

| 2001 BMW X5                               |
|-------------------------------------------|
| 2000-2002 DRIVE AXLES Front Differentials |

2000-2002 DRIVE AXLES

Front Differentials

IDENTIFICATION

CHASSIS & ENGINE IDENTIFICATION

| Model (Chassis Code) | Engine Size (Code) |
|----------------------|--------------------|
| 2000-2002            |                    |
| X5 (E53)             | 4.4L (M62)         |
| 2001-2002            |                    |
| X5 (E53)             | 3.0L (M54)         |
| 2002                 |                    |
| X5 (E53)             | 4.6L (M62)         |

DESCRIPTION & OPERATION

The front axle differential transfers power from the front drive shaft to the front axle shafts. Manufacturer recommends replacing entire unit if differential is faulty.

LUBRICATION

**CAUTION:** Use only approved gear oil in front axle differential. Failure to comply will result in serious damage to the differential. See FLUID TYPE.

CAPACITY

FLUID CAPACITY

| Year & Model           | Qt. (L) |
|------------------------|---------|
| All Models             |         |
| New Oil Filling Volume | .7 (.7) |
| Oil Change Volume      | .6 (.6) |

FLUID TYPE

Use SAF-XO fluid.

TROUBLE SHOOTING

**NOTE:** See appropriate table in TROUBLE SHOOTING article in GENERAL INFORMATION.

## REMOVAL & INSTALLATION

### DIFFERENTIAL ASSEMBLY

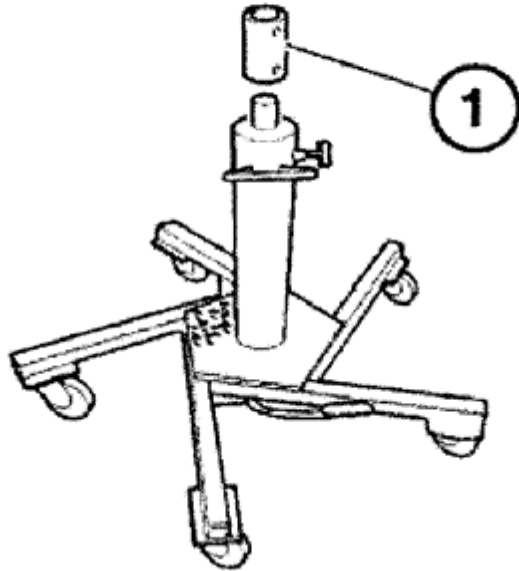
#### Removal

1. Lower front axle support. See appropriate SUSPENSION article.
2. Disconnect battery, grounding strap to body.

**NOTE:** The following work must be carried out with a second person assisting. Work instruction applies to left and right sides.

3. Lift engine hood into assembly position. Gently raise retaining clip and simultaneously push upwards. Hold engine hood and unhook damper on hood. Open hood fully and reattach damper with special tool (51 2 170) to hood. See [Fig. 1](#).
4. Detach sealing strips (1). See [Fig. 2](#).
5. Turn toggles approximately 90 degrees. See [Fig. 3](#).
6. Lift out cover (1). Unfasten screws and pull out heater bulkhead (2). See [Fig. 4](#).
7. On M54 vehicles, remove cover for fuel injectors. Remove upper section of suction filter housing with mass air flow sensor.
8. On M62 vehicles, remove acoustic cover by turning fasteners 90 degrees counterclockwise.
9. On M54 vehicles, assemble special tool (00 0 200) and special tool (00 0 201/202/204/208) and attach. Secure special tool (11 0 020) to special tool (00 0 200). See [Fig. 5](#).
10. On M62 vehicles, assemble special tool (00 0 200) and special tool (00 0 201/202/204/208) and attach. Secure special tool (11 0 200) to special tool (00 0 200). See [Fig. 6](#).
11. On all vehicles, secure special tool (11 0 020) or (11 0 200) to front and rear engine suspension eyes. The supports (1) of special tool (00 0 208) must make contact with the screws on the side walls. See [Fig. 7](#).
12. Tighten down screws (1 and 2). See [Fig. 8](#).
13. Release nuts at top on right and left engine mounts.
14. Using special tool (00 0 200), raise engine approximately .2 inches (5 mm) on M54 vehicles or .4-.5 inches (10-12 mm) on M62 vehicles.
15. On all vehicles, unscrew bolts (1 and 2) and remove reinforcement plate. See [Fig. 9](#).
16. Remove front splash guard.
17. Remove front drive shaft. See [FRONT DRIVE SHAFT](#).
18. Unfasten steering spindle from steering gear. See appropriate POWER STEERING article.
19. Remove left and right swivel bearings and axle shafts as a unit. It is not necessary to press axle shaft out of drive flange. See appropriate AXLE SHAFTS article.
20. Support front axle support with special tool (00 2 030) together with special tool (31 2 220) and a block of wood. See [Fig. 10](#).
21. Detach front axle support from engine carrier. Screw in special tool (31 1 150) in place of original screws approximately .8 inches (20 mm) and lower front axle support. See [Fig. 11](#).

22. Remove left engine mount.
23. Detach vent hose (1). See **Fig. 12**.
24. Release screws (1) and remove front axle differential. Carefully feed out differential towards bottom. See **Fig. 13**.



1 = 00 2 031 Adapter for transmission brackets  
Note: Model series: E30, E31, E32, E34,  
E36  
In conjunction with: 23 0 000, 24 0 130

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**Fig. 1: Lifting Hood Into Assembly Position**  
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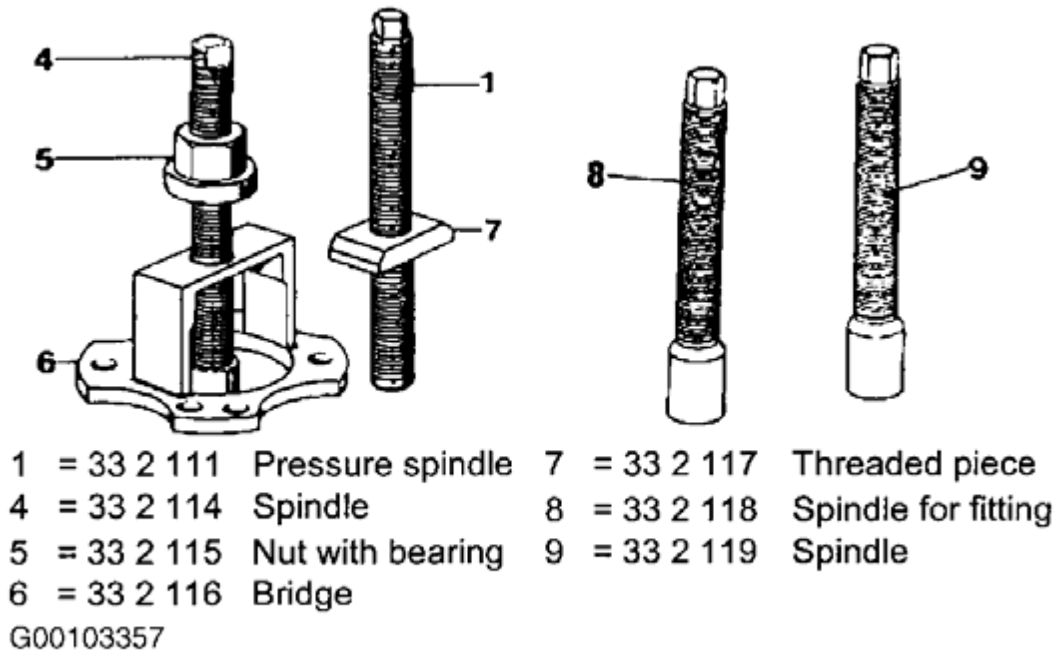
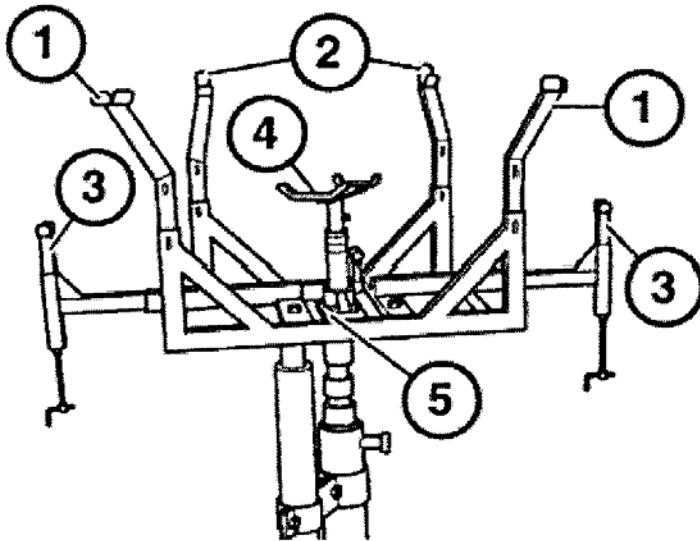


**Fig. 2: Detaching Sealing Strips**

Courtesy of BMW OF NORTH AMERICA, INC.

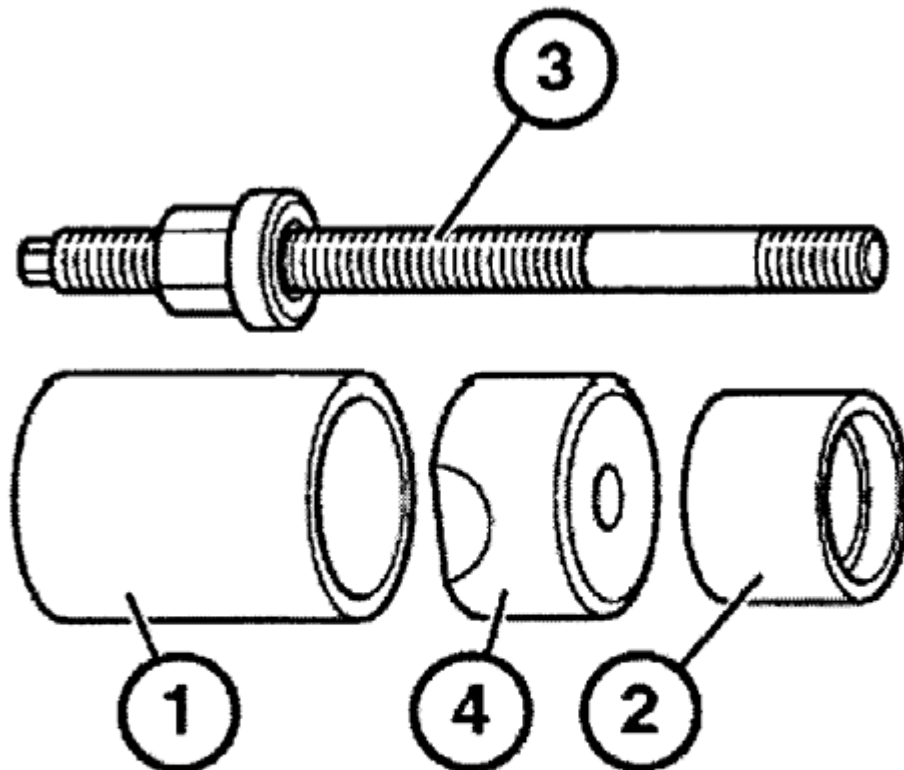


- 1 = 33 4 221 Axle body support  
Note: Support arm No. 1 and 2 - Model series: E38, E52
- 2 = 33 4 222 Axle body support  
Note: Support arm No. 3 and 4 - Model series: E38
- 3 = 33 4 223 Control arm support  
Note: Support arm No. 5 and 6 - Model series: E38, E52
- 4 = 33 4 224 Rear axle differential support  
Note: Model series: E38
- 5 = 33 4 225 Adapter plate  
Note: Model series: E38  
In conjunction with: 00 2 040
- 6 = 33 4 226 Axle support  
Note: Support arm No. 3 and 4 - Model series: E52
- 7 = 33 4 227 Axle support 1 + 2  
Note: For rear axle - Model series: E65  
In conjunction with: 00 2 030, 00 2 040
- 8 = 33 4 228 Axle support 3 + 4  
Note: For rear axle - Model series: E65

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**Fig. 3: Locating Toggles**

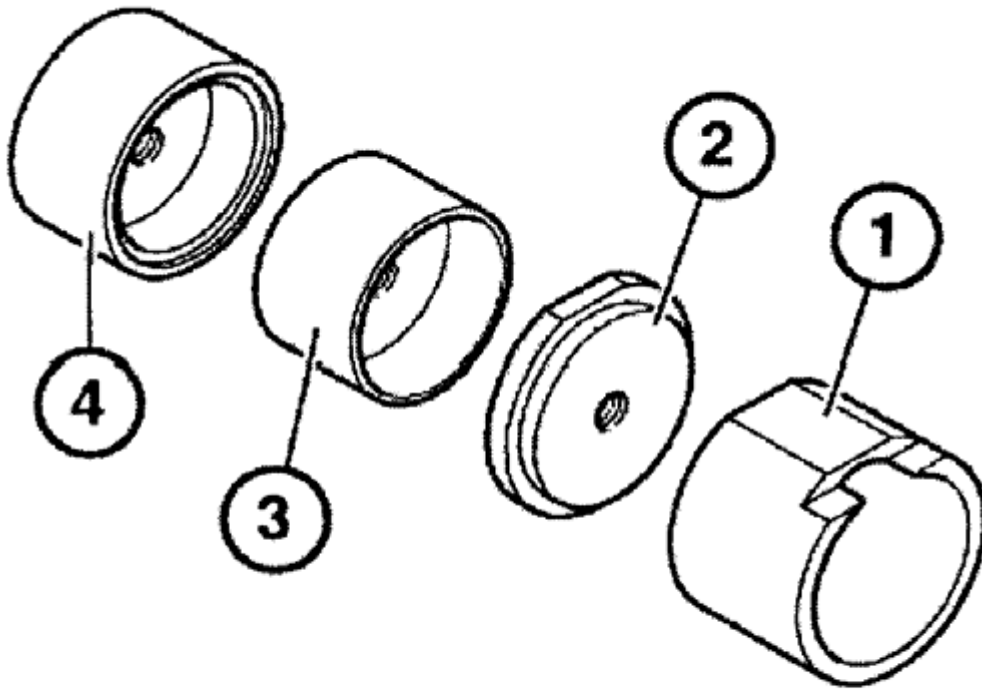
Courtesy of BMW OF NORTH AMERICA, INC.



- 1 = 33 3 331    Spacer sleeve  
2 = 33 3 332    Extractor sleeve  
3 = 33 3 333    Spindle with pressure nut  
4 = 33 3 334    Spacer sleeve

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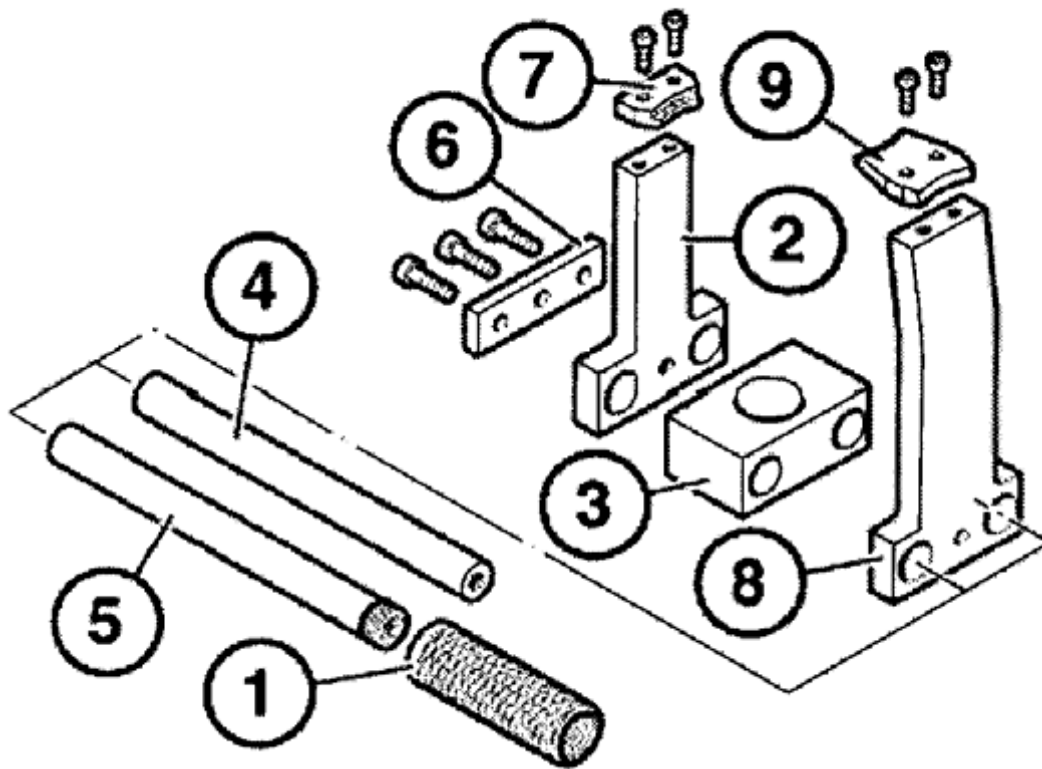
**Fig. 4: Removing Heater Bulkhead**  
Courtesy of BMW OF NORTH AMERICA, INC.



- 1 = 33 4 191 Support tube  
Note: For removal and installation operations
- 2 = 33 4 192 Support plate  
Note: For removal and installation operations
- 3 = 33 4 193 Thrust piece  
Note: For removal operations
- 4 = 33 4 194 Thrust piece  
Note: For fitting operations

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**Fig. 5: Attaching Special Tools**  
Courtesy of BMW OF NORTH AMERICA, INC.



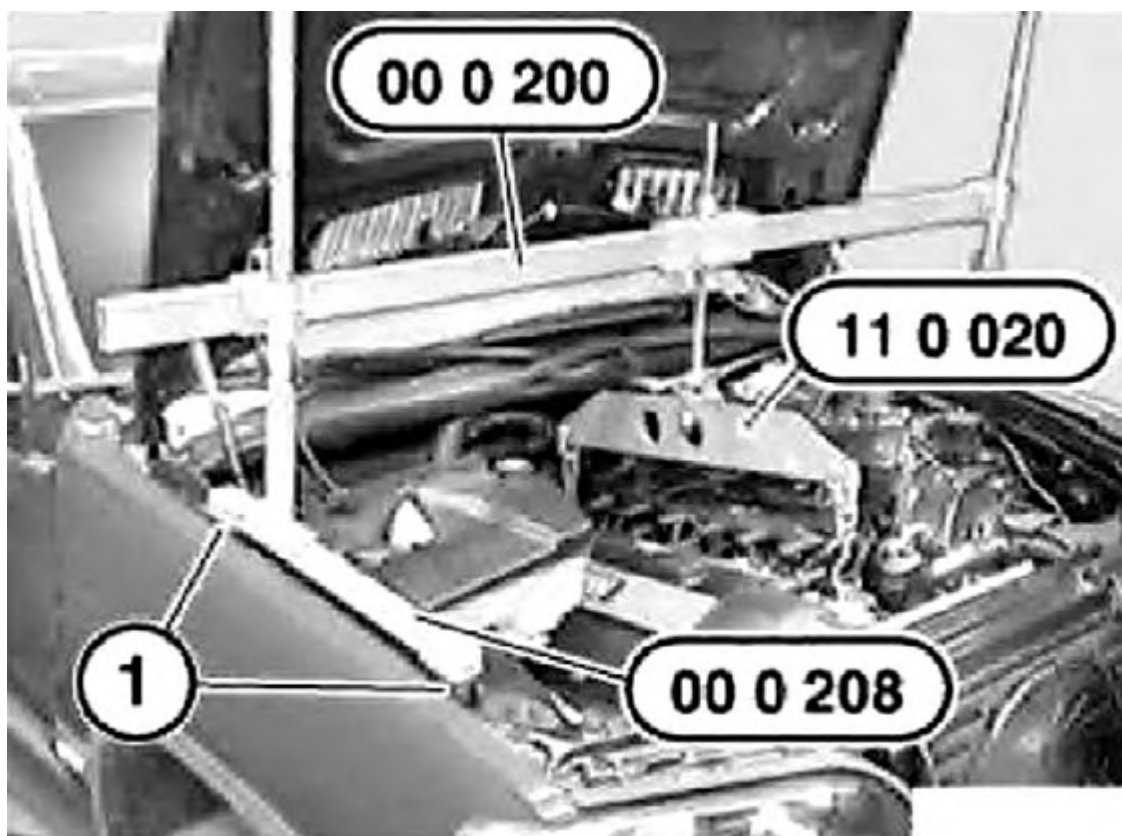
- |              |                       |
|--------------|-----------------------|
| 1 = 33 4 141 | Threaded tube         |
| 2 = 33 4 142 | Support foot (2)      |
| 4 = 33 4 144 | Guide rod             |
| 5 = 33 4 145 | Guide rod             |
| 7 = 33 4 147 | Thrust piece (2)      |
| 8 = 33 4 148 | Support foot long (2) |
| 9 = 33 4 149 | Thrust piece (2)      |

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**Fig. 6: Supporting M62 Engine**  
 Courtesy of BMW OF NORTH AMERICA, INC.

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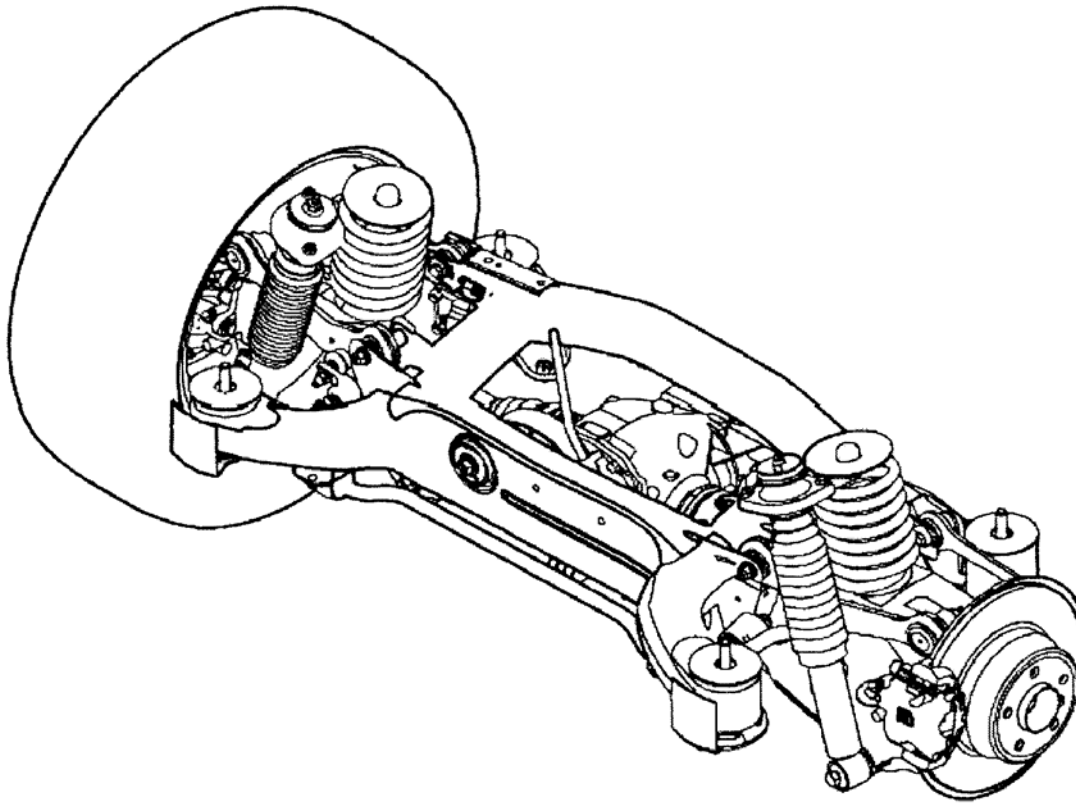
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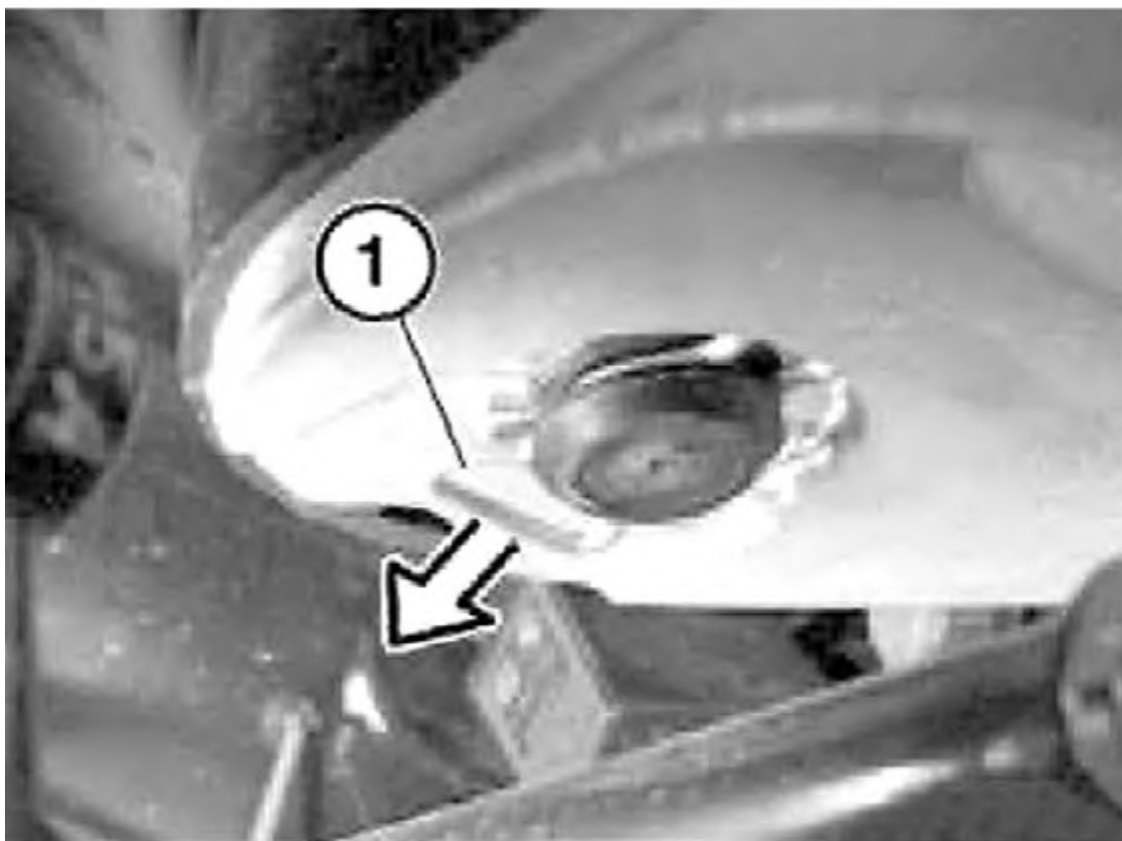
**Fig. 7: Securing Special Tool (11 0 020)**

Courtesy of BMW OF NORTH AMERICA, INC.



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**Fig. 8: Tightening Engine Support Screws**  
Courtesy of BMW OF NORTH AMERICA, INC.

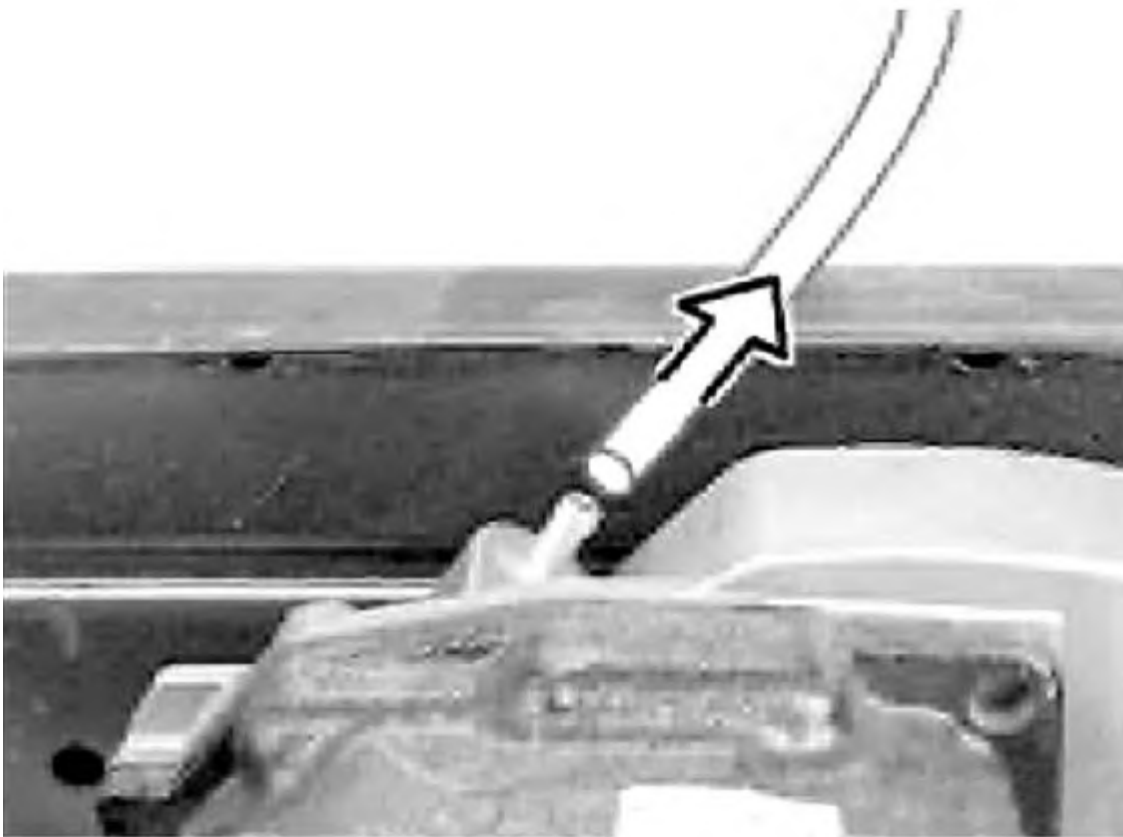


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**Fig. 9: Removing Reinforcement Plate**  
Courtesy of BMW OF NORTH AMERICA, INC.

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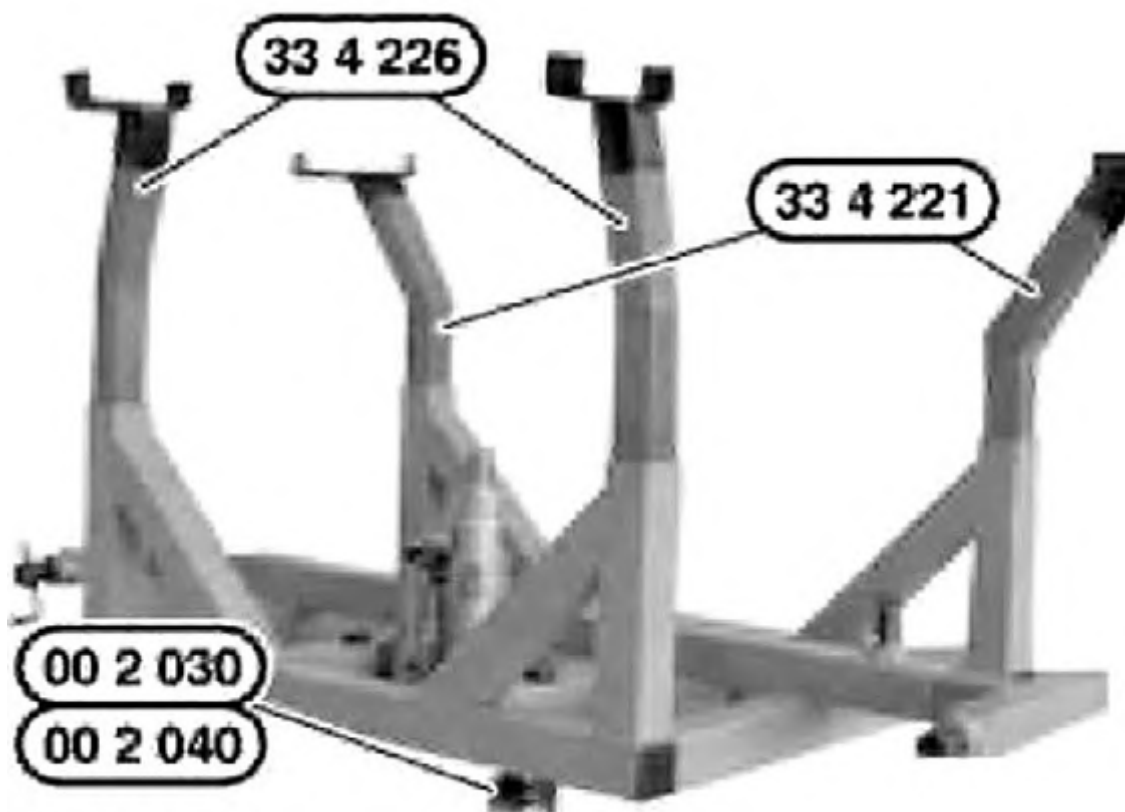


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**Fig. 10: Supporting Front Axle Support**  
Courtesy of BMW OF NORTH AMERICA, INC.

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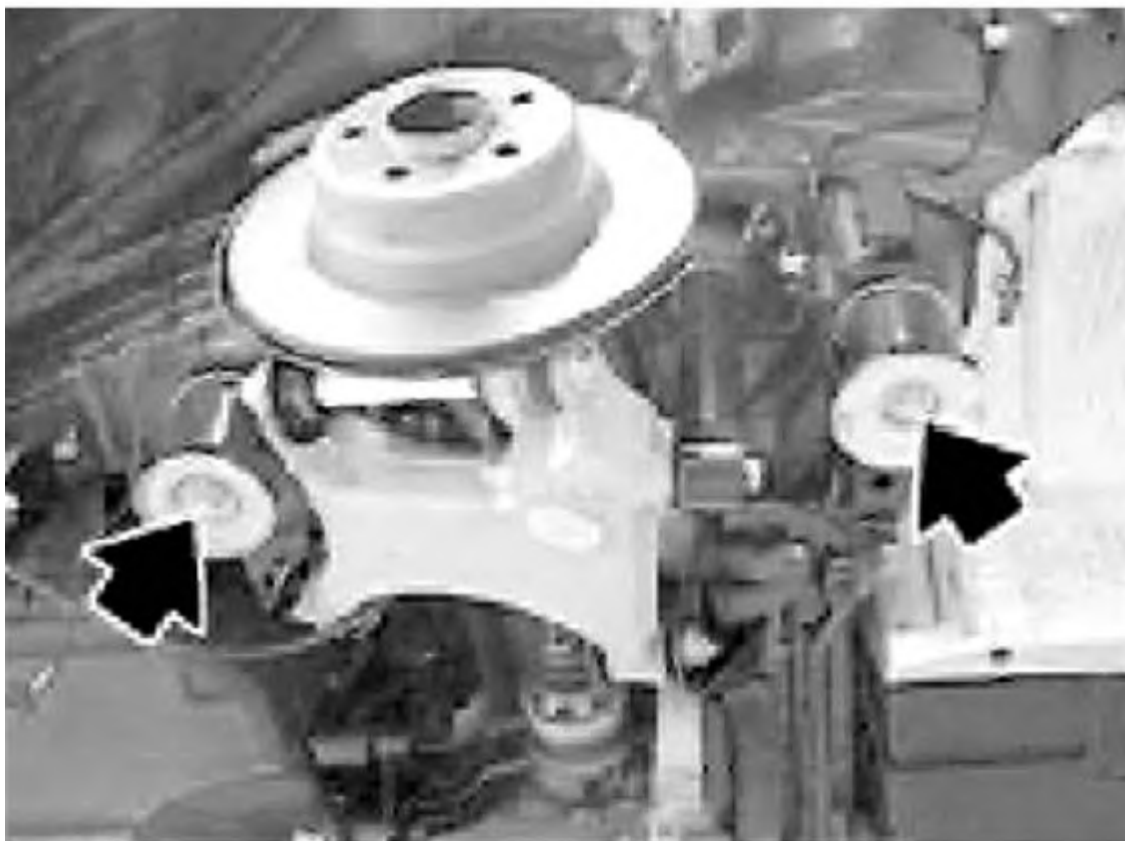
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**Fig. 11: Lowering Front Axle Support**

Courtesy of BMW OF NORTH AMERICA, INC.

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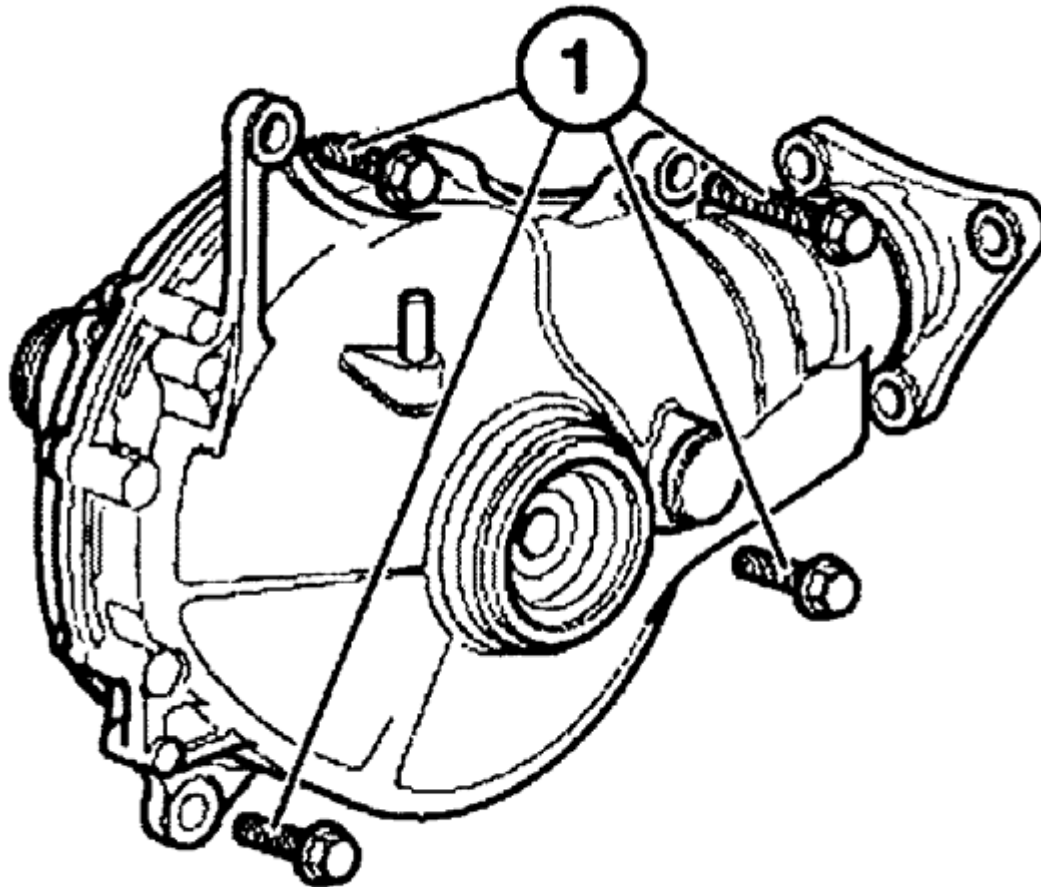
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**Fig. 12: Detaching Vent Hose**

Courtesy of BMW OF NORTH AMERICA, INC.



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**Fig. 13: Locating Front Axle Differential Screws**  
Courtesy of BMW OF NORTH AMERICA, INC.

#### Installation

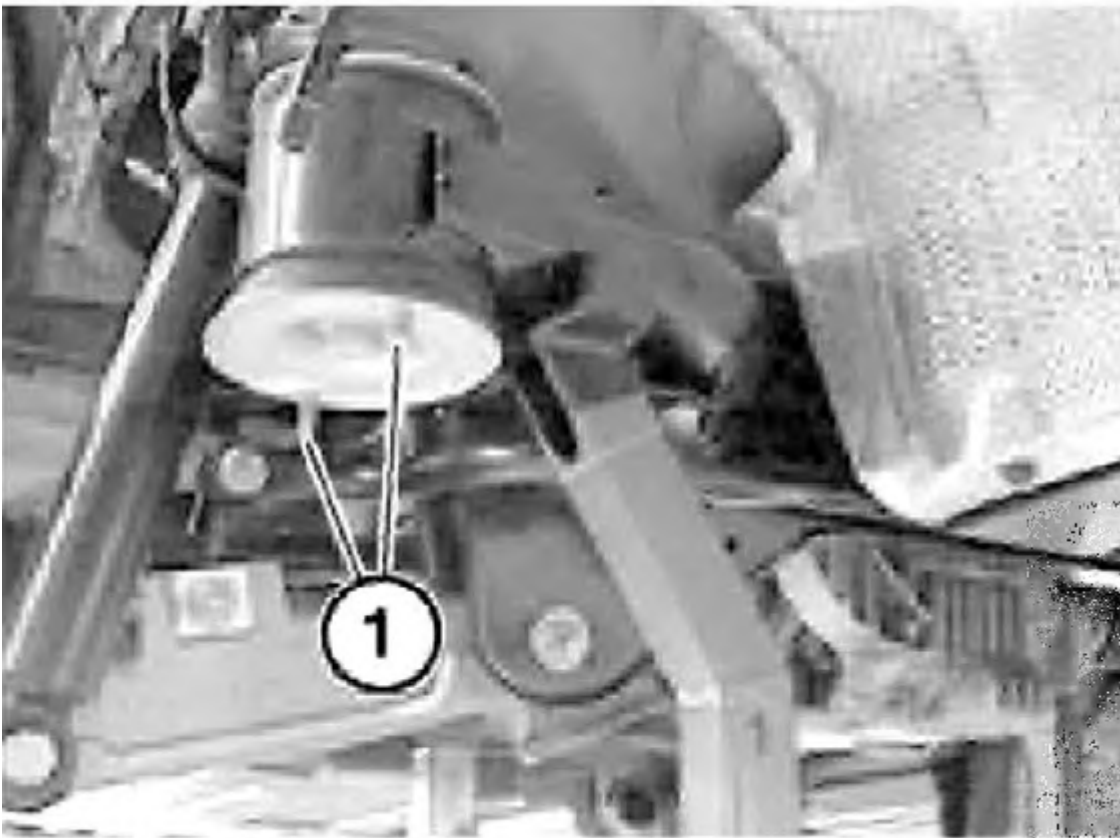
**CAUTION:** Replace axle shaft radial seal. Also, if an assembly ring is already fitted, it must be removed before the new sealing ring is inserted with the assembly ring.

1. Coat new sealing ring (1) with anti-friction agent and insert in groove. See **Fig. 14**.
2. Push on assembly ring (1) up to sealing ring. See **Fig. 15**.
3. Install front axle differential on the oil sump. The assembly ring is forced over the sealing ring and remains fitted. The assembly ring ensures that the sealing ring is not damaged when the front axle differential is installed on the engine oil sump.
4. Tighten axle differential screws to specification. See **TORQUE SPECIFICATIONS**.

5. Installation is reverse of removal.
6. When installing heater bulkhead, check rubber seals and replace if necessary. Coat rubber seals with rubber protection coating agent. Heater bulkhead is guided at sides by guide channels. Clean guide channels and coat with rubber protection coating agent.
7. There is no need to perform a front axle alignment check.

**CAUTION: Use only approved gear oil in front axle differential. Failure will result in serious damage to the differential.**

8. Open filler plug (1) and check fluid level in front axle differential. Fluid level should be to lower edge of filler plug. Replace sealing ring. See **Fig. 16**.
9. Tighten filler plug to specification. See **TORQUE SPECIFICATIONS**.



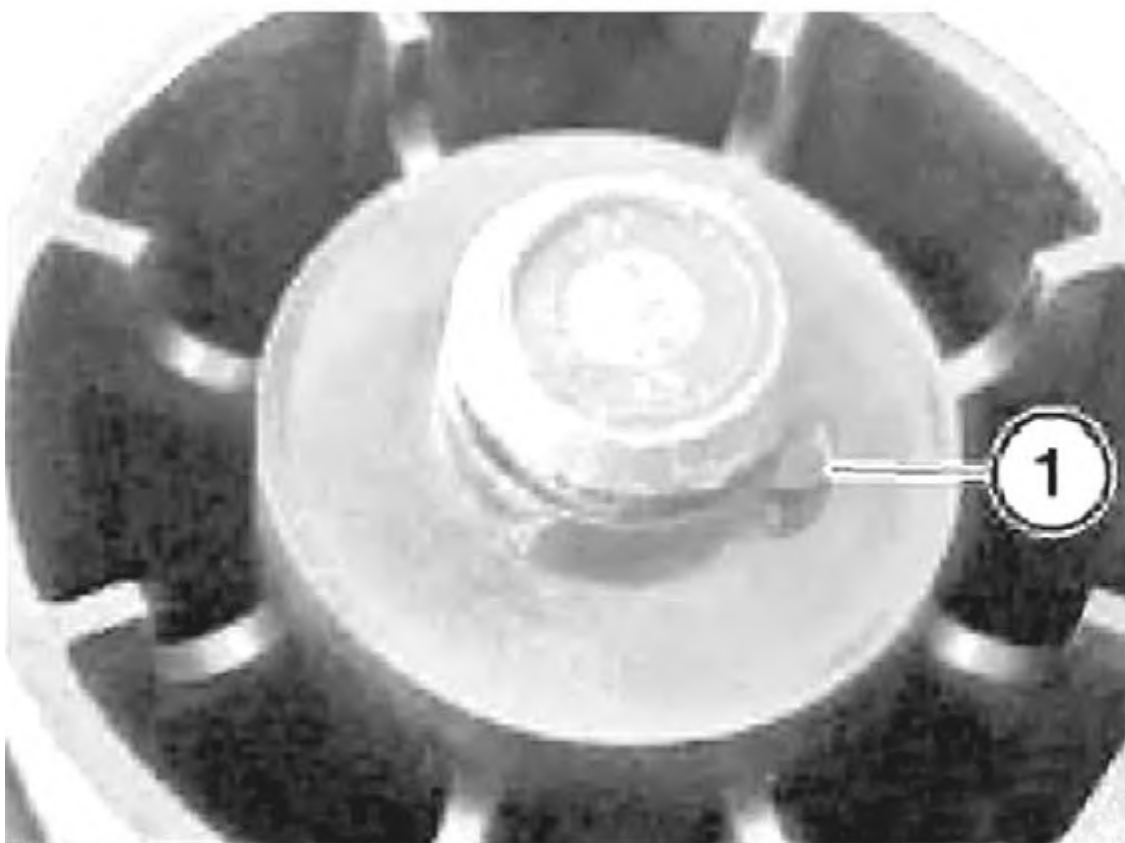
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**Fig. 14: Locating Sealing Ring**

Courtesy of BMW OF NORTH AMERICA, INC.

**2001 BMW X5**

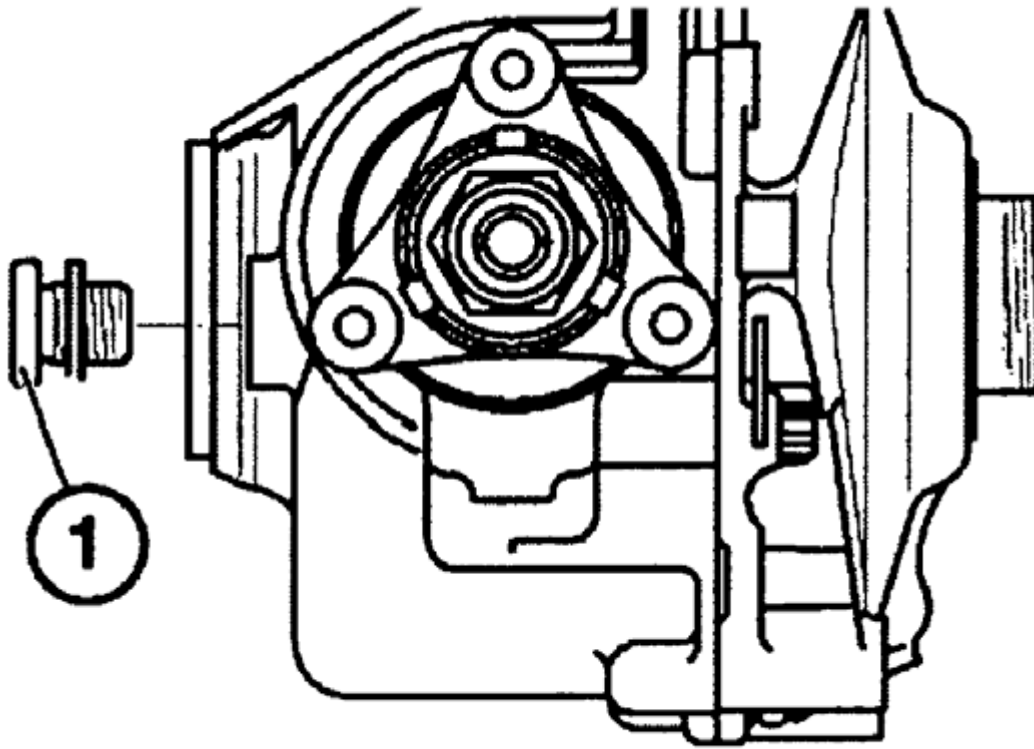
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**Fig. 15: Locating Assembly Ring**

**Courtesy of BMW OF NORTH AMERICA, INC.**



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**Fig. 16: Identifying Filler Plug**

Courtesy of BMW OF NORTH AMERICA, INC.

**FRONT DRIVE SHAFT****Removal & Installation**

**CAUTION:** Do not move vehicle with engine power once drive shaft has been removed.

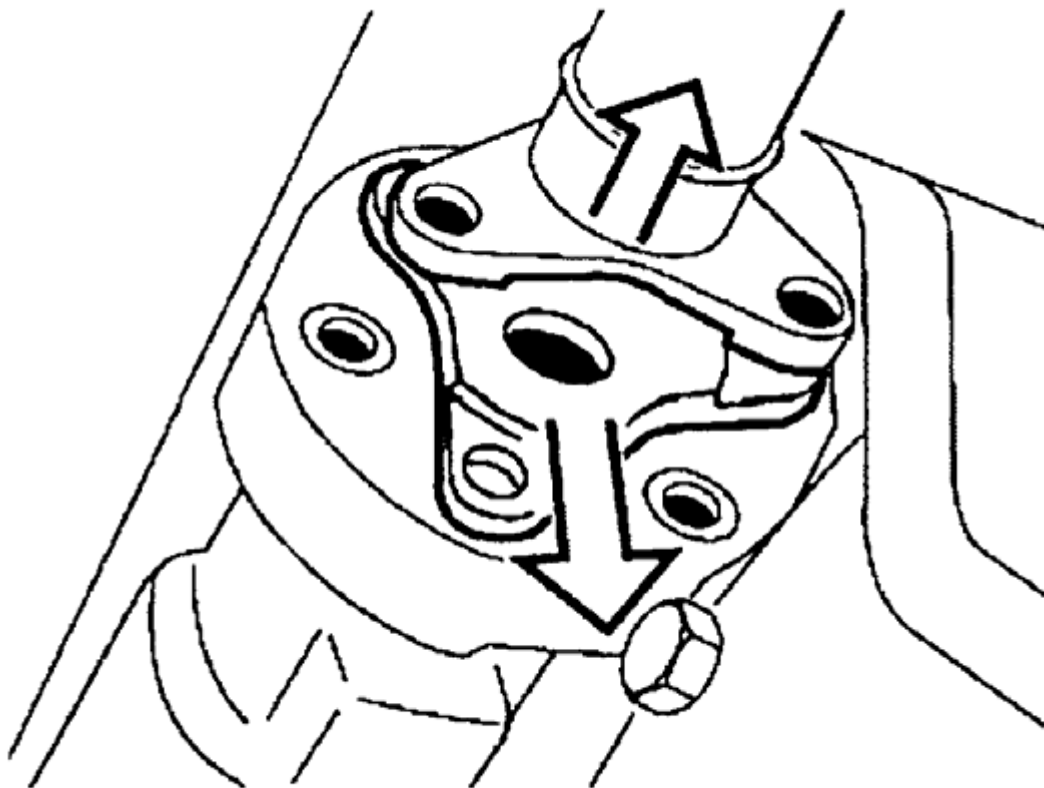
1. Unfasten screws. See **Fig. 17**.
2. Push drive shaft back. Remove flexible disk with centering flange. See **Fig. 18**.
3. Remove drive shaft from transfer case. See **Fig. 19**.
4. Check centering mount (1). See **Fig. 20**.
5. Replace centering mount if necessary. Grease centering mount.
6. Check sealing ring and replace if necessary. See **Fig. 21**.
7. Fit flexible disk in such a way that arrows point to flange arms. See **Fig. 22**.
8. Installation is reverse of removal. Tighten all screws to specification. See **TORQUE**

**SPECIFICATIONS.**



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**Fig. 17: Locating Front Drive Shaft Screws**  
Courtesy of BMW OF NORTH AMERICA, INC.



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**Fig. 18: Removing Flexible Disk**

Courtesy of BMW OF NORTH AMERICA, INC.

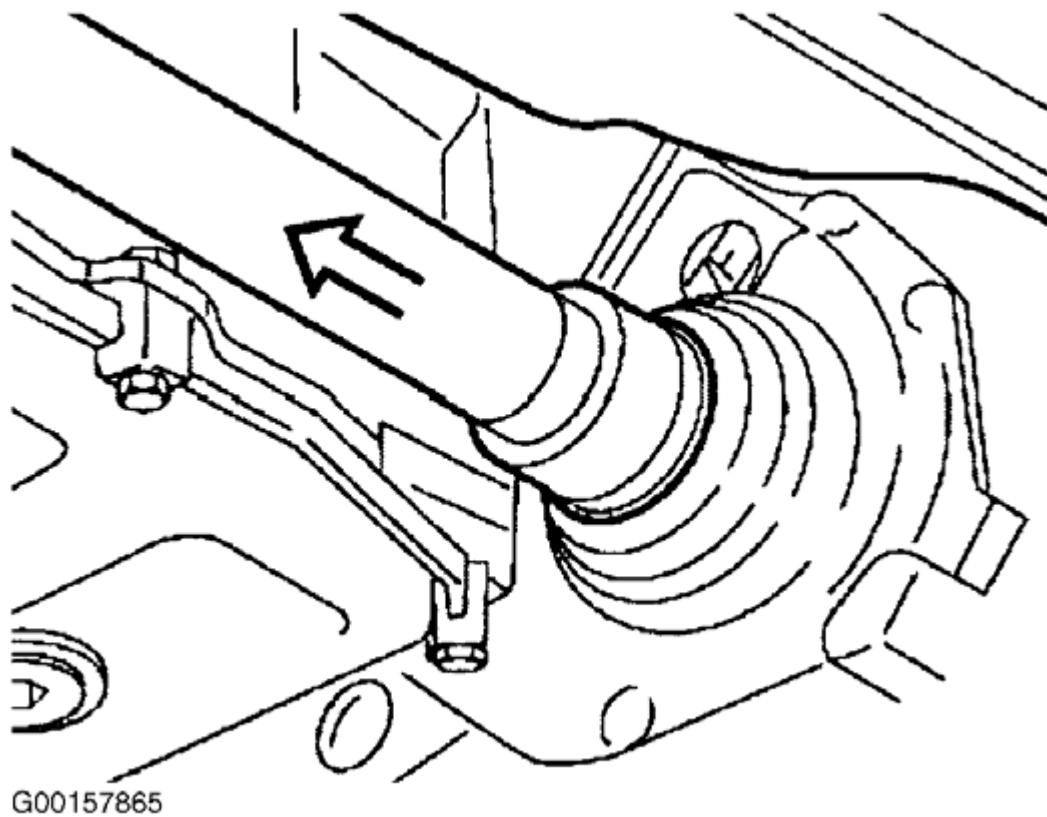
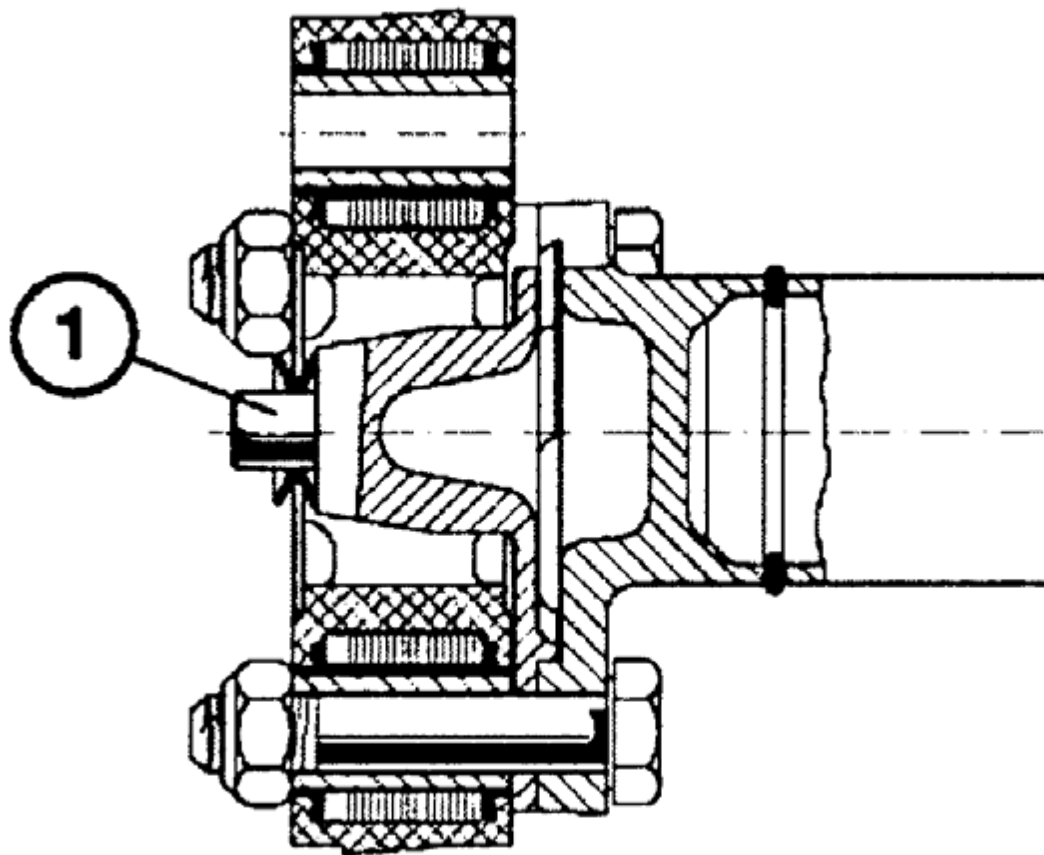
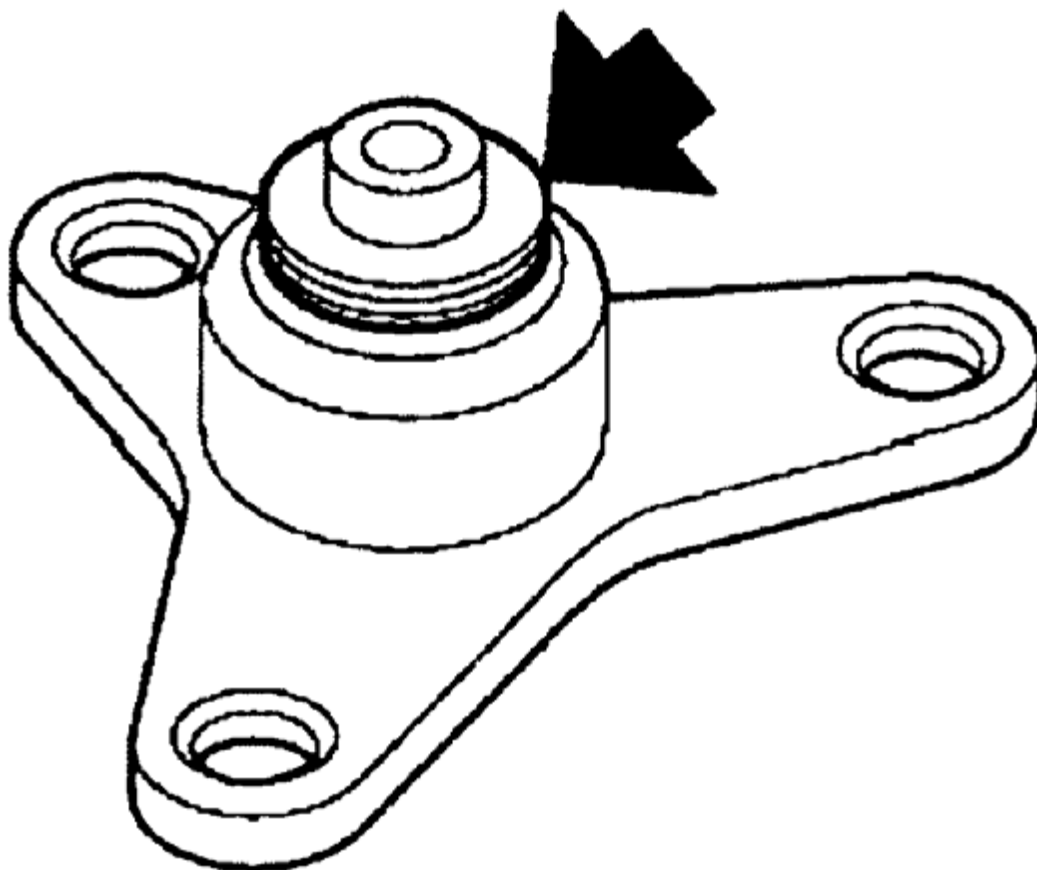


**Fig. 19: Removing Drive Shaft From Transfer Case**  
Courtesy of BMW OF NORTH AMERICA, INC.



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**Fig. 20: Locating Centering Mount**  
Courtesy of BMW OF NORTH AMERICA, INC.



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**Fig. 21: Locating Sealing Ring**

Courtesy of BMW OF NORTH AMERICA, INC.

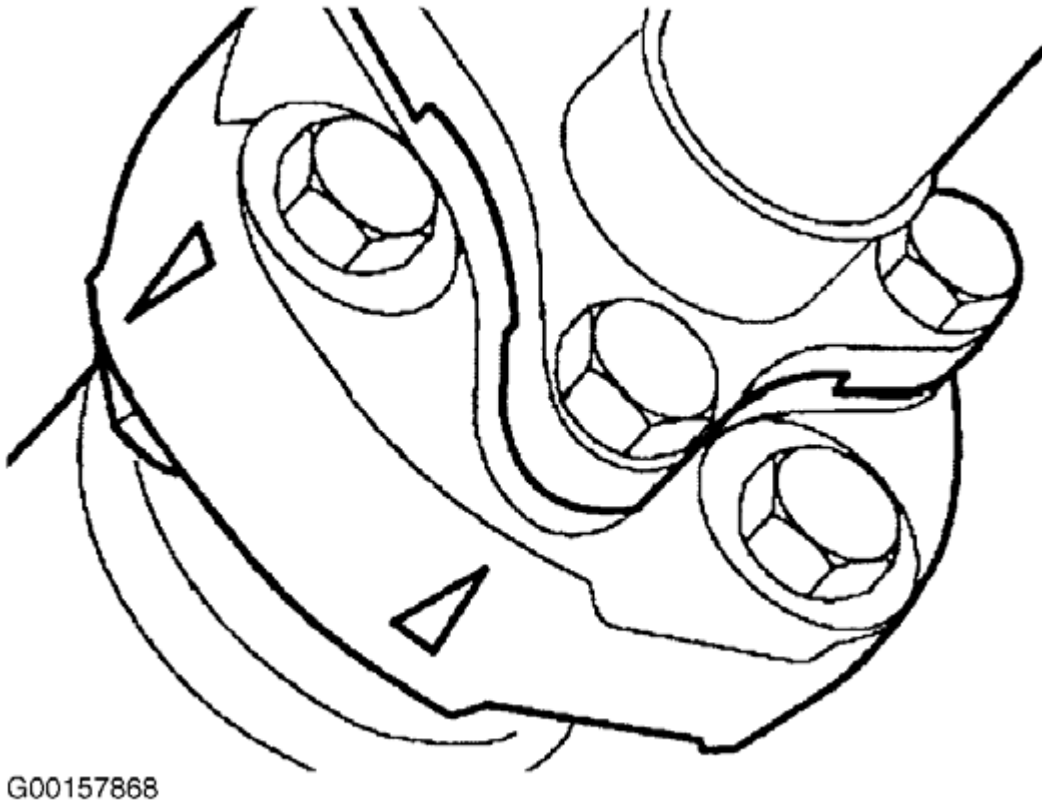


**Fig. 22: Fitting Flexible Disk**  
Courtesy of BMW OF NORTH AMERICA, INC.

## **RADIAL SEAL FOR DRIVE FLANGE**

### **Removal & Installation**

1. Remove front drive shaft. See **FRONT DRIVE SHAFT**.
2. Lift out retaining plate (1). Mark position of nut with respect to shaft with punch marks. See **Fig. 23**.
3. Brace drive flange with special tool (23 0 020) and release nut. See **Fig. 24**.
4. Pull drive flange off drive shaft with special tool (33 1 150). See **Fig. 25**.
5. Use a screwdriver (2) to lever radial seal (1) out of front axle differential housing. See **Fig. 26**.
6. Coat sealing lips of new radial seal and drive firmly home with special tool (31 5 130). See **Fig. 27**.

**CAUTION: Do not tighten nut beyond punch marks. This would damage clamping sleeve.**

7. Clean drive flange and attach. Tighten down nut until punch marks on nut and shaft match up. Install new

retaining plate. See **Fig. 23**.

8. Install front drive shaft. See **FRONT DRIVE SHAFT**.

**CAUTION:** Use only approved gear oil in front axle differential. Failure to comply will result in serious damage to the differential. See **FLUID TYPE** under LUBRICATION.

9. Check front axle differential fluid level. Fluid level should be to lower edge of filler plug. Replace sealing ring. See **Fig. 16**. Tighten filler plug to specification. See **TORQUE SPECIFICATIONS**.

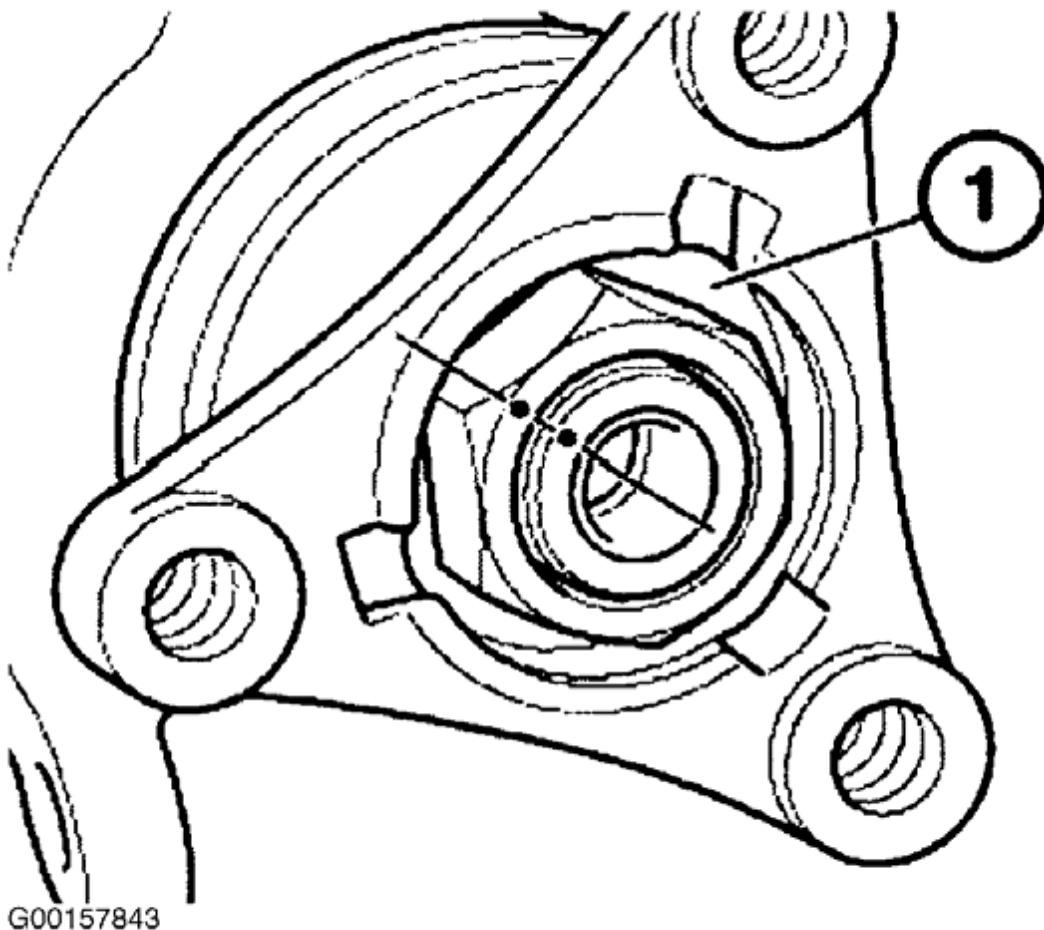


**Fig. 23: Lifting Out Retaining Plate**  
Courtesy of BMW OF NORTH AMERICA, INC.

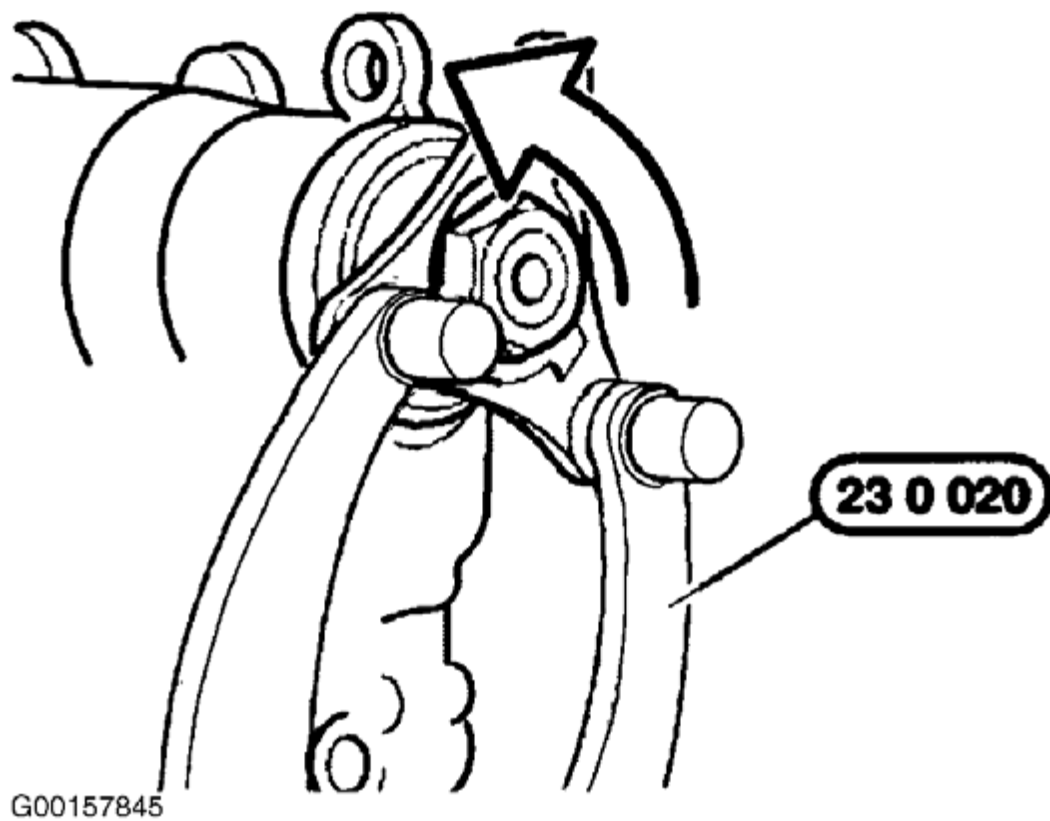


**Fig. 24: Bracing Drive Flange**

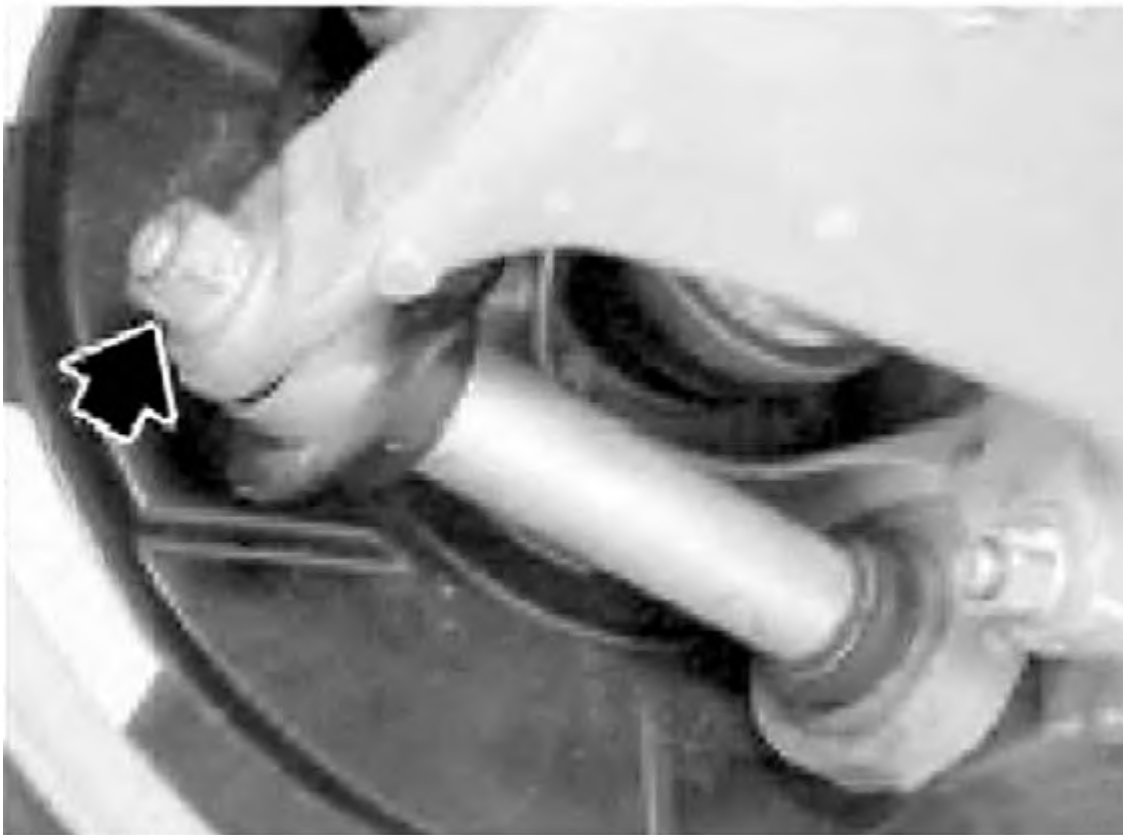
Courtesy of BMW OF NORTH AMERICA, INC.



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**Fig. 25: Pulling Off Drive Flange**

**Courtesy of BMW OF NORTH AMERICA, INC.**



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**Fig. 26: Removing Radial Seal**

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**Fig. 27: Installing Radial Seal**

Courtesy of BMW OF NORTH AMERICA, INC.

## OVERHAUL

### DIFFERENTIAL ASSEMBLY

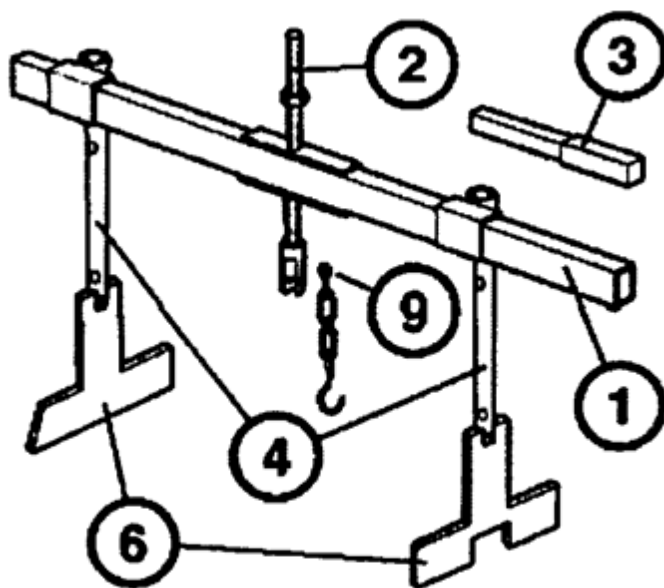
Manufacturer recommends replacing differential assembly as a unit.

## TORQUE SPECIFICATIONS

### TORQUE SPECIFICATIONS

| Application                               | Ft. Lbs. (N.m)   |
|-------------------------------------------|------------------|
| Drive Shaft Bolts                         |                  |
| Flexible Disk To Front Axle Differential  | 44 (60)          |
| Flexible Disk On Drive Shaft              | 47 (64)          |
| Filler Plug                               | 48 (65)          |
| Front Axle Differential To Engine Oil Pan | 33 (45)          |
| Wheel Lug Bolt                            | 96-111 (130-150) |

## SPECIAL TOOLS

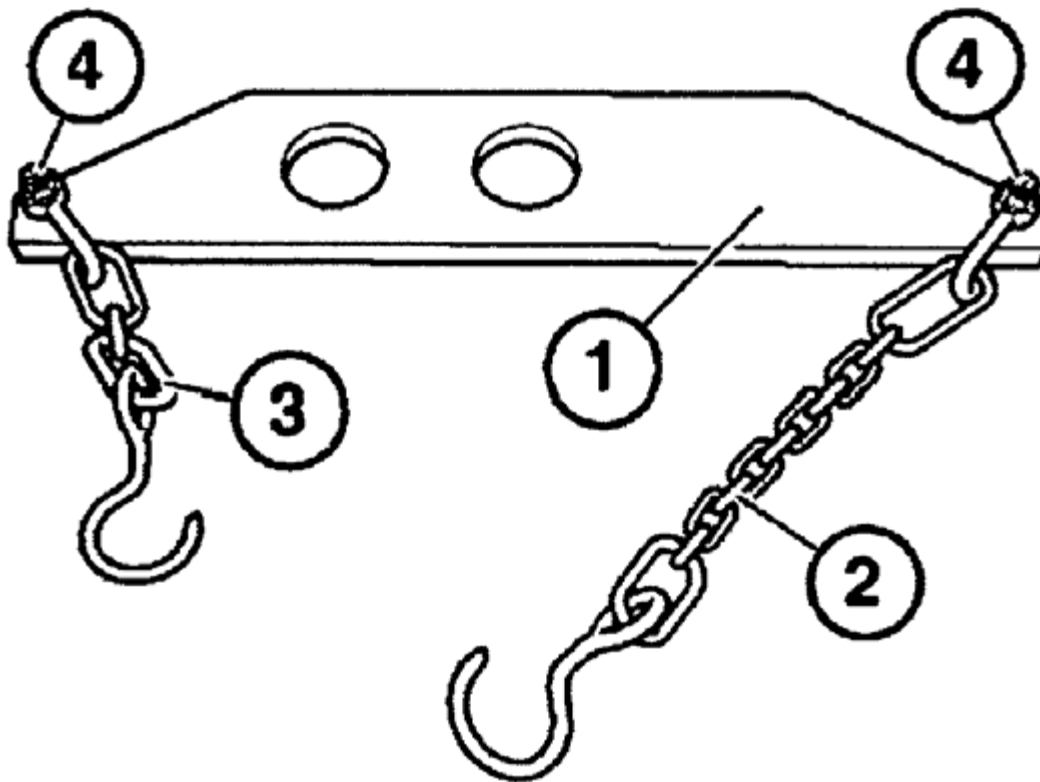


Consisting of:

- 1 = 00 0 201 Support bridge
- 2 = 00 0 202 Spindle with hook
- 3 = 00 0 203 Extension piece  
Note: For extending delivered support bridge 00 0 201 - model series: E65 - is integrated in support bridge
- 4 = 00 0 204 Adapter support (2 x)
- 5 = 00 0 205 Extension piece  
Note: Model series: R50, R53
- 6 = 00 0 206 Support foot (2 x)  
Note: Model series: E30, E31, E32, E34, E36, Z3 only 6-cylinder engines
- 7 = 00 0 207 Support foot (2 x)  
Note: Model: Z3 / only 4-cylinder engines
- 8 = 00 0 208 Support foot (2 x) with supports (4 x)  
Note: Model series: E38, E39, E46, E65
- 9 = 00 0 209 Chain with hook  
Note: Version as 11 0 003

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**Fig. 28: Identifying Cross Member (00 0 200)**  
Courtesy of BMW OF NORTH AMERICA, INC.

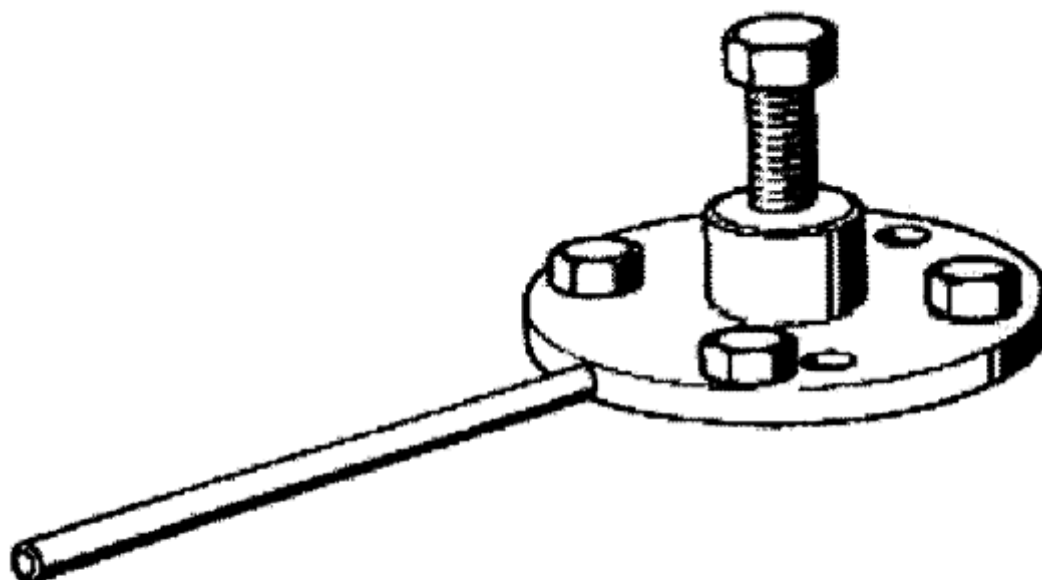


- |   |            |              |
|---|------------|--------------|
| 1 | = 11 0 001 | Lifting bar  |
| 2 | = 11 0 002 | Chain, long  |
| 3 | = 11 0 003 | Chain, short |
| 4 | = 11 0 009 | Shackle (2)  |

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**Fig. 29: Identifying Engine Lifter (11 0 000)**

Courtesy of BMW OF NORTH AMERICA, INC.



1 = 33 1 151

Spindle

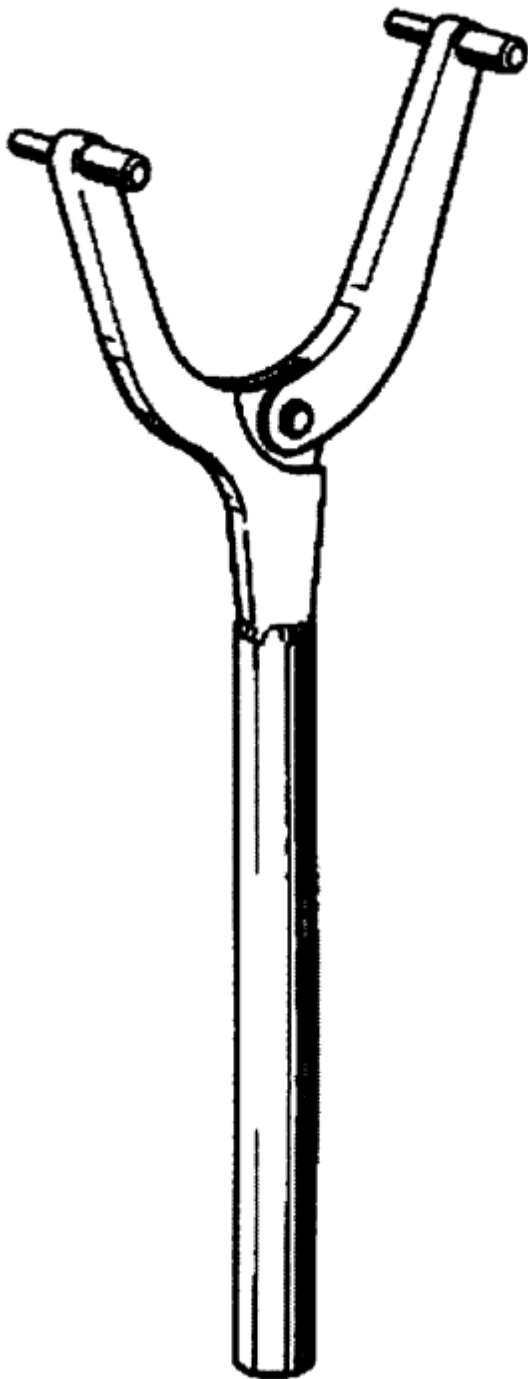
2 = 33 1 152

Drift

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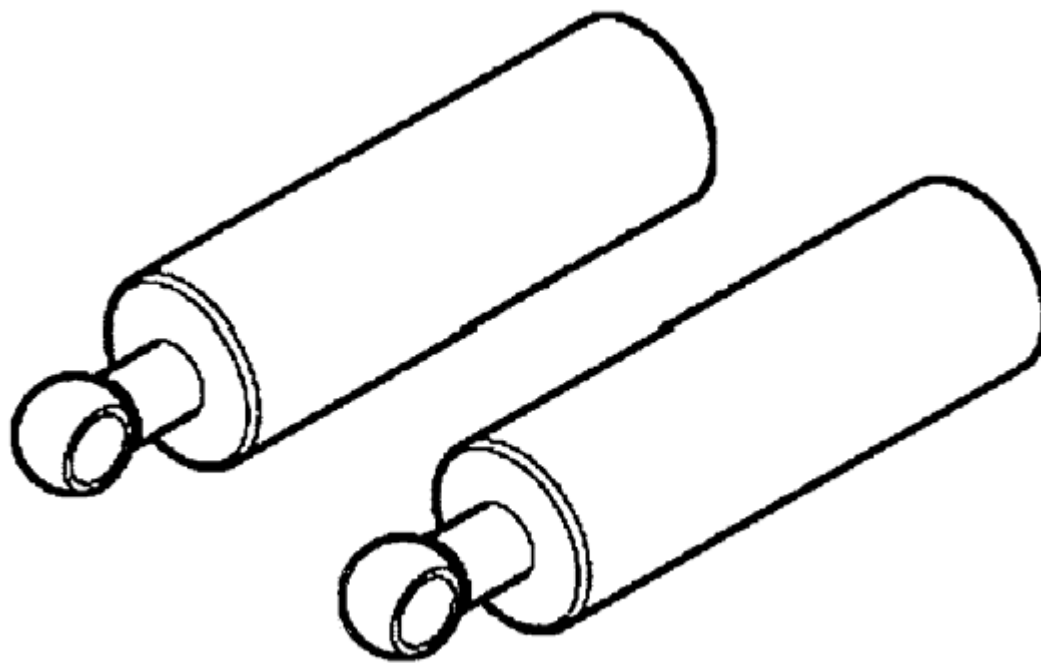
**Fig. 30: Identifying Fixture (33 1 150)**

Courtesy of BMW OF NORTH AMERICA, INC.



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**Fig. 31: Identifying Holder (23 0 020)**  
Courtesy of BMW OF NORTH AMERICA, INC.



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**Fig. 32: Identifying Hood Stay (51 2 170)**  
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