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3.6l 24v VR6 Forum

HELP! Planning a DIY Passat 3.6 Timing Chain / Oil Bolt replacement

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Thread: HELP! Planning a DIY Passat 3.6 Timing Chain / Oil Bolt replacement

mareich525 o

Semi-n00h

Join Date: Dec 12th, 2009 Location: Illinois Posts:

HELP! Planning a DIY Passat 3.6 Timing Chain / Oil Bolt replacement



OK, so my 06 Passat w/ 3.6 has been throwing the 000022 - Bank 1: CMP Sensor (G40) / Engine Speed Sensor (G28) P0016 - 008 - Incorrect Correlation - MIL ON periodically since about 180,000 miles. Its now at 195,000 and I decided to finally replace the timing chains and oil pump bolt as I'm fair sure mine has backed out and only holding the sprockets on due to the chain cover holding it from falling out.

After getting a quote for \$2100 from my local independent shop, I've decided to try this on my own. I haven't seen any DYI write ups, but have read a lot of the forum info. I've ordered the parts from ECS Tuning. I have access to the repair manual on ALLDATA, but it assumes the engine is out of the car. I thought I'd run my plan past you guys to see if I'm on track or if I'm missing something.

- * Camshaft locking tool (ordered from ECS Tuning)

 * Crankshaft pulley holding tool (going to use the needle nose pliers / vice grip setup I used when replacing the timing belt on my 1.8T)
- * Engine Lift Bar

Procedure:

* Disconnect Battery
* Put front of car on jack stands. **How high??**

QUESTION: Is there a need to pull the bumper and put the lock carrier into Service Position??

- Remove Wheels
- * Remove lower sections of front wheel housing liners
- * Remove belly pan
- * Remove Engine Cover * Remove Air Filter Assembly
- * Remove All Filler Assembly

 ** Pisconnect and lower transmission (what I could find was for REMOVING the trans, please let me know if any of the below steps can be changed for only lowering it)

- Put car in Park
- Disengage the selector lever cable from the transmission by hand and pull it out of the bracket
 Pry the cable off the shift rod ball head using an open end wrench

- Press the cable out of the auxiliary bracket on the transmission.

 Disconnect the Multifunction transmission range switch connector, starter connections, & Ground strap to bracket
- Unplug the connectors from the cam sensors Move the harness out of the way
- Remove top and bottom coolant pipes on cover Install the Engine Lift Bar
- Install to the Engine and support, but do not lift Remove the transmission mount to bracket bolts
- Remove the coolant expansion tank cap.
 Install hose clamp offs (3094 or HF Equivalent) to the hoses and remove the hoses from the ATF cooler. **If only lowering trans, can I keep the hoses connected? Or, not enough slack??**
- Remove both upper engine/transmission bolts
 Press the brake pedal on order to remove the left drive axle bolt (will need a helper)
- Remove the noise insulation.
 Remove the right drive axle heat shield from the engine.

- Disconnect both electrical connectors from the transmission.

 Remove the lower left lower part of the wheel housing liner.

 Remove the lower left lower part of the wheel housing liner.

 Remove the pendulum support, first remove bolt A -, then bolts B (When installing, tighten bolts B first, then bolt A -).

 Remove the ball joint to lower control arm nuts (three) from both lower control arms.
- Press both drive axles out of the transmission.
- Remove the left drive axle.
- Secure the right drive axle in this position as high as possible to the strut. Remove the lower engine/transmission bolts.

 Keep an easily accessible bolt installed for safety reasons.

- Start with the two lower bolts.
- Remove the six torque converter nuts using (V/175) or thin wall 15mm socket. While doing so, counter hold at the starter ring gear using
- Clamp off the ATF lines 2 using (3094 or HF Equivalent)
- Remove the ATF line bolt 1 and pull the ATF lines 2 out of the transmission. If only lowering trans, can I keep the hoses connected? Or, not enough slack??

 Plug the transmission and ATF lines using clean plugs. again, can this be avoided if not removing trans??

 Support the transmission with transmission jack, do not raise it.

- Remove the last holt.
- Separate the transmission from the engine.
- Observe the torque converter. The torque converter must be removed together with the transmission
- * Drain oil and remove oil pan Should this be done before lowering the trans??
- * Remove sealing flange * Remove intake manifold
- * Remove Cylinder head cover * Remove bolts from cover
- * Set the crankshaft to Top Dead Center (TDC) for cylinder 1. The milled tooth on the crankshaft sprocket arrow must align with the bearing cap seam.
- * insert camshaft bar -T10068 A- into both shaft grooves.
 * Ensure intermediate shaft sprocket timing marks are aligned

- Remove tensioners to ease time chain removal/installation
 Remove chains, upper then lower (primary)
 Install new guides and tensioners w/ new bolts pins.
 Install the new primary chain into the guide rail and onto the crankshaft sprocket.
- * Install the large oil pump sprocket into the chain so that the tab on the sprocket aligns with the mark on the cylinder block * Reset lower timing chain tensioner:

- * Reset lower timing chain tensioner:

 Release locking mechanism [6] . Use screwdriver.

 Push tensioner rail against chain tensioner [7] & [8] .

 Tighten tensioner bolts [9] . Tightening torque: 8 Nm.

 * Install new oil pump bolt & Tighten torque: 60 Nm + 90°.

 * Ensure high-pressure fuel pump sprocket timing mark at 12 o'clock position[10] .

 * Fit high-pressure fuel pump sprocket locking tool [11] .

 * Set inlet camshaft position actuator (marked 24E) by turning inlet camshaft position (CMP) sensor reluctor in both directions until locked [12]

* Ensure 8 links between timing marks on camshaft adjusters and on camshaft carrier aligned [15] & [16] .

* Ensure 8 links between timing marks on camshaft sprockets [17] .

* Install tensioner after timing chain installation.

* Remove high-pressure fuel pump sprocket locking tool [11] . * Remove camshaft locking tool [4] .
* Turn the crankshaft two turns clockwise to No.1 cylinder at TDC [1] . * Fit locking tool to camshafts [4] .
* Ensure timing marks aligned [15] & [16] . * If not: Repeat timing chain installation.

* Camshaft rotation can be prevented using 27 mm spanner on hexagon.

* Tighten bolt of each camshaft sprocket to 60 Nm + 90° [18] * Re-install the transmission side sealing flange w/ new crank seal * Re-install the Oil Pan * Re-install the drive plate * re-install the transmission * re-install the rest, new oil, etc I plan on taking my time and taking pictures along the way with the goal of contributing a DiY. Please let give me any / all suggestions thanks. Mike **Reply With Quote** Eric D o 02-04-2016 08:15 PM Reply #2 Senior Member The DIY is available. http://www.bentleypublishers.com/vol...-b6-ebahn.html Join Date: Feb 16th, 1999 Tragic Kingdom, CA Location: Posts: 20 460 Vehicles: VRIL-7 1943 Flugkreisel, 1945 The original Dub and Dubber. Manche VWs sind einfach schneller als andere. Reply With Quote mareich525 o 02-05-2016 11:18 AM Reply Semi-n00h Anybody with the Bentley for the B6 Passat able to confirm they have this procedure covered as a DIY? Join Date: Dec 12th, 2009 Location: Illinois Right now, my main questions are: Is there any benefit to pull the bumper and put the lock carrier into Service Position?
 How high do I need to jack the car up to get the trans out of the way? 3. When lowering the transmission (not removing it from the car), do I need to remove the ATF lines? This one I'll prob be able to figure out when I get into it Thanks, Mike **Reply With Quote** Passat2006 o 02-05-2016 03:35 PM Reply Junior Member Have a question to you? Every how often did this fault show up? was it the only fault or did it have some other ones. I'm asking, as my engine, same 180K and started with that fault, I reset it, and after 800 miles reappeared. Join Date: May 29th, 2008 Posts: 20 Vehicles: Passat 06 3.6 Sports, Touareg 06, EOS 08, Beetle 98 Thanks **Reply With Quote** mareich525 o 02-06-2016 01:01 AM Reply #5 Semi-n00h The time to re-occur varried, sometimes within a couple of days, sometime months. I have gotten other codes, but they don't have the Join Date: Dec 12th, 2009 same time/mileage stamp. Location: Illinois Posts: I've also gotten: 012408 - Throttle Control P3078 - 002 - Airflow at Idle too Low first that sets the engine light on, but the EPC light which also puts the car into limp mode comes on when I get the 000022 - Bank 1: CMP Sensor (G40) / Engine Speed Sensor (G28) P0016 - 008 - Incorrect Correlation - MIL ON I've occasionally gotten this one, but not as often 000833 - Camshaft Position Sensor (G40) P0341 - 004 - Implausible Signal - Intermittent I'm going to start on it this weekend, I'll post how far I get. Mike **Reply With Quote**

*Fit inlet camshaft sprocket with chain. Align sprocket with hole in camshaft[13] .

* Fit exhaust camshaft sprocket with chain. Align sprocket with hole in camshaft [14] .

* Tighten exhaust camshaft sprocket bolt finger tight.

locked [12].

* Tighten inlet camshaft position actuator bolt finger tight.

* Set exhaust camshaft position actuator (marked 32A) by turning exhaust camshaft position (CMP) sensor reluctor in both directions until

nater o

Angry Turtle Administrator



Join Date: Apr 10th, 2000 Vehicles: 2008 3.6L Passat 4Mo, 98 O2M 3.0L VRT, '04 .:R32, 2010 Routan 87,055

Bentley spells this out for you. It's not a fun job but it's doable.

Do yourself a favor and get that car as high as possible. This will be a PAINFUL job without the use of a lift, especially if you're 4Motion. This trans is a bear. Trust me.

Sent from my iPhone using Tapatalk

Nate

2006 B6 PASSAT FS FORUM RULES O2M Swap

B6 3.6L Spun Bearing / Engine Replacement

Reply With Quote

02-07-2016 09:46 PM Reply #7

02-08-2016 01:09 AM

02-08-2016 06:24 PM

Passat2006 o

Junior Member May 29th, 2008 Join Date:

Posts: Vehicles: Passat 06 3.6 Sports, Touareg 06, EOS 08, Beetle 98 Good Luck, Keep us posted how it goes and what you find. Might need to do it myself soon too.

Reply With Quote

#8

mareich525 o

Semi-n00h

Join Date: Dec 12th, 2009 Location: Illinois

When I looked at the procedure for removing the intake manifold, I realized i DID have to pull the bumper cover and put the front into service position. Also had to pull the fuel pump to get the bottom fuel rail off, which even w/ the front in the service position was still a pain. I got the intake manifold off and pulled the valve cover gasket. There was some watery-oil sludge on the front side of the cover and the top of the intake cam / lifters. I took a bunch of pics, but the're still on my phone. The lift bar I got from FH wasn't welded w/ the correct spacer so I'll need to exchange it. I'm going to be out of town the next couple of week ends, but I'll get back to it when I return. Next step will be to get a new lift bar and drop the trans. Thankfully, its only front wheel drive.

I also realized that this will be a good time to change the spark plugs. This was my wife's car so we had most of the service done by the dealer, I never realized how much a pain it was to change them.

Now that I've got the intake manifold off, I think I'll take Nater's advice and raise it up a bit higher on the jack stands. I've got a copy of the ELSA manual that my son bought off eBay for his 03 passat, and Alldata. While it doesn't do a walk through start to finish for this job, it does give good detail for each of the sub steps.

Mike

Reply With Ouote

Reply

Passat2006 o

Junior Member Join Date: May 29th, 2008

20 Posts:

Passat 06 3.6 Sports. Vehicles: Touareg 06, EOS 08, Beetle 98

Just thought of something. Im not sure what model car you have, but take advantage to change the HID bulbs if you car has them. If you dont, and they fail, you will need to take the whole from end back down. (Grill, Bumper Etc.)

Reply With Quote

mareich525 o

Semi-n00b

Join Date: Dec 12th, 2009 Location: Illinois Posts: 18

02-28-2016 11:15 PM Reply

Well, after being out of town the last couple of weekends, I got back in the garage today. I've got the engine supported by an engine lift bar (Harbor Freight). Both axles are off (these don't bolt to the trans, but rather have to be pressed out using a wedge / chisel. Both the top and bottom trans mounts are unbolted / removed. I got the torque converter bolts removed, and all but 2 of the trans to engine bolts removed.

The last thing before removing the trans is to disconnect the ATF lines to the cooler. I've got them clamped off, and the bolt removed. Both lines rotate, but I haven't been able to get them out. I've tried prying, but don't want to damage the lines. Anybody suggestions on how to remove them?

I've been taking a bunch of pics, and still plan to complete a write up when finished

You need to carefully pry them. They WILL come out. I've removed 'em a number of times. Get o-rings to replace while they are out-especially if you'll be prying at the lines.

Mike

Reply With Ouote

nater o



Join Date: Apr 10th, 2000 87,055 Posts:

Vehicles: 2008 3.6L Passat 4Mo, 98 O2M 3.0L VRT, '04 .:R32, 2010

HELP! Planning a DIY Passat 3.6 Timing Chain / Oil Bolt replacement

02-29-2016 06:08 AM



Sent from my iPhone using Tapatalk

Nate 2006 B6 PASSAT FS

O2M Swap

B6 3.6L Spun Bearing / Engine Replacement

Reply With Quote

mareich525 o

Semi-n00h

Join Date: Dec 12th, 2009 Location: Illinois Posts: 18

03-03-2016 11:49 PM Reply #12

Thanks for the guidance. I did pry them out, then used bolts w/ o-rings to plug both the trans openings and the lines to prevent too much leakage. I think I maybe lost 1/2 a cup.

I was able to get the trans lowered, but it took 2 attempts as I didn't make sure to push the torque converter studs out of the plate before lowering it. I raised it back up, and then pushed them out w/ a large screwdriver, then it disengaged and I was able to lower it. I didn't have a trans jack, so I used my floor jack, and a 500lb turnbuckle strap on the 2nd Engine support rod. This let me lower it slowly while prying it down around the drivers side frame w/o worrying about it hitting the floor.

I removed all the bolts from the timing cover, but the oil pan was still on , and the cover wouldn't release. Ran out of time, so I'll drain and drop the pan this weekend, then, I'll finally get a look at both chains and the oil pump bolt / sprockets.

QUESTION: This car has 195,000 miles, and still have original ATF. At this point, do you advise that I change the fluid & filter? Is it any easier w/ the trans dropped? Or would you advise I drain it after re-installing?

Mike

Reply With Quote

nater o

Angry Turtle Administrator



Apr 10th, 2000 Join Date: Posts: 87,055 Vehicles: 2008 3.6L Passat 4Mo, 98 O2M 3.0L VRT, '04 .:R32, 2010

03-04-2016 08:00 AM

Reply #13

I changed my fluid at 170k and it was black. So...yes change it, no matter what anybody says bout not touching old fluid. Better to do while trans is in and running. Need to get fluid to a certain temp (check via VCDS). Wait til it's back in to change fluid.

Sent from my iPhone using Tapatalk

Nate 2006 B6 PASSAT FS FORUM RULES O2M Swap

B6 3.6L Spun Bearing / Engine Replacement

Reply With Ouote

Reply

mareich525 o

Semi-n00b

Join Date: Dec 12th, 2009 Location: Illinois Posts: 18

03-04-2016 09:03 AM

Thanks Nate. I hadn't read any DYI's for the ATF, but I'll save it for after re-assembly, but before putting all the covers back on the car. I assume I don't need to actually drive around to heat it up? I'll look for a write up and/or ask more Q's when time comes. Anxious to get the lower covers off the engine to get a good look at the chain / bolt...

Mike

Reply With Quote

#15

jddaigle o

Memher



Join Date: May 30th, 2003 Location: Denver, CO 6,588 Posts:

Here's a DIY for the transmission fluid change:

http://www.passatworld.com/forums/91...ilter-diy.html

It's on a FWD car but the procedure will be the same. Just make sure you get the right filter, there are different sizes for FWD, AWD, and

B6 Passat 3.6 & 4motion Resource Thread

Now: 2008 VW Passat 3.6 4motion Wagon, 2013 Fiat 500 Sport
Then: 1987 Volvo 745GLE, 1989 Volvo 740GL, 1994 Volvo 940T, 1995 Infiniti G20, 2000 VW Passat 1.8T, 2001 VW Jetta Wolfsburg Ed (x2), 2004 VW Golf TDI, 2006 Jetta TDI

Reply With Quote

mareich525 o

Semi-n00b

Join Date: Dec 12th, 2009 Location: Illinois Posts: 18

#16 03-12-2016 01:35 AM Reply

03-04-2016 09:16 AM

I made a lot of progress last week. After removing the oil pan and timing chain cover, I was able to finally get a look at the timing chain and oil bolt:



As you can see, the bolt (8.8) is still tight, but the top chain was loose. When I looked closer, I realized that the top chain guide was partially gone, and pieces of it were on the sides of the lower chain:



After removing what was left, and the pieces that I could find, I compared it to the new one:



As you can see, the post that should have been covered by the chain guide was being worn away by the chain. I believe that this is what was causing my P0016 codes.

I replaced the chains, guides, tensionsers, posts, etc. (twice as I didn't make sure I had the intake camshaft adjuster was properly aligned before putting the chain on). Because I had read NateR's post where his lower chain guide disintegrated and clogged his oil sump, I took a look at mine:



Maybe because most of what was in there was fairly large pieces, I never got a low oil pressure code, but, I've got to believe that would have come soon had I kept driving it.

Here's a pic after I cleaned it out:



I got as far as replacing the timing cover and oil pan last weekend, and hope to make a lot of progress on rest of re-assembly this weekend.

One note on the timing cover, it would have been MUCH easier if I had cleaned out the bottom of the head, specifically the silicone sealant out of the corner BEFORE I put the new chains on. I did my best to clean up the head gasket and hopefully, the new sealant won't leak...

Mike

Reply With Quote

nater o Angry Turtle Administrator



Join Date: Apr 10th, 2000

Posts: 87,055 Vehicles: 2008 3.6L Passat 4Mo, 98 O2M 3.0L VRT, '04 .:R32, 2010 Routan

That's some very familiar carnage! And one helluva blocked oil pump strainer. Wow.

Sent from my iPhone using Tapatalk

03-12-2016 10:57 AM Reply #17

Nate 2006 B6 PASSAT FS FORUM RULES 02M Swap B6 3.6L Spun Bearing / Engine Replacement

Finished!!

Reply With Quote

mareich525 o

Semi-n00b

Join Date: Dec 12th, 2009 Location: Illinois Posts: 18

03-29-2016 08:56 AM Reply #18



Well, it took a long time, but its finally all back together! It took a little while to start up, but I'm sure that had to do with air in the fuel rails. I had some fun getting the tans back on the motor, only took 2 attempts. I thought I had checked to make sure the torque converter was fully seated, but, I was wrong. As I was tightening up engine / trans bolts, the motor stopped turning... after I lowered it half way down, I was able to spin the torque converter and get it to seat about another inch or so. I also ended up replacing the passenger side trans output seal, as I had dented it when I used a chisel to pop the drive shaft loose. (In hindsight, I'd have used a pry bar on that side as there's enough room). I also replaced the trans filter and re-filled it. I guess 196,000 was long enough for its lifetime.

I took the car for a ~ 15 mile test drive, and it drove and shifted better than I remember before the repair. 📆

Yesterday morning, I took it on my 4 mile commute to the train station, and the CEL popped on So, I read the codes last night: 008851 - Fuel Pressure Regulator Valve (N276) P2293 - 002 - Mechanical Malfunction - Intermittent - MIL ON

I reset it, it didn't re-occur and I drove it to the train again this morning. I'll do a quick search and see what it might be. I do remember when waiting at the one red light that I smelled a strong exhaust / fuel smell, but I was behind a couple of other cars so not sure if thats anything or not. I have not opened the hood yet since I closed it 😊

I did take lots of pics and notes and plan on doing the write up. I'm thinking of doing an outline level with separate posts for each sub section (put in service position, removal of intake manifold, removal of trans, removal / installation of timing chains / guides, etc)

Mike

Reply With Quote

jddaigle o

Member



loin Date: May 30th, 2003 Location: Denver, CO

Vehicles: 2008 Passat Wagon 2013 FIAT 500 Sport 03-29-2016 10:07 AM



#19

Congrats! Hope the codes don't mean any future trouble. That's a helluva job to take on, so 🔝 to you for sticking through it to the end.

B6 Passat 3.6 & 4motion Resource Thread

Now: 2008 VW Passat 3.6 4motion Wagon, 2013 Fiat 500 Sport
Then: 1987 Volvo 745GLE, 1989 Volvo 740GL, 1994 Volvo 940T, 1995 Infiniti G20, 2000 VW Passat 1.8T, 2001 VW Jetta Wolfsburg Ed

(x2), 2004 VW Golf TDI, 2006 Jetta TDI

Reply With Quote

SEANMAC24 o



Join Date: Jan 17th, 2016 04-12-2016 09:59 PM



Whats the verdict? Did this end up working out for you? Did the cel go away? I need to do this myself

pics saved for a full write-up, just need to spend the time putting it together. Any questions, feel free to ask.

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#21

mareich525 o

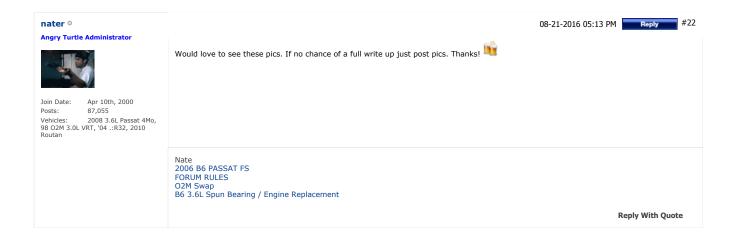
Semi-n00h

Join Date: Dec 12th, 2009 Location: Illinois 18 Posts:

07-13-2016 01:06 PM Yes, the CEL came on twice, but has not since spring. Initially, I could smell gasoline but has gone away too. So far, so good. I have more

Mike

Reply With Ouote



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