Oil Temp on the MFD - How Hard Can It Be? (Part II)

D

DerGolfGTI · Registered
Joined Feb 21, 1999 · 458 Posts

Discussion starter · #1 · May 8, 2012 (Edited)

Here is the answer to my previous question of how hard can it be to add the oil temperature display to the MFD in the Golf R. This display comes courtesy of the temperature / oil level (TOG) sensor which is standard on Golf Rs in other parts of the world, but is missing from US cars.

The credit for this installation goes to autofi. He identified the missing parts, came up with the harness swap suggestion (more on this later), did the installation first and answered all of my silly questions. I did this install second and it went pretty smoothly thanks to his help.

This is not an inexpensive mod. Parts cost approximately $500 and it's definitely cheaper to add a separate instrument to display oil temperature. But its nice to have the oil temp display on the MFD where is belongs.

Disclaimer: This procedure involves swapping the servotronic harness, which controls the electric steering system. If you screw this up and damage the harness, don't get the connectors securely plugged in, etc, you could lose your steering assist, crash and die. The swap also involves some electrical and mechanical work, so the potential is there for you to damage your car. And since you need to work under the car, if you do something stupid and support the car with a jack only, the car could fall on you and you'll die. Do not attempt any of this unless you understand what you're doing, are comfortable with it, and are willing to assume the risks involved.

What needed to be done: an oil sensor (TOG sensor) needs to be installed in the car and wired to ground, switched power, and the car's instrument cluster. The cluster needs to be coded with VCDS/VAG-COM to know the sensor is there. To install the sensor, the oil pan needs to be swapped with one which has a hole in it that the sensor bolts into.

you can take a slightly more difficult and expensive route and replace the servotronic harness. The harness is replaced with one which contains OEM wiring to the sensor. You still need to run 3 wires, but you will be running them from a connector near the driver's side headlight rather than directly from the sensor. The advantage to this approach is that its closer to an OEM installation and that is what is described below.

Here is the process in three parts: Replacing the servotronic harness with a new one, completing the wiring, and replacing the oil pan.

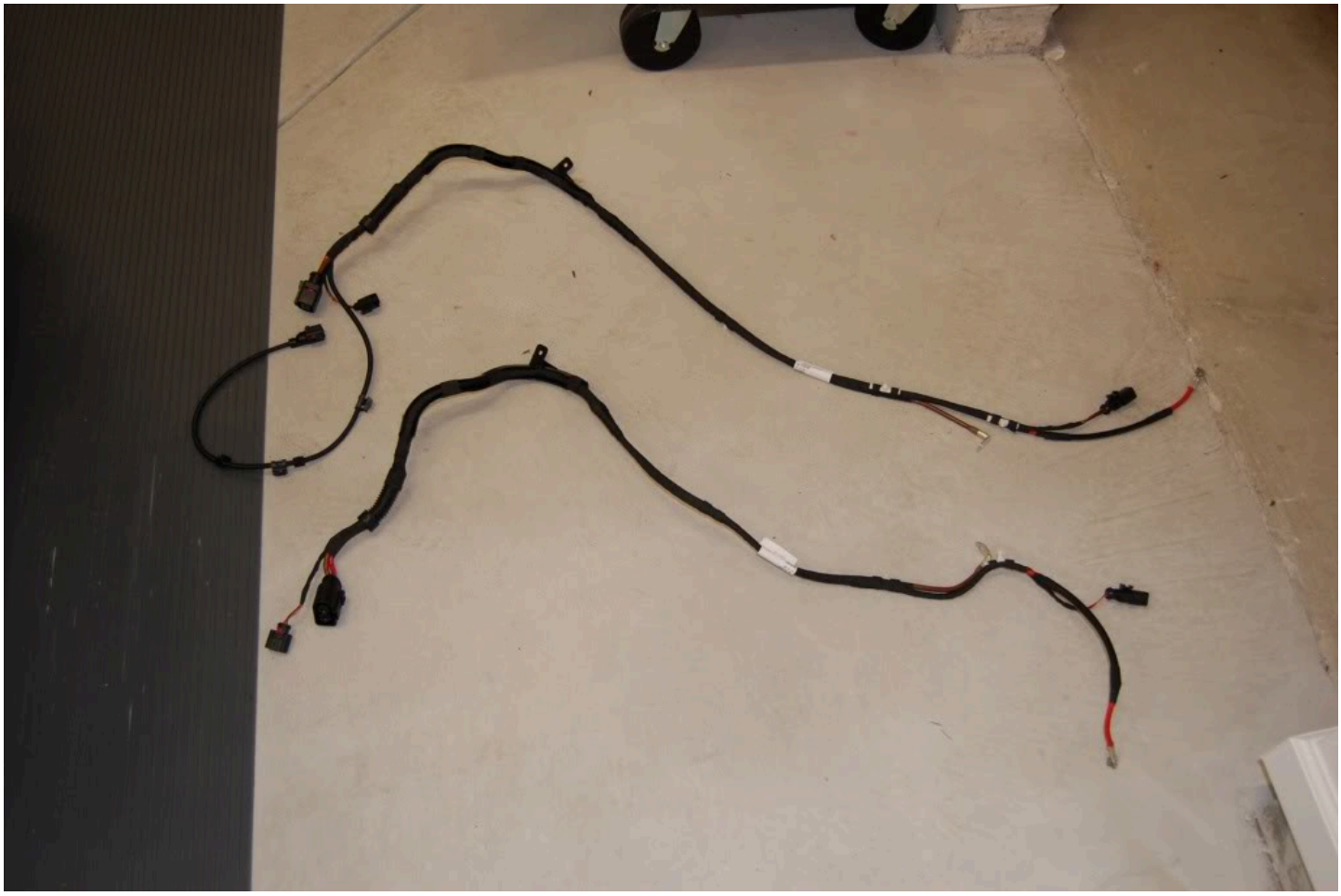
UPDATE: I haven't looked at this thread in a long time, but I'm glad to see some people have found it useful. All I did was ask the question and then document the procedure that autofi worked out so the credit really goes to him for this. I am sorry to see some people with GTIs rather than Golf Rs went to all the trouble to do this and it did not work. From the link to ross-tech page someone posted , there may be an ECU dependency. VCDS lists the ECU in my car as having software part number 5K0-907-115M and hardware part number 8P0-907-115B. Please be aware if you have a car other than a NAR Mk6 Golf R, or have a different ECU, this procedure may not work.

Part 1: Replacing Servotronic Harness

Goal: replace existing servotronic harness with a new one which has wiring for the TOG sensor. The 3 TOG sensor wires terminate on the 6 pin connector by the driver's side headlight and are for power, ground and a signal which goes to the instrument cluster.

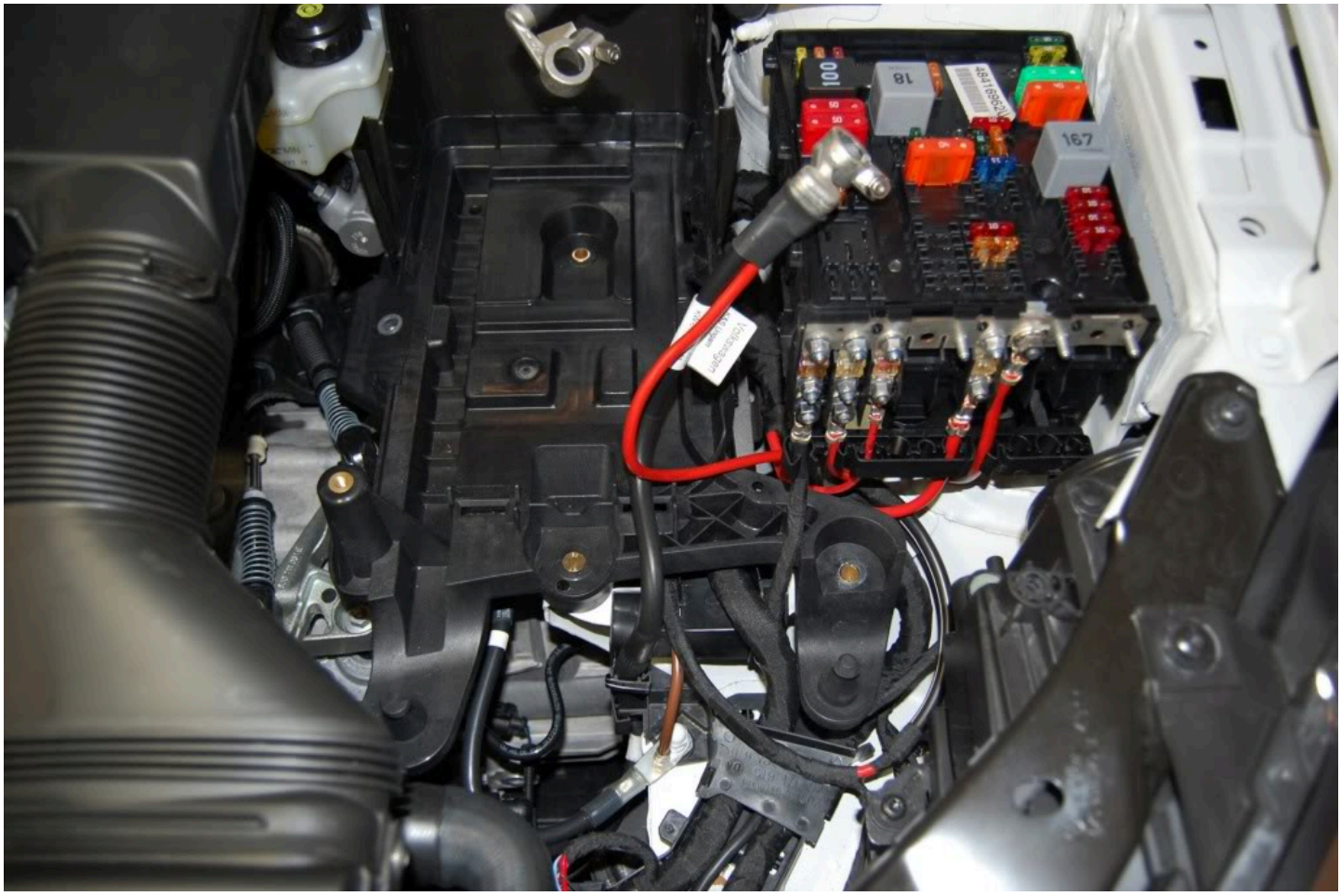
Harness part number: 1K1 971 111AJ

Here's a picture showing the two harnesses. The new harness is on the top and you can see the extra wiring on the left side of the harness. This is the section which runs to the sensor.

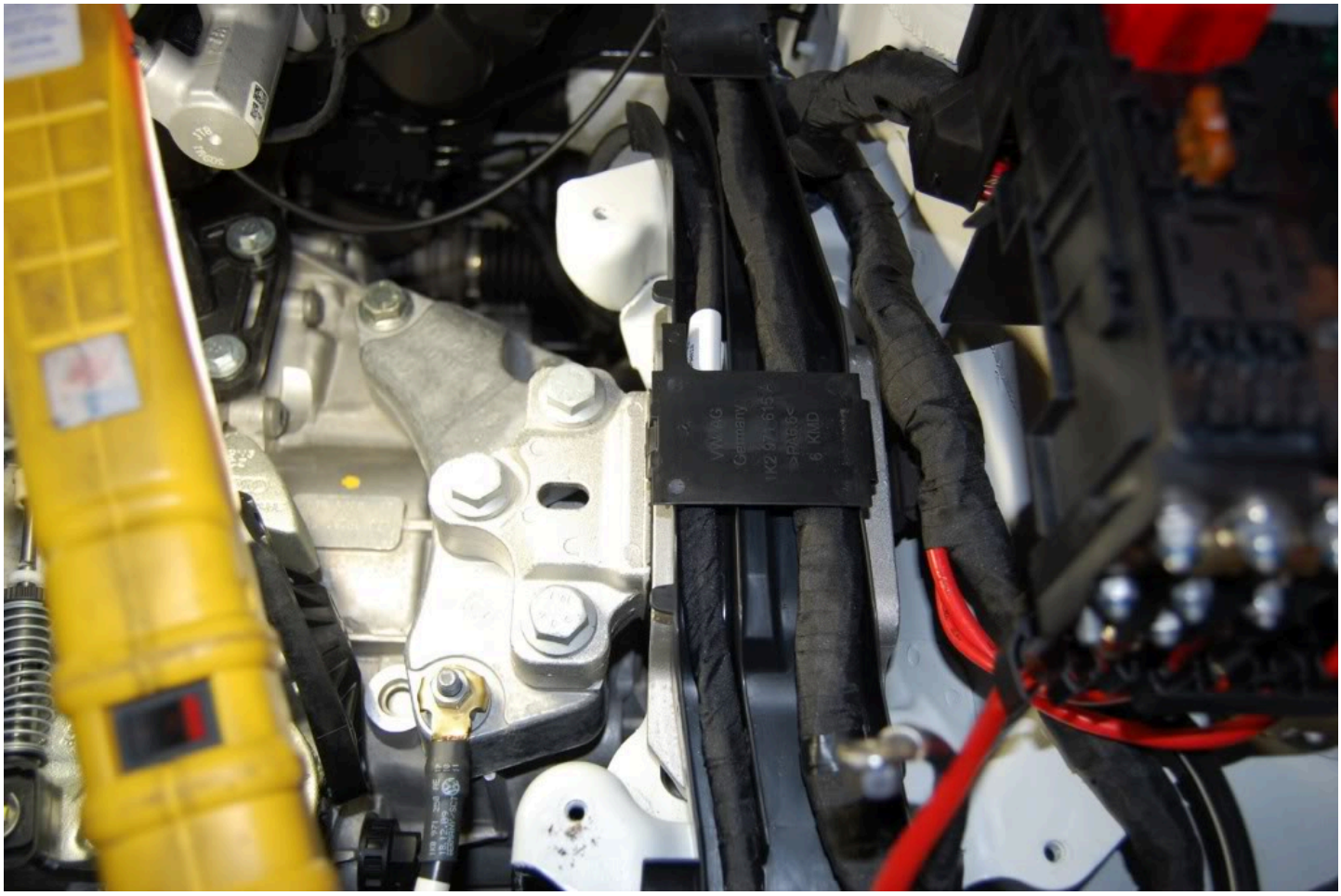


1. Remove cover for battery box and disconnect battery.

2. Remove battery hold down clamp and remove battery. Note the heavy brown wire near the bottom center of the photo is part of the servotronic harness.



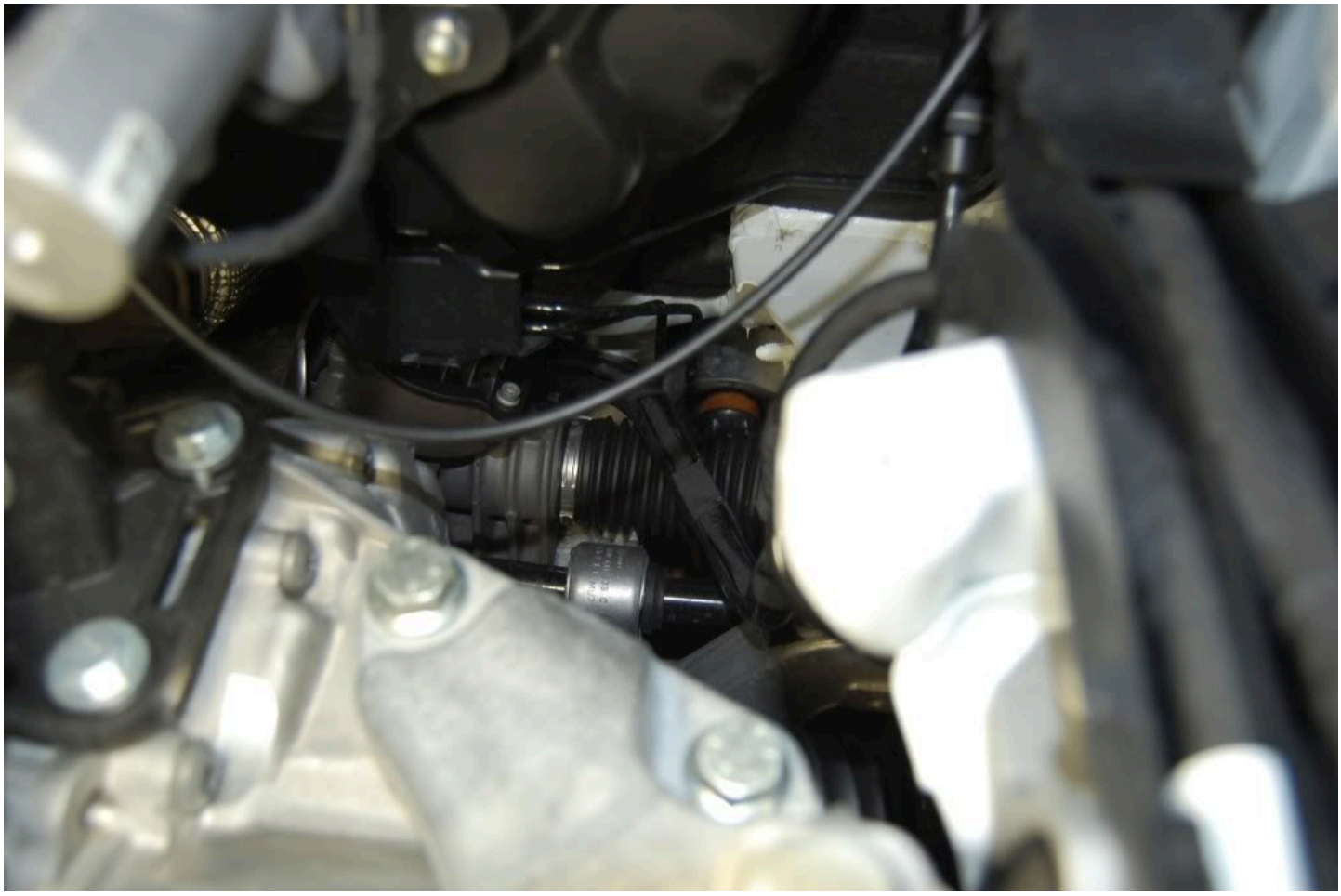
3. Remove battery tray (3 bolts). Below picture shows the harness run underneath the battery tray. Servotronic harness is the smaller harness on the left side under the black plastic clip.



4. Disconnect servotronic harness ground and power connections near the front of the car.

5. Disconnect servotronic 6 pin connector near headlight.

6. Unbolt 10mm bolt holding servotronic harness in place near the strut tower. You can reach this bolt from the top. The below picture which isn't great shows the servotronic harness running down to the steering rack and over the rubber boot on the rack. The bolt is not quite in view here.



7. Support car safely on jack stands.

8. Remove T30 torx bolt on top of heat shield above servotronic rack - the bolt is on the passenger side of the shield near the rear. It is not necessary to remove the other bolts.

9. Disconnect the two connectors from the harness to the servotronic motor.

10. Unclip the old harness from the driver's side of the subframe This was a bit tricky as there isn't much room to maneuver.

11. Remove old harness.

12. Installation of new harness is really the reverse of the removal. In my case, getting the clip on the lower part of the harness to engage in the hole on the subframe was difficult - I ended up having to trim it slightly.

sway bar. It routes to the driver's side of the torque arm. From there, clip it to the top front edge of the subframe on either side of the torque arm. From there it can reach the sensor on the oil pan nicely.

14. Do not reconnect the battery until the new wiring is completed.

Part 2: Install new wiring

Goal: To run 3 new wires from the 6 pin connector near the driver's side headlight into the car and connect these wires to power (switched), ground, and pin 11 on the instrument cluster.

(2) Repair wires to attach to 6 pin connector by headlight: 000 979 019EA

(1) Repair wire to attach to pin 11 on cluster: 000 979 009E

(3) Seals: 3B0-972-742-B

Small lighted inspection mirror is helpful. Sears and others have these.

1. Using a thin nail, push the white seals out of the unused positions (pins 4,5,6) on the 6 pin connector near the headlight which connects to the servotronic harness.

2. Using a small screwdriver, remove the purple clip on the 6 pin connector.

3. Each repair wire has a connector on each end and gets cut in half. So you actually only need 2 repair wires for the 3 new connectors which are being inserted into the 6 pin connector near the headlight which the new servotronic harness plugs into.

4. After cutting your wires in half, you will use 3 of the 4 pieces. Slide a seal onto each of the 3 wires and position it near the connector. Using suitable wire, you will need to extend each of the three wires to be long enough to reach into the inside of the car. To make things easier to trace you should use three different colors of wire. Solder the extension wires to the repair wires and cover the solder joint with heat shrink tubing or electrical tape. Small tie wraps can be used to keep the wires neatly bundled.

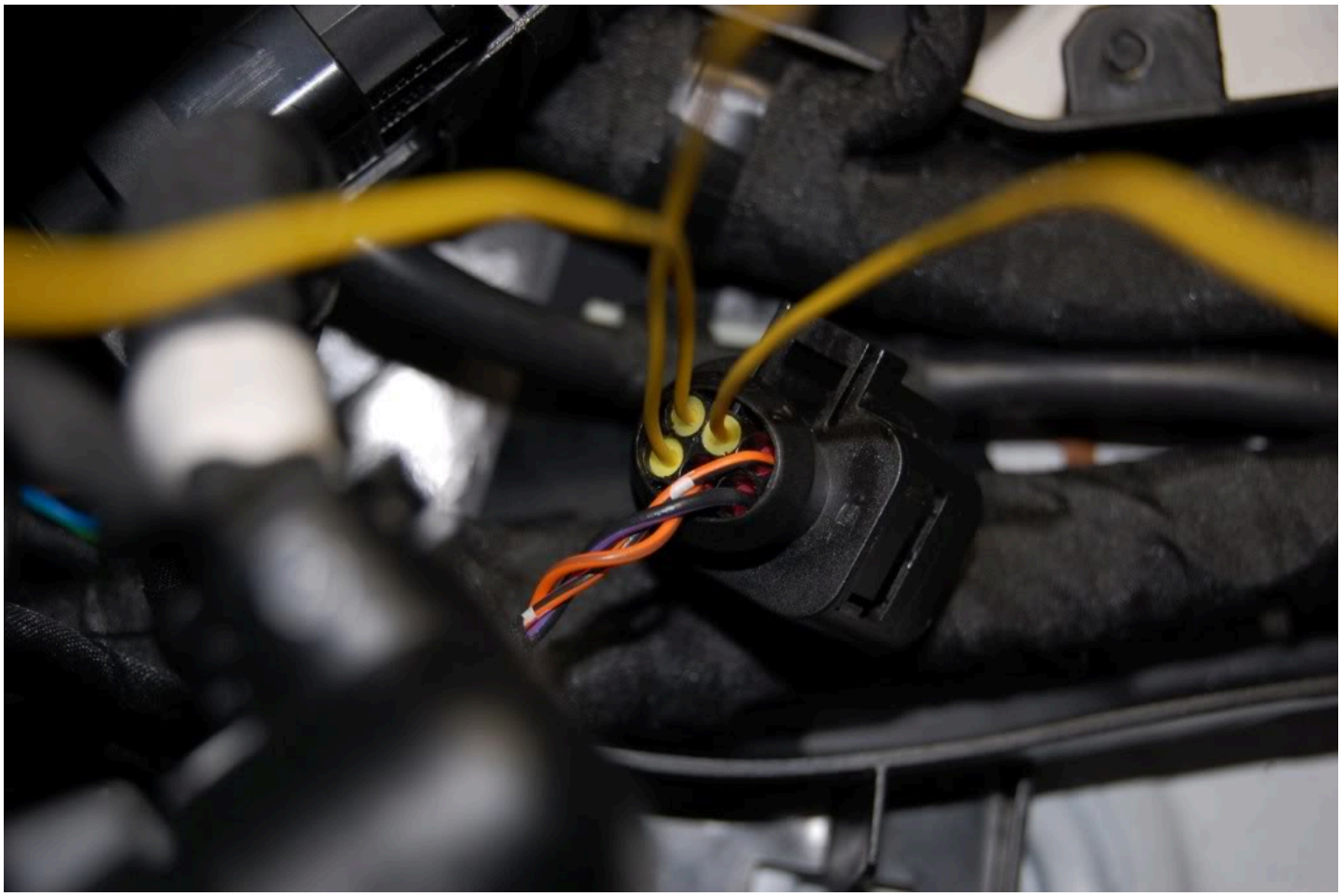
3. Insert the wire into 6 pin connector in position 4. This will be the power connection for the TOG sensor.

TOG sensor

5. Install a new wire with seal in position 6 of the 6 pin connector. This will be the connection from the TOG sensor to the instrument cluster.

6. Reinstall the purple clip on the connector. Push the seal into position in the connector.

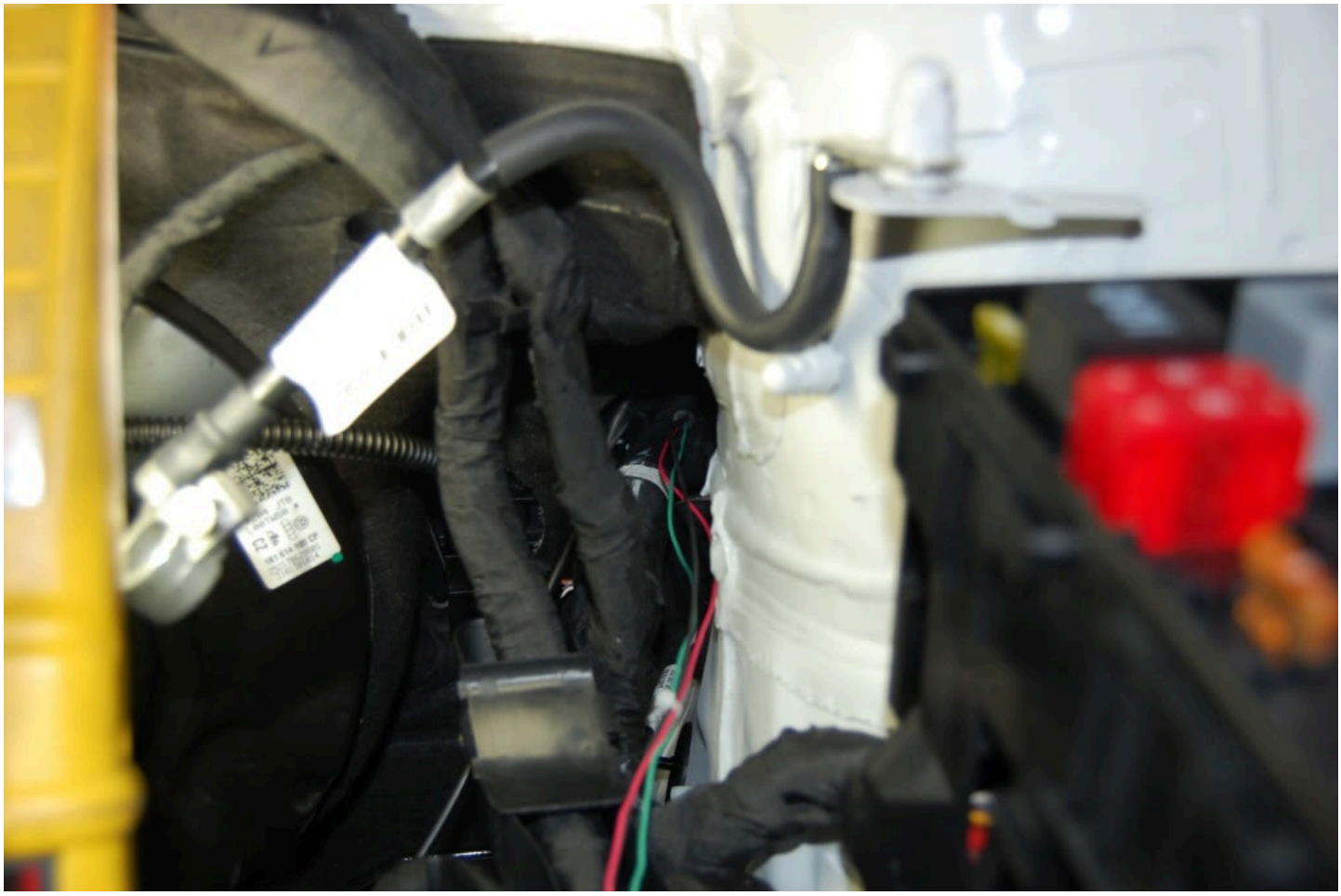
Here's a picture showing the wires with the seals in place:



Here is a picture of the connector in place by the headlight with the three new wires installed.

7. There is a grommet on the firewall near the rear of the frame rail. This grommet is where the harness enters the car, just above the pedals. There are some available spaces on this grommet. The three new wires will need to be routed through this grommet to the inside of the car. This was a bit tricky - a long, thin, stiff wire can help here. Be careful not to poke too large of a hole in the grommet as it is meant to keep water out of the car.

Here is a picture of the grommet showing my 3 new wires passing through. You can see here that I used red, green and black wires to extend into the car - again different colors help me remember which wire is which. Note you can bundle and wrap those wires better than I did - I just wanted to show the wires going through the grommet.



8. Remove the instrument cluster. This is done by removing the trim over the headlights switch, removing the trim below the cluster, and removing the 2 torx screws at the bottom of the cluster. In order to remove the connector on the back of the cluster, a tab in the middle of the connector must be depressed and the latch lifted up. A small lighted mirror can help here. Have the steering wheel in the lowest, most extended position for this. There are DIYs for removing the cluster on the Mk6 forums if you need more help, but overall its pretty easy.

9. The cluster connector cover comes off easily - just release the tab on the bottom of the connector with a small screwdriver and slide the cover off the connector.

Here is the connector with the cover slide partially off:

10. Cut the instrument repair wire in half and insert into the cluster connector at pin 11. Tape or zip-tie the wire to the harness near the connector. Reinstall the connector cover.

12. Connect the wire you ran into the car from pin 6 on the 6 pin connector to the repair wire.

13. Connect the wire you ran into the car from pin 4 on the 6 pin connector to switched power. This is available on fuse 4. In my case, I cheated and used a "add-a-circuit" adapter for this. Its not as clean as wiring into the back of the fuse box, but it was quick and easy.

14. Connect the wire you ran into the car from pin 5 on the 6 pin connector to ground. In my case, I connected this wire to the top torx screw on the fuse box after verifying this screw was grounded (it was).

15. Reinstalled the instrument cluster and fuse box panels. Make sure you engage the connector on the rear of the cluster properly and latch it in place. Again, a lighted mirror helps here.

17. You will have several warning lights on the cluster after having the battery disconnected, including the TPMS warning light, steering and stability control. These should all go away after driving a few feet. You can also scan the car with VCDS and clear any faults.

Part 3: Oil Pan Swap / Sensor Install

Goal: Replace your oil pan with one which has a hole machined into it for the TOG sensor. After the pan is installed, install the TOG sensor.

(1) Oil pan with opening for TOG sensor: 06F-103-601-L

(1) Sealant for oil pan: D-176-404-A2

(1) TOG Sensor: 06E-907-660

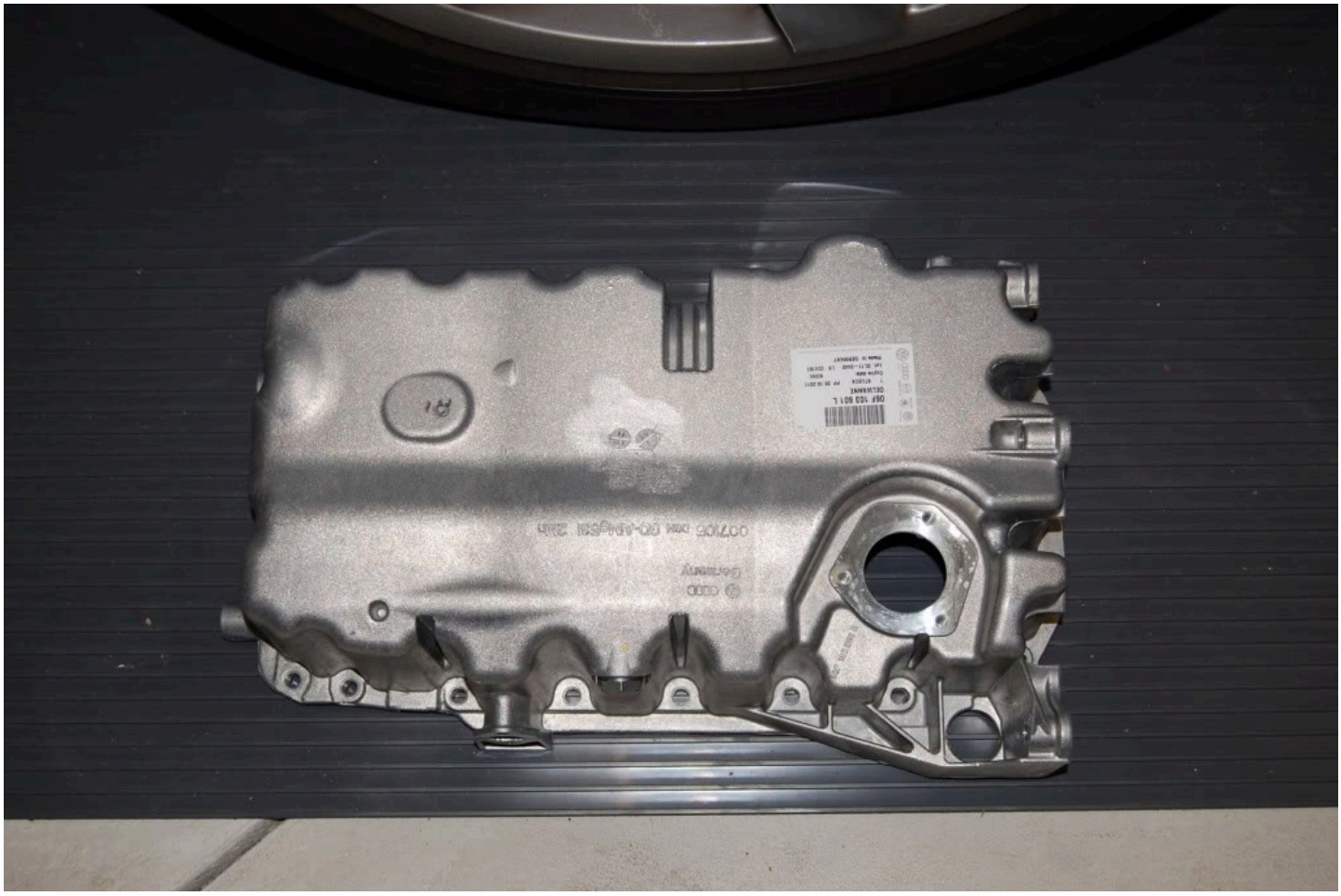
(3) bolts for TOG sensor: N910-652-01

Oil and new filter.

XZN (triple square) M8 and M12 bits. For the upper oil line bolt, a stubby M8 bit is helpful.

Note: our engine is very similar to the older 2.0T engines found in Mk5 2006 Golfs and Jettas. If you have a Bentley from one of those cars, there are diagrams and torque specs for replacing the oil pan.

Here is a picture of the new oil pan:



1. Remove engine splash guard (8 torx bolts).

2. Drain oil from pan and oil filter housing. Remove oil filter housing.

3. Place car securely on jack stands.

4. Remove T30 torx bolt securing air plumping at front of motor.

5. Loosen 2 M12 bolts securing aux water pump bracket. Below is pic of the pump.

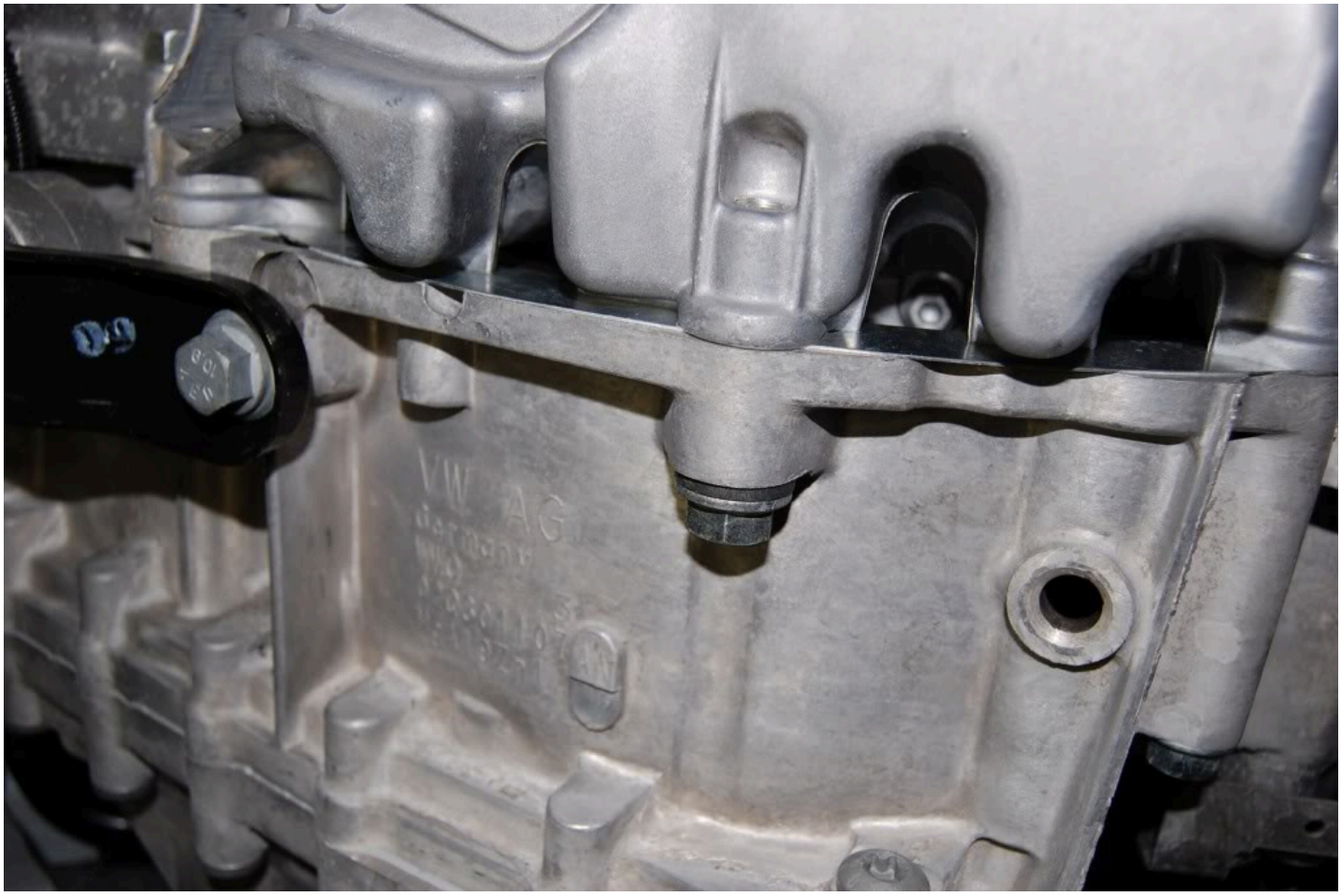
6. Remove 2 T30 torx bolts securing air plumping on side of engine (I did not remove the lower wheel arch splash guard for this, although you could).

7. Remove 2 M8 bolts to turbocharger oil line from pan.

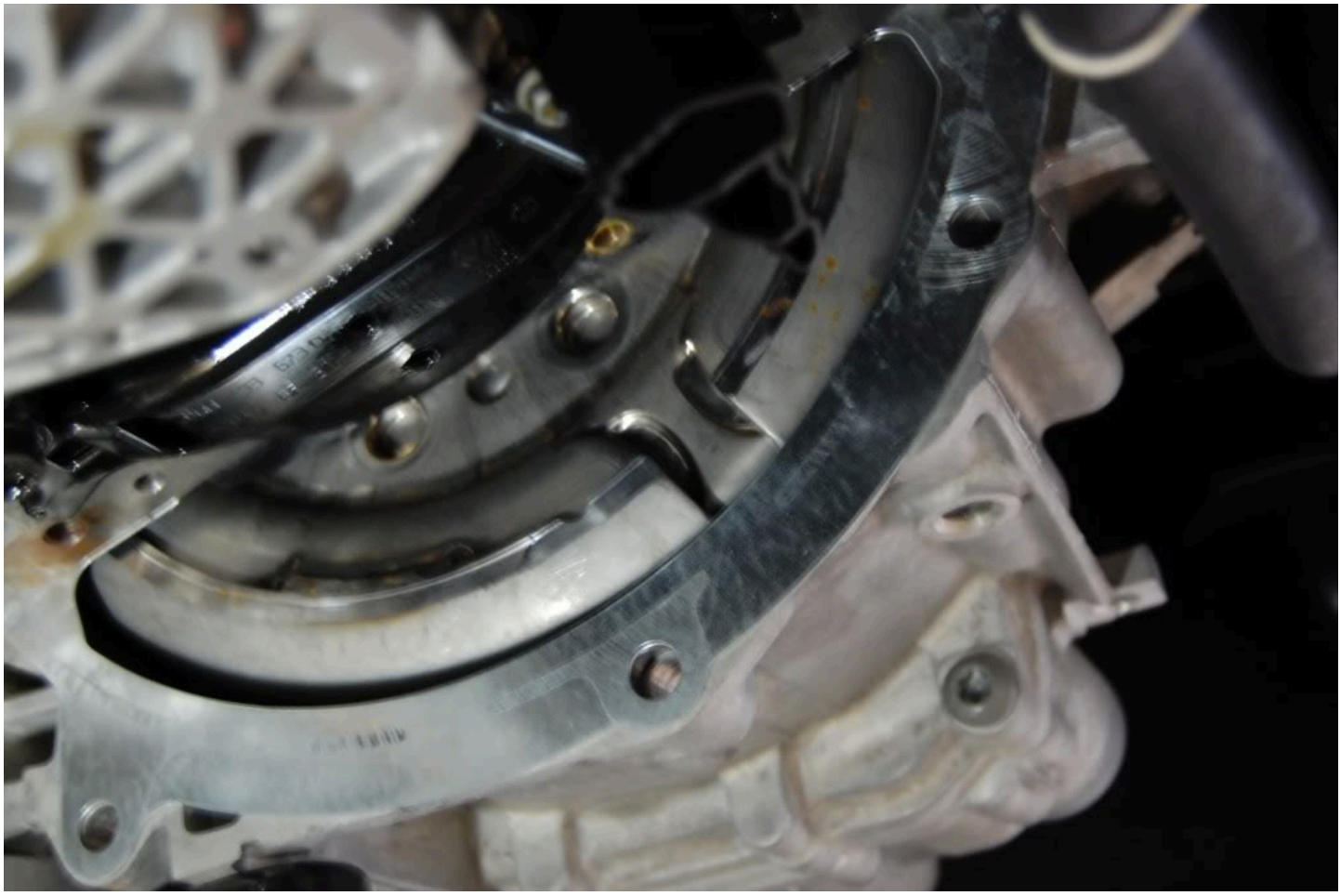
8. Remove 3 bolts connecting oil pan to transmission.

9. Remove 20 bolts attaching oil pan to engine. The two bolts recessed against the transmission require the engine to be rotated to a cut out in the flywheel. This can be done using a 19mm 12 point bolt on the crank pulley. A wobble extension helps here to.

Picture showing one of the two recessed bolts:



Picture of the flywheel showing the notch.



10. Using string or small blocks of wood, move the oil line and air plumbing away from the pan and keep it out of the way while the old pan is removed and the new pan installed.

11. There are specific cut outs on the pan where you can pry it loose. It does not take too much force to do this.

12. Remove pan. Clean all old sealant off the engine block.

13. Remove the two torx bolts on the plastic baffle in the pan and transfer the baffle to the new pan. Do NOT install the TOG sensor into the new pan now.

14. Test fit the new pan to the engine block until you feel comfortable you can fit it up there quickly and easily. This is important because once the sealant has been put on the pan, you really need to get it in position and bolted down in about 5 minutes.

of the bolt holes).

16. Position the pan on the engine and insert a couple of the pan to engine bolts loosely to hold it in place - do NOT tighten these yet.

17. Install the 3 transmission pan bolts and torque to 30ft-lbs. These should be tightened first to avoid cracking the pan, which could happen if you tightened the oil pan to engine bolts first instead.

18. Install the 20 pan to engine bolts. Torque to 11 ft-lbs in a diagonal sequence.

19. Install TOG sensor. Torque 3 M8 bolts to 9 ft-lbs. Connect cable.

20. Install the turbocharger oil line bolts torque to 9 ft-lbs.

21. Install torx bolts holding air plumbing on side and front of engine.

22. Tighten M12 bolts holding aux water pump bracket.

23. Install new oil filter and housing.

Here's a shot with the new pan and sensor in place:

24. Make sure the sealant has had at least 30 minutes to set before adding oil. Lower car from jack stands and fill with oil. Takes approximately 5 liters.

25. Recode instrument cluster using VCDS. Under adaptation, select channel (7) ESI: Coding of Service Interval Extension (SIE) - TOG. Change the value to "Oil level thermal sensor connected to instrument cluster".

26. Test drive. Oil temperature should indicate on MFI after a few minutes.

27. After the test drive, check for leaks, reinstall engine splash guard.

amalitsky

Reply Quote Like

J jsausley · Registered
Joined Dec 2, 2011 · 5,071 Posts

WOW!!!

I'd love to have the oil temp display but that's way too much work for me. That really is a pretty huge install for something so simple. Nevertheless, thanks for the information and many :beer:'s to you for completing it and showing us how. I'll just sit over here and envy you quietly.

Currently Between Fun Cars

Reply Quote Like

D DerGolfGTI · Registered
Joined Feb 21, 1999 · 458 Posts

Discussion starter · #3 · May 8, 2012

Yeah - that's exactly what I thought too! My Mk3 has this, and I had hoped it was as simple as just flipping a switch in VAG-COM, but no...

Its really not too hard of job, but I can certainly understand why people would say we're crazy to (a) spend $500 for an oil temp/level sensor, and (b) go to the trouble.

From a price point of view, Suncoast VW/Porsche sells leather sunvisors for $900 for Porsches and I guess people actually buy them - this mod actually does something and it was .. educational for me

Reply Quote Like

O OrlandoR · Registered
Joined Mar 15, 2005 · 3,247 Posts

#4 · May 8, 2012

You from Sarasota?

:sly:

Reply Quote Like

B BigmountainVMD · Registered
Joined Sep 27, 2011 · 683 Posts

#5 · May 8, 2012

Wow. :beer::beer: All it takes is looking at a project like this to remind me that, regardless of my progress working towards my doctorate, I am still a dumbass.

Stage 2+ Golf R
APR TBE, VWR SS/Intake/Subframe Mount, TyrolSport DeadSet Kit, Sachs SRE PP/Friction Disk, Beltronics STI-R + radar detector (bumper mount), Laser Interceptor Dual front laser jammers

Reply Quote Like

J JosephHatfield · Registered
Joined Sep 4, 2011 · 308 Posts

#6 · May 8, 2012

Bravo! I applaud your perseverance.

And I thought removing the Soundaktor was too hard

Reply Quote Like

C Cortexiphan · Registered
Joined Mar 1, 2010 · 4,939 Posts

#7 · May 8, 2012

I'll be doing this eventually. :thumbup:

Thanks for the write-up, much appreciated.

• Wookies In The Woods 2015 •

Reply Quote Like

G GTINC · Banned

#8 · May 9, 2012

> DerGolfGTI said:
> .....this mod actually does something....

What do you plan to do with the information on oil temp?

Reply Quote Like

S

Siliconrane · Registered
Joined May 19, 2009 · 2,010 Posts

#9 · May 9, 2012

Nice. Something to do in my spare time

2017 Golf R DSG w/ DCC / NAV / DAP (Unitronic Stage 2 ECU / TCU) Unitronic MQB Intercooler, Unitronic MQB AWD Downpipe. -->Build Thread<-- Project Sleepy R (Ultimate OEM+):wave:

Reply Quote Like

V

vdub07 · Registered
Joined Apr 15, 2001 · 2,654 Posts

#10 · May 9, 2012

And again, WOW! :thumbup:

OEM+

Reply Quote Like

M MFZERO · Registered
Joined Mar 13, 2002 · 33,042 Posts

#11 · May 9, 2012

Great read!

I was trying to get this to work on my mk5 along with the Auto-Polare Fis+ as it shows an oil temp reading in the dash. I've already had the pleasure of replacing my oil pan with the updated unit and oil sensor due to road debris. I just needed to finish sorting out wires and connectors. This will help immensely.

:beer::beer::thumbup::thumbup:

nek.cbs.csd :what:

Reply Quote Like

N nordique14 · Registered
Joined Sep 10, 2011 · 123 Posts

#12 · May 9, 2012

This is an awesome write up!

Reply Quote Like

A AWay · Registered
Joined Oct 25, 2002 · 1,126 Posts

#13 · Jun 3, 2012

Perhaps a silly question but does the it only display in Celsius?

O **Optimus812** · Registered
Joined May 5, 2012 · 205 Posts

#14 · Jun 3, 2012

Cool, it is good to know we have this option. Nice write up, thanks!!

Dave

2015 Audi A3 2.0 - APR STG 1 Tune, Lowered on H&R SS Springs
2014 Jaguar F Type V8S Conv

T **ThatVdub** · Banned
Joined May 28, 2010 · 6,994 Posts

#15 · Jun 3, 2012

Wow! :thumbup:

V **V8Star** · Registered
Joined Jun 26, 2007 · 6,048 Posts

#16 · Jun 3, 2012

Nice write up

Will definitely come in handy, I will start sourcing the parts around the time for my first oil change.

A autofi · Registered
Joined Nov 24, 2011 · 799 Posts

#17 · Jun 4, 2012

> AWay said:
> Perhaps a silly question but does the it only display in Celsius?
>
> I applaud your work and OEM approach.

Not a silly question,you can choose in the MFI settings as right now I'm using the farenheit reading.

Reply Quote Like

P Peteski · Banned
Joined Sep 29, 2000 · 585 Posts

#18 · Jan 19, 2013

This needs to be a sticky in "DIY" thread for Golf R builds and FAQ.

This writeup tremendously helped me getting my Oil Temp/Level sensor installed. I did few things differently but overall followed the steps listed in this DIY.

OP deserves some serious :beer::beer::beer::beer: for this work.

...and it also works on Color MFD Clusters
http://forums.vwvortex.com/showthre...TE-s-GOLF-R-Build....-OEM-100-and-then-some.&p=80036371&viewfull=1#post80036371

Cheers,

Peter

Reply Quote Like

R RCKEV · Registered
Joined May 29, 2012 · 542 Posts

#19 · Jan 19, 2013

> BigmountainVMD said:

> my doctorate, I am still a dumbass.

LMFAO

I had a dentist buddy that would ask me to do all his mechanic work and he used to say about the same thing.

2008 CW 3526

Reply Quote Like

W **Weasel Soup** · Registered
Joined Dec 21, 2012 · 60 Posts

#20 · Jan 19, 2013

:thumbup:

I agree with this being a sticky. Very cool that DerGolf did this write-up!

My build Thread

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1 - 20 of 50 Posts 1 2 3

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