

ADVANCE ADAPTERS INC.

Fixed Yoke kit (S.Y.E. Kit)

Instruction Sheet

P/N: 50-7905 & 50-7906

KIT CONSISTS OF:

No.	Qty	Part No.	Description
1.	1	51-7906	TAILHOUSING, DIECAST
2.	1	52-7905	SHAFT, MAIN OUTPUT
3.	1	300474	SEAL WASHER, REAR YOKE
4.	1	300475	YOKE, C.V. REAR
5.	1	300476	NUT, REAR YOKE
6.	1	300480	SEAL WASHER, FRONT YOKE
7.	1	300625	RING GEAR, SPEED-O
8.	2	300627	SNAP RING, SPEED-O RING GEAR
9.	1	716075	PLUG FOR TAILHOUSING
10.	1	716076	SEAL WASHER FOR PLUG
11.	1	716318	BEARING, 207 OPEN BALL (No Snap Ring)
12.	1	716464	SNAP RING, 207 BEARING
13.	1	716465	RETAINER RING, MODE
14.	1	716751	SEAL, TAILHOUSING

P/N: 50-7906B

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14.	1	716751	SEAL, TAILHOUSING
15.	1	113	BOX

NP231 SHORT SHAFT "FIXED YOKE" KIT

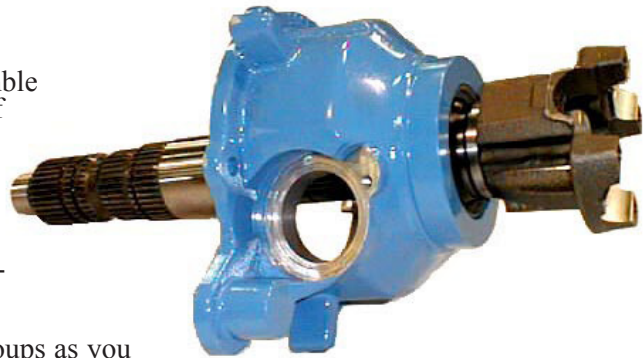
INSTALLATION PROCEDURES:

Every effort has been made to make sure your kit fits and works right the first time.

The installation of this kit requires you to nearly disassemble the entire transfer case. If your transfer case is in need of a rebuild, now is the perfect time to do it. To install this kit, it is easier to remove your transfer case and set it on end upon a workbench, but it is not necessary.

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

1. Keep all bolts, nuts, washers, etc. separated into groups as you remove them. Make sure you keep them in a labeled container that indicates what part of the transfer case they came from.
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.



THINGS TO CONSIDER BEFORE YOU BEGIN:

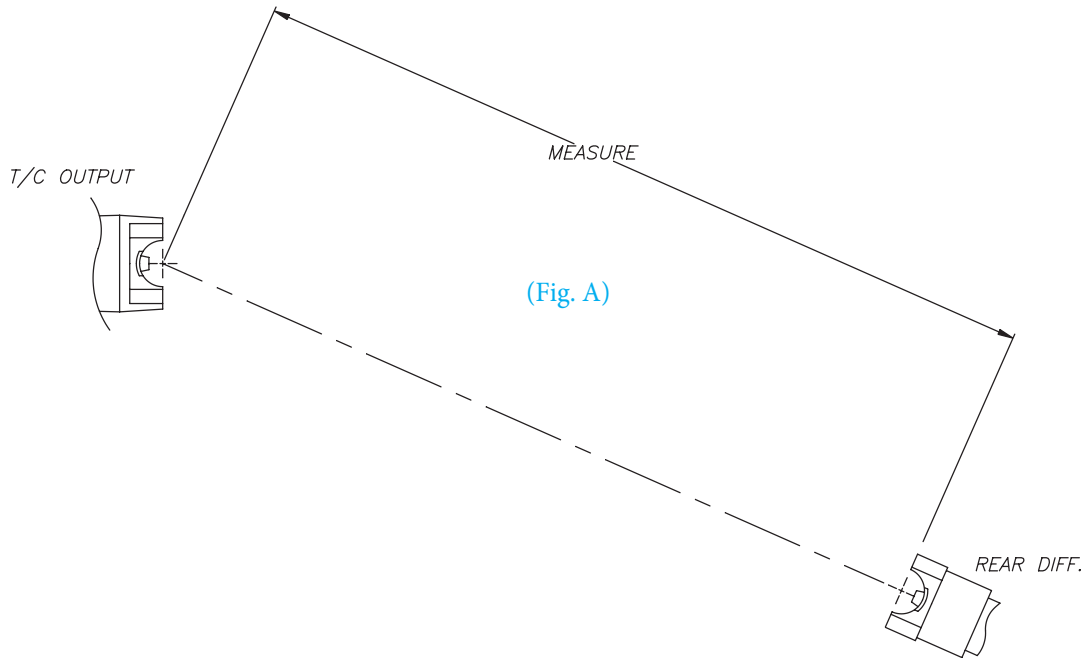
1. This kit is shipped with a rear 1310 series C.V. type yoke. You will need a C.V. equipped driveshaft. We do also offer other yoke options. P/N 300369 is a 1330CV yoke that uses the same seal as the 1310CV yoke provided in this kit. P/N 716295 - 1310 non CV yoke, P/N 300472 - 1350 non CV yoke, P/N 300473 - 1410 non CV yoke, P/N 300470 - 1300 series flange yoke, and P/N 300471 - 1410 non CV flange yoke. These yokes can also be used on our fixed yoke kit as long as the tailhousing seal is changed. The seal required is our P/N 716755 or a CR seal P/N 21061.
2. Medium strength threadlocker is recommended on all threaded fasteners.
3. A sealant such as RTV, (like the OEM sealant) is needed.
4. The shift rail on the New Process transfer case **may** require shortening. Please refer to Page 10 of these instructions to verify. If your transfer case requires this modification, then it can be done as described on Page 10 or the rail can be removed from the case and modified while the case is disassembled. If the rail is going to be removed and modified, please take note to how this mechanism is installed into the case assembly.

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NP231 SHORT SHAFT "FIXED YOKE" KIT

DRIVE SHAFT MODIFICATION:

With the vehicle finished and on the ground, measure a straight line between the transfer case output yoke and the rear pinion yoke center mating flanges. (Fig. A)



For proper C.V. type drive shaft operation, the rear differential should be pointed at the transfer case output yoke under normal driving load.

If install is performed on jack stands, make sure you have supported the vehicle well!

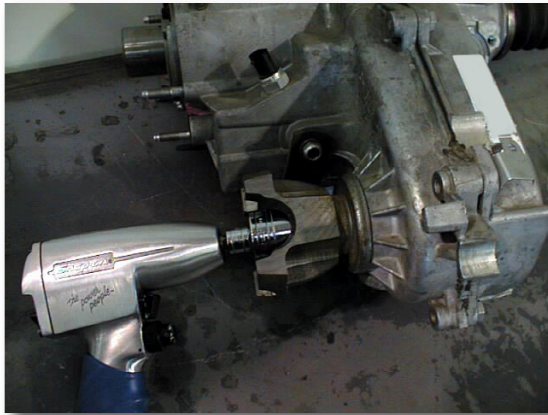
Place the transfer case range selector in the 4L position.

Remove front & rear drive shafts and begin at the disassembly procedures. (Step 1, Fig. 1)

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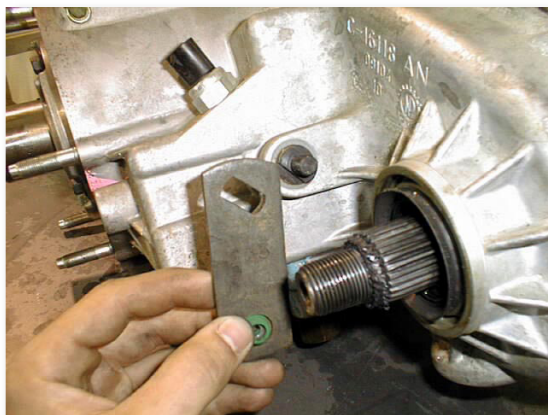
NP231 SHORT SHAFT "FIXED YOKE" KIT

DISASSEMBLY

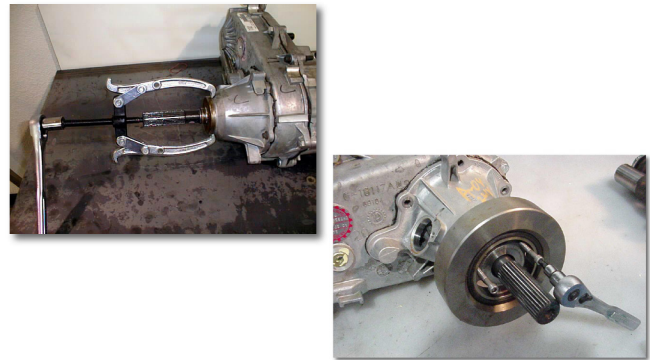


(Fig. 1) Yoke Nut Removal

- (1) Remove Speed-o-drive.
- (2) Remove front yoke nut.
 - (a) Move range lever to 4L position.
 - (b) Remove front yoke nut with 1-1/8" socket using an impact wrench. (Fig. 1)
- (3) Remove yoke. **Note:** If difficult, use a puller. (Discard seal washer).
- (4) Remove selector lever. (Fig. 2)



(Fig. 2) Range Selector Removal



(Fig. 3) Slinger Removed / Harmonic Dampener

- (5) Remove the output shaft boot. Spread band clamps with a Awl. Slide boot off.
- (6) Remove slinger (this one is tough)! Good thing you won't need this later. (Fig. 3)
- (6a) On newer transfer cases, Jeep used a harmonic dampener. The dampener has 3 tapped metric holes (6mm-1.00). By installing bolts into these holes, they will go through the dampener and press against the stock tailhousing, pressing the harmonic dampener off the output shaft.
- (7) Remove stop spacer & snap ring. (Fig. 4)



(Fig. 4) Stop Spacer & Snap Ring Removal

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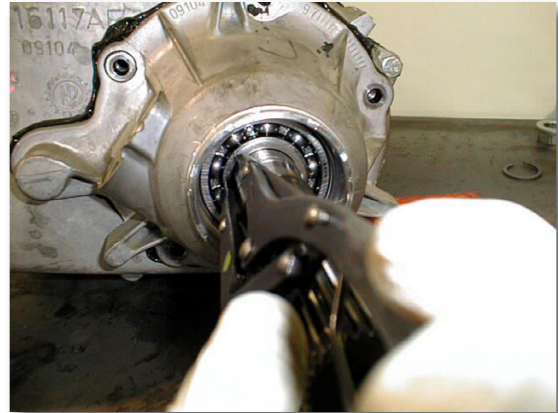
(Fig. 5) Rear Seal Removal

- (8) Remove rear seal. Collapse with punch if needed. **(Fig. 5)**



(Fig. 6) Rear O.D. Snap Ring Removal

- (9) Remove rear bearing retaining rings. **(Fig. 6) & (Fig. 7)**



(Fig. 7) Rear I.D. Snap Ring Removal

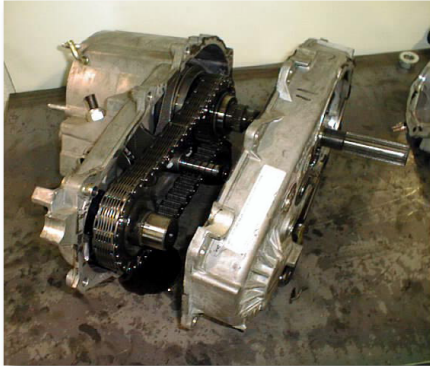


(Fig. 8) Rear Tailhousing Removal

- (10) Remove tailhousing bolts with 10mm socket & remove tailhousing. **(Fig. 8)**

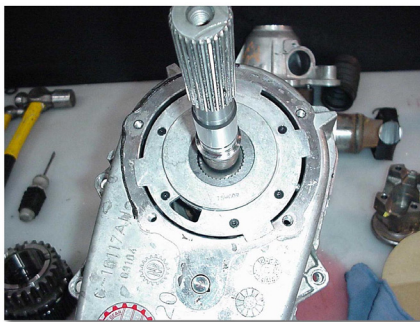
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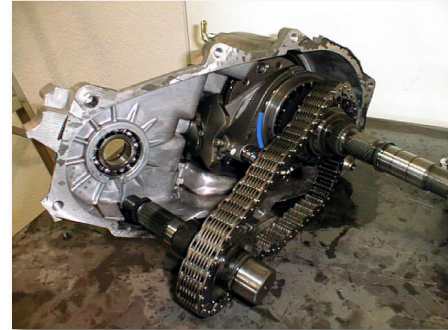


(Fig. 9) Rear Case Half Removal

- (11) Remove the rear case bolts. A 10mm 12 pt. socket is needed for the spline head bolt and a 15mm socket for the remaining bolts. **NOTE:** The two black oxide finished bolts are located at the case dowel positions and require a washer under them.
- (12) Start to remove the rear case from the front case by inserting pry bars at the cast-in locations **ONLY!** (Fig. 9)
 - (a) Pry apart evenly to break the sealer bead along the case mating surfaces.
- (13) (Fig. 10) The oil pump pickup tube is not accessible from the back of the case until the back half of the case has been taken off far enough to disengage the pump drive splines on the stock output shaft. At that time, you can either slide the pump up on the housing and remove the pump pickup tube or just remove the pump and pickup tube complete with the rear case half.
 - (a) Inspect the pickup tube "o-ring" in the pump and replace if needed. The same goes for the front shaft seal in the pump. **Do NOT** disassemble the pump; it is not a serviceable item.
 - (b) Remove, clean and inspect the inner case for wear.

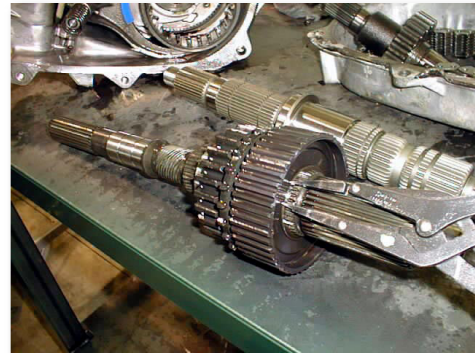


(Fig. 10) Oil Pump Removal



(Fig. 11) Front Drive Chain & Shaft Removal

- (14) Front output shaft removal:
 - (a) Pull the front output shaft out of the front bearing. (Fig. 11)
 - (b) Slide drive chain off the rear output shaft and remove both shaft and chain for cleaning & inspection.
- (15) Rear output shaft removal:
 - (a) Grasp the main shaft and remove the shaft, drive sprocket and mode hub assembly.



(Fig. 12) Front Drive Chain & Shaft Removal

- (16) Output shaft disassembly:
 - (a) Remove the mode hub retaining ring with heavy duty snap ring pliers. (Fig. 12)
 - (b) Slide remaining components, mode hub & drive sprocket off shaft.
- (17) This is as far into the case you need to go unless you find foreign material inside usually caused by a worn or stretched drive chain. You will need to be the judge.

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NP231 SHORT SHAFT "FIXED YOKE" KIT

New Process 231 transfer cases have used two types or styles of output shafts. The current style New Process output shaft started to be used in 1997 and is still being used. This newer style shaft eliminated the caged needle bearings in the drive sprocket.

We have designed our Heavy Duty fixed yoke output shaft kit with the most current design shaft found in the New Process 231 transfer case. Our shaft looks like the shaft below left - listed as "TJ" style. Jeeps having the earlier style output shaft, listed as "YJ" style, can use this kit by simply removing the caged needle bearing from the stock drive sprocket.

TJ style shaft
Current NP231 shaft design and our kit design. No needle bearings required.



YJ style shaft
Early style NP231 shaft design. The caged needle bearing from the drive sprocket must be removed for proper installation on our output shaft.

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NP231 SHORT SHAFT "FIXED YOKE" KIT

New Shaft ASSEMBLY CONSIDERATIONS



(Fig. 1A) Drive Sprocket Needle Bearings

- (1) These bearings must be removed. Once the bearings are removed, clean the inside of the drive gear to make sure it is free of any type of debris.

On 1997 and newer transfer cases, the drive sprocket does not use caged needle bearings. If you have this newer style, then continue on to Fig. 3A (2).



(Fig. 2A) Pull the Needle Bearings Out



(Fig. 3A) New Main Output Shaft Assembly

- (2) Main shaft assembly:
- Clean all components.
 - Prelube all components with a quality assembly lubricant. (Fig. 3A)
 - Slide drive sprocket into position.
 - Slide mode hub into position.
 - Install the retaining ring into position after the mode hub. (Fig. 4A)



(Fig. 4A) (Large) Retaining Ring Installation

CONTINUE TO PAGE 9

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NP231 SHORT SHAFT "FIXED YOKE" KIT



(Fig. 5A) New Main Output Shaft Assembly

- (3) Output shaft and drive chain assembly:
 - (a) Lubricate chain & shaft with ATF.
 - (b) Insert main shaft assembly into the housed planetary assembly.
 - (c) Install the drive chain onto the front output shaft.
 - (d) Insert them into the bearing. Lift upward and tilt the shaft toward the main shaft to work the chain into position. (Fig. 5A)
- (4) Make sure the mode spring is in place, seen in the middle. (Fig. 5A)



(Fig. 6A) Case Half Pre-assembly

- (5) Rear case assembly:
 - (a) With all components clean, install oil pump.
 - (b) Seat the pickup tube into the pump "o-ring". (Fig. 6A)
 - (c) Pre-lube the front output shaft bearing located in the rear case.
- (6) Apply a thin film of sealant to the front case. Use a good RTV, like the OEM sealant. (Fig. 7A) P/N = 82300234.



(Fig. 7A) Thin film RTV Applied Prior to Mating Case Halves.



(Fig. 8A) Case Halves Assembled

- (7) Assembly of case halves: (Fig. 8A)
 - (a) Slide the pump & case into position.
 - (b) If you have difficulty, check for possible problems. **DO NOT FORCE!** Mode fork rail extends through rear case!
 - (c) Install all fasteners in their original positions. **(Black bolts at dowel locations!)**
 - (d) Torque evenly to 27-34 N.m (20-25 ft./lbs.)

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NP231 SHORT SHAFT "FIXED YOKE" KIT



(Fig. 9A) Speed-o-Ring Gear Install

- (8) Assemble speed-o-drive
- Install retaining ring, located just behind the pump.
 - Slide ring gear into position.
 - Install retaining ring behind ring gear. (Fig. 9A)



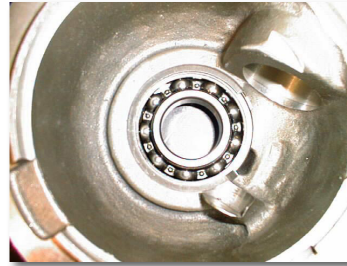
NOTE: On some NP231 transfer cases, the shift rail must be shortened. This shift rail protrudes out of the transfer case and goes into the tailhousing. The new tailhousing has a pocket depth of 1.125".

Shift your transfer case into 4WD so the shift rod is protruding the furthest out of the transfer case. If this shifter rod protrudes more than 1" out of the back side of the transfer case, then the shift rail must be shortened. Ideally the shift rod should protrude exactly 1". Transfer cases that will normally require this rail to be shortened measure 1.5" (photo above left).

Using a hack saw or cutoff wheel (and safety glasses), trim the shift rail shaft so that it protrudes only 1" (photo above right).

This kit is designed for both the Cherokees and Wranglers. The Cherokees use a vacuum actuator on the New Process tailhousing; our casting has this provision. On Wranglers, this threaded hole must be plugged. We have provided a plug and washer for this purpose. We also recommend that you use a bit of silicone to properly seal the plug.

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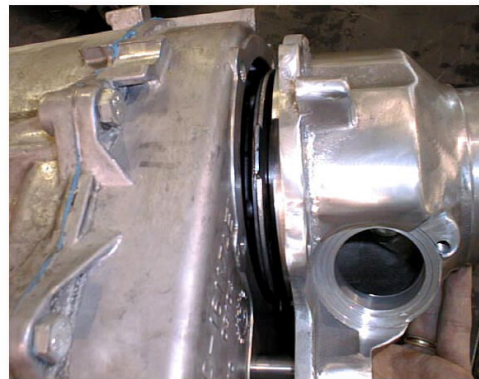


(Fig. 10A) Bearing Installed and Retained with the 716464 Snap Ring



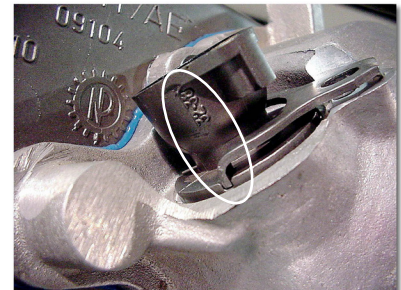
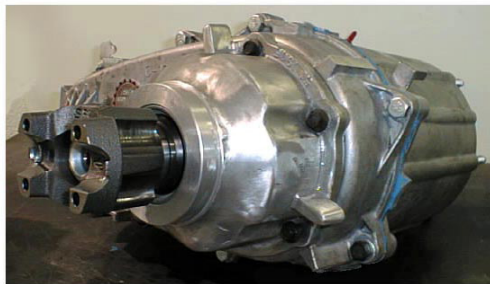
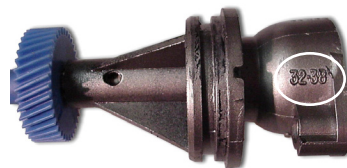
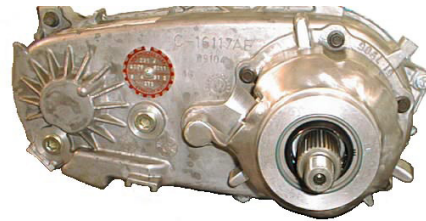
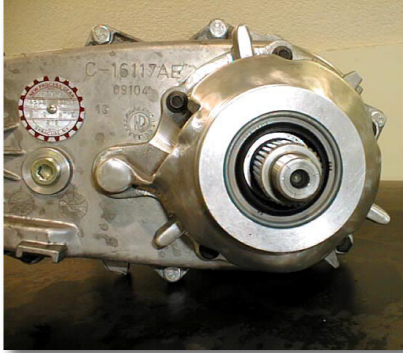
(Fig. 11A) Seal Installed

- (10) Short Tailhousing Installation:
- Prelube bearing & seal in new short tailhousing assembly. (Fig. 11A)
 - Apply sealant to tailhousing, mating surface of rear case. (thin film)
 - While supporting main shaft, slide new tail assembly into position.
 - Use care when indexing pump outer tabs and aligning tail assembly for installation. (Fig. 12A) **NOTE: Pull back on the output shaft to seat it against the rear bearing.**
 - Install the (5) 10mm bolts that retain the tailhousing and torque evenly to 20-27 N.m (15-20 ft./lbs.)



(Fig. 12A) Tailhousing Installation

NP231 SHORT SHAFT "FIXED YOKE" KIT



(Figures 13A) Final Installation

- (11) Yoke & Seal Washer installation: (This will apply to both Front & Rear yoke assembly)
 - (a) Slide the yoke seal into position on the shaft thread.
 - (b) Lube the yoke as well as the seal with ATF.
 - (c) A little trick to keep the spline seal in good shape is to slide the yoke half way on and walk the yoke into position with the retaining nut. Torque to 140-150 ft./lbs. with 1-1/8" socket.
 - (d) Install your stock speedometer housing into the new tailhousing. Depending on which speedometer gear (tooth count) you are using will determine the proper rotation of the speedometer housing. Each housing has 4 possible rotation options. Identify your speedometer gear tooth count and locate that tooth count on your speedometer housing. The number range on your housing will need to be lined up with the housing retaining clip (see photo). A touch of RTV Blue silicon around the "o"-ring will help seal the housing to the tailhousing.
- (12) Fill to recommended level with ATF.
- (13) Reconnect all exterior items: driveshafts, 4WD switch, speedometer cable, etc.
- (14) Happy Trails!

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If you have not changed your tire size or your axles, your stock speedometer drive gear will remain the same. However, if a new axle ratio and/or tire size is used, see Fig. A & B.

TIRE DIAMETER	(Fig. E) AXLE GEAR RATIOS							
	5.38	5.13	4.88	4.56	4.10	3.73	3.55	3.07
44"	33T	32T	30T	28T				
42"	35T	33T	31T	29T				
40"	36T	35T	33T	31T	28T			
39"	37T	36T	34T	32T	28T	26T		
38"	38T	36T	35T	32T	29T	27T		
37"	39T	37T	36T	33T	30T	27T	26T	
36"	40T	39T	37T	34T	31T	28T	27T	
35"	42T	40T	38T	35T	32T	29T	28T	
33"		43T	40T	37T	34T	31T	29T	
32"			41T	39T	35T	32T	30T	26T
31"			43T	40T	36T	33T	31T	27T
30"				41T	37T	34T	32T	28T
29"				43T	38T	35T	33T	29T
28"					40T	36T	34T	30T

CHRYSLER SPEEDOMETER DRIVE PART NUMBERS

(Fig. B)

When installing a speedometer gear with either 39, 40, 41 or 42 teeth, the gear and the housing must be installed separately. These are all large diameter speedometer gears. By first installing the gear into the tailhousing you will be able to tilt the gear shaft up allowing you to position the gear past the output shaft. Once this gear is in place, the speedometer housing must be aligned with the speedometer gear shaft and indexed into the tailhousing. When installing the speedometer housing, lube the o-ring that contacts the tailhousing with a bit of oil. This will prevent the o-ring from being nicked upon installation or rotation, causing this housing to leak.

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Part #	Teeth	Color
52067628	28T	
52067629	29T	
52067630	30T	
52067631	31T	
52067632	32T	BLACK
52067633	33T	YELLOW
52067634	34T	GREEN
52067635	35T	ORANGE
52067636	36T	RED
52067637	37T	
52067638	38T	BLUE
52067639	39T	GREEN
52067640	40T	ORANGE
52067641	41T	RED
52067642	42T	WHITE
52067643	43T	BLUE