

- 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

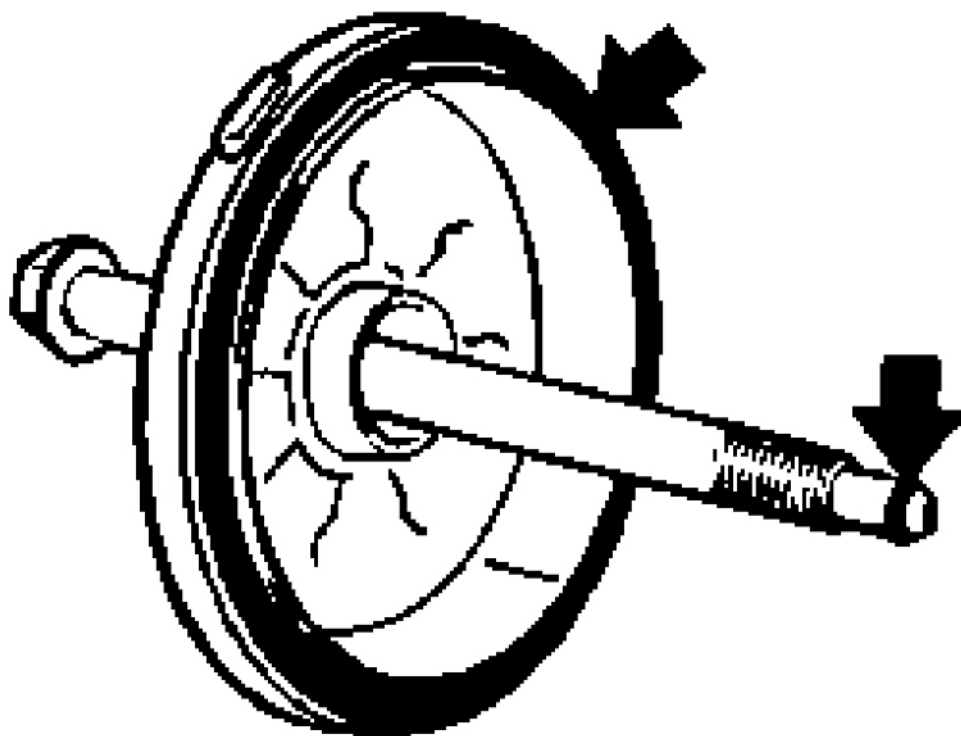
- **Personal precautionary measures:** Danger of slipping! Keep non-involved persons away from the work area. Wear personal protective clothing/equipment.
- **Environmental protection measures:** Prevent oil from draining into drain channels, sewerage systems, pits, cellars, water and the ground.
- **Limiting 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 00 249 BMW ENGINE OIL SERVICE (M40 / M42 / M43 / M43TU / M44)

Change engine oil and oil filter.

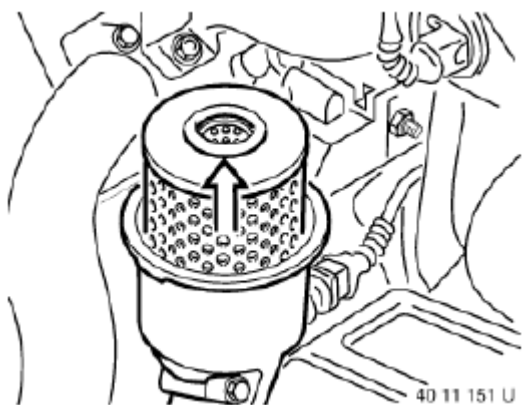
Version with central screw



42 11 151 U

Fig. 2: Identifying Oil-Filter Cover Sealing Ring
Courtesy of BMW OF NORTH AMERICA, INC.

Remove oil filter insert.



40 11 151 U

Fig. 3: Removing Oil Filter Insert
Courtesy of BMW OF NORTH AMERICA, INC.

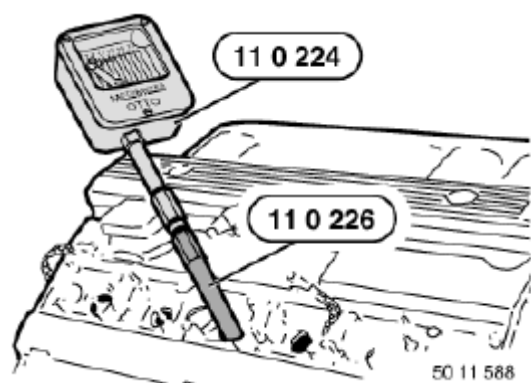


Fig. 8: Identifying Special Tools

Courtesy of BMW OF NORTH AMERICA, INC.

Now clear the fault memory.

11 00 045 CHECKING ABSOLUTE COMPRESSION OF ALL CYLINDERS

With BMW Diagnosis Information System (DIS)



W05 95 001

Fig. 9: Identifying BMW Diagnosis Information System (DIS)

Courtesy of BMW OF NORTH AMERICA, INC.

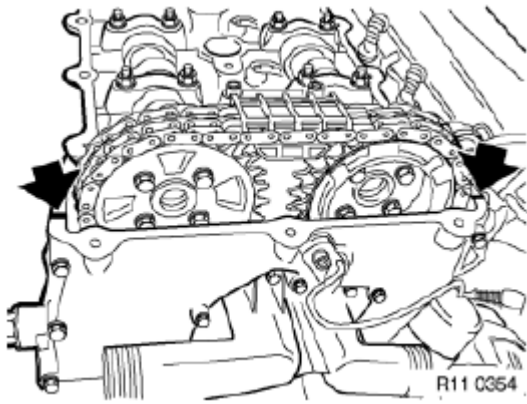


Fig. 39: Locating Gasket Sealing Surfaces (1 Of 2)
Courtesy of BMW OF NORTH AMERICA, INC.

Installation

Clean gasket residue from sealing surfaces.

Apply a thin, uniform bead of Drei Bond 1209 sealing agent to transition area of half-moon sections.

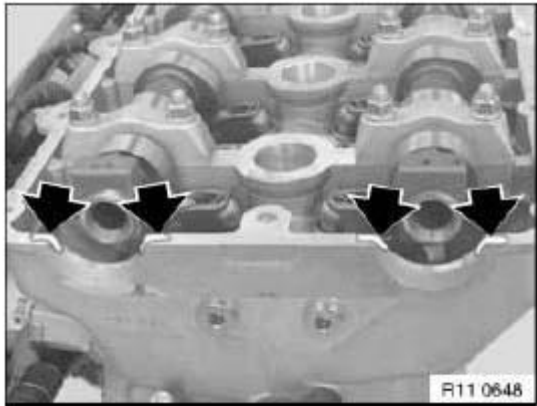


Fig. 40: Locating Gasket Sealing Surfaces (2 Of 2)
Courtesy of BMW OF NORTH AMERICA, INC.

CAUTION: The oil feed of the spray lead is sealed with a sealing ring.
Check/replace sealing ring.
Preassemble the sealing ring to the oil feed.

Rotate engine from 45° before TDC position engine-wise until in TDC position.

Secure crankshaft in TDC position with Special Tool 11 2 300.

CAUTION: Remove Special Tool 11 2 300 before starting engine.

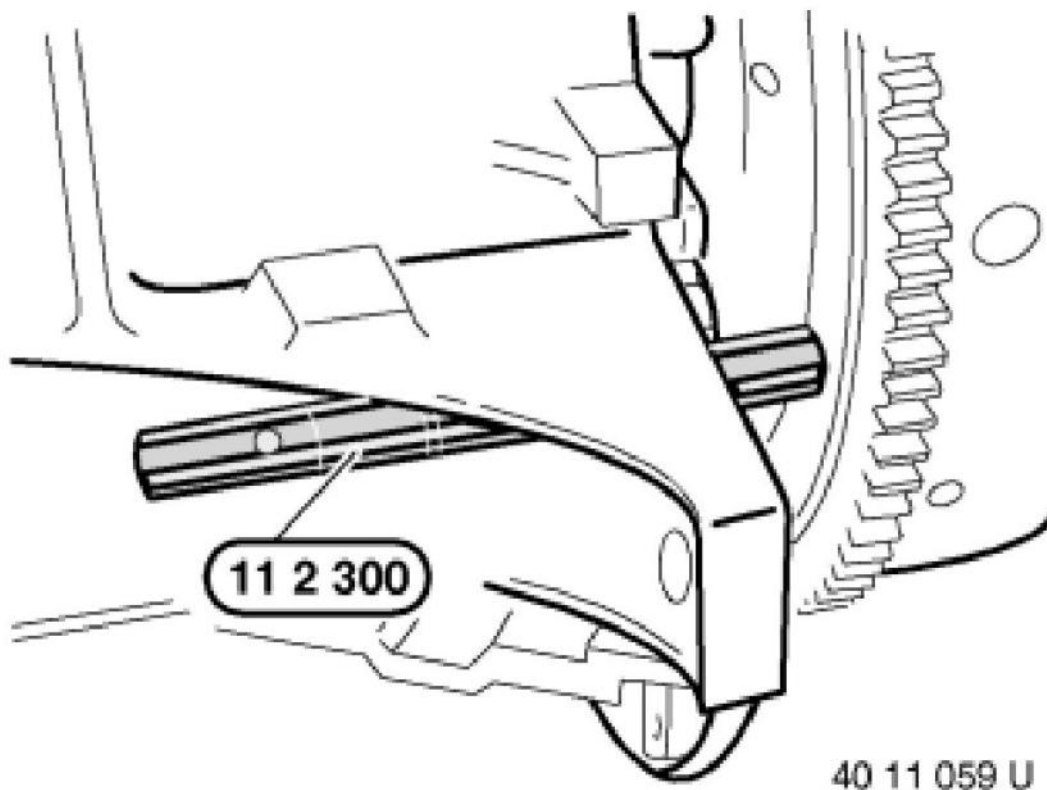


Fig. 59: Identifying Special Tool (11 2 300)
Courtesy of BMW OF NORTH AMERICA, INC.

Place the chain with the chain wheels.

NOTE: **Arrow on chain wheel in cylinder axis points up.**
 Align long bores centrally.

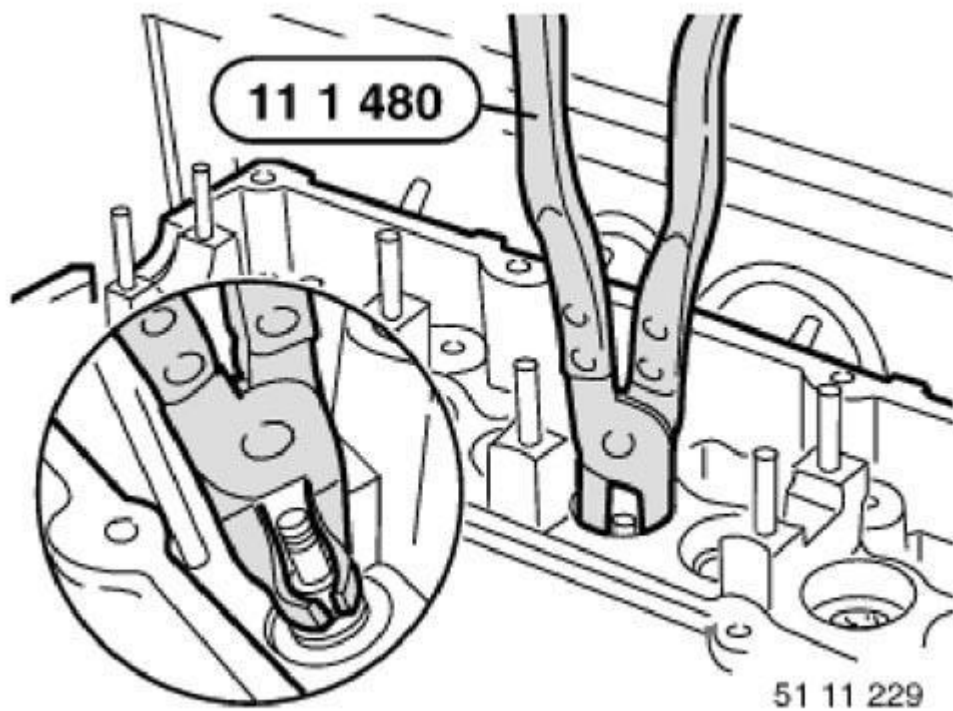


Fig. 77: Identifying Special Tool (11 1 480)
Courtesy of BMW OF NORTH AMERICA, INC.

Lubricate valve stem with oil and insert valve.

Fit Special Tool 11 1 960.

Coat new valve stem seal (1) with oil and install.

E36/7 (Z3)

Measure and note down left and right protrusion of detent buffer (1). Remove left and right detent buffers (1).

Installation

Reinstall detent buffers (1) to noted dimension.

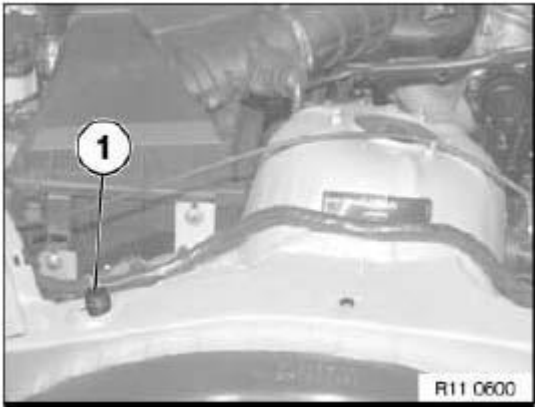


Fig. 87: Identifying Detent Buffers

Courtesy of BMW OF NORTH AMERICA, INC.

E36/7 (Z3)

Unclip cable and lines and place to one side.

Attach special tool 00 0 200 to special tool 00 0 201/202/204/207.

NOTE: Special tool 00 0 207 is secured in bore of detent buffer and behind the carrier support beside the spring dome.



Fig. 88: Identifying Special Tool (00 0 207)

Courtesy of BMW OF NORTH AMERICA, INC.

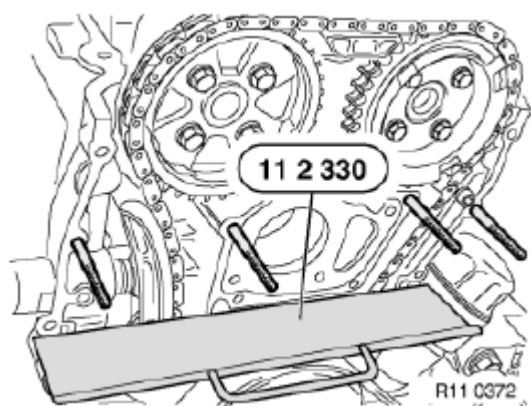


Fig. 105: Identifying Special Tool (11 2 330)
Courtesy of BMW OF NORTH AMERICA, INC.

Installation

Fit gear case cover. Insert screws and fit flush.

Carefully pull out special tool 11 2 330.

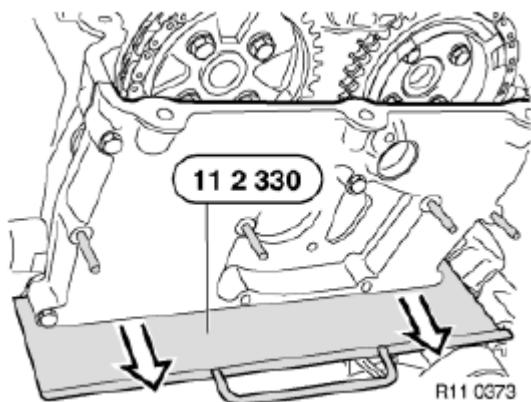


Fig. 106: Identifying Special Tool (11 2 330)
Courtesy of BMW OF NORTH AMERICA, INC.

Remove the sealing ring for the oil feed of the spray lead.

Installation

Check/replace sealing ring. Preassemble the sealing ring to the oil feed.

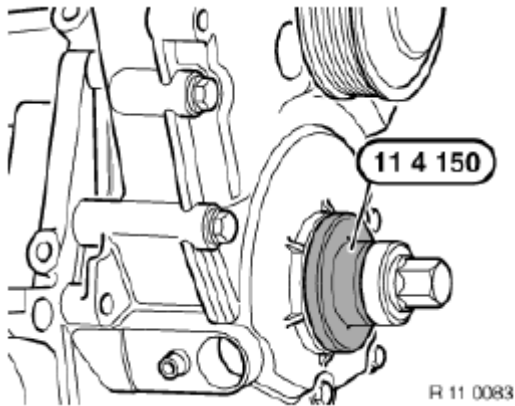


Fig. 122: Identifying Special Tool (11 4 150)

Courtesy of BMW OF NORTH AMERICA, INC.

11 14 151 REPLACING CRANKSHAFT RADIAL SEAL (TRANSMISSION SIDE)

NOTE: This repair instruction is valid for the following engines:

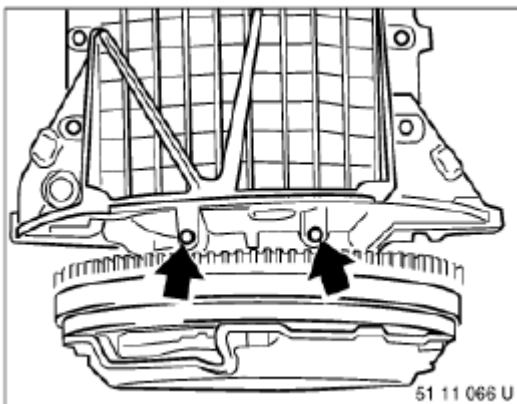
- M40 / M42 / M43 / M43TU / M44
- M50 / M52 / M52TU / M54 / M56
- S52 / S54

Necessary preliminary tasks:

- Remove gearbox
- Drain off engine oil
- Remove flywheel

Unfasten oil sump screws on transmission end.

Loosen oil pan.



for crankshaft.

Install guide bearing shell in crankcase.

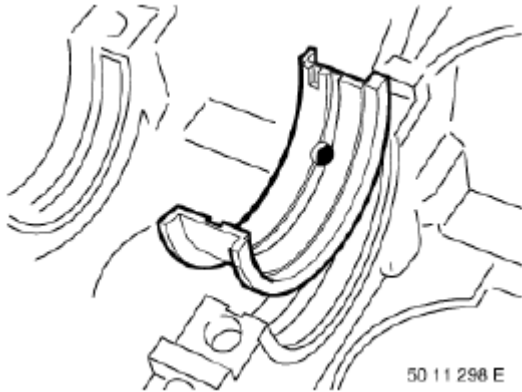


Fig. 140: Identifying Guide Bearing Shell
Courtesy of BMW OF NORTH AMERICA, INC.

Install crankshaft.

NOTE: The crankshaft is marked with yellow, green or white paint according to the tolerance of the main journal.

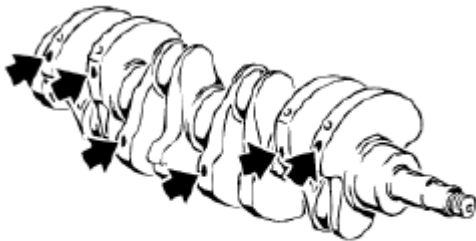


Fig. 141: Identifying Crankshaft Tolerance Of Main Journal
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Place main bearing shells with same color code as that of crankshaft in main bearing caps.

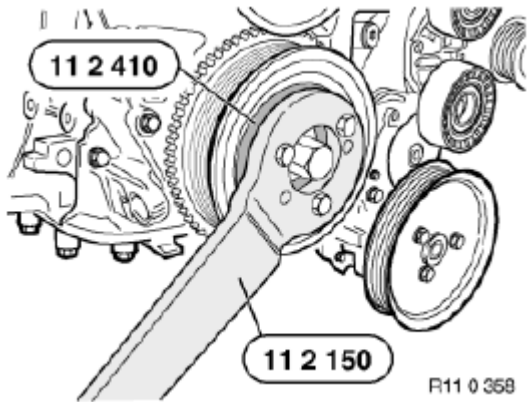


Fig. 159: Identifying Special Tools

Courtesy of BMW OF NORTH AMERICA, INC.

Unscrew central bolt.

Replace radial seal in lower timing case cover.

Installation:

Align vibration damper with groove to featherkey.

Replace central bolt.

Tightening torque see 11 23 5AZ in ENGINE - TORQUE SPECIFICATIONS (M44) .

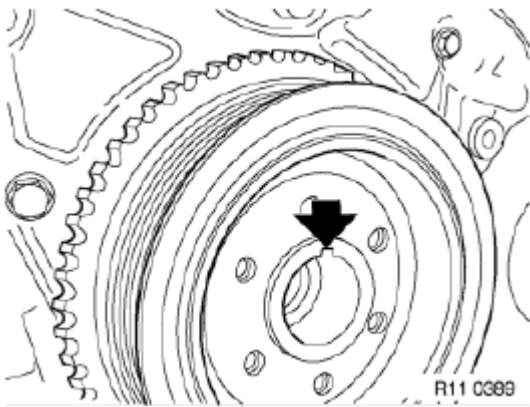


Fig. 160: Aligning Vibration Damper With Groove To Featherkey

Courtesy of BMW OF NORTH AMERICA, INC.

CONNECTING ROD WITH BEARING

11 24 571 REPLACING ALL CONNECTING-ROD BEARINGS (M44)

(piston removed)

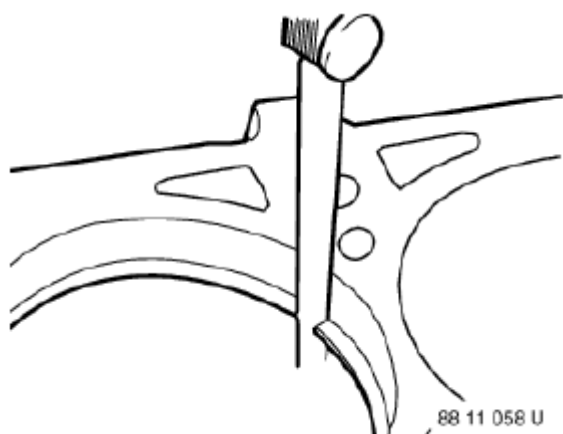


Fig. 186: Measuring Contact Clearance
Courtesy of BMW OF NORTH AMERICA, INC.

V-RIBBED BELT WITH TENSIONER

11 28 010 REPLACING ALTERNATOR DRIVE BELT (M44)

NOTE: If the drive belt are to be reused, mark the rotation direction and reinstall the drive belt with the same rotation direction.

Remove fan coupling with fan wheel, refer to 11 52 020

Remove the dust cap.

Push the tensioning device for the drive belt of the alternator back on the bolt connection of the pulley.

CAUTION: The bolt connection of the pulley for the tensioning device for the drive belt has left-hand thread and is peened.
Only change the pulley in conjunction with the tensioning device for the drive belt.

Remove drive belt.

Courtesy of BMW OF NORTH AMERICA, INC.

Check the chain wheel and replace if necessary.

Align sprocket with woodruff key and install sprocket with timing chain in position.

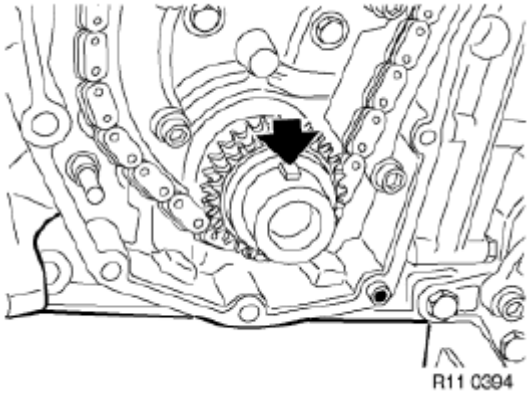


Fig. 228: Locating Woodruff Key

Courtesy of BMW OF NORTH AMERICA, INC.

Check the chain wheels and replace if necessary.

Place the chain with the chain wheels.

NOTE: The arrows on the chain wheels in cylinder axis point up.

Align long bores centrally.

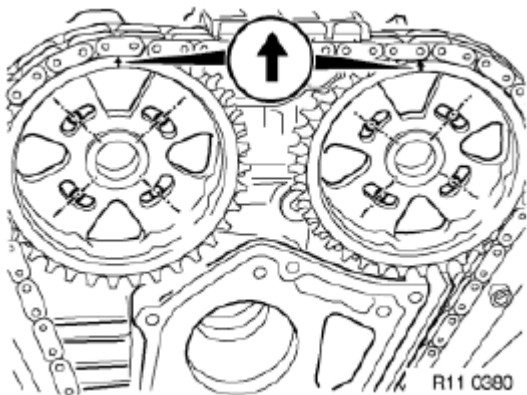


Fig. 229: Locating Arrow On Chain Wheel

Courtesy of BMW OF NORTH AMERICA, INC.

Place the sensor gear onto the inlet chain wheel.

NOTE: Arrow on sensor gear in cylinder axis points up.

NOTE: Place fingers to one side in orderly fashion.
Worn rockers may only be reused on the same grooves of the camshaft.

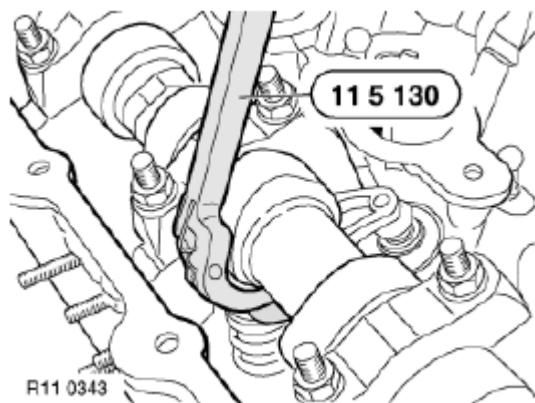


Fig. 251: Identifying Special Tool (11 5 130)
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: The rockers are crimped between the hydraulic valve clearance compensating element and the cam of the camshaft.

CAUTION: Check that the rocker is installed in the correct position.

If necessary, replace camshaft, refer to 11 31 001

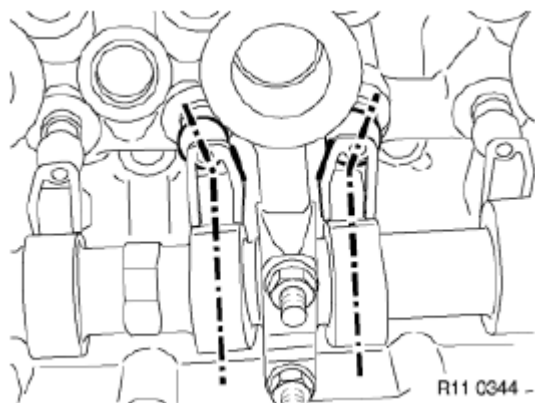


Fig. 252: Rocker Installed In Correct Position
Courtesy of BMW OF NORTH AMERICA, INC.

11 33 062 REPLACING ALL HYDRAULIC VALVE CLEARANCE ADJUSTMENT ELEMENTS (HVA) (M44)

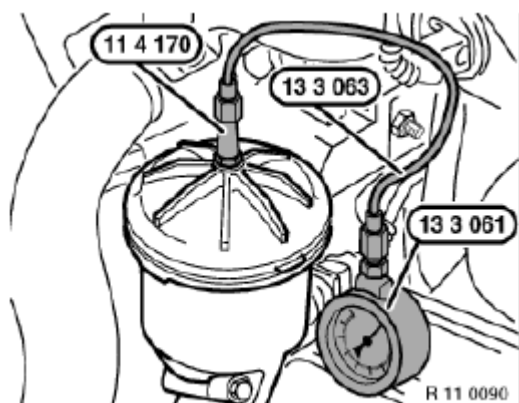
Remove all fingers, refer to 11 33 050

Fig. 269: Locating Sealing Rings

Courtesy of BMW OF NORTH AMERICA, INC.

Connect special tools 13 3 061 / 063.

Start engine and check engine oil pressure, refer to **ENGINE - TECHNICAL DATA (M44)** .

**Fig. 270: Identifying Special Tools (11 4 170, 13 3 063 And 13 3 061)**

Courtesy of BMW OF NORTH AMERICA, INC.

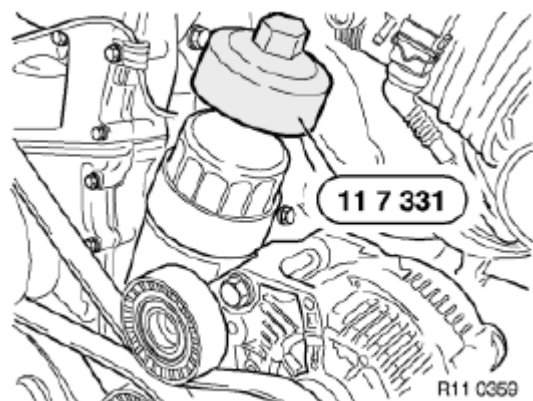
Version with screw cap

Loosen the oil filter cap using special tool 11 7 331.

NOTE: Oil flows from oil-filter housing into oil pan.

Installation

Tightening Torque, refer to 11 42 2AZ in **ENGINE - TORQUE SPECIFICATIONS (M44)** .

**Fig. 271: Identifying Special Tool (11 7 331)**

Courtesy of BMW OF NORTH AMERICA, INC.