



VW 2.0T FSI

Timing Belt Installation

This tutorial is provided as a courtesy by ECS Tuning.

Proper service and repair procedures are vital to the safe, reliable operation of all engine vehicles as well as the personal safety of those performing the repairs. Standard safety procedures and precautions (including use of safety goggles and proper tools and equipment) should be followed at all times to eliminate the possibility of personal injury or improper service which could damage the vehicle or compromise its safety.

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Getting Ready

Battery Disconnects and Keep Alive Memory

Most instruction sheets begin with a recommendation to disconnect the battery. This general caution is included because cranking the engine over with the timing belt removed results in immediate and costly damage to an interference engine. (Those wishing to forego this step should at least remove the keys from the ignition and hide them until the job is complete.)

Caution: Disconnecting the battery commonly erases volatile memory in the powertrain controller and any other control module. If you want to keep these data in memory (emissions-related OBD information, radio presets, etc.), a “memory saver” can be connected that supplies low current voltage to keep alive memory. Good backup power supplies do not have enough wattage to operate the starter and include feedback circuit protection.



Not Too Hot

Don't attempt this job while the engine is hot. The engine should be cold or slightly warm to the touch when you begin.

The ECS Tuning Ultimate Plus Timing Belt Kit for the VW 2.0T FSI contains belts, bolts, seals, rollers, tensioner, and coolant.

To find the correct kit for your vehicle, first select your vehicle at ecstuning.com, then click:
[Engine > Timing > Timing Belt Kit](#)

Jacks, Jack Stands, and Special Tools

Timing belt replacements require you to work both under the hood and under the car. If you have a lift, great. If not, please use a hydraulic jack large enough for the load, and work on a hard, flat, stable surface. Once the car is raised to working height, please support it safely, using ANSI-approved jack stands. Do not rely solely on the hydraulic jack. We strongly suggest that you have a buddy assist you for convenience and safety.

You'll need some way to support the engine while the right side engine mount is removed, and some way to raise and lower it slightly to make wiggle room at different stages of the procedure. If you use a hydraulic floor jack instead of a hanger, locate it under the engine in a spot where it cannot slip.

We'll use an engine support bar that straddles the engine compartment. Its threaded rods and attachment chains let you safely raise and lower either side of the powertrain from above. This tool is also useful for other procedures, including transmission repair and clutch replacement.

This affordable engine support bar has a 1000 pound lift capacity, and can be adjusted to straddle different width engine compartments. Powder coated for durability, its padded support legs prevent paint or body damage. It comes apart for easy storage when not in use.

[ES2804773](#)



accessory belt routing

clockwise to
loosen tensioner

tensioner bolts (3)
23Nm (17ft-lb)

accessory belt
tensioner

alternator

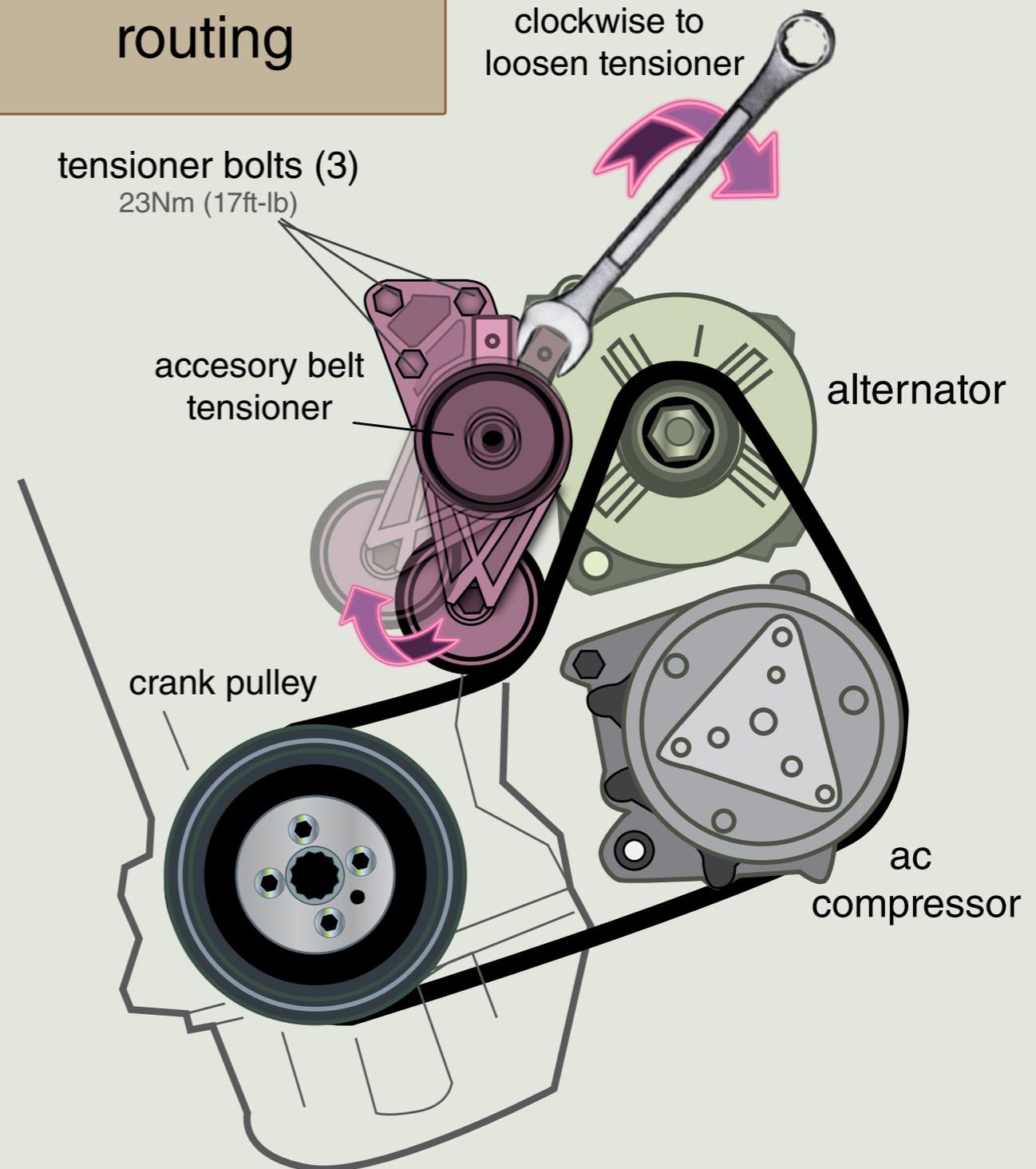
crank pulley

ac
compressor

Reference Pages

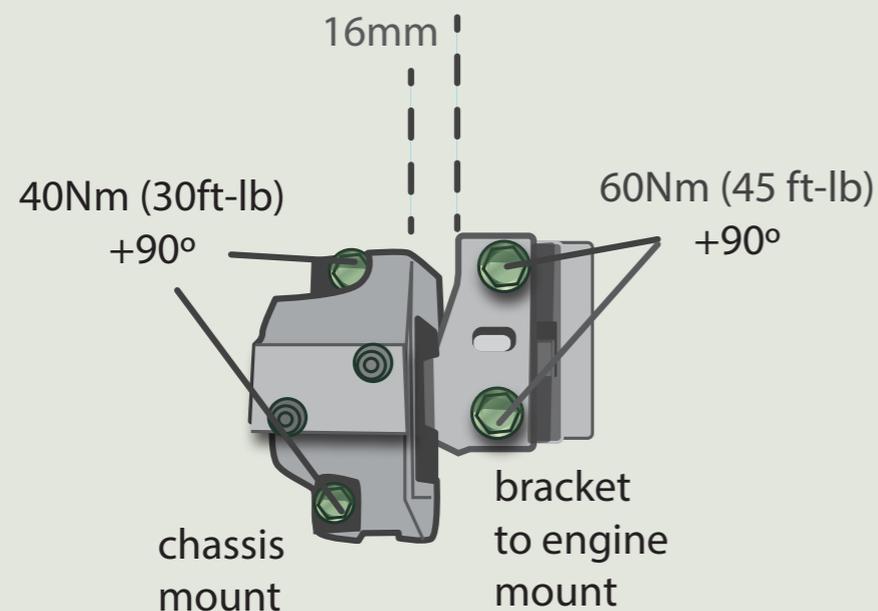
The next three pages have illustrated views of belt routings, component and fastener locations, and tightening torques.

Please refer back to these illustrations as we walk you through a photo tutorial outlining the steps of this procedure.



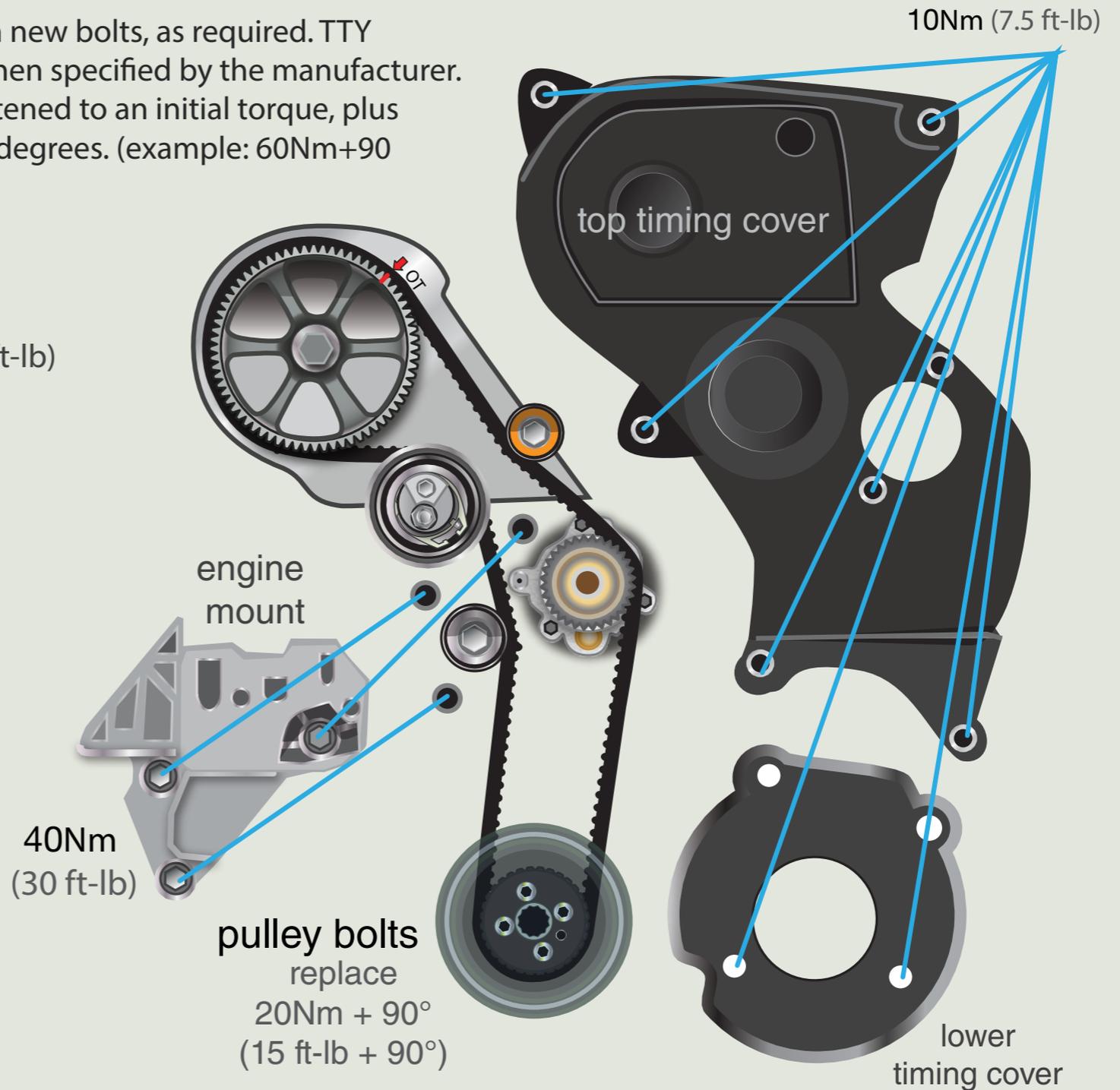
Fasteners and Component Locations

Your Ultimate Plus timing belt kit comes with new bolts, as required. TTY (torque-to-yield bolts) should be replaced when specified by the manufacturer. TTY bolts (also called "stretch bolts") are tightened to an initial torque, plus an additional fraction of a turn, measured in degrees. (example: 60Nm+90 degrees).



There should be a gap between the chassis and engine mounts when both are installed and tightened.

The recommended gap for the FSI is 16mm, measured as shown in the illustration above.



Belt Tensioning

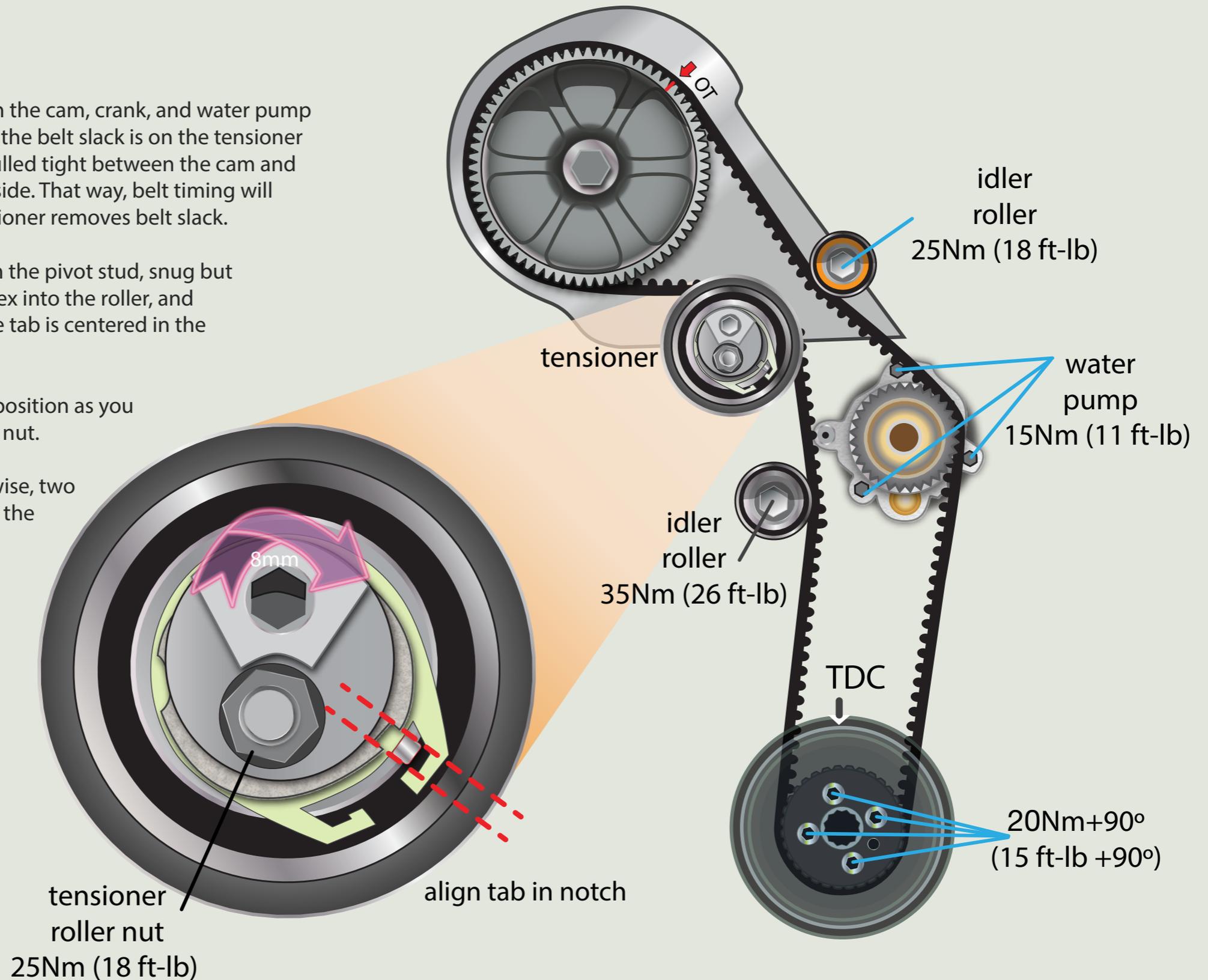
When installing the belt on the cam, crank, and water pump sprockets, make sure all of the belt slack is on the tensioner side. The belt should be pulled tight between the cam and crank on the water pump side. That way, belt timing will not change when the tensioner removes belt slack.

Install the tensioner nut on the pivot stud, snug but not tight. Insert an 8mm hex into the roller, and rotate it clockwise until the tab is centered in the notch (see image below).

Hold the tensioner in this position as you torque the tensioner roller nut.

Bar the engine over clockwise, two complete revolutions until the timing marks align again.

Double check both the belt timing and the tensioner tab alignment. If the timing marks and the tensioner are aligned properly, the belt is ready to go.



Step 1

Raise the hood.

Disconnect the mass air flow sensor.



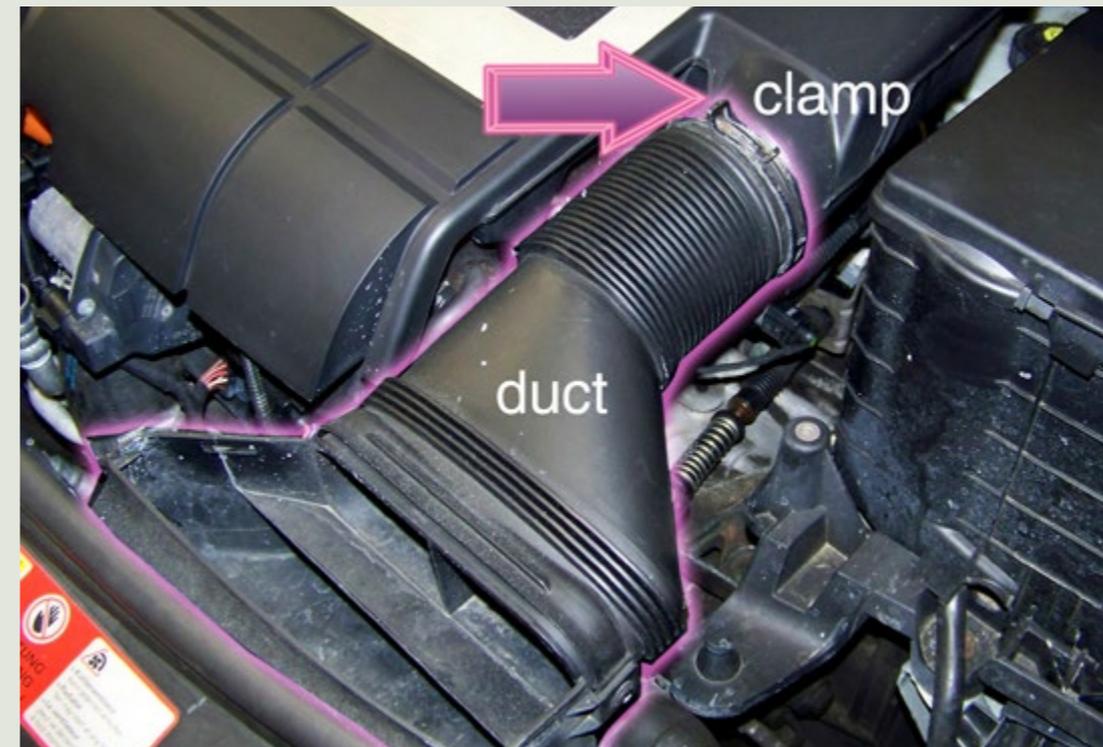
Step 2

Pop the two spring clips holding the air duct to the rear of the engine cover/filter housing, and disconnect the duct.



Step 3

Loosen the spring clamp (arrow) and disconnect the inlet air duct from the engine cover/filter housing.

**Step 4**

Lift straight up to remove the engine cover/filter housing from its four rubber grommet mounts.

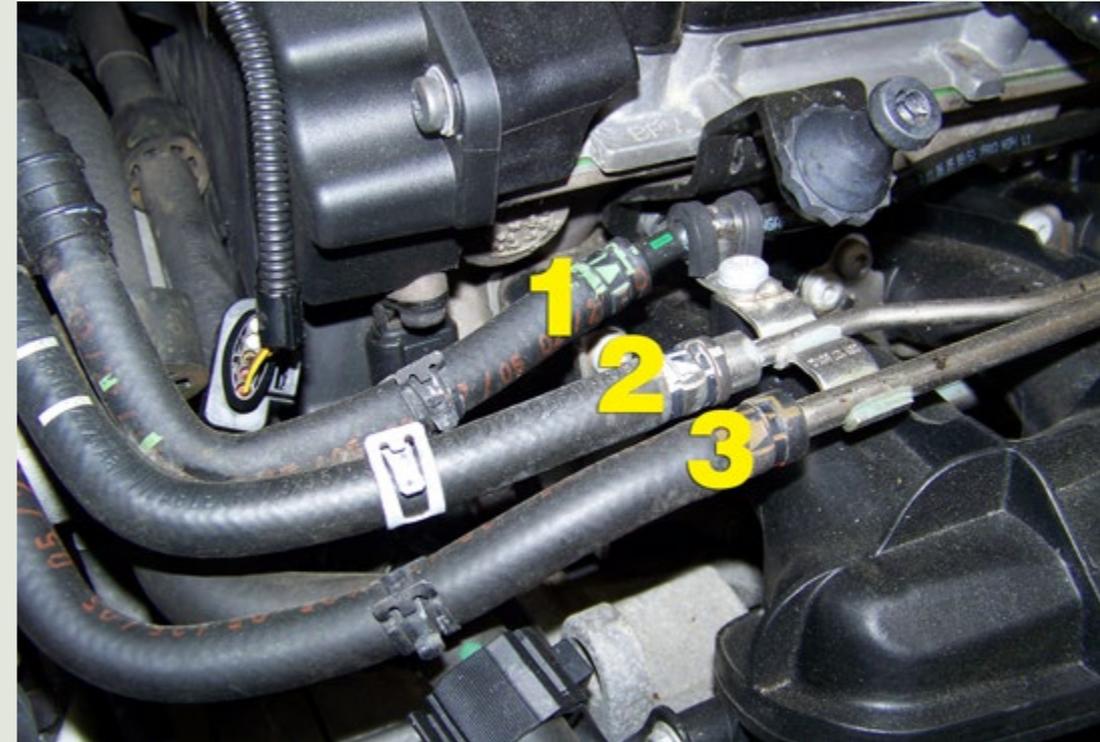
Service Tip: The rubber grommets at the four corners of the housing can heat harden, making housing removal difficult. It may take substantial force to lift the housing off the mounting posts when this happens. Lube the grommets with a high quality silicone paste after removing the housing to make future removal easier.



Step 5

Disconnect the fuel and fuel vapor rubber hoses from the metal fuel tubes that run parallel to the front edge of the valve cover.

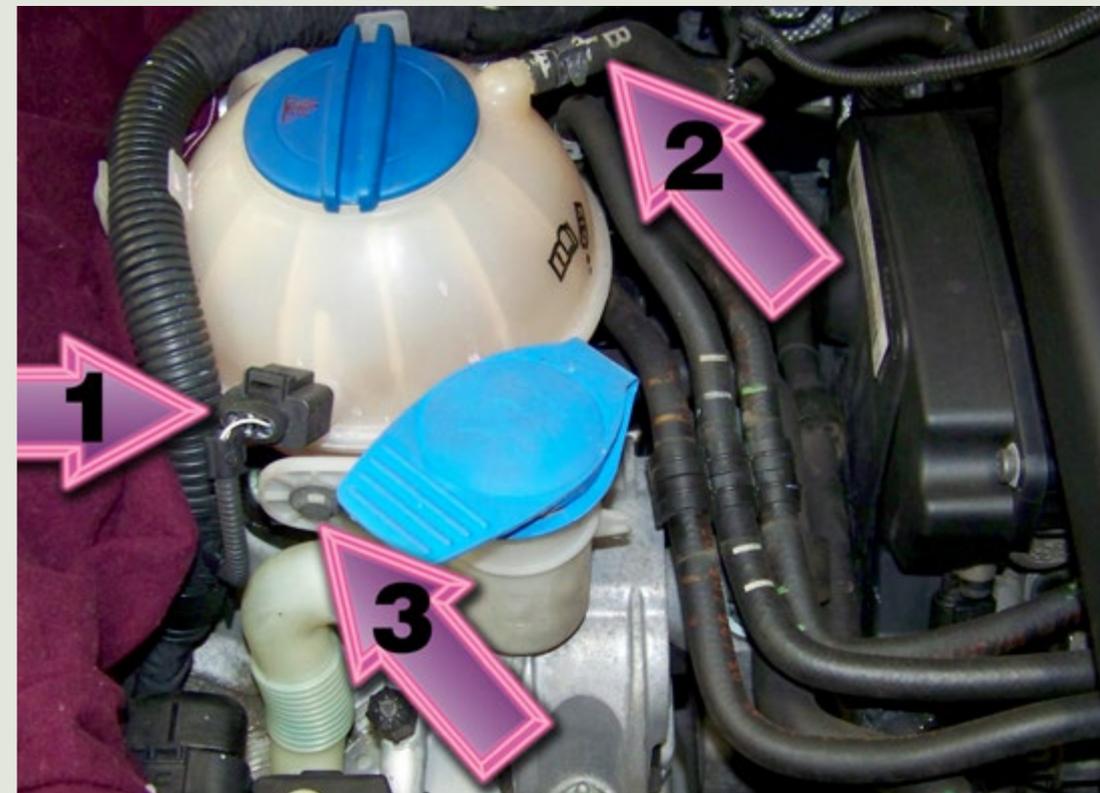
Service Tip: Expect to find a low volume of high pressure fuel in one fuel line. Wrap the lines in a shop rag to catch the spillage, and protect your eyes when disconnecting the hoses. Plug the hoses to prevent residual fuel from dripping into the engine compartment, and pull the hoses toward the rear of the engine compartment, out of your way.



Step 6

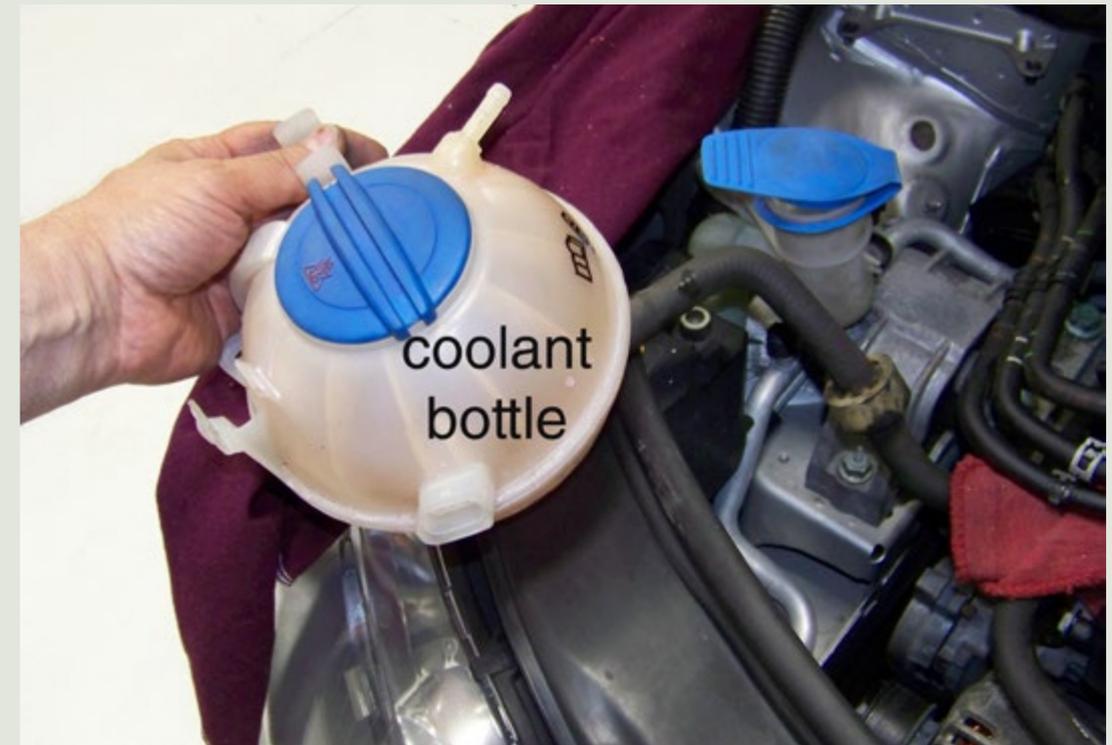
Unplug the electrical connector for the coolant level sensor (1) and remove the upper hose from the coolant bottle (2).

Remove the small 6mm bolt (10mm head) from the windshield washer fluid fill neck (3), and pull the neck forward slightly.



Step 7

Remove the two screws holding the coolant bottle in place and pull it forward. Drape it over the front of the car, out of your way. No need to disconnect the lower coolant hose from the bottle.

**Step 8**

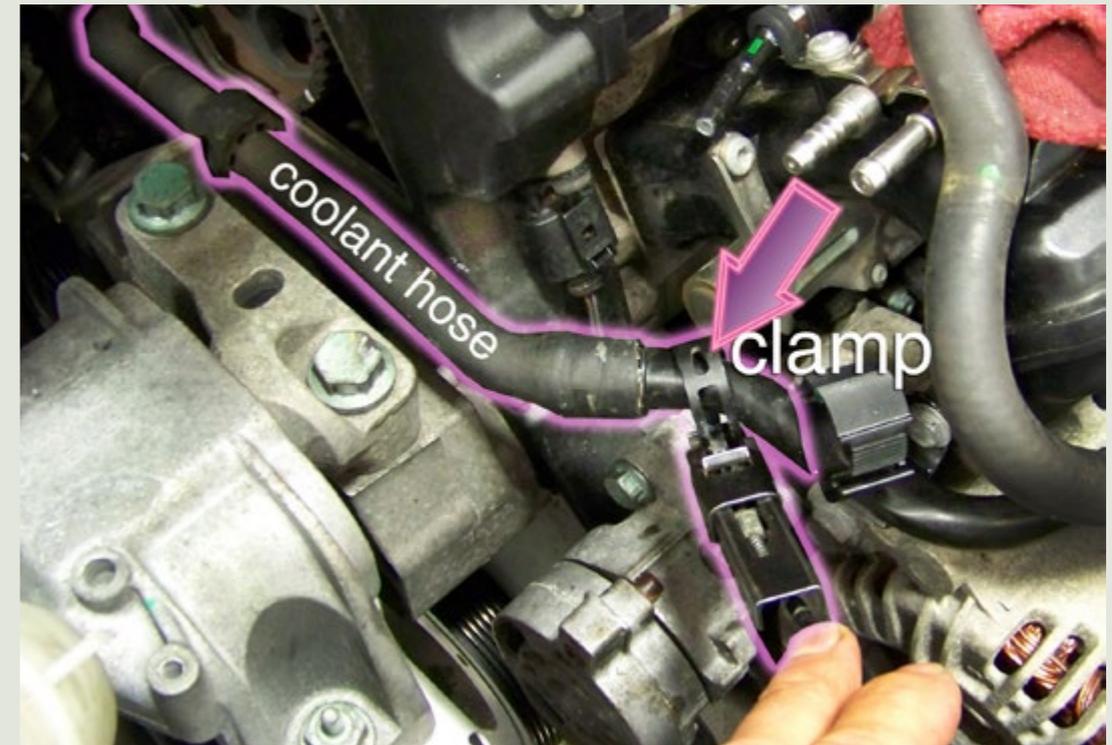
Remove the two bolts (arrows) and remove the support bracket next to the engine mount, behind the washer fluid fill neck.



Step 9

Loosen the spring-style hose clamp and disconnect the coolant hose that runs across the front of the timing belt cover.

Pull the hose back out of the way to expose the face of the timing cover.



Step 10

Raise the car.

Remove the right front wheel.

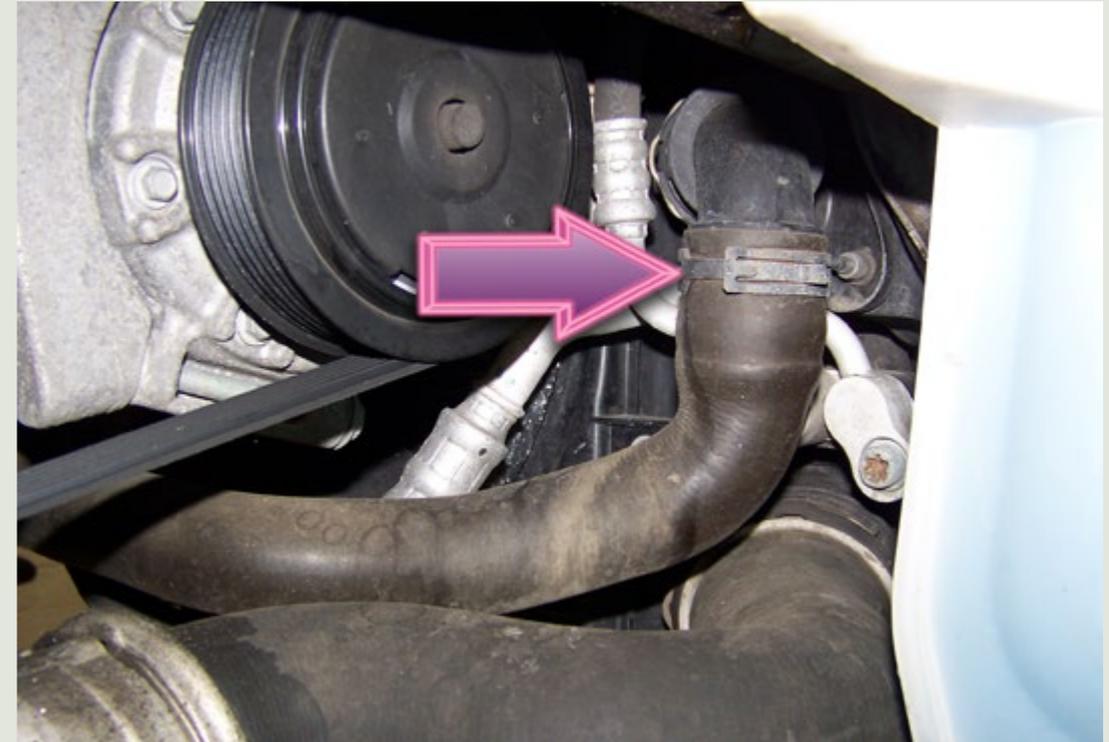
Remove the screws and the inner side cover splash shield to expose the crank pulley.



Step 11

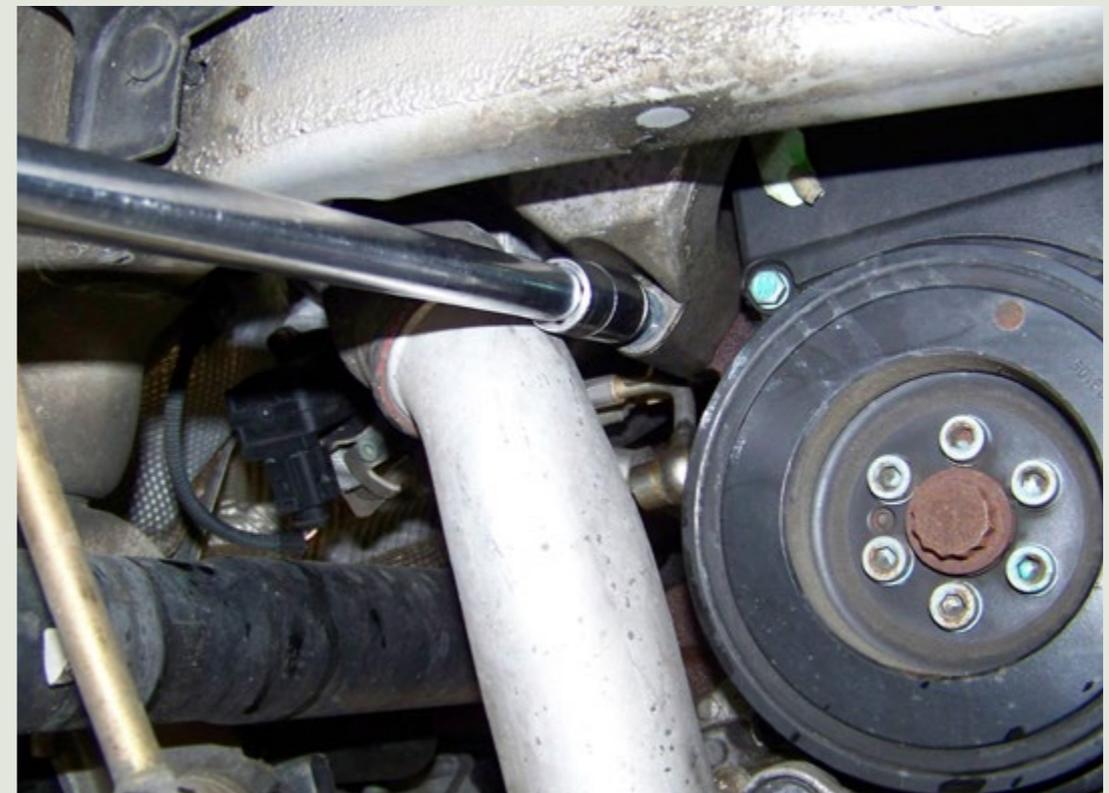
There is no cooling system drain plug.

To drain the cooling system, pull the lower radiator hose.



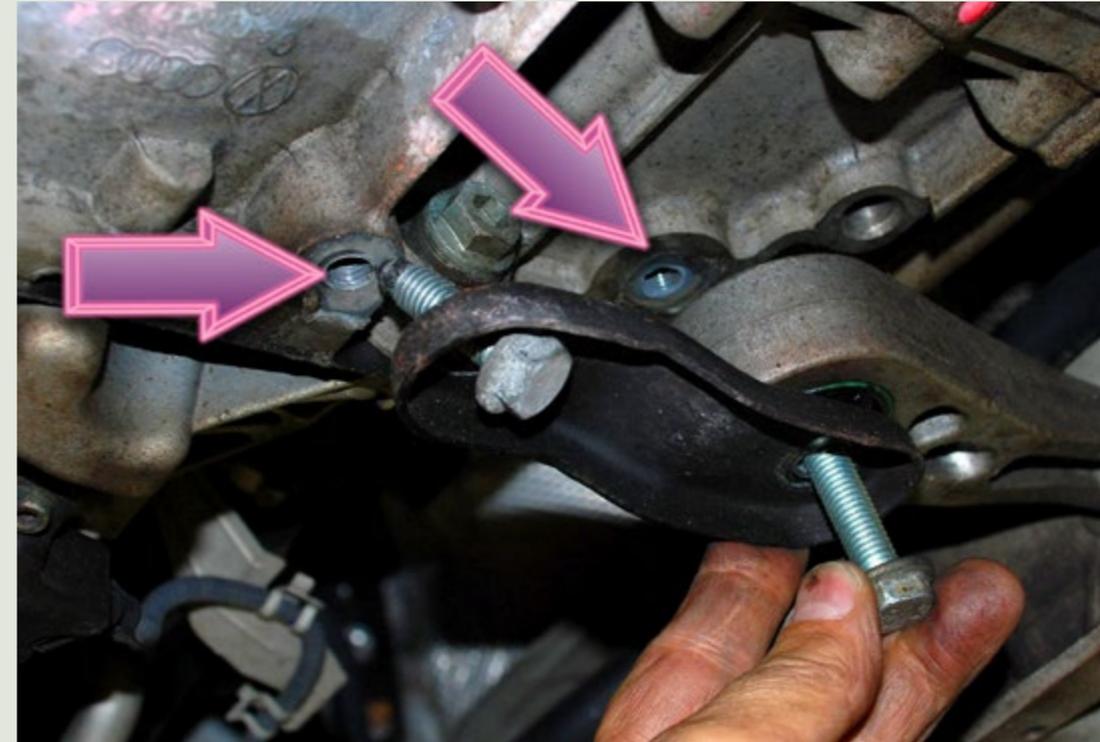
Step 12

There are three bolts securing the right side engine mount to the block. This is a good time to remove the bottom engine mount bolt while it is easily accessible.



Step 13

Remove the two front bolts from the dogbone mount at the transaxle. (This will make it easier to jack up the right side of the engine when we remove the right side engine mount.)

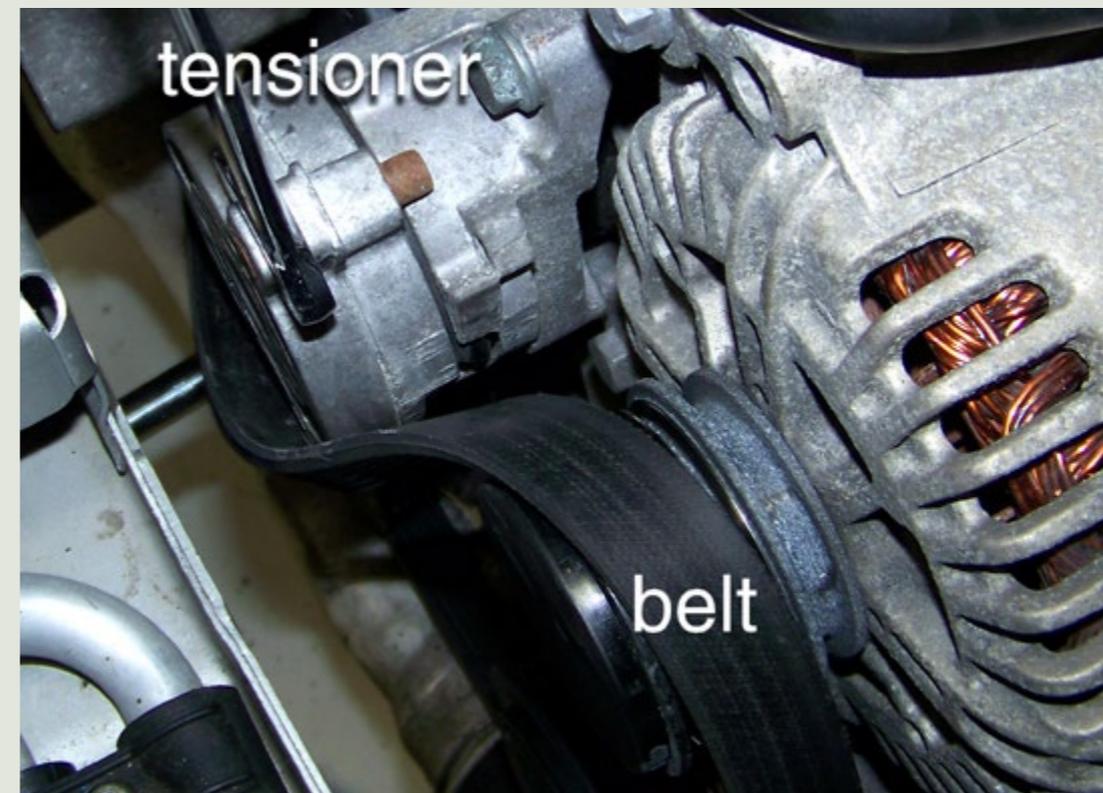


Step 14

Return to the engine compartment.

Using a 16mm open end wrench, rotate the accessory belt tensioner far enough to remove the belt.

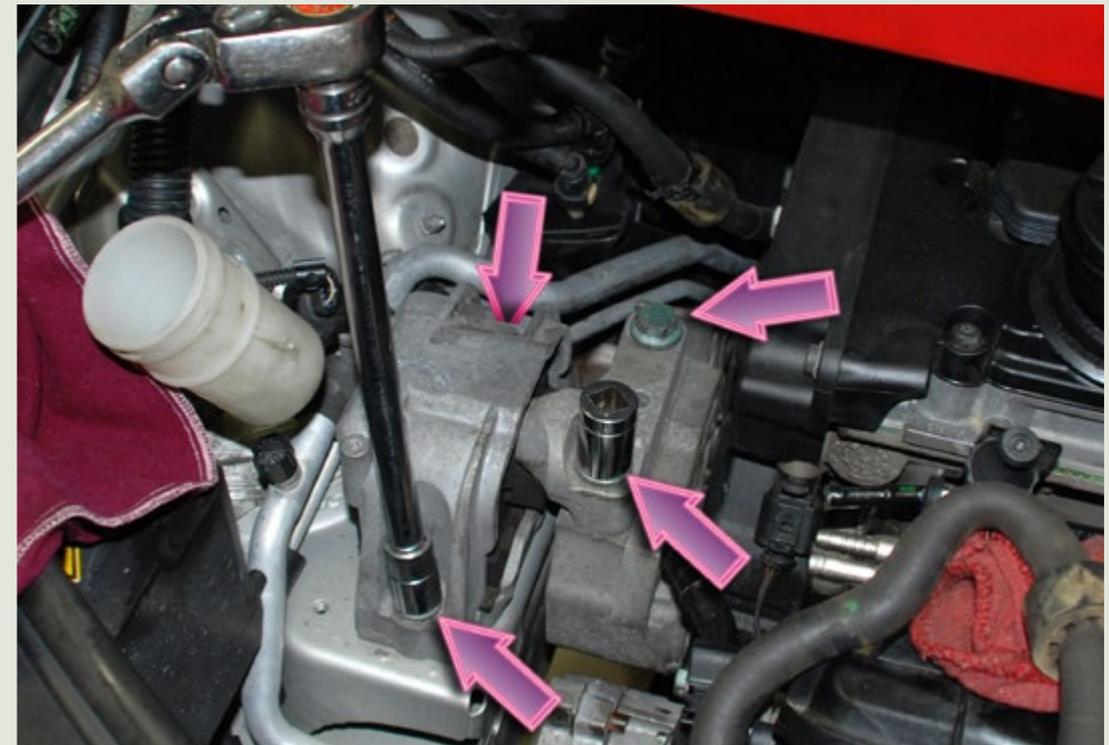
Note: See page 4 of this pdf for a side view illustration of the tensioner and accessory belt routing.



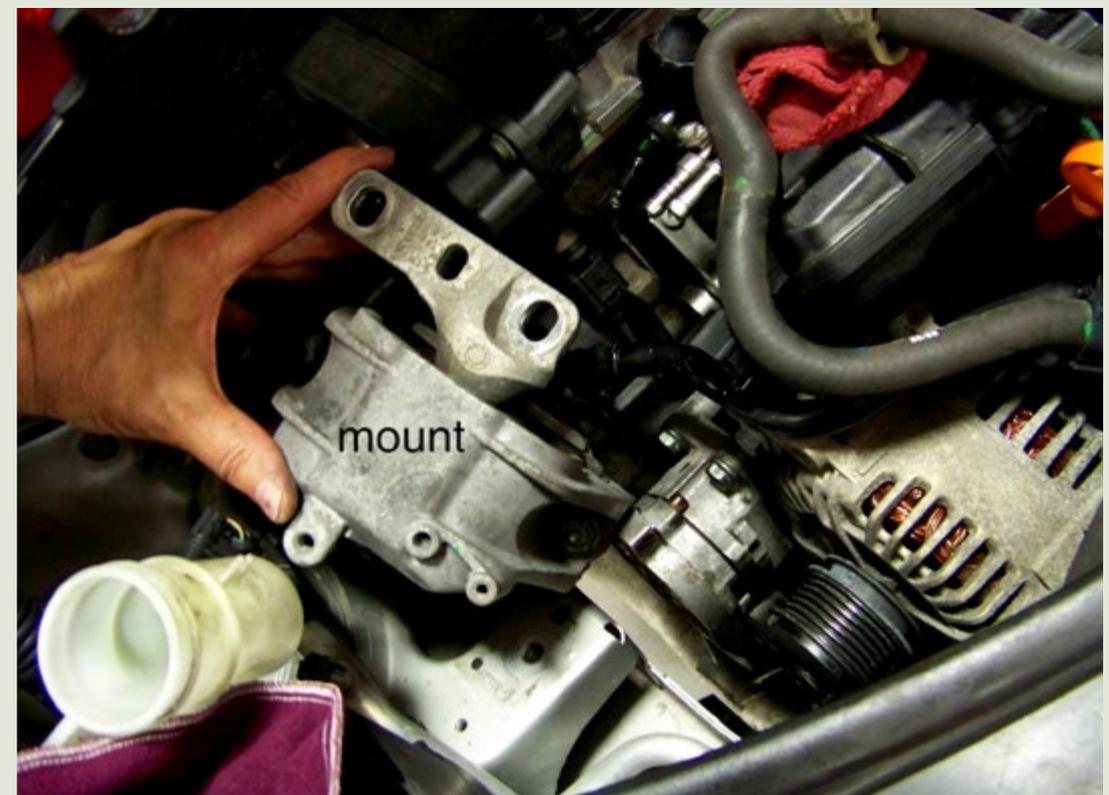
Step 15

Support the engine. We are using an engine hanger that straddles the engine bay and supports the engine weight from above. (See page 3 for more about the engine hanger.) If you are using a hydraulic jack, please make sure the engine is securely supported before removing the engine mount bolts.

Remove the engine mount bolts (arrows).

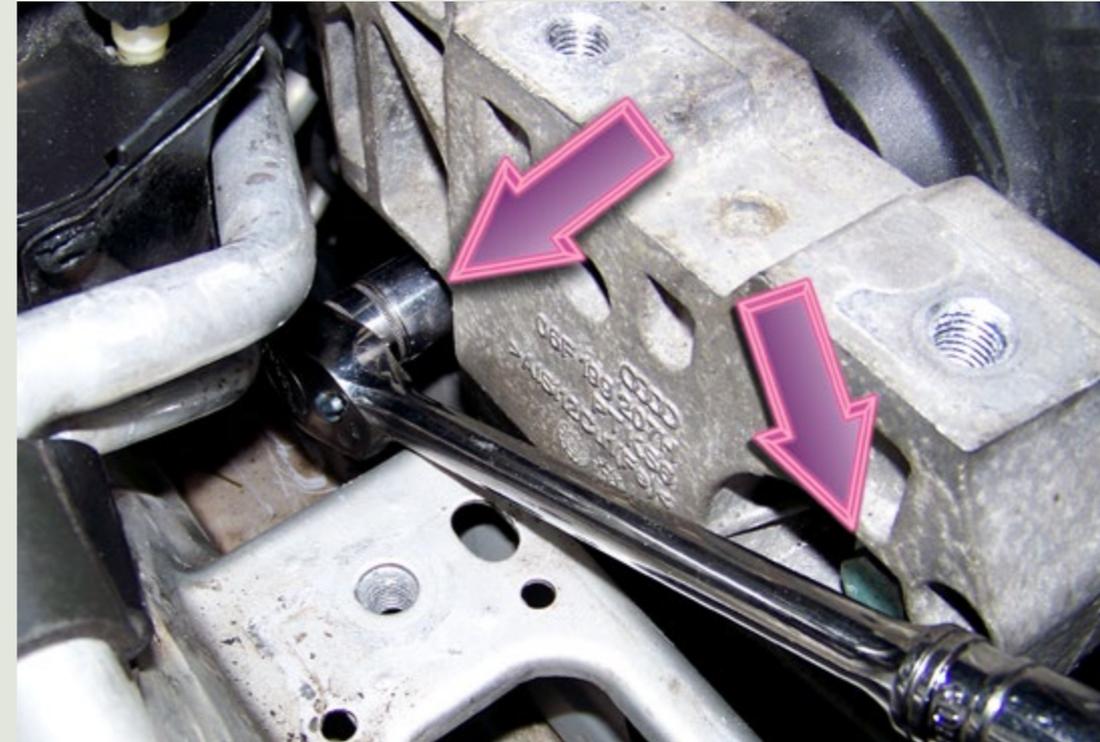
**Step 16**

Lift and remove the top section of the engine mount.



Step 17

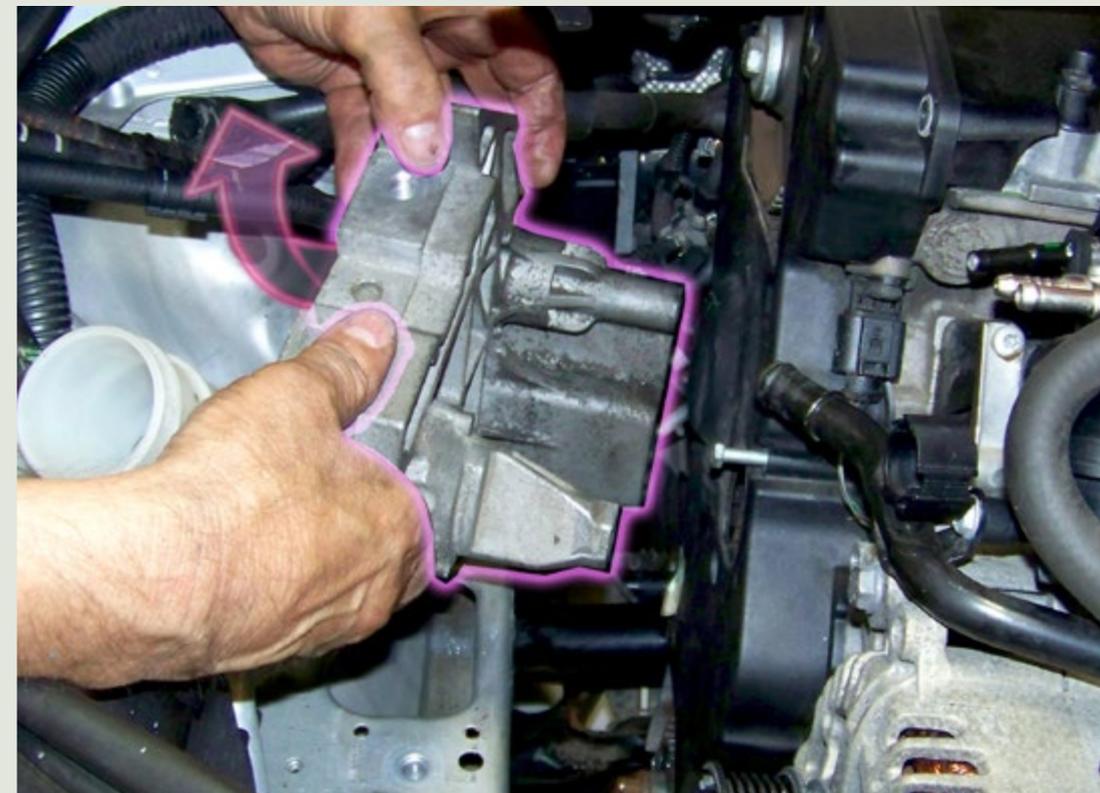
Jack up the right side of the engine far enough to remove the two remaining bolts that attach the lower engine mount to the engine block.



Step 18

Remove the mount. Slide it out far enough to clear the timing cover before lifting it up and out.

Service Tip: You may need to raise the engine even farther to remove the mount. It is a tight fit.



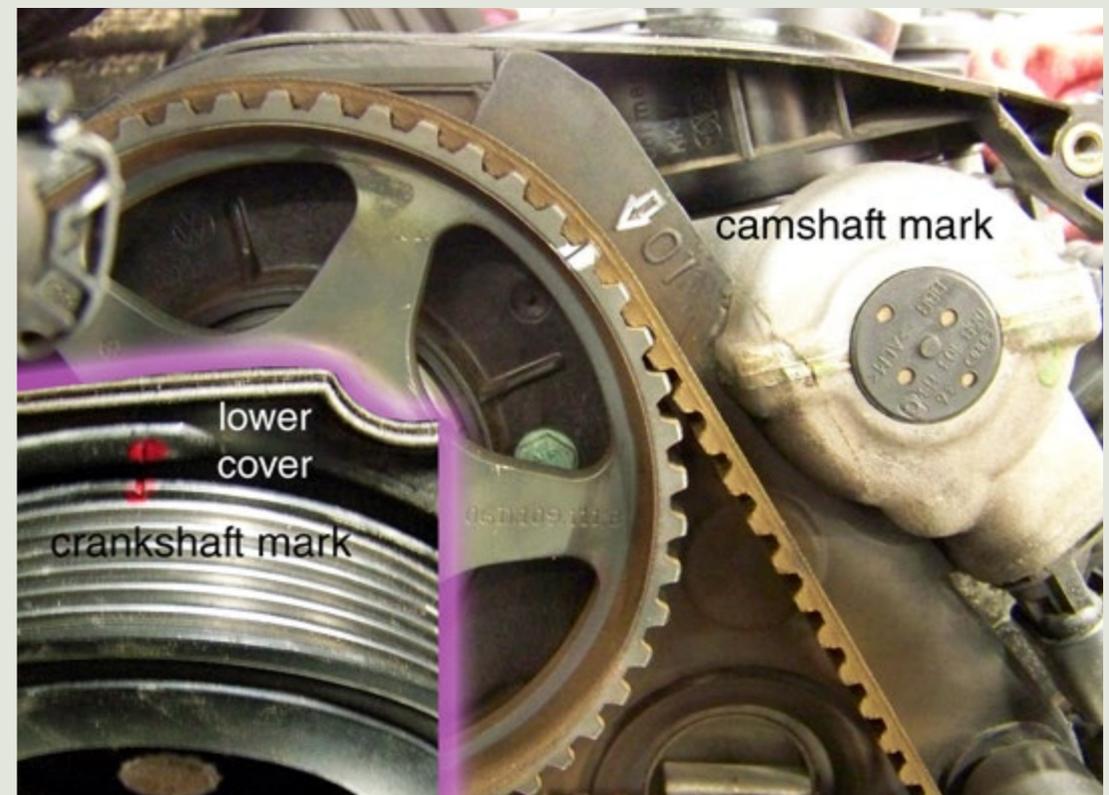
Step 19

Remove the timing cover screws and lift the cover off. See the diagram on page 5 of this pdf for exact timing cover bolt locations.



Step 20

Using a 19mm 12-point socket, extension, and long-handled ½ -inch ratchet, bar the engine over in a clockwise direction until the crank and camshaft timing marks are aligned as shown here.



Step 21

Remove the six hex head bolts holding the crank pulley to the crankshaft snout.

Service tip: Double check the crank timing marks on the pulley and lower cover to be sure you did not move the crank when removing the bolts.

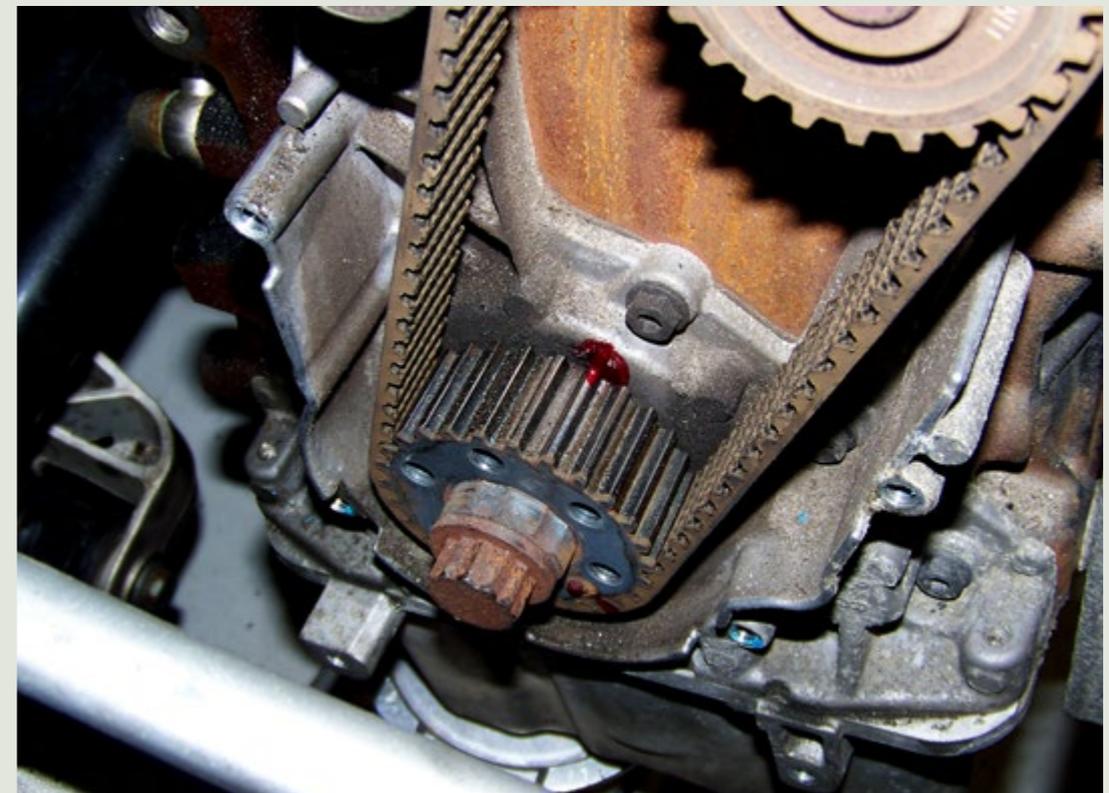
Remove the crank pulley.

Unbolt and remove the lower timing cover.



Step 22

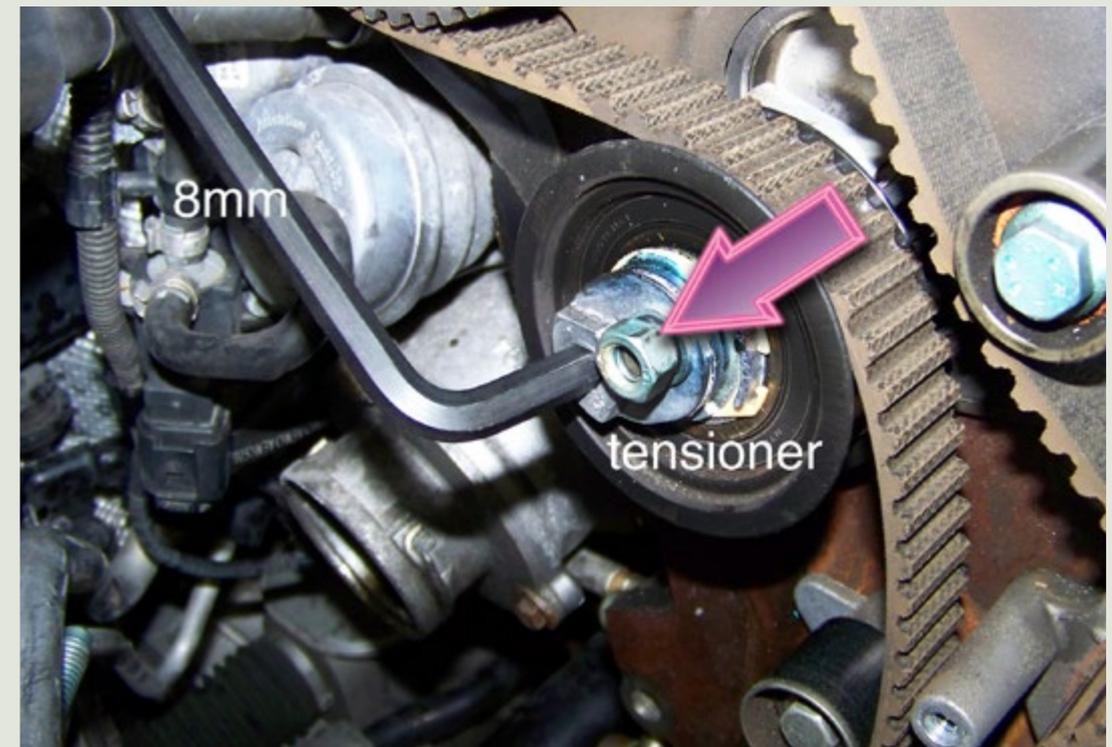
Since we just double checked crankshaft timing in the previous step, we immediately add match marks indicating TDC using an automotive paint touch up stick. These marks—one on the engine and one on a sprocket tooth—will alert us immediately if the crank gets bumped out of position for any reason as we install the new timing belt.



Step 23

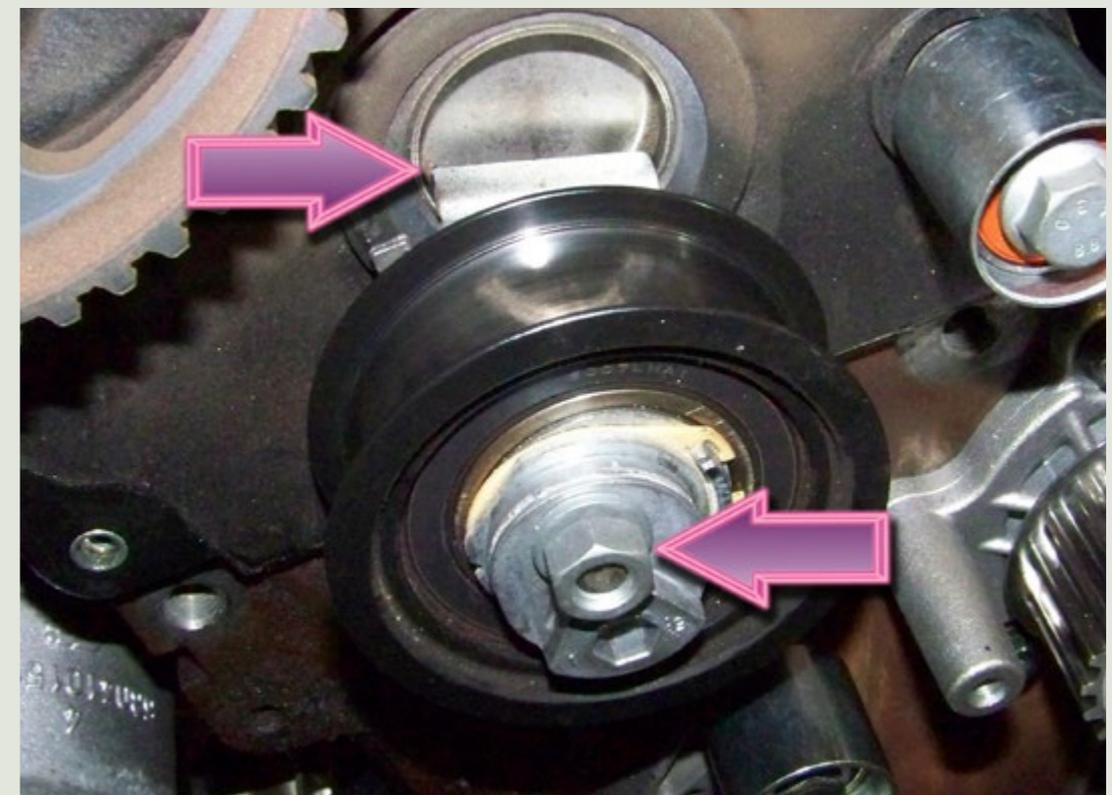
Loosen the lock nut on the tensioner (arrow). Using an 8mm hex key, rotate the tensioner counterclockwise to slacken the timing belt.

Remove the timing belt.

**Step 24**

When installing the new tensioner, insert the L-shaped bracket on the back of the tensioner into the recessed sealing (freeze) plug on the engine block (top arrow).

Then install the flat washer and nut just tight enough that you can still rotate the center of the tensioner with an 8mm hex key (lower arrow).



Step 25

Unbolt and remove the old water pump. You may need to pry back and forth and wiggle the old pump from its bore. It seals to the block with an o-ring instead of a gasket, and the old o-ring rubber can harden in place.

**Step 26**

When the old pump is removed, clean the pump bore in the block. Use emery cloth to polish away minor imperfections, rust, or scale from the bore that might damage the new pump o-ring.

Lube the new o-ring with fresh coolant. Slide it into the block and torque the fasteners to spec.

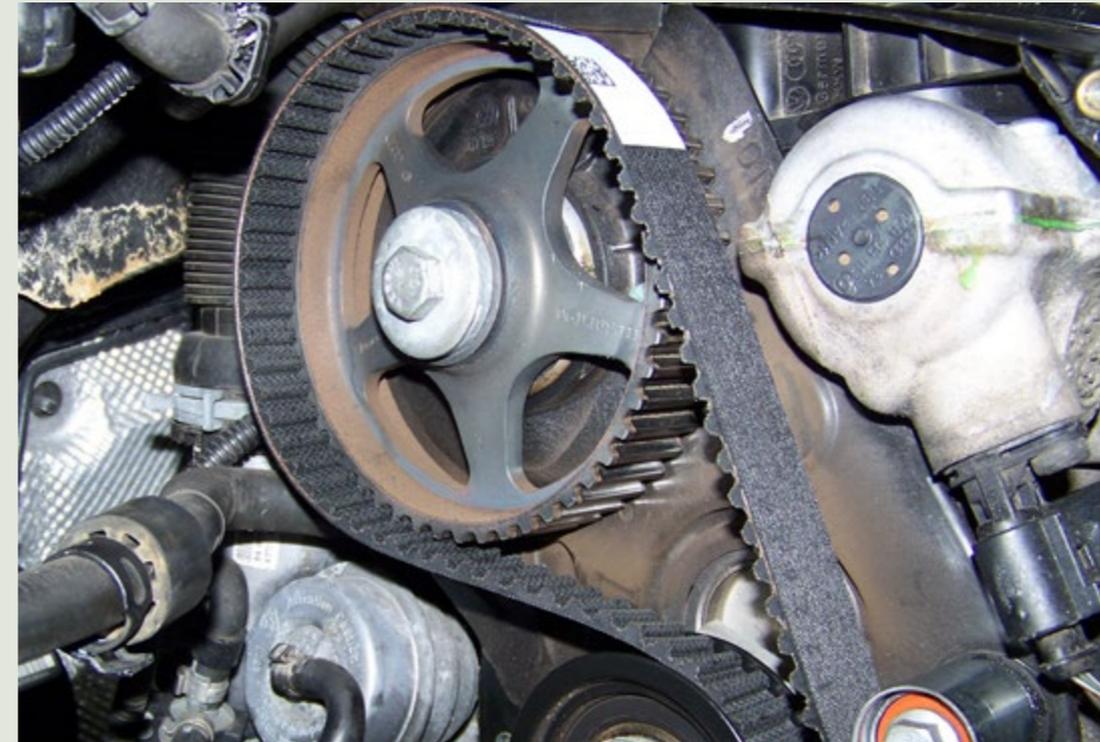


Step 27

Install the two new idler rollers and torque them to spec. They are not identical. See page 6 of this pdf for an overview of all component locations and tightening specs.

With the tensioner roller in the slack position, route the new timing belt around the sprockets at the cam, crank and water pump, as shown on page 6.

This photo shows our new timing belt being installed onto the camshaft sprocket.



Step 28

With the belt routed, use an 8mm hex key to rotate the tensioner before tightening the lock nut to hold it in place.

The entire tensioning procedure is described and illustrated in greater detail on page 6 of this pdf.



Step 29

With the belt installed and timed, it's time to reverse our steps and reassemble the engine and mounts. Slide the timing cover back in place and bolt it down.

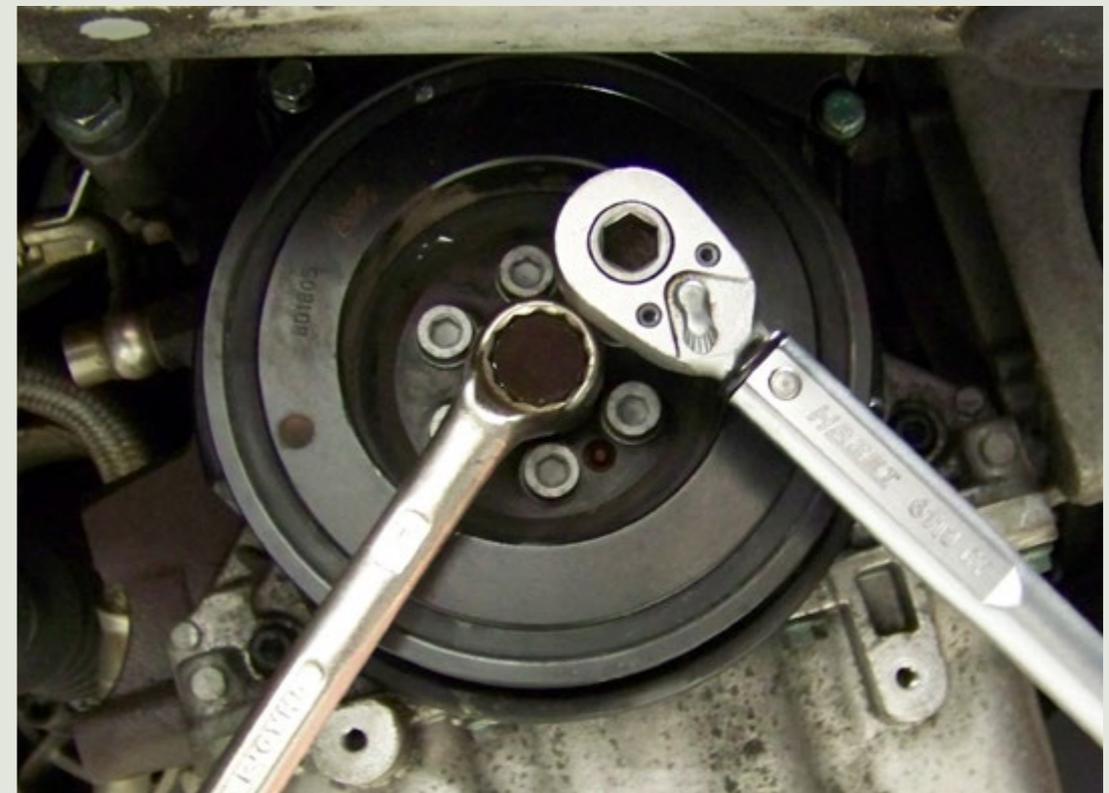
Reinstall the side mount using the new bolts in your kit.

Service Tip: When reinstalling mount bolts, properly align and position the mount sections before installing and tightening the bolts. Do not get the mount sections "close" to one another and draw them together with the bolts or you may strip the threaded holes in the aluminum mount.



Step 30

Install fresh bolts at the crankshaft pulley. Use the correct torque-to-yield specifications to tighten them.



Step 31

When everything is reassembled, fill the coolant jug to the max mark with a mix of antifreeze/coolant and distilled or demineralized water that bring the final mix ratio to 50:50.

Start the engine and turn the heater to max hot. Run the engine at an elevated rpm (1200-1500 rpm) for about two minutes or until the heater blows hot while monitoring the temp gauge.

Install the cooling system pressure cap and let the engine run until the cooling fan cycles. The coolant level should be at the max level at normal engine temperature.

CAUTION: The cooling system is under pressure. Rapid removal of the pressure cap may cause the system to boil over violently.



Thanks for purchasing the parts for your timing belt replacement kit from ECS Tuning.

We appreciate your business and hope the information in this tutorial is helpful.

Whether you need a timing belt and tensioner or a complete installation kit with everything from hardware to coolant, ECS Tuning has the parts and kits to fit your needs and budget. All contain quality parts and fluids to make your repair successful and lasting.



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