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Thread: Ultimate Timing Belt DIY!

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Tim_1.8T


Member



Join Date: Jan 19th, 2006

Location: Boynton Beach

Posts: 383



Ultimate Timing Belt DIY!

09-24-2006 07:25 PM

Reply

#1

I did this for everyone who didn't feel comfortable doing this on their own. After reading this you should feel 100% sure you can accomplish it on your own. I think anyone can do this themselves and save a ton of cash!
This timing belt change was done on my 2002 GTI 1.8T

Product Needed

Timing Belt
Timing Belt Tensioner
Timing Belt Idler Pulley
Water pump (with metal impeller)
Coolant G12
Distilled Water
Accessory belt (optional)
Thermostat (optional DIY does not cover)
New engine mount bolts

Note Kits are available from ECStuning.com, from mjm, as well as many other places. Most don't come with new stretch bolts so you need to ask for them. Can't say anything about anyone elses kits because I only dealt with ECS but i would highly recommend them. Make sure you get a metal impeller water pump as well!

Tools NEEDED

Jack
Jack stands
Phillips head screw driver
Flat Head screw driver
T25 Torx bit Screw driver
8mm allen wrench (Preferably 8mm allen head socket)
3mm allen wrench
19mm twelve point, 18mm, 16mm deep, 16mm, 12mm, 10mm deep, and 10mm sockets
16mm and 13mm wrenches
2x4 approx. 2 feet long
small breaker bar (unless you're Bruce Lee then don't worry about it)

HINT For the 13mm wrench go buy a craftsman ratcheting wrench. This is to remove the Accessory belt tensioner and this tool alone will save you at least 30 minutes when taking that stupid thing off and back on. **HIGHLY RECOMMENDED**

Step #1

Jack the Car up, put it on some stands, and remove the passenger side wheel as well as the plastic fender liner. Hopefully your wheel looks as good as this one.

**Step #2**

Remove - Both engine covers, Upper timing belt cover (with the 2 spring clips), and belly pan.



^Belly pan

Step #3

Remove the lower charge pipe (pancake pipe) using a flat head screw driver or a 7mm socket to loosen the clamps and a 10mm socket to remove the nut holding the bracket in place. I suggest removing the clamp on the intercooler and pulling the silicon connection off the IC with the pipe, much easier then removing the clamp on the pipe and trying to pull the pipe out.



^ pancake pipe

Step #4

Remove the sound dampening shield behind the lower IC pipe by prying each one of those little tabs back with a flat head screwdriver then pull straight done. OR get violent and just pull down super hard.

Step #5

Remove the timing plug on the transmission so that you can visibly see the flywheel TDC mark. The Plug is located here.

**Step #6**

Release tension on the accessory belt using a 16mm wrench to pull back the tensioner enough to align the two holes so that you can slip a 3mm allen wrench through both of them. As Illustrated.

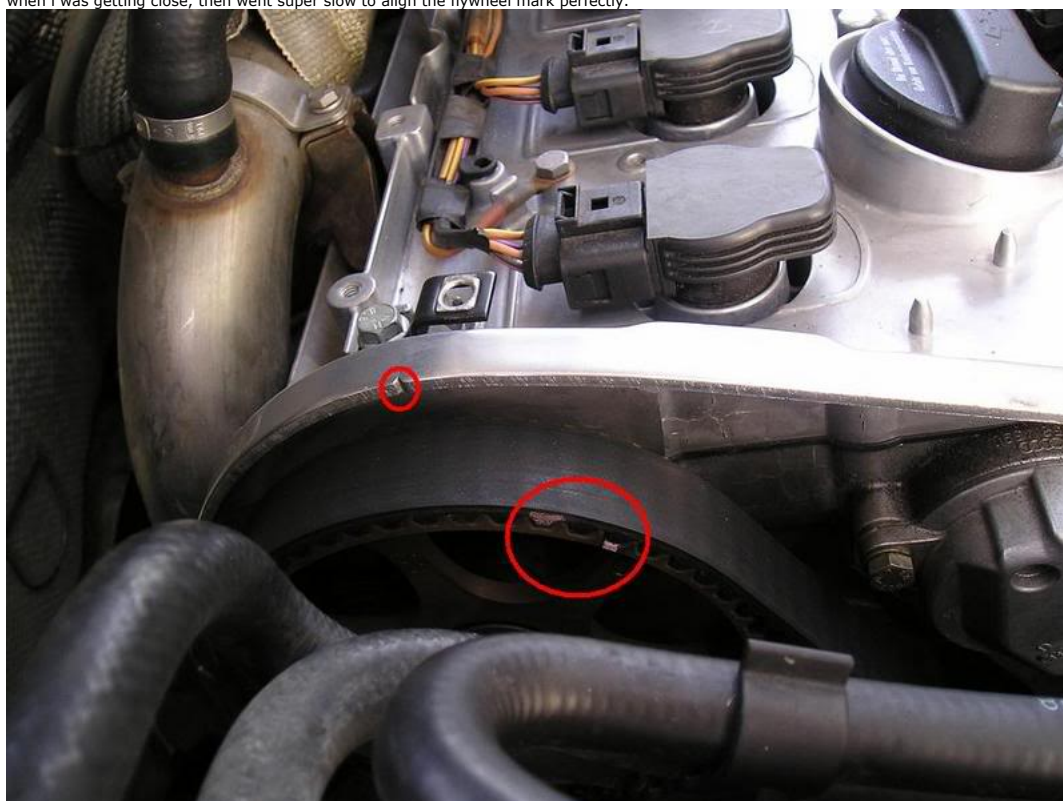


Now the accessory belt tensioner is locked in place and you can easily remove the belt. Then remove the intake pipe to the throttle body hose. When finished with all that, use your ratcheting 13mm wrench to remove the accessory belt tensioner and place that out of the way.

Note The Black Bracket goes between the bolts and the tensioner not the tensioner and the head! Remember this or your belt will not be aligned properly.

Step #7

Remove the harmonic balancer pulley. Then crank the engine to TDC with a 19mm twelve point socket. I looked at the cam gear mark to see when I was getting close, then went super slow to align the flywheel mark perfectly.



^ Here is where the cam gear lines up with the valve cover. You can also see the mark on my cam gear and my new belt from the nail polish. They don't line up because the car has been running.



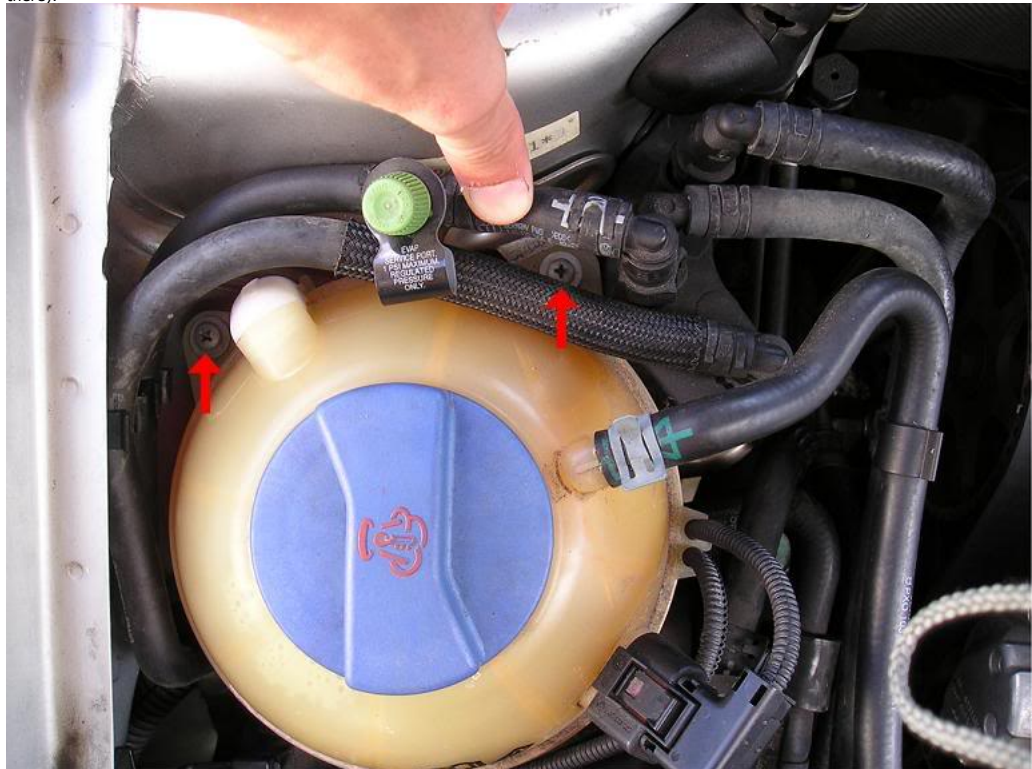
^ Here is where you will see the TDC mark on the flywheel (Behind the timing plug on the Trans) You can't see the mark on mine cause it's not on TDC. Your flywheel may look a little different as mine is a new lightweight one with that sexy blue spec clutch as you can see.

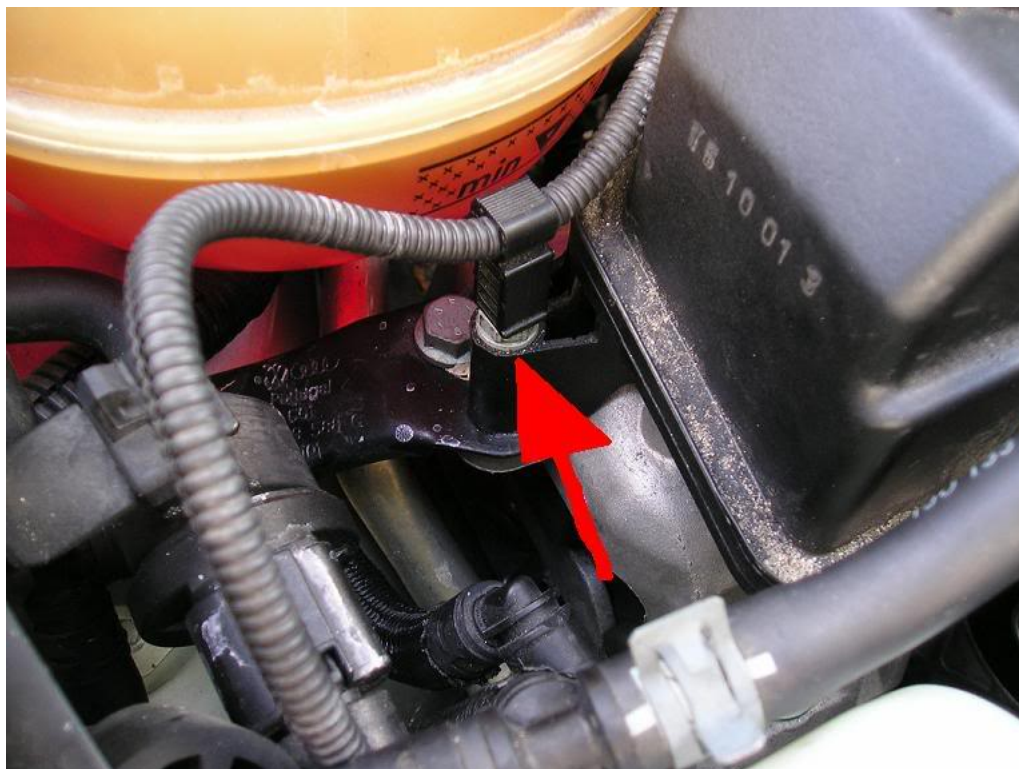
Step #8

Using a jack and a 2x4 crank the jack just so that the engine has support. Make sure the release valve on your jack is tight so that the jack doesn't slowly lose pressure.

Step #9

Remove two screws holding the coolant reservoir down as well as the bolt holding down the power steering reservoir (10mm deep socket needed there).





^ unclip that black clamp and take it off the bolt

Note Removal of the coolant res and power steering res and/or lines is not necessary but would make the job easier. I didn't remove anything just pushed everything around.

Step #10

Remove the six bolts holding the mount to the body and the bracket located here. Then slide the mount out from the top.



^ The bolts are close to those circles

Step #11

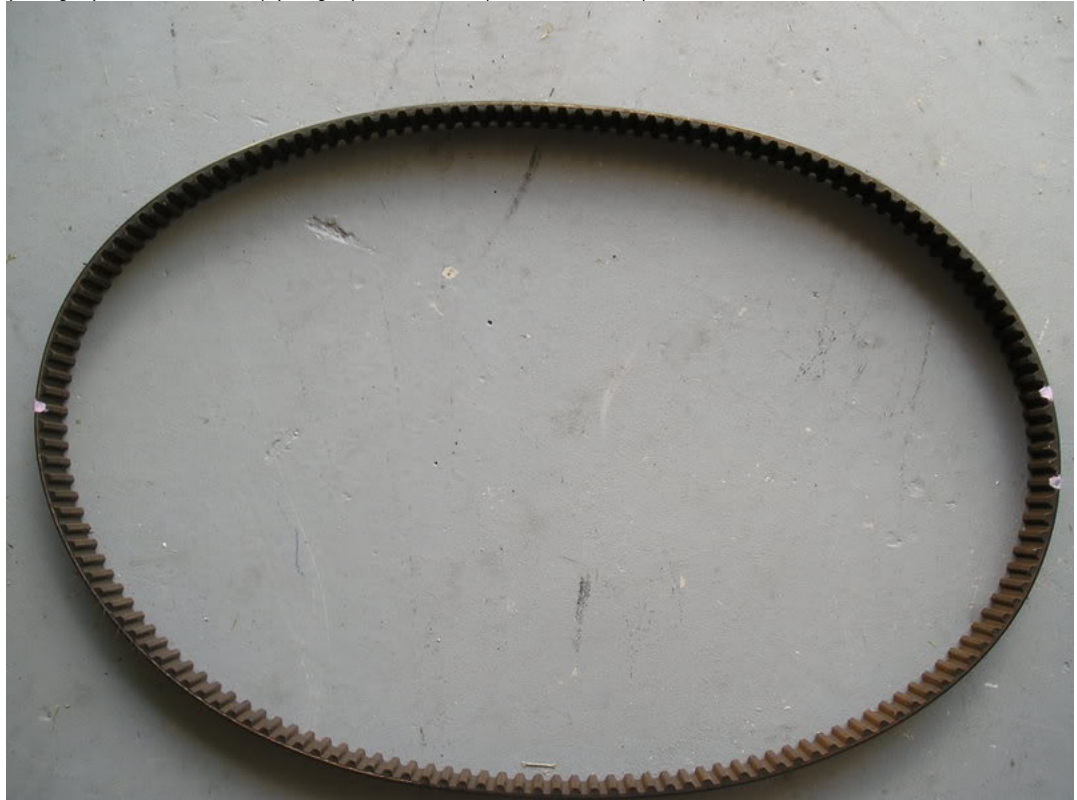
Jack the engine up a couple of inches. Then remove the rest of the engine mount which is attached to the block by removing 3 bolts. You will need the deep 16mm socket to remove at least one of them. After removing the bolts if you can't find a way to get that other piece of the mount out from the bottom don't sweat it. I just left it in there and moved it around as needed, as many others have done it this was as well.

Step #12

Remove the 5 - 10mm bolts holding the middle and lower timing belt covers on.

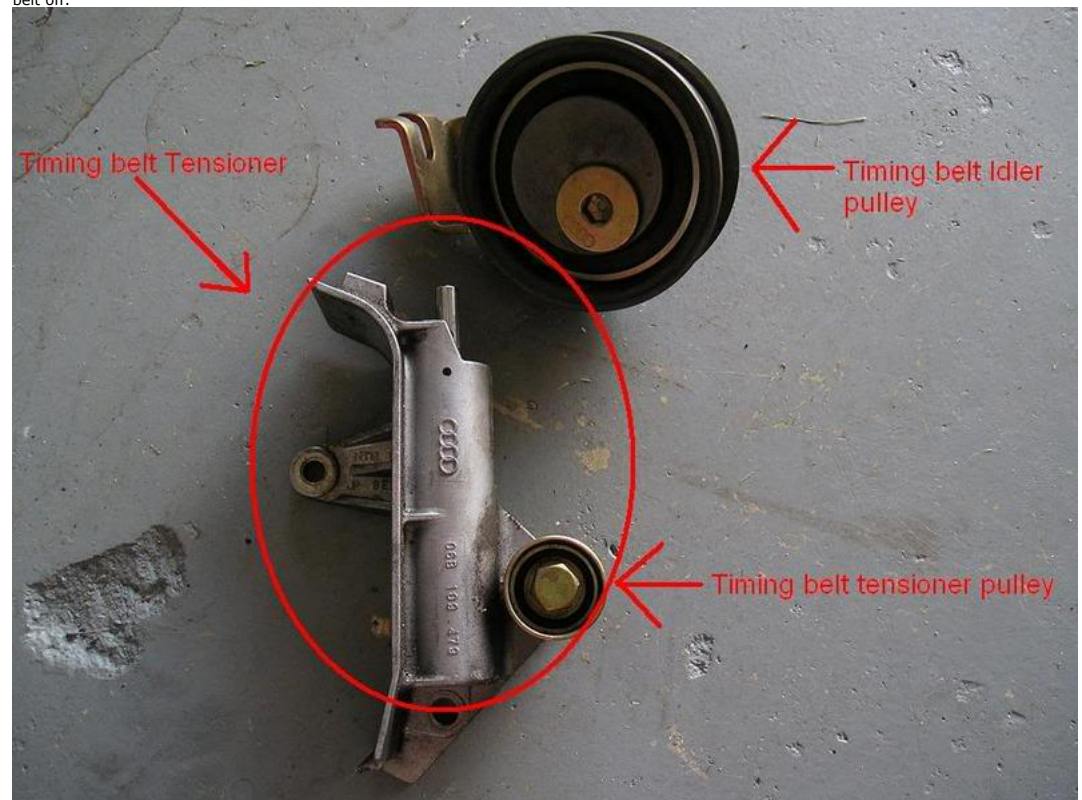
Step #13

At lucky step thirteen you get to take the timing belt off, but FIRST... make sure you mark the position of the belt on the crank gear and the cam gear. I used nail polish to do this and i made two marks on the bottom (crank gear) and 1 mark on the top (cam gear) so that it was impossible to screw it up.



^ Here is what my belt looked like after i took it off and it was marked

Now remove the little timing belt tensioner pulley. Then remove the whole Tensioner and finally remove the tensioner idler pulley. Now slip the belt off.



Step #14

Remove the water pump. It is held in with 3 10mm bolts. At this point it's not just gonna fall out. Wrap a rag around the gear and get two hands down in there. Wiggle the pump while pulling as hard as you can. When it starts to leak you're almost there. In the end your prize will be a mess of coolant on the floor and, if you're doing this timing belt swap because your waterpump broke like me, a cracked plastic waterpump impeller which you will need to reach into the block to retrieve.

Step #15

Replace the water pump. Make sure to moisten the O-ring with some coolant before bolting it back up.

Step #16

Get your new timing belt out and transfer the marks to the new belt from the old belt. Before throwing it in there put the new tensioner idler pulley in there. Now align the mark on the cam gear with the belt. Next route it down to the crank gear and line those marks up. Most difficult part of the whole job right here. Put the New tensioner in. I noticed my old one left an imprint on the block which helped me out with the way it was oriented in there. Then I put that 3mm allen wrench to good use and stuck it through the top bolt hole on the tensioner to line that one up. Then I put the bolt in the bottom hole and shifted the tensioner around until I got it to screw in. Then I bolted in the top one. Make sure the marks on the cam gear and the crank gear haven't moved and when you're confident that you've got that belt on perfect pull the pin on the tensioner. After you pull that pin there is no turning back unless you have the blot to untension the tensioner.

Step #17

Crank the engine over, by hand, at least two times so that you can match up the flywheel TDC mark and the Cam Gear TDC mark, They should match perfectly.

Step #18

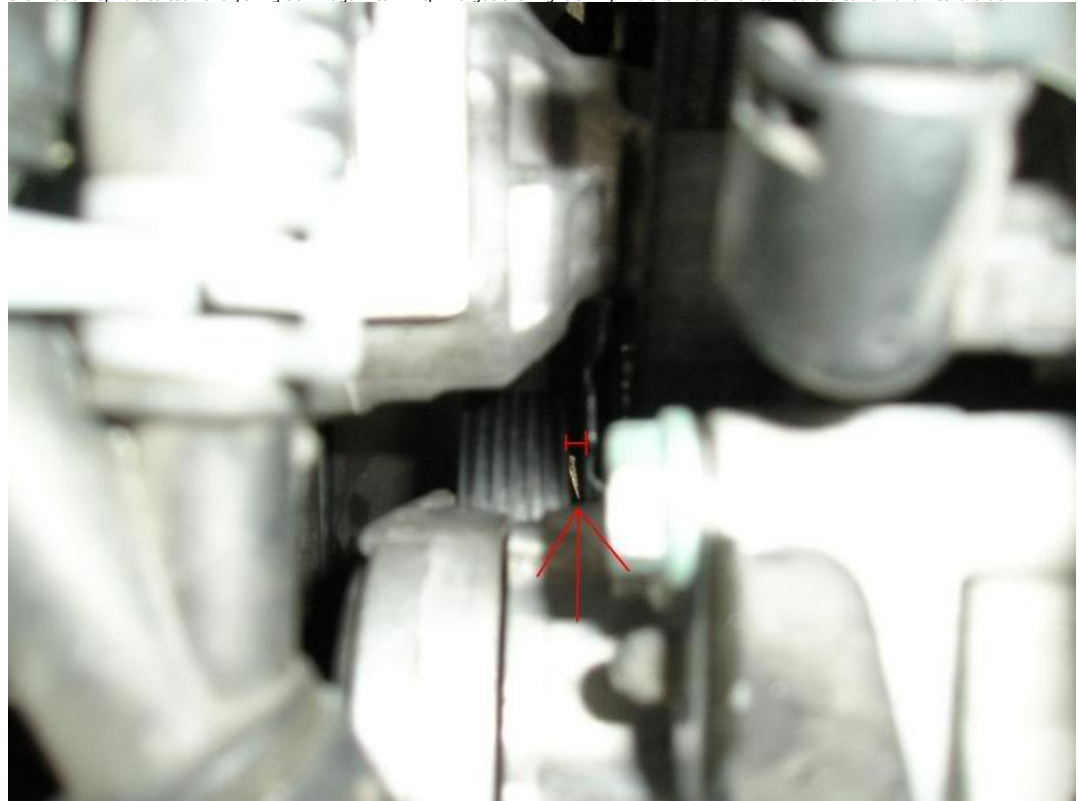
Install the middle and lower timing belt covers and bolt the mount back the the block. Then replace the harmonic balancer pulley and the accessory tension pulley.

Step #19

Attach the engine back to the mount and bolt it down.

Step #20

Repeat the steps in Step #6 to get the accessory belt back on. Make sure you have a space between the pulley and the timing belt cover. I didn't the first time, had to tear everything down again to fix it, And got the fright of my life the first time I turned the car on and heard that.



^ Blurry picture but you need a space there

Step #21

Finish up by putting the belly pan and the sound dampening shroud back in place, as well as the lower IC pipe. Also reinstall the TB hose and bolt down the coolant reservoir and the power steering res. Put your wheel back on and lower the car.

Step #22

Fill your car with coolant before starting. You may want to fill the res about 3/4 full because the engine is going to suck a lot in when you start it.

Note Mix coolant with distilled water only

Step #23


Start the car and check for belt alignment as well as top off your car with coolant. If you did everything right it's time to give yourself a pat on the back. You did good 🧐

Torque specs


Engine mount to cylinder block - 45Nm
Engine mount to Body - 40Nm + 90

Tim_1.8T Re: Ultimate Timing Belt DIY! (O2VW1.8T) 09-24-2006 07:58 PM [Reply](#) #6

Member



Join Date: Jan 19th, 2006
Location: Boynton Beach
Posts: 383




Well i got all the bolts out of the mount just couldn't jockey it out of there, as for the wheel It's not 100% needed but its a 2 second deal


Reply With Quote


Ken_C

Member



Join Date: Nov 19th, 2005
Location: Austin, TX
Posts: 102




Wow, I wish you would have done this a few months earlier. Woulda saved me about 800 bucks.
Good write up 

09-24-2006 08:21 PM [Reply](#) #7


Reply With Quote



black2001aww

Member



Join Date: Sep 30th, 2001
Posts: 2,407




Re: Ultimate Timing Belt DIY! (Tim_1.8T)
Good write up sir. It's nice when Vortex can be helpful for people!  

09-24-2006 08:21 PM [Reply](#) #8


Reply With Quote

Craig King

Member



Join Date: Dec 30th, 2005
Posts: 560




How much would this ordinarily cost to get done at a dealership or garage?

09-25-2006 12:56 AM [Reply](#) #9

Reply With Quote

O2VW1.8T

Member



Join Date: Jul 9th, 2003
Posts: 14,124
Vehicles: 2013 335i, 2012 Tundra 4x4

Re: (Craig King)

Quote, originally posted by **Craig King** »
How much would this ordinarily cost to get done at a dealership or garage?

dealer is around 500 for labor plus parts


09-25-2006 01:03 AM [Reply](#) #10

02 GTi 1.8T haldex'd w/35r-SOLD 7.3@102mph 27psi on 93 octane--04 A4 1.8T converted to AWD also- SOLD--'11 JSW Tdi 6speed Manual-Gone--
13' BMW 335i M-sport EBII


Reply With Quote

MJM Autohaus

Forum Sponsor



Join Date: Oct 20th, 2003
Location: T E X A S
Posts: 12,152
Vehicles: VAG Toys








Re: Ultimate Timing Belt DIY! (Tim_1.8T)




















Quote, originally posted by **Tim_1.8T** »

Note Kits are available from ECStuning.com, from mjm, as well as many other places. Most don't come with new stretch bolts so you need to ask for them.

Our kits do come with the 4-piece stretch bolts. No need to ask for them.
<http://www.mjmautohaus.com>


09-25-2006 08:23 PM [Reply](#) #11

	<div>MJM Autohaus (www.mjmautohaus.com) - AIM/YIM: mjmautohaus</div> <div>Apparel :: Distribution :: Free Shipping :: Installation :: OEM Parts :: Retail :: Wholesale</div> <div>Reply With Quote</div>
<div>Blue.Jester.02Gti ◉</div> <div>Member</div> <div>Join Date: Jul 31st, 2002</div> <div>Posts: 2,733</div> <div></div>	<div>Re: Ultimate Timing Belt DIY! (MJM Autohaus)</div> <div>10-03-2006 03:39 AM Reply #12</div> <div>this is indeed a very nice write-up, thanks for taking the time to do it, im sure you will save a lot of people a lot of money (or in some cases give them the opprotunity to spend a great deal more 😊🔧) I will definitely use this as a reference when doing mine!</div> <div>Reply With Quote</div>
<div>pasha ◉</div> <div>Member</div> <div></div> <div>Join Date: Aug 16th, 2006</div> <div>Posts: 1,526</div>	<div>Re: Ultimate Timing Belt DIY! (Blue.Jester.02Gti)</div> <div>10-03-2006 09:56 AM Reply #13</div> <div>"9mm twelve point" - may i ask why 12 pint. may sound lame, but why is that preferred? easier to get the socket on the bolt? is this a must, a 6 point wont work? thanks for the diy</div> <div>Reply With Quote</div>
<div>oj1480 ◉</div> <div>Member</div> <div></div> <div>Join Date: Jun 6th, 2006</div> <div>Location: NYC</div> <div>Posts: 4,110</div> <div>Vehicles: 2010/VW/GTI/CW</div>	<div>Re: Ultimate Timing Belt DIY! (Tim_1.8T)</div> <div>10-03-2006 10:13 AM Reply #14</div> <div>looks easy, but i know it isn't so. 😊</div> <div>1999 new beetle for sale. \$2,500 only</div> <div>Reply With Quote</div>
<div>Tim_1.8T ◉</div> <div>Member</div> <div></div> <div>Join Date: Jan 19th, 2006</div> <div>Location: Boynton Beach</div> <div>Posts: 383</div>	<div>Re: Ultimate Timing Belt DIY! (oj1480)</div> <div>10-03-2006 03:11 PM Reply #15</div> <div>If you're talking about the 19mm twelve point it is required because thats what it is to turn the engine over. The DIY i used said he used a 21mm socket i quote him " i don't know if this is the right tool" but he said it worked fine for him. Here is a pic off Audiworld of the crank, you can see its a 12 point.</div> <div></div> <div>Reply With Quote</div>

<div><div>pasha </div><div>Member</div><div></div><div>Join Date: Aug 16th, 2006 Posts: 1,526</div></div>	<div>Re: Ultimate Timing Belt DIY! (Tim_1.8T)</div> <div>10-03-2006 04:09 PM Reply #16</div> <div>ok, wow.. didnt realize that could be. thanks for the explanation and the pic!!! </div> <div>Reply With Quote</div>
<div><div>rod_farva02 </div><div>Member</div><div></div><div>Join Date: Jan 19th, 2004 Location: Littleton Posts: 134 Vehicles: 74 Bus tdi, 80 Rabbit Diesel </div></div>	<div>Re: Ultimate Timing Belt DIY! (pasha)</div> <div>12-16-2006 05:18 PM Reply #17</div> <div>thanks this really helped </div> <div>http://johnsupertramp.blogspot.com/ TDI Bus build blog. It's for killin zombies.</div> <div>Reply With Quote</div>
<div><div>Tetzuoe </div><div>Member</div><div></div><div>Join Date: Nov 29th, 2005 Posts: 2,045</div></div>	<div>Re: Ultimate Timing Belt DIY! (rod_farva02)</div> <div>12-16-2006 05:40 PM Reply #18</div> <div>excellent DIY, definatley going to print this out when i do mine</div> <div>Reply With Quote</div>
<div><div>Tim_1.8T </div><div>Member</div><div></div><div>Join Date: Jan 19th, 2006 Location: Boynton Beach Posts: 383 </div></div>	<div>Re: Ultimate Timing Belt DIY! (rod_farva02)</div> <div>12-16-2006 05:41 PM Reply #19</div> <div>Your welcome </div> <div>Reply With Quote</div>
<div><div>Bluebomber </div><div>Member</div><div></div><div>Join Date: Jan 1st, 2006 Posts: 2,198 </div></div>	<div>Re: Ultimate Timing Belt DIY! (Tim_1.8T)</div> <div>12-16-2006 07:47 PM Reply #20</div> <div>nice </div> <div>Reply With Quote</div>
<div><div>1.BillyT </div><div>Member</div><div></div><div>Join Date: Aug 2nd, 2000 Posts: 4,768</div></div>	<div>Re: Ultimate Timing Belt DIY! (Bluebomber)</div> <div>12-17-2006 11:53 AM Reply #21</div> <div>No need to put the car at TDC if you mark the belt and the pulleys. Also, there is a TDC reference on the crank pulley. <i>Modified by 1.BillyT at 10:56 AM 12-17-2006</i></div> <div>I was a man... I was a good man... Selling insurance...</div> <div>Reply With Quote</div>

Tim_1.8T


Member



Join Date: Jan 19th, 2006

Location: Boynton Beach

Posts: 383




Re: Ultimate Timing Belt DIY! (1.BillyT)

12-17-2006 12:17 PM

Reply

#22

Well you can't see the TDC mark on the pulley unless you remove the passenger head light which means removing the front bumper; extra work. As for the TDC in the first place when you crank the car over by hand twice the marks on the belt will no longer line up however the TDC marks will so if you don't like to make sure you did it right then you don't have to move the motor to TDC center. Otherwise i'd advise it considering it's a 2 second deal and it could potentially save you thousands 

Reply With Quote

PD Performance

Former Advertiser

Join Date: Jul 1st, 2004

Posts: 2,898


Re: Ultimate Timing Belt DIY! (Tim_1.8T)

12-17-2006 12:31 PM

Reply

#23

Quote, originally posted by **Tim_1.8T** »

Well you can't see the TDC mark on the pulley unless you remove the passenger head light which means removing the front bumper; extra work. As for the TDC in the first place when you crank the car over by hand twice the marks on the belt will no longer line up however the TDC marks will so if you don't like to make sure you did it right then you don't have to move the motor to TDC center. Otherwise i'd advise it considering it's a 2 second deal and it could potentially save you thousands 

You can see it right from the top straight down between the powersteering resivour and the engine.


I never use the flywheel especially on aftermarket setups since I have way to many that are not marked correctly or marked at all.

The factory manuals don't even reference using the flywheel on any new cars just the crank pulley and cam gear.

your method does work but is not as reliable as using the actual crank.

No need to even mark anything, there is a notch on the valve cover and mark on the cam gear. And a mark on the crank pulley and notch on the lower engine cover.


Never done it any other way.

excellent detailed writeup 

Reply With Quote

skydaman

Member



Join Date: Dec 16th, 2005

Location: NoVa

Posts: 11,799


Re: Ultimate Timing Belt DIY! (PD Performance)

12-17-2006 01:36 PM

Reply

#24

Nice writeup! This will save people hundreds of \$\$.



Reply With Quote

1.BillyT

Member

Join Date: Aug 2nd, 2000

Posts: 4,768

Re: Ultimate Timing Belt DIY! (PD Performance)

12-17-2006 09:18 PM

Reply

#25

Quote, originally posted by **PD Performance** »


You can see it right from the top straight down between the powersteering resivour and the engine. I never use the flywheel especially on aftermarket setups since I have way to many that are not marked correctly or marked at all.


The factory manuals don't even reference using the flywheel on any new cars just the crank pulley and cam gear.

your method does work but is not as reliable as using the actual crank.

No need to even mark anything, there is a notch on the valve cover and mark on the cam gear. And a mark on the crank pulley and notch on the lower engine cover.

Never done it any other way.

excellent detailed writeup 

This is me, agreeing with Chris... hell must be freezing over. 

we mark the belt and pulleys instead of putting the motor at TDC. Different path to the same place.

I was a man... I was a good man... Selling insurance...

Reply With Quote

Tetzuoe

Re: Ultimate Timing Belt DIY! (PD Performance)

12-28-2006 10:17 PM


Reply

#26

Member

Join Date: Nov 29th, 2005

Posts: 2,045





Quote, originally posted by **PD Performance** »

No need to even mark anything, there is a notch on the valve cover and mark on the cam gear. And a mark on the crank pulley and notch on the lower engine cover.


ok so im working on this right now (going to take a break to sleep and whatnot else)

Ive aligned the cam to TDC and the crank is very close (just left of the valve cover mark, half a tooth i guess). removed the harmonic dampener pully and the lower cover, took off the belt and am in the process of getting the new belt in and tensioning.

once i get the tensioner pully and piston back in with the timing belt on, should i:
remove the pin to tension the belt
put the lower cover back on
put the acessory pully back on (harmonic damping pully)
see how out of alignment the crank and cam are (# teeth)
re-un-tension the belt
adjust for the # teeth
tension the belt
rinse and repeat

seems correct...   ??


should i readjust the crank so the two marks are exactly aligned? or go with the alignment that was orignally there.

thanks for the help and the diy is great, fun thing to do over break 

Reply With Quote

Tim_1.8T


Member



Join Date: Jan 19th, 2006

Location: Boynton Beach

Posts: 383




Re: Ultimate Timing Belt DIY! (Tetzuoe)

12-28-2006 11:43 PM

Reply

#27

once you pull the pin unless you have the tensioning bolt there is no turning back. If you mark the original belt like it says to in the DIY and transfered them, then they should match perfectly to the marks left on the crank gear and the cam gear, if they're not lining up perfect don't pull the pin. There is no rinse and repeat make sure you do it right the first time or you're gonna be in deep **** 

Reply With Quote

Tetzuoe

Member

Join Date: Nov 29th, 2005

Posts: 2,045



Re: Ultimate Timing Belt DIY! (Tim_1.8T)

12-29-2006 01:15 AM

Reply

#28

sooo... for the sake of argument... lets say we didnt mark the belt.... 

Reply With Quote

AaronAnderson

Member

Join Date: May 26th, 2006

Posts: 474



Re: Ultimate Timing Belt DIY! (Tim_1.8T)

12-29-2006 11:21 AM

Reply

#29

Then use all of those marks stated above.

Reply With Quote

Tetzuoe

Member

Join Date: Nov 29th, 2005

Posts: 2,045




Re: (AaronAnderson)

12-30-2006 05:53 PM

Reply


#30

did all the steps that i said above, when the m5 bolt depresses the tensioner you have to put the pin back in, then to move the belt it helps if you take the tensioner out (leave in the pully). anyway everything works now 

Reply With Quote

thetwodubheads

Member



Join Date: Dec 6th, 2004

Posts: 5,478


Vehicles: 12 Golf TDI, 10 Ram 2500 Cummins


Re: (Tetzuoe)

12-31-2006 06:02 PM

Reply

#31

Are there any techs in here that have a hint on how to get the damn mount out of the bay? People have said that they just jacked the motor all the way up, but on my car it still didn't come out. I absolutely hated having to put the mount to one side then the other to work that damn tensioner! 

Now I have to do this again to replace my cam tensioner seal. 

Reply With Quote

anthony_g

Member

Re: (thetwodubheads)

12-31-2006 07:45 PM

Reply

#32

Member

Join Date: Jan 9th, 2001


Posts: 1,583

I'm also in the process of replacing may cam seal (a month after the TB job). moving that mount bracket around was the only difficult part of the whole TB job. wouldn't come out for me either (2001 AWW). don't think I have to muck with the mount for the cam seal though.

Reply With Quote

White Jetta

Member



Join Date: Mar 17th, 2002

Location: Massachusetts

Posts: 6,590

Vehicles: Why don't you take a seat over there

Re: (anthony_g)

12-31-2006 09:05 PM

Reply

#33


Bump because these threads are great

Sent on a Post-It by way of carrier pigeon

Reply With Quote

whizbang

Member



Join Date: Jun 18th, 2002

Location: Land of 10,000 Lakes

Posts: 148

Vehicles: 2004 VW Jetta GLI

Re: (thetwodubheads)

01-01-2007 11:25 AM

Reply


#34

Here are some thoughts from my recent timing belt install.
If you are going to replace the water pump and/or thermostat drain the coolant first. It makes a big mess if you don't.
Unless you want to pull the motor leave the motor mount in the car loose. It will come out with the tensioner removed but will NOT go back in with the tensioner installed. I got distracted by friends stopping over to 'help' and forgot to re-position the motor mount before I bolted up the tensioner and pulled the pin. I had to unbolt all engine/trans mounts and lower the motor/trans nearly out of the car to get the mount reinstalled.
Other than the motor mount issues the install is fairly straight forward with the DIY.

Reply With Quote

groggory

Moderator



Join Date: Apr 21st, 2003

Location: Long Beach, CA

Posts: 9,415

Vehicles: 2002 VW GTI 1.8 BT

01-01-2007 04:38 PM

Reply

#35

My brother just had his timing belt replaced at a local shop and they said his old belt ('03 GTI 1.8t) was off by a tooth. They also said being off by a tooth was very common on '02 and '03 1.8t's from their experience in the shop.
Anyone else with an '02 - '03 notice this?
Also, how can I be sure I am aligning the timing belt properly compared to just aligning it how it was before?
Thanks,
Greg

My Build
My FAQ / DIY Thread -- Look here for 90% of the questions you have
FS: New in box, primer'd 20AE body kit (front+rear valences and side skirts) -- PM me for details
FS: Fiberglass 20AE replica spoiler. No scratches. Reflex Silver.

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