

2007-08 TRANSMISSION**Transfer Box - Repair - X5****00 TRANSFER CASE, GENERAL****00 DANGER OF POISONING IF OIL IS INGESTED/ABSORBED THROUGH THE SKIN****Danger of poisoning!**

Ingesting oil or absorbing through the skin may cause poisoning!

Possible symptoms are:

- Headaches
- Dizziness
- Stomach aches
- Vomiting
- Diarrhoea
- Cramps/fits
- Unconsciousness

Protective measures/rules of conduct:

- Pour oil only into appropriately marked containers
- Do not pour oil into drinking vessels (drinks bottles, glasses, cups or mugs)
- Observe country-specific safety regulations

First aid measures:

- Do not induce vomiting.

If the person affected is still conscious, he/she must rinse out their mouth with water, drink plenty of water and consult a doctor immediately.

If the person affected is unconscious, do not administer anything by mouth, place the person in the recovery position and seek immediate medical attention.

00 RISK OF INJURY IF OIL COMES INTO CONTACT WITH EYES AND SKIN**Danger of injury!**

Contact with eyes or skin may result in injury!

Possible symptoms are:

- Impaired sight
- Irritation of the eyes
- Reddening of the skin
- Rough and cracked skin

Protective measures/rules of conduct:

- Wear protective goggles
- Wear oil-resistant protective gloves
- Observe country-specific safety regulations

First aid measures:

- Eye contact: Rinse eyes immediately with plenty of water for at least 15 minutes; if available, use an eye-rinsing bottle. If irritation of the eyes persists, consult a doctor.
- Skin contact: Wash off with soap and water immediately. If irritation persists, consult a doctor.

NOTE: Do not use solvents/thinners.

00 SAFETY INSTRUCTIONS FOR HANDLING OIL

WARNING: Danger of poisoning. See 00 DANGER OF POISONING IF OIL IS INGESTED/ABSORBED THROUGH THE SKIN if oil is ingested/absorbed through the skin!
Risk of injury. See 00 RISK OF INJURY IF OIL COMES INTO CONTACT WITH EYES AND SKIN if oil comes into contact with eyes and skin!

Recycling:

Observe country-specific waste-disposal regulations.

Measures if oil is unintentionally released:

- Personal precautionary measures: Danger of slipping! Keep non-involved persons away from the work area. Wear personal protective clothing/equipment.
- Environmental protection measures: Prevent oil from draining into drain channels, sewerage systems, pits, cellars, water and the ground.
- Limiting spread: Use oil blocks to prevent the surface spread of oil.
- Cleaning procedure: Bind and dispose of escaped oil with nonflammable absorbents.

NOTE: Do not flush oil away with water or aqueous cleaning agents.

27 00 ... REPLENISHING /CHANGING TRANSFER CASE OIL (ATC 700)

IMPORTANT: Use only the approved gear oil in the transfer case.

Failure to comply with this requirement will result in serious damage to the transfer case!

NOTE: Only change the oil when the transfer case is at normal operating temperature.

Necessary preliminary tasks:

- Remove underbody protection. See **51 47 491 REMOVING AND INSTALLING/REPLACING REAR UNDERBODY PROTECTION**
- If necessary, remove exhaust system
- Remove heat shields

Checking/correcting transfer case oil level:

Undo oil filler plug (1).

Check transfer case oil level.

If necessary, pour in gear oil up to lower edge of opening for oil filler plug (1).

Installation:

Tightening torque 27 00 11AZ, see **TRANSFER BOX IN GENERAL** .

Replace sealing ring.

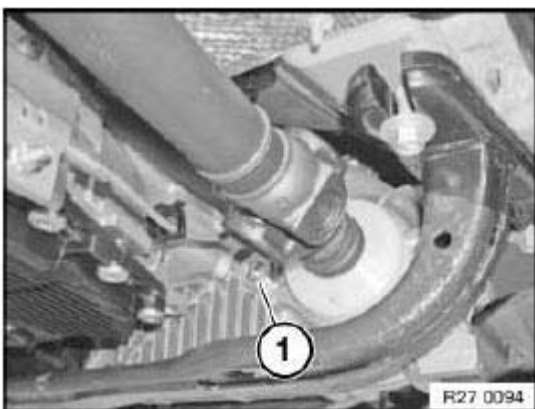


Fig. 1: Identifying Oil Filler Plug

Courtesy of BMW OF NORTH AMERICA, INC.

Place oil collecting apparatus underneath.

Remove oil drain plug (1).

Drain and dispose of gear oil.

NOTE: Observe country-specific waste-disposal regulations Replace sealing ring, screw in oil drain plug (1) and tighten down.

Tightening torque 27 00 11AZ, see TRANSFER BOX IN GENERAL .

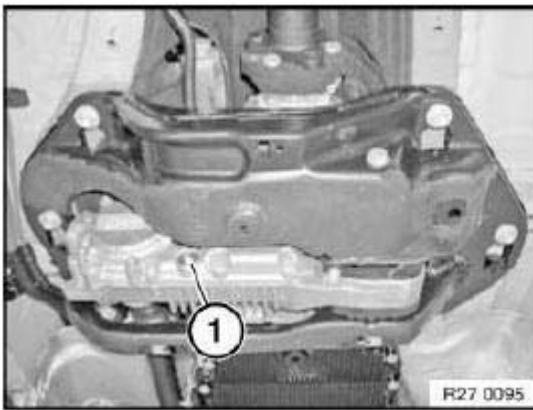


Fig. 2: Identifying Oil Drain Plug

Courtesy of BMW OF NORTH AMERICA, INC.

Undo oil filler plug (1).

Pour in gear oil up to lower edge of opening for oil filler plug (1).

Tightening torque 27 00 11AZ, see TRANSFER BOX IN GENERAL .

Replace sealing ring.

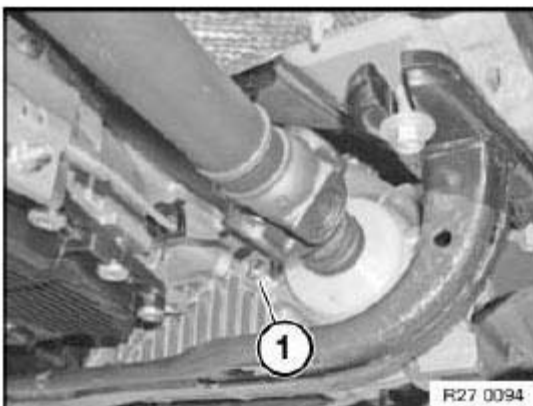


Fig. 3: Identifying Oil Filler Plug

Courtesy of BMW OF NORTH AMERICA, INC.

10 TRANSFER CASE**27 10 010 REMOVING AND INSTALLING TRANSFER BOX ATC 700 (AUTOMATIC TRANSMISSION)**

IMPORTANT: After replacement, the "Repair" service function must be carried out with in the BMW diagnosis system.

WARNING: *Danger to life!*

Mount securing fixture for vehicle on lifting platform. See 51 71 505 MOUNT SECURING FIXTURE FOR VEHICLE ON LIFTING PLATFORM to prevent the vehicle from slipping off or tilting down.

IMPORTANT: After completing work, check gear oil level and top up if necessary.

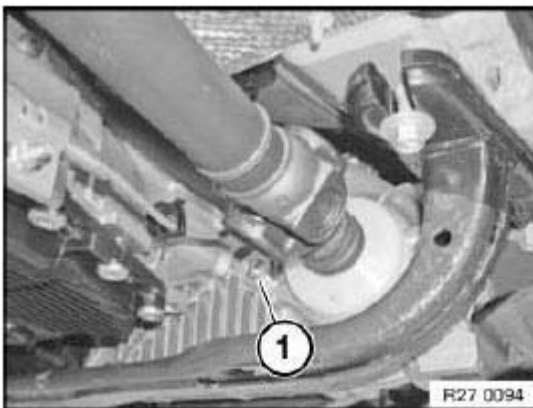
Filler plug (1):

Tightening torque 27 00 11AZ, see TRANSFER BOX IN GENERAL .

Oil level up to filler edge of filler plug (1).

Use only approved gear oil.

Failure to comply with this requirement will result in serious damage to the transfer case!

**Fig. 4: Identifying Oil Filler Plug**

Courtesy of BMW OF NORTH AMERICA, INC.

Necessary preliminary tasks:

- Remove underbody protection. See 51 47 491 REMOVING AND INSTALLING/REPLACING REAR UNDERBODY PROTECTION
- Remove exhaust system bracket from transmission and transfer box
- Remove front and rear heat shields

- Support transmission. See **23 .. UNIVERSAL TRANSMISSION BRACKET**
- Remove propeller shaft. See **26 11 000 REMOVING AND INSTALLING PROPELLER SHAFT (INSERTED) COMPLETELY**
- Remove front propeller shaft.
- Remove transmission cross-member. See **22 32 050 REPLACING CROSS-MEMBER FOR TRANSMISSION MOUNTING**

Disconnect plugs (1) and (2) from servomotor.

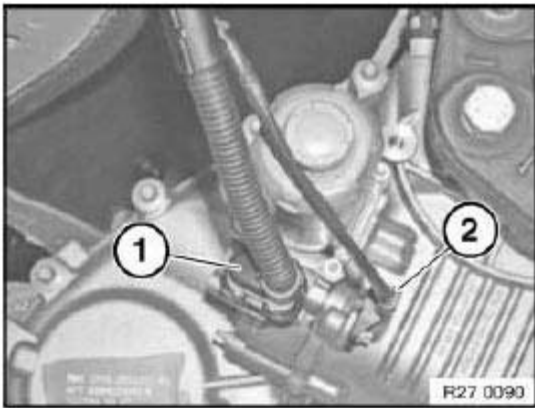


Fig. 5: Identifying Plugs And Servomotor
Courtesy of BMW OF NORTH AMERICA, INC.

Release screw connection of transfer case.

Tightening torque 27 00 9AZ, see **TRANSFER BOX IN GENERAL** .

Remove transfer case.

Installation:

Pay attention to dowel pin (1).

Grease dowel pin (1).

Apply a thin coat of grease to splines.

Grease: WEICON ANTI-SEIZE.

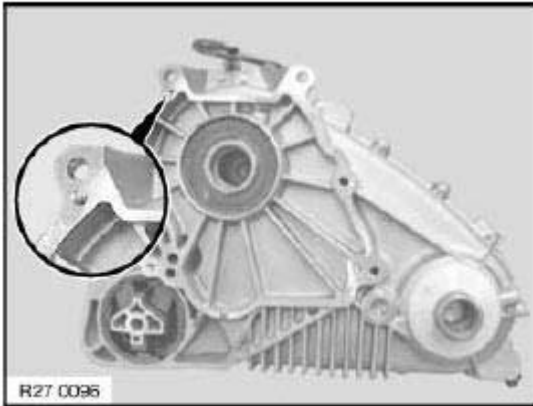


Fig. 6: Identifying Dowel Pin

Courtesy of BMW OF NORTH AMERICA, INC.

27 10 020 INSTALLING REPLACEMENT TRANSFER BOX (ATC 700)

IMPORTANT: Before and after replacement, execute the "Repair" service function with the BMW diagnosis system.

Recycling:

Catch and dispose of escaping transmission fluid. Observe country-specific waste-disposal regulations.

IMPORTANT: After completing work, check transmission oil level and top up if necessary.
Release filler plug (1).
Check oil level.
Tightening torque 27 00 11AZ, see **TRANSFER BOX IN GENERAL** .
Pour in transmission oil up to lower edge of opening for filler plug (1).
Use only the approved transmission oil.

Failure to comply with this requirement will result in serious damage to the transfer box!

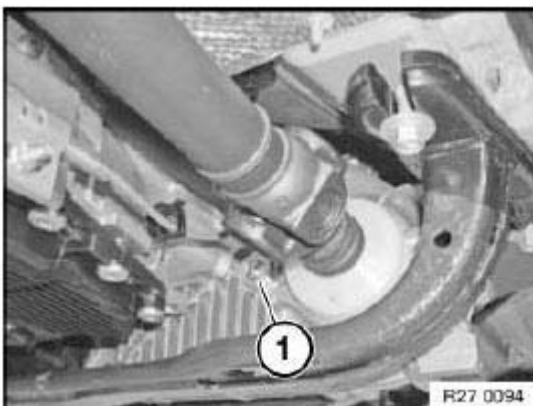


Fig. 7: Identifying Oil Filler Plug

Courtesy of BMW OF NORTH AMERICA, INC.

Necessary preliminary tasks:

- Drain transmission oil at oil drain plug

Tightening torque, 27 00 11AZ, see TRANSFER BOX IN GENERAL .

- Remove transfer box. See 27 10 010 Removing and Installing Transfer Box ATC 700 (Automatic Transmission)

Modify following parts:

- Covers and protective caps
- Drive shaft transportation lock
- Vent hose of transfer box

27 10 070 REPLACING OUTPUT FLANGE ON TRANSFER BOX AT REAR (ATC700)

IMPORTANT: After completing work, check gear oil level. See 27 00 TRANSFER BOX IN GENERAL and top up if necessary.

Use only the approved gear oil in this transfer box.

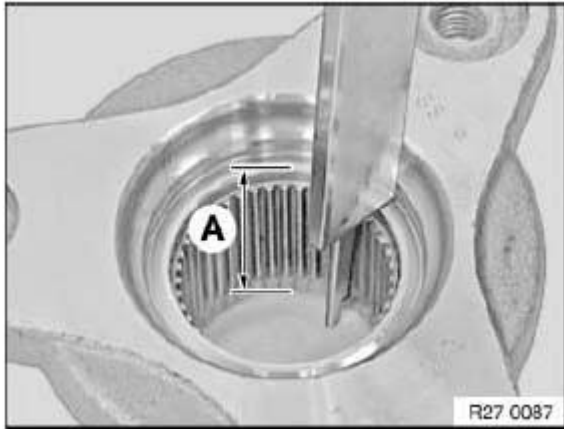
NOTE:

- Operations for removing output flange are identical to replacing radial shaft seal. See 27 21 020 Replacing Radial Shaft Seal for Output Flange (ATC 700).

Installation:

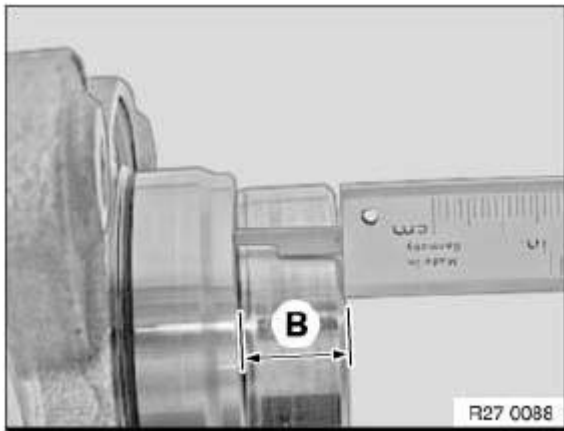
- Thickness of new shim must be determined before output flange is installed

Determine and note down measurement A of output flange (previous and new).

**Fig. 8: Checking Measurement A**

Courtesy of BMW OF NORTH AMERICA, INC.

Determine and note down measurement B of output flange (previous and new).

**Fig. 9: Checking Measurement B**

Courtesy of BMW OF NORTH AMERICA, INC.

Determine measurement C, thickness of shim.

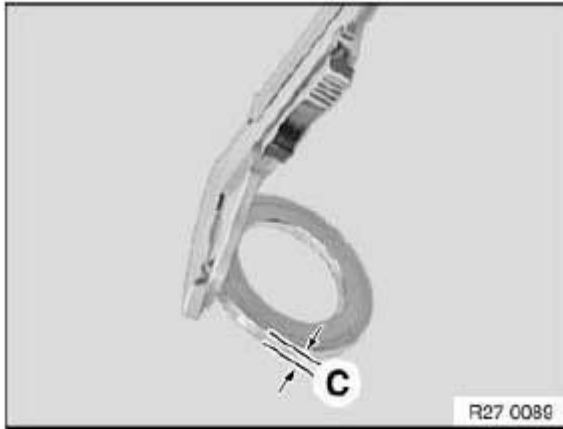


Fig. 10: Checking Measurement C

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Calculate thickness of new shim:

1. Add measurement A of output flange (previous) and measurement C of shim (previous)

Then subtract measurement B (previous) from result A+C (previous)

2. Subtract measurement B from measurement A of output flange (new)
3. Then subtract result of step 2 from result of step 1.

27 10 700 REMOVING AND INSTALLING / REPLACING CONTROL UNIT FOR TRANSFER BOX (ATC 700)

IMPORTANT: Read and comply with notes on protection against electrostatic damage (ESD protection), see 61 35... NOTES ON ESD PROTECTION (ELECTRO STATIC DISCHARGE) .

○ **Replacement:**

Before and after replacement, execute the "Repair" service function with the BMW diagnosis system.

Necessary preliminary tasks:

- Raise luggage compartment floor trim

Release screws (1).

Remove battery cover (2) towards top.

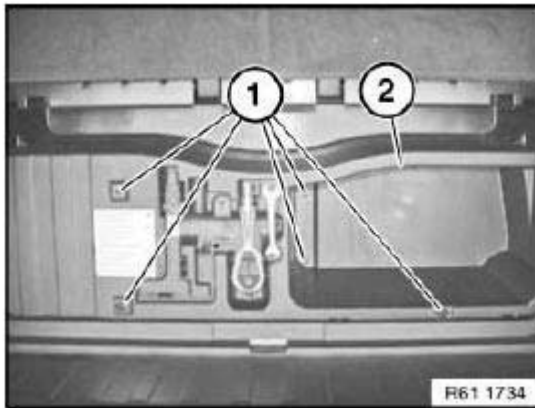


Fig. 11: Identifying Battery Cover And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect connector (1).

Unscrew nuts.

Remove control unit.

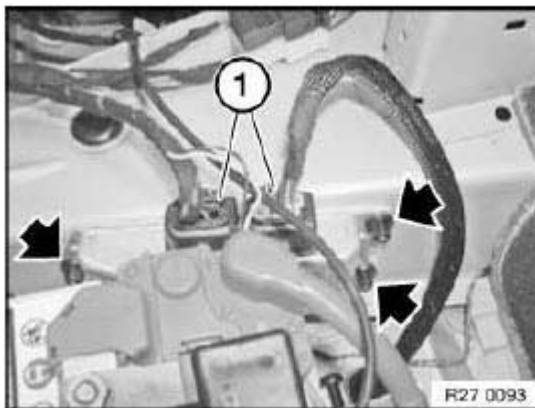


Fig. 12: Locating Nuts
Courtesy of BMW OF NORTH AMERICA, INC.

27 10 710 REPLACING CLASSIFICATION RESISTOR FOR SERVOMOTOR (ATC 700)

IMPORTANT: Delete previous resistance values when replacing the resistor.
Using BMW diagnosis system, work through test program in accordance with instructions.

Disconnect connector (1).

Release screw (2) and remove resistor.

Tightening torque 27 00 14AZ, see TRANSFER BOX IN GENERAL .

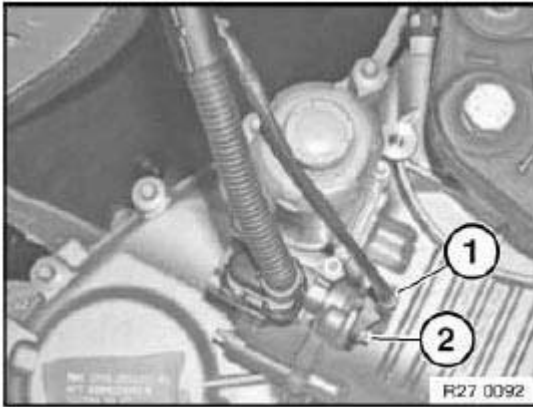


Fig. 13: Identifying Connector And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

27 10 720 REPLACING SERVOMOTOR (ATC 700)

IMPORTANT: After replacement, the "Repair" service function must be carried out with in the BMW diagnosis system.

Disconnect plugs (1 and 2).

Tightening torque 27 00 14AZ, see TRANSFER BOX IN GENERAL .

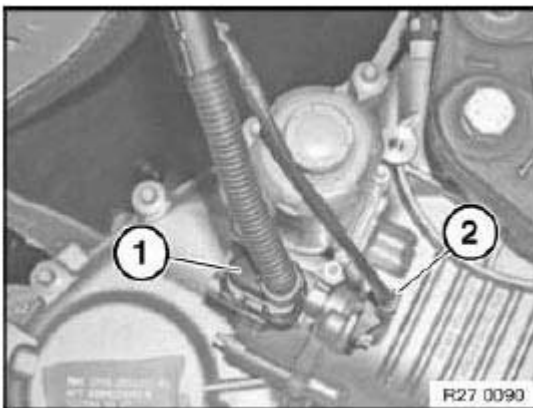


Fig. 14: Identifying Plugs And Servomotor
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws and remove servomotor from transfer box.

Tightening torque 27 00 13AZ, see TRANSFER BOX IN GENERAL .

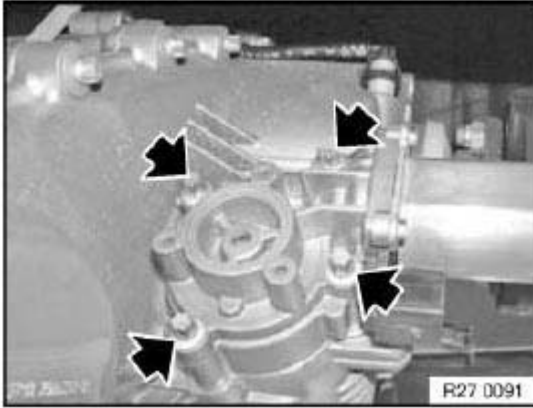


Fig. 15: Locating Screws

Courtesy of BMW OF NORTH AMERICA, INC.

21 TRANSMISSION SHAFTS

27 10 070 REPLACING OUTPUT FLANGE ON TRANSFER BOX AT REAR (ATC700)

IMPORTANT: After completing work, check gear oil level, see 27 00 ... Replenishing /Changing Transfer Case Oil (ATC 700) and top up if necessary.
Use only the approved gear oil in this transfer box.

NOTE:

- Operations for removing output flange are identical to replacing radial shaft seal. See 27 21 020 Replacing Radial Shaft Seal for Output Flange (ATC 700)

Installation:

- Thickness of new shim must be determined before output flange is installed

Determine and note down measurement A of output flange (previous and new).

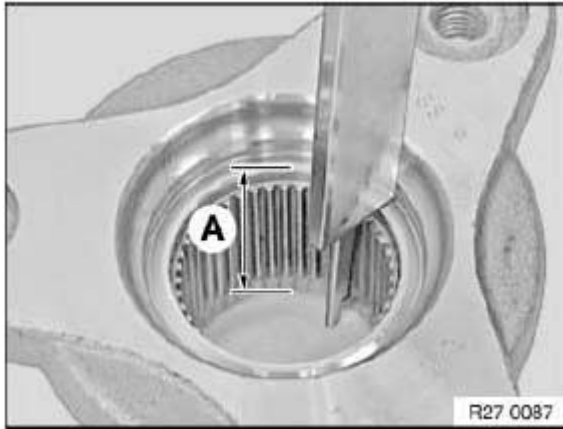


Fig. 16: Checking Measurement A

Courtesy of BMW OF NORTH AMERICA, INC.

Determine and note down measurement B of output flange (previous and new).

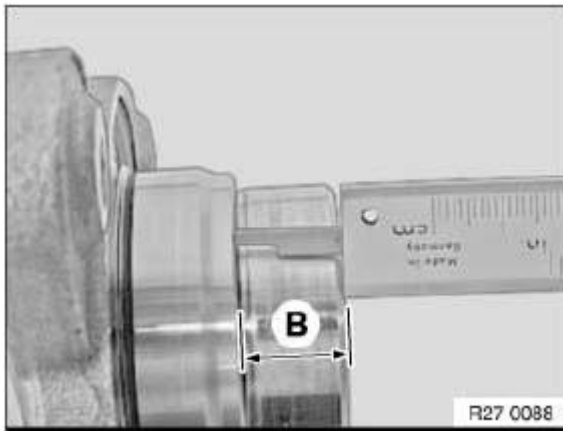


Fig. 17: Checking Measurement B

Courtesy of BMW OF NORTH AMERICA, INC.

Determine measurement C, thickness of shim.

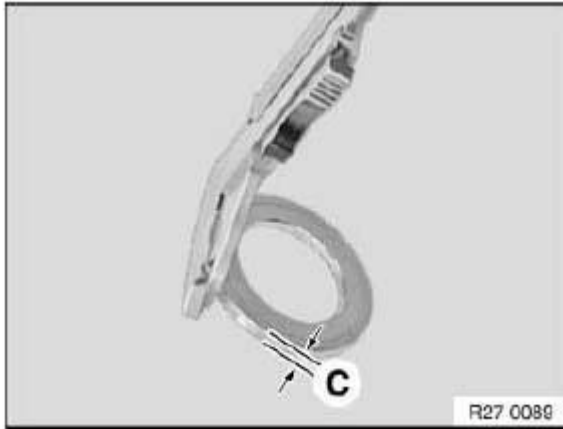


Fig. 18: Checking Measurement C

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Calculate thickness of new shim:

1. Add measurement A of output flange (previous) and measurement C of shim (previous)

Then subtract measurement B (previous) from result A+C (previous)

2. Subtract measurement B from measurement A of output flange (new)
3. Then subtract result of step 2 from result of step 1.

27 21 010 REPLACING RADIAL SHAFT SEAL FOR DRIVE FLANGE (ATC 700)

Special tools required:

- 23 0 490
- 27 1 460 **DRIFT**

IMPORTANT: After completing work, check gear oil level, see 27 00 ... Replenishing /Changing Transfer Case Oil (ATC 700) and top up if necessary.
Use only approved gear oil in this transfer box.

Necessary preliminary tasks:

- Remove transfer box, see 27 10 010 Removing and Installing Transfer Box ATC 700 (Automatic Transmission)

Drive a hole into radial shaft seal (1) using a centre punch (2).

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IMPORTANT: Do not use a drill as drillings may result in transmission malfunction.

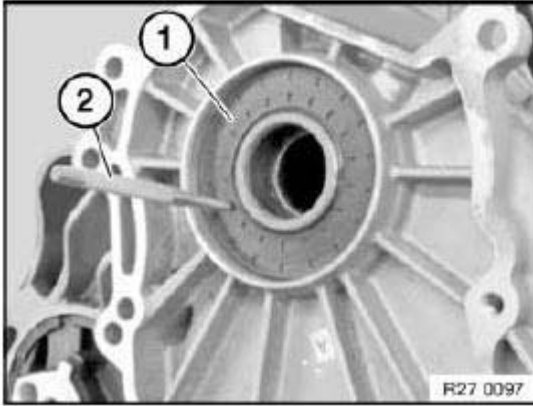


Fig. 19: Identifying Radial Shaft Seal And Centre Punch
Courtesy of BMW OF NORTH AMERICA, INC.

Screw in special tool 23 0 490 .

Drive out radial shaft seal (1) with impact weight (2).

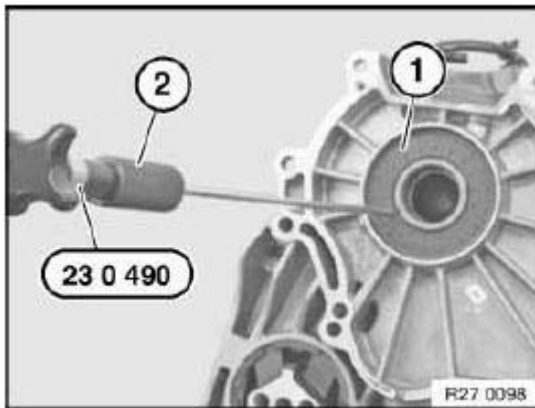


Fig. 20: Identifying Radial Shaft Seal And Impact Weight With Special Tools
Courtesy of BMW OF NORTH AMERICA, INC.

Drive in radial shaft seal with special tool 27 1 460, see **DRIFT** .

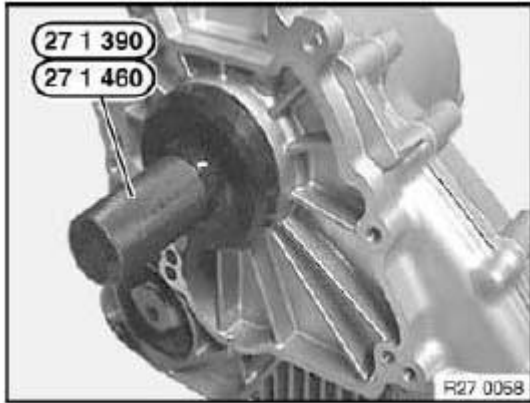


Fig. 21: Identifying Radial Shaft Seal With Special Tool (27 1 460)
 Courtesy of BMW OF NORTH AMERICA, INC.

Add final details to vehicle.

Check oil level.

Check transmission for leaks.

27 21 020 REPLACING RADIAL SHAFT SEAL FOR OUTPUT FLANGE (ATC 700)

Special tools required:

- 23 0 490
- 27 1 480, see **DRIFT**

IMPORTANT: After completing work, check gear oil level and top up if necessary.
 Use only approved gear oil See **27 00 ... Replenishing /Changing Transfer Case Oil (ATC 700)** in this transfer box.

Necessary preliminary tasks:

- Remove underbody protection. See **51 47 491 REMOVING AND INSTALLING/REPLACING REAR UNDERBODY PROTECTION**
- Support transmission. See **23 .. UNIVERSAL TRANSMISSION BRACKET**
- Release exhaust system bracket
- Remove propeller shaft. See **26 11 000 REMOVING AND INSTALLING PROPELLER SHAFT (INSERTED) COMPLETELY**
- Remove transmission cross-member. See **22 32 050 REPLACING CROSS-MEMBER FOR TRANSMISSION MOUNTING**

Release retaining ring (1).

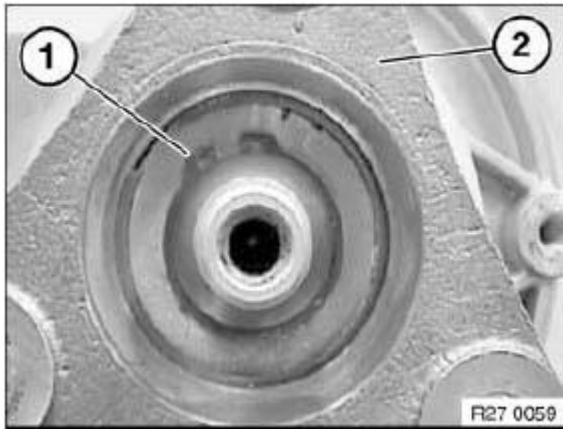


Fig. 22: Identifying Retaining Ring

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Replace O-ring in output flange.

Check that O-ring is in correct position.

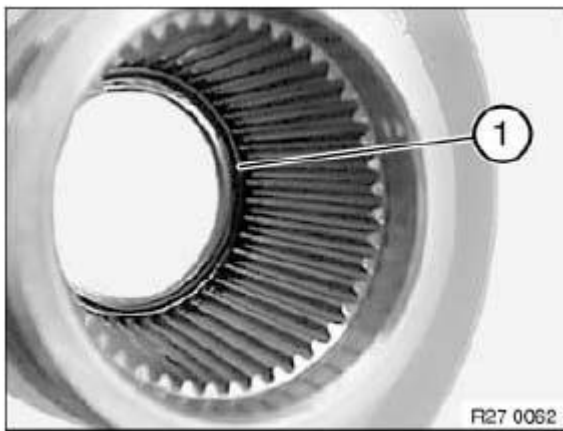


Fig. 23: Identifying O-Ring In Output Flange

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: The propeller shaft may move when the output flange is pushed on. The retaining ring can thus no longer be fitted.

Installation:

- Push on output flange
- Using 2 screwdrivers, press output flange downwards on output shaft (2) upwards until groove for retaining ring is completely visible.

- Fit retaining ring.

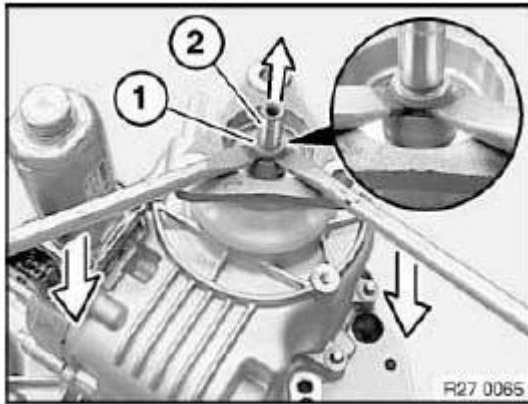


Fig. 24: Pressing Output Flange Downwards Or Output Shaft Upwards
Courtesy of BMW OF NORTH AMERICA, INC.

Drive a hole into radial shaft seal (1) using a centre punch (2).

IMPORTANT: Do not use a drill as drillings may result in transmission malfunction.

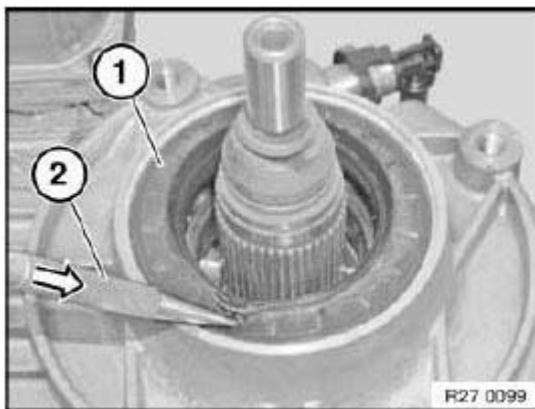


Fig. 25: Identifying Radial Shaft Seal And Centre Punch
Courtesy of BMW OF NORTH AMERICA, INC.

Screw in special tool 23 0 490 .

Drive out radial shaft seal (1) with impact weight (2).

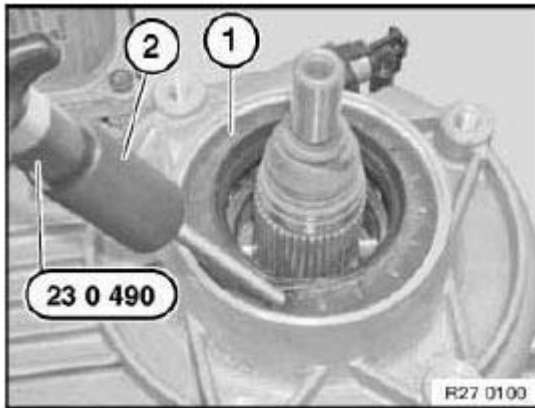


Fig. 26: Identifying Radial Shaft Seal And Impact Weight With Special Tool (23 0 490)
Courtesy of BMW OF NORTH AMERICA, INC.

Drive in radial shaft seal with special tool 27 1 480 **DRIFT** .

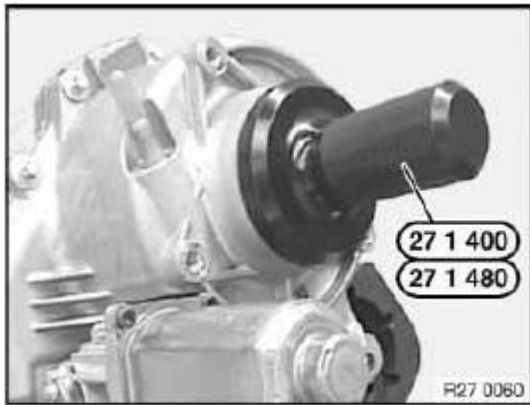


Fig. 27: Identifying Radial Shaft Seal With Special Tool
Courtesy of BMW OF NORTH AMERICA, INC.

Add final details to vehicle.

Check oil level.

Check transmission for leaks.

27 21 030 REPLACING RADIAL SHAFT SEAL FOR FRONT AXLE OUTPUT (ATC 700)

Special tools required:

- 23 0 490
- 27 1 470 **DRIFT**

Replenishing /Changing Transfer Case Oil (ATC 700).
Use only the approved gear oil. See 27 10 070 Replacing Output Flange on Transfer Box at Rear (ATC700) in this transfer box.

Necessary preliminary tasks:

- Remove front propeller shaft .

Remove protective cap (1) with a screwdriver.

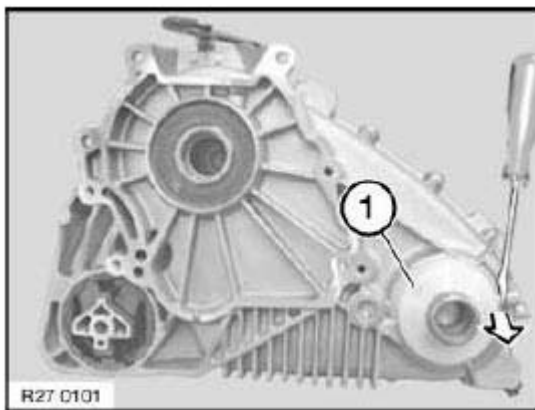


Fig. 28: Removing Protective Cap With Screwdriver
Courtesy of BMW OF NORTH AMERICA, INC.

Drive a hole into radial shaft seal (1) using a centre punch (2).

IMPORTANT: Do not use a drill as drillings may result in transmission malfunction.

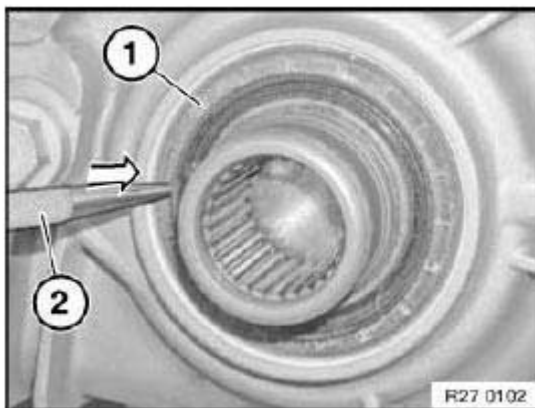


Fig. 29: Driving Hole Into Radial Shaft Seal
Courtesy of BMW OF NORTH AMERICA, INC.

Screw in special tool 23 0 490 .

Drive out radial shaft seal (1) with impact weight (2).

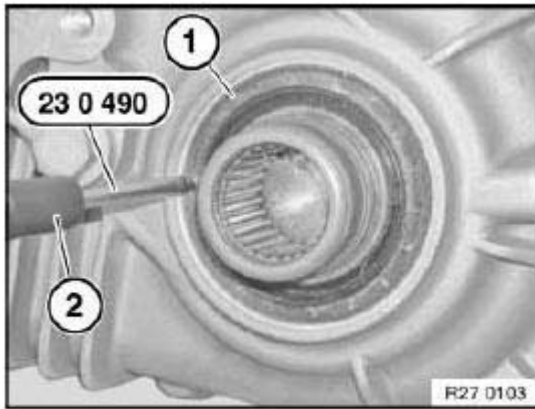


Fig. 30: Identifying Radial Shaft Seal And Impact Weight With Special Tool
Courtesy of BMW OF NORTH AMERICA, INC.

Drive in radial shaft seal with special tool 27 1 470 **DRIFT** .

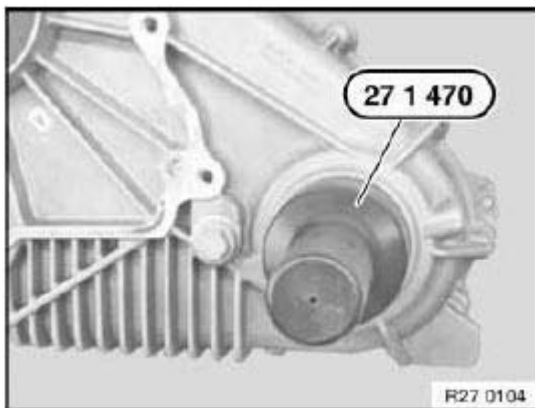


Fig. 31: Identifying Radial Shaft Seal With Special Tool (27 1 470)
Courtesy of BMW OF NORTH AMERICA, INC.

Add final details to vehicle.

Check oil level.

Check transmission for leaks.