

2002-04 DRIVE AXLES

Axle Shafts - Front - RAV4

DESCRIPTION

Axle shafts transfer power from transaxle to front wheels (FWD), or front and rear wheels (AWD). Axle shaft consists of axle shaft with flexible Constant Velocity (CV) joint at each end. Front inner CV joint is splined to transaxle.

Inner and outer CV joints are enclosed by a CV joint boot. Boot maintains lubrication in CV joint and prevents contamination of CV lubricant. Boots must be replaced if cracked, torn or damaged. Inner CV joint can be repaired without replacing assembly but outer CV joint must be replaced as an assembly.

TROUBLE SHOOTING

NOTE: See DRIVE AXLE NOISE DIAGNOSIS article in **GENERAL INFORMATION**.

REMOVAL & INSTALLATION

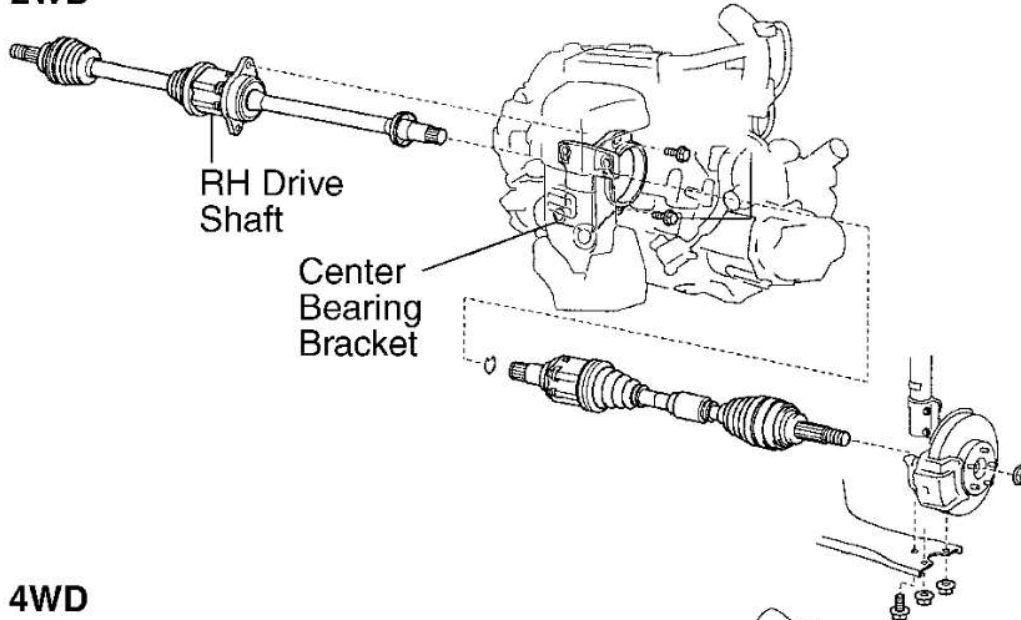
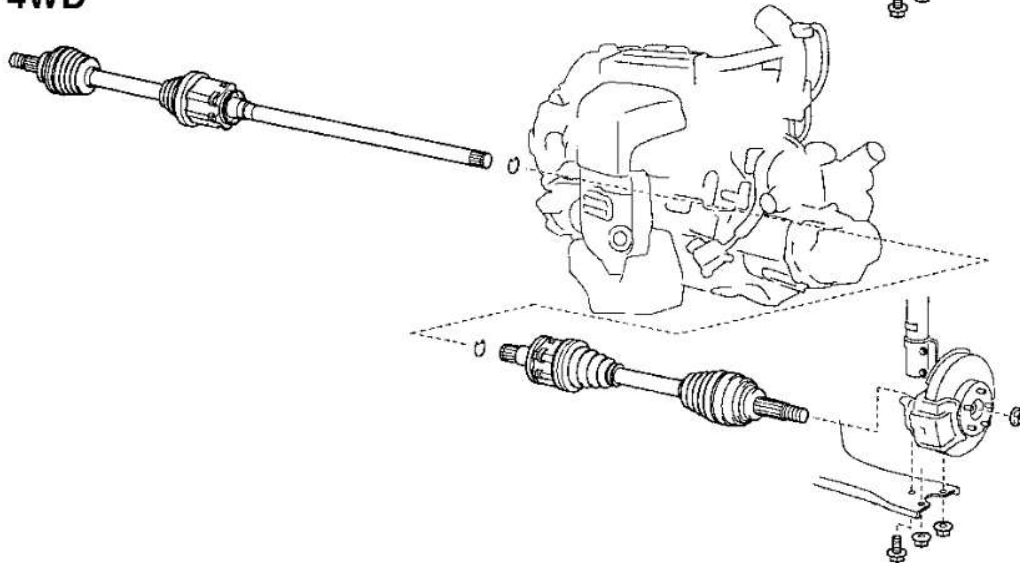
REMOVAL

NOTE: **DO NOT** damage oil seal, axle shaft boots or Anti-Lock Brake System (ABS) speed sensor rotor when removing axle shaft.

1. Raise and support vehicle.
2. Remove front wheel.
3. Drain gear oil from transaxle into proper container.
4. Unstake axle shaft hub nut. While applying brakes, remove axle hub nut. See **Fig. 1**.
5. Remove bolt and 2 nuts, and separate lower ball joint from suspension arm.

NOTE: **On FWD vehicles, removal of right-side axle shaft requires disassembly of center bearing axle support.**

6. Using a plastic hammer, tap axle shaft from hub. Pull steering knuckle outward, and disconnect axle shaft from steering knuckle.
7. To remove axle shaft (except right side on FWD), use an appropriate pry bar and pry axle from transaxle assembly. See **Fig. 2**. Slide axle shaft toward steering knuckle until free of transaxle assembly.
8. To remove right-side axle shaft on FWD, remove 2 bolts from center bearing axle support and remove axle shaft. See **Fig. 3**.

2WD**4WD**

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Fig. 1: Exploded View Of Front FWD & AWD Axle Shaft Components
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

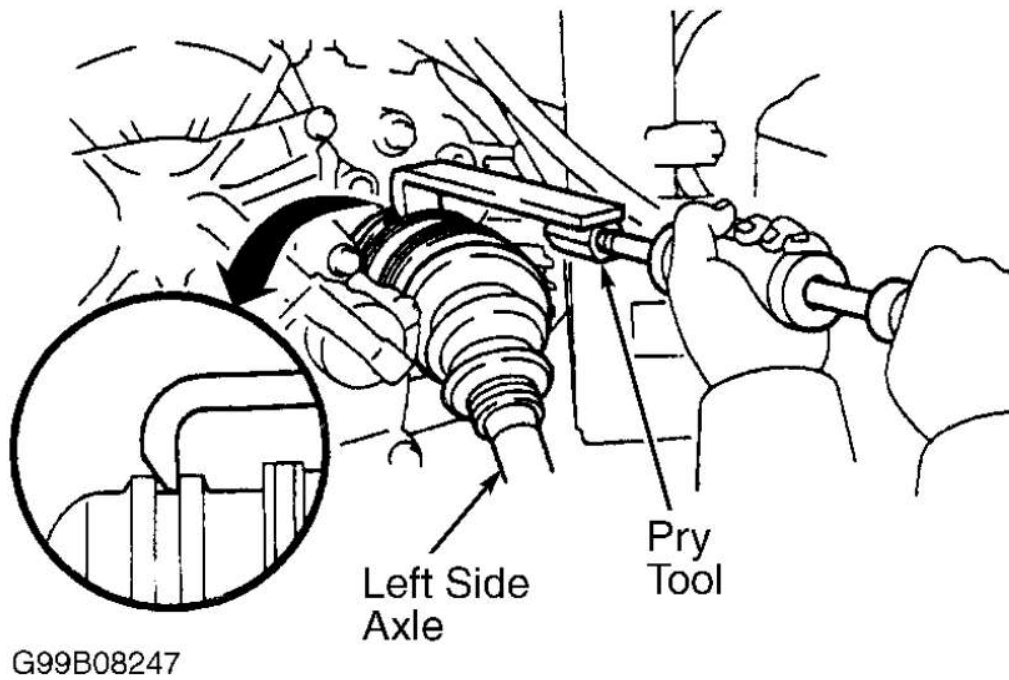
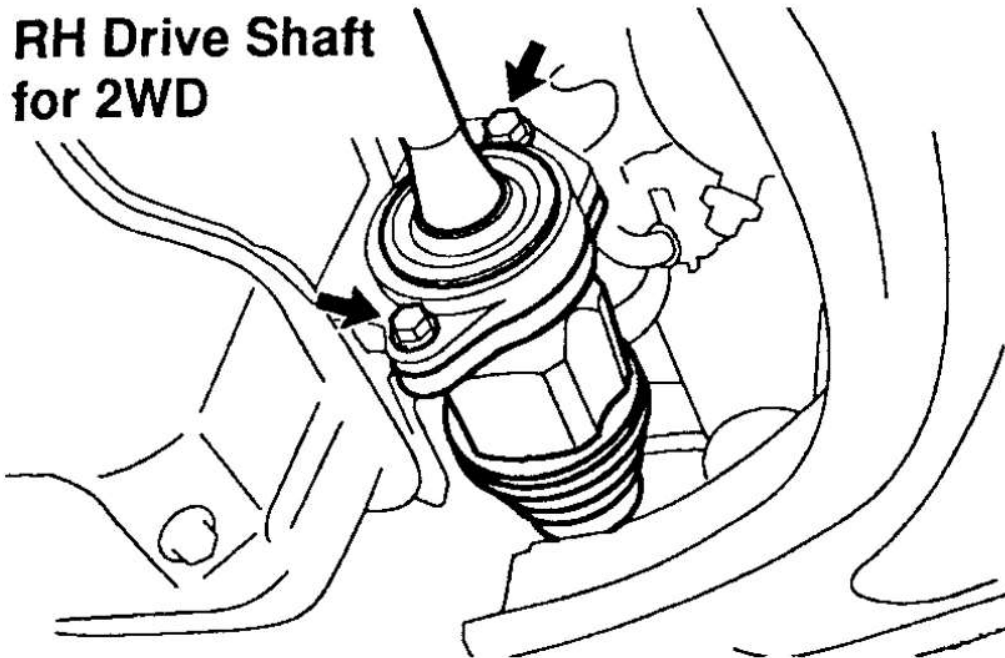


Fig. 2: Removing Left-Side Axle Shaft (AWD)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



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Fig. 3: Disassembling Center Bearing Front Axle Shaft Support (FWD)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION

Ensure no play exists in inner and outer joints. Inner joint must slide smoothly inward and outward, and be free from excessive play in radial direction. Check for torn or damaged boots.

DISASSEMBLY

NOTE: Manufacturer does not recommend overhaul of outer joint assembly.

1. Remove boot clamps and slide boots from joints.
2. Remove dynamic damper and clamps (if equipped).
3. Paint reference marks on inboard joint tulip, tripod and outboard joint shaft for reassembly reference. See **Fig. 4**.
4. Remove outboard joint from inboard tulip joint.
5. Remove snap ring from end of axle shaft retaining inboard tripod joint.
6. Paint reference marks on tripod joint and axle shaft for reassembly reference.

7. Using a hammer and brass drift, tap inboard tripod joint from axle shaft. DO NOT tap on roller of tripod joint during removal.
8. Remove boots and boot clamps from axle shaft.
9. Using a press, remove dust cover from right-side axle (FWD).
10. On FWD models, disassemble right-side axle bearing case. Using snap ring pliers or a screwdriver, remove snap ring. Using a press, remove bearing from case. Remove straight pin from bearing case with pin punch and hammer.
11. Using a press, remove dust cover. Remove snap ring retaining bearing to axle shaft, then press bearing from axle.
12. Using a screwdriver and hammer, remove outer dust deflector from axle shaft.
13. Using a press, remove dust cover from left-side inboard joint tulip (FWD). See **Fig. 5** .

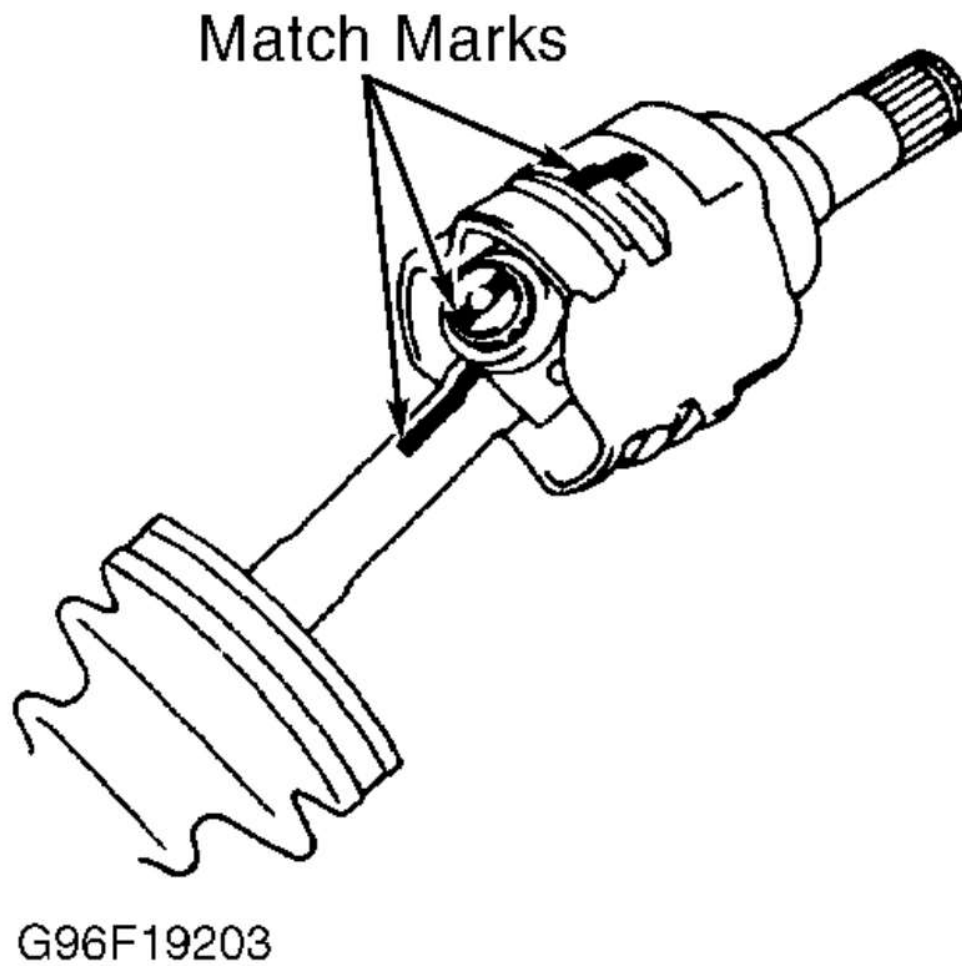
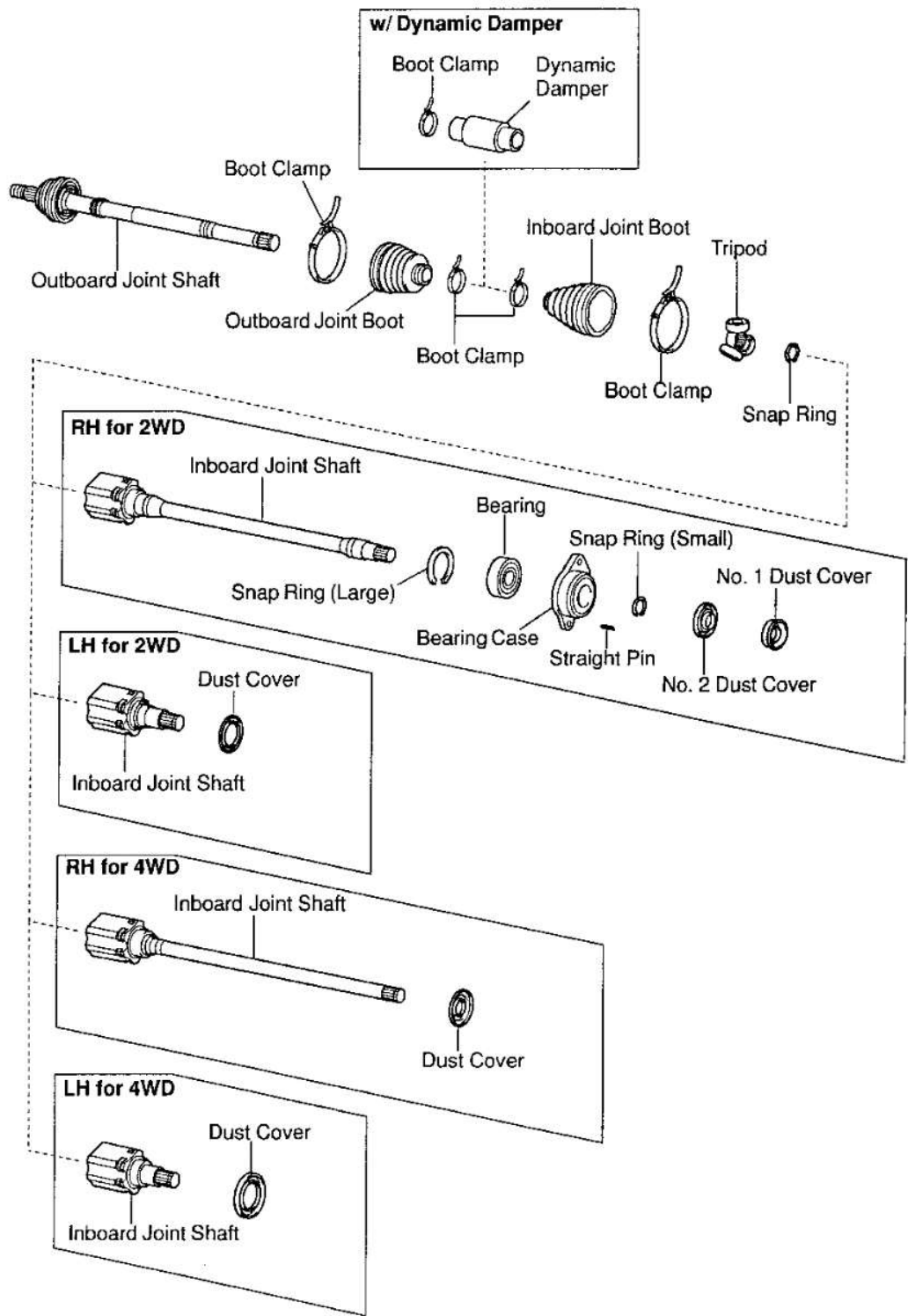


Fig. 4: Match-Marking Components For Reassembly Reference
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



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Fig. 5: Exploded View Of Front FWD & AWD Axle Shaft
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REASSEMBLY

1. On FWD models, install straight pin into bearing case using pin punch and hammer.
2. Using a press, install NEW bearing into bearing case. Install snap ring.
3. Using a press, install bearing assembly on axle shaft. Install NEW snap ring.
4. Press NEW dust cover against bearing, leaving .039 in. (1.0 mm) between bearing and dust cover.
5. Using a press, install NEW dust cover onto axle shaft. Right-side (transaxle side) dust cover must be positioned 3.39-3.43 in. (86.0-87.0 mm) from end of axle shaft. See **Fig. 6** .
6. Wrap splines on axle shaft with tape to prevent damaging boots during installation. Install NEW boots and NEW boot clamps onto axle shaft.
7. Install dynamic damper and NEW clamps. Install boot and boot clamps onto outboard joint.
8. Install inboard tripod joint onto axle shaft, with reference mark aligned. Using a hammer and brass drift, tap tripod until it is fully seated on axle shaft. DO NOT allow brass drift to contact roller on tripod during installation.
9. Install NEW snap ring on end of axle shaft.
10. Apply grease supplied with overhaul kit into outboard and inboard joints and boots. See **BOOT GREASE SPECIFICATIONS** .
11. Align reference marks placed on inboard tulip and outboard shaft prior to disassembly. Install inboard tulip to outboard joint shaft. Install boot on inboard joint cover.
12. Tighten boot clamps. Ensure boots are seated in grooves on axle shaft. Adjust axle shaft to standard axle shaft length. See **AXLE SHAFT LENGTH SPECIFICATIONS** . See **Fig. 7** .
13. Position dynamic damper on outboard end of left axle shaft. Dynamic damper should be positioned at distance of 6.14-6.30 in. (155.9-159.9 mm). Tighten dynamic damper clamps. See **Fig. 8** .

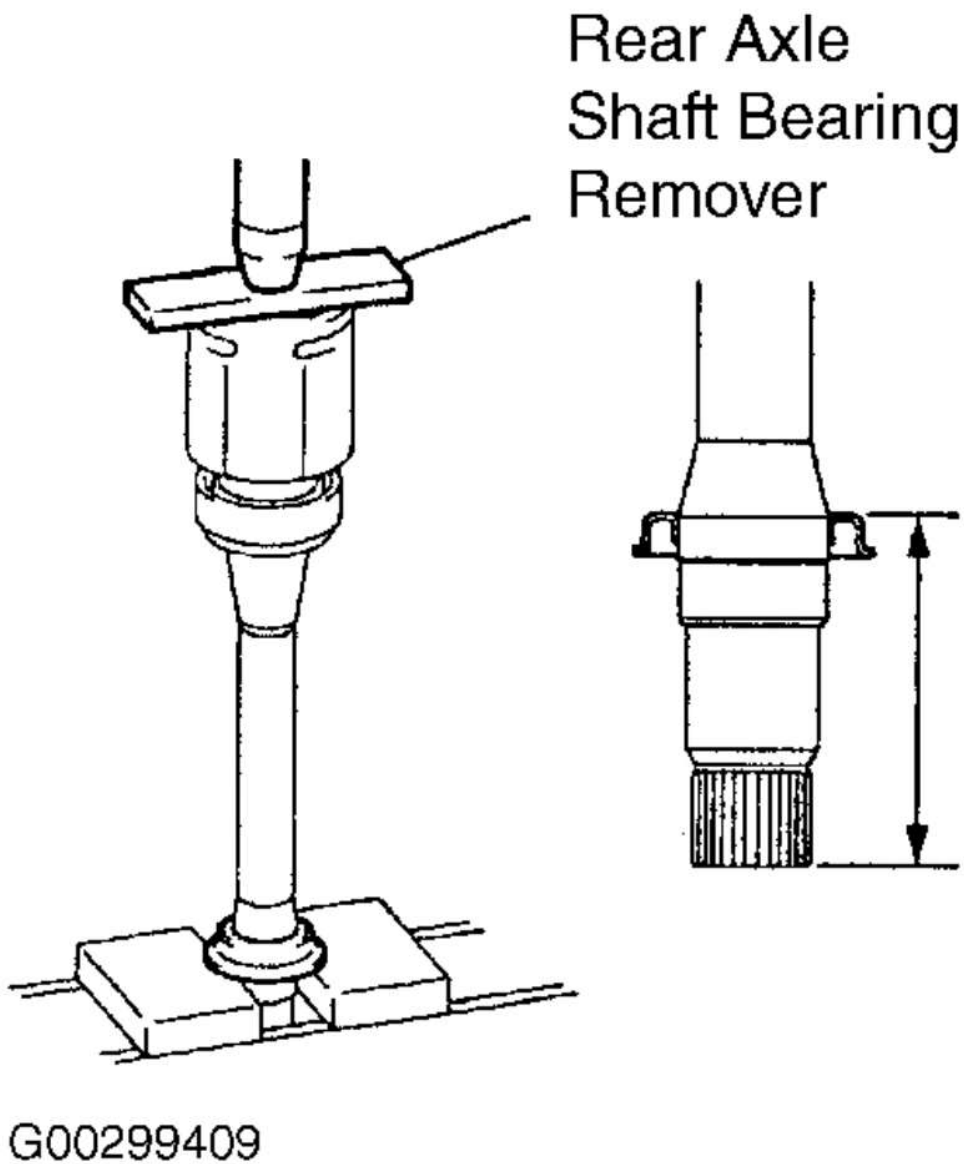


Fig. 6: Installing Right Axle Shaft Dust Cover
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

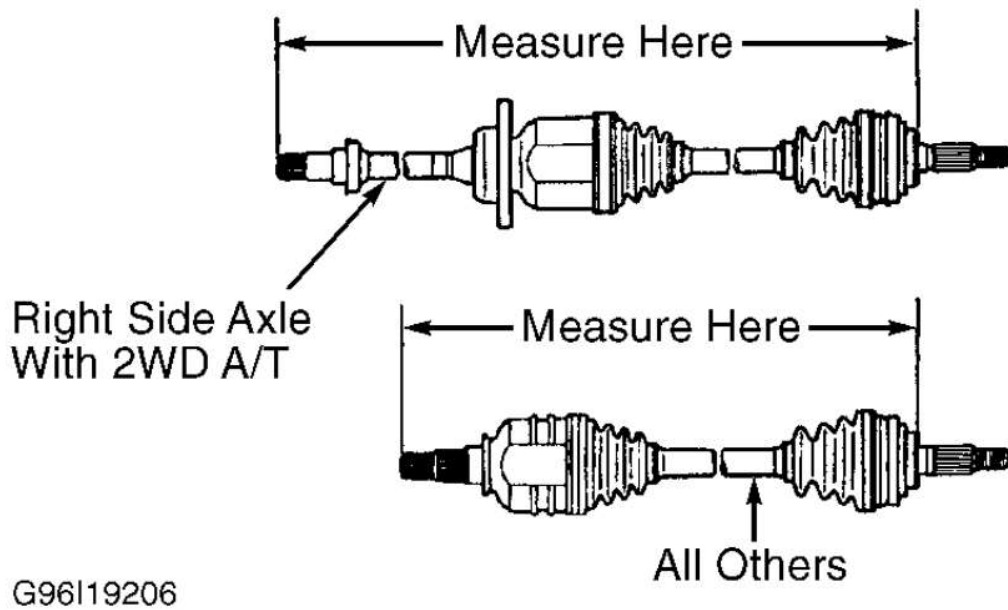


Fig. 7: Measuring Front Axle Shaft Length
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

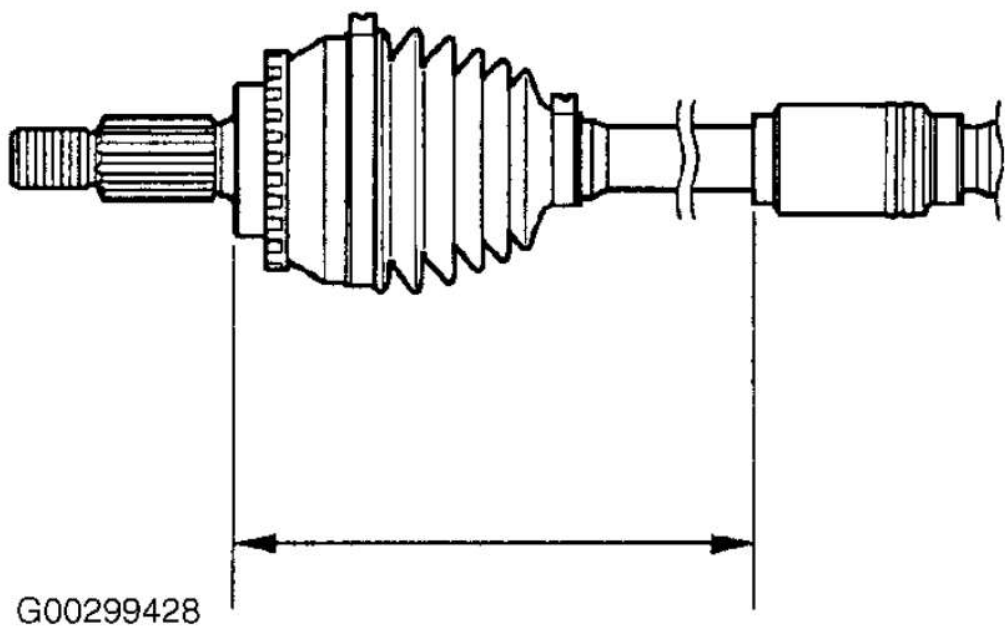


Fig. 8: Measuring Front Axle Shaft Damper Distance
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

- 1. To install, reverse removal procedure. Before installing axle shafts, install NEW snap ring on end of axle shaft (except right side on FWD). Coat axle shaft seals in transaxle with grease. Coat axle shaft splines and sliding surfaces with gear oil. Position snap ring on end of axle shaft, with opening facing downward.
- 2. Install axle shaft by lightly tapping axle shaft into transaxle. Ensure axle shaft will move inward and outward approximately .079-.120 in. (2-3 mm), and cannot be pulled from transaxle.
- 3. To install remaining components, reverse removal procedure. Tighten remaining bolts/nuts to specification. See **TORQUE SPECIFICATIONS** . Fill transfer case (or transaxle) with appropriate lubrication.

AXLE SHAFT LENGTH SPECIFICATIONS

FRONT AXLE SHAFT LENGTH SPECIFICATIONS

Application	In. (mm)
FWD ⁽¹⁾	
Left Side	22.80-23.20 (580.4-590.4)
Right Side	33.60-34.00 (853.5-863.5)

AWD ⁽¹⁾	
Left Side	20.27-20.67 (515.5-525.5)
Right Side	36.04-36.44 (915.5-925.5)
(1) Measure axle shaft length between inner joint flange and outer joint flange. See Fig. 7 .	

BOOT GREASE SPECIFICATIONS

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Application	Oz. (g)
Inboard (Yellow)	6.6-7.0 (185-195)
Outboard (Yellow)	6.8-7.1 (190-200)

TORQUE SPECIFICATIONS

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Application	Ft. Lbs. (N.m)
Axle Shaft Hub Nut	159 (216)
Bearing Bracket Bolt	47 (64)
Lower Control Arm-To-Ball Joint Bolt/Nut	94 (127)
Wheel Lug Nut	76 (103)