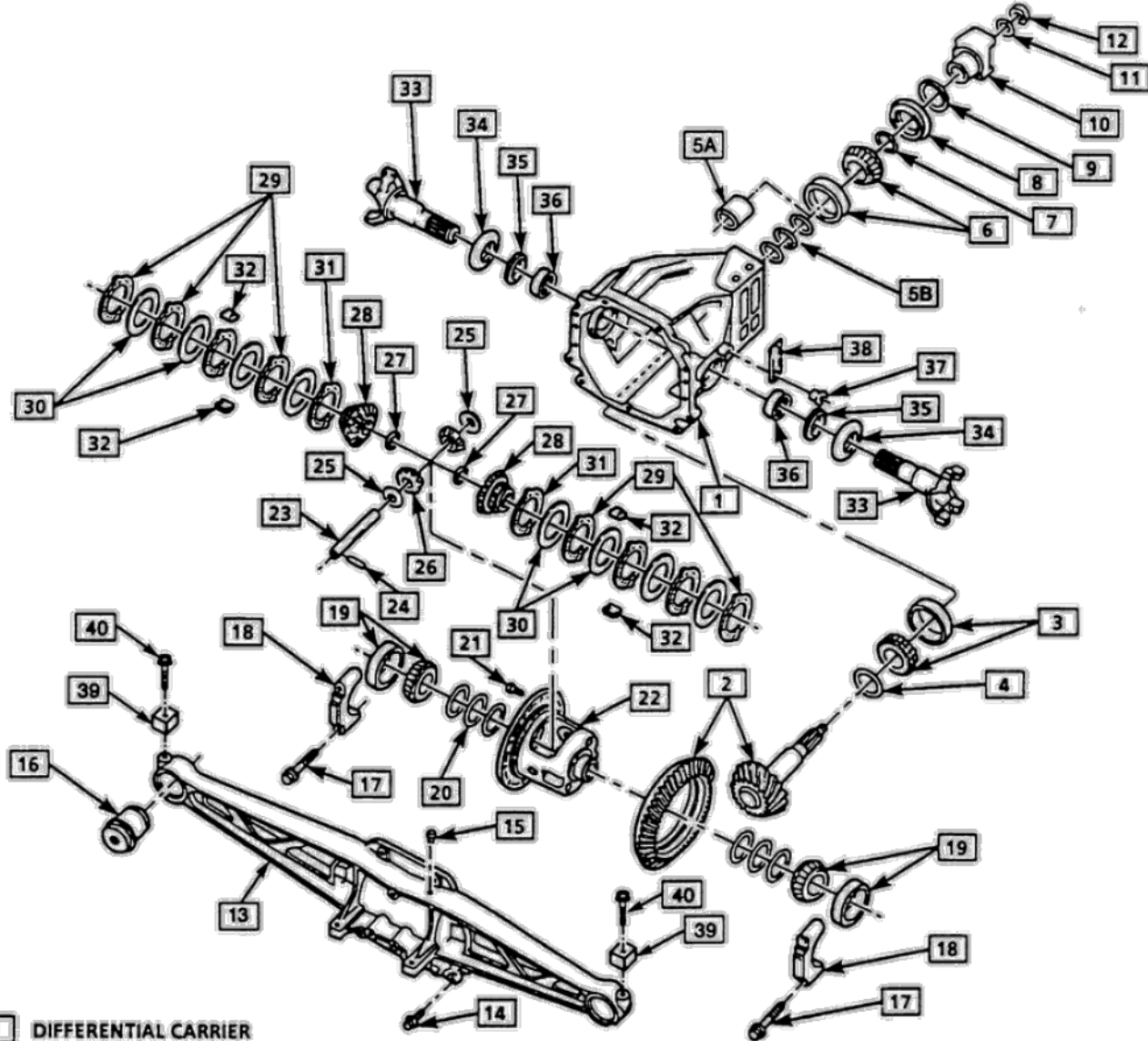
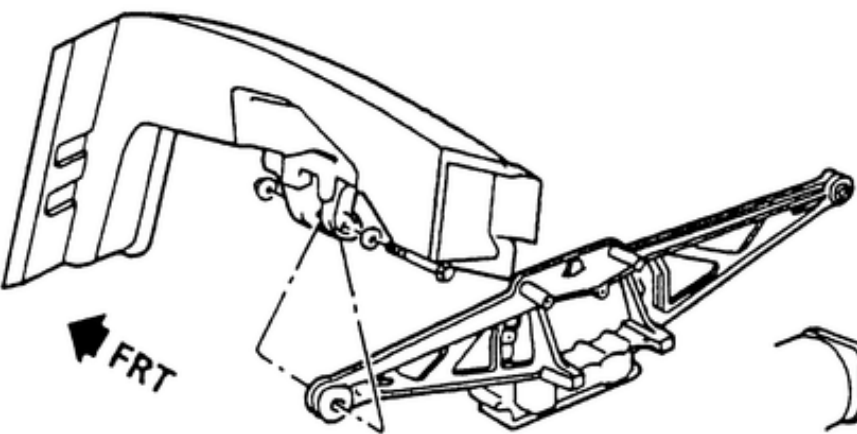
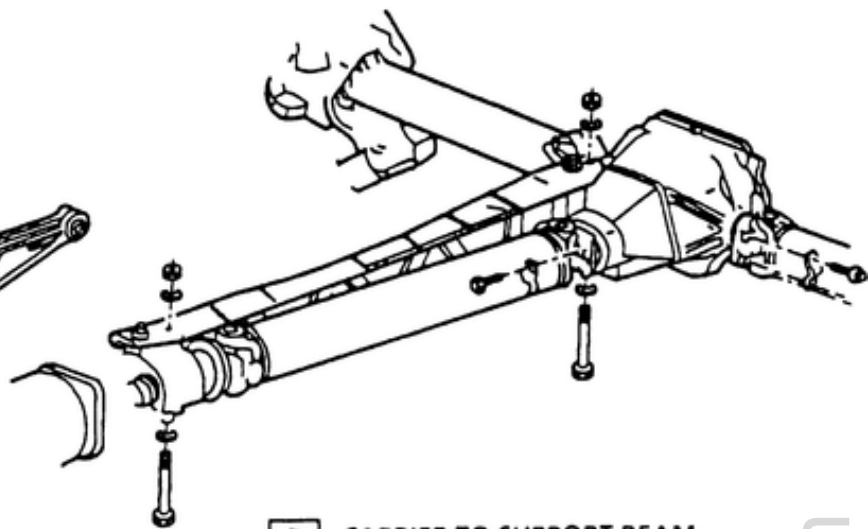




- | | | |
|--|--|--|
| 1 DIFFERENTIAL CARRIER | 14 DIFFERENTIAL CARRIER COVER BOLT | 28 SIDE GEAR |
| 2 RING AND PINION GEARS | 15 REAR AXLE VENTILATOR | 29 CLUTCH PACK PLATES |
| 3 INNER PINION BEARING AND CUP | 16 DIFFERENTIAL CARRIER BUSHING | 30 CLUTCH PACK DISCS |
| 4 PINION DEPTH SHIM | 17 SIDE BEARING CAP BOLT | 31 DISHED SPACER |
| 5A PINION BEARING PRELOAD SPACER (MODEL 44) | 18 SIDE BEARING CAP | 32 CLUTCH PACK RETAINER CLIP |
| 5B PINION BEARING PRELOAD SHIMS (MODEL 36) | 19 SIDE BEARING AND CUP | 33 YOKE (AXLE) SHAFT |
| 6 OUTER PINION BEARING AND CUP | 20 SIDE BEARING SHIMS | 34 YOKE (AXLE) SEAL DUST SHIELD |
| 7 THRUST WASHER | 21 RING GEAR BOLT | 35 YOKE (AXLE) SEAL |
| 8 PINION YOKE SEAL | 22 DIFFERENTIAL CASE | 36 YOKE (AXLE) BEARING |
| 9 PINION YOKE SEAL DUST SHIELD | 23 PINION SHAFT | 37 LUBRICANT FILLER PLUG |
| 10 PINION YOKE | 24 PINION SHAFT RETAINER | 38 LUBRICANT IDENTIFICATION TAG |
| 11 WASHER | 25 THRUST WASHER | 39 MASS DAMPNER |
| 12 PINION NUT | 26 PINION GEAR | 40 BOLT |
| 13 DIFFERENTIAL CARRIER COVER | 27 YOKE (AXLE) SHAFT SNAP RING RETAINER | |



A COVER TO BODY ATTACHMENT



B CARRIER TO SUPPORT BEAM

TORQUE SPECIFICATIONS

Component	ft. lbs.	inch lbs.	Nm
Manual Transmission			
Back-up light switch	35		47
Extension housing (output shaft) seal			
Strap retaining bolts	12.5		17
Transmission fluid fill plug	26		35
Manual transmission assembly			
1984-92 vehicles			
Transmission attaching bolts	45-60		60-80
Oil cooler line fittings	8-12		11-16
1993-96 vehicles			
Transmission-to-clutch housing bolts	37		50
Driveshaft -to-yoke retaining bolts	18		25
Support bracket bolts	18		25
Torque beam-to-differential carrier bolt	60		80
Torque beam-to-transmission bolt	37		50
Clutch			
Driven disc and Pressure Plate			
1989-96 vehicles			
Clutch housing bolts	37		50
Ball stud nut	33		45
Ball stud locking screw			
VIN P & 5 engines	11		15
VIN J engines	16		22
Housing cover bolts		80	9
Left heat shield nut		12	1.4
Master Cylinder			
1984-88 vehicles	15-22		20-30
1989-96 vehicles	12		17
Slave Cylinder			
1984-88 vehicles	25-40		34-54
1989-96 vehicles			
Line fittings	13		18
Mounting bolts	18		25
Bleeder Screws			
1989-90 vehicles (tighten until screw breaks for clearance)	10-14		14-19
Automatic Transmission			
Park/Neutral Safety switch nuts		26	3
Extension housing seal			
Strap retaining bolts	12.5		17
Automatic transmission assembly			
Transmission-to-engine bolts	35		47
Torque converter-to-flywheel bolts	46		62
Converter cover screws		89	10
Shift linkage/control cable retainer	15		20

TORQUE SPECIFICATIONS

Component	ft. lbs.	inch lbs.	Nm
Driveline			
Driveshaft & U-Joints			
Propeller shaft retaining bolts	18		24
Differential carrier bolts at the carrier	60		80
Transmission bolts	37		50
Driveline Support			
Driveline support bolts at the differential carrier	59		80
Driveline support-to-transmission bolts	37		50
Axle Shaft, Bearing & Seal			
Carrier outer support retaining bolts 60 ft. lbs. (80 Nm)	60		80
Driveshaft U-joint retainer bolts 26 ft. lbs. (35 Nm)	26		35
Spindle rod bracket bolts 60 ft. lbs. (80 Nm)	60		80
Tie rod outer axle socket-to-knuckle end nut 33 ft. lbs. (45 Nm)	33		45
Rear Axle			
Differential Assembly			
Bearing cap bolts			
7.875 inch rear axle (automatic transmission)	45		60
8.5 inch axle (manual transmission)	63		85
Rear Axle Housing			
Driveshaft yoke bolts	60		80
Differential carrier cover-to-frame bracket bolts	89		120
U-joint strap bolts	18		24
Axle shaft U-joint-to-yoke shaft retainers	26		35
Tie rod end-to-knuckle nuts	33		45
Spindle support rod mounting bracket-to-carrier bolt	60		80
Exhaust system hangers and nuts	13		17

BASIC DRIVESHAFT PROBLEMS

Problem	Cause	Solution
Shudder as car accelerates from stop or low speed	• Loose U-joint • Defective center bearing	• Replace U-joint • Replace center bearing
Loud clunk in driveshaft when shifting gears	• Worn U-joints	• Replace U-joints
Roughness or vibration at any speed	• Out-of-balance, bent or dented driveshaft • Worn U-joints • U-joint clamp bolts loose	• Balance or replace driveshaft • Replace U-joints • Tighten U-joint clamp bolts
Squeaking noise at low speeds	• Lack of U-joint lubrication	• Lubricate U-joint; if problem persists, replace U-joint
Knock or clicking noise	• U-joint or driveshaft hitting frame tunnel • Worn CV joint	• Correct overloaded condition • Replace CV joint

Troubleshooting Basic Clutch Problems

Problem	Cause
Excessive clutch noise	Throwout bearing noises are more audible at the lower end of pedal travel. The usual causes are: • Riding the clutch • Too little pedal free-play • Lack of bearing lubrication A bad clutch shaft pilot bearing will make a high pitched squeal, when the clutch is disengaged and the transmission is in gear or within the first 2' of pedal travel. The bearing must be replaced. Noise from the clutch linkage is a clicking or snapping that can be heard or felt as the pedal is moved completely up or down. This usually requires lubrication. Transmitted engine noises are amplified by the clutch housing and heard in the passenger compartment. They are usually the result of insufficient pedal free-play and can be changed by manipulating the clutch pedal.
Clutch slips (the car does not move as it should when the clutch is engaged)	This is usually most noticeable when pulling away from a standing start. A severe test is to start the engine, apply the brakes, shift into high gear and SLOWLY release the clutch pedal. A healthy clutch will stall the engine. If it slips it may be due to: • A worn pressure plate or clutch plate • Oil soaked clutch plate • Insufficient pedal free-play
Clutch drags or fails to release	The clutch disc and some transmission gears spin briefly after clutch disengagement. Under normal conditions in average temperatures, 3 seconds is maximum spin-time. Failure to release properly can be caused by: • Too tight transmission lubricant or low lubricant level • Improperly adjusted clutch linkage
Low clutch life	Low clutch life is usually a result of poor driving habits or heavy duty use. Riding the clutch, pulling heavy loads, holding the car on a grade with the clutch instead of the brakes and rapid clutch engagement all contribute to low clutch life.

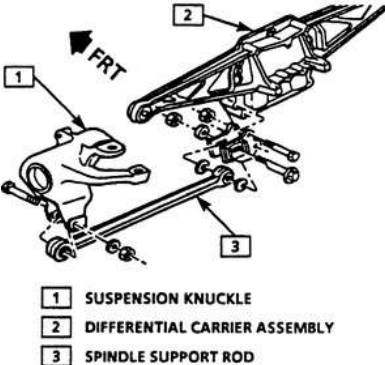
1990 Chevrolet CORVETTE

Submodel: | **Engine Type:** V8 | **Liters:** 5.7

Fuel Delivery: FI | Fuel: GAS

1. Raise and support the vehicle safely, making sure the rear suspension hangs freely.
NOTE: Do not support the vehicle by means of the differential or the transverse leaf springs.
2. Remove the rear transverse leaf spring from the knuckle as follows:
 - A. Remove 1 rear wheel assembly.
 - B. Install tool J-33432 or equivalent transverse leaf compressor, onto the rear transverse spring and compress the spring.
 - C. Remove the cotter pin, nut, rubber grommets and bolt attaching the spring to the knuckle.
 - D. Carefully release and remove spring compressor.
3. Remove the cotter pin, nut and washer from the tie rod outer socket at knuckle. Using a suitable linkage puller, disconnect the outer tie rod from the knuckle.

Fig. 1: Exploded view of the spindle support rod



4. Disconnect the spindle rod bracket at the differential carrier.
5. Remove the axle shaft universal joint straps at the both the spindle and yoke shaft ends.
6. Remove the shaft by supporting the shaft and pushing out on the knuckle assembly.
7. If necessary, remove rear axle yoke, oil seal and bearing as follows:
 - A. If equipped, remove the upper and lower underbody braces.
 - B. Remove the exhaust assembly.
 - C. Support the rear differential, then remove the differential carrier outer support bolts.
 - D. Remove the carrier cover and drain the gear oil into a suitable container.
 - E. Remove the snapping from the axle shaft yoke and remove the yoke.
 - F. If only replacing the seal, pry the axle shaft yoke seal out using a suitable tool. Be careful not to damage the yoke shaft bearing assembly.
 - G. If the seal cannot be removed in this manner or the bearing assembly is to be replaced as well, remove the differential assembly.
 - H. Using tools J-34171 for the 7.875 inch axle (automatic transmission) or J-35509 for the 8.5 inch axle (manual transmission), and driver handle J-8592 or equivalents, and a hammer, remove the seal and bearing assembly. Discard the seal and bearing.

Fig. 2: Exploded view of the rear axle components — 1996 vehicle shown, others similar



To install:

- B. If removed, install a new rear axle shaft bearing and seal as follows:
 - A. If installing a new bearing, clean the seal bore using a standard metal cleaning solvent.
 - B. Install a new rear axle bearing assembly. Use tools J-34172 for the 7.875 inch axle (automatic transmission) or J-35510 for the 8.5 inch axle (manual transmission) with driver handle J-8592 or equivalents, and a hammer.
 - C. Lubricate bearings with a suitable hypoid lubricant.
 - D. Apply a light coat of hypoid lubricant on the lip of the axle shaft seal.
 - E. Install axle shaft seal using tools J-26938 for 7.875 in. axle or J-35511 for 8.5 in. axle and driver J-8592 or equivalents.
 - F. If removed, install the differential assembly.
 - G. Install the axle yoke shaft and snapping into the differential carrier.
 - H. If a new yoke shaft is installed, yoke shaft end play should be checked and adjusted, if necessary by using snaprings of varying thickness. Endplay should be 0.0005–0.0085 inch (0.013–0.216mm).

- I. Apply a continuous $\frac{1}{4}$ inch bead of sealant to the mating surfaces, then install the differential carrier cover, with gasket, to the carrier. Tighten the bolts to specification using the proper torque sequence.
 - J. Install the carrier outer support retaining bolts and tighten to 60 ft. lbs. (80 Nm).
 - K. Remove the differential support and install the exhaust assembly or connect the crossover pipe, as applicable.
 - L. If applicable, install the underbody upper and lower braces.
- 9. Install the axle assembly shaft into the differential and spindle yoke.
 - 10. Install the shaft U-joint retainers and tighten the bolts to 26 ft. lbs. (35 Nm).
 - 11. Connect the spindle rod bracket to the differential carrier and tighten the spindle rod bracket bolts to 60 ft. lbs. (80 Nm).
 - 12. Install the tie rod outer axle socket to the knuckle. Install the washer and nut, tighten the end nut to 33 ft. lbs. (45 Nm), then replace the cotter pin.
 - 13. Using a suitable compression tool, connect the leaf spring to the knuckle and install the bolt, grommets and nut. Tighten the nut and align the slot in the nut with the hole in the bolt, then insert a new cotter pin.
 - 14. Lower the vehicle.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

1. Disconnect the negative battery cable.
2. Remove the rear axle assembly.
3. Remove the differential cover and drain the gear oil into a suitable container, then mount the assembly in a suitable support.
4. Remove the snaprings from each axle shaft yoke in the differential carrier. Mark each snapring to indicate which side it was removed from. The snaprings come in several different sizes.
5. Remove the axle shaft yokes.
6. Remove the differential bearing caps, noting the matched letters stamped on the caps and carrier.
7. Mount the carrier housing spreader tools J-24385-01 and J-24385-20 or equivalents, to the carrier housing and install a dial indicator set.
8. Measure the carrier spread using the dial indicator mounted to the assembly.
9. Spread the case, but do not exceed 0.010 inch (0.25mm) of spread.
10. Use 2 prybars to carefully pry the carrier assembly from the case. Be sure to avoid damage to any machined surfaces and tag the bearing cups to indicate from which side they were removed.
11. Remove the spreader after the assembly has been removed.

Fig. 1: Rear spring-to-differential carrier mounting

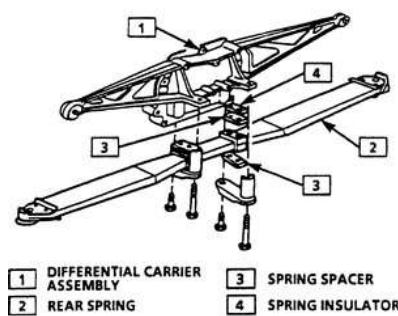
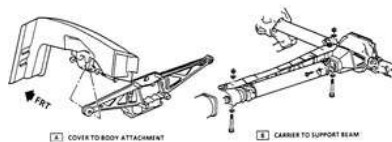


Fig. 2: Location of the differential carrier cover attachments



To install:

12. With the spreader mounted to carrier, spread the carrier, but not exceeding 0.010 in. (0.25mm) of spread then remove the dial set.
13. Lubricate and assemble the bearing cups to the differential bearing.
14. Install the differential assembly into the carrier and seat the differential assembly into the cross bore of the carrier. If necessary, use a rawhide or heavy duty plastic hammer to seat the differential.
15. Install the bearing caps and bolts, make sure the letters stamped on the caps and carrier assembly coincide in both direction and letter.
16. Tighten the cap bolts to 45 ft. lbs. (60 Nm) for the 7.875 inch axle (automatic transmission) or to 63 ft. lbs. (85 Nm) for the 8.5 inch axle (manual transmission).
17. Measure the ring gear backlash at 3 equally spaced points:
 - A. Backlash tolerance is 0.006–0.009 in. (0.15–0.23mm) and cannot vary more than 0.0010–0.0015 in. (0.03–0.04mm).
 - B. High backlash is corrected by moving some shims from the opposite side of the case to the ring gear side, thus moving the ring gear closer to the pinion.
 - C. Low backlash is corrected by moving shims from the ring gear side of the case to the opposite side, thus moving the ring gear away from the pinion.
18. Install axle shaft yokes and snaprings, ensuring snaprings are installed on the side from which they were removed.
19. Apply a continuous $\frac{1}{4}$ inch bead of 1052914 or equivalent sealant, to the mating surfaces and install the carrier cover with gasket onto the carrier. Tighten the bolts to specification, following the proper sequence.
20. Install the rear axle housing assembly into vehicle.
21. Lower the vehicle and connect the negative battery cable.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

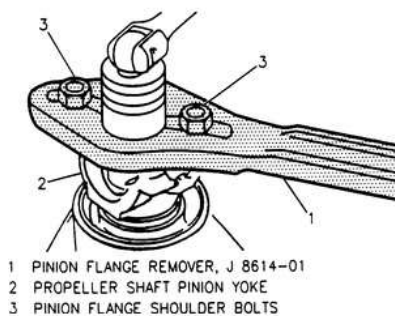
Fuel Delivery: FI | Fuel: GAS

1. Raise and safely support the vehicle.
2. If equipped, remove the upper and lower underbody braces.
3. Remove the exhaust assembly.
4. Remove the driveline support beam and driveshaft.
5. Remove the pinion yoke nut using a suitable tool to hold the yoke, then remove the yoke from the carrier.
6. Inspect the yoke seal area for wear, replace the yoke if necessary.
7. Carefully pry the pinion yoke seal from the differential housing using a small suitable tool. Be careful not to damage the pinion threads.

To install:

8. Clean the seal bore of the differential carrier.
9. Use J-34163 for the 7.875 inch axle (automatic transmission), J-35503 for the 8.5 inch axle (manual transmission), or an equivalent pinion seal installation tool, to install the new seal into the carrier bore.
10. Install the pinion yoke and tighten the nut while using a suitable tool to hold the pinion yoke. Tighten the pinion nut to 200 ft. lbs. (271 Nm) for an automatic transmission or 250 ft. lbs. (339 Nm) for a manual transmission.

Fig. 1: Remove and installation of the pinion nut and washer



11. Install the driveshaft and the driveline support beam.
12. Install the exhaust assembly or crossover pipe, as applicable.
13. If equipped, install the upper and lower underbody braces.
14. Check and fill the differential, as necessary.
15. Lower the vehicle.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

1. Raise and support the vehicle safely.
2. Remove the spare tire, then remove tire cover by disengaging the support hooks.
3. If equipped, remove the upper and lower underbody braces.
4. Remove the exhaust assembly.
5. Remove the transverse leaf springs from vehicle.
6. If necessary, remove exhaust hangers.
7. Remove the spindle support rod, bolts and mounting bracket from the carrier.
8. Remove both tie rod ends from knuckles.
9. Remove the axle universal joint straps from differential yokes.
10. Support the axle shaft and push the wheel and tire assembly outward to disengage joints from differential yokes.
11. Scribe alignment marks on driveshaft and pinion yoke for installation purposes.
12. Remove the driveshaft U-joint straps from the pinion flange and push the driveshaft forward into the transmission, then support the shaft from the driveline support beam.
13. Support the rear axle assembly using a transmission jack, then install a jackstand or other support under the transmission.
14. Remove the carrier cover attaching bolts from the frame brackets.
15. Remove the driveline support beam attaching bolts from the rear axle rear axle housing.
16. Carefully lower the rear axle assembly from the vehicle.

To install:

17. Raise the rear axle assembly into position on the vehicle.
18. Apply 9636067 or equivalent sealant to the driveline support and the differential carrier, then install the driveline support bolts at the front of the carrier cover.
19. To ensure proper alignment of the driveline, a clearance of 1.53–2.00 in. (39–51mm) must be maintained between the top of the beam to the underbody and a clearance of 0.86–1.34 in. (22–34mm) from the passenger side of the beam to the side wall. Take the measurements directly above and to the right of the driveshaft yoke and adjust if necessary, then tighten the bolts to 60 ft. lbs. (80 Nm).
20. Install the differential carrier cover-to-frame bracket bolts and tighten to 89 ft. lbs. (120 Nm).
21. Align the marks on driveshaft and yoke, and install the driveshaft. Tighten the U-joint strap bolts to 18 ft. lbs. (24 Nm).
22. Install wheel axle shaft joints into the yokes.
23. Install axle shaft U-joint retainers onto the yoke shafts, then tighten the retainers to 26 ft. lbs. (35 Nm).
24. Install tie rod ends into knuckle. Install the washers and nuts, then tighten the tie rod nut to 33 ft. lbs. (45 Nm) to align slot in nut with hole in stud. Install a new cotter pin.
25. Install the spindle support rod mounting bracket onto the carrier and tighten the bolts to 60 ft. lbs. (80 Nm).
26. Install the transverse leaf spring.
27. If removed, install the exhaust system hangers and nuts, tighten the nuts to 13 ft. lbs. (17 Nm).
28. Install the exhaust system assembly or crossover pipe, as applicable.
29. If equipped, install the upper and lower underbody braces.
30. Install the spare tire cover and spare tire.
31. Fill the rear axle with a suitable lubricant.
32. Adjust the rear suspension, as necessary, then lower the vehicle.

[TORQUE SPECIFICATIONS](#)

[TORQUE SPECIFICATIONS](#)

[BASIC DRIVESHAFT PROBLEMS](#)

[TROUBLESHOOTING BASIC CLUTCH PROBLEMS](#)