipe the low gear bore with petroleum jelly and install a row of 32 needle roller bearings, the spacer and a second row of 32 bearings.
6. Secure the shaft with its splined end facing in a vice with protective jaws. If jaws are not available, wrap the shaft in shop cloths.
7. Install the low gear/bearing assembly on the shaft. The clutch gear should face downward.

8. Install the thrust washer positioning pin. Install the thrust washer and a new snap ring. The snap ring opening should be positioned opposite the pin.

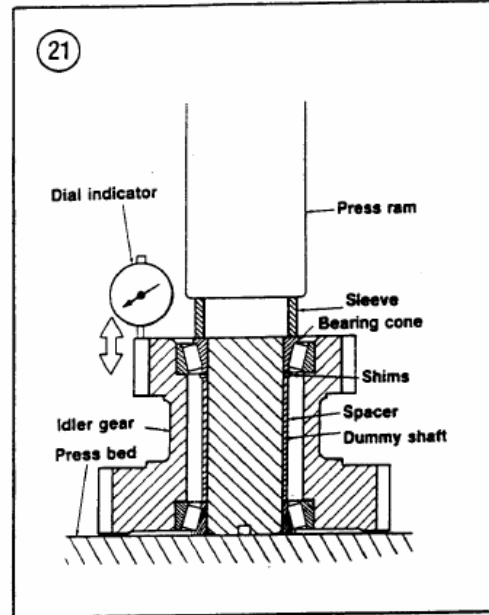
Idler Gear Disassembly/Assembly

(Refer to Figure 20 for this procedure.)

1. If the bearings are defective, drive the bearing cups from the idler gear using the drive slot provided in the gear bore.
2. Install new bearing cups with a suitable installer and arbour press.
3. Assemble the idler gear, bearings, spacer and shim pack using a suitable dummy shaft.
4. Position the assembly in the press. Use a length of pipe that will clear the dummy shaft and apply sufficient pressure to the bearing cones to eliminate clearance between the spacer and shim pack.
5. Install a dial indicator and check the end play between the bearing cones and cups. See Figure 21, (Page 141). If end play exceeds 0.002 in., disassemble the idler gear and change the shim pack thickness as required to bring end play within specifications.

Transfer Case Assembly

1. Install the assembled idler gear with dummy shaft in the transfer case (large end first) through the front output shaft bore.
2. Insert the idler shaft from the large bore side of the case, engage the idler gear assembly and drive the shaft into the case with a soft-faced hammer.
3. Place the washer on the end of the idler shaft and install a new locknut finger-tight. Rotate the gear to make sure it does not bind, and then tighten the locknut to specifications (Page 142).
4. Install the idler shaft cover with a new gasket. The flat on the cover should face the front output shaft rear bearing retainer. Tighten the cap screws to specifications (Page 142).
5. If the interlock pins were removed from the interlock bore, reinsert them through the front output shaft opening.
6. Partially insert the solid end of the long shift rail in the front of the case. The detent notches should face upward.
7. Fit the shift fork on the shift rail with its long end facing inward. Engage the fork with the rail and push the rail into its neutral position.
8. Install the input shaft and bearing in the transfer case.
9. Partially insert the short shift rail in the front of the case with its detent notches facing upward.
10. Assemble the sliding clutch and shift fork. Place the sliding clutch/fork on the input shaft. Engage the fork with the short shift rail and push the rail into its neutral position.
11. Align the roll pin holes in each shift fork/rail assembly and install the roll pins with a long punch.
12. Insert the high gear and thrust washer in the case. With the sliding clutch engaging the shift fork, move the shift rail and fork assembly into its front drive position, meshing the sliding clutch internal teeth with the high gear mating teeth.
13. Align the thrust washer, high gear and sliding clutch with the case bearing bore, then install the front output shaft/low gear assembly to engage the high gear assembly.
14. Install the front output shaft front bearing retainer with a new gasket. Tighten the cap screws to specifications (Page 142).
15. Coat the roller bearing in the front output shaft rear bearing retainer with engine oil. Install the retainer to the case with 2 new gaskets. Coat the retainer screw threads with scaler and tighten to specifications (Page 142).
16. Move the long shift rail to its HIGH position then install the rear output shaft/retainer assembly to the housing and input shaft. Use 1 or more gaskets as required to provide clearance on the input shaft pilot. Tighten the housing bolts to specifications (Page 142).



17. Coat the shift rail pin access plugs with scaler and install with a punch.
18. Install the drain and fill plugs.
19. Connect the cross link to the shift rail. Install the clevis pin with a new cotter pin.
20. Install the flange, washer and retaining nut on each of the shafts. Hold each flange from turning and tighten its retaining nut to specifications (Page 142).

Table 1 TIGHTENING TORQUES

Fastener	ft.-lb.	N-m
NEW PROCESS 205		
Bearing retainer bolts		
Front and rear	30-35	41-47
Input shaft	15-25	21-33
All others	20-40	28-54
Detent ball retainer plug	15-25	21-33
Drain/fill plugs	30	41
Extension housing-to-case	30-35	41-47
Front input shaft seal retainer	20-40	28-54
Idler shaft		
Cover bolts	20	27
Locknut	90-130	123-176
Mounting bracket		
To transfer case	30-40	41-54
To frame bracket	70-90	95-122
Stabilizer bar	20-30	28-41
Output shaft locknut	90-130	123-176
Power take-off cover	12-18	17-24