

2003-05 DRIVELINE/AXLE

Propeller Shaft - Repair Procedures - Z4/E85

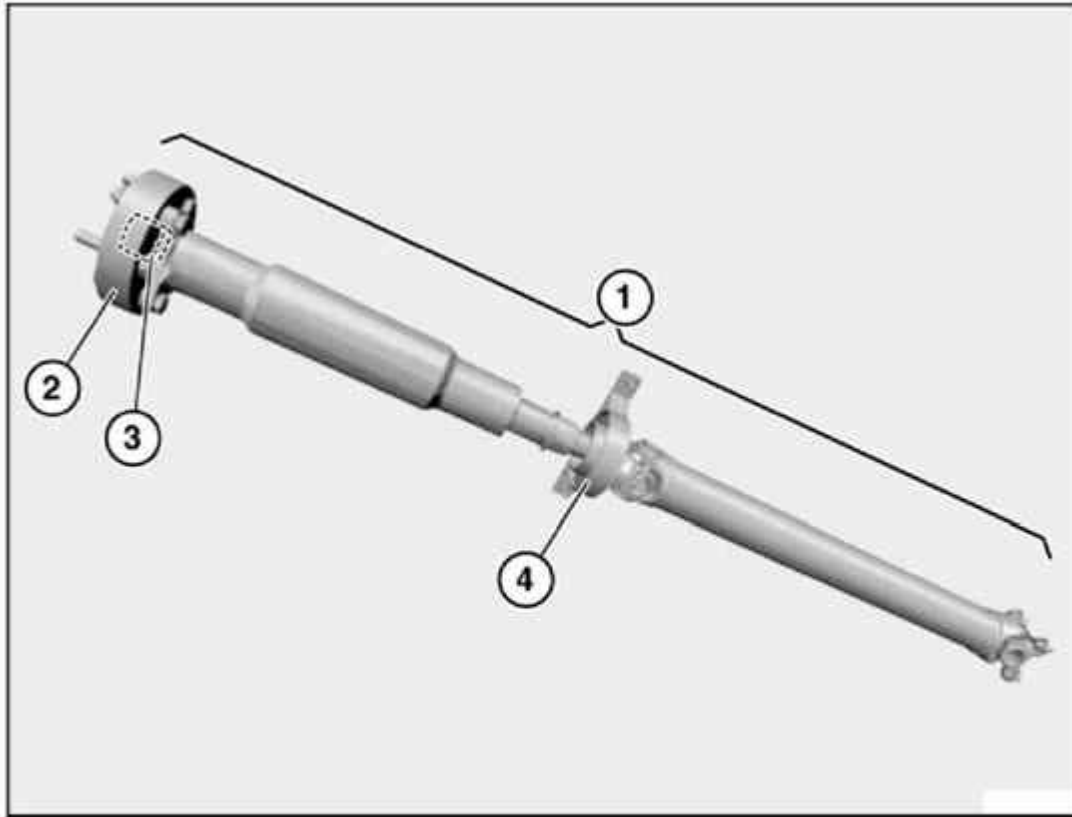
PROPELLER SHAFT GENERAL

26 00... PROPELLER SHAFT DEFLECTION ANGLES

IMPORTANT: Specifications on propeller shaft deflection angles are only possible on request from the manufacturer with the vehicle identification number of the problem vehicle.

PROPELLER SHAFT ASSEMBLY

26 11... OVERVIEW OF PROPELLER SHAFT WITH UNIVERSAL JOINT



0 General information

1 Complete propeller shaft

2 Flexible disk

3 Centering mount

4 Centre mount

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Fig. 1: Identifying Propeller Shaft Assembly

Courtesy of BMW OF NORTH AMERICA, INC.

26 11 000 REMOVING AND INSTALLING PROPELLER SHAFT (CARDAN UNIVERSAL JOINT) COMPLETELY

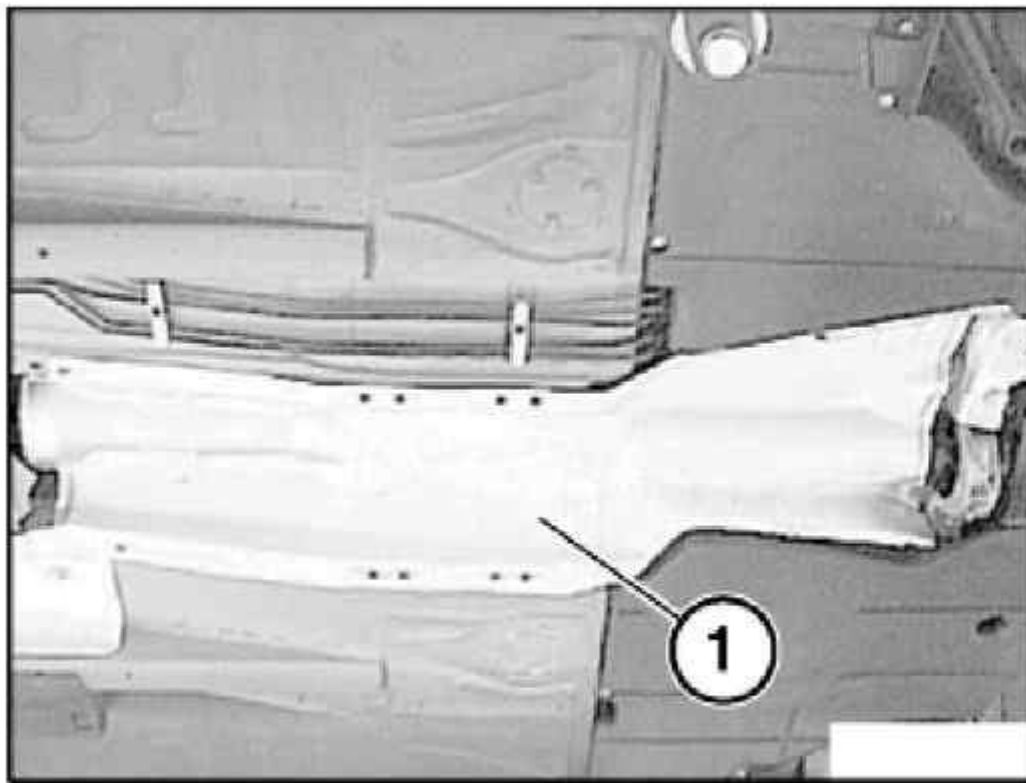
Special tools required:

- 26 1 040

Necessary preliminary tasks:

- Remove complete exhaust system. . See **EXHAUST SYSTEM - REPAIR INSTRUCTIONS** .

Remove heat shield (1).



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Fig. 2: Removing Heat Shield

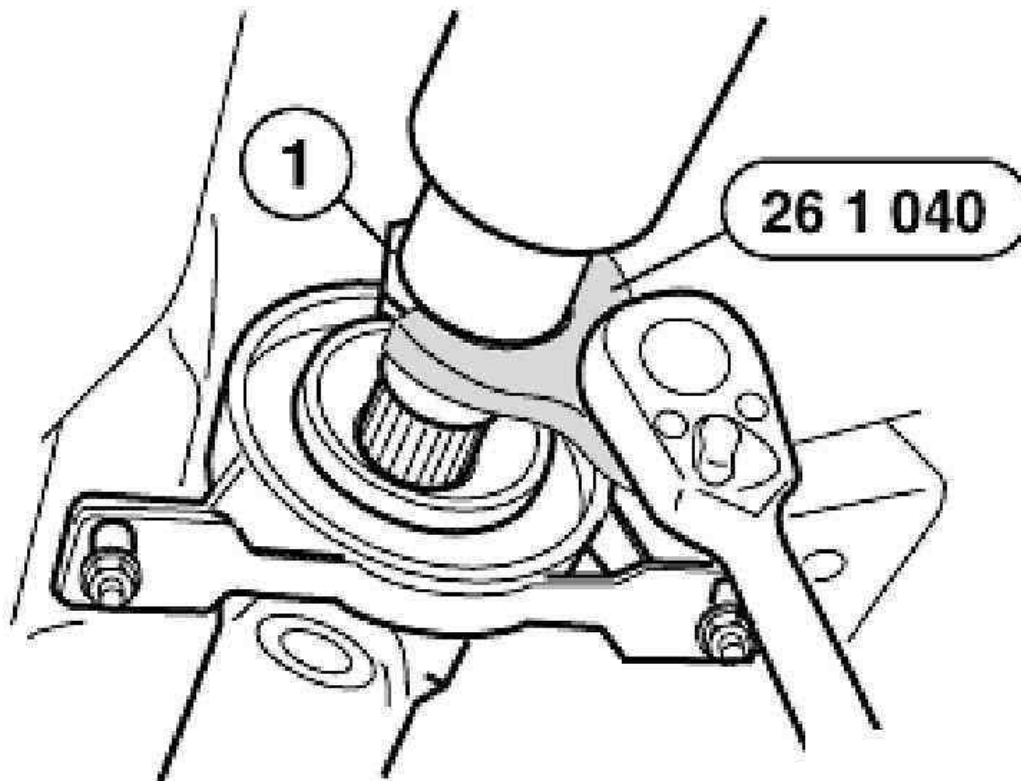
Courtesy of BMW OF NORTH AMERICA, INC.

Release threaded ring (1) several turns with special tool 26 1 040.

Installation:

Tighten threaded ring with special tool 26 1 040.

Tightening torque, see 26 11 3AZ in **PROPELLER SHAFT - TIGHTENING TORQUES** .



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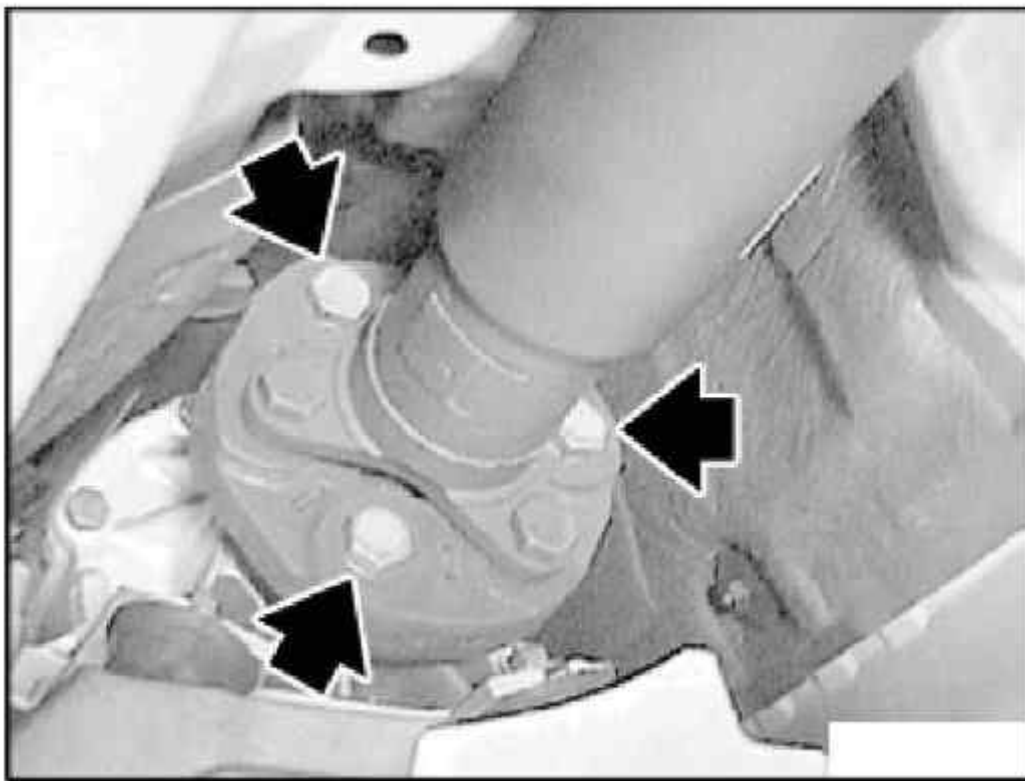
Fig. 3: Removing Threaded Ring
Courtesy of BMW OF NORTH AMERICA, INC.

Unfasten screws.

Tightening torque, see 26 11 1AZ in **PROPELLER SHAFT - TIGHTENING TORQUES**.

Installation:

- Replace self-locking nuts
- Grip heads of mounting screws of flexible disk on transmission flange and tighten down at nuts.



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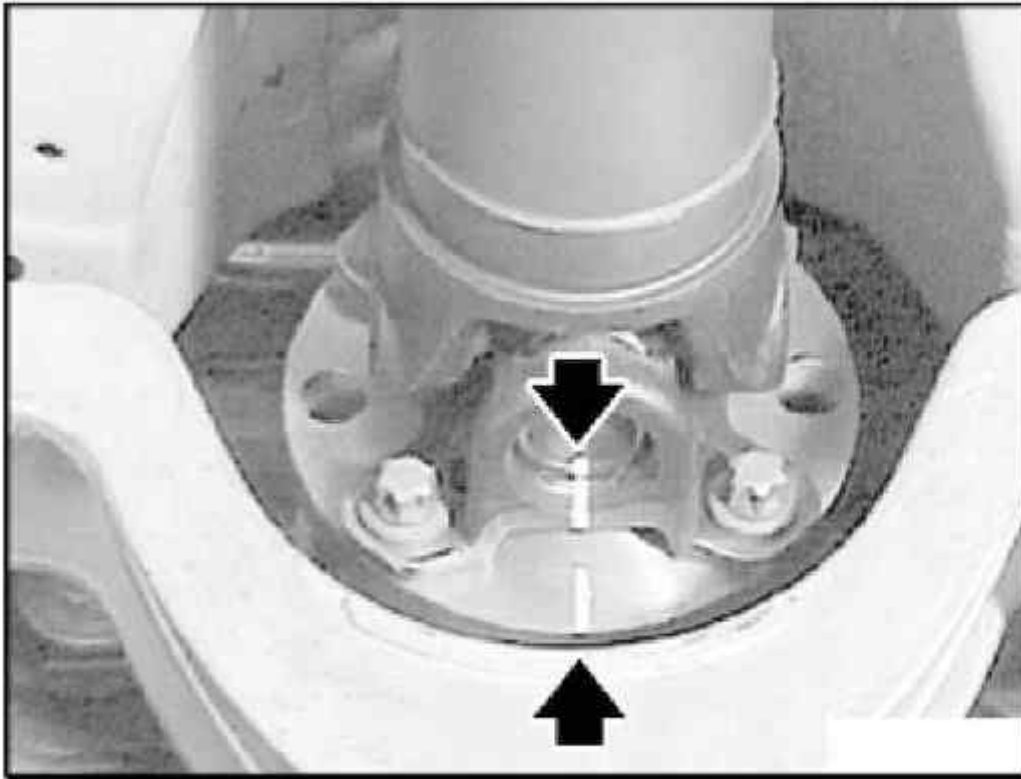
Fig. 4: Identifying Screws For Removal

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: To avoid complaints of humming:

Before removing propeller shaft, mark cardan universal joint to drive flange of final drive.

Reinstall joint in this position.



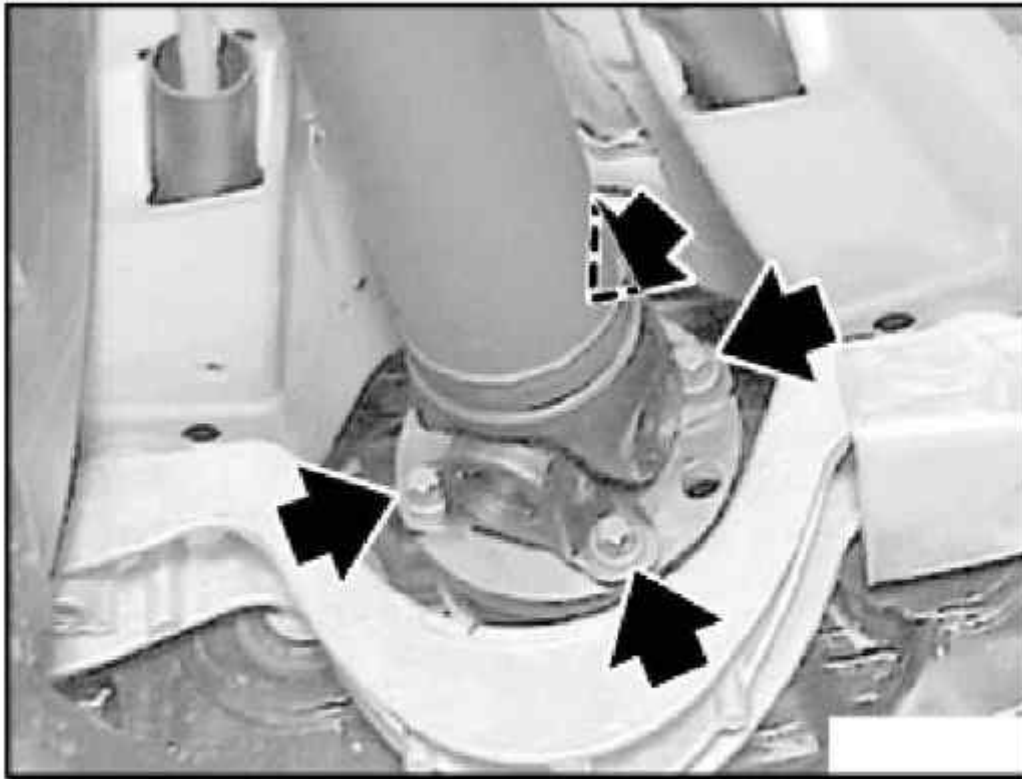
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Fig. 5: Identifying Match Mark

Courtesy of BMW OF NORTH AMERICA, INC.

Unfasten screws.

Tightening torque, see 26 11 4AZ in **PROPELLER SHAFT - TIGHTENING TORQUES** .

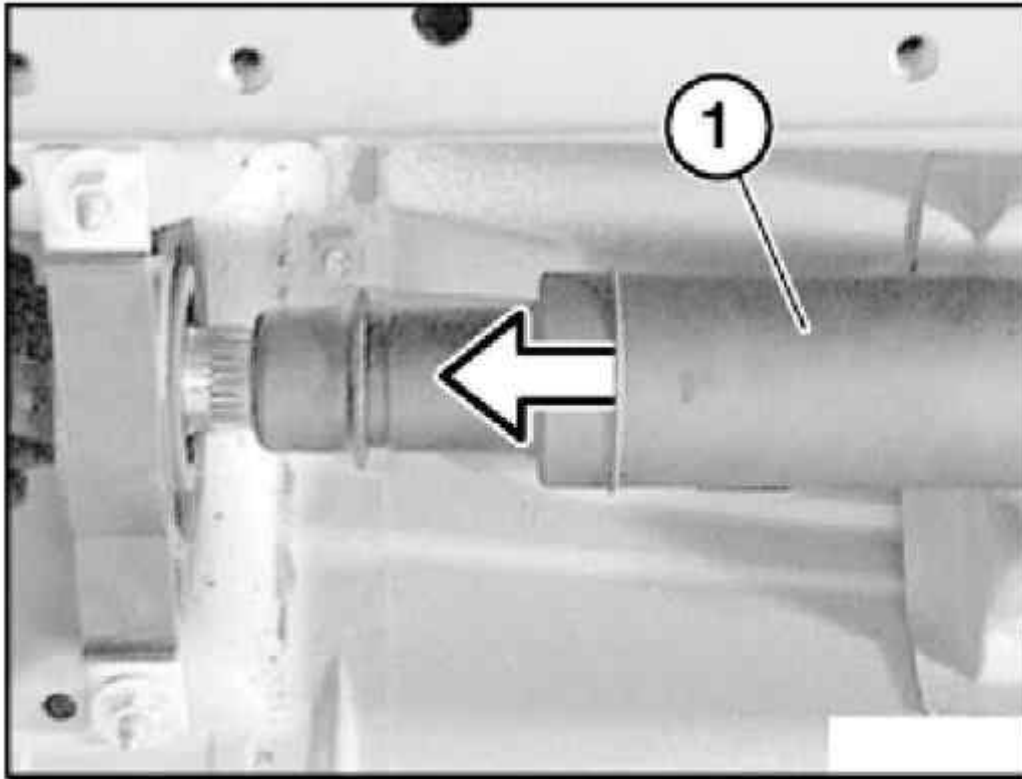


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Fig. 6: Removing Screws

Courtesy of BMW OF NORTH AMERICA, INC.

Push rear propeller shaft (1) forwards.



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Fig. 7: Removing Propeller Shaft

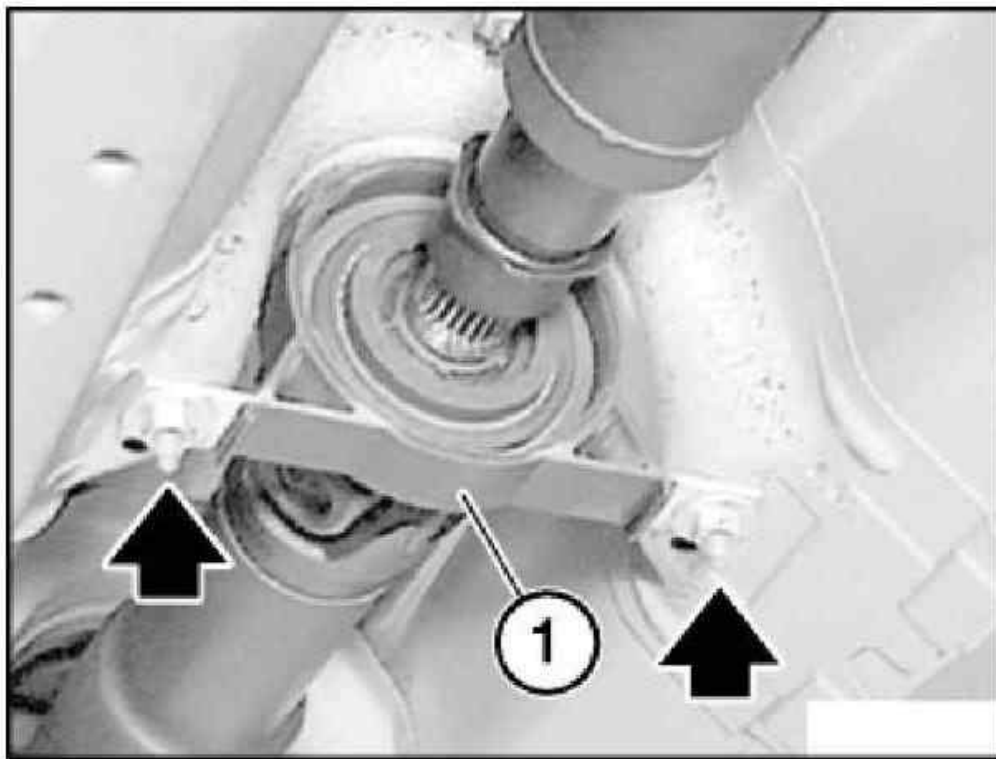
Courtesy of BMW OF NORTH AMERICA, INC.

Grip propeller shaft and release nuts.

Tightening torque, see 26 11 6AZ in **PROPELLER SHAFT - TIGHTENING TORQUES** .

Bend propeller shaft downwards at center bearing (1).

Detach propeller shaft from transmission output flange and remove downwards.



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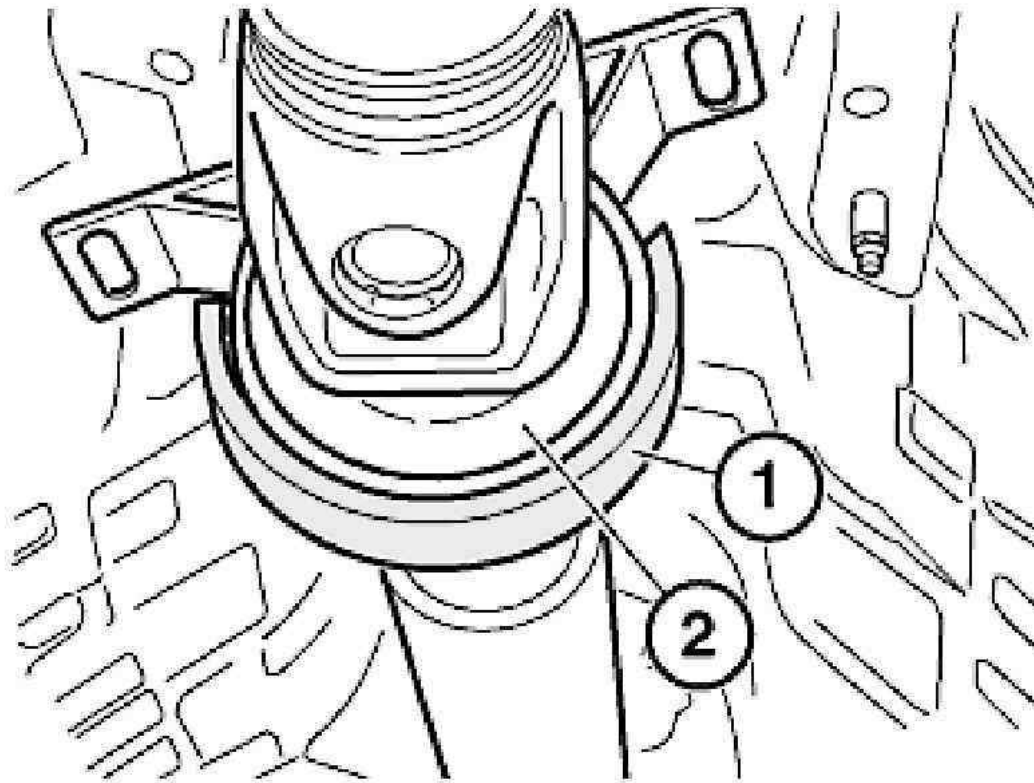
Fig. 8: Detaching Propeller Shaft From Transmission Output
Courtesy of BMW OF NORTH AMERICA, INC.

Installation (except E46 Compact and Z4):

Pull off cover tape from butylene tape on both sides.

Stick outer butylene tape (1) to center bearing (2).

- Butylene tape: BMW Parts Service



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Fig. 9: Installing Propeller Shaft

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: (except E46 Compact and Z4)

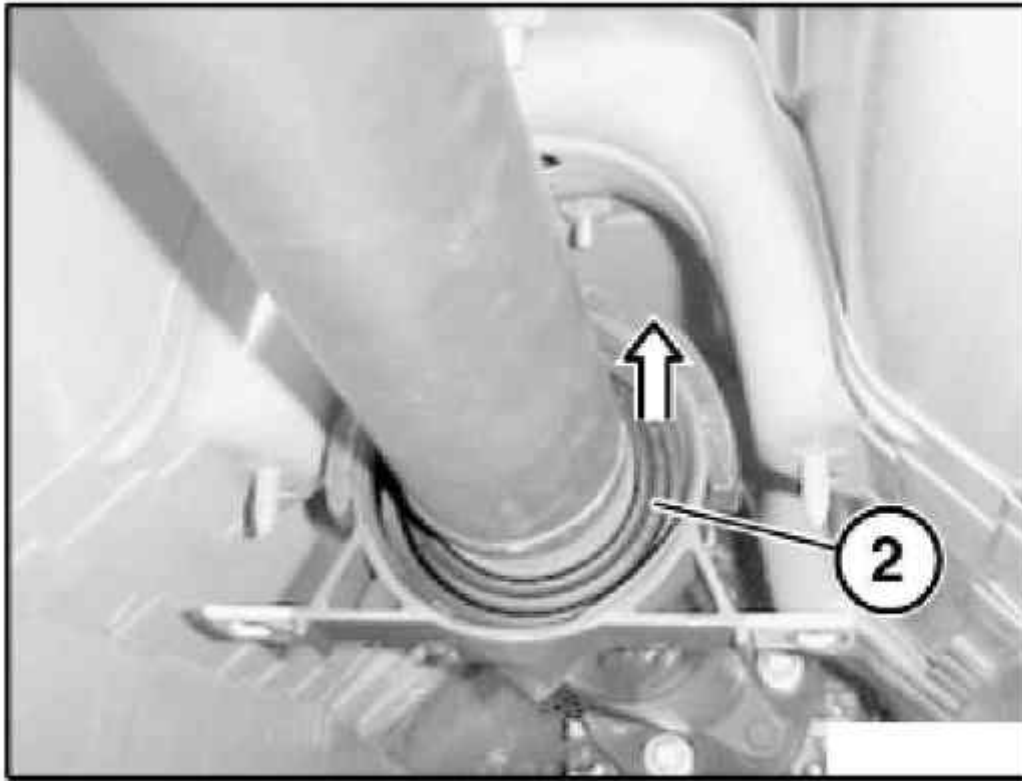
- Remove butylene tape already attached to center bearing.
- Clean adhesive area on center bearing and on body
- Then coat adhesive area on body with mineral oil

This coating with oil is necessary to facilitate insertion of the sticky butylene tape in the propeller shaft tunnel.

This prevents the butylene tape from being deformed.

Installation:

Press center bearing (2) into transmission tunnel.

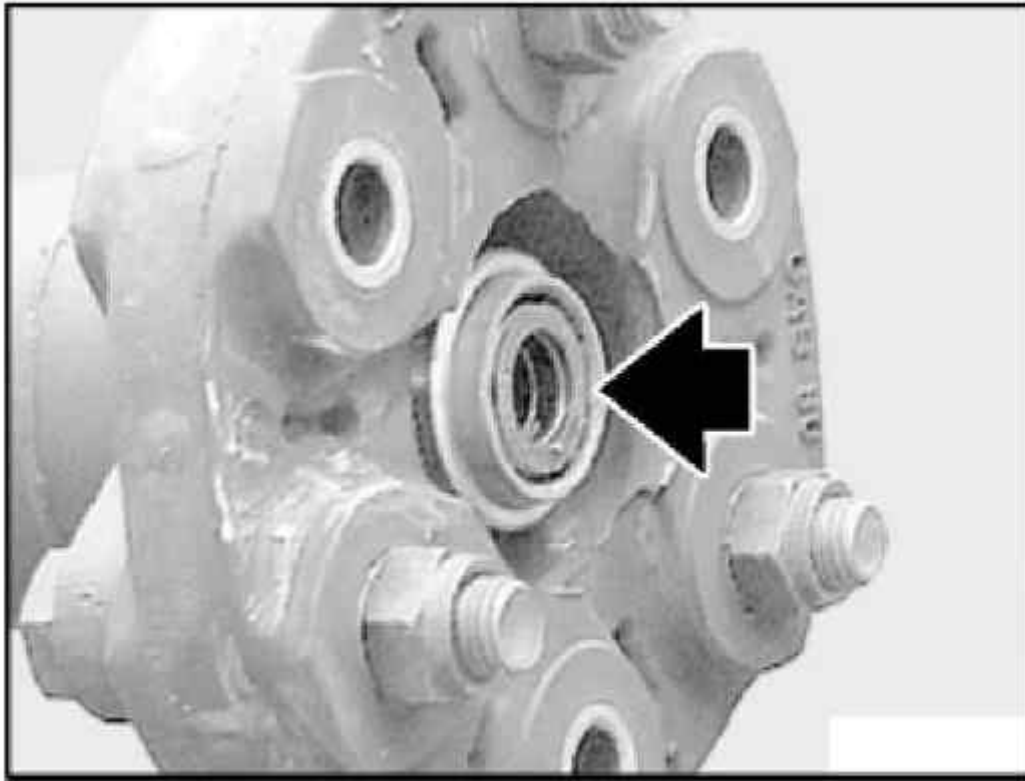


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Fig. 10: Installing Center Bearing Into Transmission Tunnel
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Check centering; if necessary, replace damaged centering.
Grease centering mount.



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Fig. 11: Checking Centering

Courtesy of BMW OF NORTH AMERICA, INC.

26 11 051 REPLACING FLEXIBLE DISK FOR PROPELLER SHAFT

Necessary preliminary tasks:

- Remove propeller shaft from transmission and center bearing. See **26 11 000 Removing And Installing Propeller Shaft (Cardan Universal Joint) Completely** .

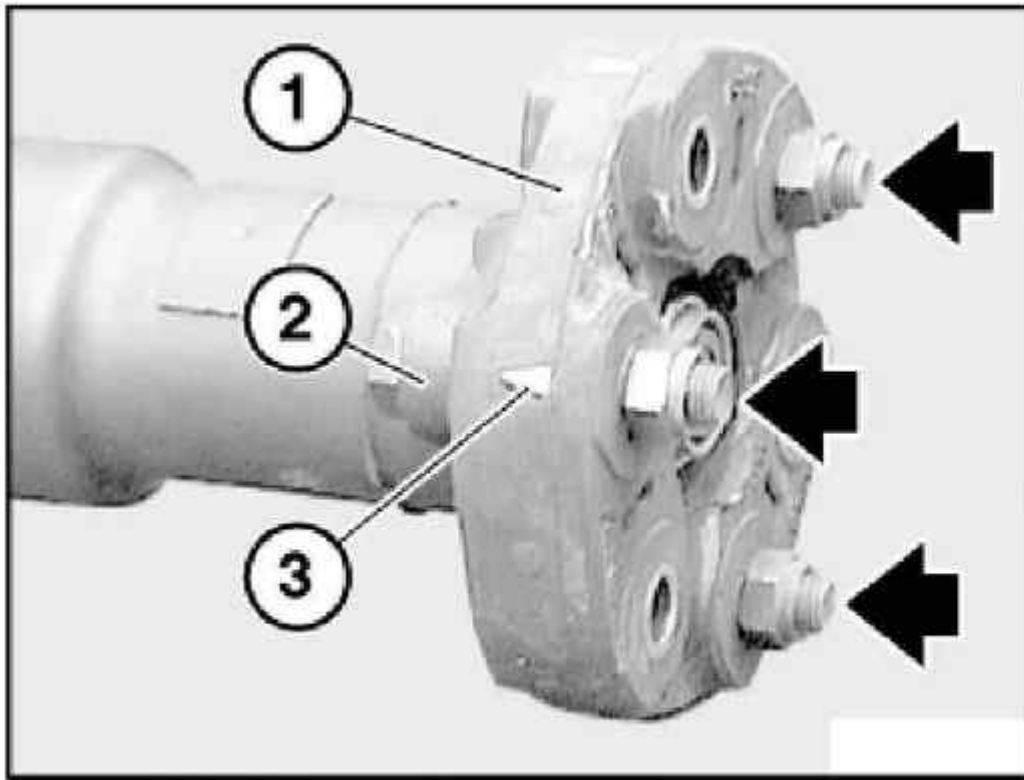
NOTE: To protect universal joints, tie back propeller shaft in area of center bearing.

Release screws and remove flexible disk (1) from propeller shaft.

Tightening torque, see 26 11 1AZ in **PROPELLER SHAFT - TIGHTENING TORQUES** .

Installation:

- Arrows (3) on circumference of flexible disk must point to flange arms (2).
- Replace self-locking nuts.
- Grip heads of mounting screws of flexible disk on propeller shaft flange and tighten down at nuts.



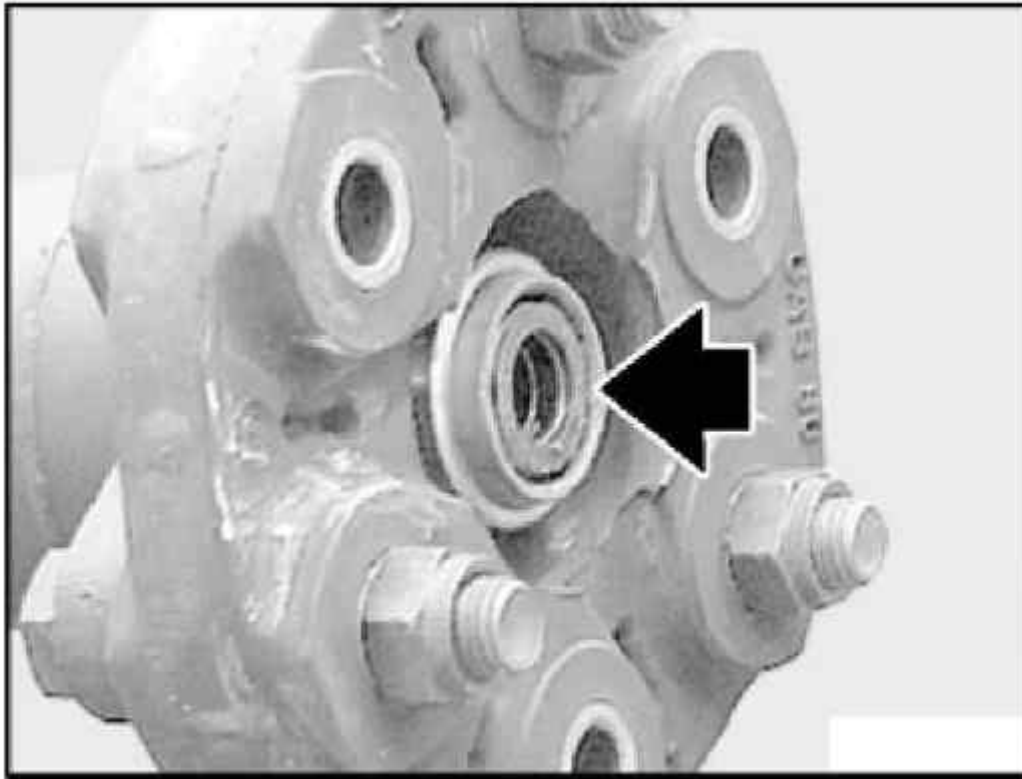
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Fig. 12: Installing Propeller Shaft
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Check centering element, replace centering element if damaged. See **26 11 090 Removing And Installing/Replacing Centering Mount For Propeller Shaft** .

Grease centering mount.



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Fig. 13: Greasing Centering Mount

Courtesy of BMW OF NORTH AMERICA, INC.

26 11 090 REMOVING AND INSTALLING/REPLACING CENTERING MOUNT FOR PROPELLER SHAFT

Special tools required:

- 00 5 500
- 11 1 310
- 11 2 030

Necessary preliminary tasks:

- Remove propeller shaft. . See **26 11 000 Removing And Installing Propeller Shaft (Cardan Universal Joint) Completely** .

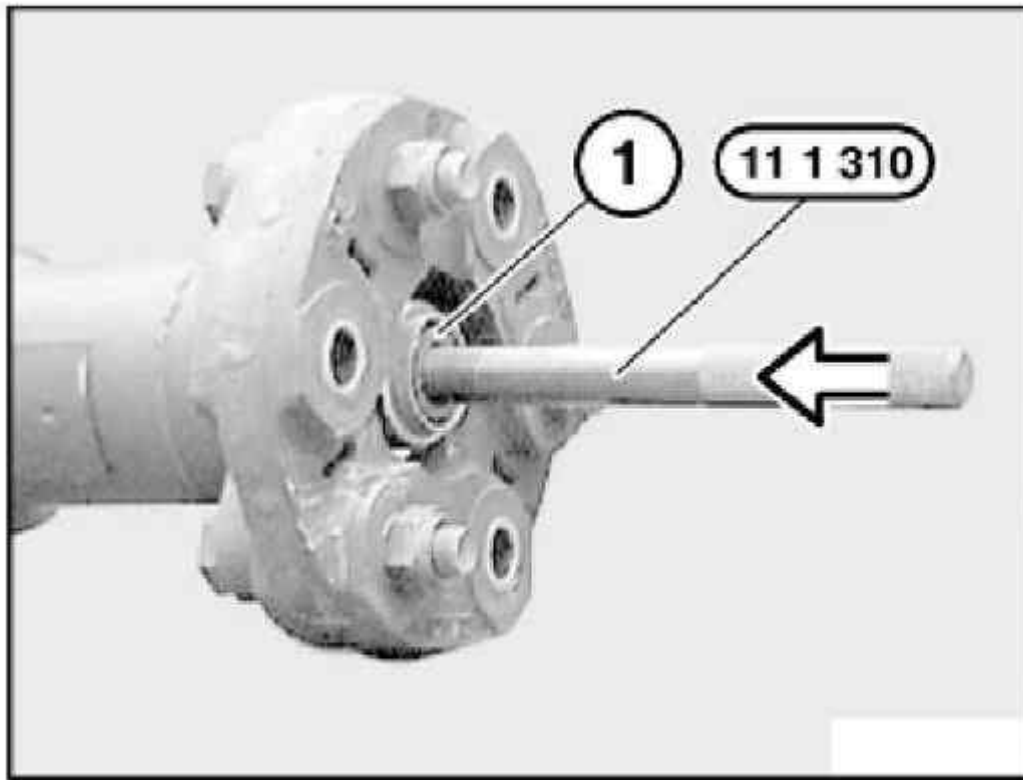
Fill centering bore (1) completely with viscous grease.

Drive special tool 11 1 310 with a plastic hammer into centering bore.

The centering mount (1) is forced out of the propeller shaft by the pressure on the grease filling.

If necessary, top up grease repeatedly.

NOTE: To drive out the mount, you can also fill the centering bore with water instead of grease.



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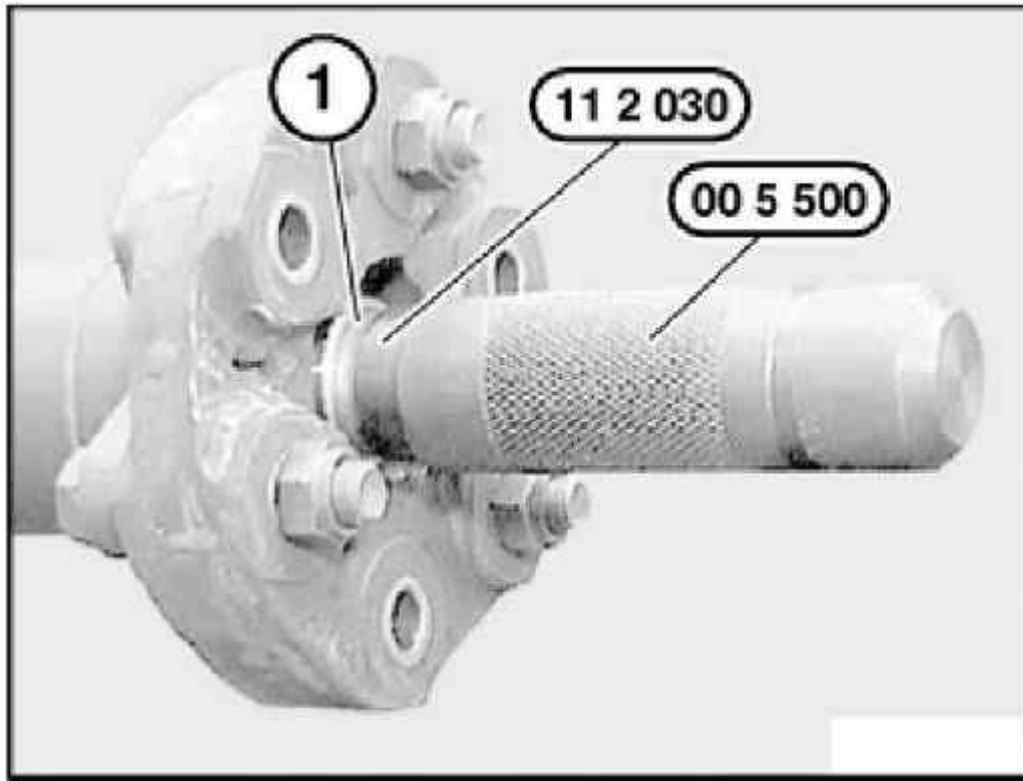
Fig. 14: Forcing Centering Mount Out Of Propeller Shaft By Pressure On Grease Filling
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Remove grease/water from mount bore.

Drive in centering (1) with special tools 11 2 030 and 00 5 500 into propeller shaft (observe protrusion).

Grease centering mount.

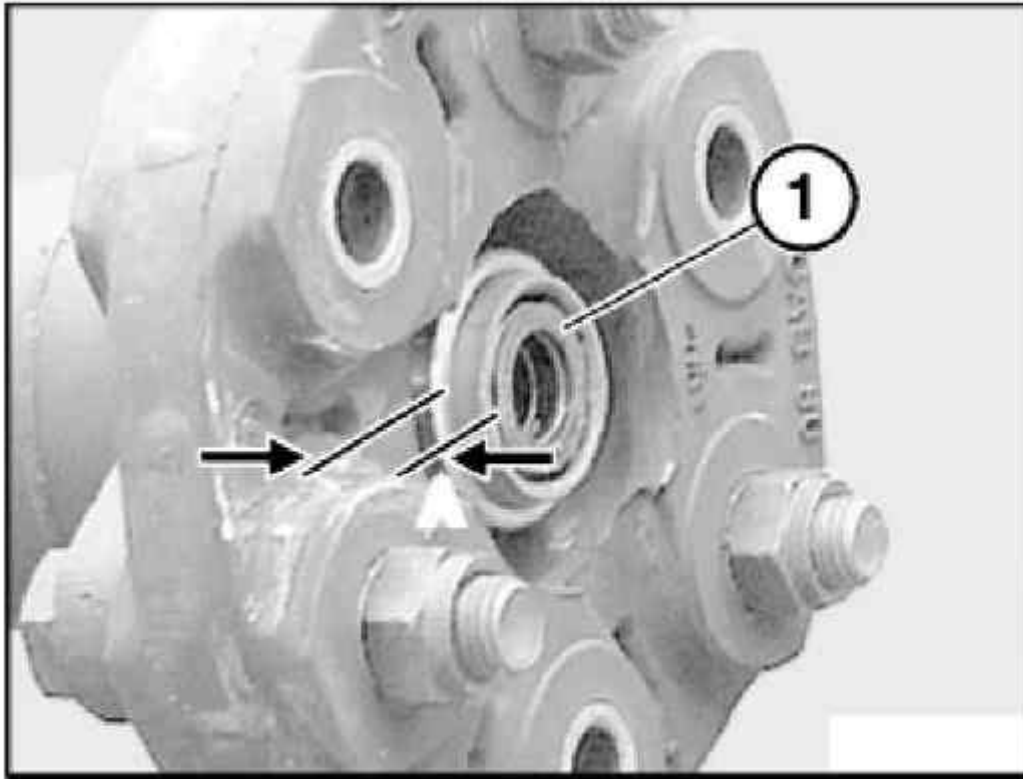


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Fig. 15: Removing Grease From Mount Bore
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Observe protrusion $A = 4^{+2}$ mm of centering (1).



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Fig. 16: Identifying Protrusion

Courtesy of BMW OF NORTH AMERICA, INC.

CENTRE CONSOLE ASSEMBLY

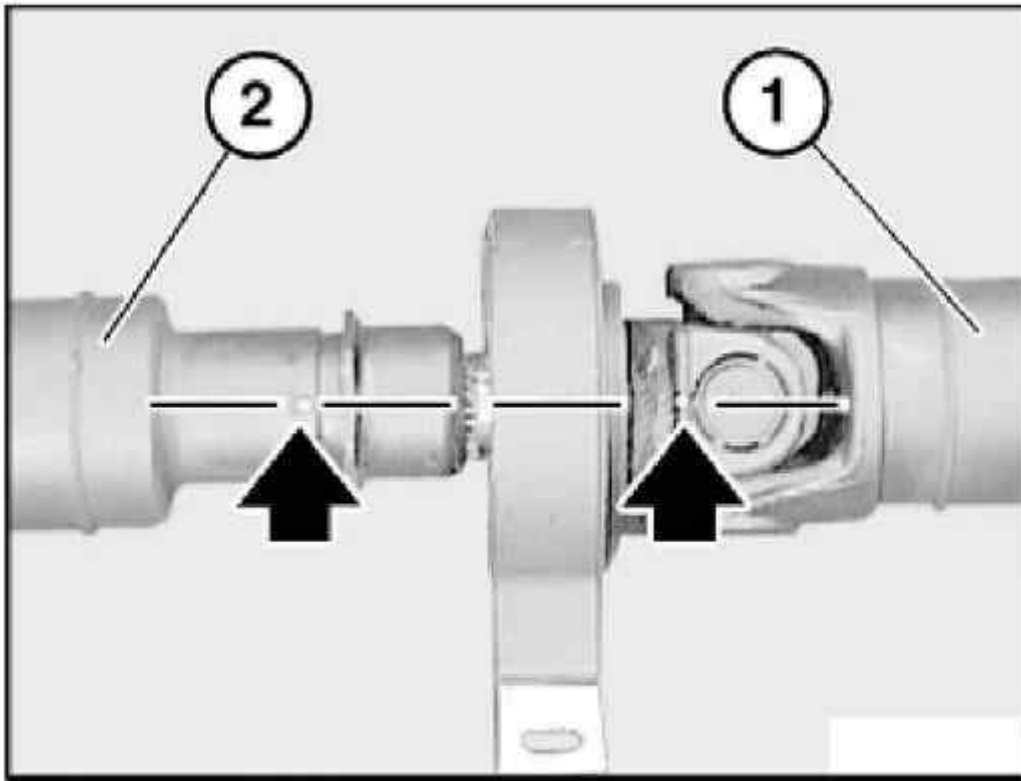
26 12 001 REPLACING COMPLETE PROPELLER SHAFT CENTER MOUNT

Necessary preliminary tasks:

- Remove propeller shaft. See 26 11 000 Removing And Installing Propeller Shaft (Cardan Universal Joint) Completely .

NOTE: **The propeller shaft is balanced. The front and rear propeller shafts must be reassembled in the same position.**

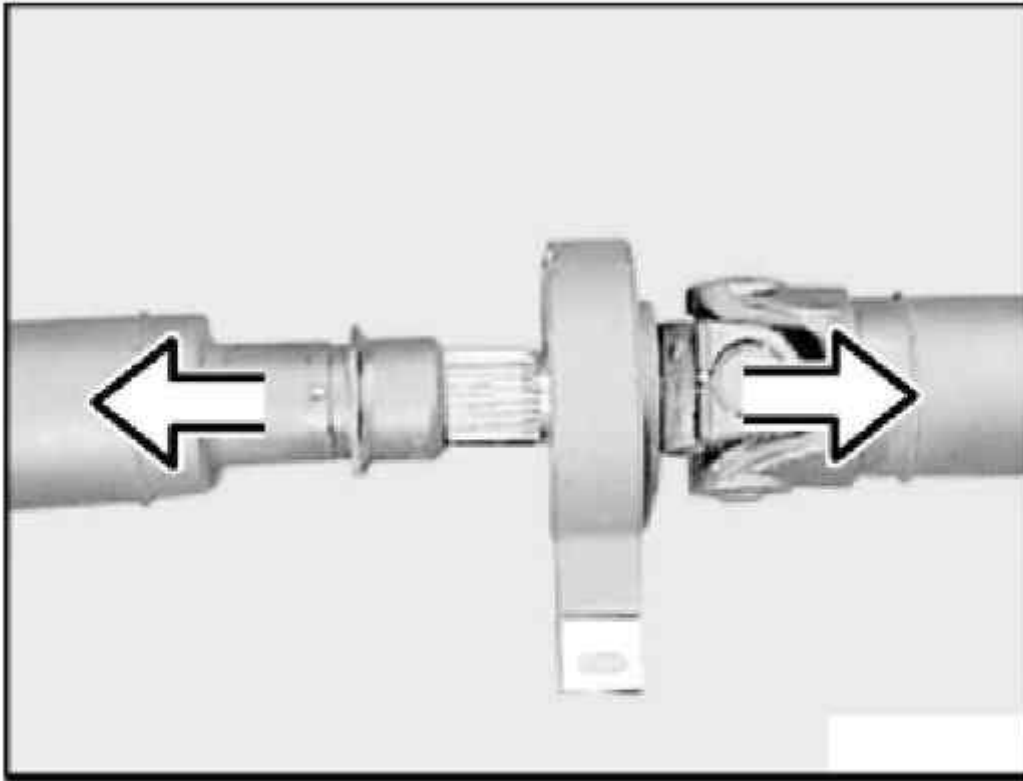
Mark front propeller shaft (1) and rear propeller shaft (2) in one plane.



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Fig. 17: Aligning Mark On Front And Rear Propeller Shaft
Courtesy of BMW OF NORTH AMERICA, INC.

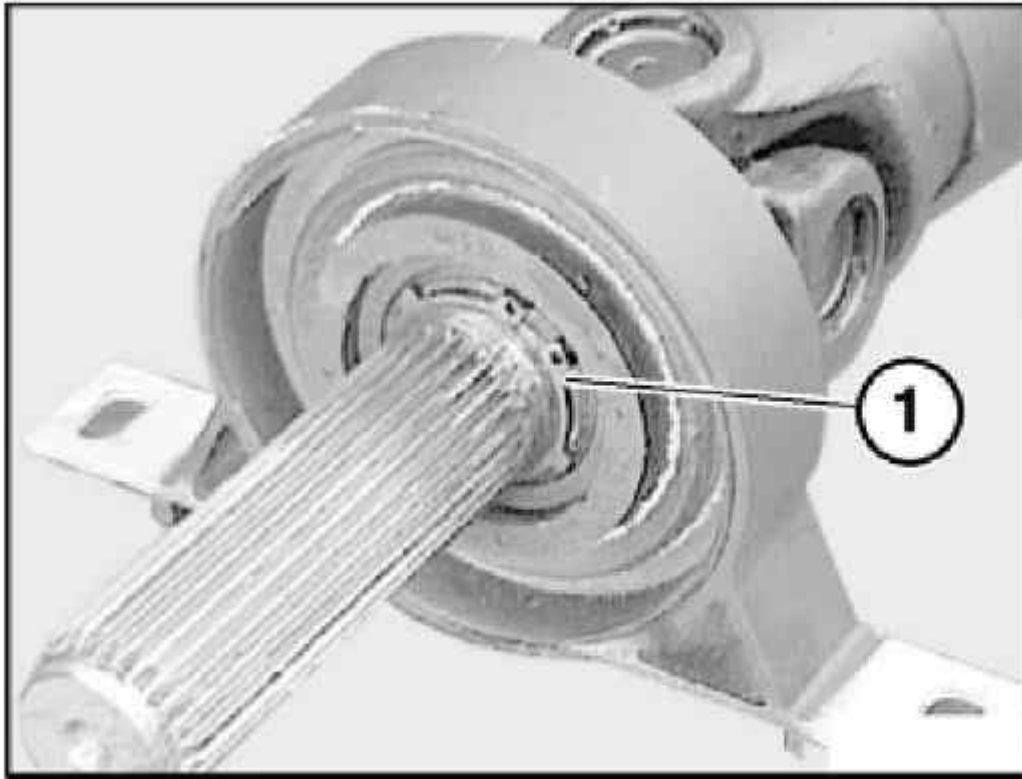
Pull propeller shaft apart.



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Fig. 18: Disconnecting Propeller Shaft
Courtesy of BMW OF NORTH AMERICA, INC.

Remove snap ring (1).

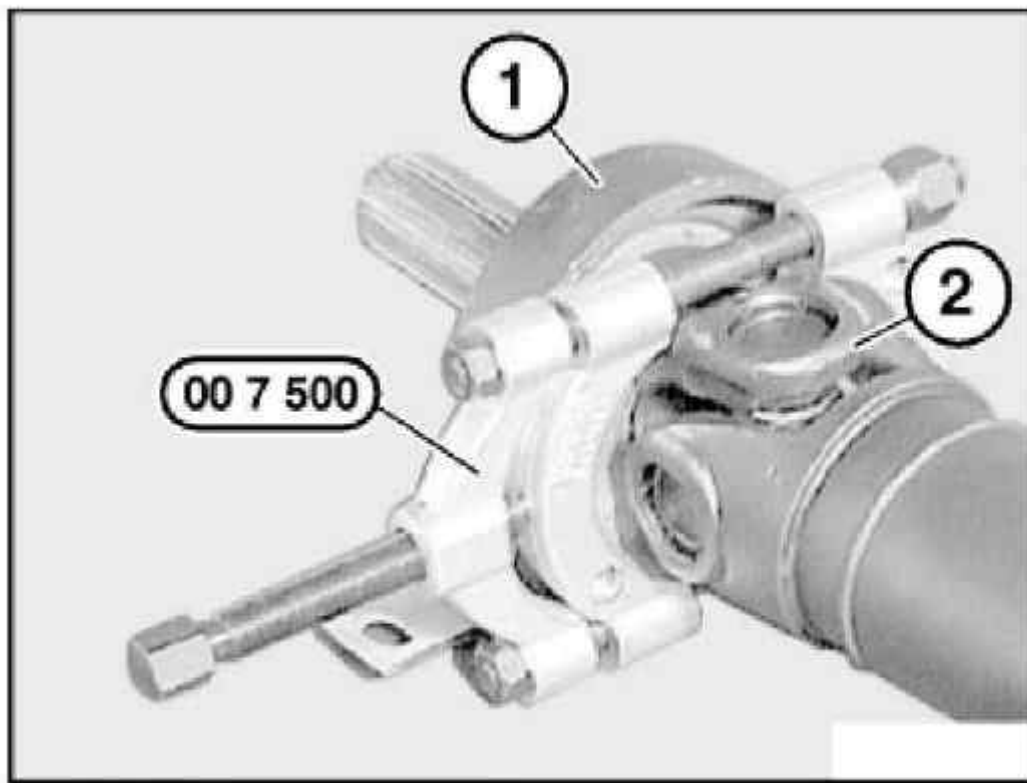


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Fig. 19: Removing Snap Ring

Courtesy of BMW OF NORTH AMERICA, INC.

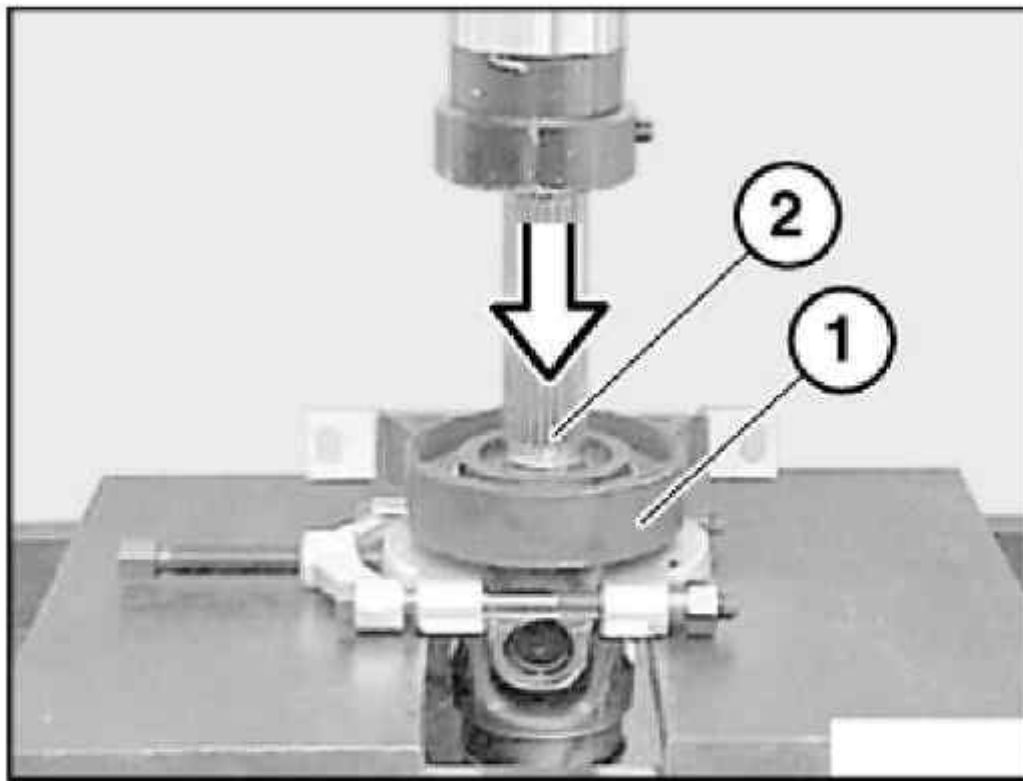
Install special tool 00 7 500 between center bearing (1) and universal joint (2).



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Fig. 20: Installing Special Tool
Courtesy of BMW OF NORTH AMERICA, INC.

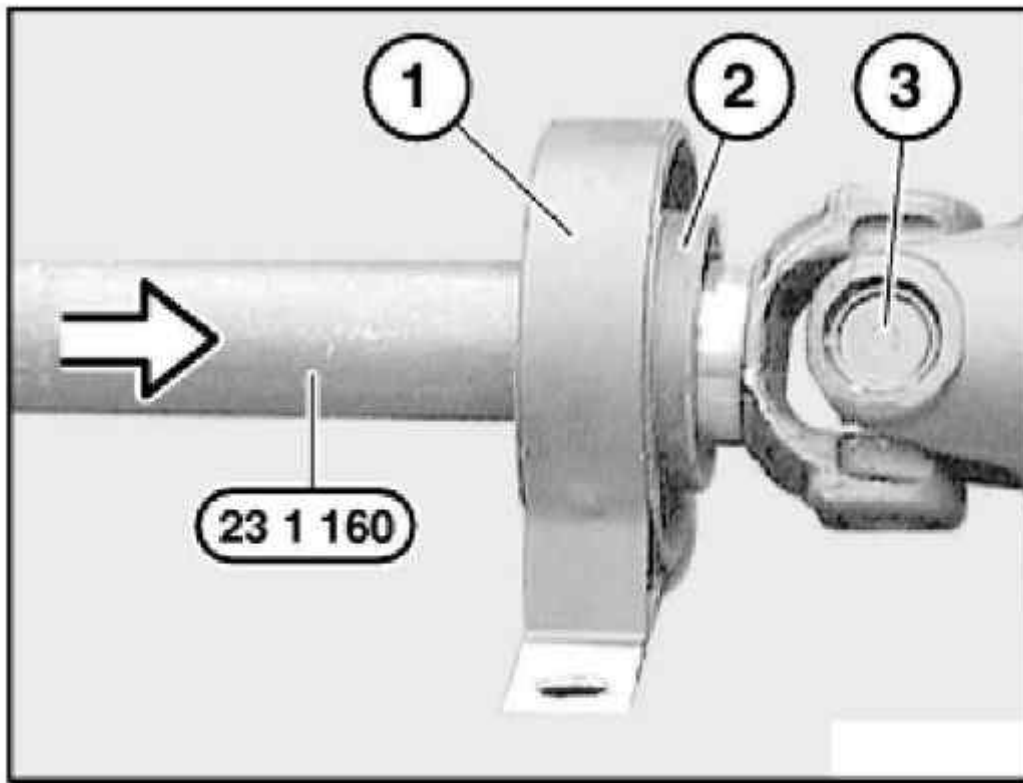
Using a hydraulic press, force center bearing (1) off propeller shaft (2).



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Fig. 21: Removing Center Bearing From Propeller Shaft
Courtesy of BMW OF NORTH AMERICA, INC.

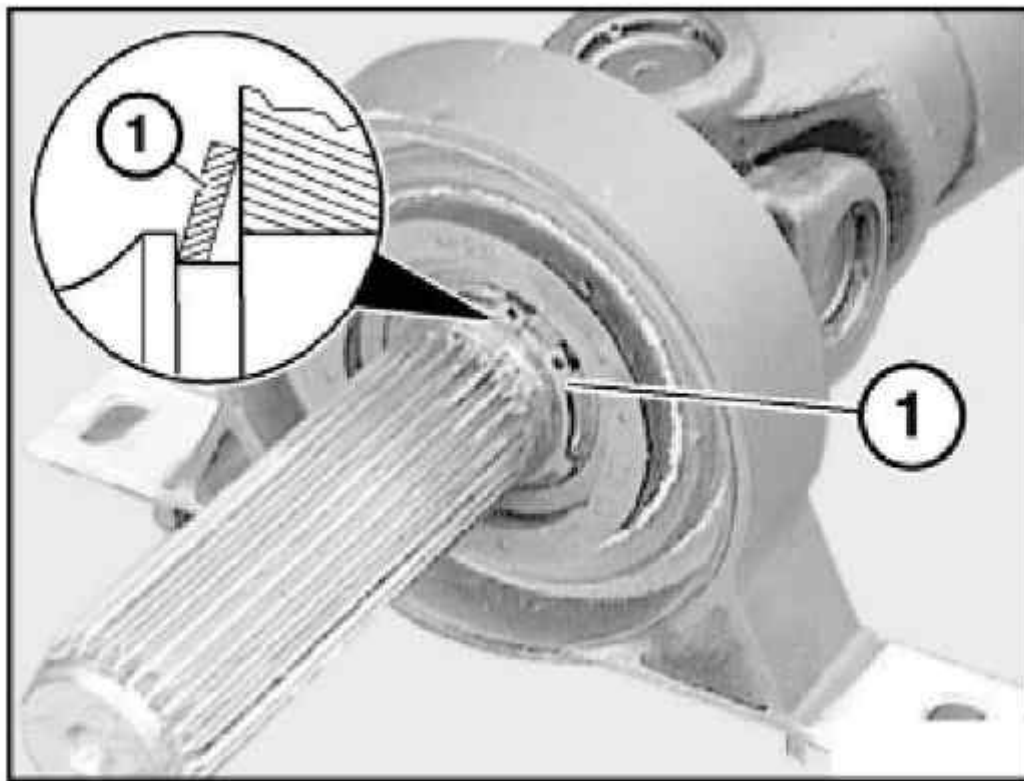
Force new center bearing (1) onto propeller shaft. Collar (2) must point to universal joint (3). Drive center mount firmly home with special tool 23 1 160.



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Fig. 22: Driving Center Mount With Special Tool
Courtesy of BMW OF NORTH AMERICA, INC.

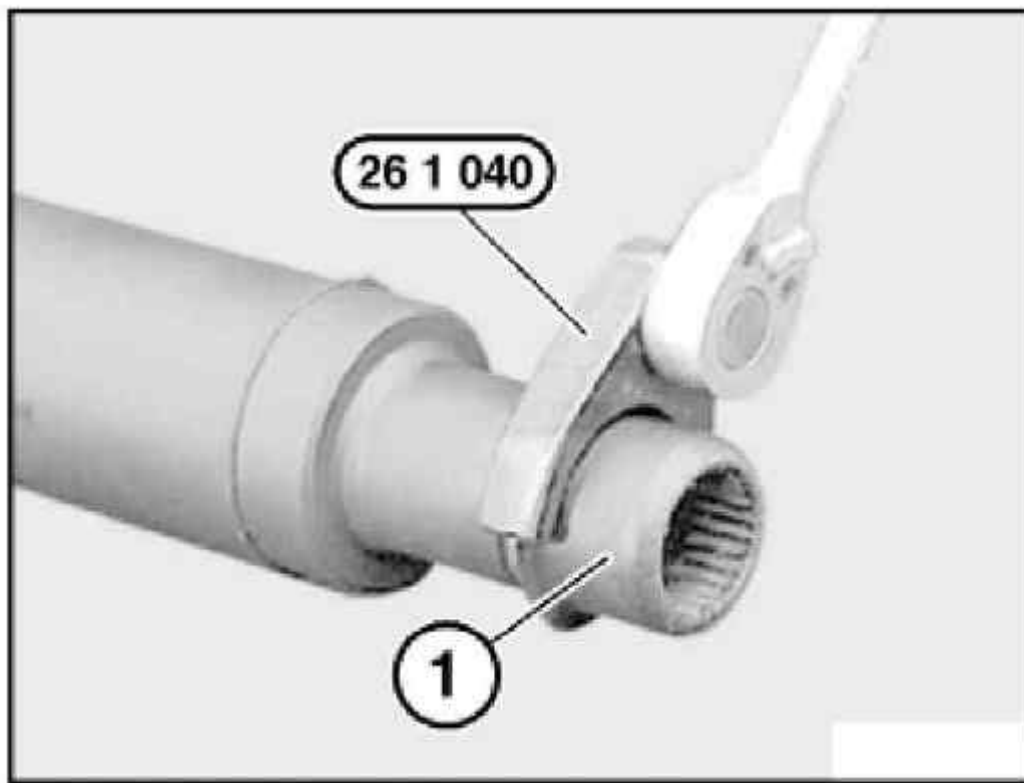
Install new snap ring (1), with plate to bearing.



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Fig. 23: Installing New Snap Ring With Plate To Bearing
Courtesy of BMW OF NORTH AMERICA, INC.

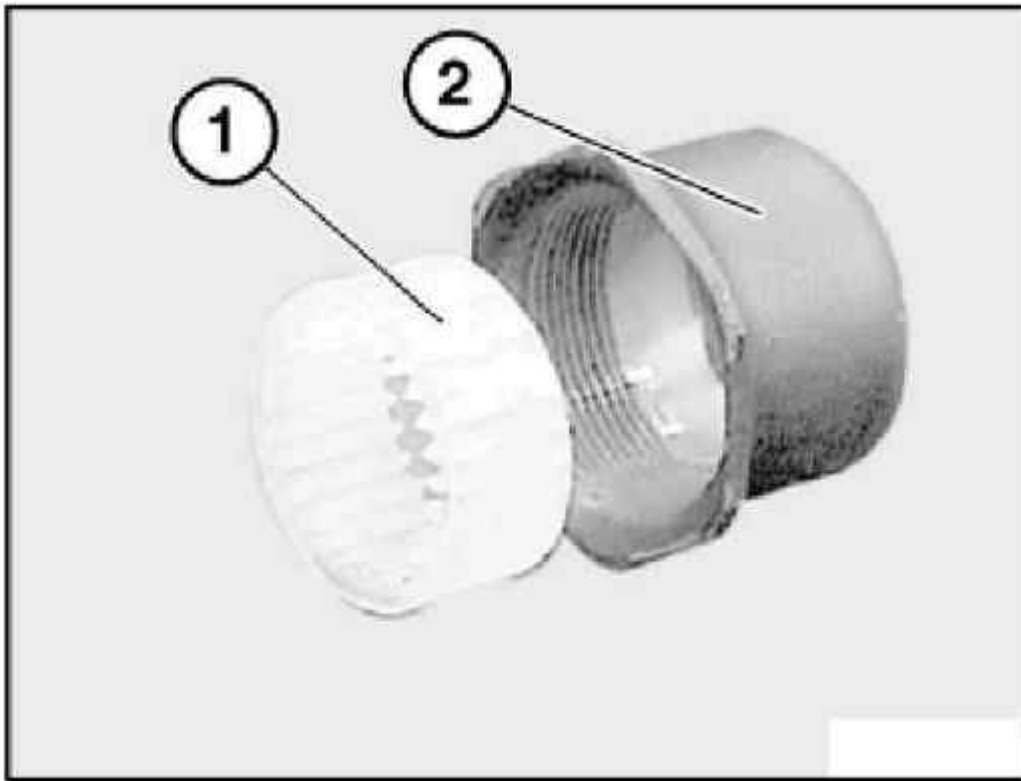
Screw threaded ring (1) off propeller shaft; if necessary, use special tool 26 1 040 to provide assistance.



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Fig. 24: Screwing Threaded Ring Off Propeller Shaft
Courtesy of BMW OF NORTH AMERICA, INC.

If necessary, insert new clamping ring (1) in threaded ring (2).



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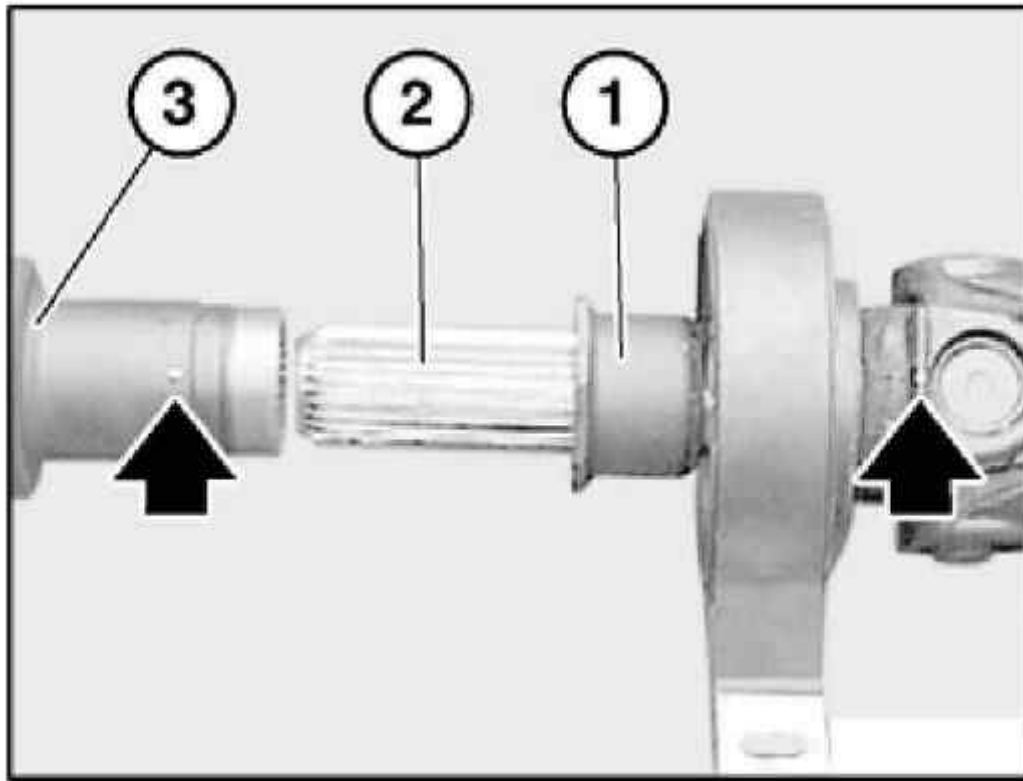
Fig. 25: Inserting New Clamping Ring In Threaded Ring
Courtesy of BMW OF NORTH AMERICA, INC.

Force threaded ring (1) onto shaft (2).

Grease longitudinal splines of shaft (2) uniformly.

Observe markings and force rear propeller shaft (3) onto shaft (2) (markings must be flush).

Screw down threaded ring (1) with propeller shaft (3) until handtight.



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Fig. 26: Installing Threaded Ring With Propeller Shaft
Courtesy of BMW OF NORTH AMERICA, INC.

26 12 011 REPLACING GROOVED BALL BEARING IN CENTER MOUNT OF PROPELLER SHAFT

Special tools required:

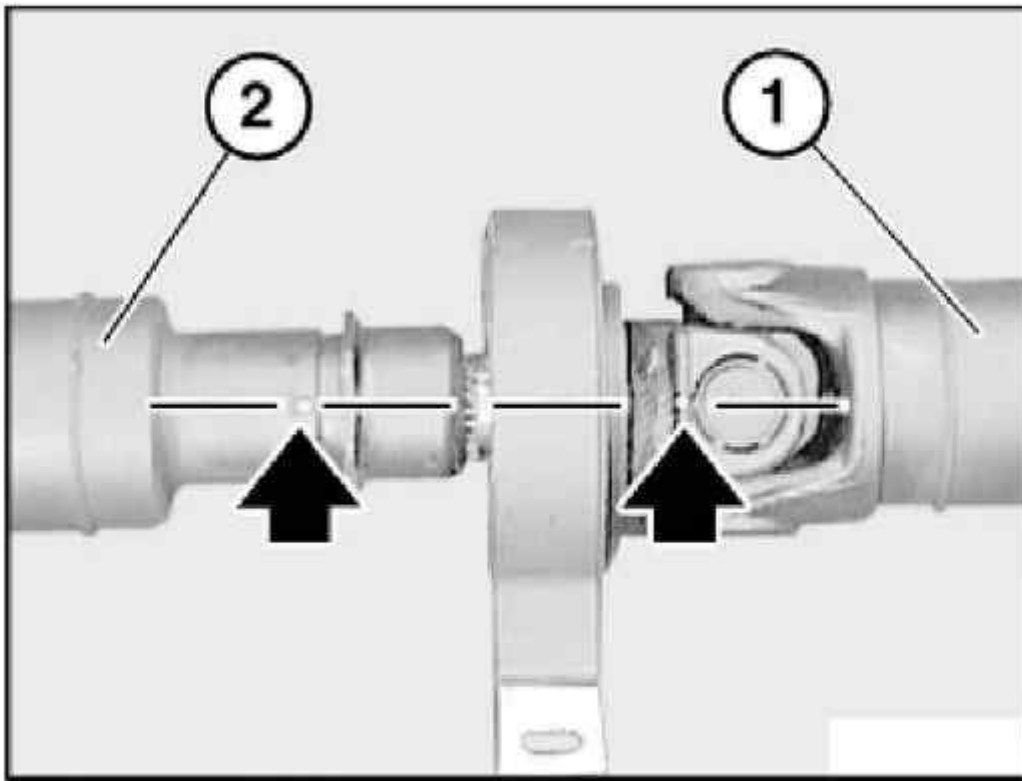
- 00 7 500
- 23 1 160
- 26 1 040
- 33 3 202
- 33 3 203

Necessary preliminary tasks:

- Remove propeller shaft . See **26 11 000 Removing And Installing Propeller Shaft (Cardan Universal Joint) Completely** .

NOTE: The propeller shaft is balanced. The front and rear propeller shafts must be reassembled in the same position.

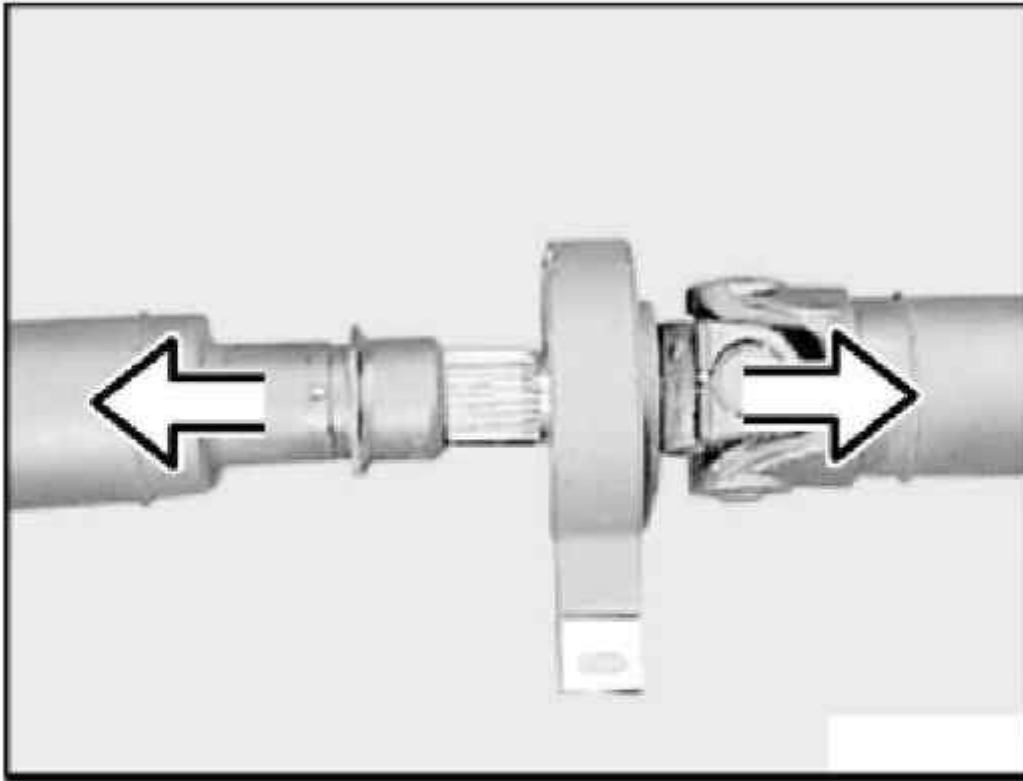
Mark front propeller shaft (1) and rear propeller shaft (2) in one plane.



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Fig. 27: Removing Front And Rear Propeller Shafts
Courtesy of BMW OF NORTH AMERICA, INC.

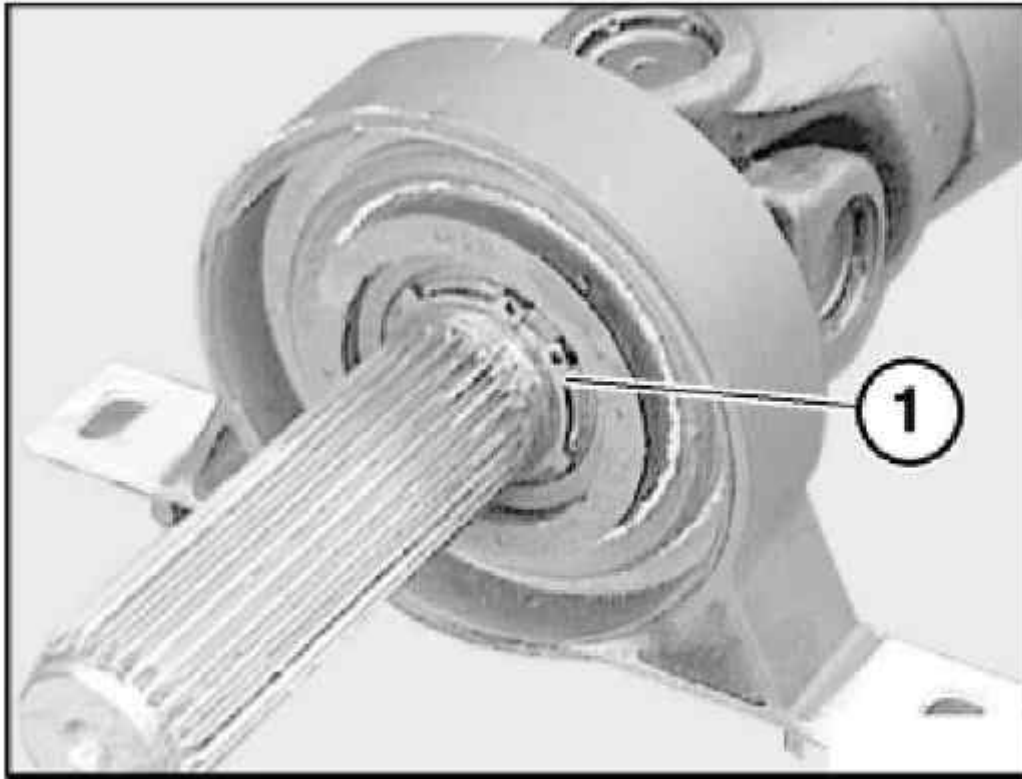
Pull propeller shaft apart.



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Fig. 28: Pulling Propeller Shaft Apart
Courtesy of BMW OF NORTH AMERICA, INC.

Remove snap ring (1).

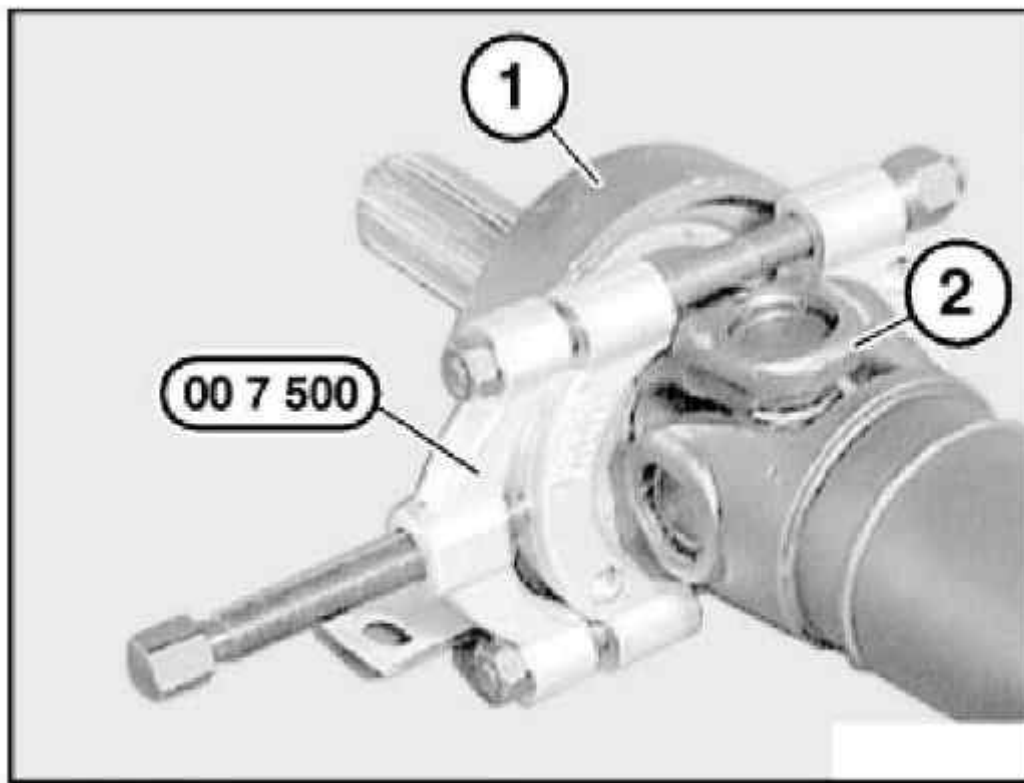


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Fig. 29: Removing Snap Ring

Courtesy of BMW OF NORTH AMERICA, INC.

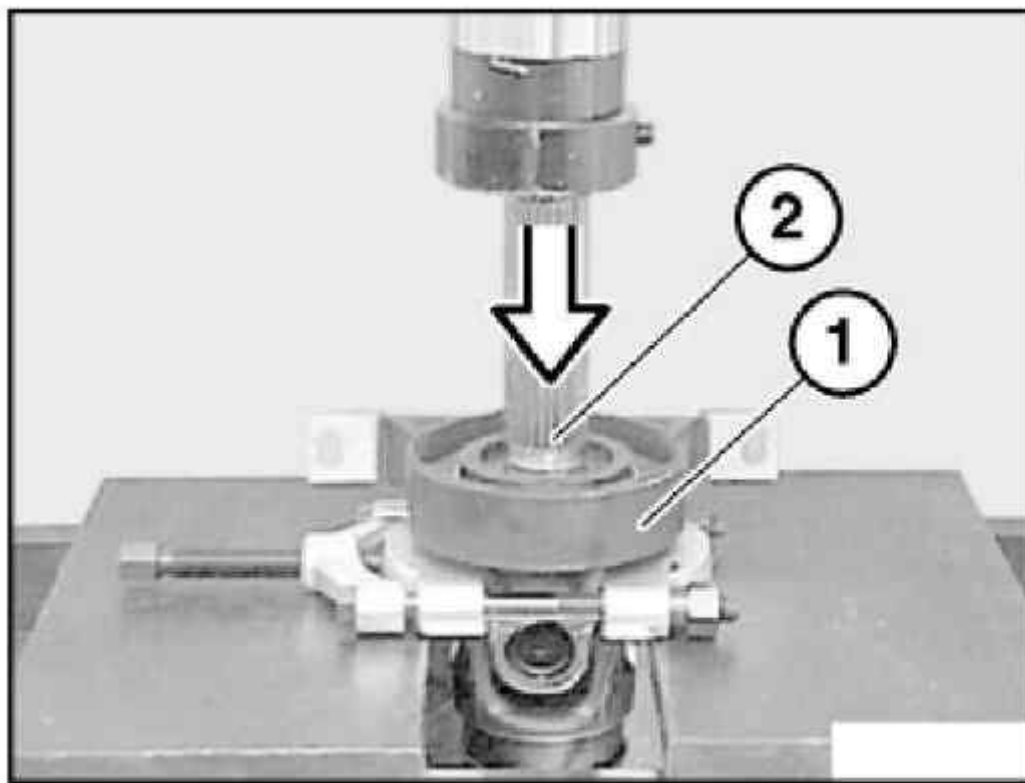
Install special tool 00 7 500 between center bearing (1) and universal joint (2).



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Fig. 30: Installing Special Tool 00 7 500 Between Center Bearing And Universal Joint
Courtesy of BMW OF NORTH AMERICA, INC.

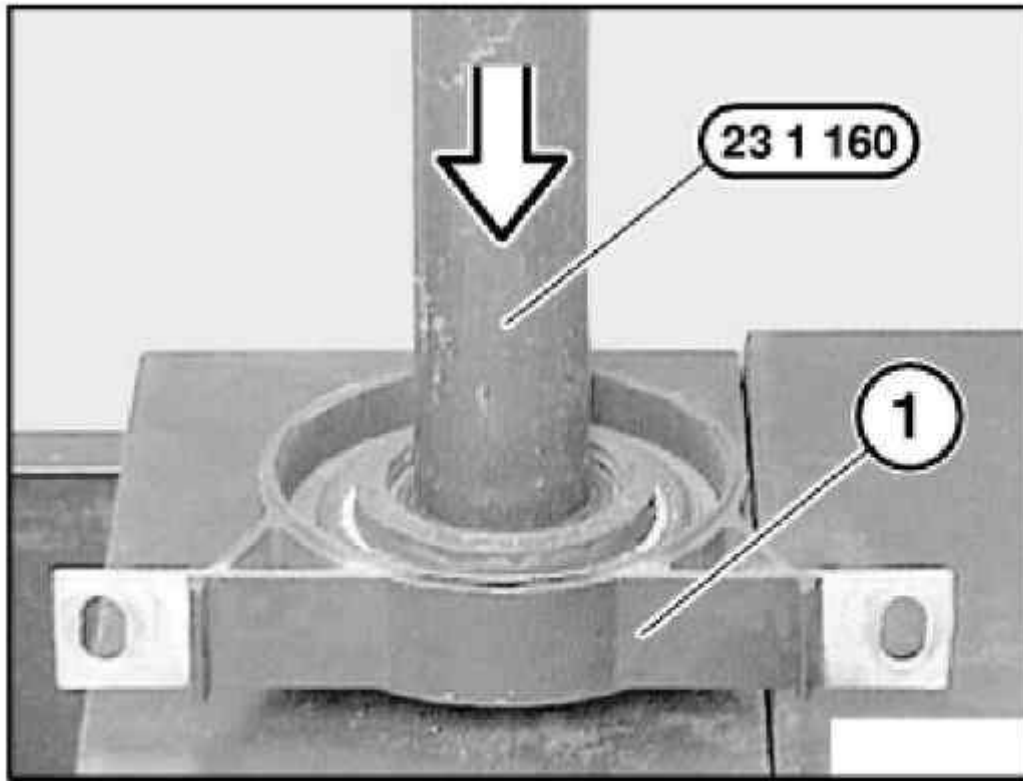
Using a hydraulic press, force center mount (1) off propeller shaft (2).



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Fig. 31: Forcing Center Mount Off Propeller Shaft
Courtesy of BMW OF NORTH AMERICA, INC.

Using special tool 23 1 160, press deep-groove ball bearing out of center mount (1).



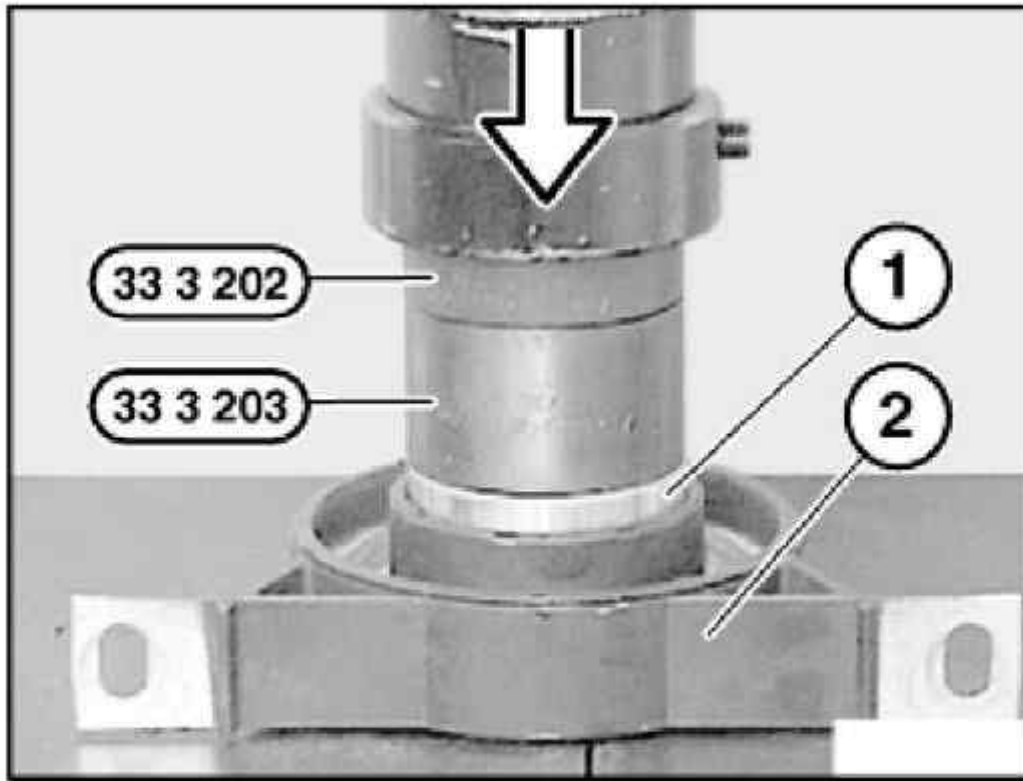
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Fig. 32: Pressing Deep-Groove Ball Bearing Out Of Center Mount
Courtesy of BMW OF NORTH AMERICA, INC.

Coat rubber-coated bearing seat of center mount (2) with Circolight.

Circolight, refer to BMW Parts.

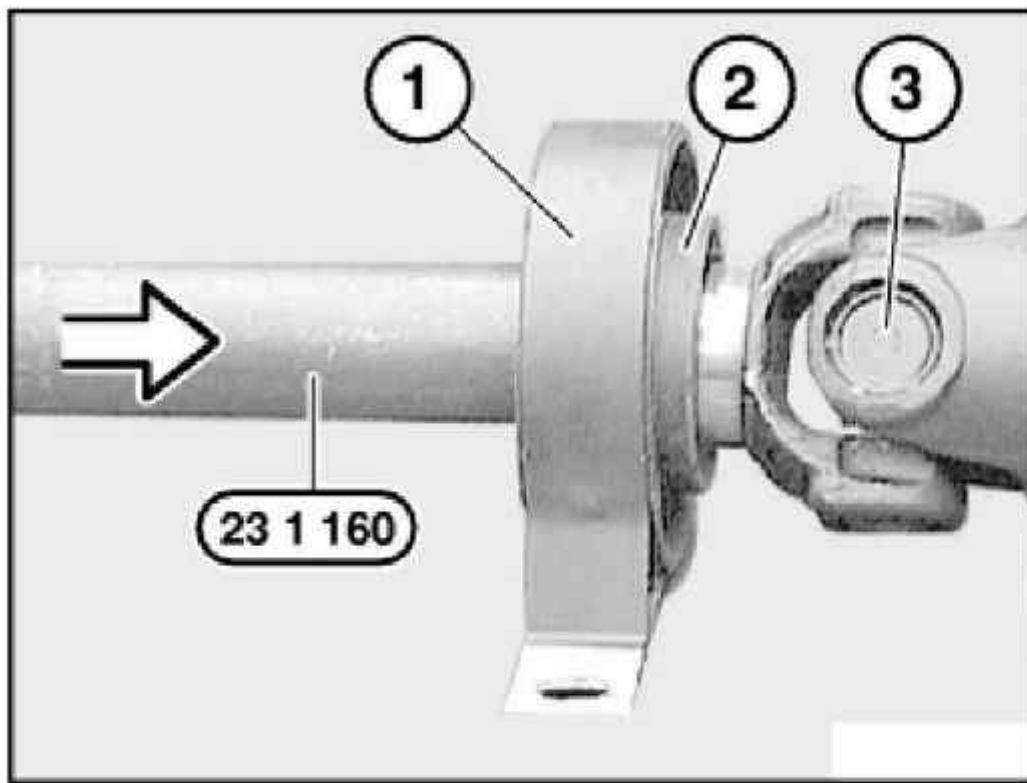
Using special tool 33 3 202 / 33 3 203, press new deep-groove ball bearing (1) into center mount (2).



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Fig. 33: Pressing New Deep-Groove Ball Bearing Into Center Mount
Courtesy of BMW OF NORTH AMERICA, INC.

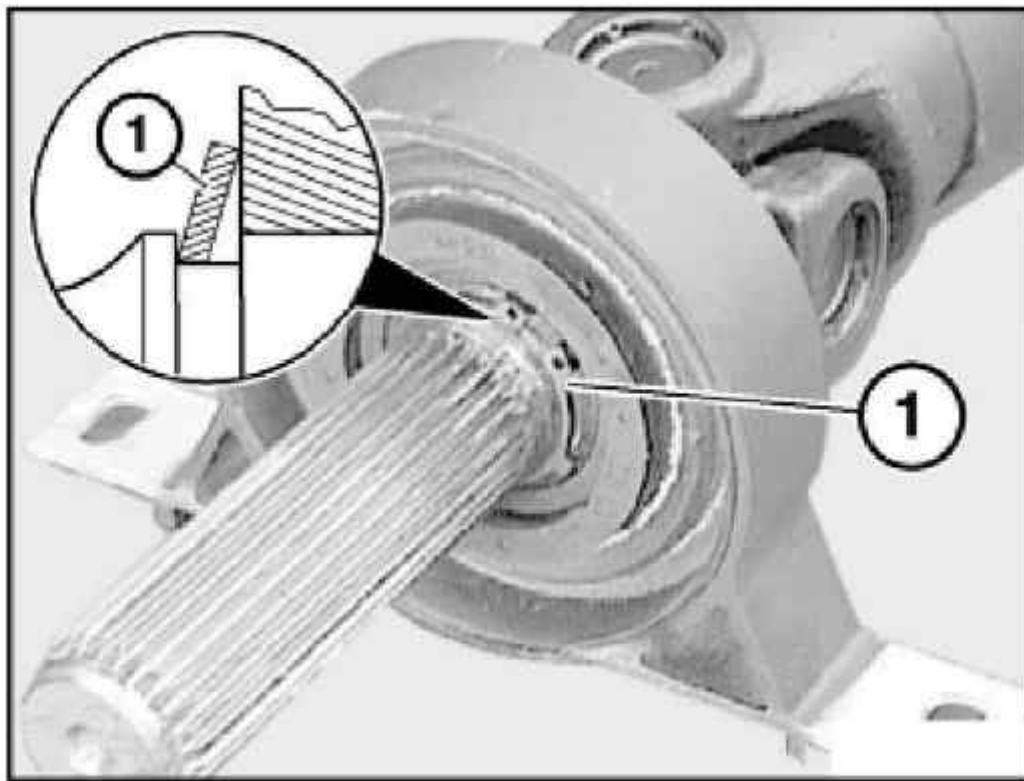
Force center mount (1) onto propeller shaft. Collar (2) must point to universal joint (3). Drive center mount firmly home with special tool 23 1 160.



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Fig. 34: Installing Center Mount Onto Propeller Shaft
Courtesy of BMW OF NORTH AMERICA, INC.

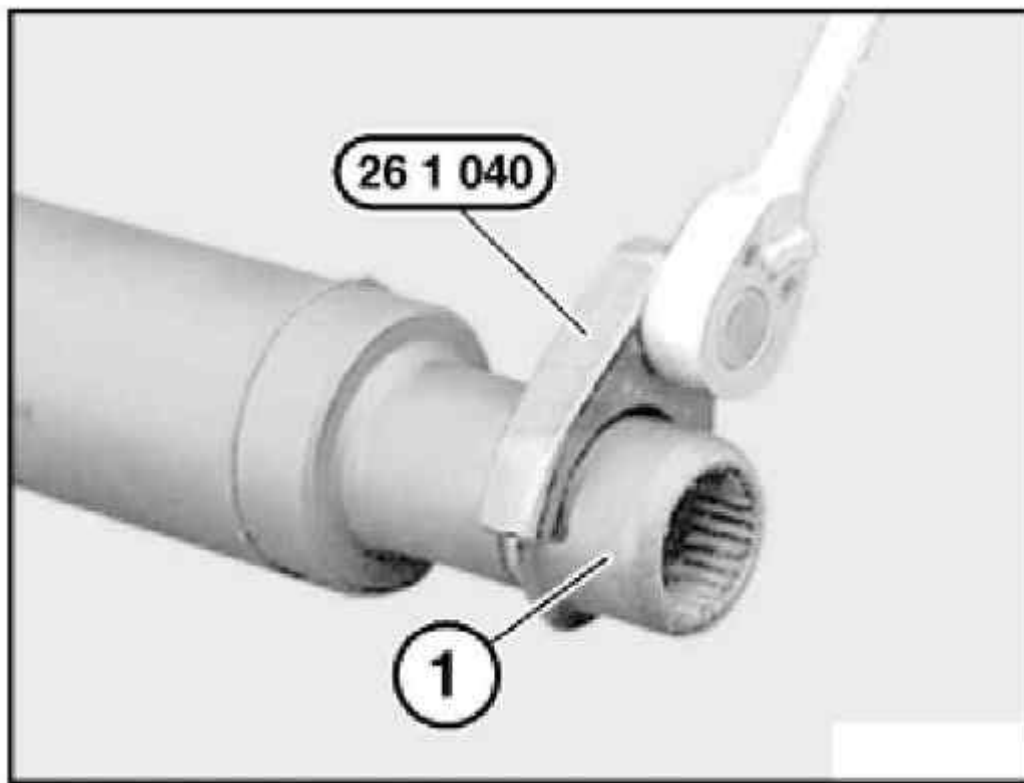
Install new snap ring (1) with plate to mount.



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Fig. 35: Installing New Snap Ring With Plate To Mount
Courtesy of BMW OF NORTH AMERICA, INC.

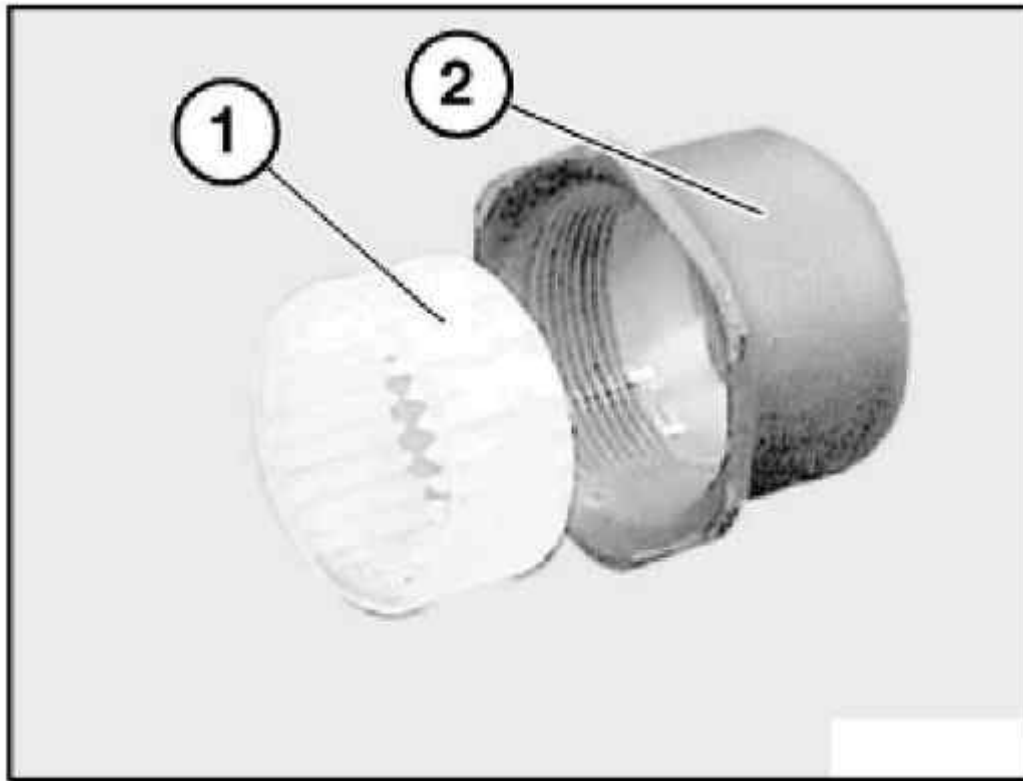
Screw threaded ring (1) off propeller shaft. If necessary, use special tool 26 1 040 as an aid.



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Fig. 36: Removing Threaded Ring From Propeller Shaft
Courtesy of BMW OF NORTH AMERICA, INC.

If necessary, insert new clamping ring (1) in threaded ring (2).



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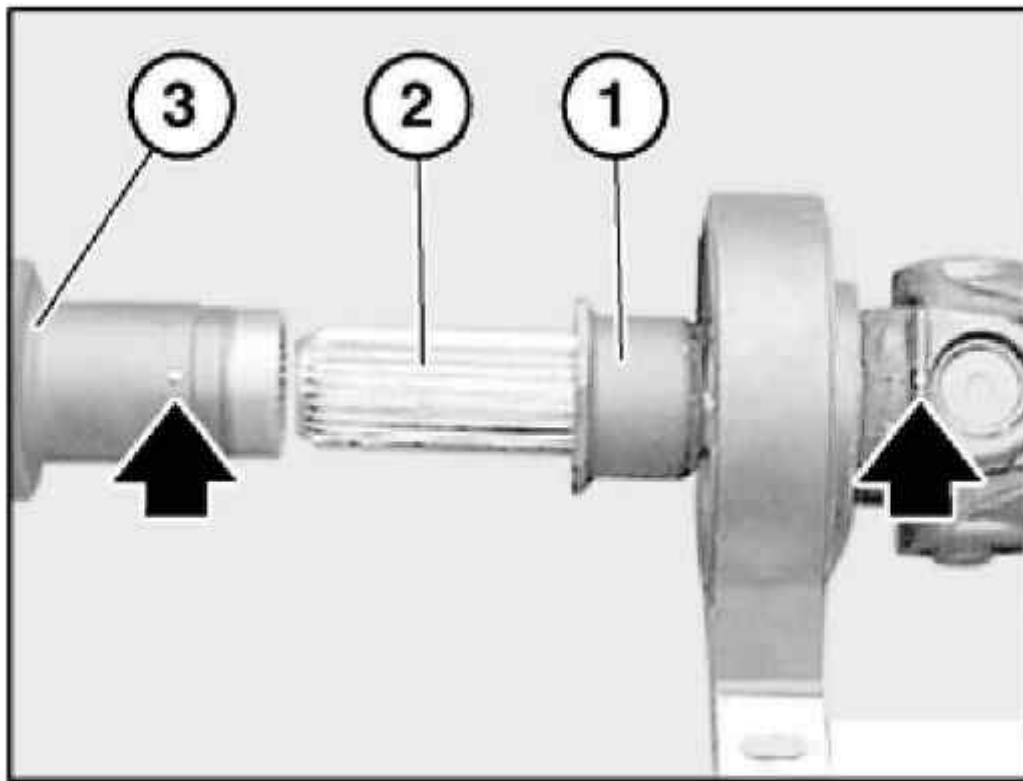
Fig. 37: Identifying New Clamping Ring
Courtesy of BMW OF NORTH AMERICA, INC.

Force threaded ring (1) onto shaft (2).

Grease longitudinal splines of shaft (2) uniformly.

Observe markings and force rear propeller shaft (3) onto shaft (2) (markings must be flush).

Screw down threaded ring (1) with propeller shaft (3) until handtight.



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Fig. 38: Installing Threaded Ring On Propeller Shaft
Courtesy of BMW OF NORTH AMERICA, INC.