

DIFFERENTIAL AND DRIVELINE

TABLE OF CONTENTS

	page		page
DESCRIPTION AND OPERATION		INNER TRIPOD JOINT SEAL BOOT	7
FRONT DRIVESHAFTS	1	OUTER C/V JOINT SEAL BOOT	13
DIAGNOSIS AND TESTING		SPECIFICATIONS	
DRIVESHAFT DIAGNOSIS	2	TORQUE	17
REMOVAL AND INSTALLATION		SPECIAL TOOLS	
DRIVESHAFTS	3	DRIVESHAFT	17
DISASSEMBLY AND ASSEMBLY			
DRIVESHAFT RECONDITION	7		

DESCRIPTION AND OPERATION

FRONT DRIVESHAFTS

Vehicles equipped with either an automatic or manual transmission use an unequal-length drive-shaft system.

The system incorporates two driveshaft assemblies (left and right) that consist of an inner and outer constant velocity (CV) joint and a solid interconnecting shaft (Fig. 1). The right driveshaft is longer than the left due to transaxle packaging and powertrain design.

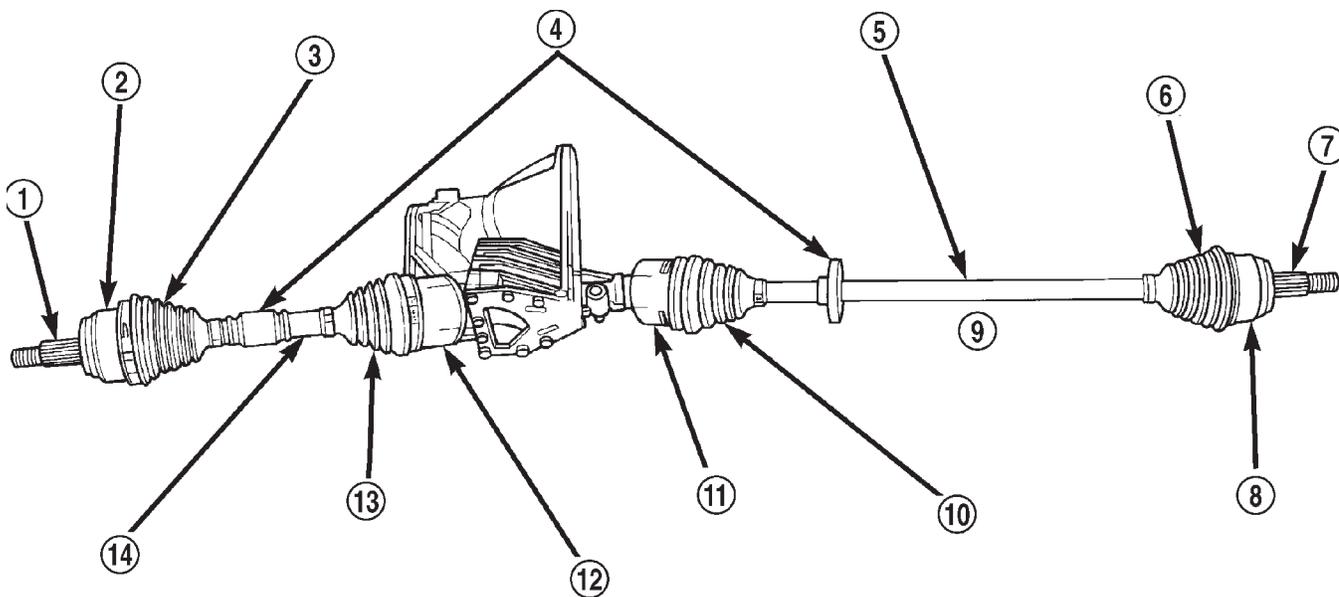


Fig. 1 Unequal Length Driveshaft System

8050053f

- | | |
|--------------------------------|--|
| 1 - STUB AXLE | 8 - OUTER C/V JOINT |
| 2 - OUTER C/V JOINT | 9 - RIGHT DRIVESHAFT |
| 3 - OUTER C/V JOINT BOOT | 10 - INNER TRIPOD JOINT BOOT |
| 4 - TUNED RUBBER DAMPER WEIGHT | 11 - INNER TRIPOD JOINT |
| 5 - INTERCONNECTING SHAFT | 12 - INNER TRIPOD JOINT |
| 6 - OUTER C/V JOINT BOOT | 13 - INNER TRIPOD JOINT BOOT |
| 7 - STUB AXLE | 14 - INTERCONNECTING SHAFT LEFT DRIVESHAFT |

DESCRIPTION AND OPERATION (Continued)

Driveshafts used on both the right and left sides of the vehicle use a tuned rubber damper weight mounted to the interconnecting shaft (Fig. 1). The damper weight applications vary by which side of the vehicle the driveshaft is located on and the transmission application of the vehicle. When replacing a driveshaft, be sure the replacement driveshaft has the same damper weight as the original.

Both driveshaft assemblies use the same type of inner and outer joints. The inner joint of both driveshaft assemblies is a tripod joint, and the outer joint of both driveshaft assemblies is a Rzeppa joint. Both tripod joints and Rzeppa joints are true constant velocity (C/V) joint assemblies. The inner tripod joint allows for the changes in driveshaft length through the jounce and rebound travel of the front suspension.

On vehicles equipped with ABS brakes, the outer C/V joint is equipped with a tone wheel used to determine vehicle speed for ABS brake operation.

The inner tripod joint of both driveshafts is splined into the transaxle side gears. The inner tripod joints are retained in the side gears of the transaxle using a snap ring located in the stub shaft of the tripod joint. The outer C/V joint has a stub shaft that is splined into the wheel hub and retained by a single piece steel hub nut (Fig. 2). The hub nut is a locking style; the nut lock, anti-rattle washer, and cotter pin are not necessary.

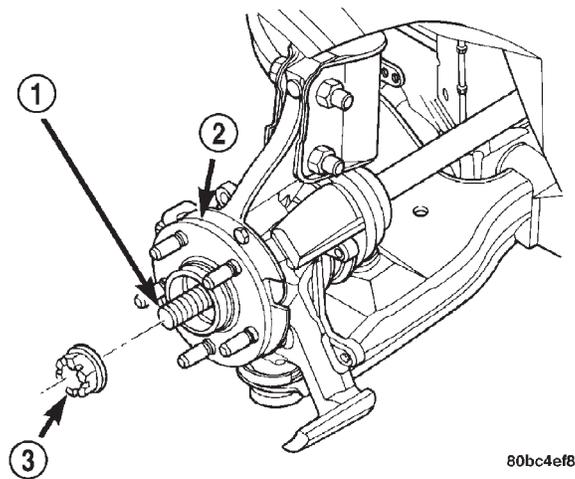


Fig. 2 Driveshaft Retaining Nut

- 1 - DRIVESHAFT
- 2 - HUB
- 3 - HUB NUT

NOTE: This vehicle does not use a rubber-lip bearing seal as on previous front-wheel-drive cars to prevent contamination of the front wheel bearing. On these vehicles, the face of the outer C/V joint fits deeply into the steering knuckle, using a close outer C/V joint-to-steering knuckle fit. This design deters direct water splash on bearing seal while allowing any water that gets in, to run out the bottom of the steering knuckle bearing bore. It is important to thoroughly clean the outer C/V joint and the wheel bearing area in the steering knuckle before it is assembled after servicing.

DIAGNOSIS AND TESTING

DRIVESHAFT DIAGNOSIS

VEHICLE INSPECTION

(1) Check for grease in the vicinity of the inboard tripod joint and outboard C/V joint; this is a sign of inner or outer joint seal boot or seal boot clamp damage.

(2) A light film of grease may appear on the right inner tripod joint seal boot; this is considered normal and should not require replacement of the seal boot. The right inner tripod joint seal boot is made of silicone rubber; which will allow the weeping (sweating) of the joint lubricant to pass through it while in operation.

NOISE AND/OR VIBRATION IN TURNS

A clicking noise and/or a vibration in turns could be caused by one of the following conditions.

(1) Damaged outer C/V or inner tripod joint seal boot or seal boot clamps. This will result in the loss and/or contamination of the joint grease, resulting in inadequate lubrication of the joint.

(2) Noise may also be caused by another component of the vehicle coming in contact with the driveshafts.

CLUNKING NOISE DURING ACCELERATION

This noise may be a result of one of the following conditions:

(1) A torn seal boot on the inner or outer joint of the driveshaft assembly.

(2) A loose or missing clamp on the inner or outer joint of the driveshaft assembly.

(3) A damaged or worn driveshaft C/V joint.

DIAGNOSIS AND TESTING (Continued)

SHUDDER OR VIBRATION DURING ACCELERATION

- (1) A worn or damaged driveshaft inner tripod joint.
- (2) A sticking tripod joint spider assembly (inner tripod joint only).
- (3) Improper wheel alignment. See Wheel Alignment in this group for alignment checking and setting procedures and specifications.

VIBRATION AT HIGHWAY SPEEDS

- (1) Foreign material (mud, etc.) packed on the backside of the wheel(s).
- (2) Out of balance front tires or wheels. See Group 22, Wheels And Tires for the required balancing procedure.
- (3) Improper tire and/or wheel runout. See Group 22, Wheels And Tires for the required runout checking procedure.

REMOVAL AND INSTALLATION

DRIVESHAFTS

CAUTION: Boot sealing is vital to retain special lubricants and to prevent foreign contaminants from entering the C/V joint. Mishandling, such as allowing the assemblies to dangle unsupported, or pulling or pushing the ends can cut boots or damage C/V joints. During removal and installation procedures, always support both ends of the driveshaft to prevent damage.

REMOVAL

CAUTION: The driveshaft, when installed, acts as a bolt and secures the front hub/bearing assembly. If vehicle is to be supported or moved on its wheels with a driveshaft removed, install a **PROPER-SIZED BOLT AND NUT** through front hub. Tighten bolt and nut to 203 N-m (150 ft. lbs.). This will ensure that the hub bearing cannot loosen.

- (1) Disconnect battery negative cable.
- (2) Place transaxle in gated park.
- (3) Raise vehicle on hoist.
- (4) Remove wheel and tire assembly (Fig. 3).

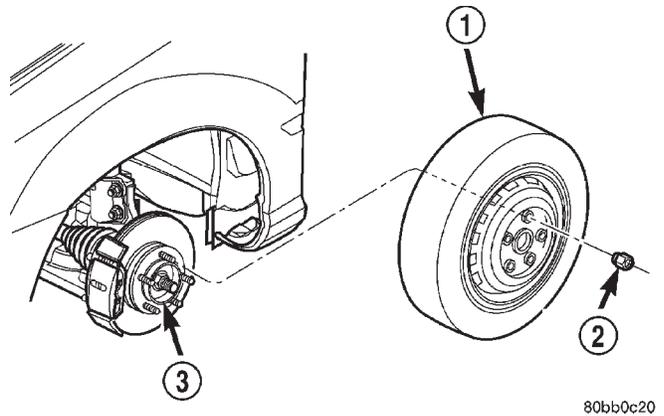


Fig. 3 Wheel and Tire Removal

- 1 - WHEEL/TIRE ASSY.
- 2 - LUG NUT (5)
- 3 - HUB

(5) Remove the driveshaft to hub and bearing retaining nut (Fig. 4).

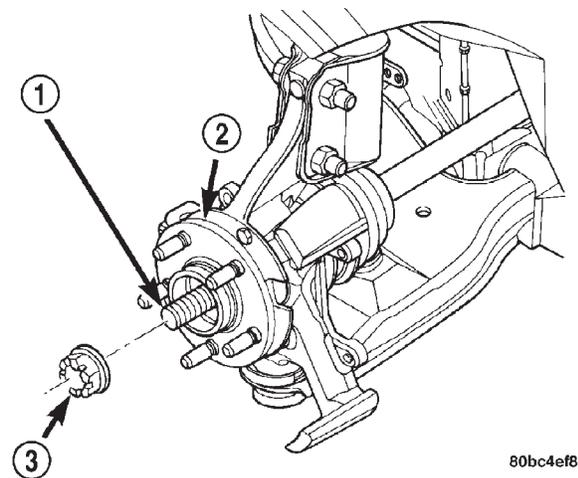


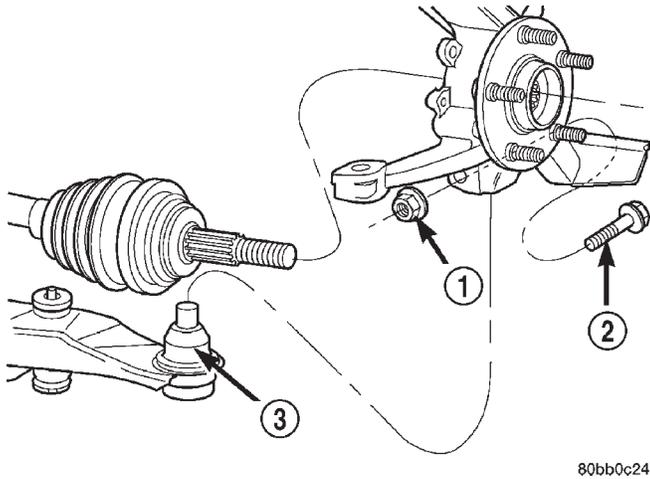
Fig. 4 Driveshaft Retaining Nut Removal

- 1 - DRIVESHAFT
- 2 - HUB
- 3 - HUB NUT

(6) If equipped with ABS, disconnect the front wheel speed sensor and secure harness out of the way.

REMOVAL AND INSTALLATION (Continued)

(7) Remove nut and bolt (Fig. 5) retaining ball joint stud into steering knuckle.



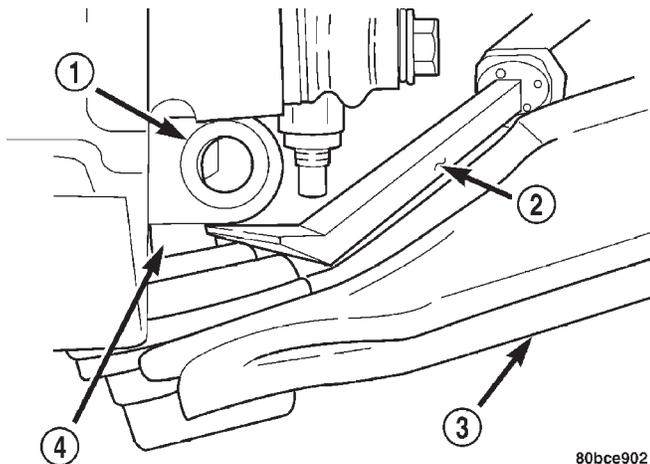
80bb0c24

Fig. 5 Steering Knuckle at Lower Control Arm Ball Joint

- 1 - NUT
- 2 - BOLT
- 3 - BALL JOINT

NOTE: Use caution when separating ball joint stud from steering knuckle, so ball joint seal does not get damaged.

(8) Separate ball joint stud from steering knuckle by prying down on lower control arm (Fig. 6).



80bce902

Fig. 6 Separating Lower Control Arm from Steering Knuckle

- 1 - STEERING KNUCKLE
- 2 - PRY BAR
- 3 - LOWER CONTROL ARM
- 4 - BALL JOINT STUD

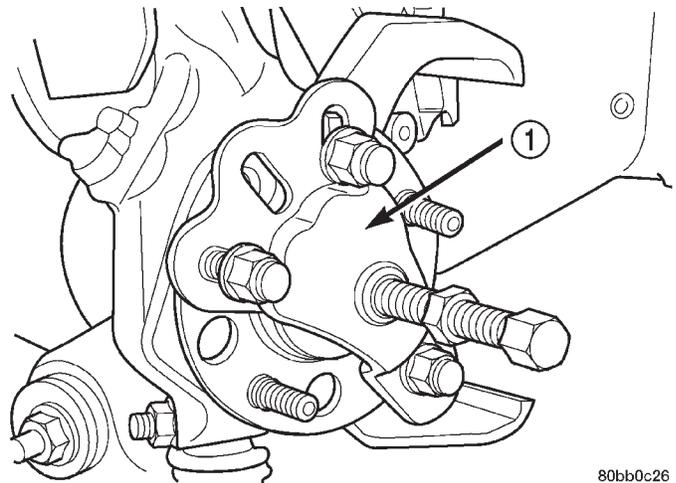
NOTE: Care must be taken not to separate the inner C/V joint during this operation. Do not allow driveshaft to hang by inner C/V joint, driveshaft must be supported.

(9) Remove driveshaft from steering knuckle by pulling outward on knuckle while pressing in on driveshaft. Support outer end of driveshaft assembly. If difficulty in separating driveshaft from steering knuckle is encountered, perform the following procedure:

(a) Install Puller, Special Tool 6790 on hub and bearing assembly (Fig. 7), using wheel lug nuts to secure it in place.

(b) Install a wheel lug nut on wheel stud to protect the threads on the stud. Install a flat blade pry tool to keep hub from turning. Using Puller, force the driveshaft outer stub axle from the hub and bearing assembly (Fig. 8).

(c) Pull steering knuckle assembly out and away from outer C/V joint of the driveshaft assembly as shown in (Fig. 5).



80bb0c26

Fig. 7 Puller Installed On Hub/Bearing Assembly

- 1 - TOOL 6790

(10) Support outer end of the driveshaft assembly.

NOTE: Removal of the inner tripod joints is made easier if you apply outward pressure on the joint as you strike the punch with a hammer.

REMOVAL AND INSTALLATION (Continued)

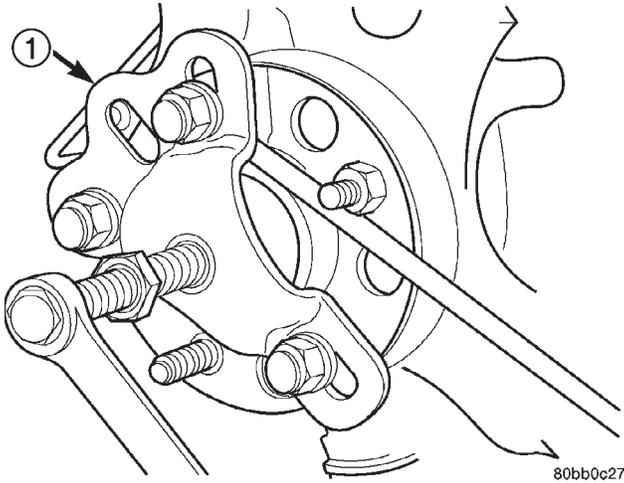


Fig. 8 Removing Stub Axle From Hub/Bearing

1 - TOOL 6790

(11) Remove the inner tripod joints from the side gears of the transaxle using a punch to dislodge the inner tripod joint retaining ring from the transaxle side gear. If removing the right side inner tripod joint, position the punch against the inner tripod joint (Fig. 9). Strike the punch sharply with a hammer to dislodge the right inner joint from the side gear. If removing the left side inner tripod joint, position the punch in the groove of the inner tripod joint (Fig. 10). Strike the punch sharply with a hammer to dislodge the left inner tripod joint from the side gear.

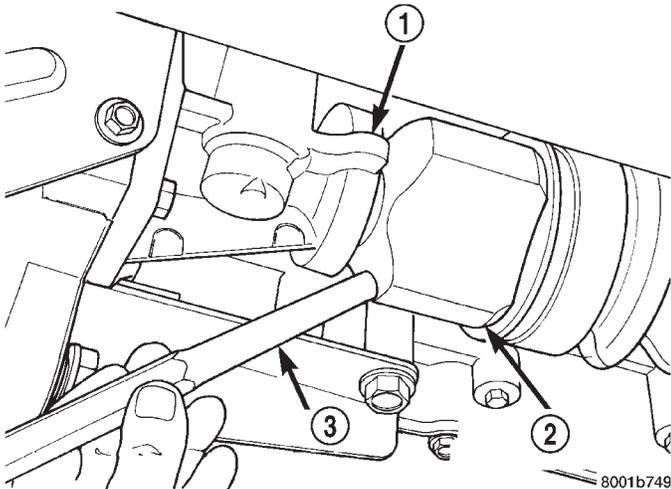


Fig. 9 Disengaging Right Inner Tripod Joint from Transaxle

1 - TRANSAXLE
2 - RIGHT INNER TRIPOD JOINT
3 - PUNCH

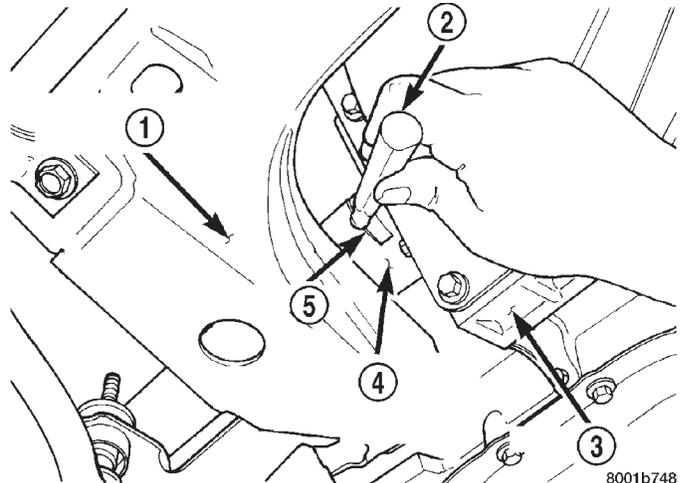


Fig. 10 Disengaging Left Inner Tripod Joint from Transaxle

1 - FRONT SUSPENSION CROSSMEMBER
2 - DRIFT
3 - TRANSAXLE
4 - DRIVESHAFT INNER TRIPOD JOINT
5 - NOTCH

(12) Hold inner tripod joint and interconnecting shaft of driveshaft assembly (Fig. 11). Remove inner tripod joint from transaxle by pulling it straight out of transaxle side gear and transaxle oil seal. **When removing tripod joint, do not let spline or snap ring drag across sealing lip of the transaxle to tripod joint oil seal. When tripod joint is removed from transaxle, some fluid will leak out.**

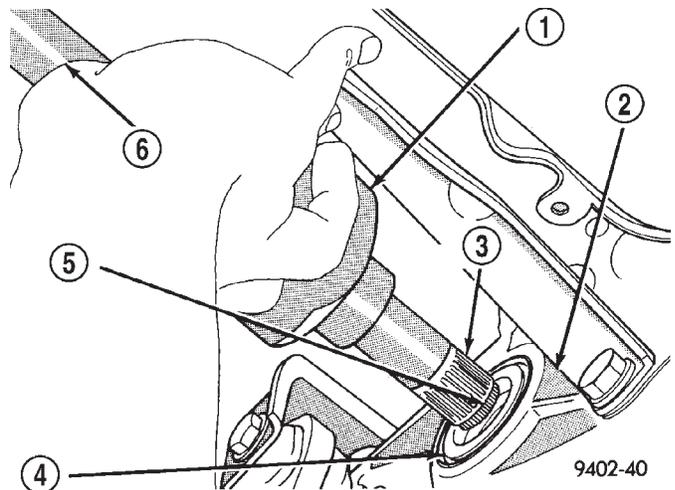


Fig. 11 Tripod Joint Removal from Transaxle

1 - INNER TRIPOD JOINT
2 - TRANSAXLE
3 - SPLINE
4 - OIL SEAL
5 - SNAP RING
6 - INTERCONNECTING SHAFT

REMOVAL AND INSTALLATION (Continued)

CAUTION: The driveshaft, when installed, acts as a bolt and secures the front hub/bearing assembly. If vehicle is to be supported or moved on its wheels with a driveshaft removed, install a **PROPER-SIZED BOLT AND NUT** through front hub. Tighten bolt and nut to 203 N-m (150 ft. lbs.). This will ensure that the hub bearing cannot loosen.

INSTALLATION

(1) Thoroughly clean spline and oil seal sealing surface, on tripod joint. Lightly lubricate oil seal sealing surface on tripod joint with fresh clean transmission lubricant.

(2) Holding driveshaft assembly by tripod joint and interconnecting shaft, install tripod joint into transaxle side gear as far as possible by hand.

(3) Carefully align tripod joint with transaxle side gears. Then grasp driveshaft interconnecting shaft and push tripod joint into transaxle side gear until fully seated. **Test that snap ring is fully engaged with side gear by attempting to remove tripod joint from transaxle by hand. If snap ring is fully engaged with side gear, tripod joint will not be removable by hand.**

(4) Clean all debris and moisture out of steering knuckle (Fig. 12).

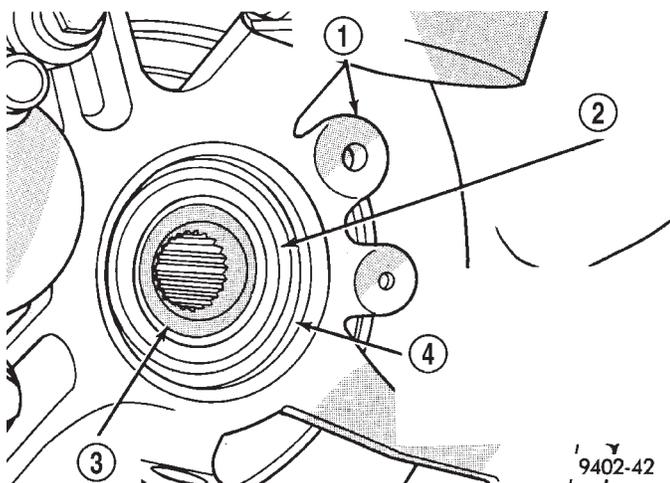
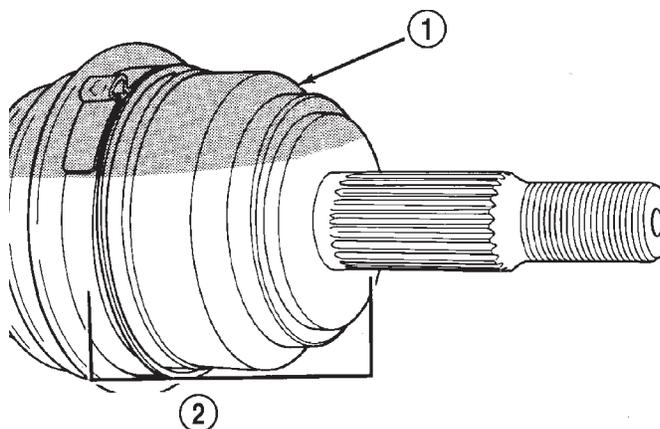


Fig. 12 Steering Knuckle to C/V Joint Sealing Area

- 1 - STEERING KNUCKLE
- 2 - WHEEL BEARING
- 3 - FRONT HUB
- 4 - THIS AREA OF THE STEERING KNUCKLE IS TO BE FREE OF ALL DEBRIS AND MOISTURE BEFORE INSTALLING DRIVE SHAFT IN STEERING KNUCKLE

(5) Ensure that front of outer C/V joint, which fits into steering knuckle (Fig. 13), is free of debris and moisture before assembling into steering knuckle.



9402-43

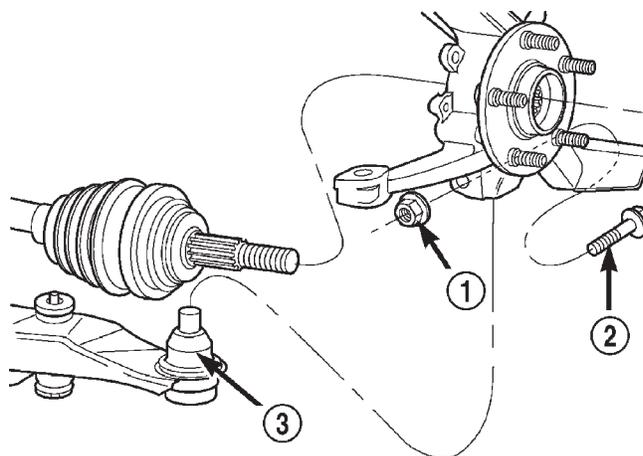
Fig. 13 Outer C/V Joint Inspection

- 1 - OUTER C/V JOINT
- 2 - THIS AREA OF OUTER C/V JOINT MUST BE FREE OF ALL DEBRIS AND MOISTURE, BEFORE INSTALLATION INTO STEERING KNUCKLE.

(6) Slide driveshaft back into front hub. Install steering knuckle onto the ball joint stud (Fig. 14).

NOTE: At this point, the outer joint will not seat completely into the front hub. The outer joint will be pulled into hub and seated when the hub nut is installed and torqued.

(7) Install a **NEW** steering knuckle to ball joint stud bolt and nut (Fig. 14). Tighten the nut and bolt to 95 N-m (70 ft. lbs.).



80bb0c24

Fig. 14 Driveshaft Installation Into Hub And Steering Knuckle

- 1 - NUT
- 2 - BOLT
- 3 - BALL JOINT

REMOVAL AND INSTALLATION (Continued)

(8) Clean all foreign matter from threads of drive-shaft outer stub axle. Install hub nut onto the threads of the stub axle and tighten nut to 244 N·m (180 ft. lbs.) (Fig. 15).

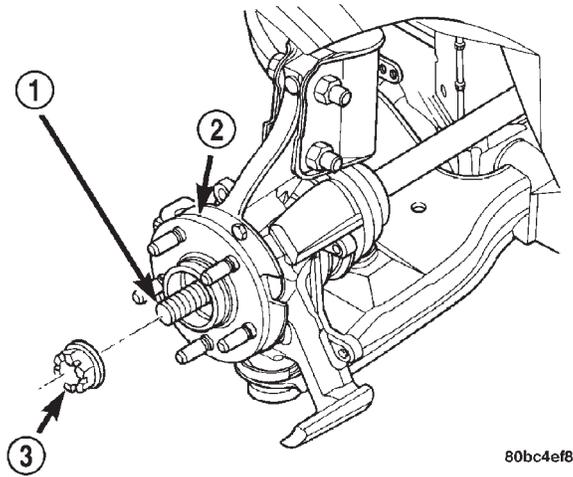


Fig. 15 Driveshaft Retaining Nut Installation

- 1 - DRIVESHAFT
- 2 - HUB
- 3 - HUB NUT

(9) Install front wheel and tire assembly. Install front wheel lug nuts (Fig. 16) and tighten to 128 N·m (95 ft. lbs.).

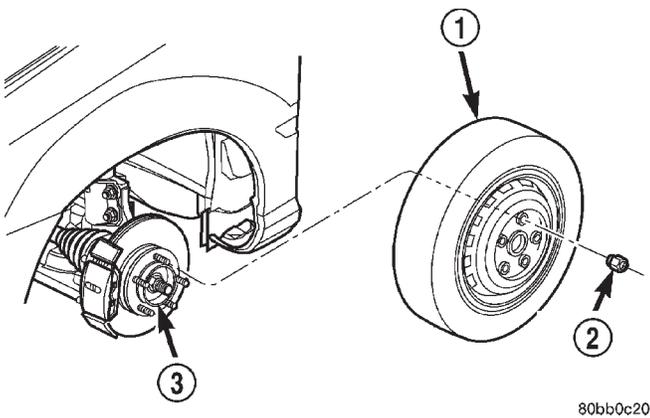


Fig. 16 Wheel and Tire Installation

- 1 - WHEEL/TIRE ASSY.
- 2 - LUG NUT (5)
- 3 - HUB

(10) Check for correct fluid level in transaxle assembly. Refer to Group 21 Transaxle, for the correct fluid level checking procedure for the type of transaxle being checked.

- (11) Lower vehicle.
- (12) Connect battery negative cable.

DISASSEMBLY AND ASSEMBLY

DRIVESHAFT RECONDITION

NOTE: The only service that is to be performed on the driveshaft assemblies is the replacement of the driveshaft seal boots.

If any failure of internal driveshaft components is diagnosed during a vehicle road test or disassembly of the driveshaft, the driveshaft will need to be replaced as an assembly.

NOTE: Lubricant requirements and quantities are different for inner joints than for outer joints. Use only the recommended lubricants in the required quantities when servicing driveshaft assemblies.

See (Fig. 17) for the exploded view of the front driveshaft components.

INNER TRIPOD JOINT SEAL BOOT

REMOVAL

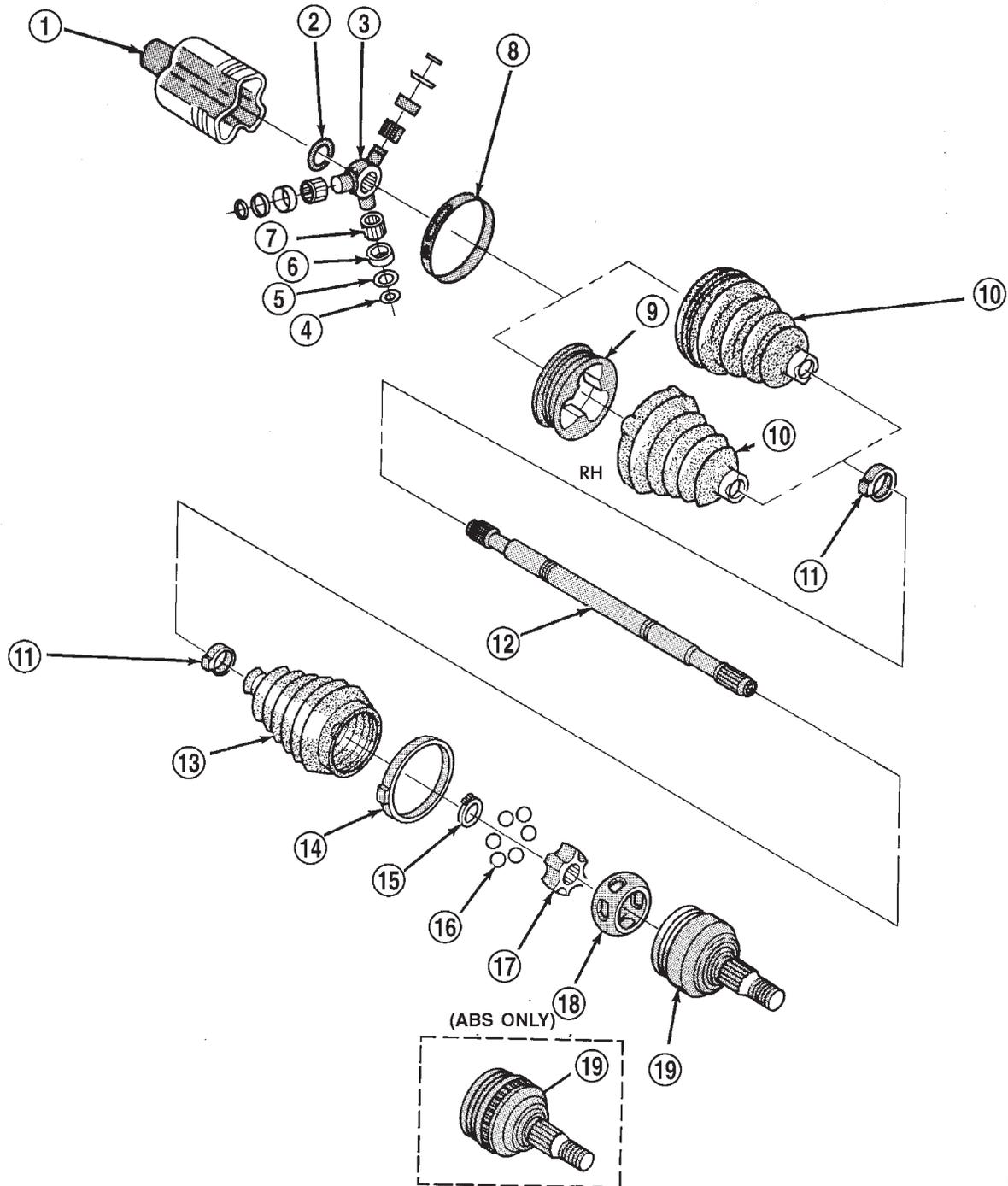
To remove sealing boot from driveshaft for replacement, the driveshaft assembly must be removed from the vehicle. See Driveshaft Removal and Installation in this section for the required driveshaft removal and replacement procedure.

The inner tripod joints use no internal retention in the tripod housing to keep the spider assembly in the housing. Therefore, do not pull on the interconnecting shaft to disengage tripod housing from transmission stub shaft. Removal in this manner will cause damage to the inboard joint sealing boots.

(1) Remove the driveshaft requiring boot replacement from the vehicle. See Driveshaft Removal and Installation in this section for the required driveshaft removal procedure.

(2) Remove large boot clamp that retains inner tripod joint sealing boot to tripod joint housing (Fig. 18) and discard. Then remove small clamp that retains inner tripod joint sealing boot to interconnecting shaft and discard. Remove the sealing boot from the tripod housing and slide it down the interconnecting shaft.

DISASSEMBLY AND ASSEMBLY (Continued)

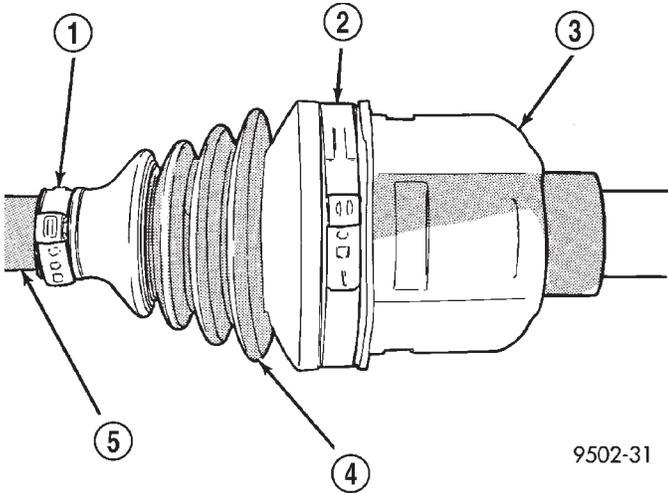


9302-51

Fig. 17 Driveshaft Assembly Components (Exploded View)

- | | |
|-------------------------------|---|
| 1 - HOUSING ASM, RETAINER & | 11 - CLAMP, SEAL RETAINING |
| 2 - RING, SPACER | 12 - SHAFT, AXLE (RH SHOWN, LH SIMILAR) |
| 3 - SPIDER, TRIPOD JOINT | 13 - SEAL, DRIVE AXLE OUTBOARD |
| 4 - RING, RETAINING | 14 - CLAMP, SEAL RETAINING |
| 5 - RETAINER, BALL & ROLLER | 15 - RING, RACE RETAINING |
| 6 - BALL, TRIPOD JOINT | 16 - BALL, CHROME ALLOY |
| 7 - ROLLER, NEEDLE | 17 - RACE, C/V JOINT INNER |
| 8 - CLAMP, SEAL RETAINING | 18 - CAGE, C/V JOINT |
| 9 - BUSHING, TRILOBAL TRIPOD | 19 - RACE, C/V JOINT OUTER |
| 10 - SEAL, DRIVE AXLE INBOARD | |

DISASSEMBLY AND ASSEMBLY (Continued)



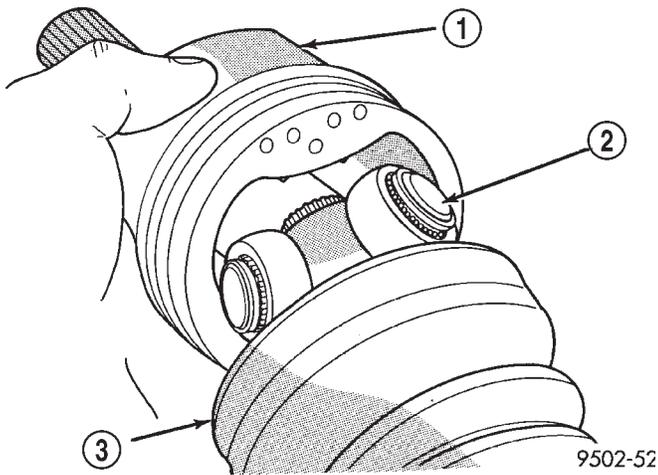
9502-31

Fig. 18 Inner Tripod Joint Sealing Boot Clamps

- 1 - SMALL CLAMP
- 2 - LARGE CLAMP
- 3 - INNER TRIPOD JOINT
- 4 - SEALING BOOT
- 5 - INTERCONNECTING SHAFT

CAUTION: When removing the spider joint from the tripod joint housing, hold the rollers in place on the spider trunions to prevent the rollers and needle bearings from falling away.

(3) Slide the interconnecting shaft and spider assembly out of the tripod joint housing (Fig. 19).



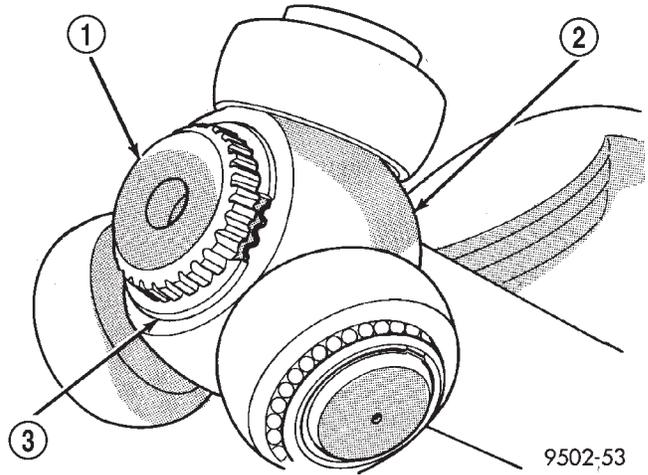
9502-52

Fig. 19 Spider Assembly Joint Removal from Housing

- 1 - TRIPOD JOINT HOUSING
- 2 - SPIDER ASSEMBLY
- 3 - SEALING BOOT

(4) Remove snap ring that retains spider assembly to interconnecting shaft (Fig. 20). Remove the spider assembly from interconnecting shaft. If spider assembly will not come off interconnecting shaft by hand, it

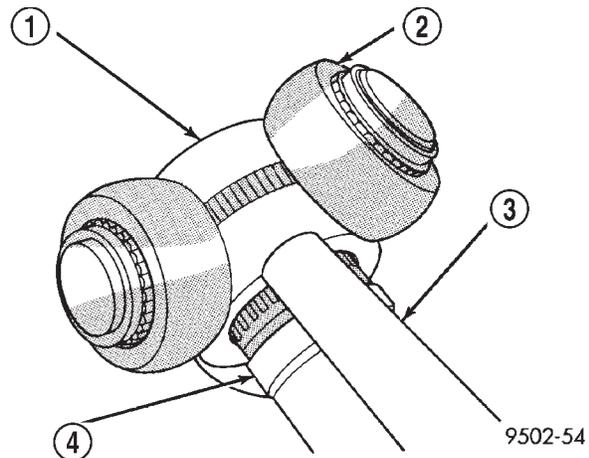
can be removed by tapping spider assembly with a brass drift (Fig. 21). **Do not hit the outer tripod bearings in an attempt to remove spider assembly from interconnecting shaft.**



9502-53

Fig. 20 Spider Assembly Retaining Snap Ring

- 1 - INTERCONNECTING SHAFT
- 2 - SPIDER ASSEMBLY
- 3 - RETAINING SNAP RING



9502-54

Fig. 21 Spider Assembly Removal from Interconnecting Shaft

- 1 - SPIDER ASSEMBLY
- 2 - DO NOT HIT SPIDER ASSEMBLY BEARINGS WHEN REMOVING SPIDER ASSEMBLY
- 3 - BRASS DRIFT
- 4 - INTERCONNECTING SHAFT

(5) Slide sealing boot off interconnecting shaft.

(6) Thoroughly clean and inspect spider assembly, tripod joint housing, and interconnecting shaft for any signs of excessive wear. **If any parts show signs of excessive wear, the driveshaft assembly will require replacement. Component parts of these driveshaft assemblies are not serviceable.**

DISASSEMBLY AND ASSEMBLY (Continued)

INSTALLATION

NOTE: The inner tripod joint sealing boots are made from two different types of material. High-temperature applications use silicone rubber whereas standard temperature applications use Hytrel plastic. The silicone sealing boots are soft and pliable. The Hytrel sealing boots are stiff and rigid. The replacement sealing boot **MUST BE** the same type of material as the sealing boot that was removed.

(1) Slide inner tripod joint seal boot retaining clamp, onto interconnecting shaft. Then slide the replacement inner tripod joint sealing boot onto interconnecting shaft. **Inner tripod joint seal boot MUST be positioned on interconnecting shaft, so the raised bead on the inside of the seal boot is in groove on interconnecting shaft (Fig. 22).**

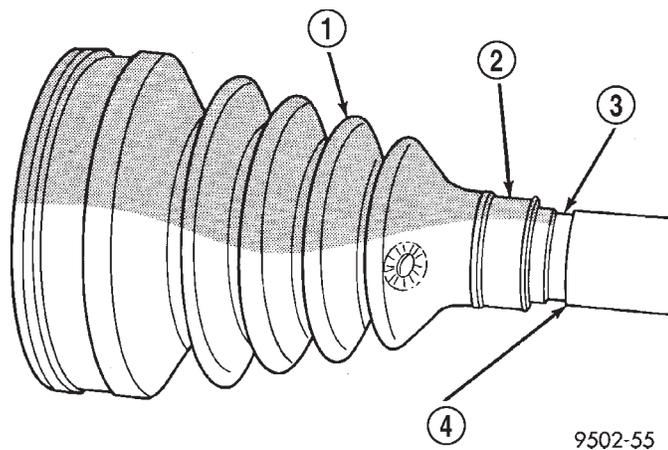


Fig. 22 Sealing Boot Installation on Interconnecting Shaft

- 1 - SEALING BOOT
- 2 - RAISED BEAD IN THIS AREA OF SEALING BOOT
- 3 - GROOVE
- 4 - INTERCONNECTING SHAFT

(2) Install spider assembly onto interconnecting shaft with chamfer on spider assembly toward interconnecting shaft (Fig. 23). Spider assembly must be installed on interconnecting shaft far enough to fully install spider retaining snap ring. If spider assembly will not fully install on interconnecting shaft by hand, it can be installed by tapping the spider body with a brass drift (Fig. 24). **Do not hit the outer tripod bearings in an attempt to install spider assembly on interconnecting shaft.**

(3) Install the spider assembly to interconnecting shaft retaining snap ring into groove on end of interconnecting shaft (Fig. 25). Be sure the snap ring is fully seated into groove on interconnecting shaft.

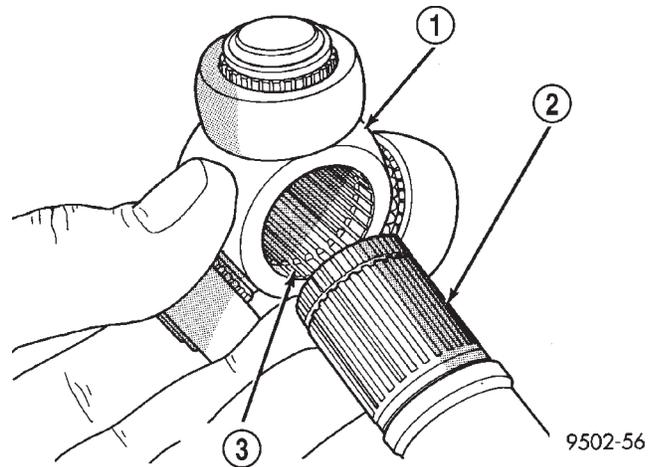


Fig. 23 Spider Assembly Installation on Interconnecting Shaft

- 1 - SPIDER ASSEMBLY
- 2 - INTERCONNECTING SHAFT
- 3 - CHAMFER

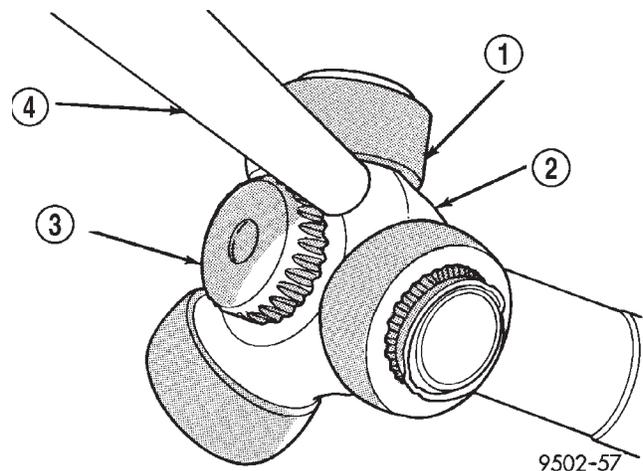


Fig. 24 Installing Spider Assembly On Interconnecting Shaft

- 1 - DO NOT HIT BEARINGS WHEN INSTALLING THE SPIDER ASSEMBLY
- 2 - SPIDER ASSEMBLY
- 3 - INTERCONNECTING SHAFT
- 4 - BRASS DRIFT

(4) Distribute 1/2 the amount of grease provided in the seal boot service package (DO NOT USE ANY OTHER TYPE OF GREASE) into tripod housing. Put the remaining amount into the sealing boot.

(5) Align tripod housing with spider assembly and then slide tripod housing over spider assembly and interconnecting shaft (Fig. 26).

(6) Install inner tripod joint seal boot to interconnecting shaft clamp evenly on sealing boot.

DISASSEMBLY AND ASSEMBLY (Continued)

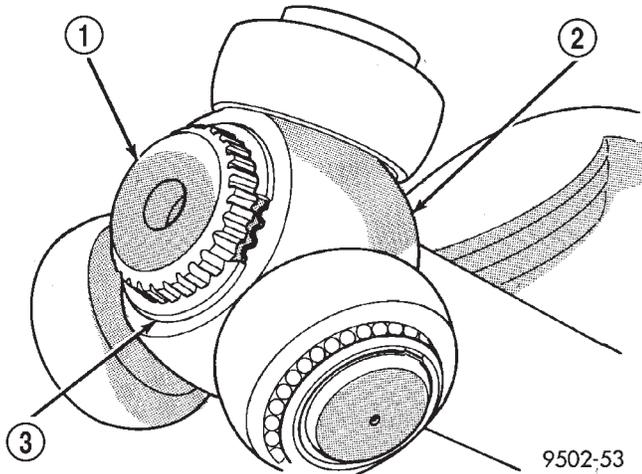


Fig. 25 Spider Assembly Retaining Snap Ring Installed

- 1 - INTERCONNECTING SHAFT
- 2 - SPIDER ASSEMBLY
- 3 - RETAINING SNAP RING

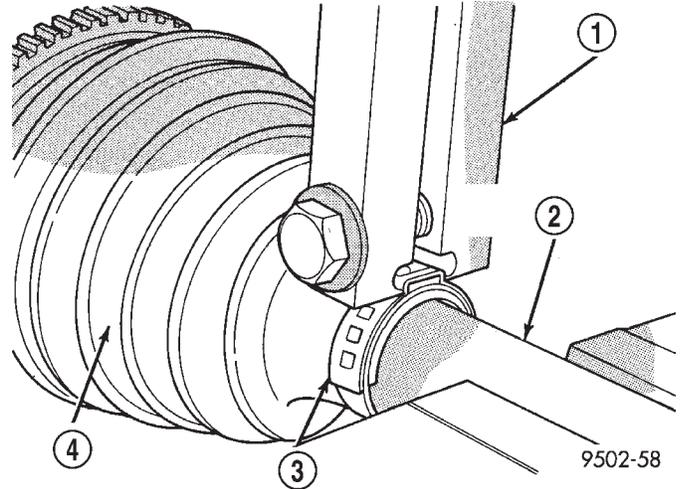


Fig. 27 Crimping Tool Installed on Sealing Boot Clamp

- 1 - SPECIAL TOOL C-4975A
- 2 - INTERCONNECTING SHAFT
- 3 - CLAMP
- 4 - SEALING BOOT

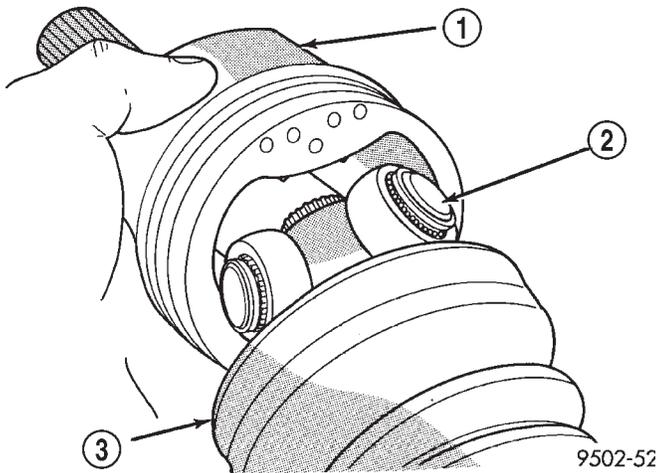


Fig. 26 Installing Tripod Housing on Spider Assembly

- 1 - TRIPOD JOINT HOUSING
- 2 - SPIDER ASSEMBLY
- 3 - SEALING BOOT

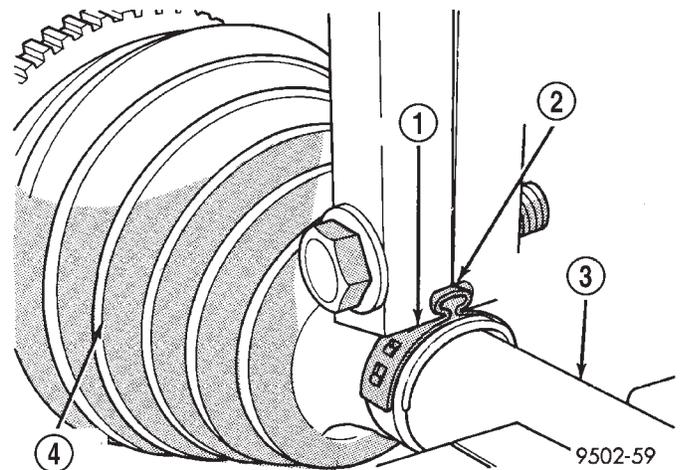


Fig. 28 Sealing Boot Retaining Clamp Installed

- 1 - CLAMP
- 2 - JAWS OF SPECIAL TOOL C-4975A MUST BE CLOSED COMPLETELY TOGETHER HERE
- 3 - INTERCONNECTING SHAFT
- 4 - SEALING BOOT

(7) Clamp sealing boot onto interconnecting shaft using crimper, Special Tool C-4975-A and the following procedure. Place crimping tool C-4975-A over bridge of clamp (Fig. 27). Tighten nut on crimping tool C-4975-A until jaws on tool are closed completely together, face to face (Fig. 28).

CAUTION: Seal must not be dimpled, stretched, or out-of-shape in any way. If seal is NOT shaped correctly, equalize pressure in seal and shape it by hand.

(8) Position sealing boot into the tripod housing retaining groove. Install seal boot retaining clamp evenly on sealing boot.

CAUTION: The following positioning procedure determines the correct air pressure inside the inner tripod joint assembly prior to clamping the sealing boot to inner tripod joint housing. If this procedure is not done prior to clamping sealing boot to tripod joint housing, boot durability can be adversely affected.

DISASSEMBLY AND ASSEMBLY (Continued)

CAUTION: When venting the inner tripod joint assembly, use care so inner tripod sealing boot does not get punctured or, in any other way, damaged. If sealing boot is punctured or damaged while being vented, the sealing boot can not be used.

(9) Insert a trim stick between the tripod joint and the sealing boot to vent inner tripod joint assembly (Fig. 29). **When inserting trim stick between tripod housing and sealing boot, ensure trim stick is held flat and firmly against the tripod housing. If this is not done, damage to the sealing boot can occur.** If inner tripod joint has a Hytrel (hard plastic) sealing boot, be sure trim stick is inserted between soft rubber insert and tripod housing, and not the hard plastic sealing boot and soft rubber insert.

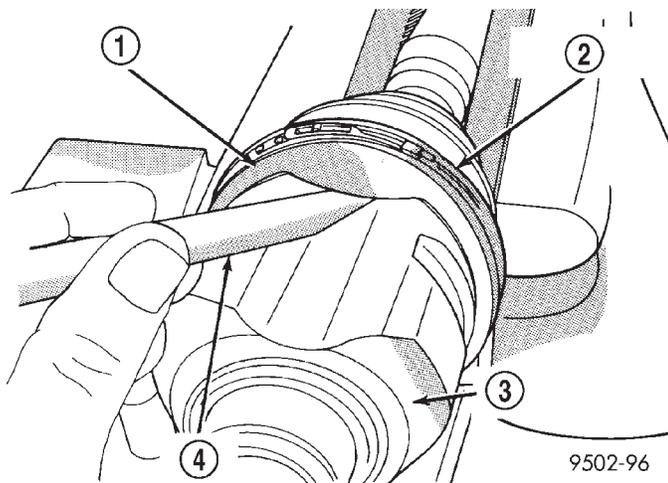


Fig. 29 Trim Stick Inserted for Venting Tripod Joint

- 1 - INNER TRIPOD JOINT SEALING BOOT
- 2 - SEALING BOOT CLAMP
- 3 - INNER TRIPOD JOINT HOUSING
- 4 - TRIM STICK

(10) With trim stick inserted between sealing boot and tripod joint housing, position inner tripod joint on driveshaft until correct sealing boot edge to edge length is obtained for type of sealing boot material being used (Fig. 30) (Fig. 31). Then remove the trim stick.

(11) Clamp tripod joint sealing boot to tripod joint using required procedure for type of boot clamp application. If seal boot uses crimp type boot clamp, clamp sealing boot onto tripod housing using crimper, Special Tool C-4975-A. Place crimping tool C-4975-A over bridge of clamp (Fig. 32). Tighten nut on crimping tool C-4975-A until jaws on tool are closed completely together, face-to-face (Fig. 33).

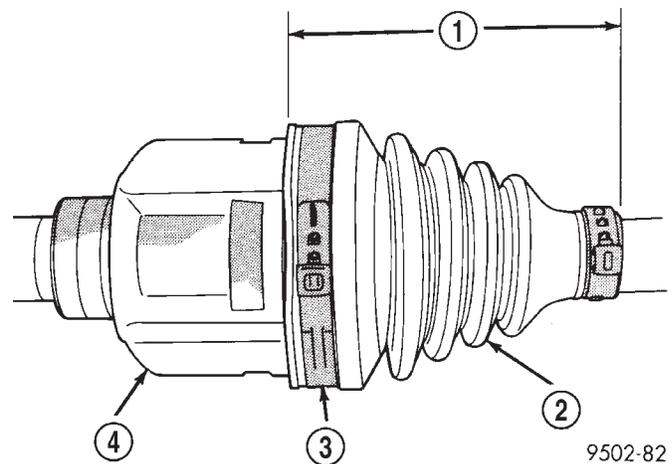


Fig. 30 Sealing Boot End to End Length with Hytrel Boot

- 1 - 107 MILLIMETERS
- 2 - HYTREL SEALING BOOT
- 3 - SEALING BOOT CLAMP
- 4 - INNER TRIPOD JOINT

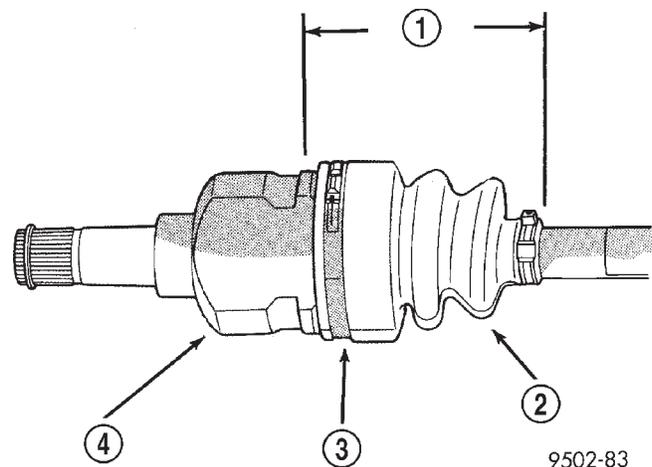


Fig. 31 Sealing Boot End to End Length with Silicone Boot

- 1 - 115 MILLIMETERS
- 2 - SILICONE SEALING BOOT
- 3 - CLAMP
- 4 - INNER TRIPOD JOINT

(12) If seal boot uses low profile latching type boot clamp, clamp sealing boot onto tripod housing using clamp locking tool, Snap-On® YA3050 (or an equivalent). Place prongs of clamp locking tool in the holes of the clamp (Fig. 34). Squeeze tool together until top band of clamp is latched behind the two tabs on lower band of clamp (Fig. 35).

DISASSEMBLY AND ASSEMBLY (Continued)

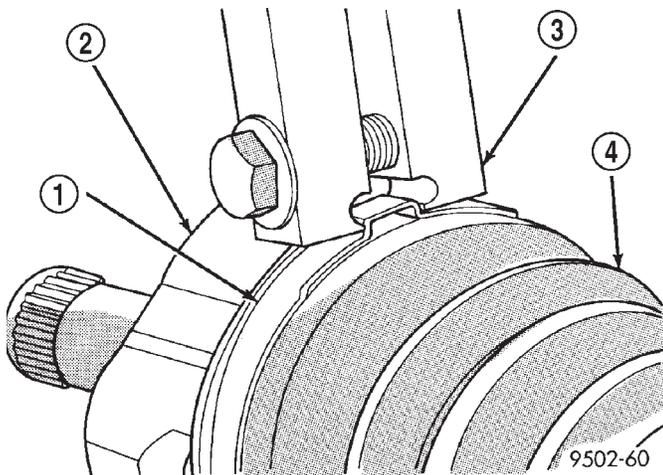


Fig. 32 Crimping Tool Installed on Sealing Boot Clamp

- 1 - CLAMP
- 2 - TRIPOD JOINT HOUSING
- 3 - SPECIAL TOOL C-4975A
- 4 - SEALING BOOT

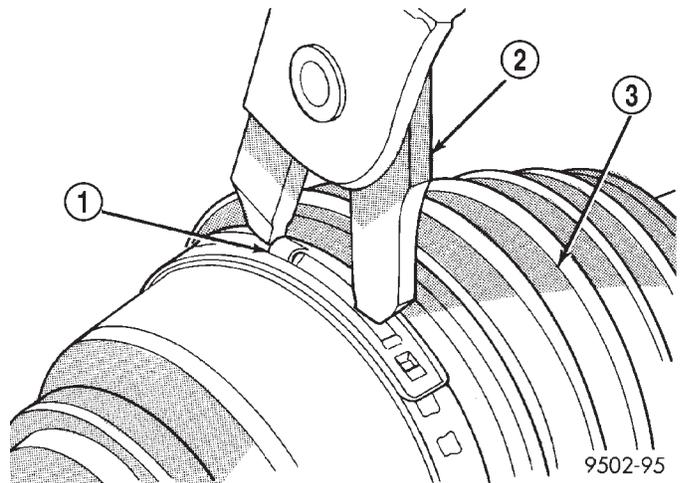


Fig. 34 Clamping Tool Installed on Sealing Boot Clamp

- 1 - CLAMP
- 2 - SPECIAL TOOL YA3050
- 3 - SEALING BOOT

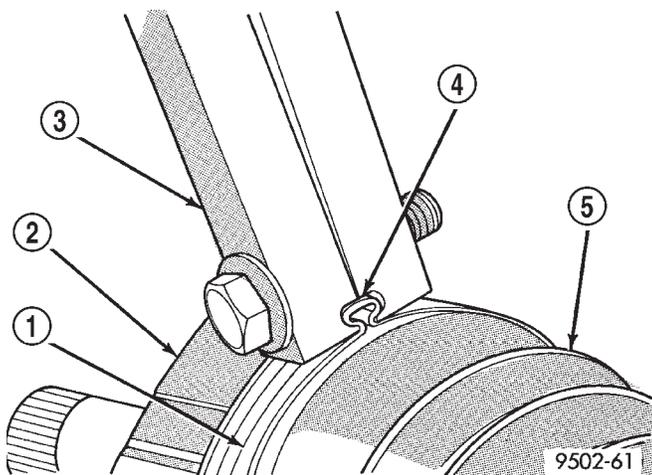


Fig. 33 Sealing Boot Retaining Clamp Installed

- 1 - CLAMP
- 2 - TRIPOD HOUSING
- 3 - SPECIAL TOOL C-4975A
- 4 - JAWS OF SPECIAL TOOL C-4975A MUST BE CLOSED COMPLETELY TOGETHER HERE
- 5 - SEALING BOOT

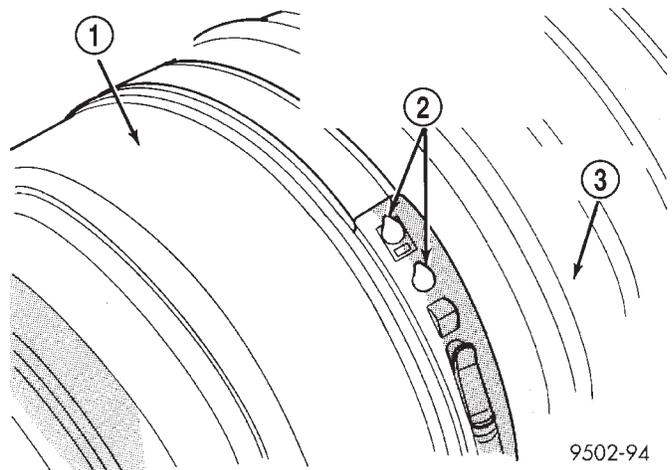


Fig. 35 Sealing Boot Clamp Correctly Installed

- 1 - INNER TRIPOD JOINT HOUSING
- 2 - TOP BANK OF CLAMP MUST BE RETAINED BY TABS AS SHOWN HERE TO CORRECTLY LATCH BOOT CLAMP
- 3 - SEALING BOOT

(13) Install the driveshaft requiring boot replacement back on the vehicle. See Driveshaft Removal and Installation in this section for the required drive-shaft installation procedure.

OUTER C/V JOINT SEAL BOOT

REMOVAL

To remove outer C/V joint sealing boot from a drive-shaft for replacement, the driveshaft assembly must be removed from the vehicle. See Driveshaft Removal and Installation in this section for the required drive-shaft removal and replacement procedure.

(1) Remove driveshaft assembly requiring boot replacement from vehicle. See Driveshaft Removal and Installation in this section for the required drive-shaft removal procedure.

DISASSEMBLY AND ASSEMBLY (Continued)

(2) Remove large boot clamp retaining C/V joint sealing boot to C/V joint housing (Fig. 36) and discard. Remove small clamp that retains outer C/V joint sealing boot to interconnecting shaft and discard. Remove sealing boot from outer C/V joint housing and slide it down interconnecting shaft.

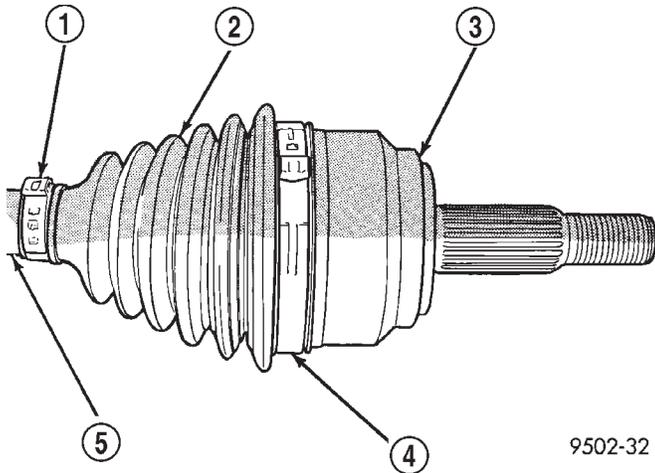


Fig. 36 Outer C/V Joint Seal Boot Clamps

- 1 - SMALL CLAMP
- 2 - SEALING BOOT
- 3 - OUTER C/V JOINT HOUSING
- 4 - LARGE CLAMP
- 5 - INTERCONNECTING SHAFT

(3) Wipe away grease to expose outer C/V joint and interconnecting shaft.

(4) Remove outer C/V joint from interconnecting shaft using the following procedure: Support interconnecting shaft in a vise **equipped with protective caps on jaws of vise to prevent damage to interconnecting shaft**. Then, using a **soft-faced hammer**, sharply hit the end of the C/V joint housing to dislodge housing from internal circlip on interconnecting shaft (Fig. 37). Then slide outer C/V joint off end of interconnecting shaft, joint may have to be tapped off shaft using a **soft-faced hammer**.

(5) Remove large circlip (Fig. 38) from the interconnecting shaft before attempting to remove outer C/V joint sealing boot.

(6) Slide failed sealing boot off interconnecting shaft.

(7) Thoroughly clean and inspect outer C/V joint assembly and interconnecting joint for any signs of excessive wear. **If any parts show signs of excessive wear, the driveshaft assembly will require replacement. Component parts of these driveshaft assemblies are not serviceable.**

INSTALLATION

(1) Slide new sealing boot to interconnecting shaft retaining clamp onto interconnecting shaft. Slide the

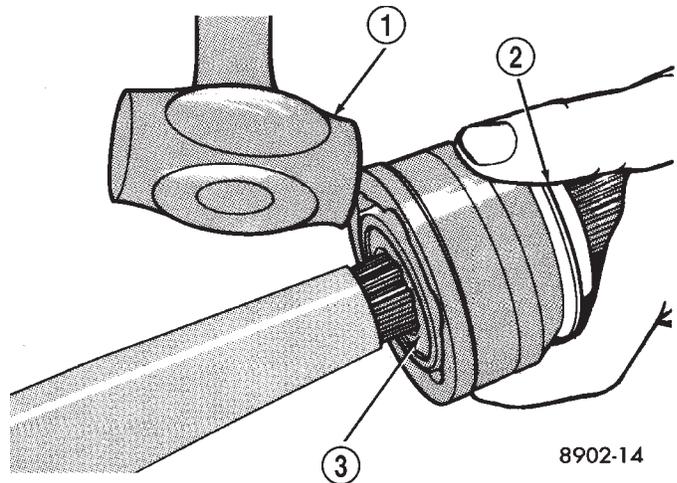


Fig. 37 Outer C/V Joint Removal from Interconnecting Shaft

- 1 - SOFT HAMMER (TAP HOUSING)
- 2 - WEAR SLEEVE
- 3 - CIRCLIP (OUTER END OF SHAFT)

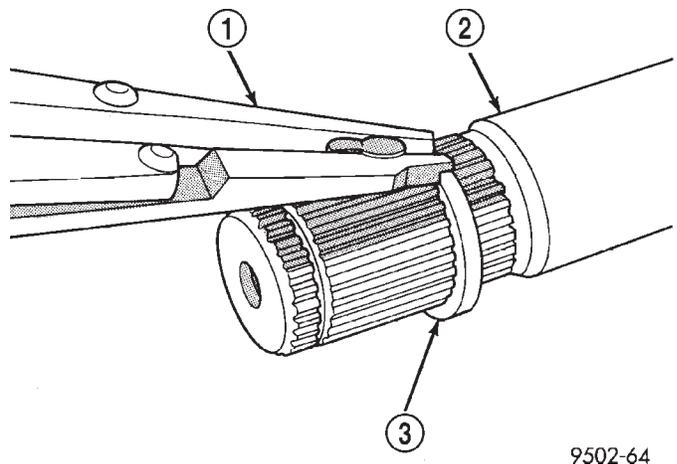


Fig. 38 Circlip Removal from Interconnecting Shaft

- 1 - SNAP RING PLIERS
- 2 - INTERCONNECTING SHAFT
- 3 - CIRCLIP

outer C/V joint assembly sealing boot onto the interconnecting shaft (Fig. 39). **Seal boot MUST be positioned on interconnecting shaft so the raised bead on the inside of the seal boot is in groove on interconnecting shaft.**

(2) Align splines on interconnecting shaft with splines on cross of outer C/V joint assembly and start outer C/V joint onto interconnecting shaft.

(3) Install outer C/V joint assembly onto interconnecting shaft by using a **soft-faced hammer** and tapping end of stub axle (with nut installed) until outer C/V joint is fully seated on interconnecting shaft (Fig. 40).

DISASSEMBLY AND ASSEMBLY (Continued)

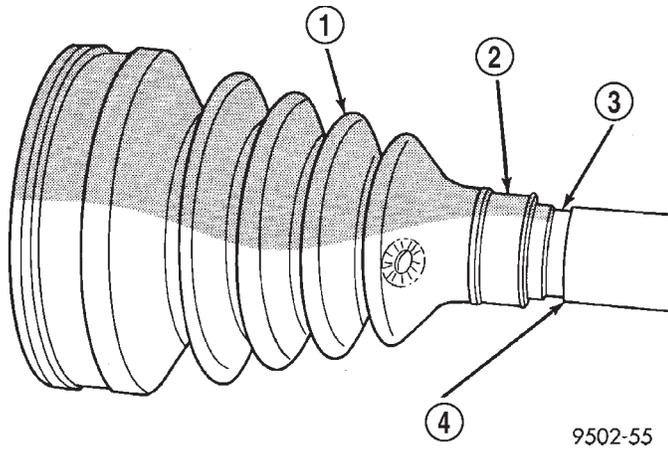


Fig. 39 Sealing Boot Installation on Interconnecting Shaft

- 1 - SEALING BOOT
- 2 - RAISED BEAD IN THIS AREA OF SEALING BOOT
- 3 - GROOVE
- 4 - INTERCONNECTING SHAFT

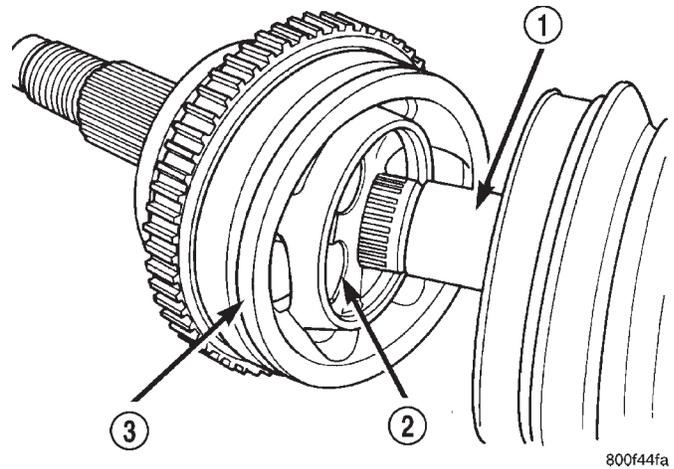


Fig. 41 Outer C/V Joint Correctly Installed on Interconnecting Shaft

- 1 - INTERCONNECTING SHAFT
- 2 - CROSS
- 3 - OUTER C/V JOINT ASSEMBLY

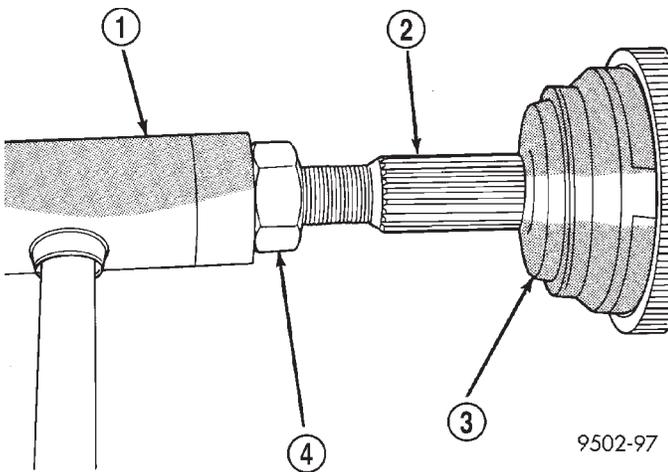


Fig. 40 Outer C/V Joint Installation on Interconnecting Shaft

- 1 - SOFT FACED HAMMER
- 2 - STUB AXLE
- 3 - OUTER C/V JOINT
- 4 - NUT

(4) Outer C/V joint assembly must be installed on interconnecting shaft until cross of outer C/V joint assembly is seated against circlip on interconnecting shaft (Fig. 41).

(5) Distribute 1/2 the amount of grease provided in seal boot service package (DO NOT USE ANY OTHER TYPE OF GREASE) into outer C/V joint assembly housing. Put the remaining amount into the sealing boot.

(6) Install outer C/V joint sealing boot to interconnecting shaft clamp evenly on sealing boot.

(7) Clamp sealing boot onto interconnecting shaft using crimper, Special Tool C-4975-A and the following procedure. Place crimping tool C-4975-A over bridge of clamp (Fig. 42). Tighten nut on crimping tool C-4975-A until jaws on tool are closed completely together, face to face (Fig. 43).

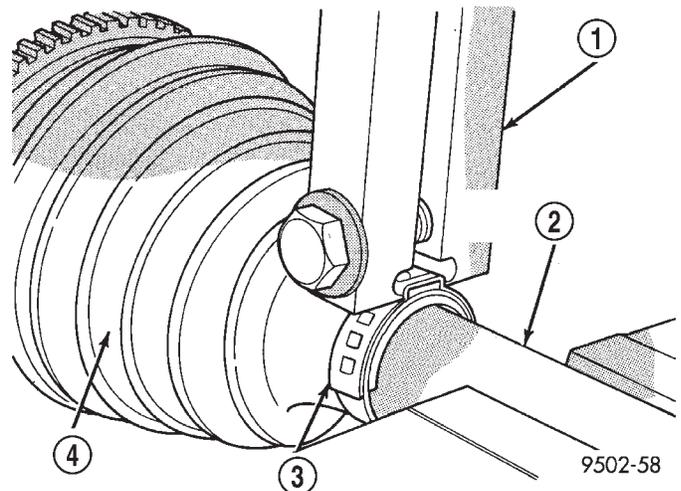


Fig. 42 Crimping Tool Installed on Sealing Boot Clamp

- 1 - SPECIAL TOOL C-4975A
- 2 - INTERCONNECTING SHAFT
- 3 - CLAMP
- 4 - SEALING BOOT

DISASSEMBLY AND ASSEMBLY (Continued)

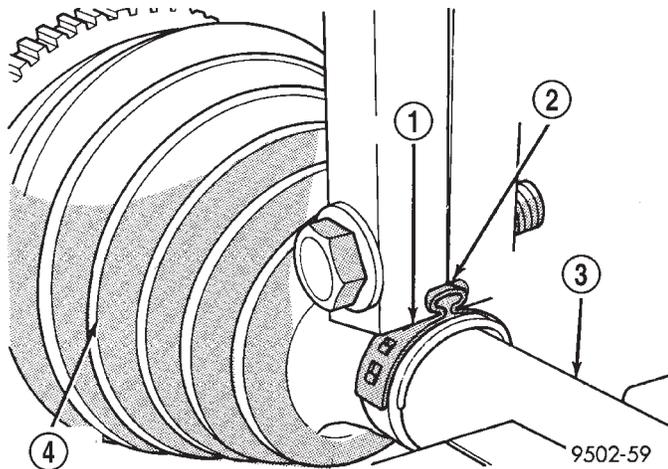


Fig. 43 Sealing Boot Retaining Clamp Installed

- 1 - CLAMP
- 2 - JAWS OF SPECIAL TOOL C-4975A MUST BE CLOSED COMPLETELY TOGETHER HERE
- 3 - INTERCONNECTING SHAFT
- 4 - SEALING BOOT

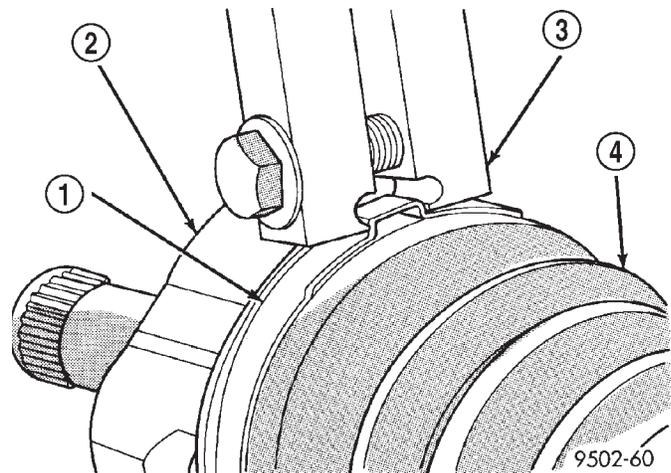


Fig. 44 Crimping Tool Installed on Sealing Boot Clamp

- 1 - CLAMP
- 2 - TRIPOD JOINT HOUSING
- 3 - SPECIAL TOOL C-4975A
- 4 - SEALING BOOT

CAUTION: Seal must not be dimpled, stretched, or out-of-shape in any way. If seal is NOT shaped correctly, equalize pressure in seal and shape it by hand.

(8) Position outer C/V joint sealing boot into its retaining groove on outer C/V joint housing. Install sealing boot to outer C/V joint retaining clamp evenly on sealing boot.

(9) Clamp sealing boot onto outer C/V joint housing using Crimper, Special Tool C-4975-A and the following procedure. Place crimping tool C-4975-A over bridge of clamp (Fig. 44). Tighten nut on crimping tool C-4975-A until jaws on tool are closed completely together, face to face (Fig. 45).

(10) Install the driveshaft requiring boot replacement back on the vehicle. See Driveshaft Removal and Installation in this section for the required driveshaft installation procedure.

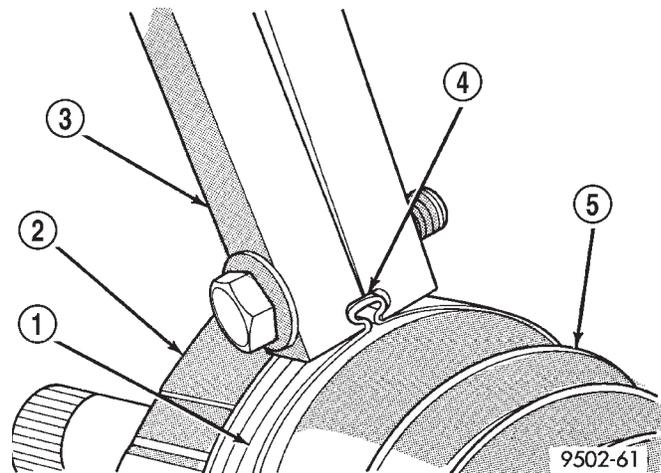


Fig. 45 Sealing Boot Retaining Clamp Installed

- 1 - CLAMP
- 2 - TRIPOD HOUSING
- 3 - SPECIAL TOOL C-4975A
- 4 - JAWS OF SPECIAL TOOL C-4975A MUST BE CLOSED COMPLETELY TOGETHER HERE
- 5 - SEALING BOOT

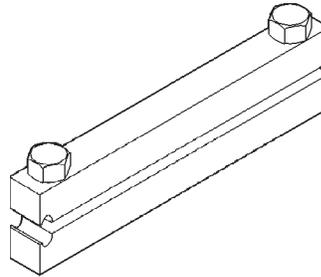
SPECIFICATIONS

TORQUE

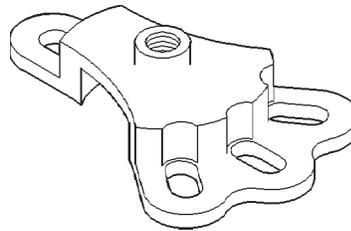
DESCRIPTION	TORQUE
Driveshaft-to-Hub/Bearing	
Nut	244 N·m (180 ft. lbs.)
Knuckle-to-Ball Joint	
Bolt/Nut	95 N·m (70 ft. lbs.)
Wheel/Tire-to-Hub/Bearing	
Lug Nuts	128 N·m (95 ft. lbs.)

SPECIAL TOOLS

DRIVESHAFT



Boot Clamp Installer C-4975A



Puller 6790

