

TRANSMISSION**Manual Transmission - Repair Instructions****TRANSMISSION IN 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 if oil is ingested/absorbed through the skin!
RISK OF INJURY 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.

00 11..... DRAINING/TOPPING UP GEAR OIL IN MANUAL TRANSMISSION

NOTE: Gearbox must be at normal operating temperature.
Gear oil:

- refer to MANUAL TRANSMISSION - OPERATING FLUIDS .

Filling capacities:

- Refer to TECHNICAL DATA .

Draining gear oil:

- Release oil drain plug (1) and filler plug (2).
- Clean oil drain plug (1) and screw in.

Tightening torque 23 00 4AZ .

Fill transmission with ATF.

- Pour in gear oil until overflowing.
- Tighten in filler screw (2).

Tightening torque: 23 00 4AZ .

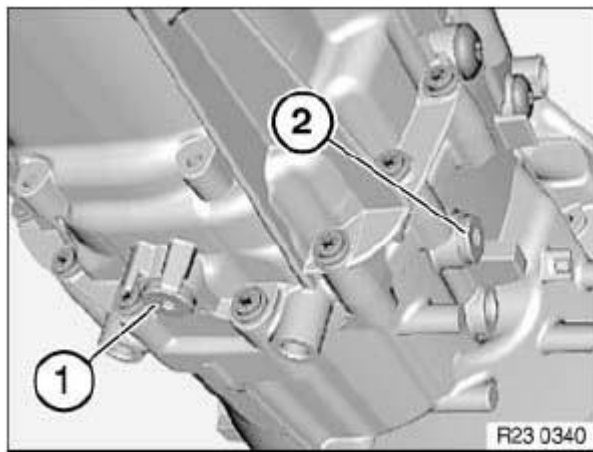


Fig. 1: Identifying Oil Drain Plug And Filler Plug
Courtesy of BMW OF NORTH AMERICA, INC.

23 TRANSMISSION DESIGNATIONS

Breakdown of BMW designation:

TRANSMISSION DESIGNATIONS CHART

A5S 300J (old designation)		
CARMANUALSUSA		
Saturday, September 05, 2015 9:26:22 AM	Page 3	© 2011 Mitchell Repair Information Company, LLC.

A	Transmission type	○ S = Manual transmission ○ A = Automatic transmission
5	Number of forward gears	
S	Type of top gear	○ D = Direct gear ○ S = Overdrive gear
300	Max. input torque (Nm)	
J	Code letter of transmission manufacturer	○ G = Getrag ○ J = Jatco ○ R = GMPT (General Motors Powertrain) ○ Z = ZF (Zahnradfabrik Friedrichshafen)
SMG	Notes	SMG = Sequential M gearbox/transmission
GS6-37BZ (new designation according to BMW Group Standard GS 90007)		
G	Transmission	
S	Transmission type	○ S = Manual transmission ○ A = Automatic transmission
6	Number of forward gears	
-		○ - = Standard with manual gearshift ○ HP = Hydraulic planetary gear
37	Transmission type	○ 26 = D-transmission ○ 31 = C-transmission ○ 39 = F-transmission ○ 37 = H-transmission ○ 53 = G-transmission ○ 17 = I-transmission ○ 47 = J-transmission
B	Gear set	○ B = Gasoline gear ratio ○ D = Diesel gear ratio
Z	Code letter of transmission manufacturer	○ G = Getrag ○ Z = ZF (Zahnradfabrik Friedrichshafen)

Manual transmission:**TRANSMISSION DESIGNATIONS CHART**

BMW designation	Manufacturer	Manufacturer designation	Remark
S5D 200G	Getrag	B transmission (220/5)	
S5D 200G	Getrag	B transmission (221/5)	for M41 engine only
S5D 250G	Getrag	B transmission (220/5)	Reinforced design
S5D 260Z	ZF	C-transmission (S5-31 D)	for M51 engine only

S5D 280Z	ZF	C-transmission (S5-31)	
S5D 310Z	ZF	C-transmission (S5-31)	up to 9.95
S5D 320Z	ZF	C-transmission (S5-31)	from 9.95 (reinforced design)
GS5S31BZ (SMG)	ZF	C transmission	SMG
GS5-39DZ	ZF	F transmission	
S6S 420G	Getrag	D-transmission (226/6)	
S6S 420G (SMG)	Getrag	D transmission	SMG
S6S 560G	Getrag	E-transmission (286/6)	
GS6-37BZ	ZF	H-transmission	
GS6S37BZ (SMG)	ZF	H-transmission	
GS6-37DZ	ZF	H-transmission	
GS6-37BG	Getrag	H-transmission	
GS6-53BZ	ZF	G-transmission	
GS6-53DZ	ZF	G-transmission	
GS6-17BG	Getrag	I-transmission	
GS7S47BG (SMG)	Getrag	J-transmission (247)	SMG 7-speed

Automatic transmission:
TRANSMISSION DESIGNATIONS CHART

BMW designation	Manufacturer	Manufacturer designation	Remark
A4S 200R	GMPT	GM4	
A4S 270R	GMPT	THM-R1w	Transmission widesteppped
A4S 310R	GMPT	THM-R1	
A5S 300J	Jatco	Jatco	
A5S 310Z	ZF	5HP-18	
A5S 325Z	ZF	5HP-19	
A5S 440Z	ZF	5HP-24	
A5S 560Z	ZF	5HP-30	
A5S 360R / 390R	GM	GM5	
GA6HP19Z	ZF	6HP19	
GA6HP26Z	ZF	6HP26	
GA6HP32Z	ZF	6HP32	
GA6L45R	GM	GM6	

23... UNIVERSAL BMW TRANSMISSION TAKE-UP
Special tools required:

- **00 2 030**
- **23 4 050**

NOTE:

- The universal transmission bracket is introduced for the E60 AWD
- Suitable for manual and automatic transmissions

IMPORTANT: Front and rear supports (1) can be laterally adjusted by means of screws (2). Carrier (3) of rear supports (1) can be longitudinally adjusted by means of screw.
 Supports must be adapted in length and width to the transmission.

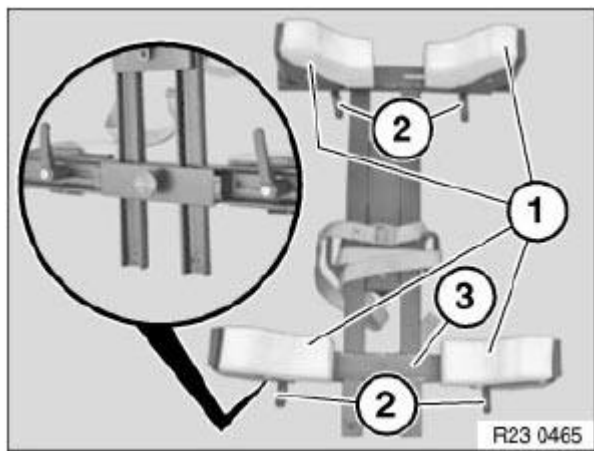


Fig. 2: Identifying Front And Rear Supports With Carrier
 Courtesy of BMW OF NORTH AMERICA, INC.

Supporting transmission:

Support transmission with special tools 23 4 050, 00 2 030 .

IMPORTANT: Transmission must be secured with tensioning strap (1).

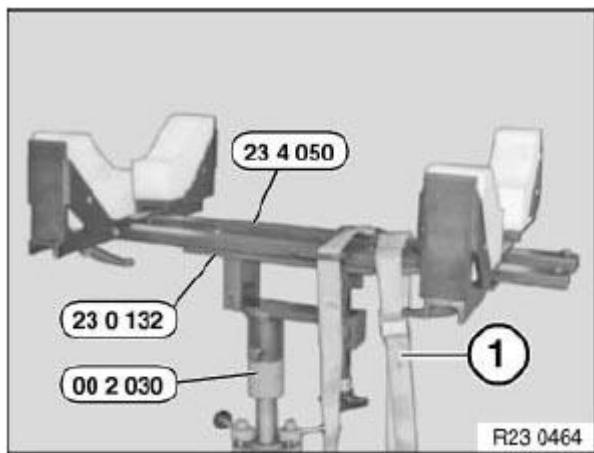


Fig. 3: Identifying Special Tools (00 2 030) And (23 4 050)

Courtesy of BMW OF NORTH AMERICA, INC.

23..... UNIVERSAL TRANSMISSION RETAINING BRIDGE

Special tools required:

- 00 1 450
- 24 0 200

NOTE:

- The transmission retaining bridge 24 0 200 is suitable for both manual and automatic transmissions

IMPORTANT: Adapters and spindles must be adapted for positive locking to the transmission.
(Risk of injury)

Adapt adapters (1) and spindle with thrust piece (3) to transmission.

Adapt length with slide (2).

Screw in spindle (4).

IMPORTANT: Before mounting on assembly stand 00 1 450, check retaining bridge for secure seating.

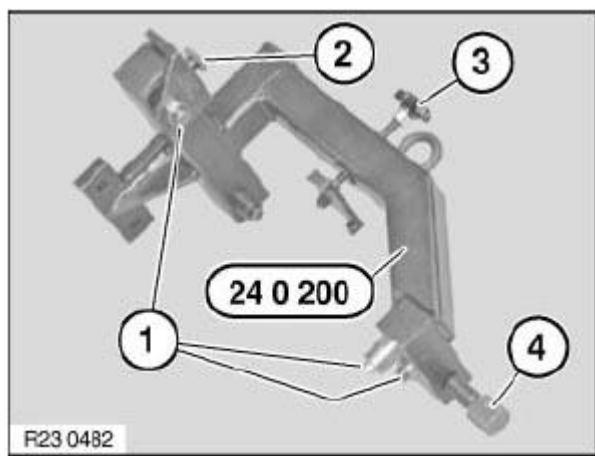
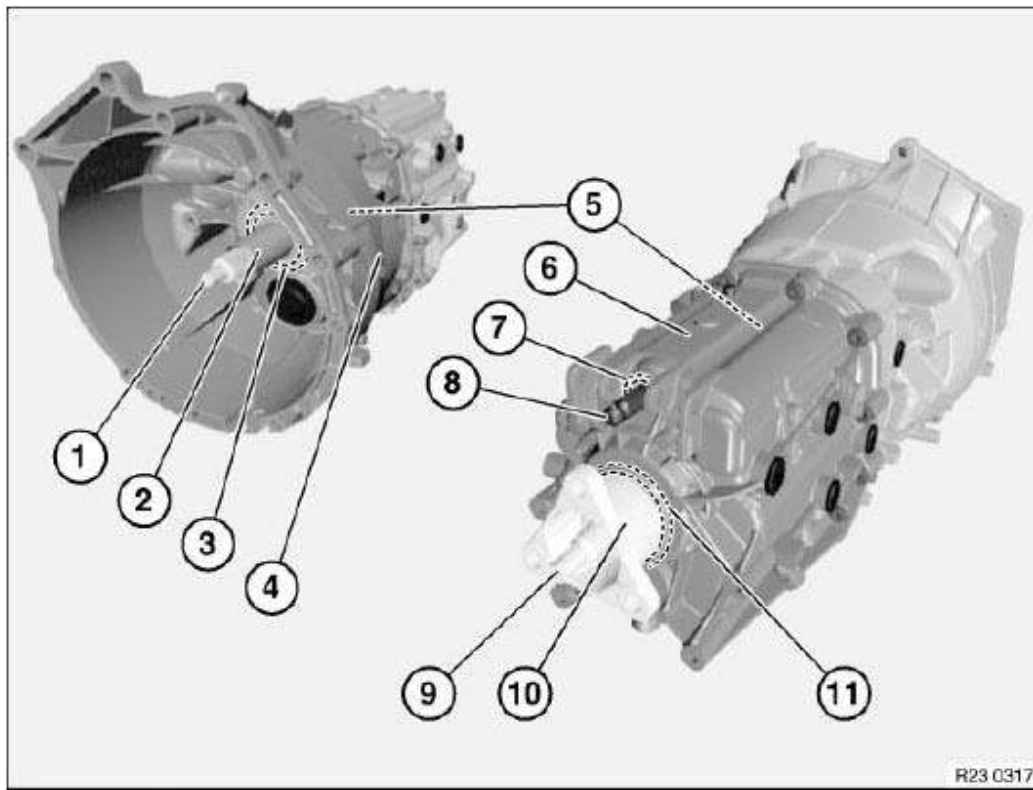


Fig. 4: Identifying Adapt Adapters And Spindle With Thrust Piece To Transmission
Courtesy of BMW OF NORTH AMERICA, INC.

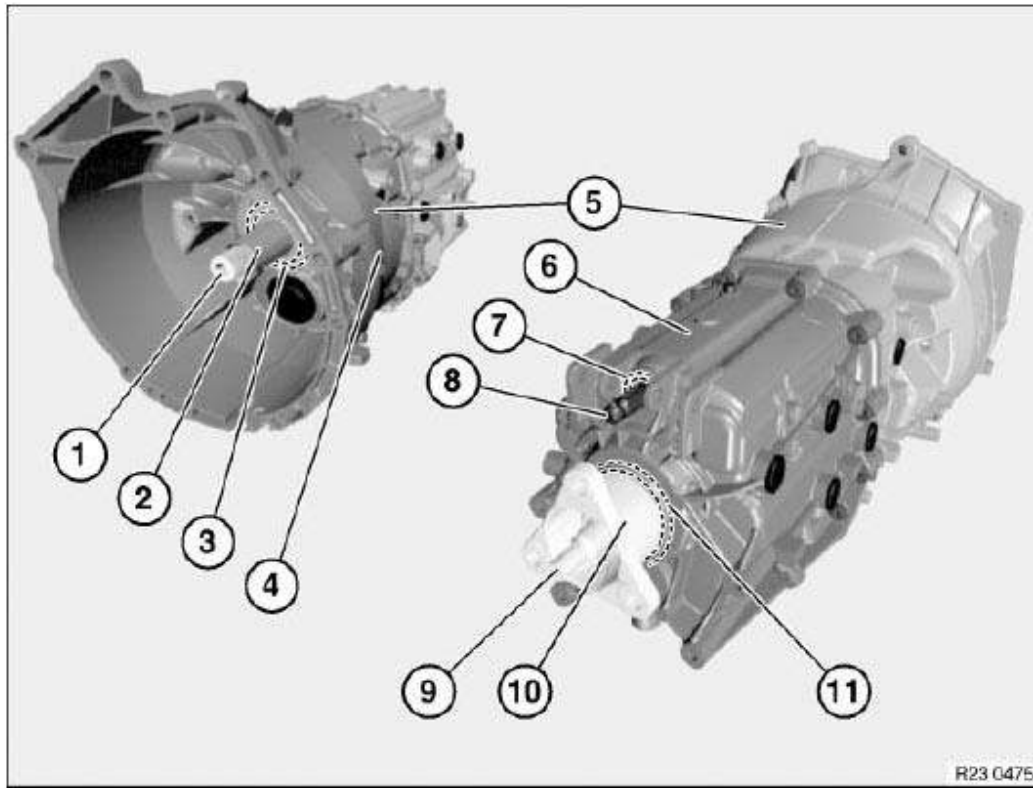
23 00... OVERVIEW OF TRANSMISSION HOUSING (GS6-37/53BZ/DZ)



- | | | |
|----|-------------------------------------|---|
| 0 | General information | Complete transmission, oil change,
transmission designations |
| 1 | Input shaft | |
| 2 | Guide tube | |
| 3 | Radial seal | For drive shaft |
| 4 | Transmission housing, front section | |
| 5 | Internal components | |
| 6 | Transmission housing, rear section | shafts, gear wheels, gearshift components |
| 7 | Radial seal | For selector shaft |
| 8 | Shift shaft | |
| 9 | Output shaft | |
| 10 | Output flange | |
| 11 | Radial seal | For output flange |

Fig. 5: Overview Of Transmission Housing
 Courtesy of BMW OF NORTH AMERICA, INC.

23 00... OVERVIEW OF TRANSMISSION HOUSING (GS6-53BZ/DZ)



- | | | |
|----|-------------------------------------|---|
| 0 | General information | Complete transmission, oil change,
transmission designations |
| 1 | Input shaft | |
| 2 | Guide tube | |
| 3 | Radial seal | For drive shaft |
| 4 | Transmission housing, front section | |
| 5 | Internal components | |
| 6 | Transmission housing, rear section | shafts, gear wheels, gearshift components |
| 7 | Radial seal | For selector shaft |
| 8 | Shift shaft | |
| 9 | Output shaft | |
| 10 | Output flange | |
| 11 | Radial seal | For output flange |

Fig. 6: Overview Of Transmission Housing
 Courtesy of BMW OF NORTH AMERICA, INC.

23 01 010 REPLACING SEALING CAP (GS6-17BG/DG)

Necessary preliminary work:

- Remove gearbox
- Remove **CLUTCH RELEASE BEARING/LEVER**

Drive a hole into the sealing cap (1) with a suitable tool (2).

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

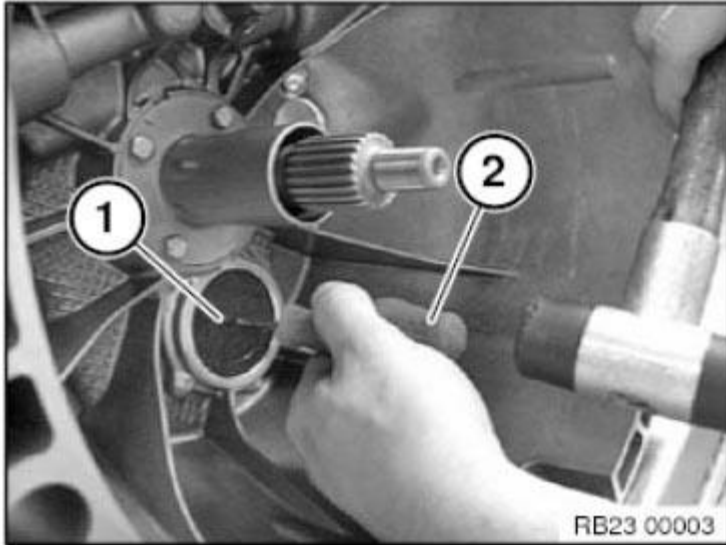


Fig. 7: Drilling Hole Into Sealing Cap Using Suitable Tool
Courtesy of BMW OF NORTH AMERICA, INC.

Screw special tool 23 0 490 (puller) into sealing cap.

Withdraw sealing cap from transmission housing with aid of impact weight.

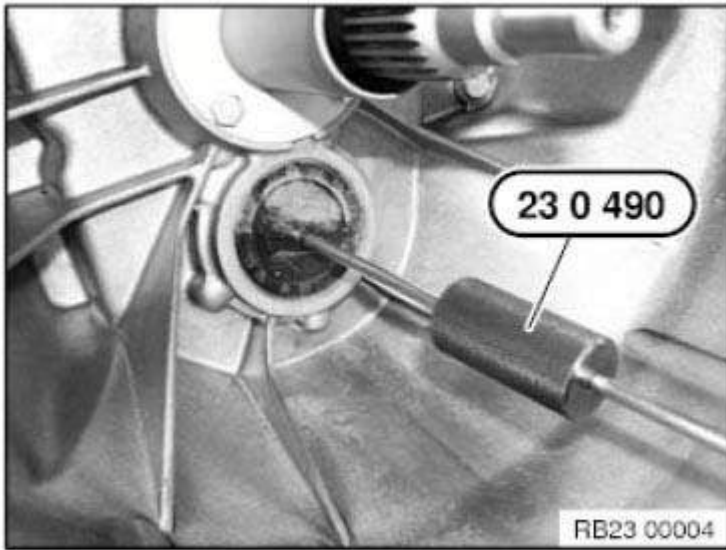


Fig. 8: Turning Sealing Cap Using Special Tool (23 0 490)
Courtesy of BMW OF NORTH AMERICA, INC.

Apply transmission oil to the sealing lip of the sealing cap (1) and insert.

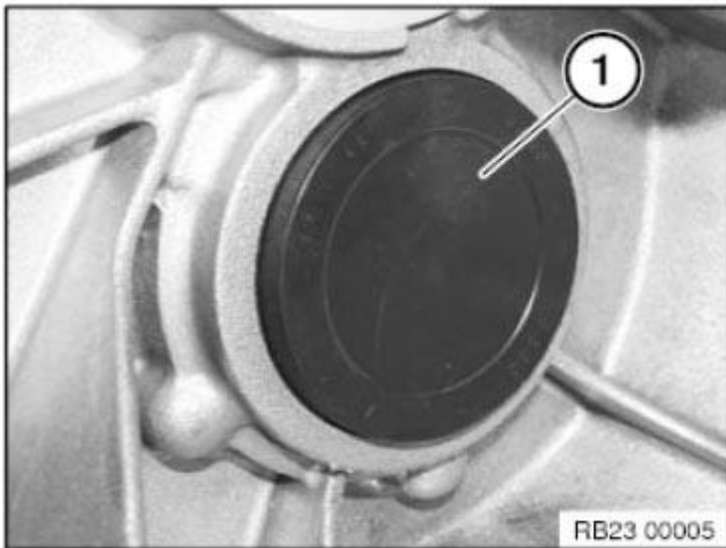


Fig. 9: Identifying Sealing Cap
Courtesy of BMW OF NORTH AMERICA, INC.

Drive sealing cap firmly home with special tool 23 0 330 (mandrel).

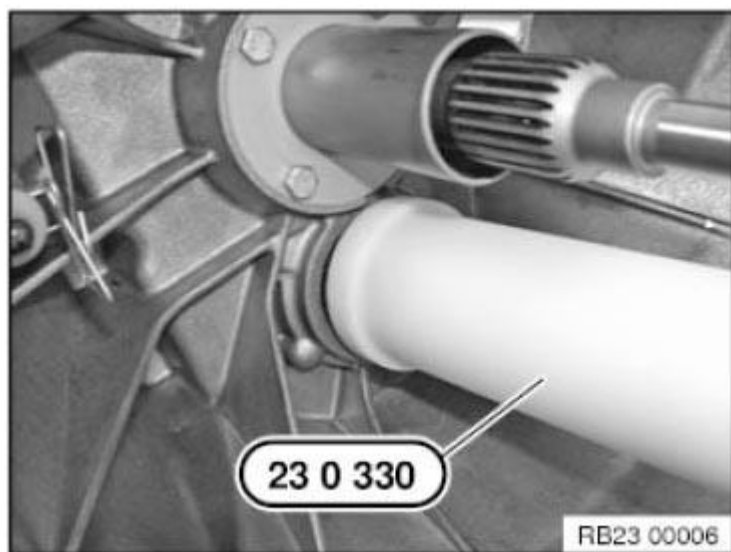


Fig. 10: Driving Sealing Cap Using Special Tool (23 0 330)
Courtesy of BMW OF NORTH AMERICA, INC.

23 00 018 REMOVING AND INSTALLING TRANSMISSION (GS6-53DZ) N54

Special tools required:

- 00 2 030
- 00 9 010
- 00 9 120
- 00 9 130
- 21 2 240
- 23 4 050

IMPORTANT: After completion of work, check GEAR OIL LEVEL .
Use only the approved gear oil.

Failure to comply with this requirement will result in serious damage to the manual transmission.

IMPORTANT: Aluminium screws/bolts must be replaced each time they are released .
Aluminium screws/bolts are permitted with and without color coding (blue).
For reliable identification:
Aluminium screws/bolts are not magnetic .
Jointing torque and angle of rotation must be observed without fail (risk of damage) .

Necessary preliminary tasks:

- **DISCONNECT BATTERY**
- Remove **REINFORCEMENT PLATE**
- Remove **EXHAUST SYSTEM**
- Support engine with lifter

Remove heat shields (1) and (2).

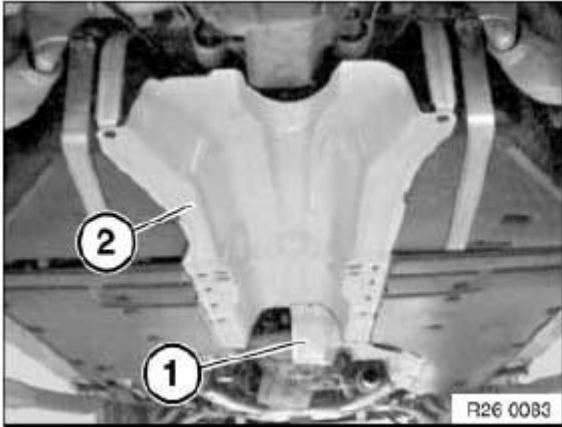


Fig. 11: Identifying Heat Shields

Courtesy of BMW OF NORTH AMERICA, INC.

Release bolts (1).

Disconnect connector (2).

Steel screws, tightening torque **23 00 1AZ** .

Aluminium screws, tightening torque **23 00 2AZ** .

Release aluminium screws with special tool **00 9 010**.

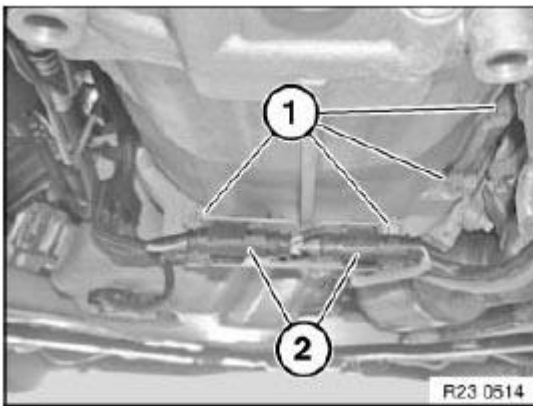


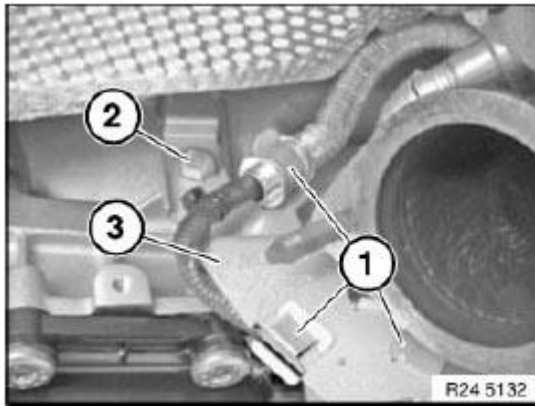
Fig. 12: Identifying Connector And Bolts

Courtesy of BMW OF NORTH AMERICA, INC.

Unclip cable (1) from holder.

Release screw (2) and remove holder (3).

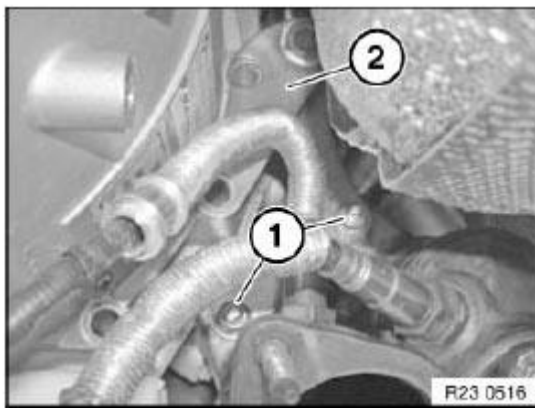
NOTE: Illustration similar

**Fig. 13: Identifying Cable, Screw And Holder**

Courtesy of BMW OF NORTH AMERICA, INC.

Release bolts (1).

Remove holder (2).

**Fig. 14: Identifying Transmission Bolts And Holder**

Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connection (1) from reversing light switch.

Release cable from retainers.

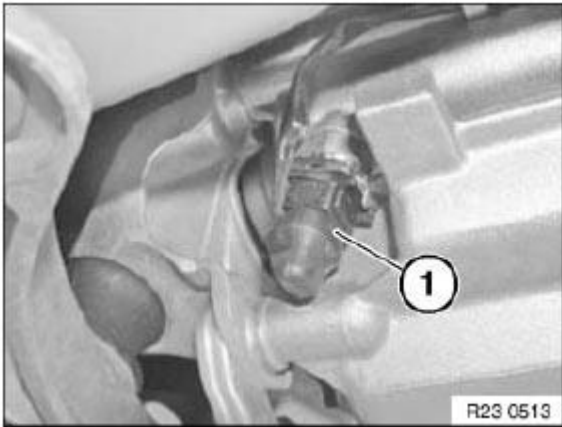


Fig. 15: Identifying Plug Connection

Courtesy of BMW OF NORTH AMERICA, INC.

Supporting transmission:

Support transmission with special tools 23 4 050, 00 2 030.

Secure transmission to mounting with tensioning strap (1).

Tasks are described in TRANSMISSION BRACKET.

After completion of work, check transmission oil level.

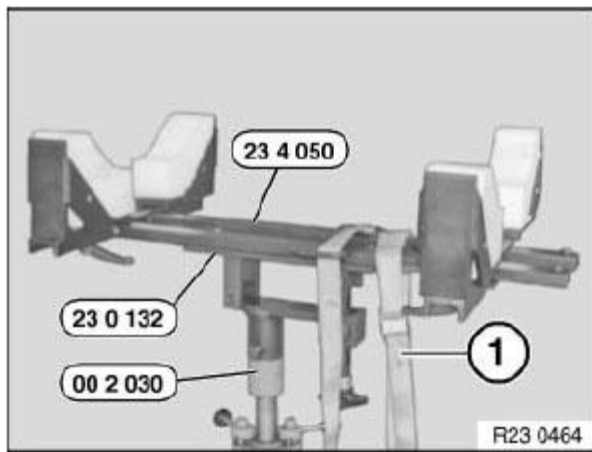


Fig. 16: Identifying Special Tools (00 2 030) And (23 4 050)

Courtesy of BMW OF NORTH AMERICA, INC.

Remove TRANSMISSION CROSS-MEMBER .

Release screws.

Remove transmission support block.

Tightening torque **22 32 2AZ** .

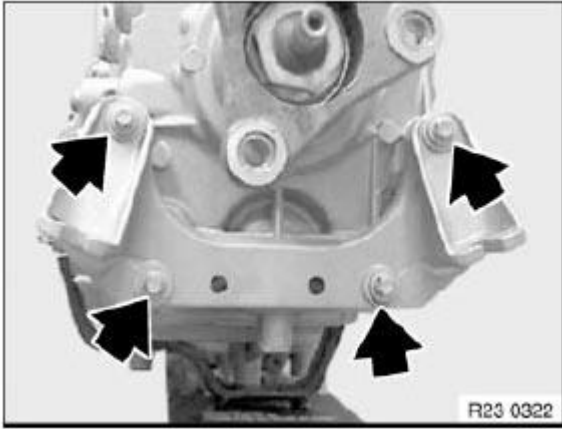


Fig. 17: Locating Transmission Support Block Bolts
Courtesy of BMW OF NORTH AMERICA, INC.

- Remove propeller shaft from transmission.
- Release center bearing.
- Tie propeller shaft to one side.

Tasks are described in Removing **PROPELLER SHAFT** .

NOTE: Pressure line of clutch slave cylinder remains connected.

IMPORTANT: Slowly relieve tension on clutch slave cylinder otherwise air is drawn in through sealing sleeve.

Release nuts and remove clutch slave cylinder.

Tightening torque **21 52 5AZ** .

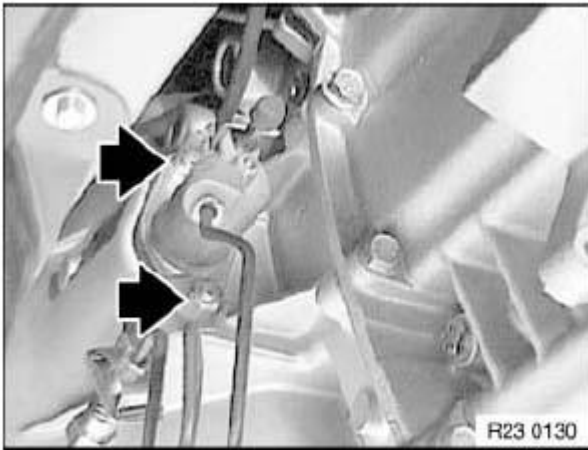


Fig. 18: Locating Clutch Slave Cylinder Nuts
Courtesy of BMW OF NORTH AMERICA, INC.

Lever out retainer (1).

Disengage shift rod (2).

Installation:

Grease shift rod.

Grease, refer to **MANUAL TRANSMISSION - OPERATING FLUIDS** .

Make sure shims (3) are in correct position.

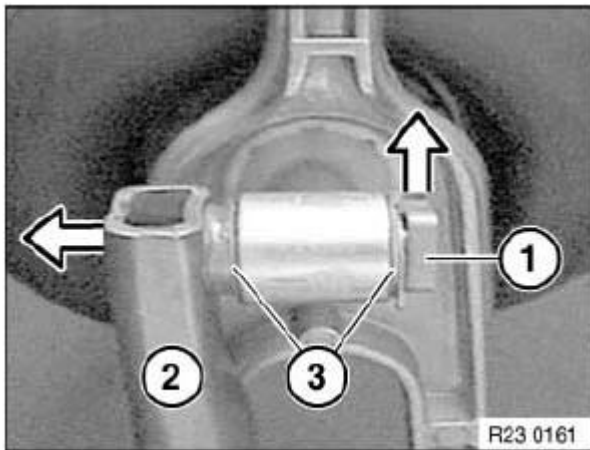


Fig. 19: Disengaging Shift Rod
Courtesy of BMW OF NORTH AMERICA, INC.

Release and remove bearing pins (1) in direction of arrow.

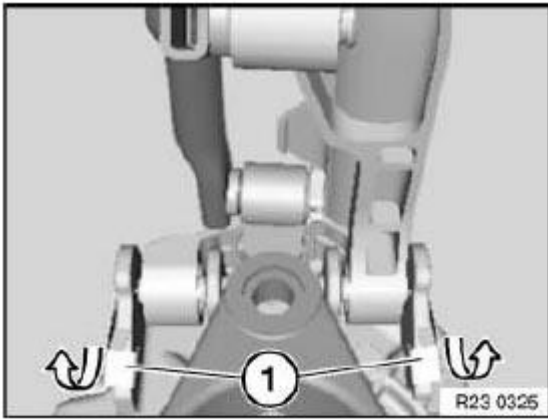


Fig. 20: Removing Bearing Pins

Courtesy of BMW OF NORTH AMERICA, INC.

Lift out shift arm (1).

Installation:

Grease bearing pins (1).

Grease,

refer to **MANUAL TRANSMISSION - OPERATING FLUIDS** .

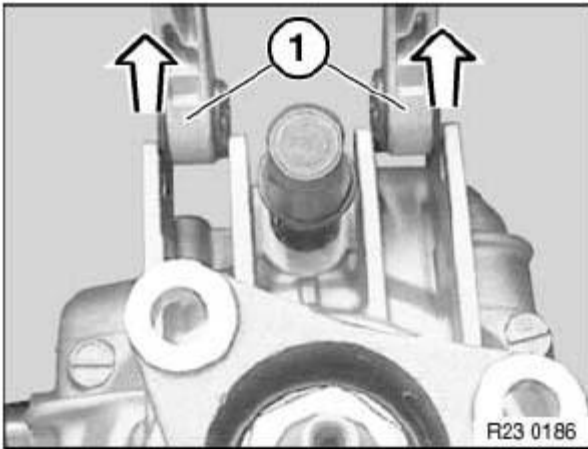


Fig. 21: Lifting Out Shift Arm

Courtesy of BMW OF NORTH AMERICA, INC.

Release screws.

Installation:

Tightening torque, steel screws **23 00 1AZ** .

Tightening torque, aluminium screws **23 00 2AZ** . Screws: 3/4/5/9/10 (screw 3 only present on N54).

IMPORTANT: Do not allow the transmission to hang off from the transmission input shaft as this will deform the clutch plate. Pull out transmission towards rear and remove.

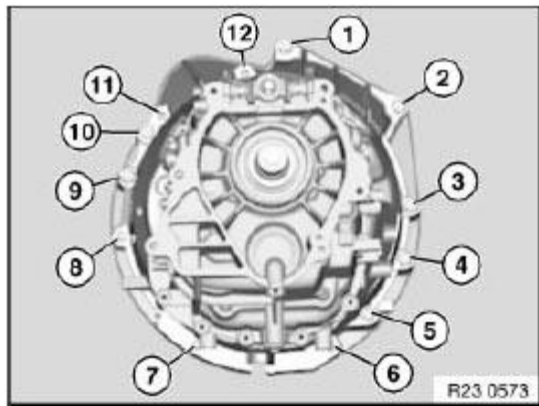


Fig. 22: Identifying Transmission Bolts Tightening Sequence
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Secure angle of rotation special tool **00 9 120** with magnet **00 9 130** to floor plate. Screw down aluminium screws according to angle of rotation. Angle of rotation **23 00 2AZ** .

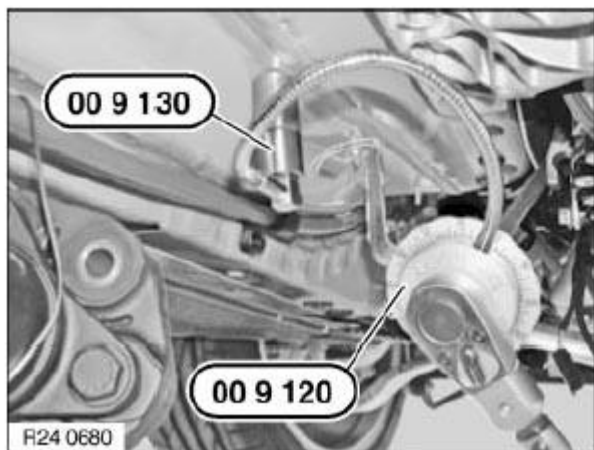


Fig. 23: Identifying Special Tools (00 9 130) And (00 9 120)
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Check that dowel sleeves are correctly seated.

Replace damaged dowel sleeves.

Ensure correct position of cover plate.

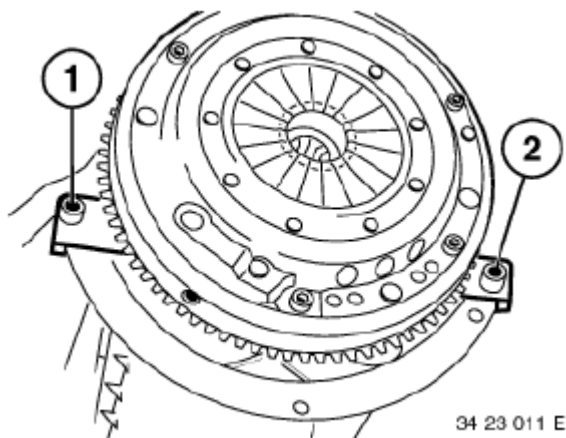


Fig. 24: Identifying Correct Position Of Cover Plate
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Check lubrication of transmission input shaft for sticky consistency. If grease is sticky, clean input shaft and **REPLACE CLUTCH PLATE** .

Check clutch plate for friction rust in splines and **REPLACE** if necessary.

Mechanically remove existing grease and lining abrasion from splines of clutch plate (with a cloth).

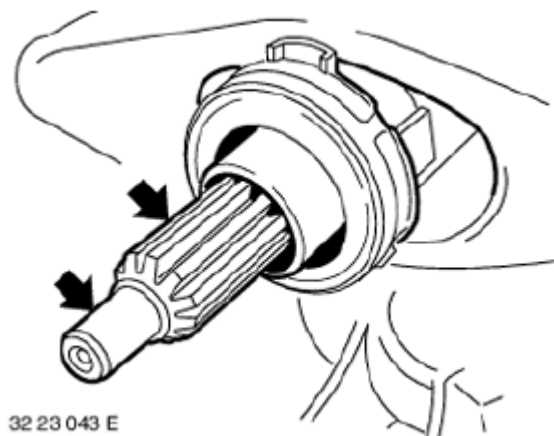


Fig. 25: Locating Input Shaft Splines
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Greasing specification:

- Remove and clean **RELEASE BEARING AND RELEASE LEVER** .
- Push on grease scraper ring **21 2 240** as far as it will go.
- Grease splines (1) of input shaft with a brush. refer to **MANUAL TRANSMISSION - OPERATING FLUIDS** .
- Detach grease scraper ring.
- Lightly grease guide sleeve for release bearing.

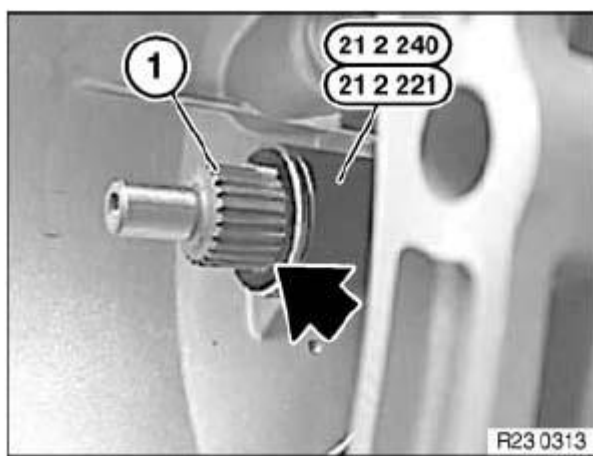


Fig. 26: Identifying Special Tools (21 2 240) And (21 2 221)
Courtesy of BMW OF NORTH AMERICA, INC.

23 00 018 REMOVING AND INSTALLING TRANSMISSION (GS6-53DZ) N54 AWD**Special tools required:**

- **00 2 030**
- **00 9 010**
- **00 9 120**
- **00 9 130**
- **21 2 240**
- **23 4 050**

IMPORTANT: After completion of work, check gear oil level.
Use only the approved gear oil.

Failure to comply with this requirement will result in serious damage to the manual transmission.

IMPORTANT: Aluminium screws/bolts must be replaced each time they are *released* .
Aluminium screws/bolts are permitted with and without color coding (blue).
For reliable identification:
Aluminium screws/bolts are *not magnetic* .
Jointing torque and angle of rotation must be observed without fail (risk of damage) .

Necessary preliminary tasks:

- **Disconnect battery**
- Remove **REINFORCEMENT PLATE**
- Remove **EXHAUST SYSTEM**
- Remove **FRONT PROPELLER SHAFT**
- Support **engine with lifter**

Remove heat shields (1) and (2).

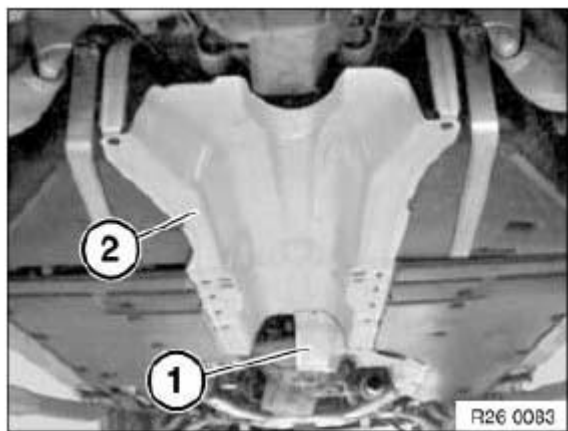


Fig. 27: Identifying Heat Shields

Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Disconnect connector (2).

Steel screws, tightening torque **23 00 1AZ** .

Aluminium screws, tightening torque **23 00 2AZ** .

Release aluminium screws with special tool 00 9 010.

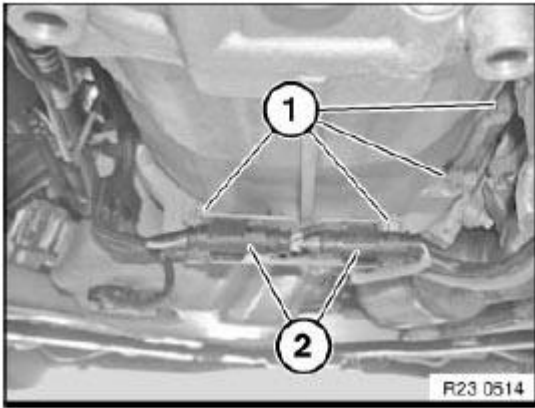


Fig. 28: Identifying Connector

Courtesy of BMW OF NORTH AMERICA, INC.

Unclip cable (1) from holder.

Release screw (2) and remove holder (3).

NOTE: Illustration similar

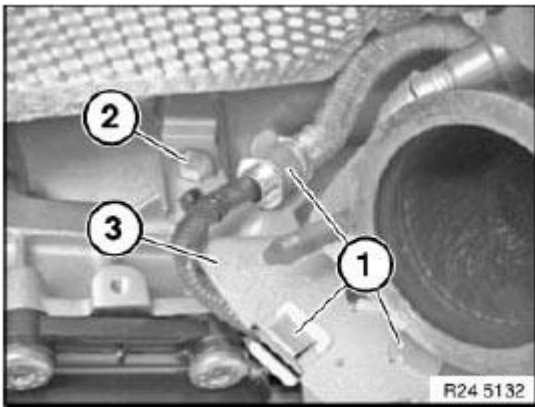


Fig. 29: Identifying Holder Screw And Cable

Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Remove holder (2).

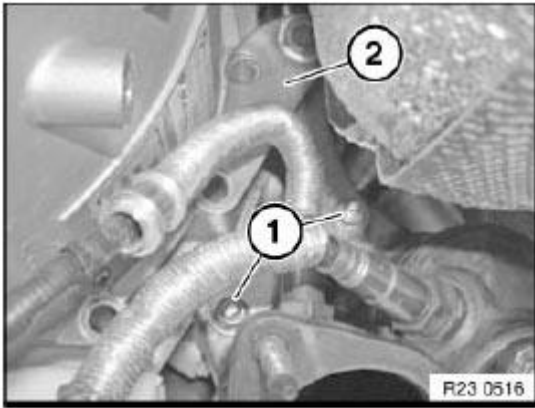


Fig. 30: Identifying Holder Screws

Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connection (1) from reversing light switch.

Release cable from retainers.

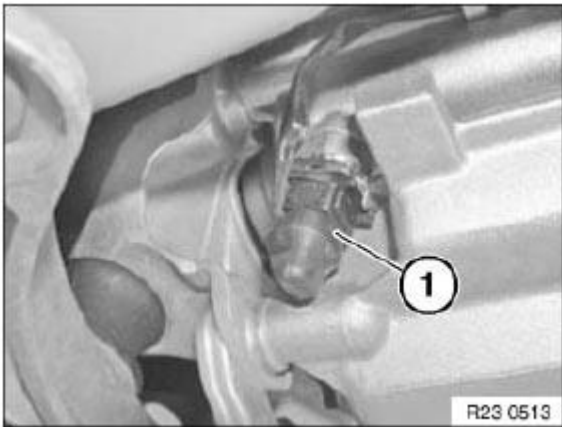


Fig. 31: Identifying Plug Connection

Courtesy of BMW OF NORTH AMERICA, INC.

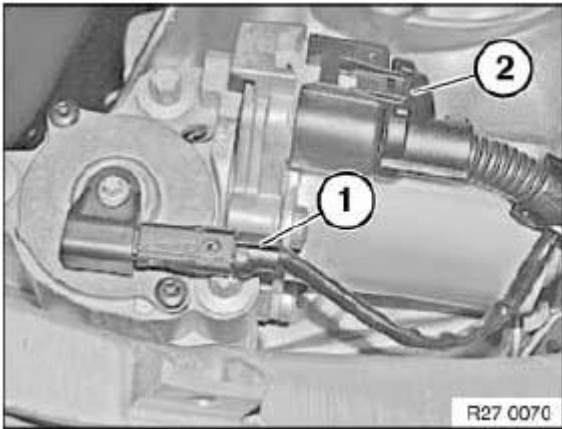


Fig. 32: Identifying Reversing Light Switch

Courtesy of BMW OF NORTH AMERICA, INC.

- Remove propeller shaft from transmission.
- Release center bearing.
- Tie propeller shaft to one side.

Tasks are described in **PROPELLER SHAFT** .

Supporting transmission:

Support transmission with special tools 23 4 050, 00 2 030.

Secure transmission to mounting with tensioning strap (1).

After completion of work, check transmission oil level.

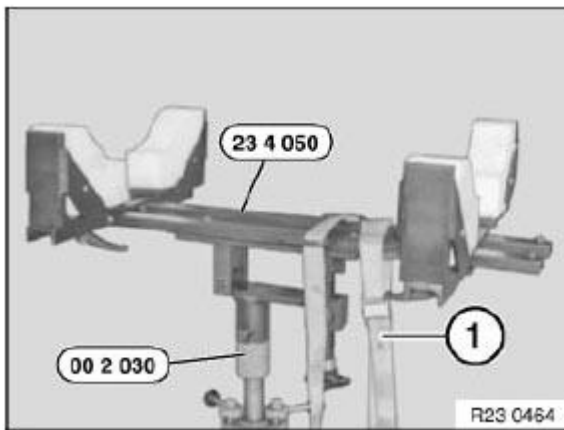


Fig. 33: Supporting Transmission With Special Tools 23 4 050 And 00 2 030

Courtesy of BMW OF NORTH AMERICA, INC.

Remove **CROSS-MEMBER FOR TRANSMISSION MOUNTING (AWD)** .

NOTE: Pressure line of clutch slave cylinder remains connected.

IMPORTANT: Slowly relieve tension on clutch slave cylinder otherwise air is drawn in through sealing sleeve.

Release nuts and remove clutch slave cylinder.

Tightening torque **21 52 5AZ** .

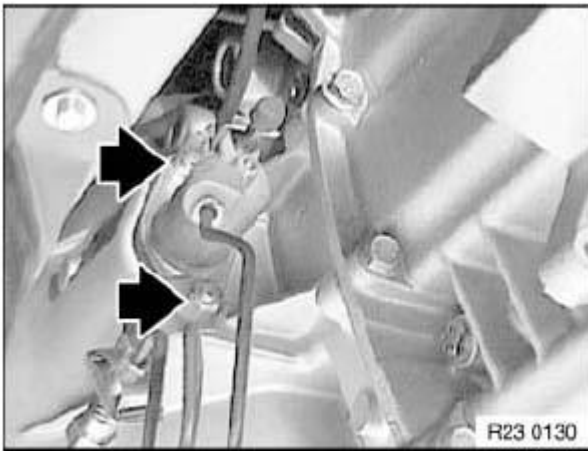


Fig. 34: Locating Clutch Slave Cylinder Nuts
Courtesy of BMW OF NORTH AMERICA, INC.

Lever out retainer (1).

Disengage shift rod (2).

Installation:

Grease shift rod.

Make sure shims (3) are in correct position.

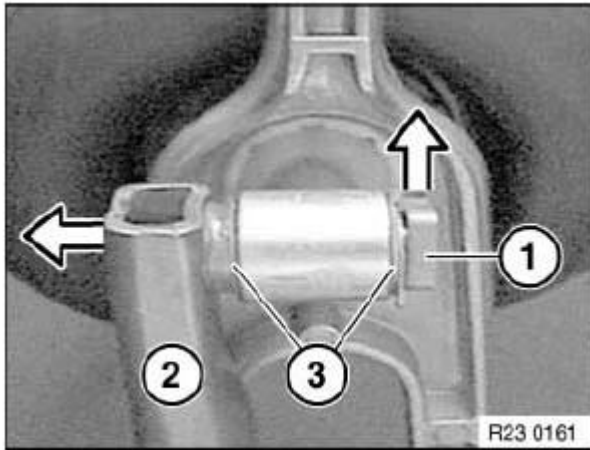


Fig. 35: Disengaging Shift Rod

Courtesy of BMW OF NORTH AMERICA, INC.

Release and remove bearing pins (1) in direction of arrow.

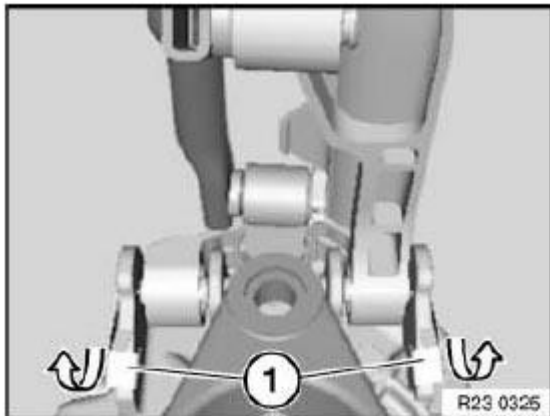


Fig. 36: Removing Bearing Pins

Courtesy of BMW OF NORTH AMERICA, INC.

Lift out shift arm (1).

Installation:

Grease bearing pins (1).

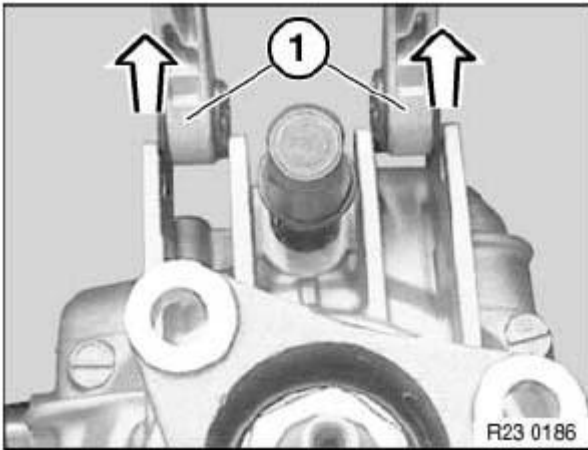


Fig. 37: Lifting Out Shift Arm

Courtesy of BMW OF NORTH AMERICA, INC.

Release screws.

Installation:

Tightening torque, steel screws **23 00 1AZ** .

Tightening torque, aluminium screws **23 00 2AZ** .

Screws: 3/4/5/9/10 (screw 3 only present on N54).

IMPORTANT: Do not allow the transmission to hang off from the transmission input shaft as this will deform the clutch plate. Pull out transmission towards rear and remove.

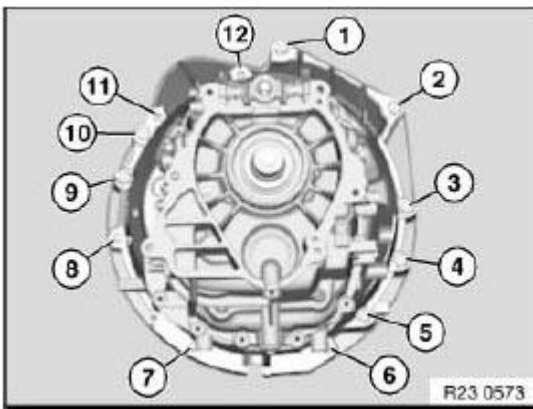


Fig. 38: Identifying Tightening Sequence Of Transmission Screws

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Secure angle of rotation special tool 00 9 120 with magnet 00 9 130 to floor plate. Screw down aluminium screws/bolts according to angle of rotation 23 00 2AZ.

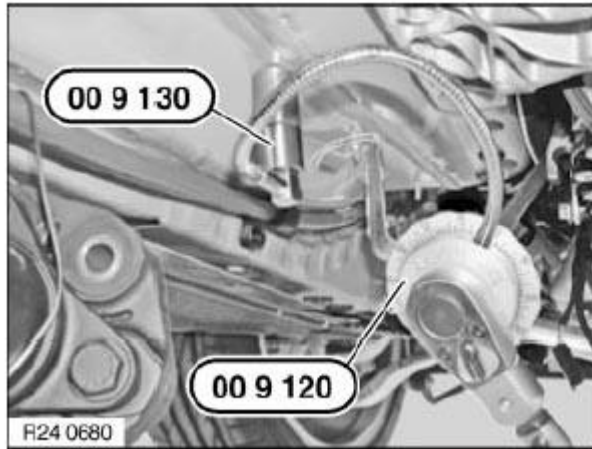


Fig. 39: Identifying Special Tool 00 9 120 And Magnet 00 9 130
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Check that dowel sleeves are correctly seated.

Replace damaged dowel sleeves.

Ensure correct position of cover plate.

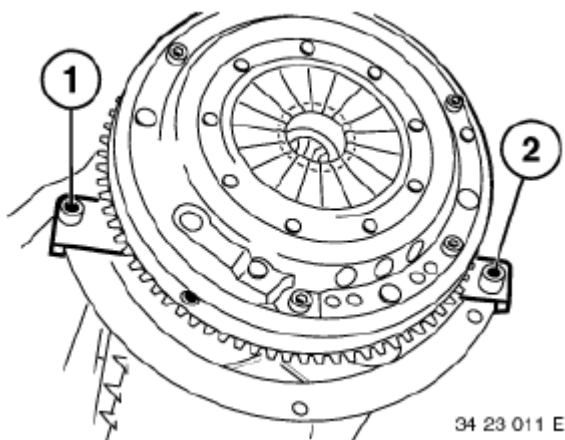


Fig. 40: Identifying Dowel Sleeves
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Check lubrication of transmission input shaft for sticky consistency. If grease is sticky, clean input shaft and **replace clutch plate** .

Check clutch plate for friction rust in splines and **replace** if necessary.

Mechanically remove existing grease and lining abrasion from splines of clutch plate (with a cloth).

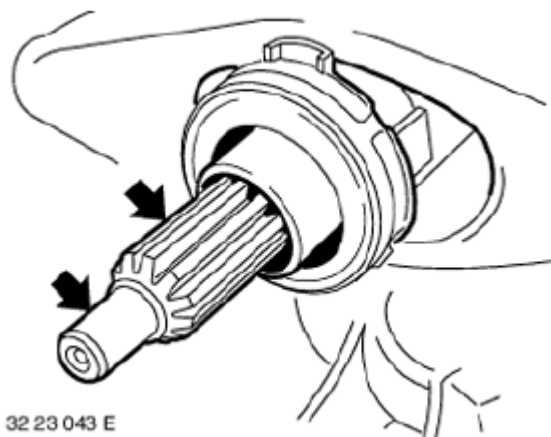


Fig. 41: Identifying Transmission Input Shaft
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Greasing specification:

- Remove and clean **release bearing and release lever** .
- Push on grease scraper ring 21 2 240 as far as it will go.
- Grease splines (1) of input shaft with a brush.
- Detach grease scraper ring.
- Lightly grease guide sleeve for release bearing.

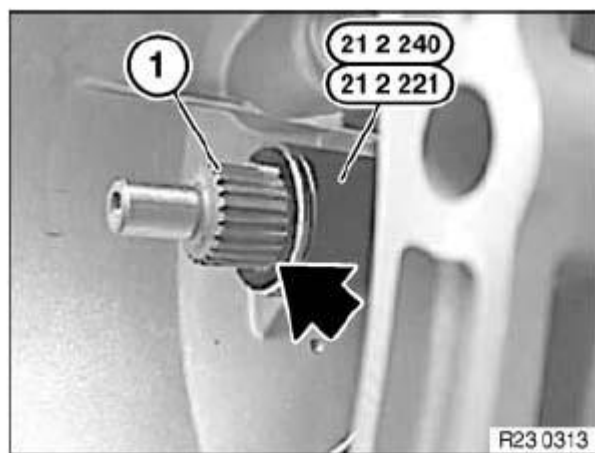


Fig. 42: Identifying Splines Of Input Shaft
 Courtesy of BMW OF NORTH AMERICA, INC.

23 00 037 INSTALLING REPLACEMENT TRANSMISSION (GS6-53BZ/DZ)

IMPORTANT: After completion of work, check TRANSMISSION FLUID LEVEL .
 Use only the approved transmission fluid. See MANUAL TRANSMISSION - OPERATING FLUIDS .

Failure to comply with this instruction will result in serious damage to the transmission.

Recycling:

Catch and dispose of escaping transmission fluid.

Observe country-specific waste-disposal regulations

Necessary preliminary tasks:

- Drain gear oil at oil drain plug. Tightening torque: 23 00 4AZ .
- REMOVE TRANSMISSION.

If necessary, unfasten screws.

Remove and convert transmission bearing block.

Tightening torque 22 32 2AZ .

NOTE: Illustration shows E46.

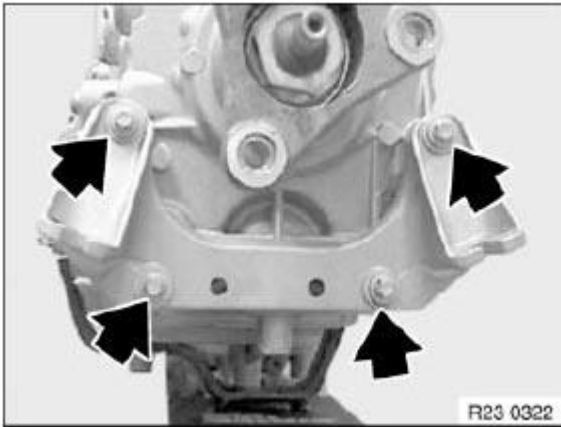


Fig. 43: Locating Transmission Support Block Bolts
Courtesy of BMW OF NORTH AMERICA, INC.

Convert shift rod joint.

Push back retaining ring (1) and drive out dowel pin (2).

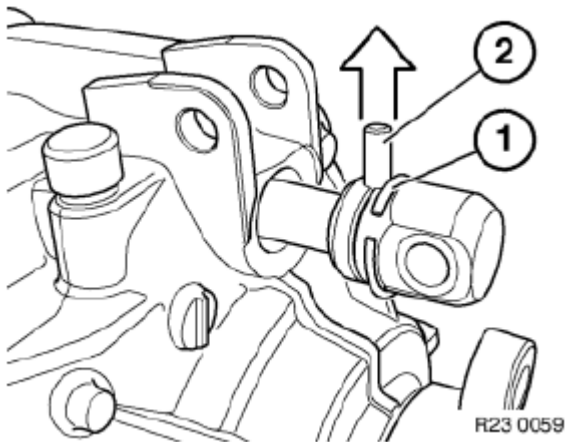
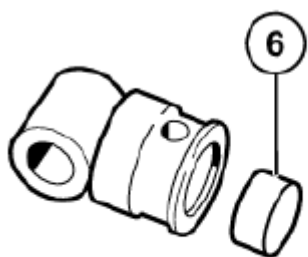


Fig. 44: Driving Out Dowel Pin
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Check damping disk (6) for damage and replace if necessary.



36 25 020 U

Fig. 45: Identifying Damping Disk

Courtesy of BMW OF NORTH AMERICA, INC.

Convert following parts from previous transmission to new transmission.

- **RELEASE BEARING AND RELEASE LEVER** .
- Ball pin and spring wire clip
- Studs for clutch slave cylinder.
- Reversing light switch tightening torque: **23 41 5AZ** .

Add final details to vehicle.

Check oil level.

Installation:

23 00 037 INSTALLING REPLACEMENT TRANSMISSION (GS6-53BZ/DZ) AWD

IMPORTANT: After completion of work, check transmission fluid level . See **TRANSMISSION FLUID LEVEL** .

Use only the approved transmission fluid . See **MANUAL TRANSMISSION - OPERATING FLUIDS**

Failure to comply with this instruction will result in serious damage to the transmission.

Recycling:

Catch and dispose of escaping transmission fluid.

Observe country-specific waste-disposal regulations

Necessary preliminary tasks:

- Drain gear oil at oil drain plug. Tightening torque: **23 00 4AZ** .
- **Remove transmission** .

Release screws.

Remove and convert transmission bearing block.

Tightening torque 22 32 2AZ .

NOTE: Illustration shows E46.

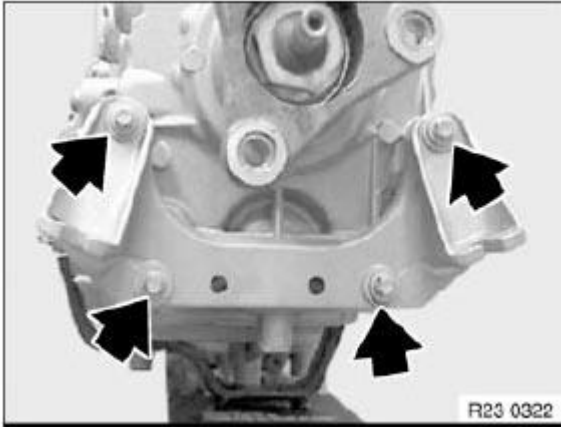


Fig. 46: Locating Convert Transmission Bearing Block Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Convert shift rod joint.

Push back retaining ring (1) and drive out dowel pin (2).

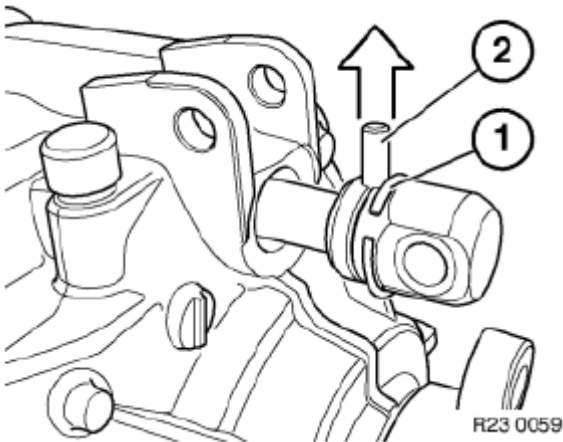
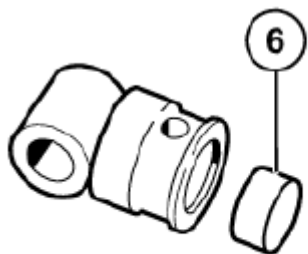


Fig. 47: Removing Dowel Pin
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Check damping disk (6) for damage and replace if necessary.



36 25 020 U

Fig. 48: Identifying Damping Disk

Courtesy of BMW OF NORTH AMERICA, INC.

Convert following parts from previous transmission to new transmission.

- **Release bearing and release lever .**
- Ball pin and spring wire clip
- Studs for clutch slave cylinder.
- Reversing light switch tightening torque: **23 41 5AZ** .

Add final details to vehicle.

Check oil level.

HOUSING WITH COVER

23 11 615 REPLACING GUIDE TUBE FOR CLUTCH RELEASE UNIT (GS6-53BZ/DZ)

NOTE: (transmission removed)

Necessary preliminary tasks:

- Remove **CLUTCH RELEASE BEARING AND RELEASE LEVER** from guide tube

Release screws.

Remove guide tube (1).

Installation:

Clean thread.

Install screws with Loctite 243.

Tightening torque **23 11 2AZ** .

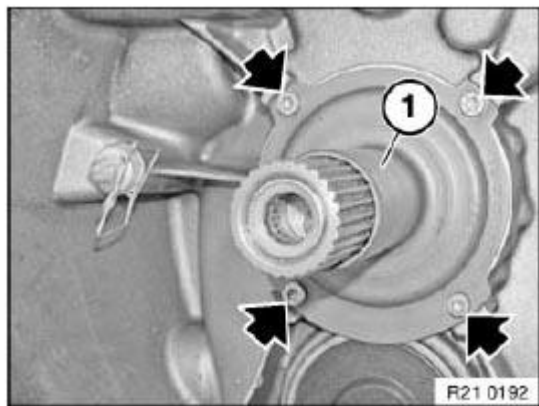


Fig. 49: Identifying Guide Tube And Screws

Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Remove sticker (1) and adhesive with a suitable solvent.



Fig. 50: Identifying Sticker

Courtesy of BMW OF NORTH AMERICA, INC.

BEARING IN HOUSING, SEALING RING

23 12 059 REPLACING RADIAL SHAFT SEAL FOR OUTPUT FLANGE (GS6-53BZ/DZ G-TRANSMISSION)

Special tools required:

- 23 0 020
- 23 0 200
- 23 2 320
- 23 3 210

- 23 3 230
- 33 1 150
- 33 1 154

IMPORTANT: After completion of work, check TRANSMISSION OIL LEVEL .
Use only approved transmission oil. See MANUAL TRANSMISSION - OPERATING FLUIDS .
Failure to comply with this instruction will result in serious damage to the transmission.

Necessary preliminary tasks:

- Unflange propeller shaft from transmission and tie up to one side.

Tasks are described in Removing PROPELLER SHAFT .

Brace output flange with special tool **23 0 020**.

Release collar nut with special tool **23 2 320**.

Release E90, 91 M57T2, E60S85 with special tool **23 0 200**.

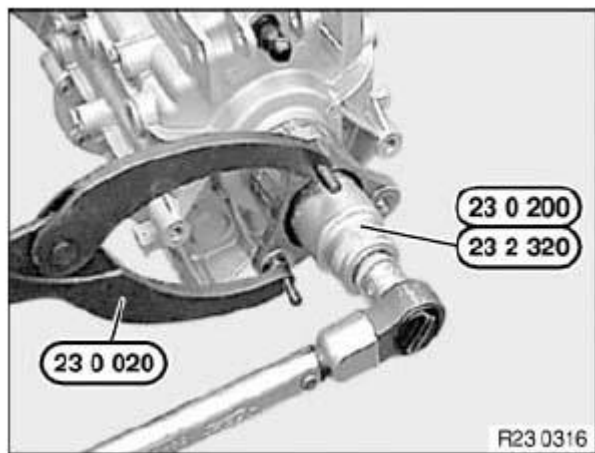


Fig. 51: Identifying Special Tools (23 0 200) And (23 2 320)
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Mark flange with thermo pin and heat to min. 80°- 100°.

WARNING: Scalding hazard! Fit flange wearing suitable protective gloves only!

IMPORTANT: Do not drive on flange.

Secure collar nut with Loctite 243.

- Loctite 243: BMW Parts Service.
- Tightening torque: **23 21 1AZ** .

Detach output flange (1) with special tool **33 1 150** and adapter plate **33 1 154** from output shaft.

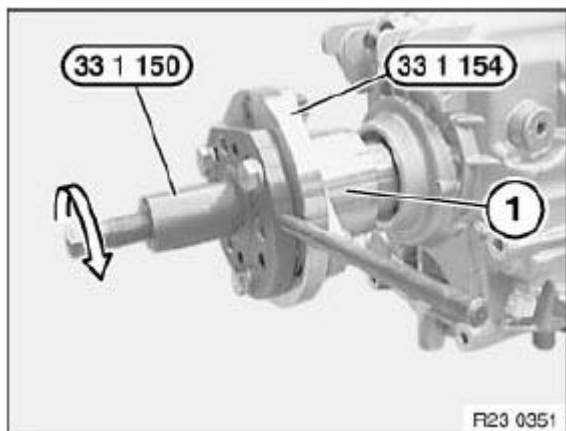


Fig. 52: Identifying Output Flange With Special Tool
Courtesy of BMW OF NORTH AMERICA, INC.

Release screw on special tool **23 3 210** .

Slide special tool **23 3 210** over output shaft and screw into sealing ring firmly.

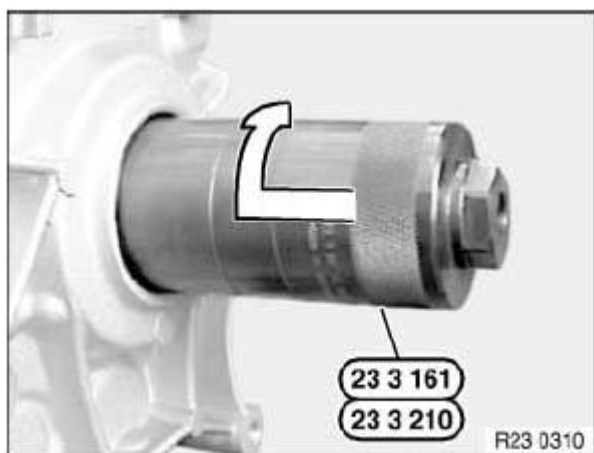


Fig. 53: Sliding Special Tool Over Output Shaft
Courtesy of BMW OF NORTH AMERICA, INC.

Insert screw into special tool **23 3 210** again and continue turning until sealing ring is pulled out of transmission housing.

If necessary, remove ring spring of sealing ring.

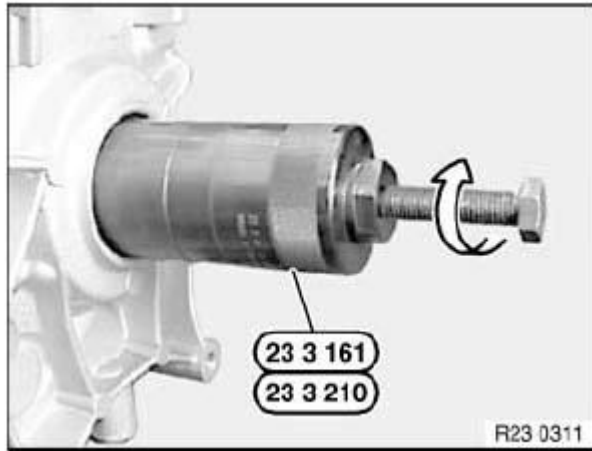


Fig. 54: Inserting Screw Into Special Tool
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Coat sealing lips of new radial seal with gear oil.

Drive in radial seal as far as it will go with special tool **23 3 230** and plastic hammer.

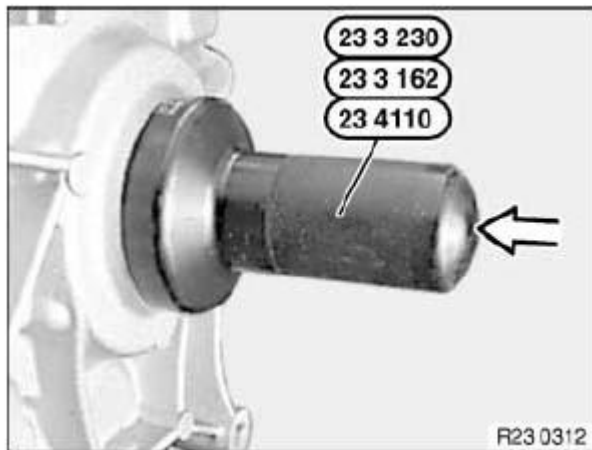


Fig. 55: Identifying Special Tools (23 3 230), (23 4110) And (23 3 162)
Courtesy of BMW OF NORTH AMERICA, INC.

23 12 089 REPLACING RADIAL SHAFT SEAL FOR SELECTOR SHAFT (GS6-53BZ/DZ)

Special tools required:

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Saturday, September 05, 2015 9:26:22 AM

Page 39

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- **23 0 210**
- **23 0 220**

IMPORTANT: After completion of work, check **TRANSMISSION OIL LEVEL** .
Use only approved transmission oil. See **MANUAL TRANSMISSION - OPERATING FLUIDS** .
Failure to comply with this instruction will result in serious damage to the transmission.

Necessary preliminary tasks:

- Shift transmission into 2nd gear
- Unflange propeller shaft from transmission.

Tasks are described in Removing **PROPELLER SHAFT** .

Lever retaining ring (1) out of groove with a small screwdriver.

Slide locking ring (1) towards rear.

Drive out cylinder pin (2).

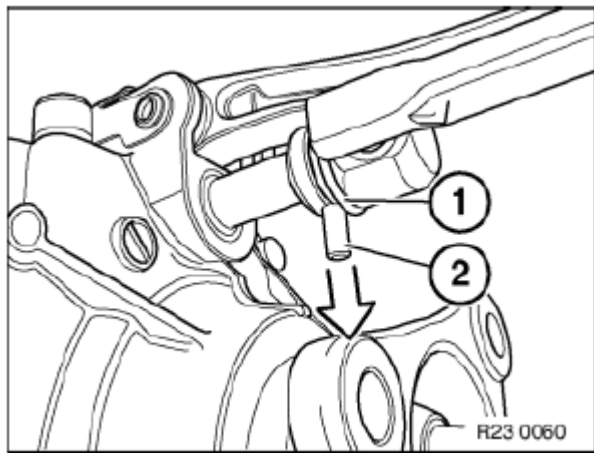


Fig. 56: Driving Out Cylinder Pin
Courtesy of BMW OF NORTH AMERICA, INC.

Screw in special tool **23 0 210** until it is firmly connected with radial seal (1).

Pull out radial seal with special tool **23 0 210** .

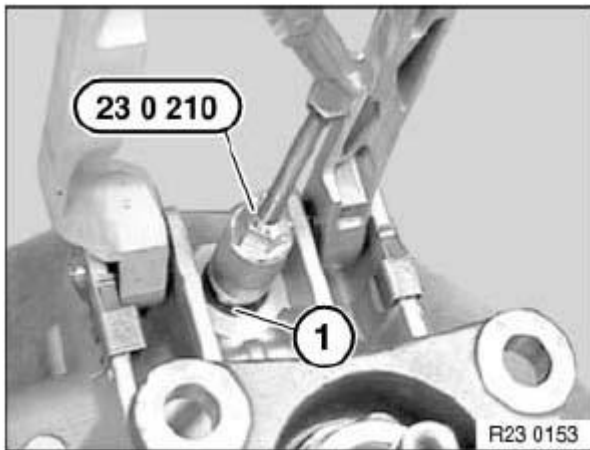


Fig. 57: Identifying Special Tools (23 0 210)

Courtesy of BMW OF NORTH AMERICA, INC.

Coat sealing lips of radial seal and selector shaft with transmission oil.

Drive in radial seal with special tool 23 0 220 .

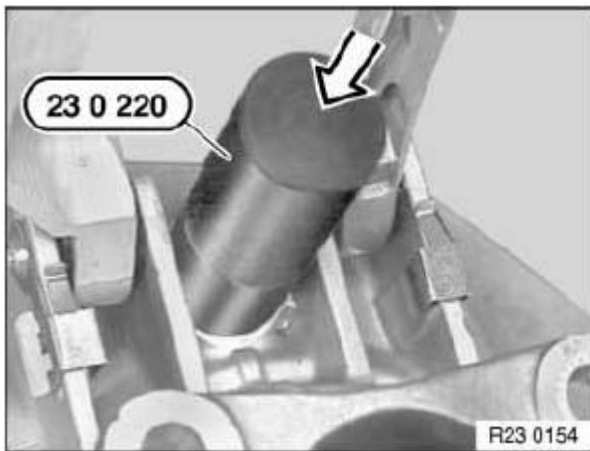


Fig. 58: Identifying Special Tools (23 0 220)

Courtesy of BMW OF NORTH AMERICA, INC.

23 12 510 REPLACING RADIAL SHAFT SEAL FOR DRIVE SHAFT (GS6-53BZ/DZ)

Special tools required:

- 23 3 200
- 23 3 220

IMPORTANT: After completion of work, check TRANSMISSION OIL LEVEL .
Use only approved transmission oil. See MANUAL TRANSMISSION -

OPERATING FLUIDS .

Failure to comply with this instruction will result in serious damage to the transmission!

Necessary preliminary tasks:

- Remove **TRANSMISSION**.
- Remove **CLUTCH RELEASE UNIT AND RELEASE LEVER** from guide tube.

Release screws.

Tightening torque: **23 11 2AZ** .

Remove guide tube (1).

Installation:

Clean guide tube.

Do not grease guide tube.

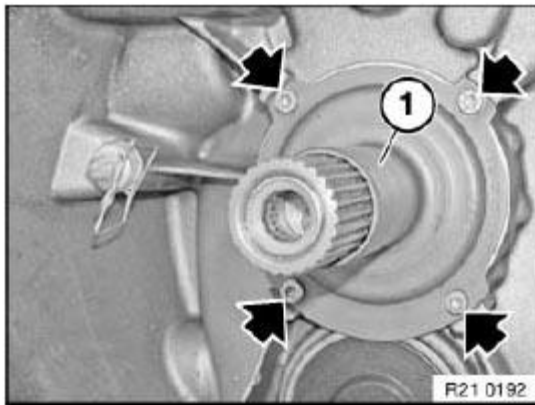


Fig. 59: Identifying Guide Tube And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Release screw on special tool **23 3 200**.

Push special tool onto drive shaft and screw into sealing ring.

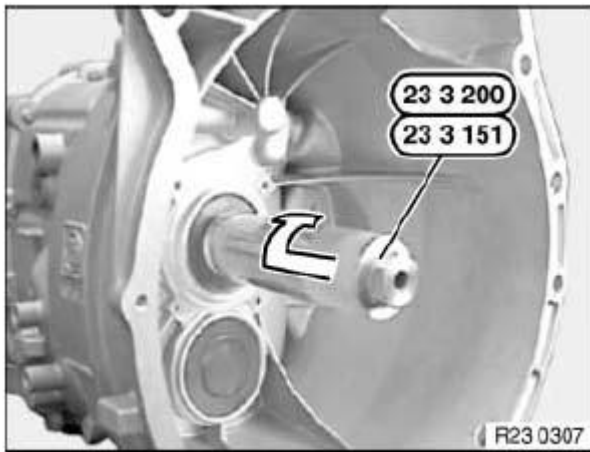


Fig. 60: Identifying Special Tools (23 3 200), (23 3 151) And (23 3 220)
 Courtesy of BMW OF NORTH AMERICA, INC.

Insert screw into special tool 23 3 200 again and continue turning until sealing ring is pulled out of transmission housing.

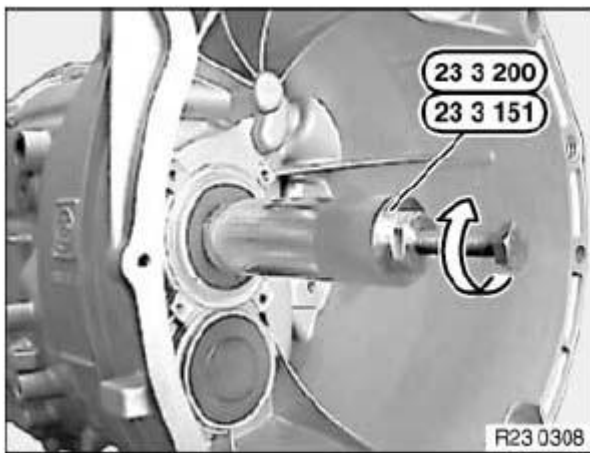


Fig. 61: Identifying Special Tools (23 3 200) And (23 3 251)
 Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Coat sealing lips of radial seal with gear oil.

Push radial seal (1) onto drive shaft up to housing.

Drive in radial seal (1) as far as it will go with special tool 23 3 220 and plastic hammer.

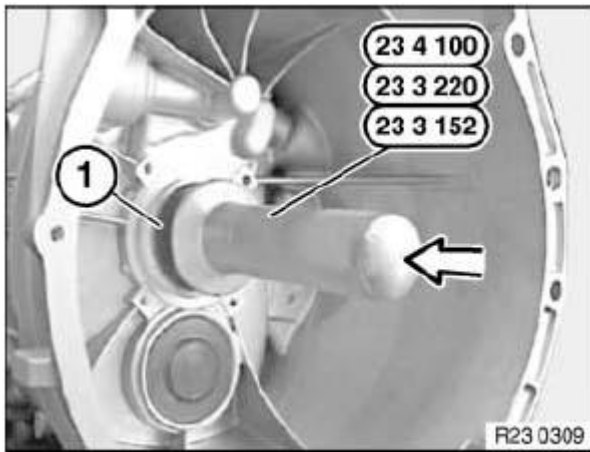


Fig. 62: Identifying Special Tools (23 3 200) And (23 3 251)
Courtesy of BMW OF NORTH AMERICA, INC.

ELECTRICAL ADD-ON PART

23 14 510 REPLACING REVERSING LIGHT SWITCH

Necessary preliminary tasks:

- Remove rear underbody protection

GS6-17DG/BG and GS6-37DG/BG transmissions only.

Disconnect plug connection (1) on reverse gear switch.

Remove reverse gear switch.

Tightening torque **23 14 1AZ** .

NOTE: **Illustration similar**

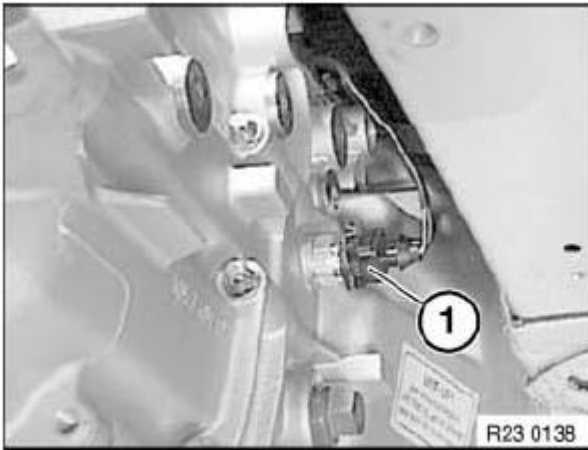


Fig. 63: Identifying Plug Connection

Courtesy of BMW OF NORTH AMERICA, INC.

GS6-53DG/BG transmission only

Disconnect plug connection (1) on reverse gear switch.

Remove reverse gear switch.

Tightening torque **23 14 1AZ** .

NOTE: Illustration similar

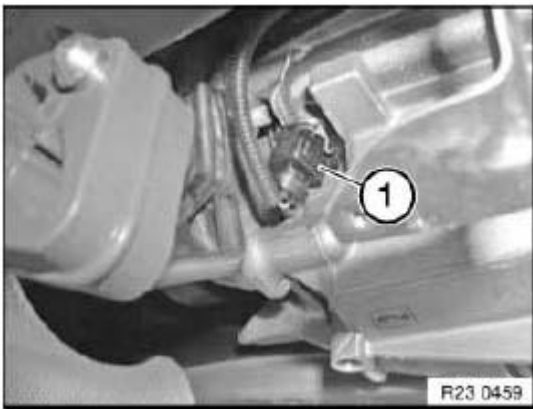


Fig. 64: Identifying Plug Connection

Courtesy of BMW OF NORTH AMERICA, INC.

23 14 550 REMOVING/REPLACING ZERO GEAR SENSOR

IMPORTANT: After installing the zero gear sensor, it is necessary to teach in the position of the zero gear sensor again.

Adjustment is carried out with the "Service function" of the DIS Tester (learn/write zero gear sensor).

Necessary preliminary tasks:

- Lower transmission

Tasks are described in Removing transmission.

Disconnect plug connection (1) on zero gear sensor.

Release screws (2).

Remove zero gear sensor.

Tightening torque **23 14 2AZ** .

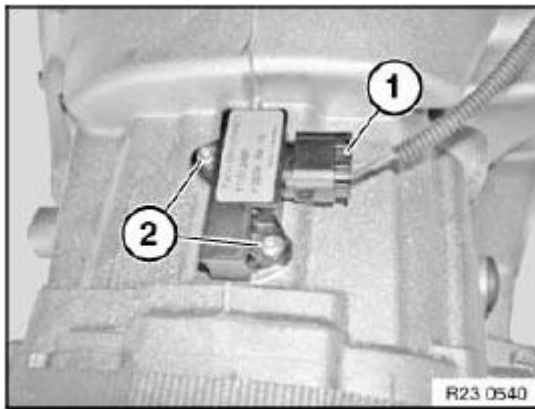


Fig. 65: Identifying Plug Connection On Zero Gear Sensor And Screw
Courtesy of BMW OF NORTH AMERICA, INC.