

## 2003 BMW X5 44i

2001-05 MANUAL TRANSMISSIONS Servicing - GS6-37BZ & S5D 280Z/S5D 320Z, 4WD

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## APPLICATION

### MANUAL TRANSMISSION APPLICATION

Application	Transmission Model
X5 (E53)	
3.0L (2001-05)	ZF Type H

## LUBRICATION

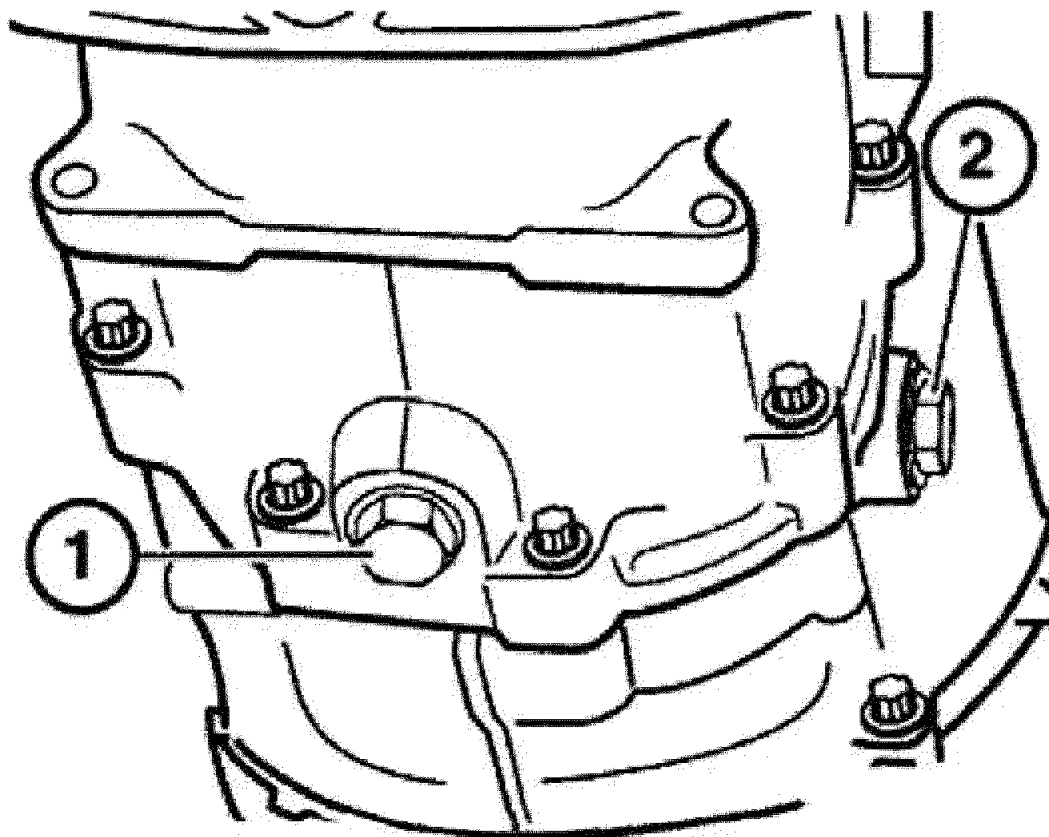
### SERVICE INTERVALS

Inspect fluid level when vehicle is serviced. See CHECKING FLUID LEVEL . DO NOT drain fluid, transmission has lifetime fluid.

### CHECKING FLUID LEVEL

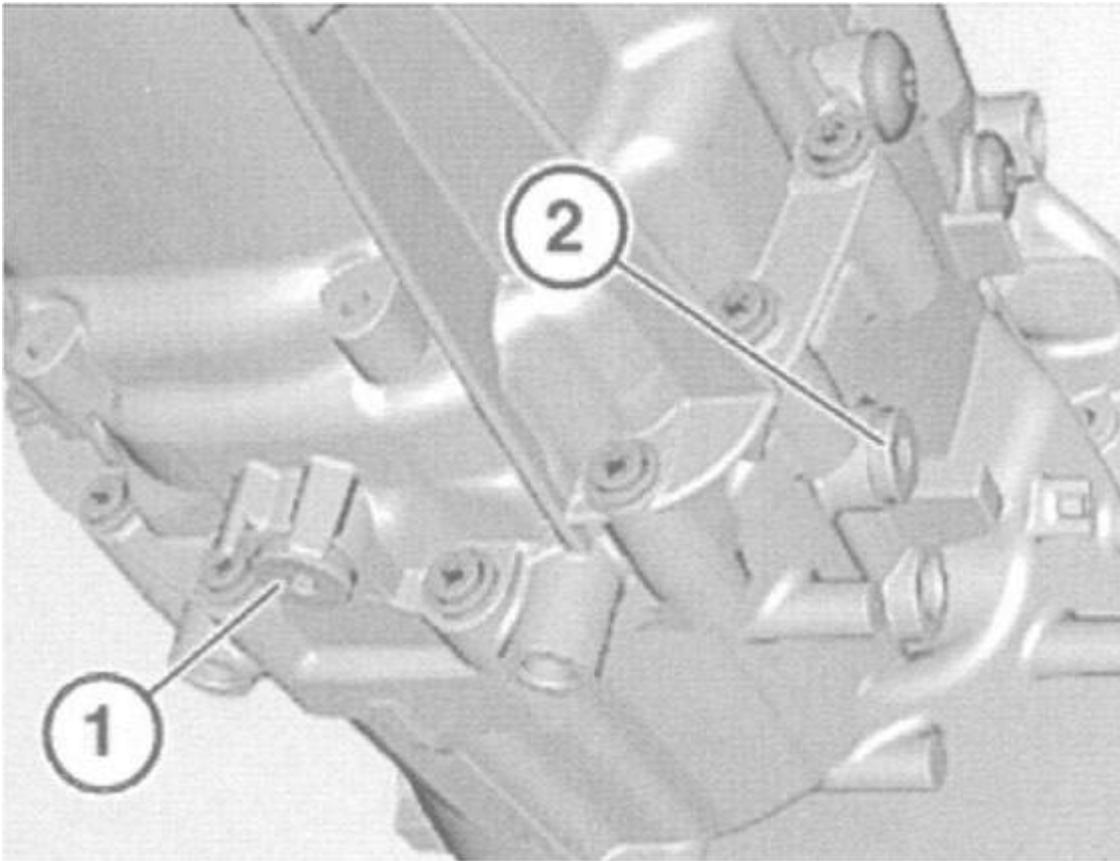
**NOTE:** Numbers in text refer to numbers in figure.

Check lubricant at fill hole (2). See Fig. 1 or Fig. 2 . Lubricant should be at bottom of filler plug hole. To install filler plug, tighten to specification. See TORQUE SPECIFICATIONS .



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**Fig. 1: Locating Oil Drain Plug & Filler Plug**  
Courtesy of BMW OF NORTH AMERICA, INC.



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**Fig. 2: Locating Transmission Oil Drain & Filler Plug**  
Courtesy of BMW OF NORTH AMERICA, INC.

## **RECOMMENDED FLUID**

For model years 1998-2003, all manual transmissions are filled with Esso/Exxon MTF-LT-1 lifetime fluid. A Yellow label with the letters MTF-LT-1 is located next to the oil filler plug. Except for models specified under **SERVICE INTERVALS**, no oil change is required for the service life of the transmission.

From model year 2004, some manual transmissions are filled with Castrol MTF-LT-2 lifetime fluid. This fluid has the same properties as the MTF-LT-1 fluid. The MTF-LT-1 fluid may be mixed or substituted for the MTF-LT-2 manual transmission fluid.

## **FLUID CAPACITIES**

Fluid capacity is approximately 1.4 qts. (1.3L). Transmission should be filled to bottom of filler plug hole.

## **ADJUSTMENTS**

## **GEARSHIFT LINKAGE**

No external adjustment is necessary.

## **REMOVAL & INSTALLATION**

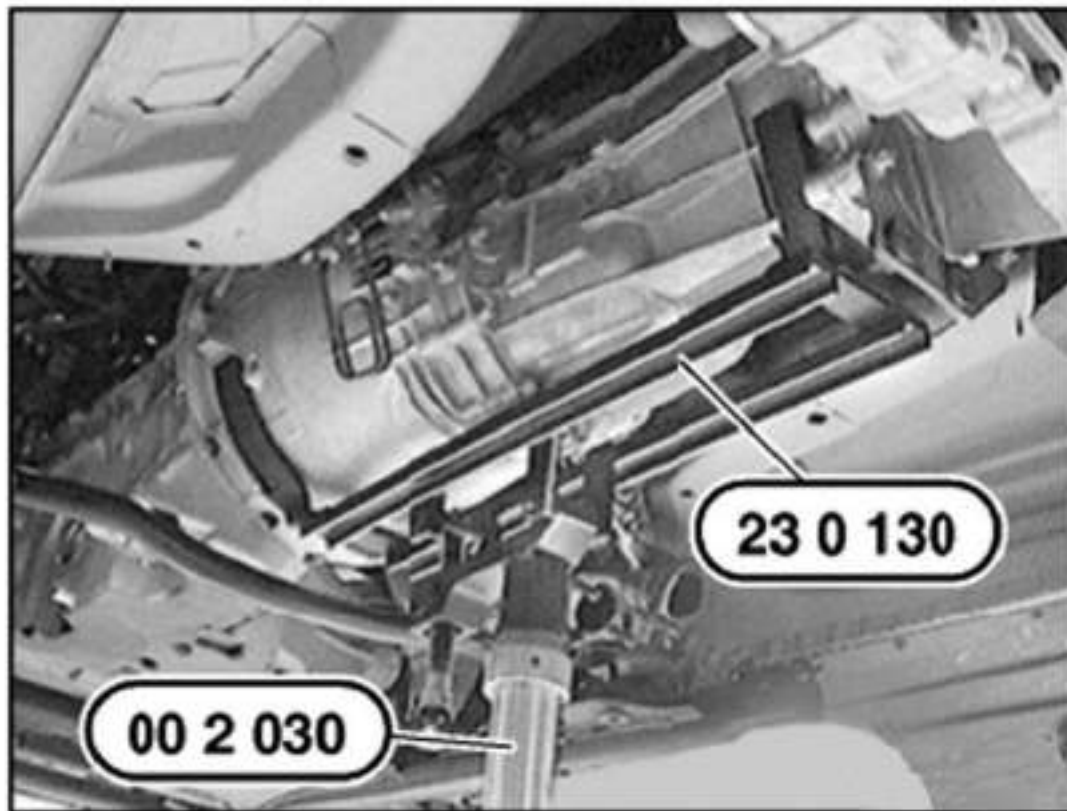
### **REPLACING RADIAL SEAL FOR OUTPUT FLANGE (S5D 280Z/S5D 320Z, 4WD)**

**NOTE:** Numbers in text refer to numbers in figure.

**CAUTION:** After completion of work, check transmission oil level. See **CHECKING FLUID LEVEL** . Use only approved transmission fluid. See **RECOMMENDED FLUID** . Failure to comply with this instruction will result in serious damage to the transmission.

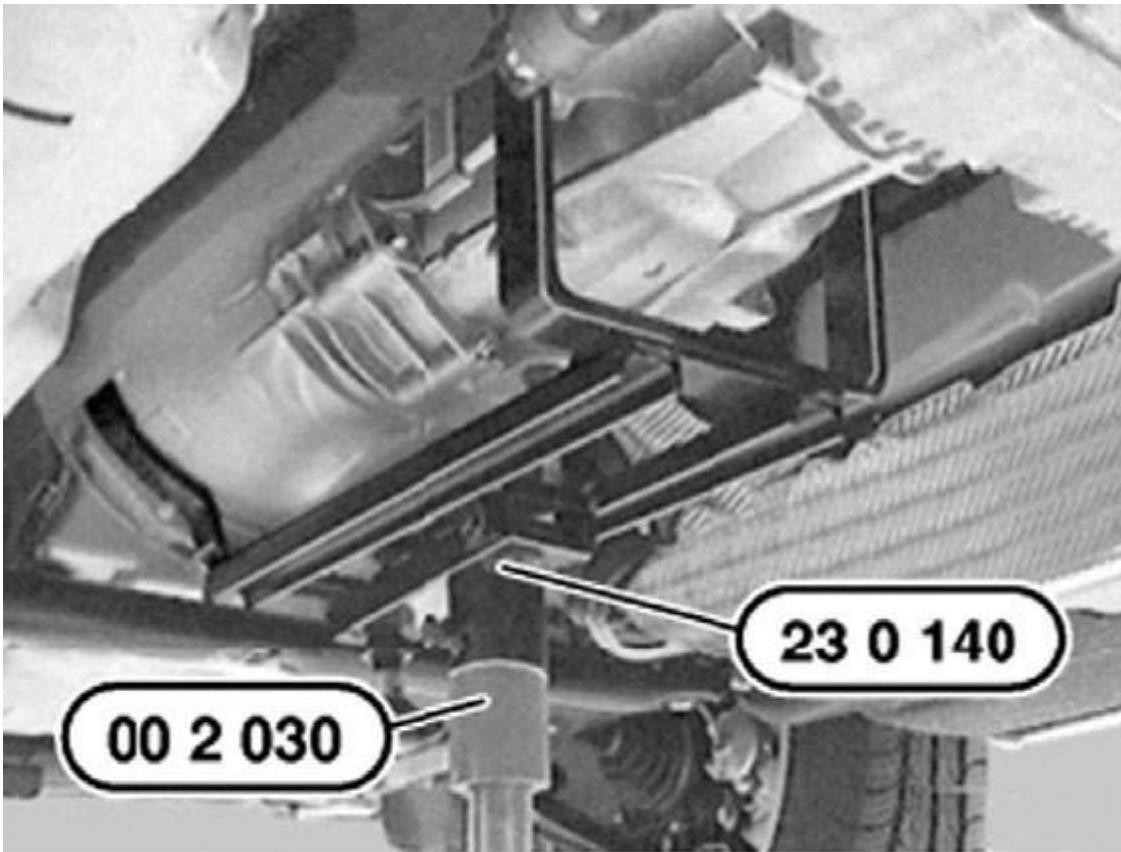
Unflange propeller shaft from transmission and tie up to one side. See REMOVING AND INSTALLING COMPLETE PROPELLER SHAFT.

S5D 280Z transmission in E53: support transmission with Special Tools (00 2 030) and (23 0 130). See **Fig. 3** .  
S5D 320Z transmission in E46/16: support transmission with Special Tools (00 2 030) and (23 0 140). See **Fig. 4** .



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**Fig. 3: Supporting Transmission & Transfer Case (E53)**  
Courtesy of BMW OF NORTH AMERICA, INC.

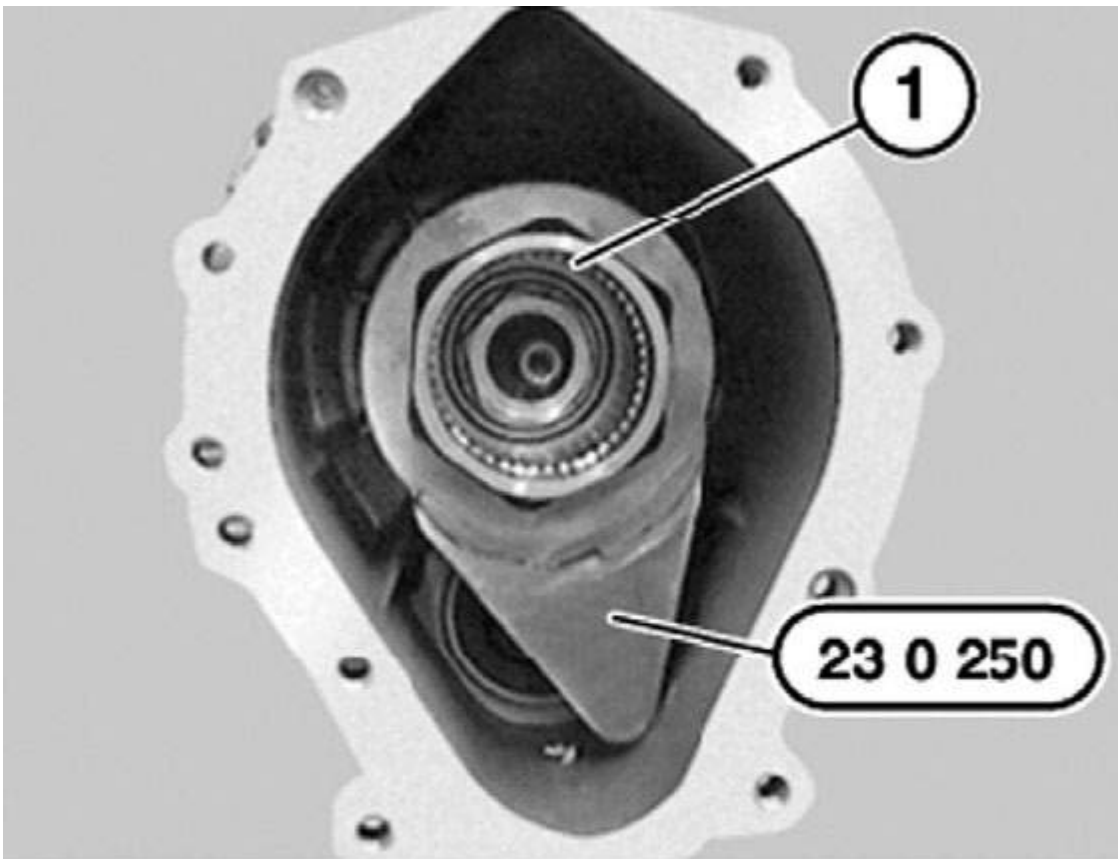


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**Fig. 4: Supporting Transmission (E46/16)**  
Courtesy of BMW OF NORTH AMERICA, INC.

Remove transfer case. See REMOVING AND INSTALLING TRANSFER CASE (MANUAL TRANSMISSION).

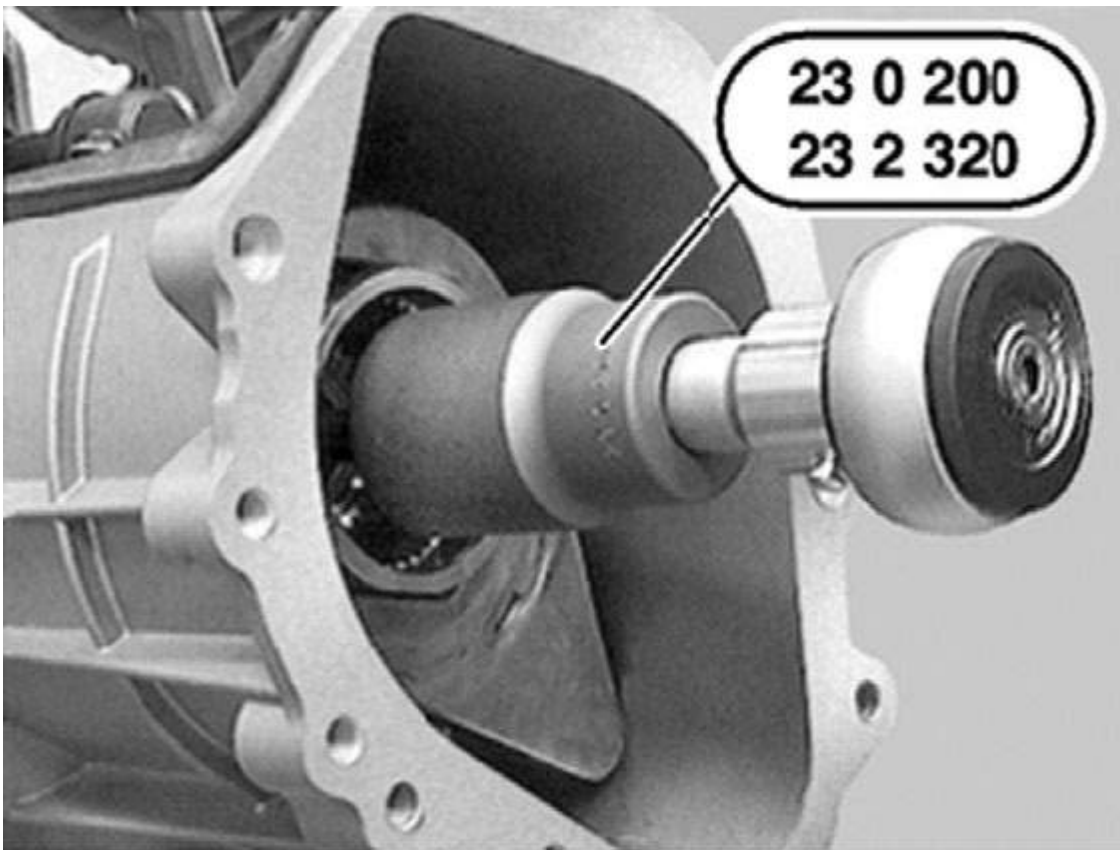
Fit Special Tool (23 0 250) on output flange (1). See **Fig. 5** .



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**Fig. 5: Fitting Special Tool On Output Flange**  
Courtesy of BMW OF NORTH AMERICA, INC.

Release collar nut with Special Tool (23 2 320). See **Fig. 6** . Upon installation, insert collar nut with Loctite 243. Tighten to specification. See **TORQUE SPECIFICATIONS** .



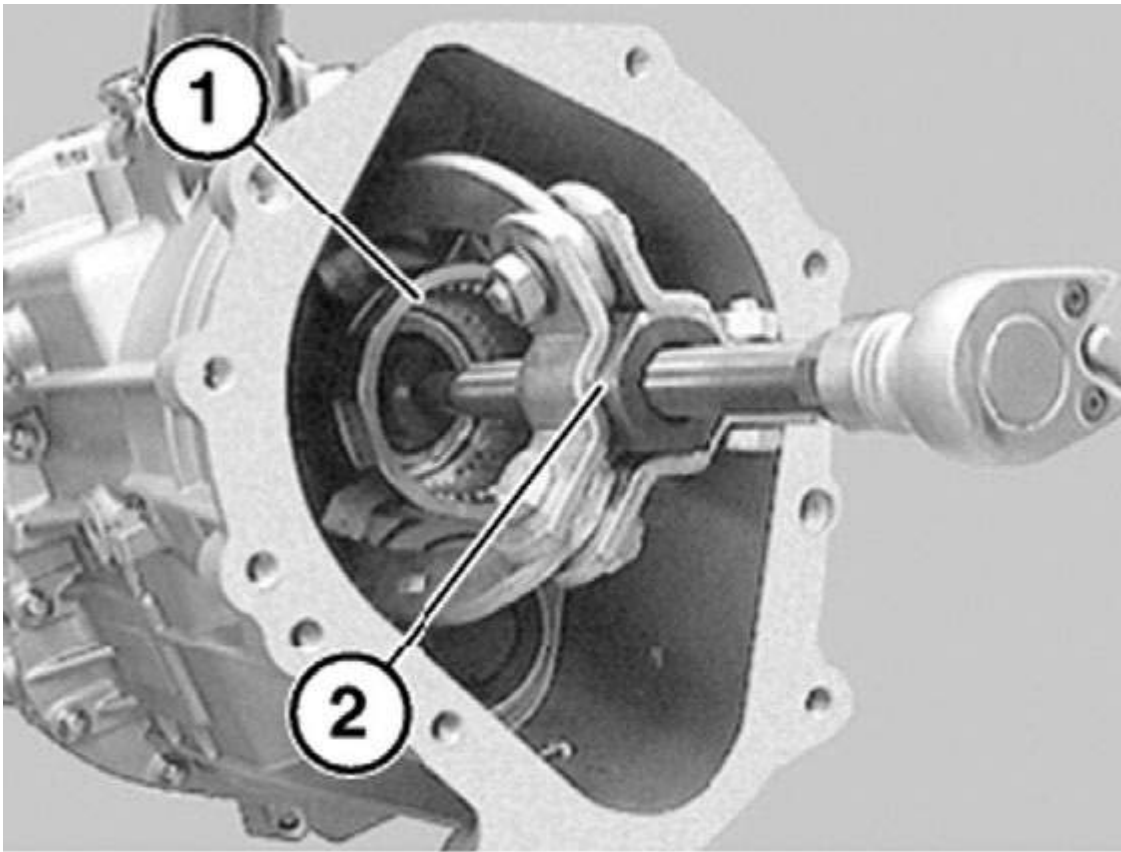
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**Fig. 6: Releasing Collar Nut**

Courtesy of BMW OF NORTH AMERICA, INC.

Detach output flange (1) with three-claw extractor tool (2) from output shaft. See **Fig. 7** . Upon installation, heat output flange (1) to approx. 80°C and push onto output shaft.

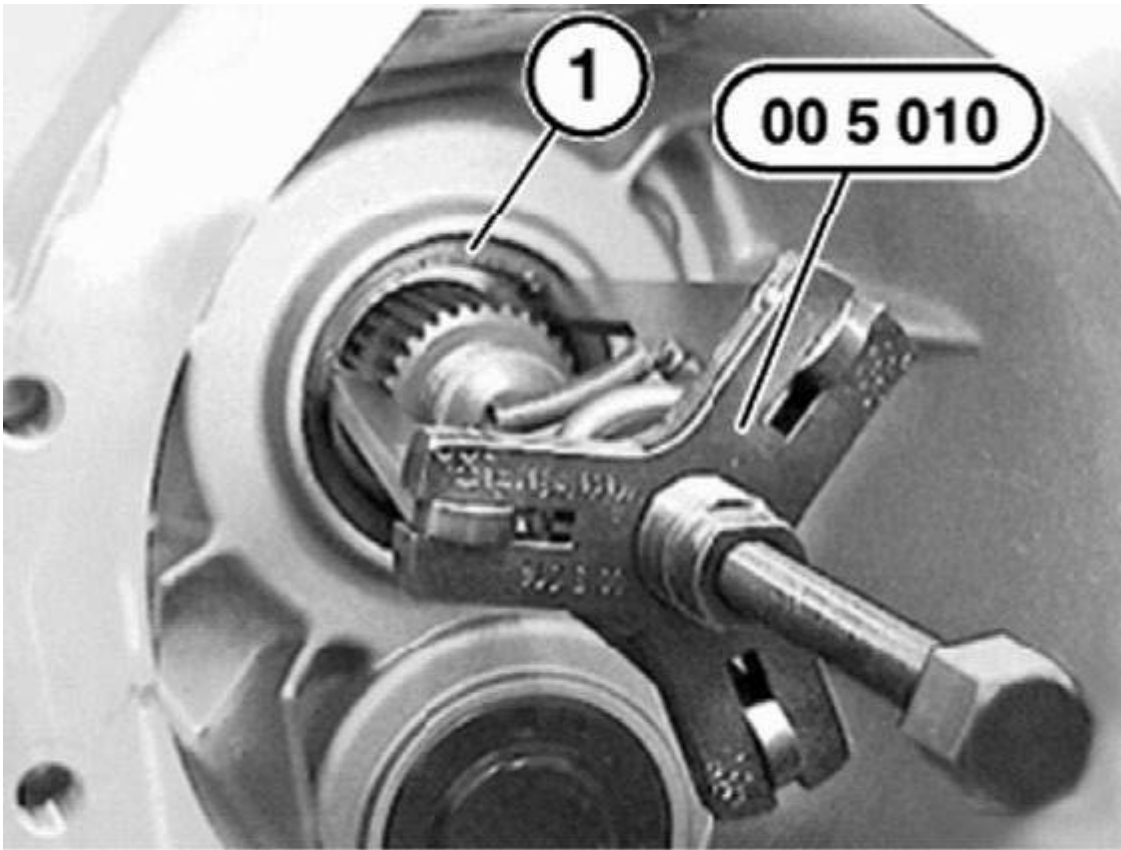




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**Fig. 7: Detaching Output Flange**  
Courtesy of BMW OF NORTH AMERICA, INC.

Remove radial seal (1) with Special Tool (00 5 010). See **Fig. 8** .

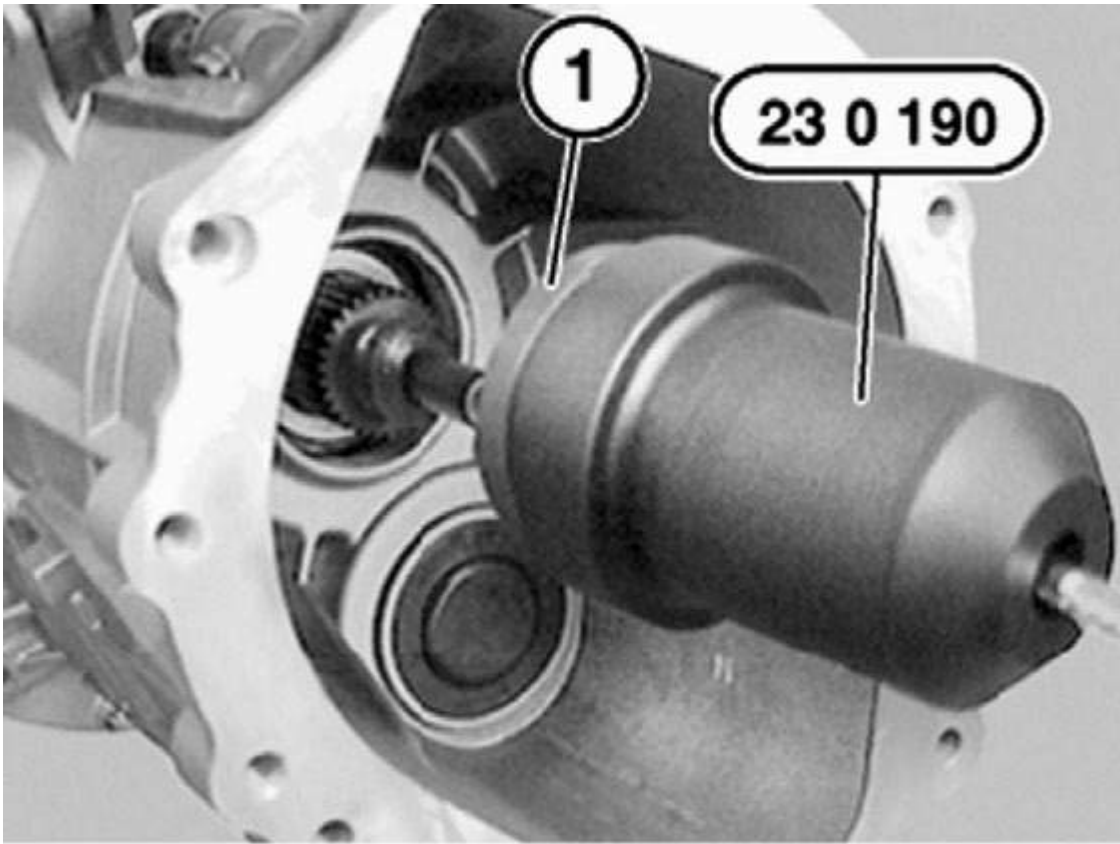


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**Fig. 8: Removing Radial Seal**

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

Installation: coat sealing lips of new radial seal (1) with transmission oil. See **Fig. 9** . Drive in radial seal (1) with Special Tool (23 0 190) and plastic hammer until flush.



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**Fig. 9: Installing Radial Seal**

Courtesy of BMW OF NORTH AMERICA, INC.

#### REPLACING RADIAL SEAL FOR SELECTOR SHAFT (GS6-37BZ)

**NOTE:** Numbers in text refer to numbers in figure.

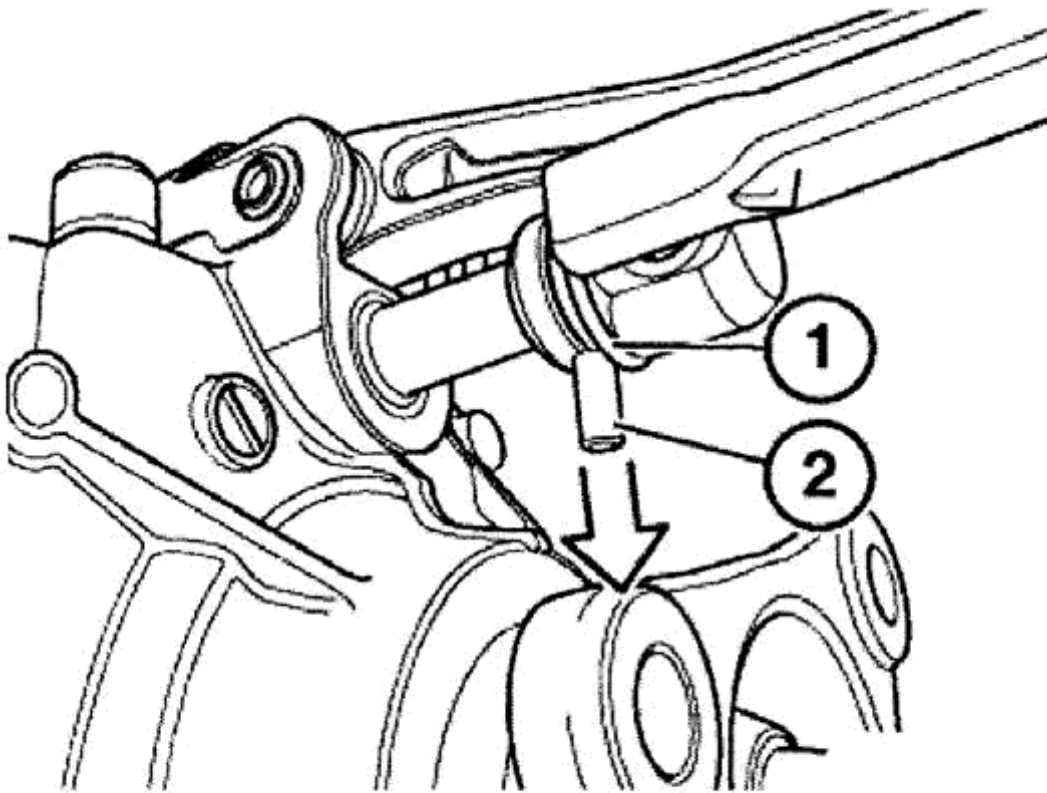
**CAUTION:** After completion of work, check transmission oil level. See CHECKING FLUID LEVEL . Use only approved transmission fluid. See RECOMMENDED FLUID . Failure to comply with this instruction will result in serious damage to the transmission.

Remove transfer case. See REMOVING AND INSTALLING TRANSFER CASE (MANUAL TRANSMISSION).

Shift transmission into 2nd gear.

Lever retaining ring (1) out of groove with a small screwdriver. See Fig. 10 . Slide locking ring (1) towards

rear. Drive out cylinder pin (2).

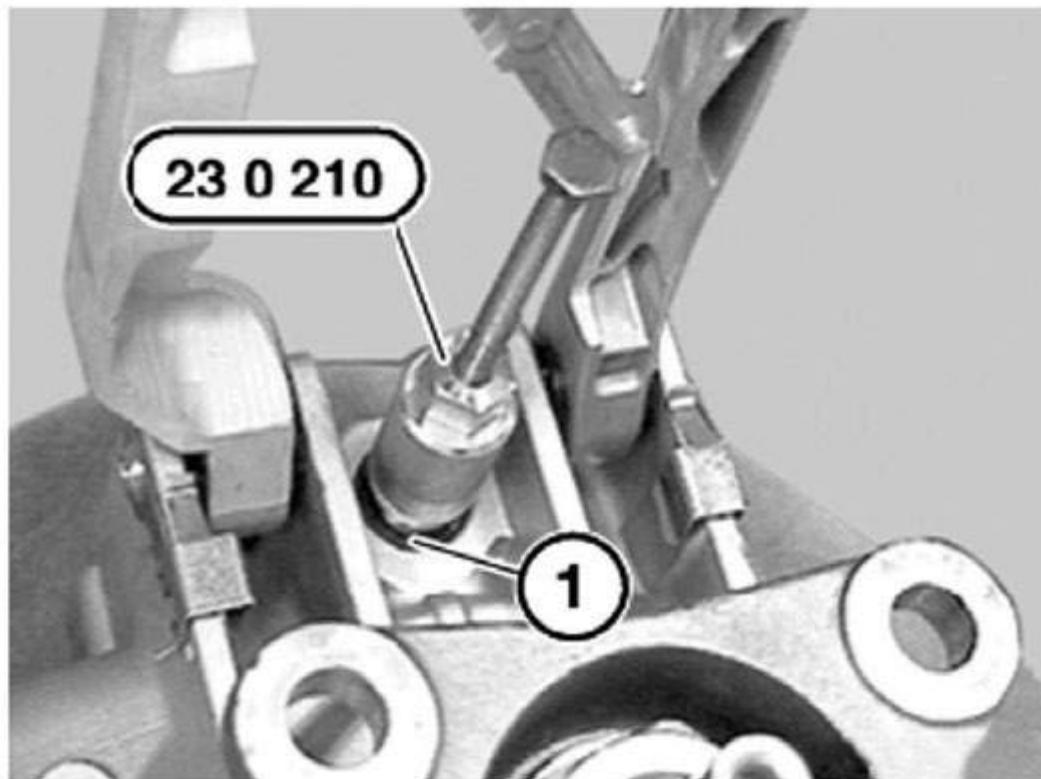


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**Fig. 10: Removing Retaining Ring**

Courtesy of BMW OF NORTH AMERICA, INC.

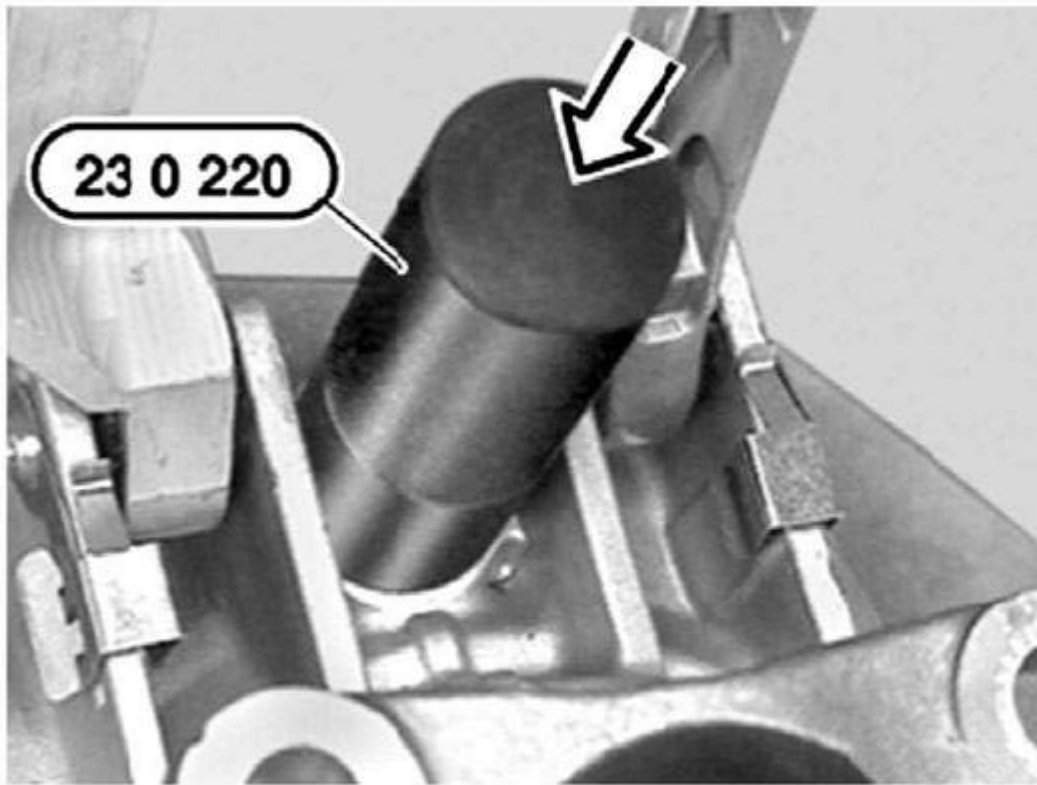
Screw in Special Tool (23 0 210) until it is firmly connected with radial seal (1). See **Fig. 11** . Pull out radial seal with Special Tool (23 0 210).



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**Fig. 11: Pulling Out Radial Seal For Selector Shaft**  
Courtesy of BMW OF NORTH AMERICA, INC.

Coat sealing lips of radial seal and selector shaft with gear oil. Drive in radial seal with Special Tool (23 0 220). See **Fig. 12** .



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**Fig. 12: Driving In Radial Seal For Selector Shaft**  
 Courtesy of BMW OF NORTH AMERICA, INC.

## TORQUE SPECIFICATIONS

### TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Drain & Fill Plug	
S5DZ	37 (50)
GS6-37BZ/DZ	
M12x1.5 Thread	18 (25)
M18x1.5 Hexagon Socket	26 (35)
Output Flange <sup>(1)</sup>	
S5D 280Z/S5D 320Z	
Step 1	125 (170)
Step 2	Release
Step 3	96 (130)
GS6-37BZ/GS6-17BG	

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Step 1	125 (170)
Step 2	Release
Step 3	88 (120)
(1) Collar nut installed with bolt cement.	