

2003 Dodge Pickup R1500

2002-04 DRIVE AXLES' 'Axle Shafts - Front - Ram Pickup 1500 4WD

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DESCRIPTION

Vehicles equipped with 4WD and C205F front axle assembly use equal length axle shaft system to deliver power from front differential to front wheels. Both axle shafts are identical and interchangeable, 3-piece units consisting of outer Rzeppa joint, solid interconnecting shaft and inner tripod joint. Both Rzeppa joints and tripod joints are true Constant Velocity (CV) joint assemblies. Inner tripod joint allows for changes in axle shaft length through jounce and rebound travel of front suspension.

Both inner CV joints are splined onto differential axle shafts and are retained on axle shaft by a snap ring located on axle shaft. Outer CV joints have stub shafts that are splined into wheel hub and are retained by a steel hub nut.

LUBRICATION

CV joints require special lubrication. Joints are enclosed in a boot to contain lubricant and prevent contamination. Periodic lubrication of CV joints is not required, but boots should be inspected at regular intervals.

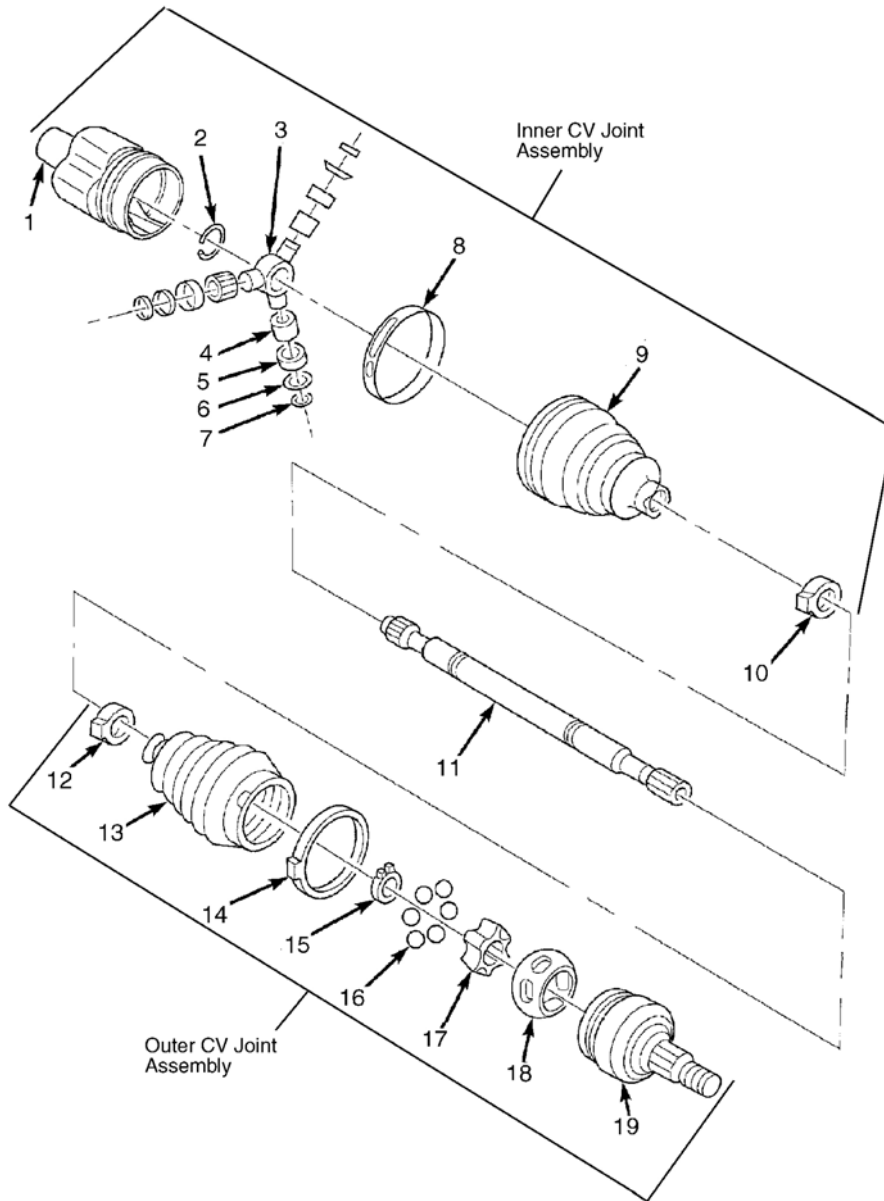
TROUBLE SHOOTING

NOTE: See **POWERTRAIN** in **BASIC TROUBLE SHOOTING** article in **GENERAL INFORMATION**.

REMOVAL, DISASSEMBLY, REASSEMBLY & INSTALLATION

CAUTION: NEVER grasp axle shaft assembly by CV boots, as this may cause boot to pucker or crease and reduce service life of CV boot. Avoid overangulating or stroking CV joints when handling axle shaft assembly. To prevent CV boot deterioration, keep axle shaft assemblies away from battery acid, transmission fluid, brake fluid, differential fluid and gasoline.

None		



- 1. Tripod Joint Housing
- 2. Snap Ring
- 3. Tripod Joint
- 4. Needle Roller
- 5. Ball
- 6. Ball & Needle Roller Retainer
- 7. Retaining Ring
- 8. Large CV Boot Clamp
- 9. CV Boot

- 10. Small CV Boot Clamp
- 11. Interconnecting Shaft
- 12. Small CV Boot Clamp
- 13. CV Boot
- 14. Large CV Boot Clamp
- 15. Snap Ring
- 16. Balls (6)
- 17. Inner Race
- 18. Cage
- 19. Rzeppa Joint Housing

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Fig. 1: Exploded View Of Front Axle Shaft Assembly
 Courtesy of CHRYSLER CORP.

AXLE SHAFTS

None

Removal

1. Have assistant apply brakes, and loosen wheel lug nuts and hub nut. Raise and support vehicle. Remove wheel and tire assembly. Remove hub nut from axle shaft.
2. Remove disc brake caliper mounting pins from caliper adapter, and remove caliper assembly. Support disc brake caliper assembly by using a wire hook and suspending it out of the way. DO NOT allow caliper to hang by flex hose. Remove caliper adapter mounting bolts, and remove caliper adapter from steering knuckle. Remove brake rotor.
3. Place hydraulic jack under lower suspension arm, and raise jack to unload rebound bumper. Remove lower shock absorber bolt. Remove upper ball joint nut, and separate upper ball joint from steering knuckle with Remover (8677).
4. Support outer end of axle shaft assembly. Insert 2 pry bars between inner CV joint and differential case. Pry against inner CV joint until tripod joint is disengaged from differential axle shaft. Hold inner CV joint and interconnecting shaft of axle shaft. Push steering knuckle outward and push outer CV joint from steering knuckle, without damaging threads on outer CV joint stub axle shaft. Remove front axle shaft from vehicle.

Disassembly (Inner CV Joint)

1. Clamp interconnecting shaft of tripod joint housing into vise equipped with protective caps, and support CV joint. Cut, remove and discard CV boot clamps using a grinder or cut-off wheel without damaging tripod joint housing or interconnecting shaft. Slide CV boot away from tripod joint housing and down interconnecting shaft.
2. Slide tripod joint housing off tripod joint and interconnecting shaft. Remove and discard housing bushing from tripod joint housing. See **Fig. 2** . Using snap ring pliers, remove snap ring retaining tripod joint to interconnecting shaft. See **Fig. 3** . Remove tripod joint from interconnecting shaft.
3. Slide inner CV boot off interconnecting shaft and discard. Thoroughly clean and inspect tripod joint, tripod joint housing and interconnecting shaft for any signs of excessive wear. If any parts show signs of excessive wear, replace tripod CV joint as an assembly.

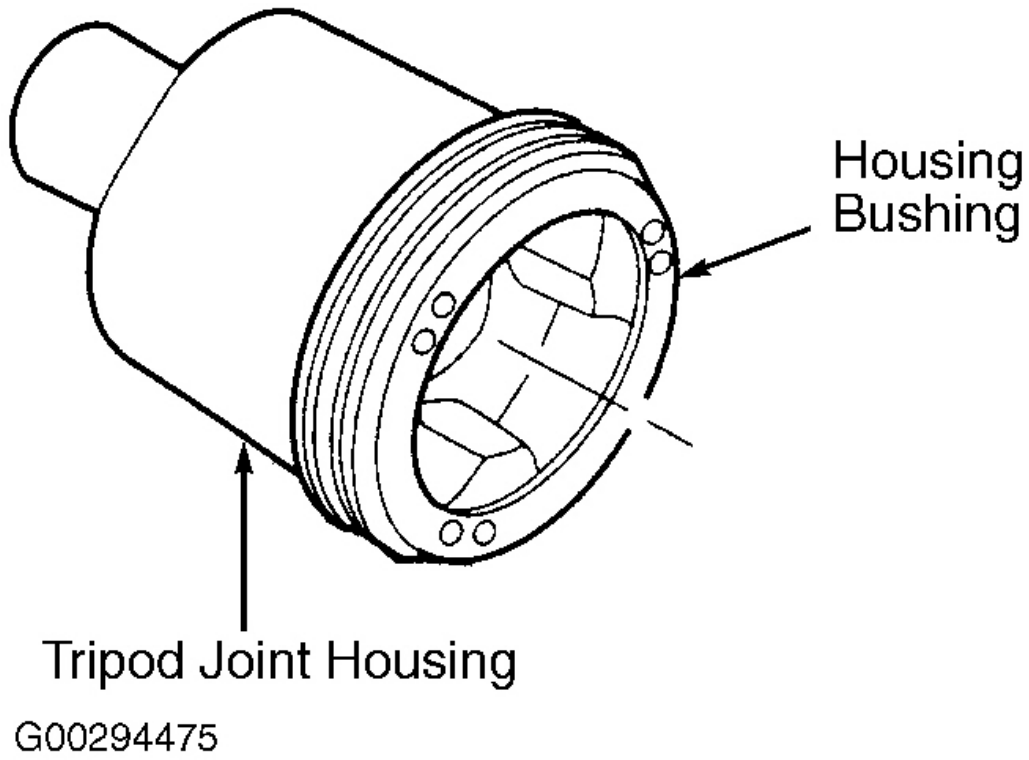
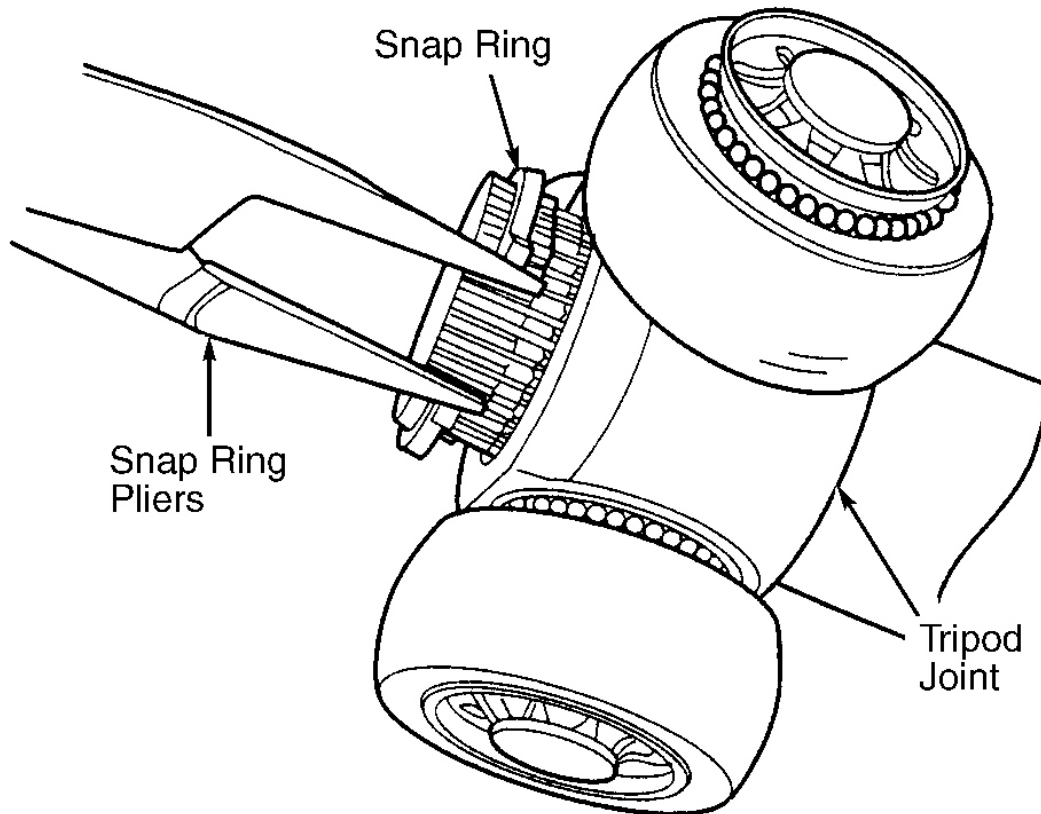


Fig. 2: Identifying Tripod Joint Housing Bushing
Courtesy of CHRYSLER CORP.



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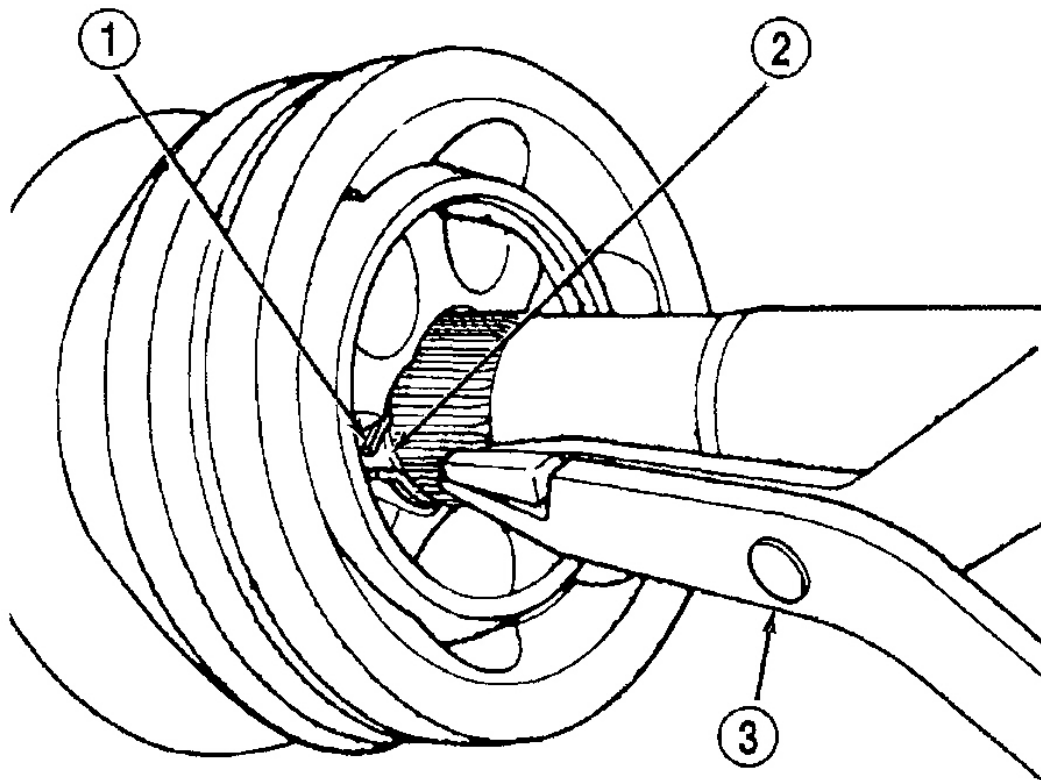
Fig. 3: Removing Tripod Joint Snap Ring
 Courtesy of CHRYSLER CORP.

Disassembly (Outer CV Joint)

1. Clamp interconnecting shaft of Rzeppa joint housing into vise equipped with protective caps, and support CV joint. Cut, remove and discard CV boot clamps using a grinder or cut-off wheel without damaging Rzeppa joint housing or interconnecting shaft. Slide CV boot away from Rzeppa joint housing and down interconnecting shaft.
2. Wipe away grease to expose Rzeppa joint snap ring. Using snap ring pliers, spread snap ring and slide Rzeppa joint off interconnecting shaft BEFORE trying to remove outer CV boot. See **Fig. 4** . Slide outer CV boot off interconnecting shaft and discard.
3. Clamp stub shaft end of Rzeppa joint housing in soft-jawed vise with Rzeppa joint facing up. Place alignment marks on inner race, cage and Rzeppa joint housing with dabs of paint. See **Fig. 5** . Press down on one side of inner race to tilt cage and to gain access to ball on opposite side of cage. See **Fig. 6** . If joint is very tight, use brass drift and hammer to tap inner race. DO NOT hit cage. Repeat process until all 6 balls are removed.
4. Turn cage and inner race 90° to position 2 opposing cage windows in area between ball grooves, and pull

cage and inner race upward and away from Rzeppa joint housing. See **Fig. 7** .

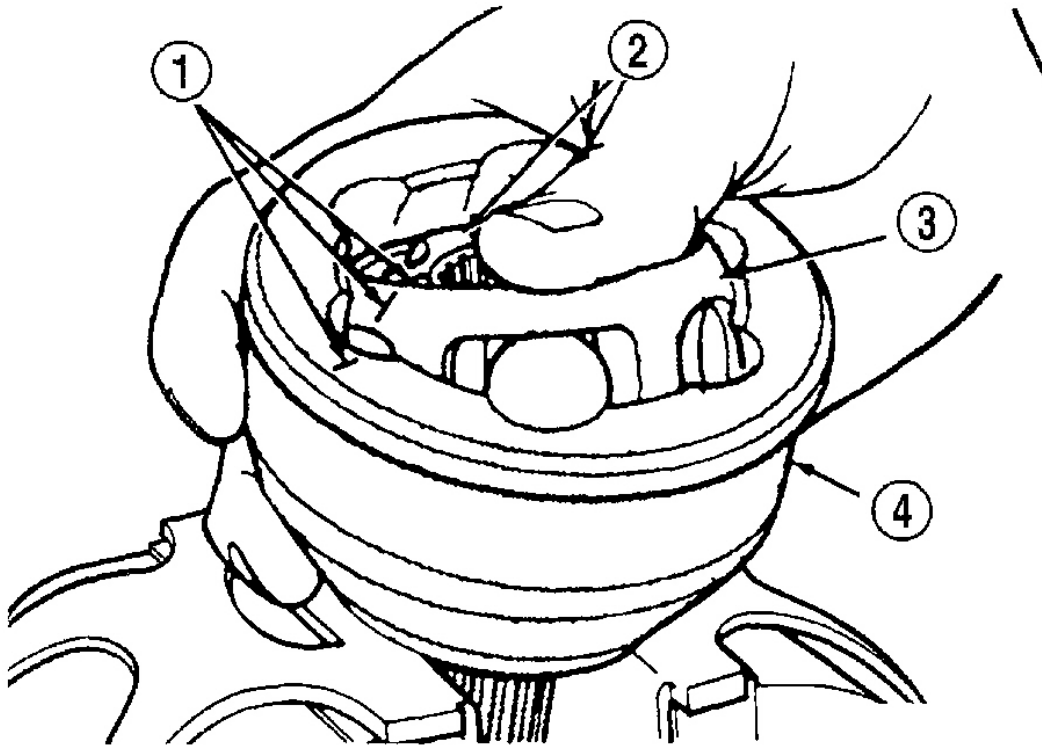
5. To remove inner race from inside cage, turn inner race 90° to cage and align elongated cage window with one spherical land on inner race. Raise land into cage window, and remove inner race by swinging it out of cage. See **Fig. 8** .
6. Thoroughly clean and inspect Rzeppa joint assembly and interconnecting shaft for any signs of excessive wear. If CV joint is worn or any parts show signs of excessive wear, CV joint and boot must be replaced as an assembly.



- 1 - SNAP RING
2 - SNAP RING GROOVE
3 - SNAP RING PLIERS

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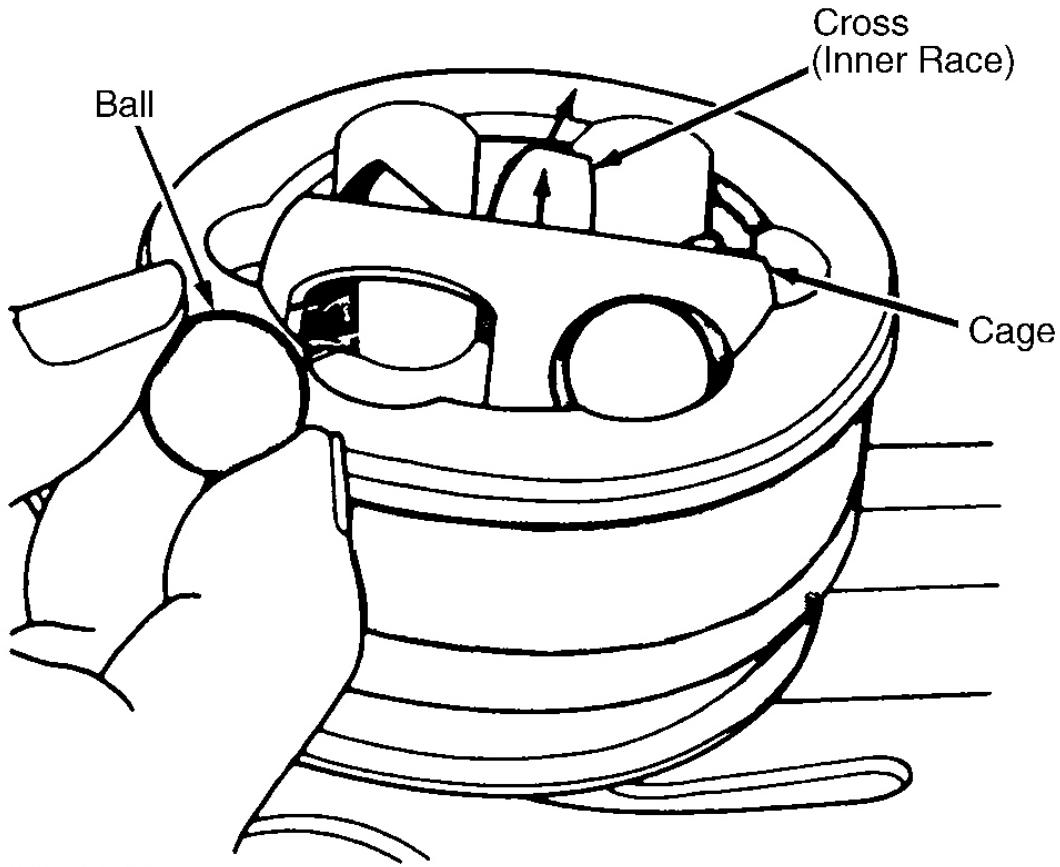
Fig. 4: Spreading Snap Ring To Remove Rzeppa Joint From Interconnecting Shaft
Courtesy of CHRYSLER CORP.



- 1. Alignment Marks
- 2. Inner Race
- 3. Cage
- 4. Rzeppa Joint Housing

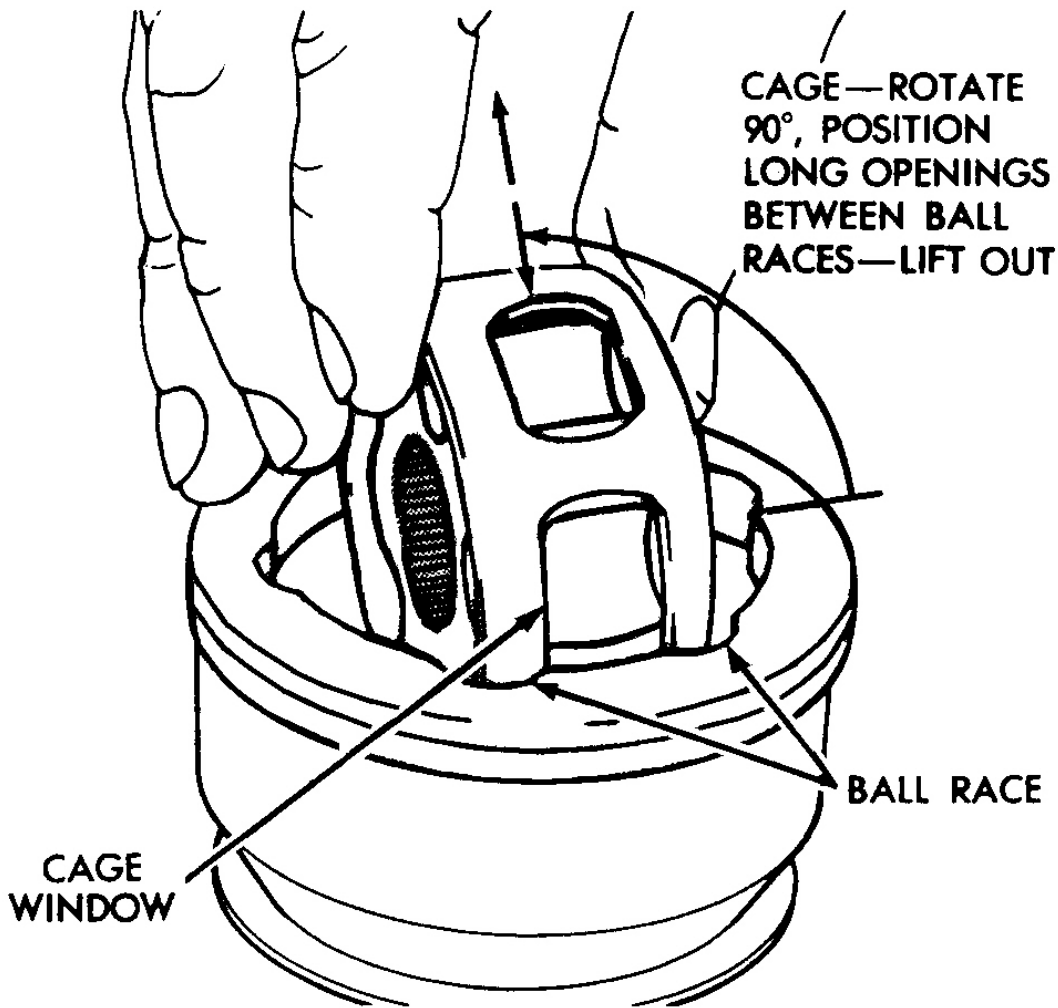
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Fig. 5: Placing Alignment Marks On Rzeppa Joint Components
Courtesy of CHRYSLER CORP.



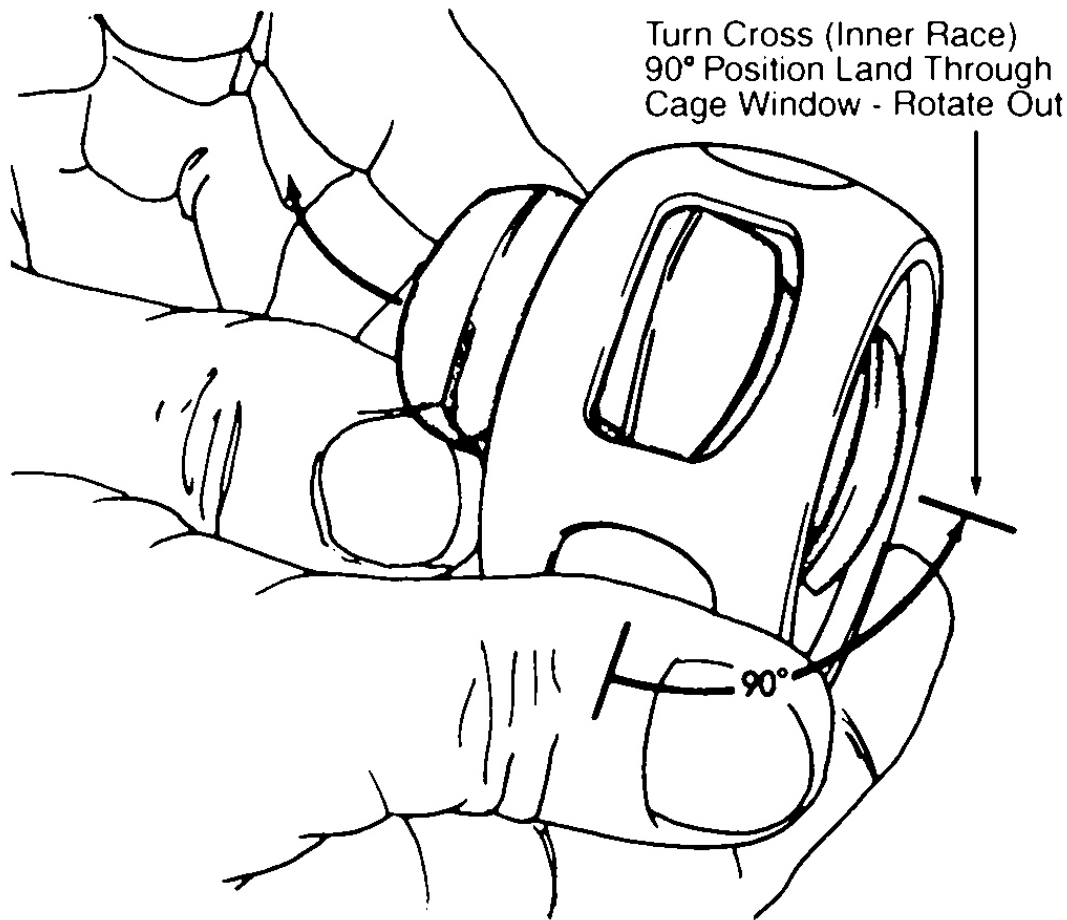
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Fig. 6: Positioning Inner Race & Cage To Remove Balls From Rzeppa Joint Housing
Courtesy of CHRYSLER CORP.



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Fig. 7: Removing Cage & Inner Race From Rzeppa Joint Housing
Courtesy of CHRYSLER CORP.



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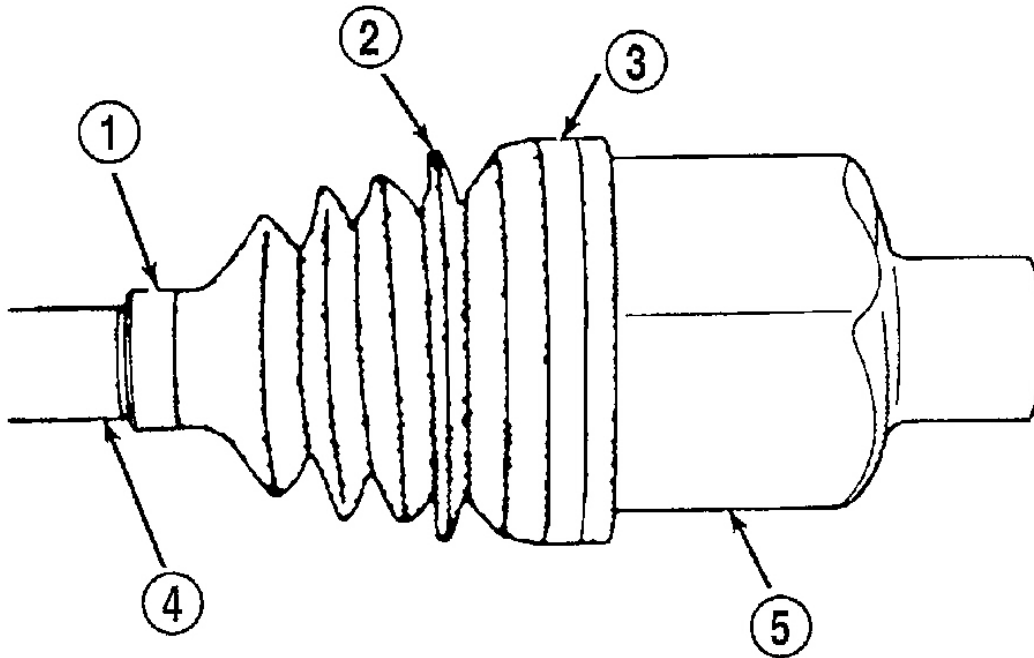
Fig. 8: Separating Rzeppa Joint Inner Race From Cage
 Courtesy of CHRYSLER CORP.

Reassembly (Inner CV Joint)

1. Slide NEW inner CV boot onto interconnecting shaft. Install tripod joint onto interconnecting shaft far enough to fully seat snap ring. Install snap ring and ensure it is fully seated in groove on end of interconnecting shaft.
2. Pack grease provided in CV boot service package into tripod joint housing and inner CV boot. Coat tripod joint with grease supplied in CV boot service package. Install NEW tripod joint housing bushing onto tripod joint housing. See **Fig. 2** . Align tripod joint housing with tripod joint, and slide tripod joint housing over tripod joint and interconnecting shaft.
3. Position CV boot onto tripod joint housing in original position. See **Fig. 9** . Verify that CV boot is not twisted and remove any excess air from inside of CV boot. Measure distance between tripod housing end to end of boot on interconnecting shaft. Distance should be 10.25" (260 mm). See **Fig. 11** . Adjust distance by allowing more or less air into boot.

None

4. Install NEW CV boot clamps on inner CV boot. Place Crimping Tool (C-4975-A) over bridge of CV boot clamp and tighten nut on crimping tool until jaws are completely closed together, face-to-face. See **Fig. 10** . Ensure both CV boot clamps are firmly clamped in place.

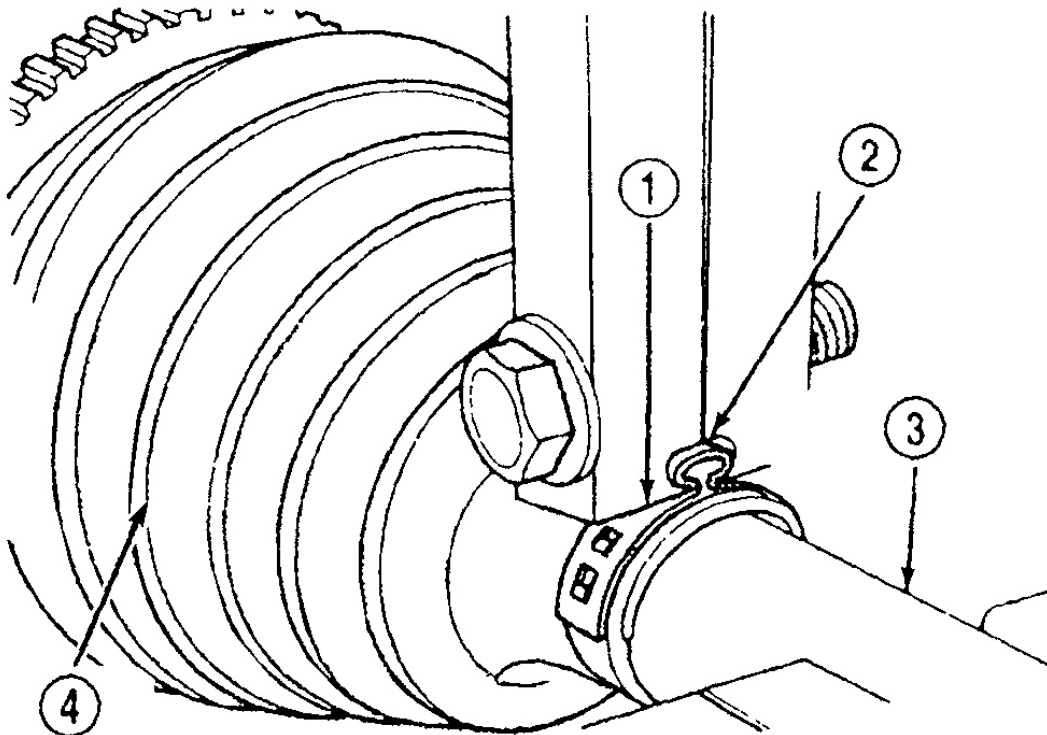


- 1. CV Boot Clamp
- 2. CV Boot
- 3. CV Boot Clamp

- 4. Interconnecting Shaft
- 5. Tripod Joint Housing

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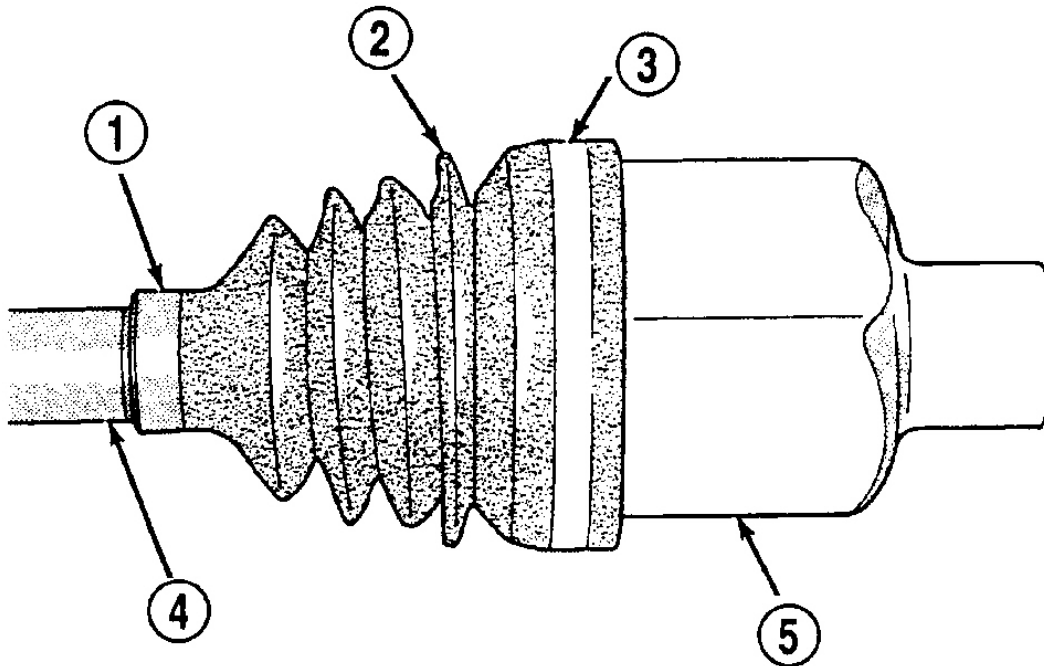
Fig. 9: View Of Properly Installed Inner CV Boot
 Courtesy of CHRYSLER CORP.



- 1 - CV BOOT CLAMP
- 2 - JAWS OF CRIMPING TOOL (C-4975-A) MUST BE CLOSED COMPLETELY TOGETHER HERE
- 3 - INTERCONNECTING SHAFT
- 4 - CV BOOT

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Fig. 10: Crimping Small CV Boot Clamp Onto Interconnecting Shaft (Same Procedure Is Used For Large CV Boot Clamp)
Courtesy of CHRYSLER CORP.



1. CV Boot Clamp
2. CV Boot
3. CV Boot Clamp
4. Interconnecting Shaft
5. Tripod Joint Housing

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Fig. 11: Identifying Assembled Components Of Inner CV Joint Assembly
 Courtesy of CHRYSLER CORP.

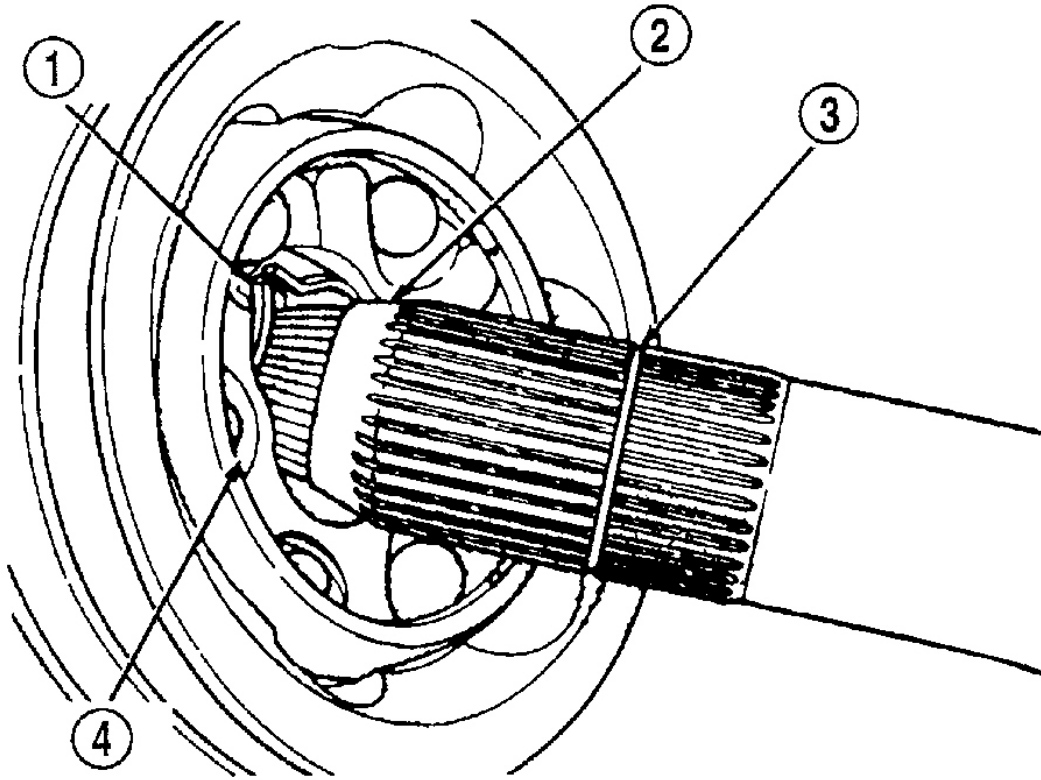
Reassembly (Outer CV Joint)

1. Apply light coat of grease provided in CV boot service package to Rzeppa joint components before reassembly. Align parts according to paint markings made at disassembly. Insert one inner race land into cage window and feed inner race into cage. Pivot inner race 90° to complete cage assembly. See **Fig. 8**.
2. Align opposing elongated cage windows with Rzeppa joint housing land. Feed cage assembly into Rzeppa joint housing. Pivot cage 90° to complete installation of cage assembly. Apply grease to ball races from grease included with replacement CV boot. Spread lubricant equally between all races.
3. Insert balls into raceways by tilting cage and inner race assembly in same manner as removing balls. See **Fig. 6**. Place NEW CV boot clamps on NEW CV boot, and slide CV boot onto interconnecting shaft. Apply remaining grease from replacement CV boot package to Rzeppa joint and CV boot.
4. Align splines of interconnecting shaft with splines on inner race of Rzeppa joint assembly, and start CV joint housing onto interconnecting shaft. Push Rzeppa joint assembly onto interconnecting shaft until snap ring seats in groove of interconnecting shaft. See **Fig. 12**. Ensure snap ring is properly seated by

None

trying to pull Rzeppa joint off interconnecting shaft.

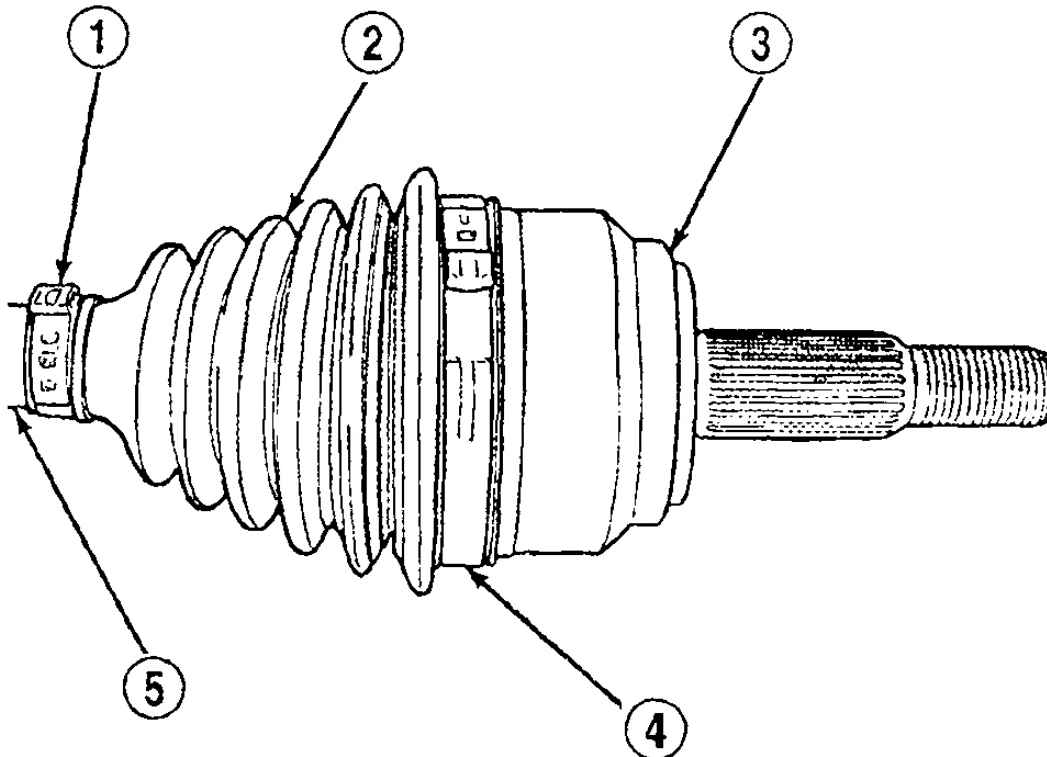
5. Position CV boot on Rzeppa joint housing in original position. Verify that CV boot is not twisted and remove any excess air from inside of CV boot. Install CV boot clamps on outer CV boot. See **Fig. 13** . Place Crimping Tool (C-4975-A) over bridge of CV boot clamp and tighten nut on crimping tool until jaws are completely closed together, face-to-face. See **Fig. 10** . Ensure both CV boot clamps are firmly clamped in place.



1. Snap Ring
2. Interconnecting Shaft Taper
3. Snap Ring Groove
4. Inner Race

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Fig. 12: Installing Rzeppa Joint Onto Interconnecting Shaft
Courtesy of CHRYSLER CORP.



- | | |
|-------------------------|--------------------------|
| 1. SMALL CLAMP | 4. LARGE CLAMP |
| 2. OUTER CV BOOT | 5. INTERCONNECTING SHAFT |
| 3. RZEPPA JOINT HOUSING | |

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Fig. 13: View Of Properly Installed Outer CV Boot
 Courtesy of CHRYSLER CORP.

Installation

1. Clean hub and bearing assembly bore in steering knuckle, hub and bearing assembly mating surface, and axle shaft splines. Apply light coating of wheel bearing grease to all axle shaft splines.
2. Holding axle shaft assembly by hand at outer CV joint and interconnecting shaft, insert outer CV joint stub shaft into steering knuckle. Support axle shaft and align splines of inner CV joint with differential axle shaft splines.
3. Grasp inner CV joint and interconnecting shaft and forcefully push inner CV joint onto differential axle shaft until snap ring is engaged with inner CV joint. Test that snap ring is fully engaged by attempting to remove inner CV joint from differential axle shaft by hand. If snap ring is fully engaged, inner CV joint cannot be removed by hand.
4. Insert upper ball joint stud into steering knuckle. Install upper ball joint nut and tighten to specification. Install and tighten lower shock absorber bolt. See **TORQUE SPECIFICATIONS** .

None

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5. Install brake rotor. Install caliper adapter on steering knuckle and tighten mounting bolts. Mount disc brake caliper on caliper adapter and tighten mounting pins. See **TORQUE SPECIFICATIONS** . Clean all foreign matter from threads on end of axle shaft.
6. Install hub nut onto end of axle shaft. Have assistant apply brakes to keep hub from turning, and tighten hub nut to specification. Install and tighten wheel lug nuts in criss-cross pattern. See **TORQUE SPECIFICATIONS** .

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Disc Brake Caliper Adapter Mounting Bolts	130 (176)
Disc Brake Caliper Mounting Pins	24 (32)
Hub (Axle Shaft) Nut	185 (251)
Lower Shock Absorber Bolt	100 (135)
Upper Ball Joint Nut	55 (75)
Wheel Lug Nuts	135 (183)

None