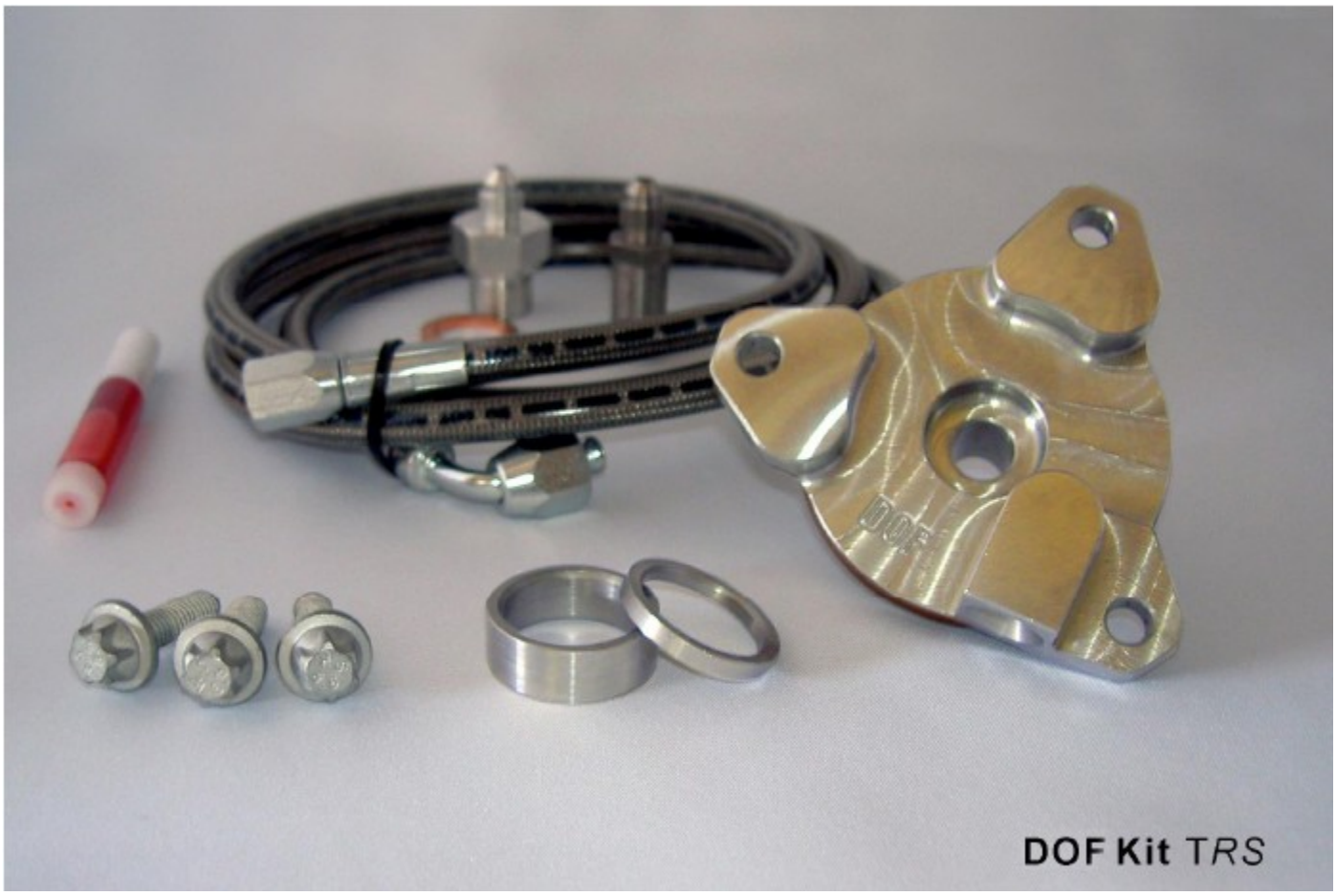
Installation Instructions for Direct Oil Feed Kit Versions DOF1 (early style)

Please read through the complete instructions to familiarize yourself with the process before you attempt to do it for the first time.

The DOF Kit 1 is for M96 Porsche engines with the dual-row or single-row IMS bearing.

DESIGN911 UK

T: + 44 (0) 208 500 8811 **F:** + 44 (0) 208 501 3015 **E:** sales@design911.com



Cars with the double-row bearing use the small spacer (ring) and cars with the single-row bearing use the large spacer (ring).

Parts included in each kit:

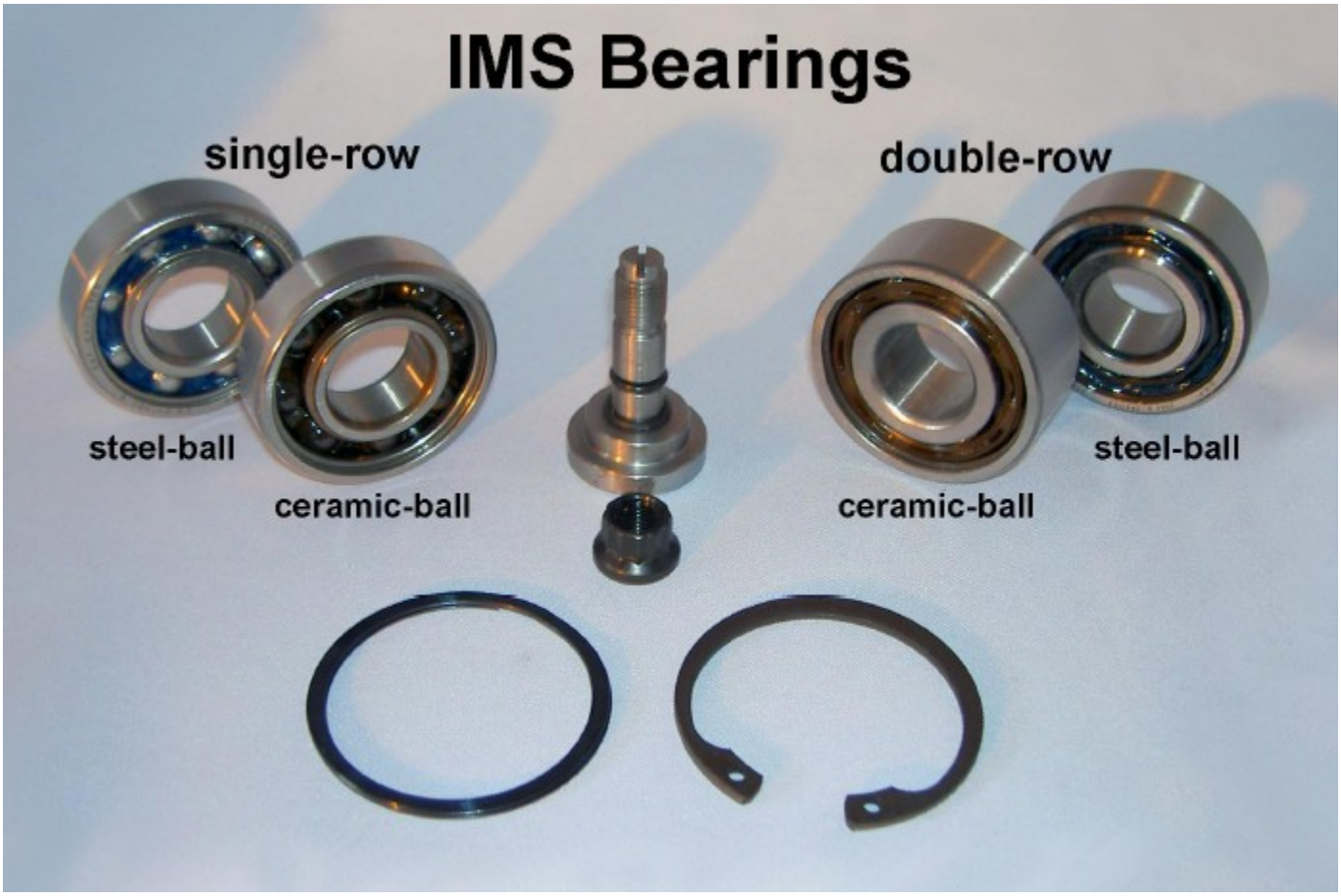
- Patented DOF flange housing with seal
- Spacer ring (small ring for dual-row, large ring for single-row)
- M14x1.5 (19 mm hex) oil line adapter with crush washer
- Oil line straight fitting with o-ring
- Tube of thread lock
- 3 new M6x20 micro-encapsulated flange housing bolts
- High-pressure flexible oil line (3,000 psi rated DOT)
- Camshaft housing plug

DESIGN911 UK

T: + 44 (0) 208 500 8811 **F:** + 44 (0) 208 501 3015 **E:** sales@design911.com

Parts included in IMS Bearing Kit (order separately):

- IMS bearing (single or double-row, steel or ceramic balls)
- IMS bearing support shaft with nut and o-ring seal
- Retaining spring clip



Tools needed:

- Air/electric grinder with bit (or hand saw and assortment of files)
- Flat-blade screwdrivers
- Flat-bladed pry bars
- Selection of sockets including 32 mm for chain tensioner
- Selection of wrenches

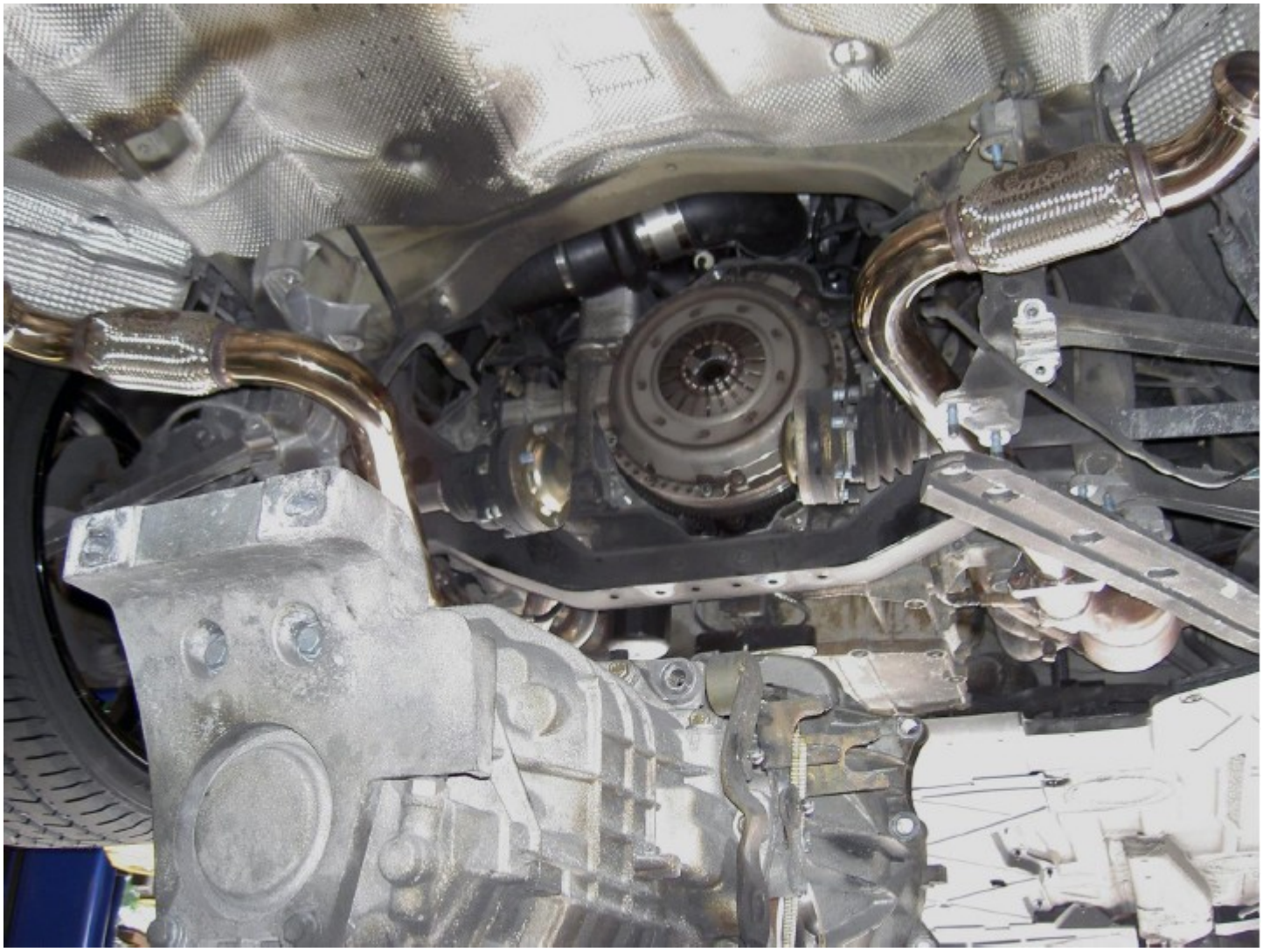
DESIGN911 UK

T: + 44 (0) 208 500 8811 **F:** + 44 (0) 208 501 3015 **E:** sales@design911.com

- Hex allen wrench for oil plug
- Spring-clip (c-clip) removal/insertion pliers
- IMS bearing extraction tool (if replacing the existing bearing)
- IMS bearing insertion tool (if replacing the existing bearing)
- Soft-faced mallet/hammer
- Grease
- Work gloves
- Rags/paper towels

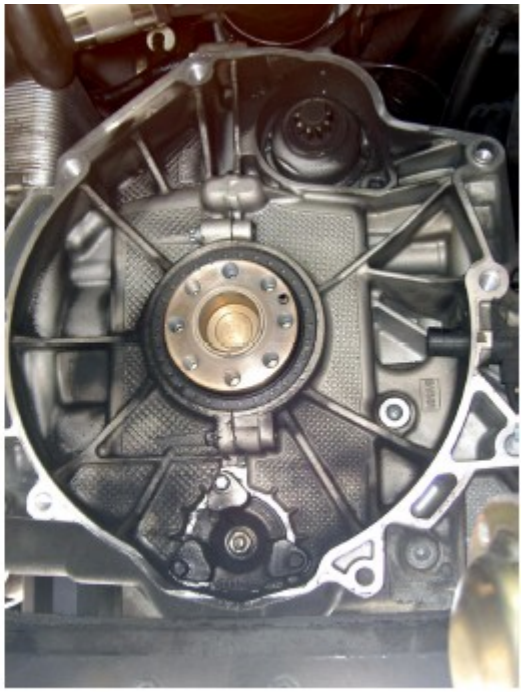
INSTRUCTIONS:

These instructions begin after the shop has removed the transmission from the vehicle according to Porsche's recommendations.



Remove the clutch assembly (or torque converter).

Remove the dual-mass flywheel



Inspect the rear mail seal (RMS) and determine if it will be replaced due to leaks. If replacement is needed, do so after the DOF installation.

Using a straight ruler or caliper and marker, on the bottom of the exposed bell housing edge on the engine, from the center, just under the IMS bearing, measure and place a mark at 13 mm and a second mark at 33 mm to the right of the center (as you're looking at it).

DESIGN911 UK

T: + 44 (0) 208 500 8811 **F:** + 44 (0) 208 501 3015 **E:** sales@design911.com

Clean the surrounding area of soot and debris.

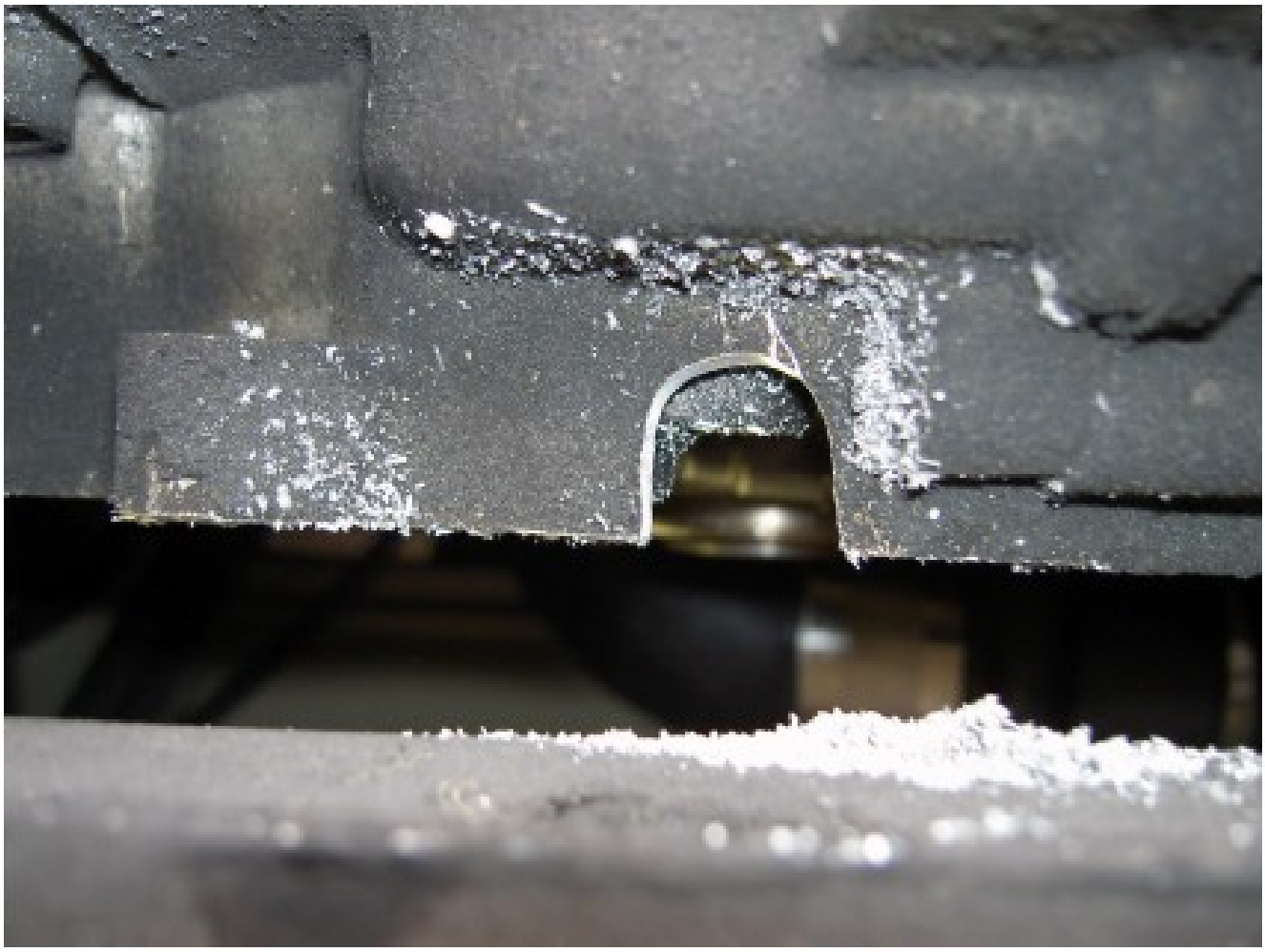
To allow you more working room, on the Boxsters remove the side of the engine's lower safety cable from the engine support yolk immediately under where you will be grinding into the bell housing. On the Carreras, loosen and move out of the way the rear sway bar.

Using an electric or air grinder and correct bit for soft metal and/or a hand saw, cut at the measured marks on the bell housing edge. Cut deep enough to be able to pass and connect the oil line's fitting into the new flange. You can cut all the way through the bell housing nerve up to but not into the engine case.

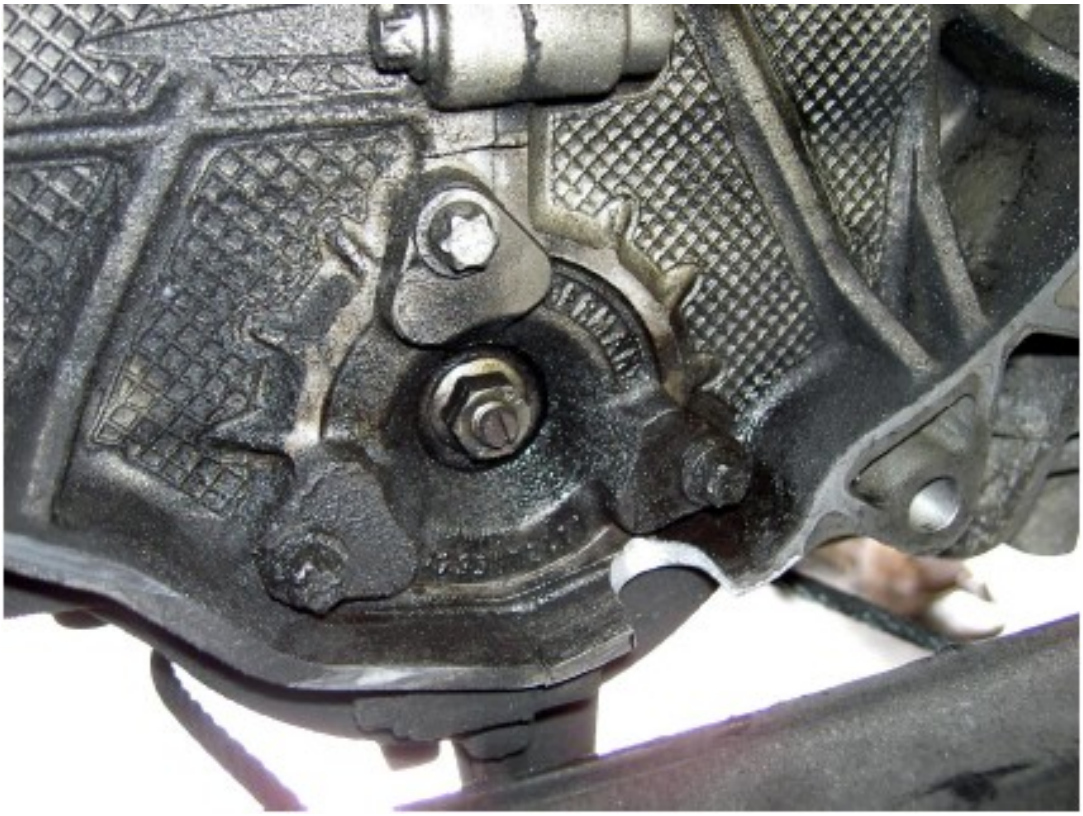
DESIGN911 UK

T: + 44 (0) 208 500 8811 **F:** + 44 (0) 208 501 3015 **E:** sales@design911.com

View from underneath. You can finish with a file later on, if needed.



Clean all of the metal debris.



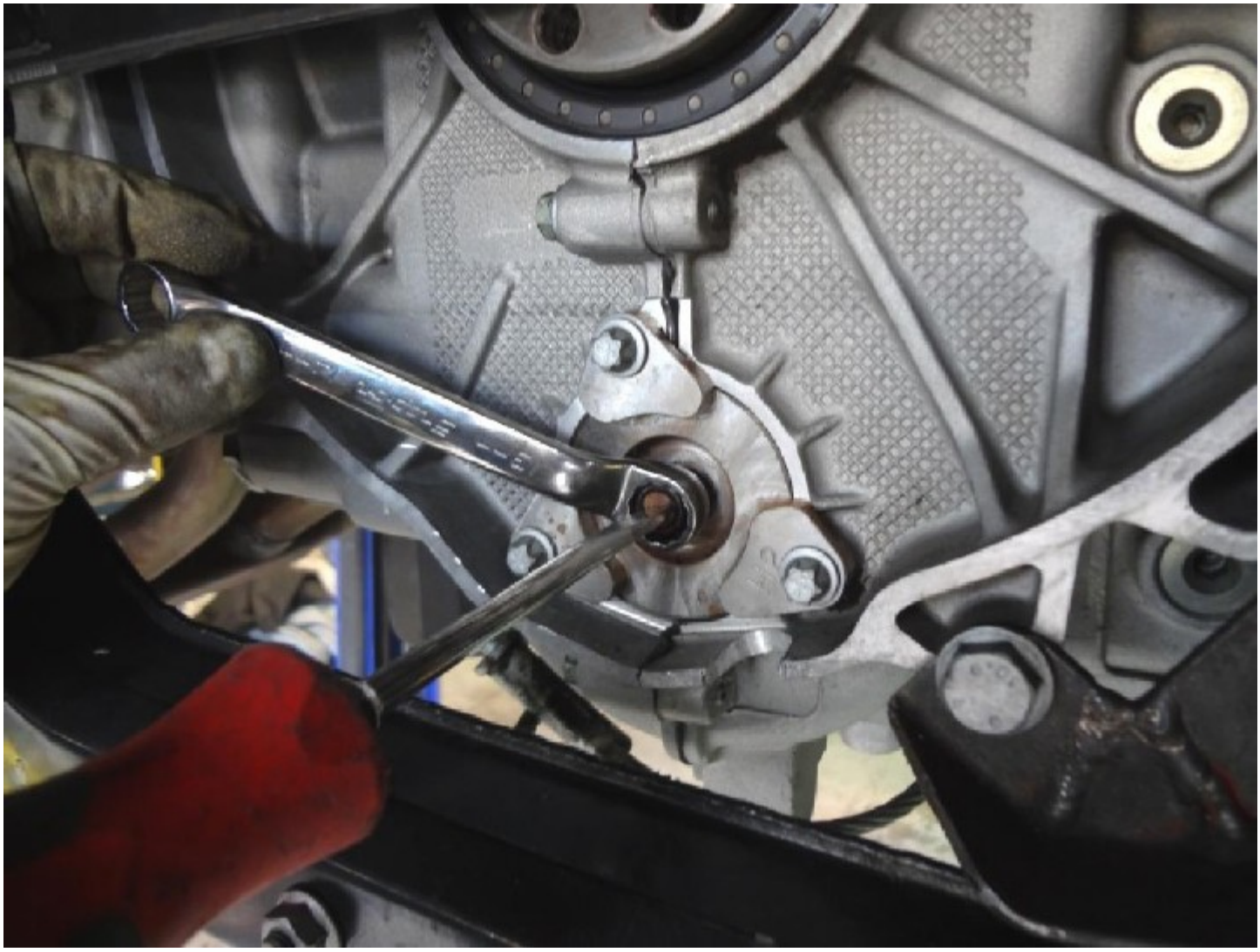
Put the engine in top dead center (TDC).
On the Boxsters, remove the right camshaft plug and lock cam in place with the correct locking key. On the Carrera it’s the left camshaft.

Also, lock the engine’s crankshaft to avoid any movement during installation.

Drain the engine oil.

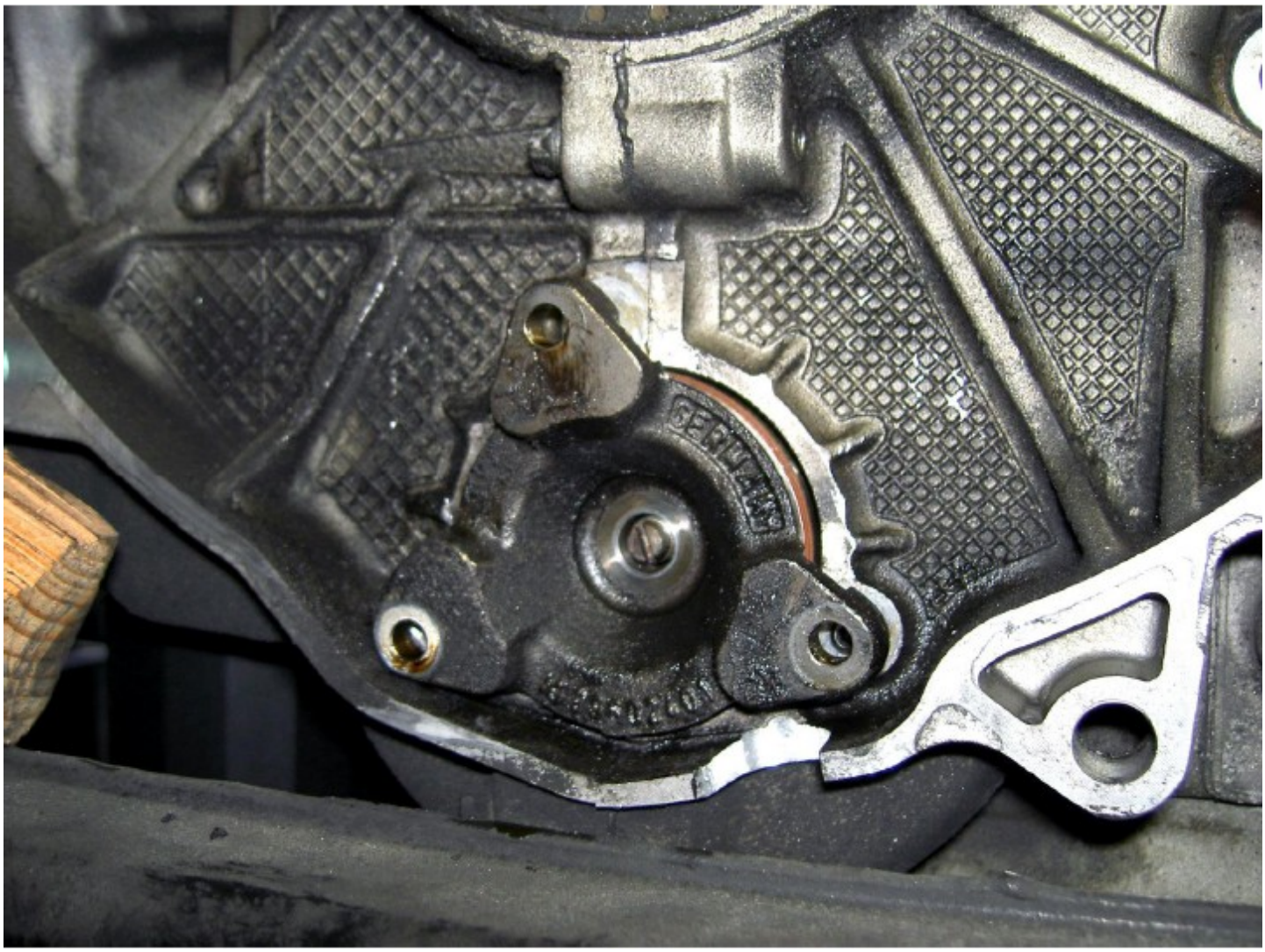
FLANGE/BEARING REMOVAL

Holding the end of the bearing support shaft with a flat screwdriver, loosen and remove the center nut.



Remove the three flange support bolts.

Using a couple of flat-bladed pry bars or strong screwdrivers slowly and carefully pry out the existing bearing flange.



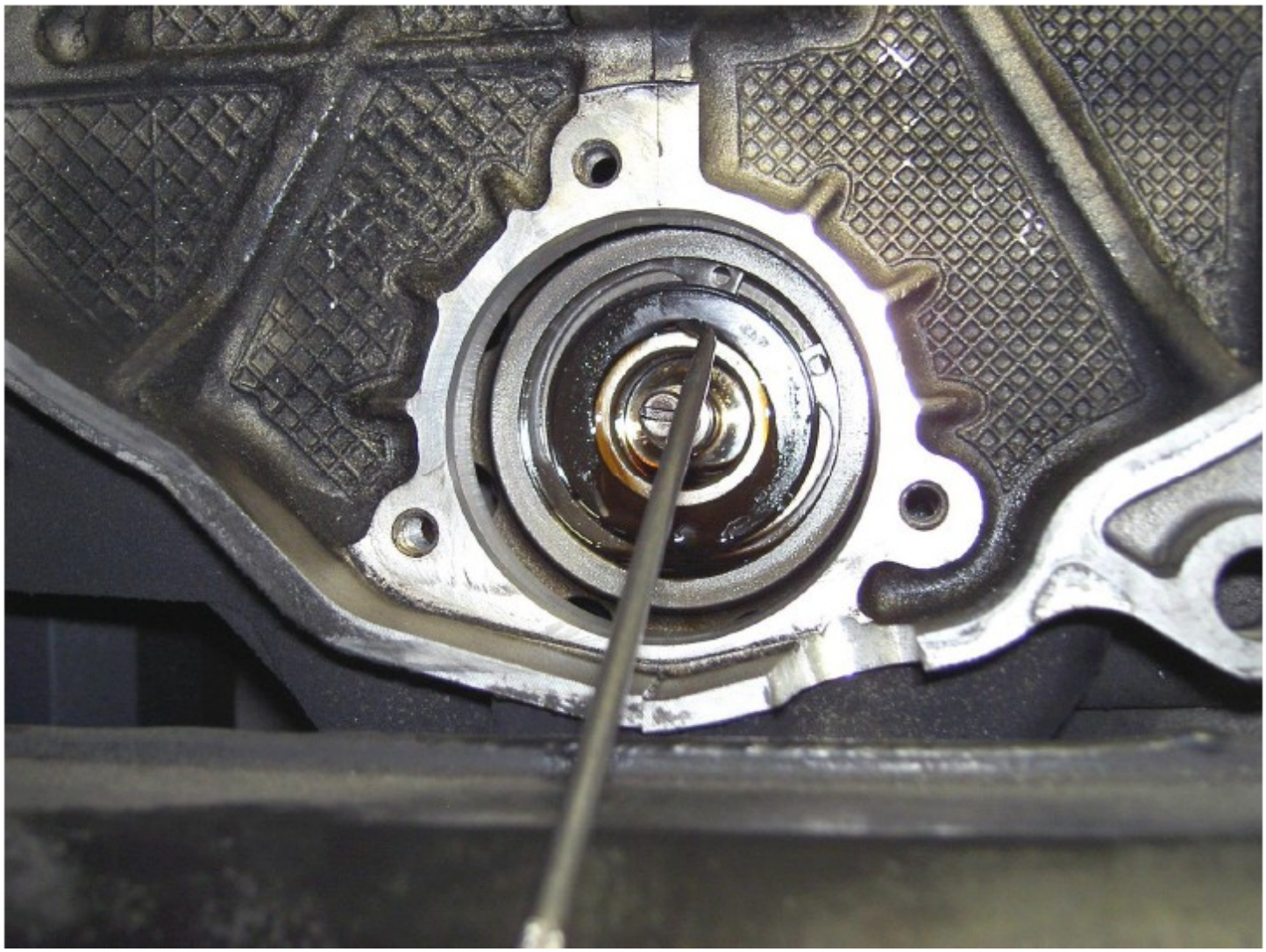
Be prepared to catch oil.

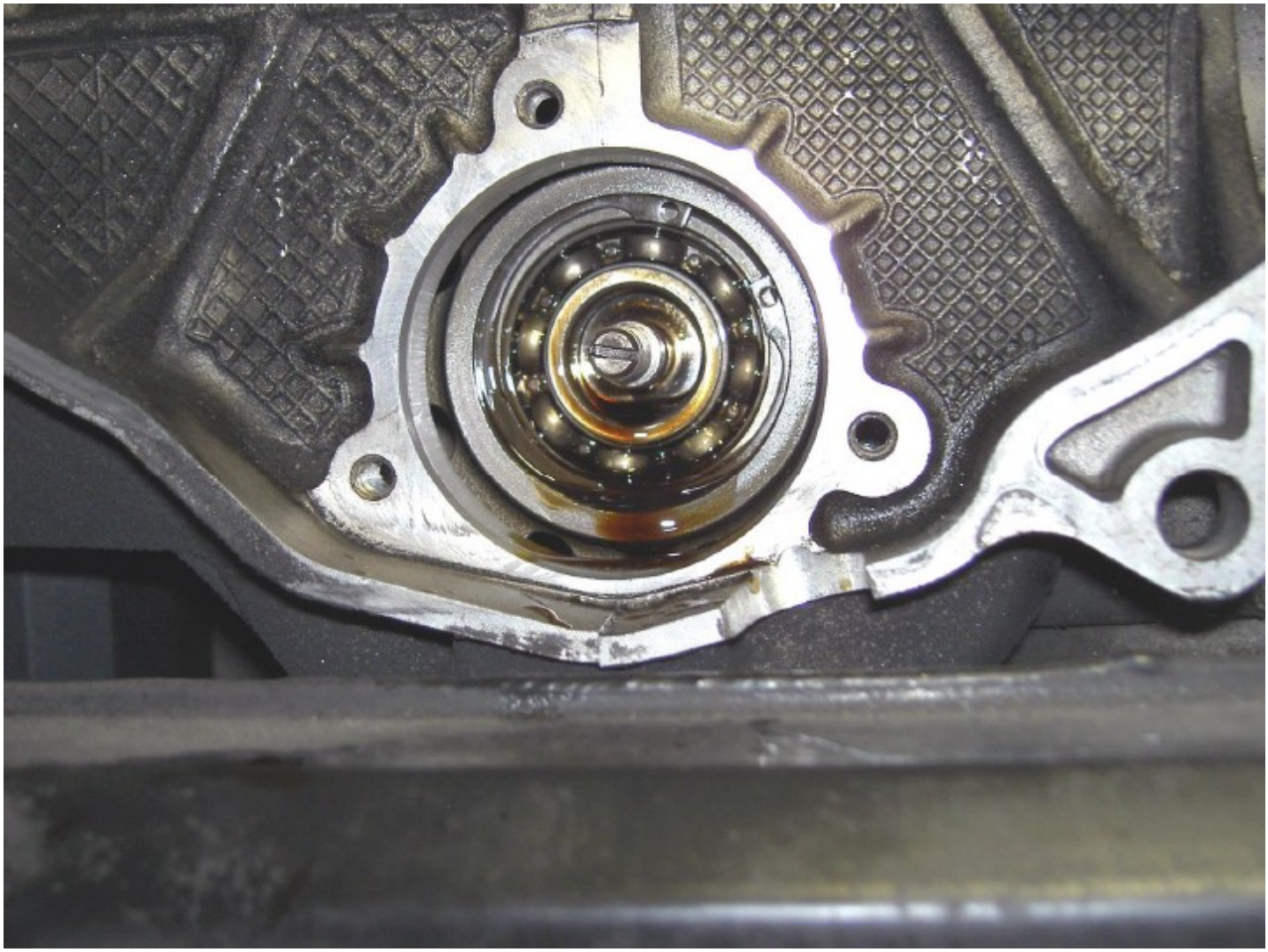
CHAIN TENSIONER REMOVAL

Using a 32 mm socket, remove the right bank chain tensioner on the Boxster (left bank tensioner on the Carrera).

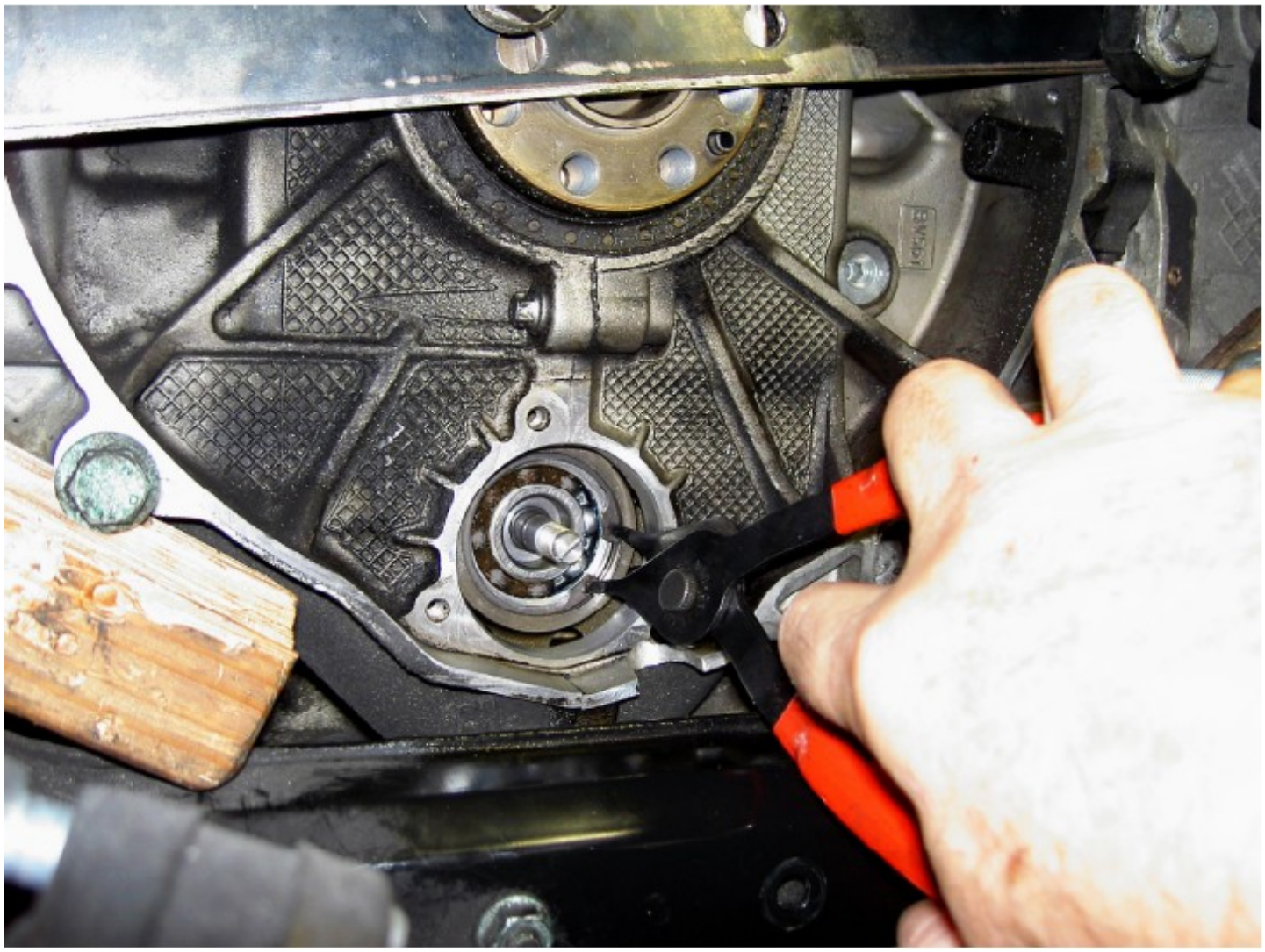
Be prepared to catch oil.

Test to see if there is any movement (slop) in the bearing's shaft. Lateral movement (slop) means that the bearing has started to wear down. We recommend that a new bearing be installed regardless, but if the existing bearing is not going to be replaced, remove it's outer seal using a sharp pick or small screwdriver and proceed to the "PREPARE AND INSTALL DOF FLANGE" step, further down in these instructions.

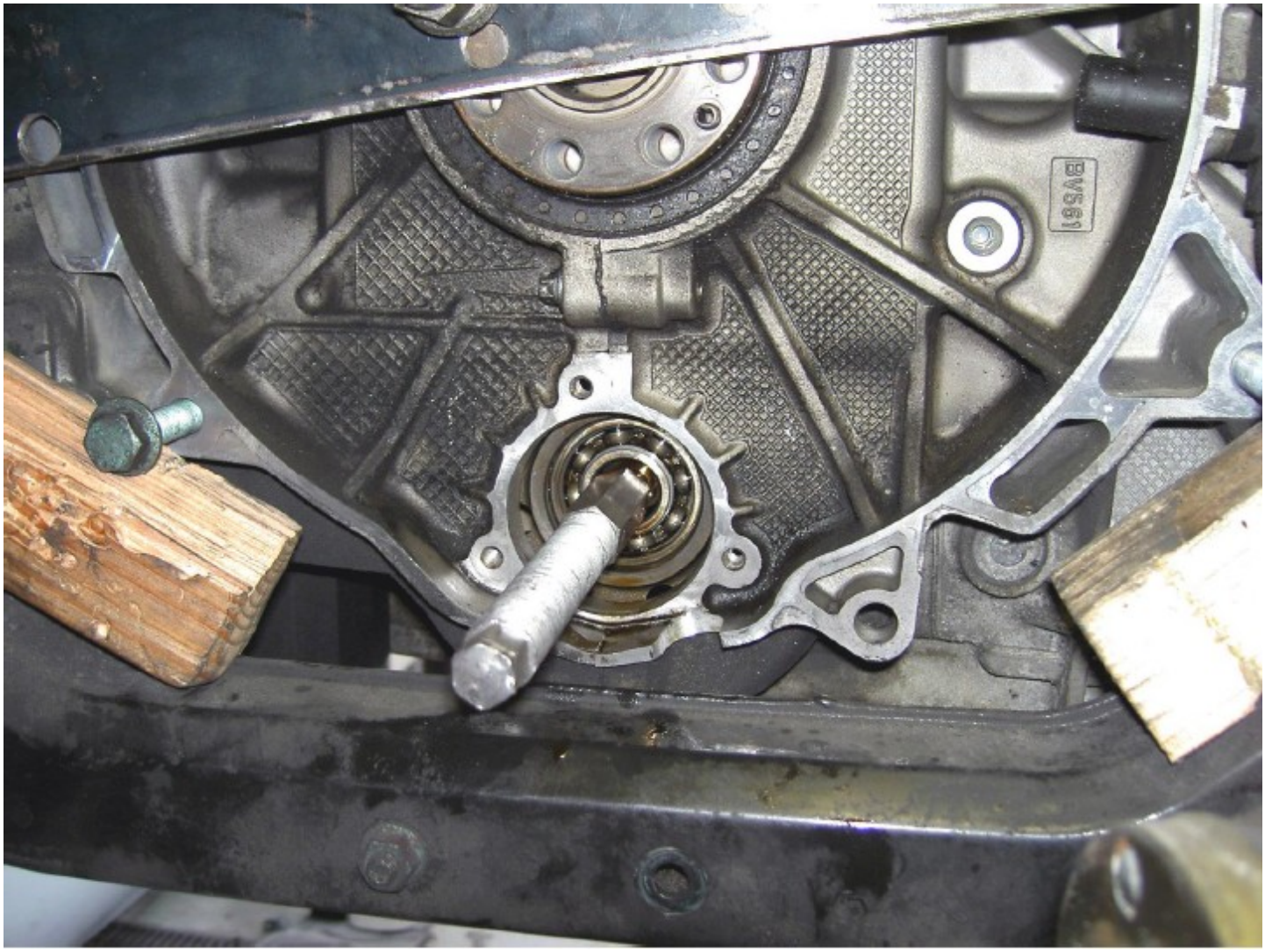




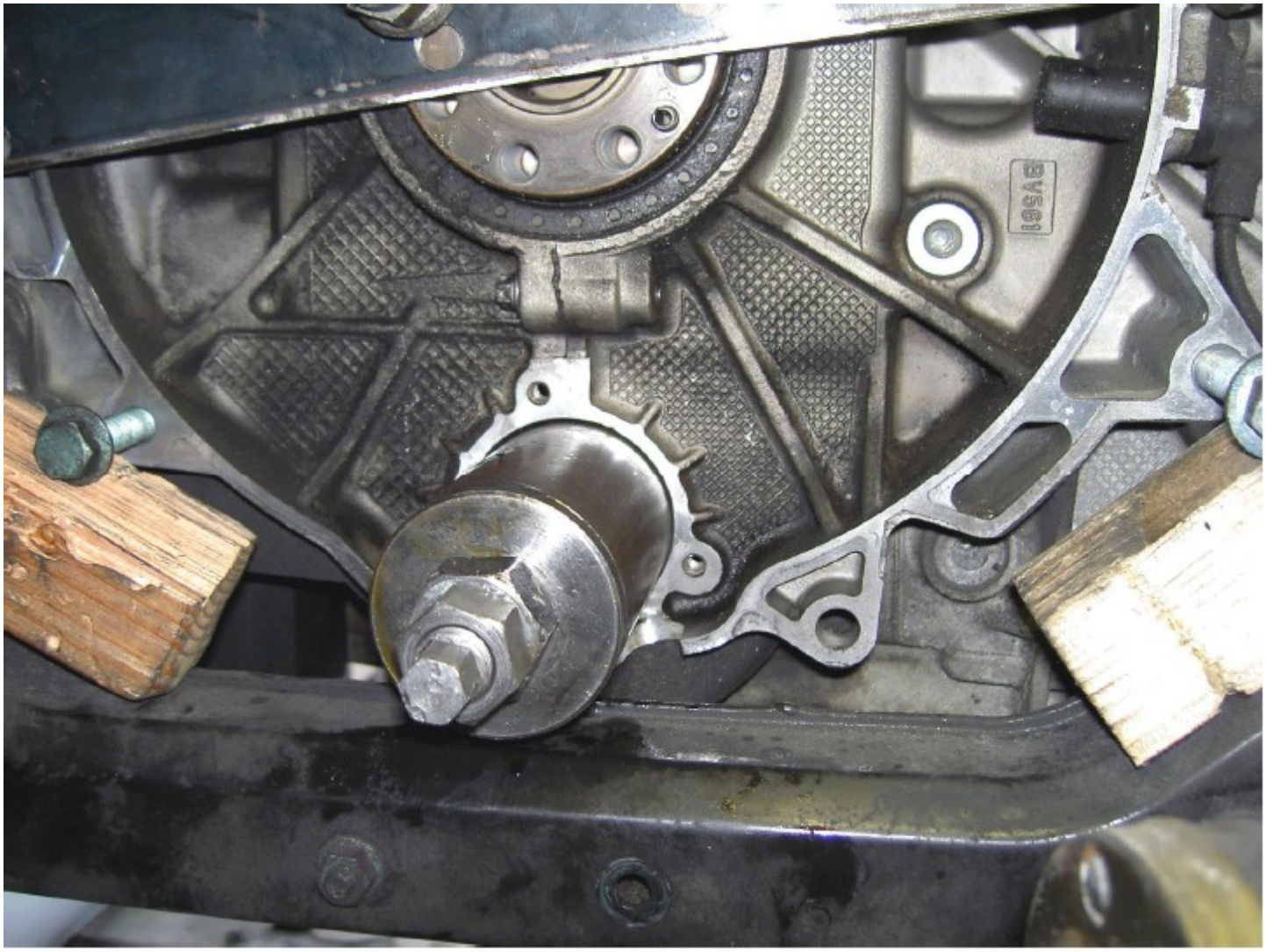
If the IMS bearing is to be replaced, remove the retaining C-clip.



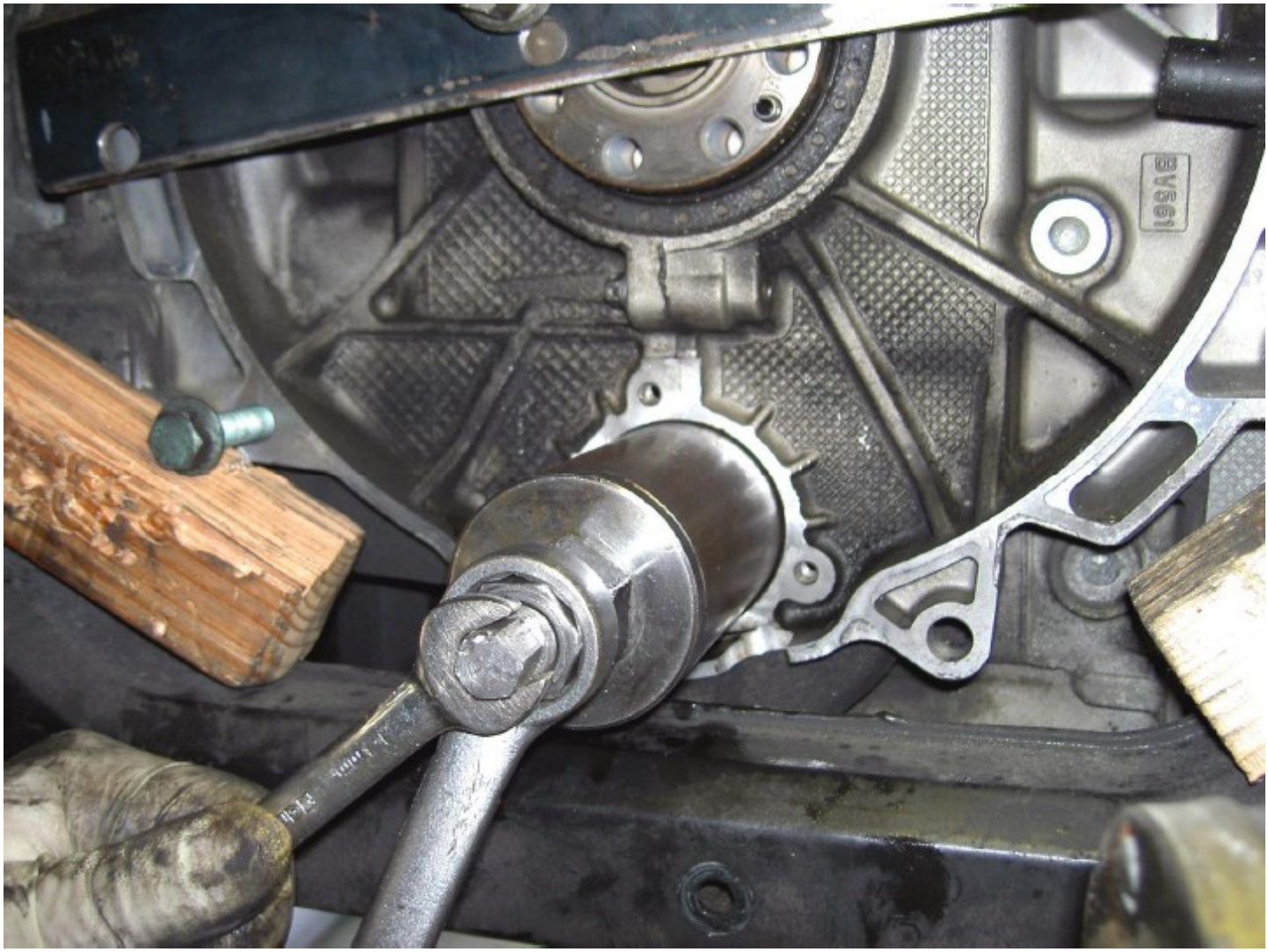
Screw the center bolt from the bearing removal tool onto the bearing’s support shaft and tighten by hand.



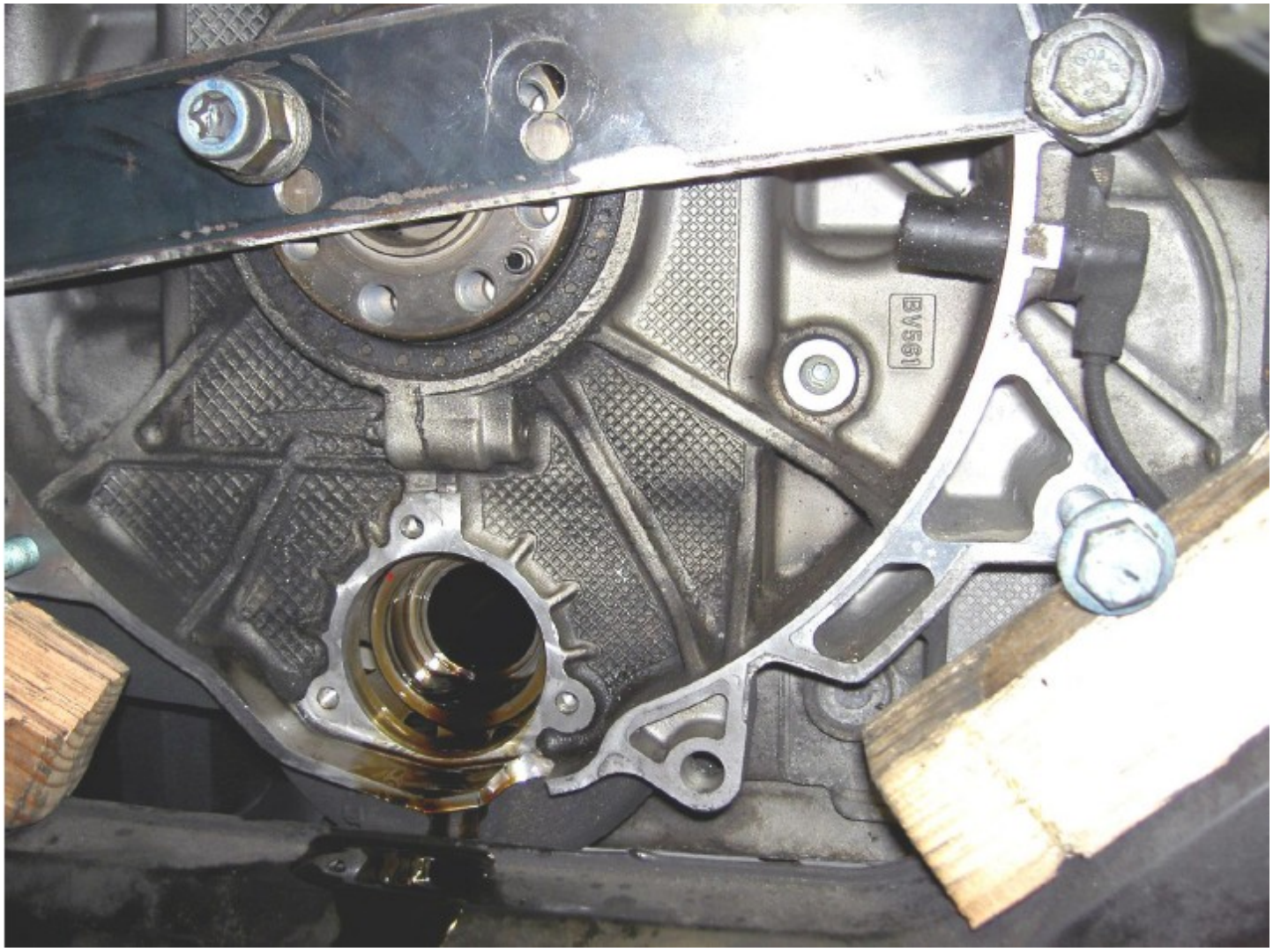
Place the bearing removal tool onto the center bolt and tighten the main nut by hand so that the tool is completely against the engine case.



With a wrench, hold the center bolt so it doesn’t rotate and start tightening the main nut slowly. At some point you may hear a loud pop which is normal. Keep tightening the main nut until the bearing is completely removed. The bearing will come out inside the removal tool.



Be prepared to catch oil.



Clean out the open end of the IMS. Leave a thin film of oil or grease so that the new bearing slides in easier.

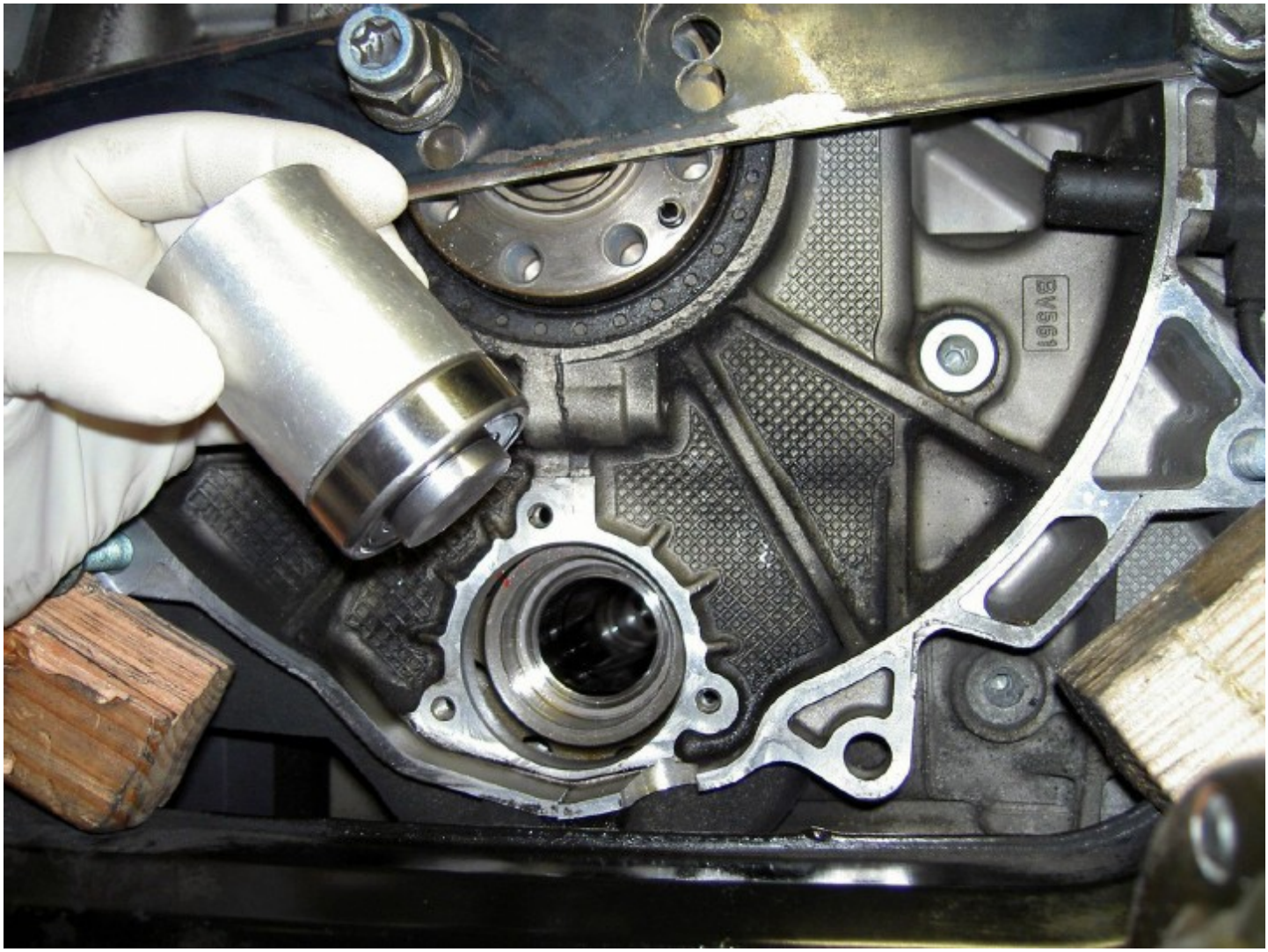
PREPARE AND INSTALL THE NEW IMS BEARING

Place the new (supplied) bearing support shaft onto the new (supplied) bearing. Make sure that the open side of the bearing faces towards the shaft's threaded end.

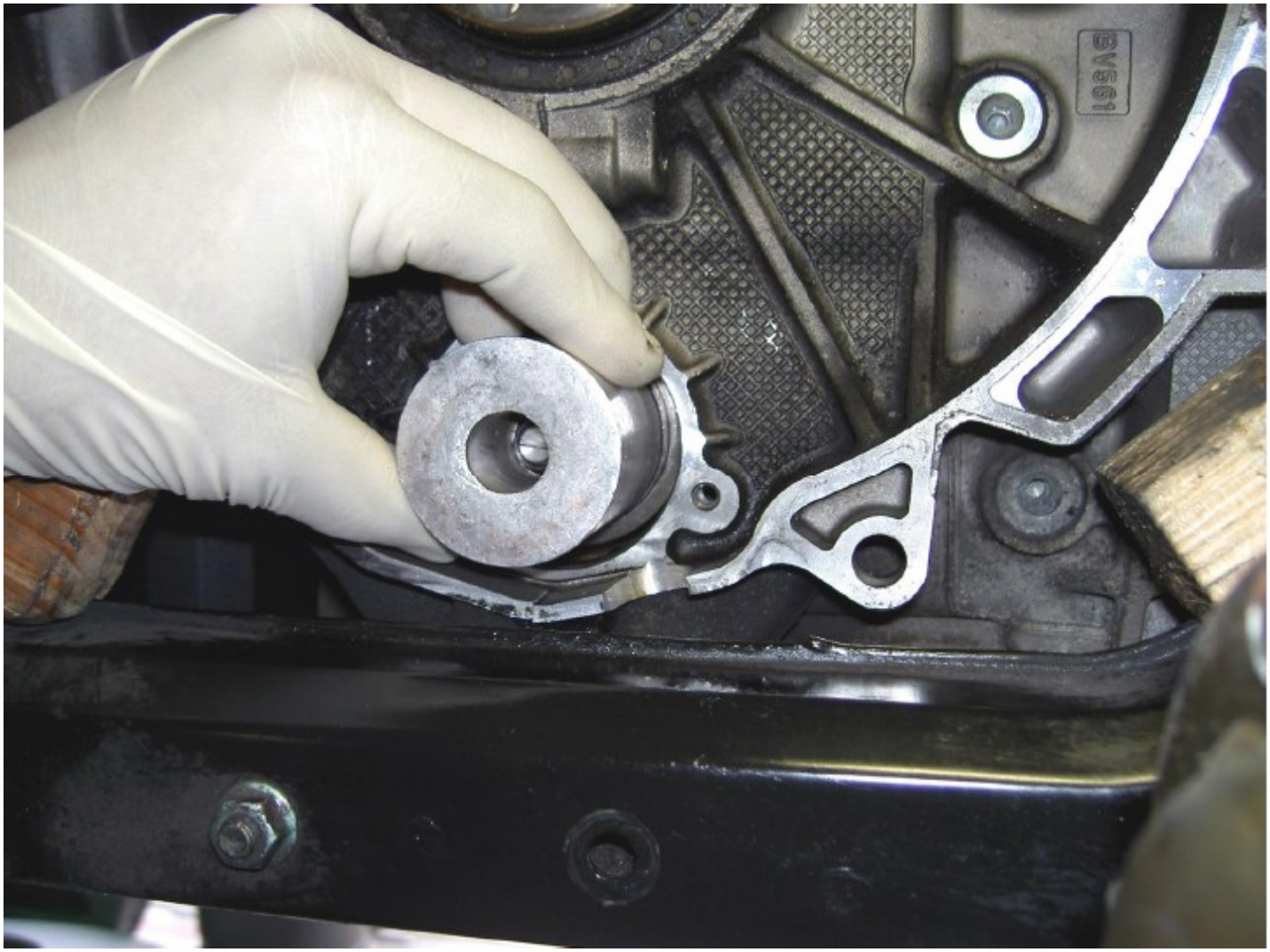
Place the bearing with the shaft in place over a socket of the correct size which can support the inner race of the bearing and lightly tap the end of the shaft completely onto the bearing’s inner race.


Blue-Point

Place the assembly into the bearing insertion tool.

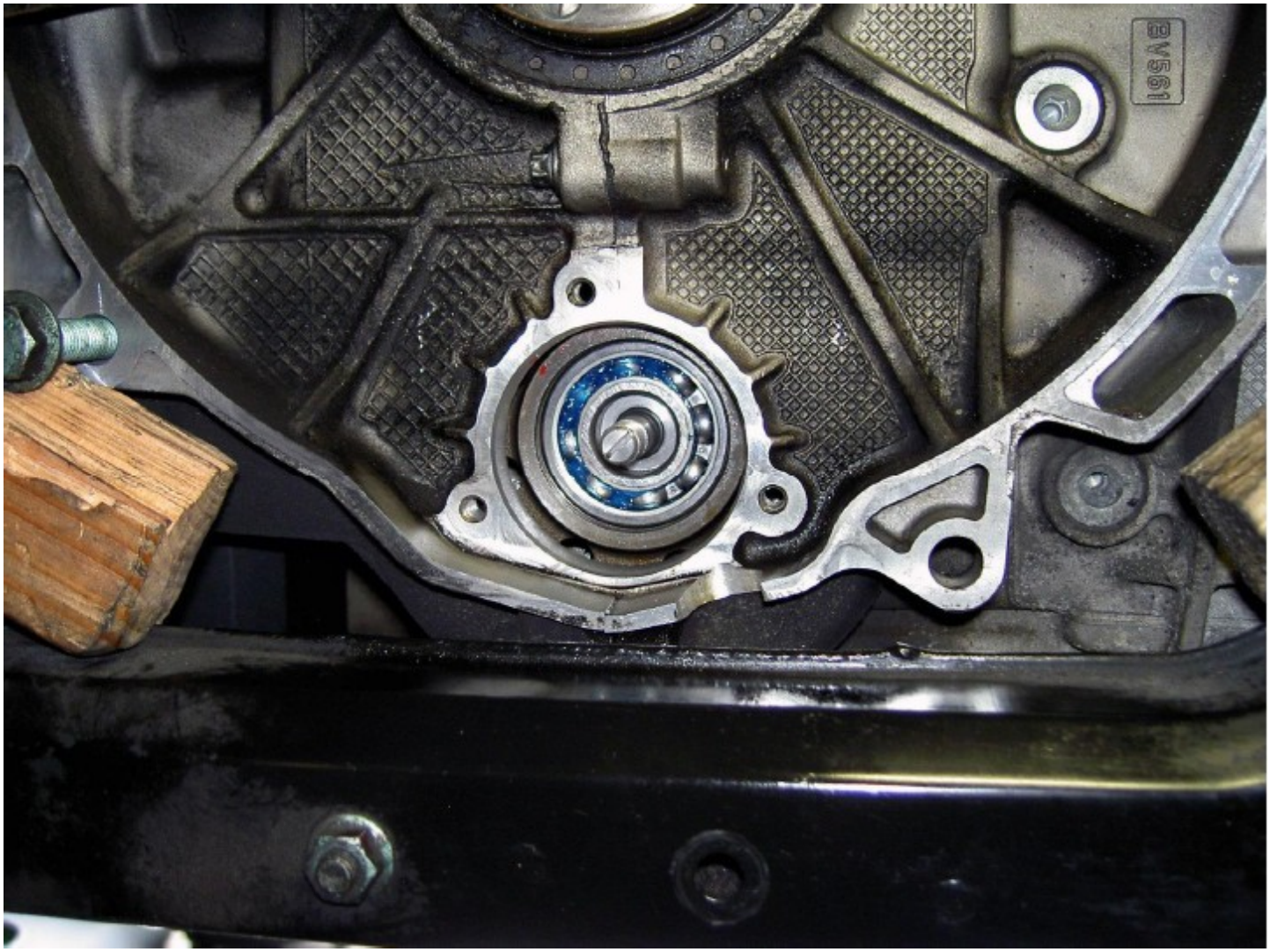


Carefully center over the bearing’s seat.

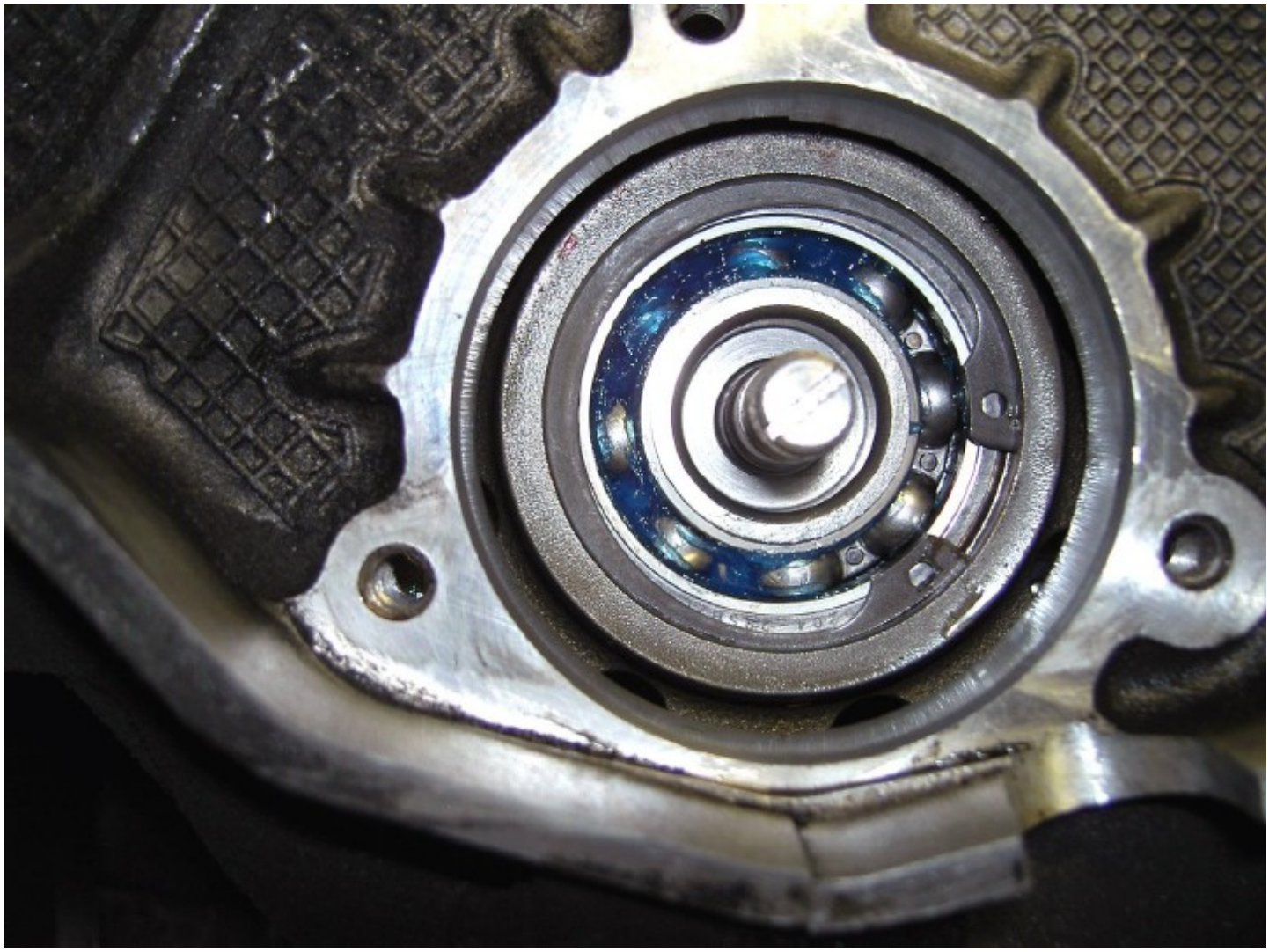


Tap the end of the insertion tool until the bearing is seated completely. You will hear a “solid” change in sound when the bearing has reached the engine block.

Pull the insertion tool out. The correctly installed bearing should look like this:



Using the proper C-clip pliers insert the new retaining clip (supplied).



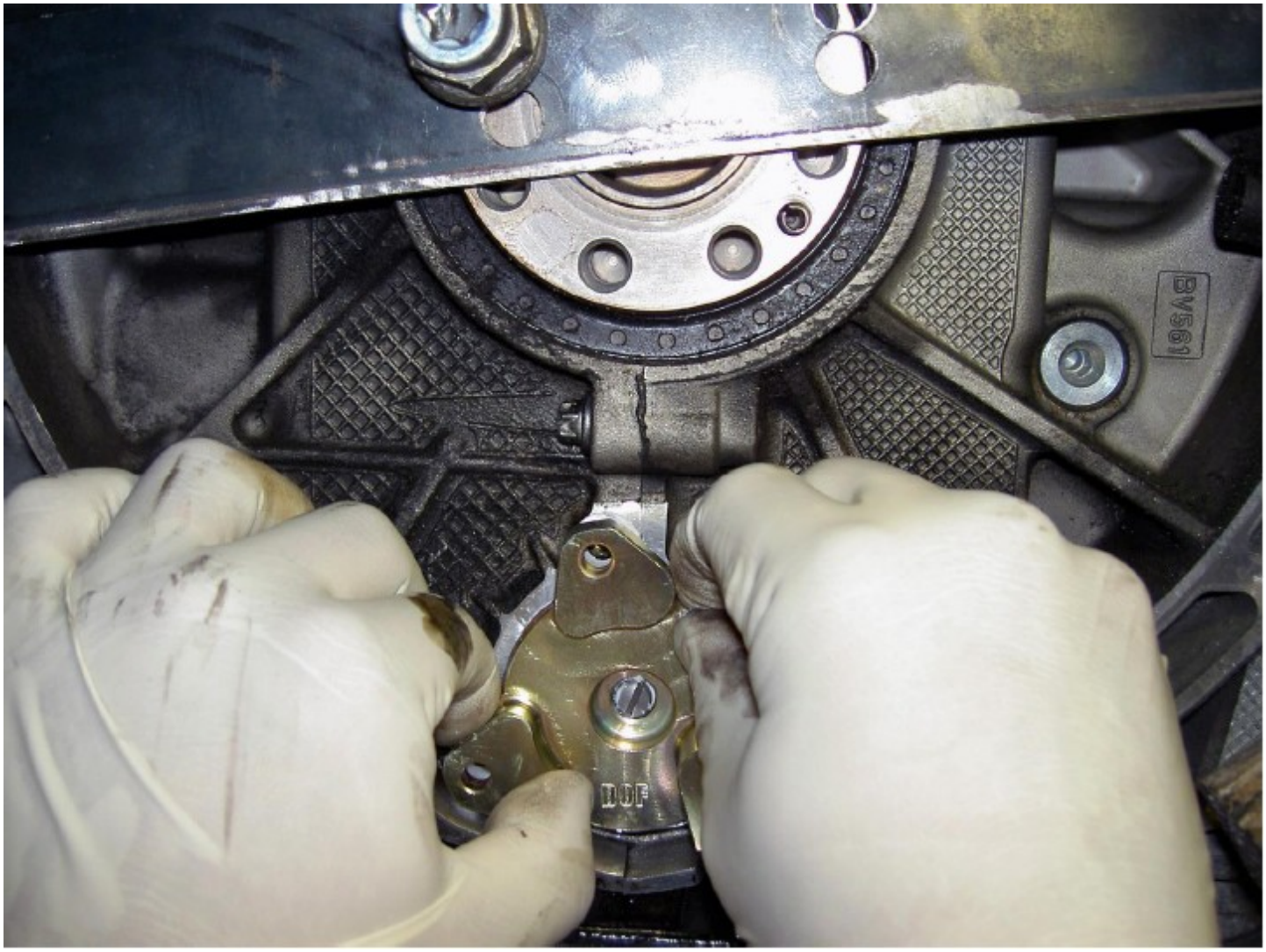
PREPARE AND INSTALL THE DOF FLANGE

Insert the spacer ring (supplied) onto the DOF.
(Shown is the large spacer used on single row bearings. The double row bearing uses a smaller (ring).

DESIGN911 UK
T: + 44 (0) 208 500 8811 F: + 44 (0) 208 501 3015 E: sales@design911.com

Smear a bit of high-quality white lithium grease on the inside of the DOF shaft and on the outside red sealing ring.

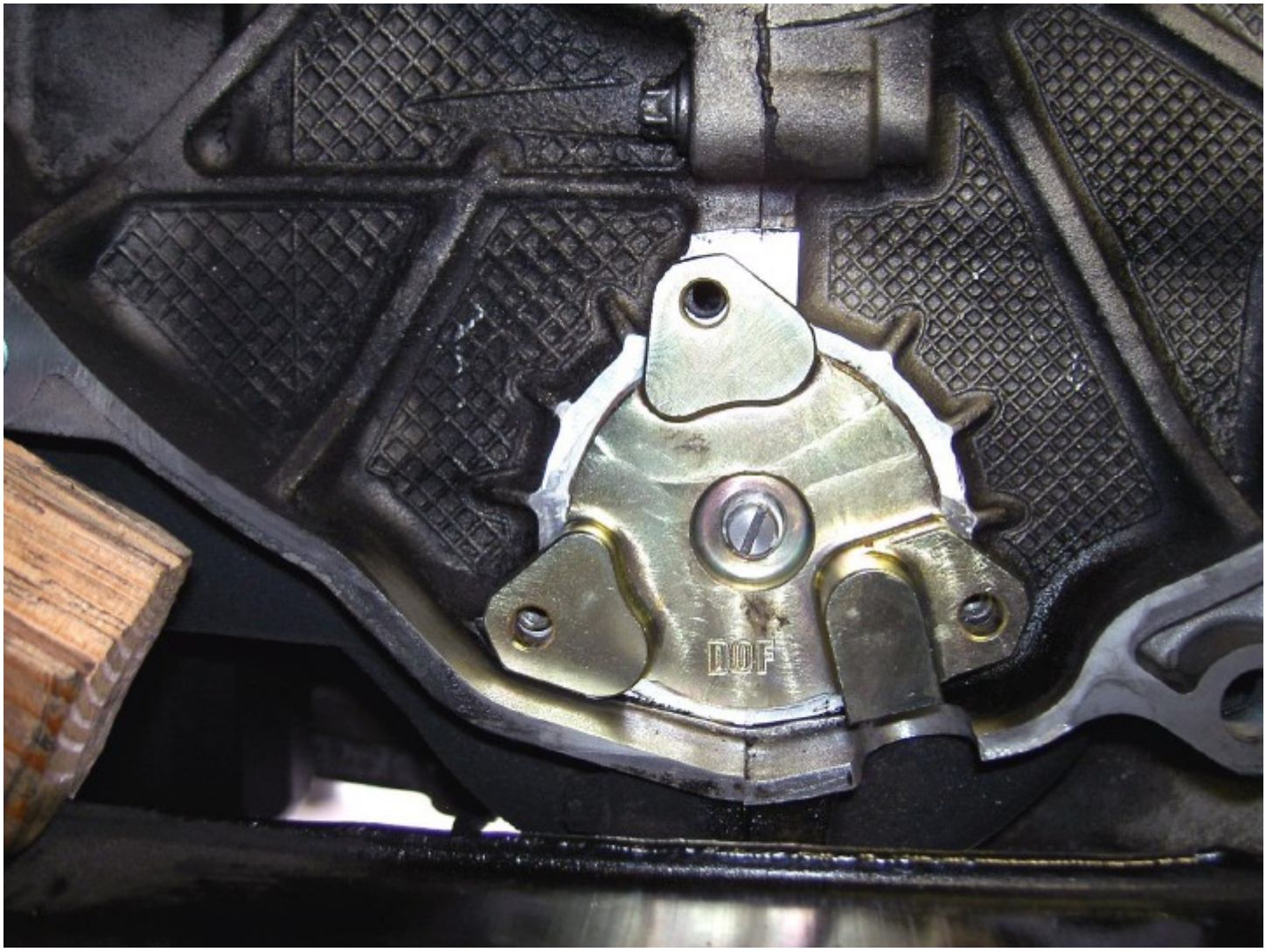
Place the new DOF flange with spacer ring in place onto the bearing support shaft.



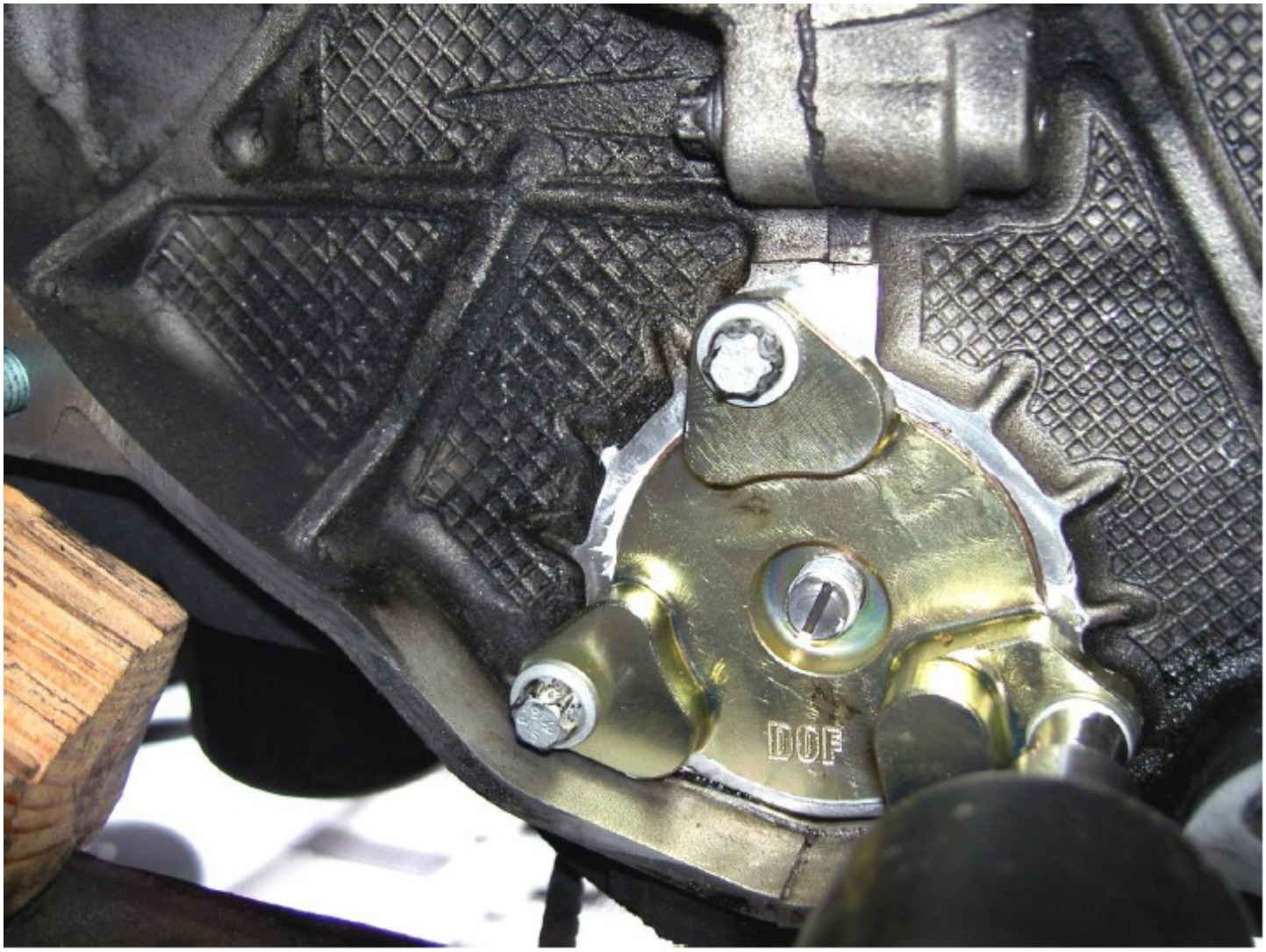
Thread one of the old, removed bolts in place on the top most hole of the flange.
Insert a phillips screwdriver or punch-pin into one of the two remaining holes and carefully use as a lever to gently guide the flange into position. Once in position, using the butt end of a hammer's wooden handle or a soft-faced mallet, tap the flange into place.
Remove the old bolt.

DESIGN911 UK

T: + 44 (0) 208 500 8811 **F:** + 44 (0) 208 501 3015 **E:** sales@design911.com



Check the clearance for the DOF/Oil line screw-in adapter on the bell housing cut-out that you made before. Adjust the clearance if necessary with a file.
Insert the three new, micro-encapsulated flange bolts (supplied) and thread by hand.



Tighten each bolt only a few turns at a time and move to the next one. This assures that the flange gets inserted correctly.

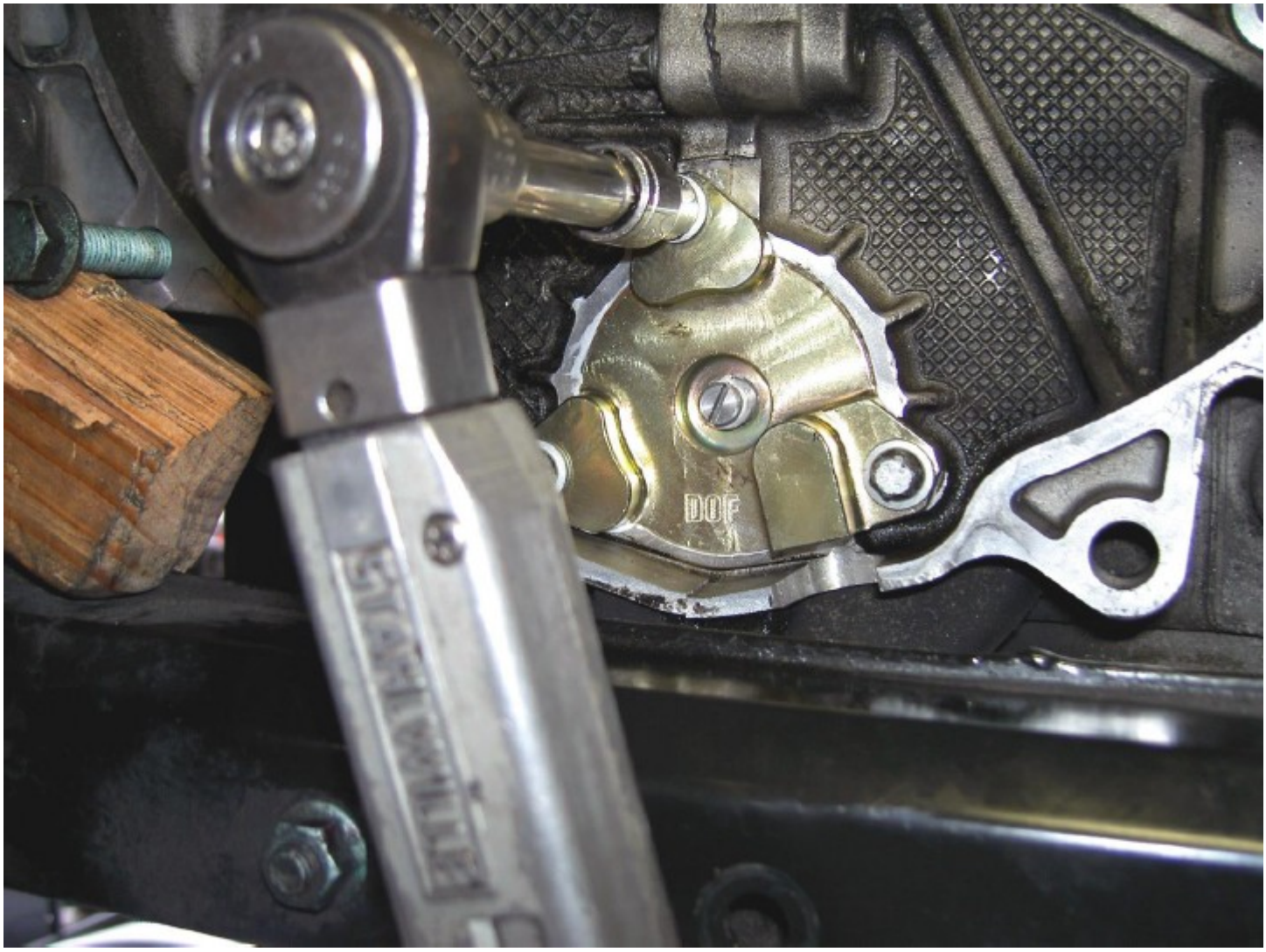
DESIGN911 UK

T: + 44 (0) 208 500 8811 **F:** + 44 (0) 208 501 3015 **E:** sales@design911.com

Once al three bolts are completely screwed in and the flange has been seated, tighten to a torque of 10 Nm (7.5 lb-ft or 88.5 lb-in).

DESIGN911 UK

T: + 44 (0) 208 500 8811 **F:** + 44 (0) 208 501 3015 **E:** sales@design911.com

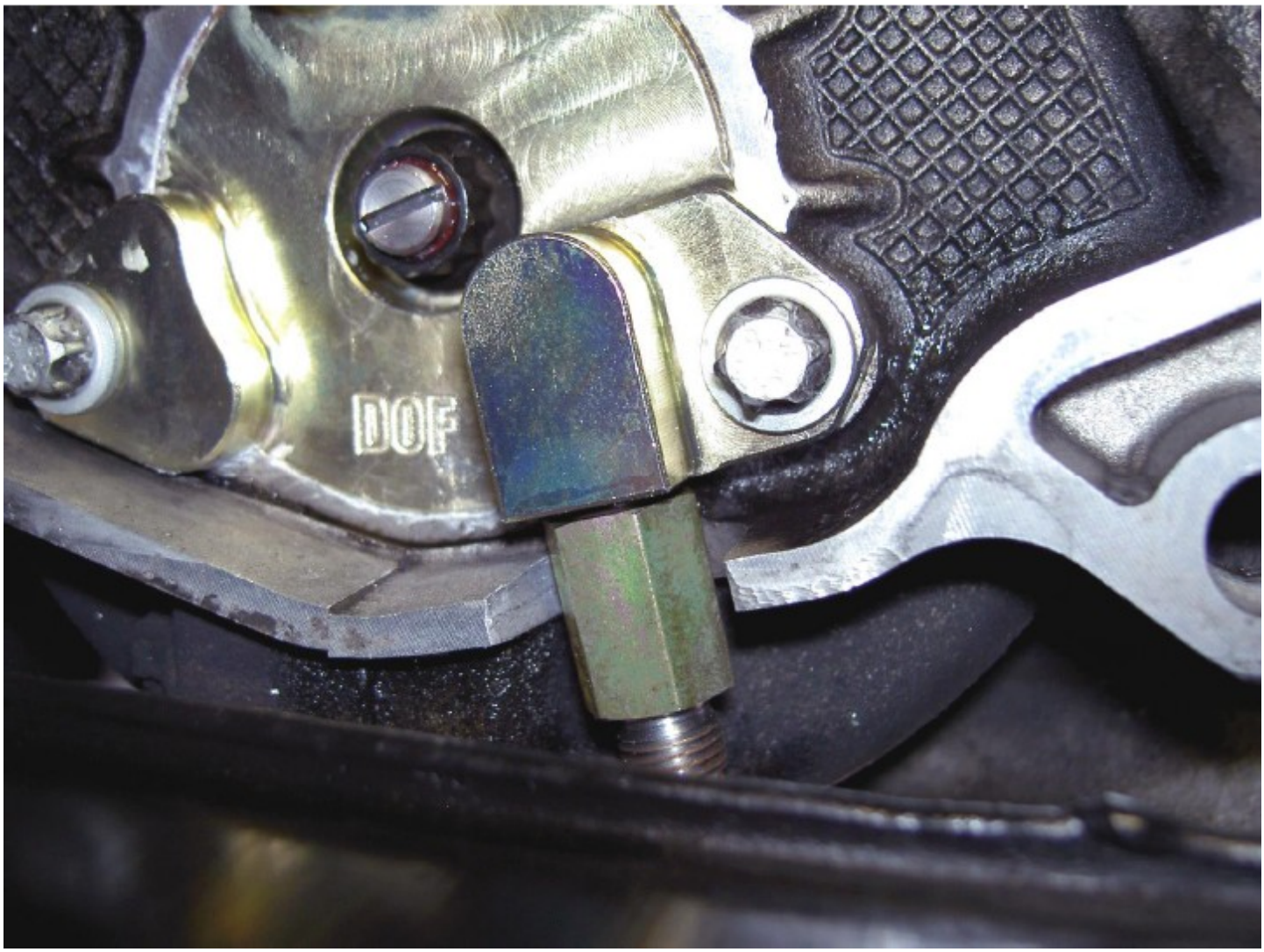


Put a bit of thread locker (supplied) onto the threads of the new bearing support flange nut (supplied) and thread in place by hand.

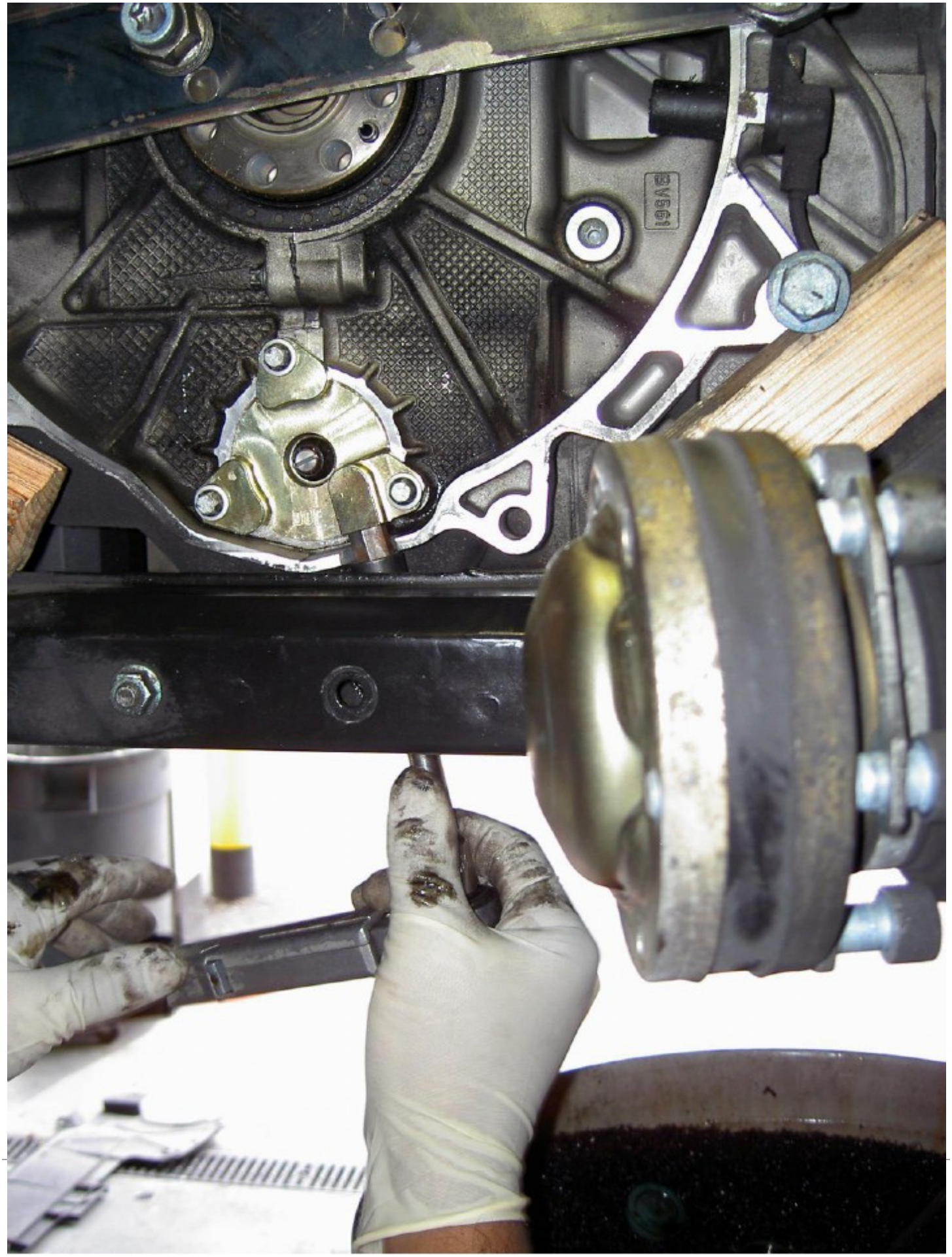
Tighten to a torque of 15 Nm (11 lb-ft or 132 lb-in).

Put a bit of thread locker (supplied) onto the threads of the straight hose adapter on the O-ring side.

Thread into place onto the DOF flange. Note that the o-ring end of the hose adapter screws into the DOF.



Tighten to a torque of 13 Nm (10 lb-ft or 115 lb-in).

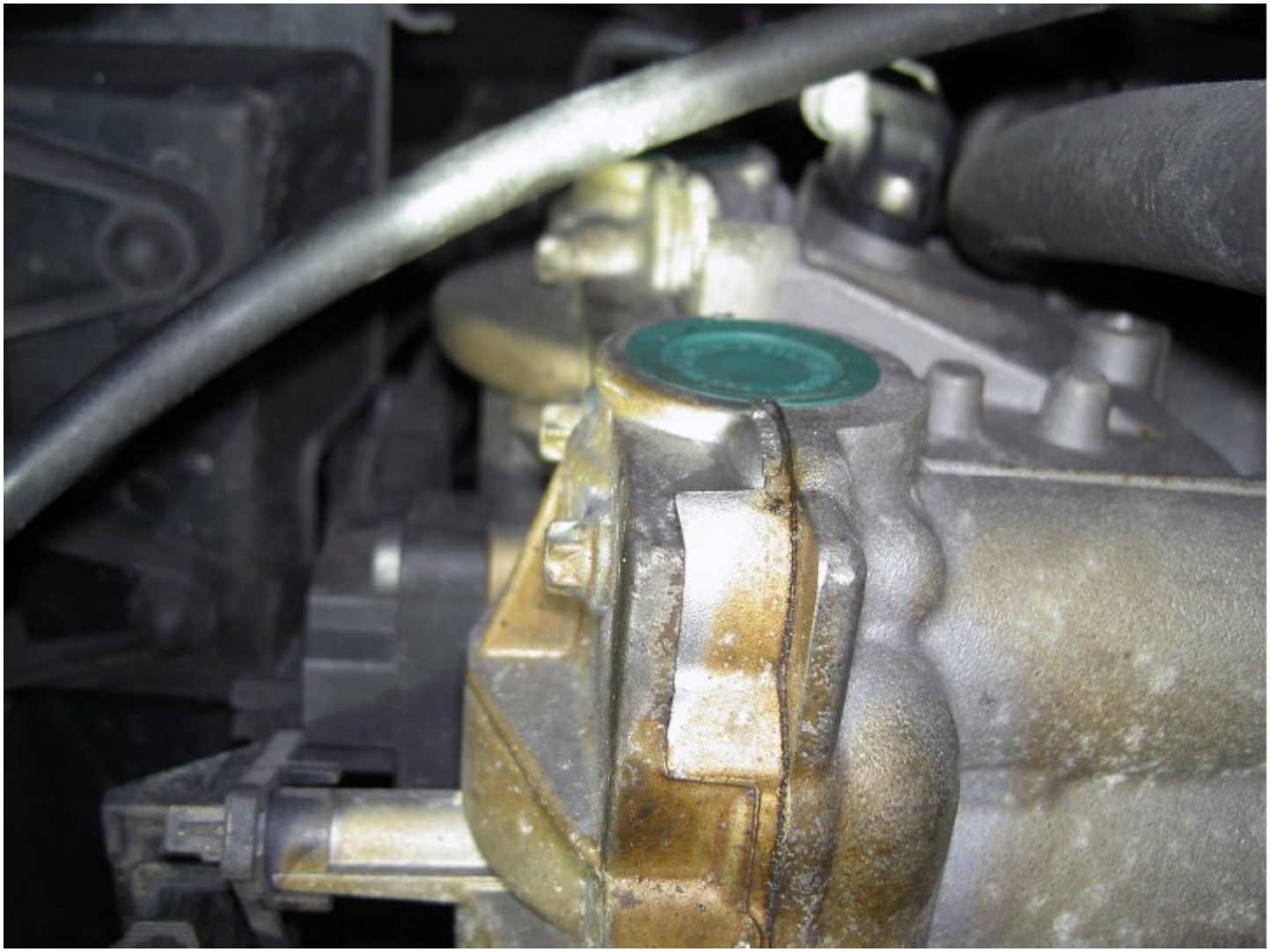


Clean the previously removed chain tensioner.

Insert and tighten the chain tensioner.

Torque to 80 Nm (59 lb-ft).

Remove the cam locking key and lightly tap the (supplied) green cam seal in place.



From the top of the engine thread the angled end of the high pressure oil line down to the DOF and thread into place.

Torque to 13 Nm (10 lb-ft or 115 lb-in).

On Boxsters replace the earlier removed engine safety cable to the engine support yolk and tighten. In the case of the Carrera, replace the rear sway bar and tighten.
Working from the top of the engine, remove the factory oil port plug on the left side of the top of the engine, next to the air filter box and under the rear end of the fuel injector bar (on the Boxster). The Carrera's oil port will be on the front right side of the engine. If there is a sensor in this location, then use the port on the rear left side of the engine, directly below the coolant tank.

Place the copper crush ring onto the 14 mm end of the hose adapter. Put a couple of drops of thread locker (supplied) and thread onto the engine. Torque to 15 Nm (11 lb-ft or 132 lb-in).

Finally thread the free end of the high pressure oil line onto the newly inserted adapter and torque to 13 Nm (10 lb-ft or 115 lb-in).

Check to make sure that nothing is loose.

If the Rear Main Seal is to be replaced, do it now.
Reinstall the dual-mass flywheel.
Reinstall the Clutch/Torque Converter.
Reinstall the Transmission.
Reinstall all removed panels, plates, muffler etc.
Run the engine and make sure there are no leaks.

Thank you for purchasing the Direct Oil Feed (DOF) System.

DESIGN911 UK
T: + 44 (0) 208 500 8811 **F:** + 44 (0) 208 501 3015 **E:** sales@design911.com