

2004 Lexus LS430 timing belt replacement

Useful references

- [Good video of the entire process](#)
- [Part diagrams](#)

Tools needed

- Crankshaft tool
 - 2 breaker bars, maybe cheater bar
- Pulley puller
- Standard sockets etc.

Introduction

The video linked above has a lot of detail. For some steps I refer you to the video since it might be easier than trying to write it out.

I wasn't planning on making instructions before I started, but ended up taking some notes and decided to write them up. This should include most of the torque specs, something that the video doesn't have. I use a combination of pictures I took and snippings from the part diagrams.

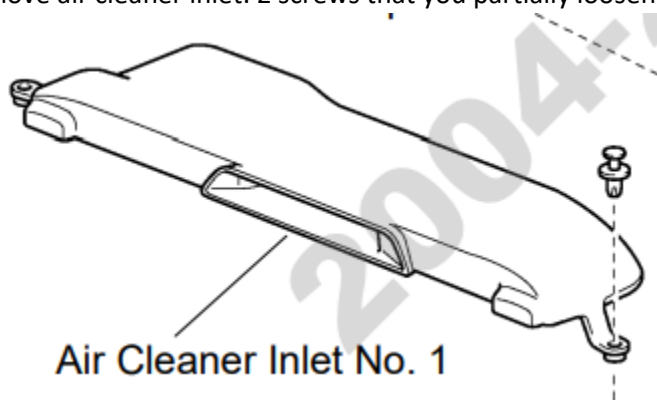
Overall, the repair was very reasonable. For context, the kinds of repairs I've done before include brakes, brake lines, exterior door handle, oil pan, fuel injectors (4 cylinder), spark plus, oil changes. This was one of the less frustrating repairs, although it was a bit more involved. Nothing was too complicated; there are just a lot of parts to take off and put back on.

Take your time, be organized, and take some notes as you go. I found it really helpful to write a note about each part as I took it apart. Take note of any connectors, hoses, brackets, etc. This comes in handy during reassembly, especially since the video kind of glosses over the reassembly.

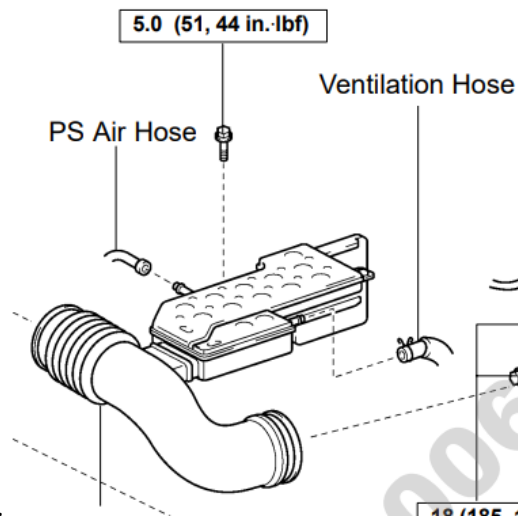
Disassembly

1. The order of these steps doesn't matter a whole lot
 - a. Disconnect negative battery terminal
 - b. Jack up car and remove bottom cover, 10 mm screws
 - c. Remove engine covers: I removed the main one and left one; I did spark plugs at the same time. Replace acorn nuts on studs for engine cover.
2. Drain radiator. This might take a little while, it's faster if you unscrew the valve all the way. The coolant won't come through the tube, though, so be ready to catch it.

3. Remove air cleaner inlet: 2 screws that you partially loosen



4. Remove intake air connector pipe: one screw, one small hose, one medium hose. Replace screw



into hole.

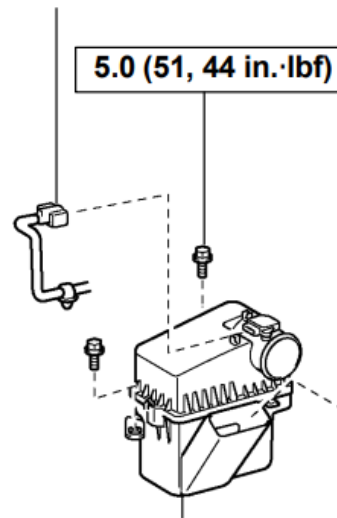
5. Disconnect oil cooler lines on the bottom of the radiator from radiator side. A bit of WD-40 can help to work them loose: pry up the edge a bit and squirt a little in. Put something in the tubes to keep them from dripping, ear plugs work ok.
6. Disconnect the radiator hoses from the engine side



7. Disconnect the electrical clip from the radiator and unclip it from the 3 wire ties. They work like zip ties.

8. Remove the air cleaner assembly: electrical clip and hose in the back, MAF sensor clip, two 10

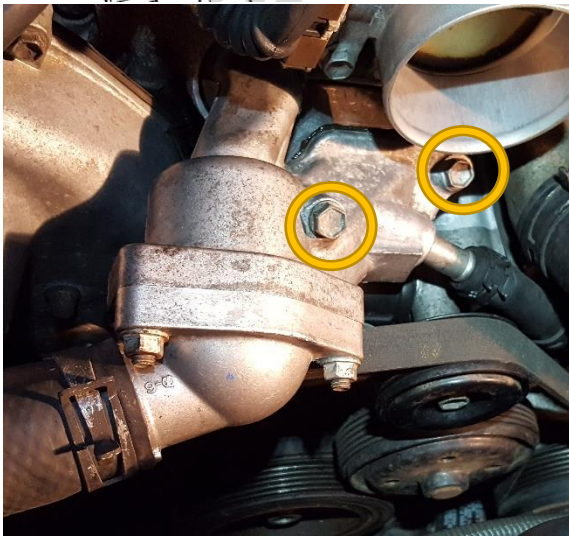
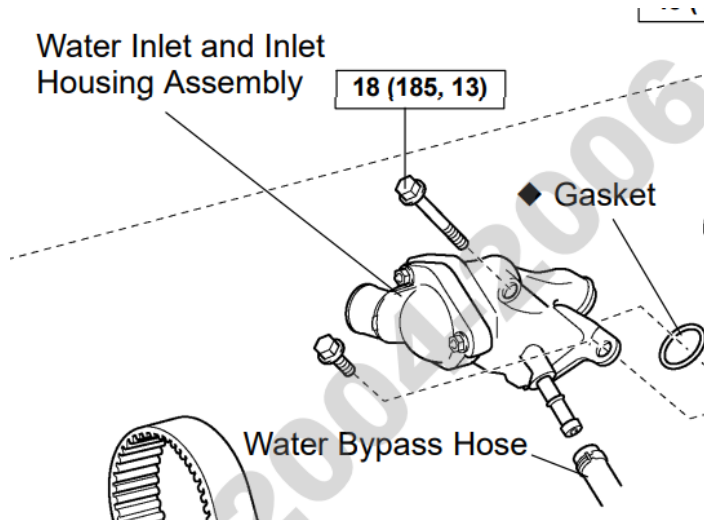
MAF Connector



Air Cleaner Assy

mm screws, replace them into their holes.

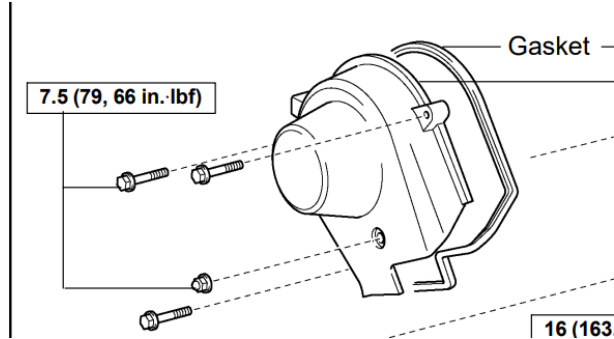
9. Remove the radiator supports, 12 mm. Replace the nuts onto the studs.
10. Remove the radiator. Watch out for any wires that might get snagged, otherwise it should come out pretty easily.
11. Take off the serpentine belt by turning the bolt on the tensioner pulley (14 mm?) counter clockwise.
12. Remove the water inlet and inlet housing assembly (thermostat housing). This can take a bit of wiggling to get off, the gasket on the tube is fairly tight. 2 screws and a hose. Keep the screws with the housing, the hose clip could stay on the hose.



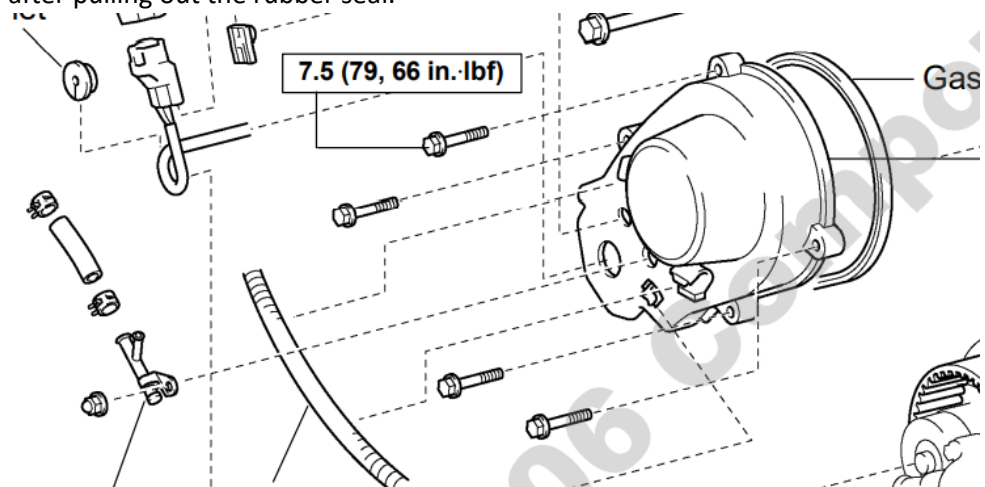
13. Remove the passenger side timing belt cover. 3 bolts and an acorn nut, unclip two hoses from the clip on the side. Replace acorn nut on stud or keep with bolts with the cover. Remove the



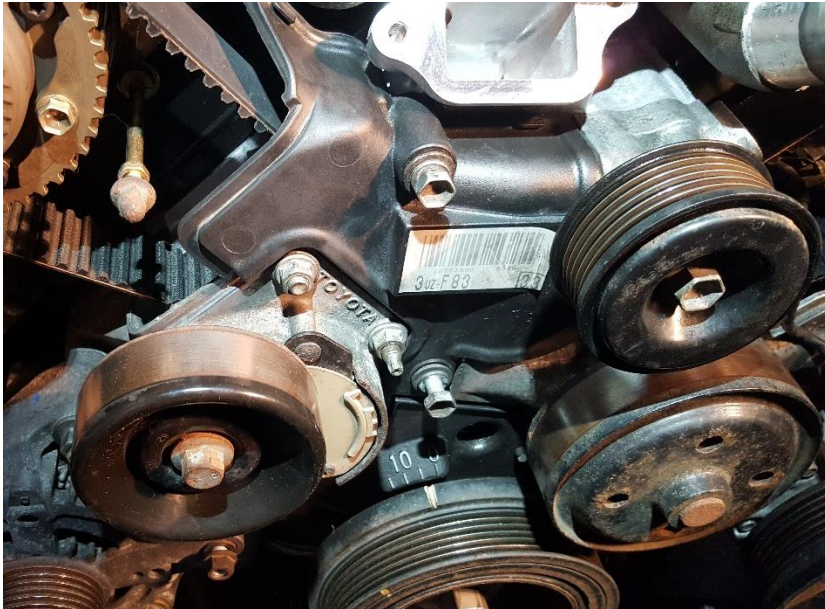
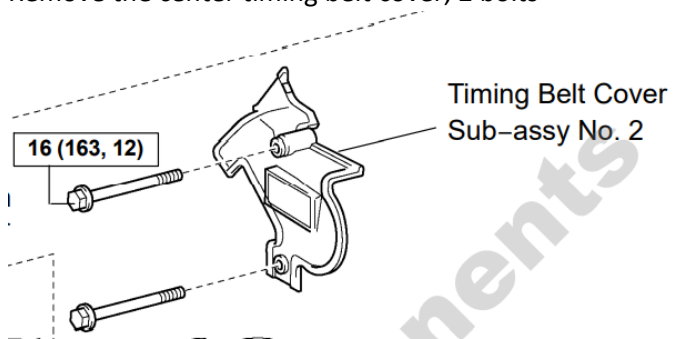
gasket with the cover.



14. Remove the driver's side timing belt cover. This one's a bit trickier, there's a wire that goes over it. 4 bolts and acorn nut. Slide the electrical clip off of the holder and feed it through the hole after pulling out the rubber seal.

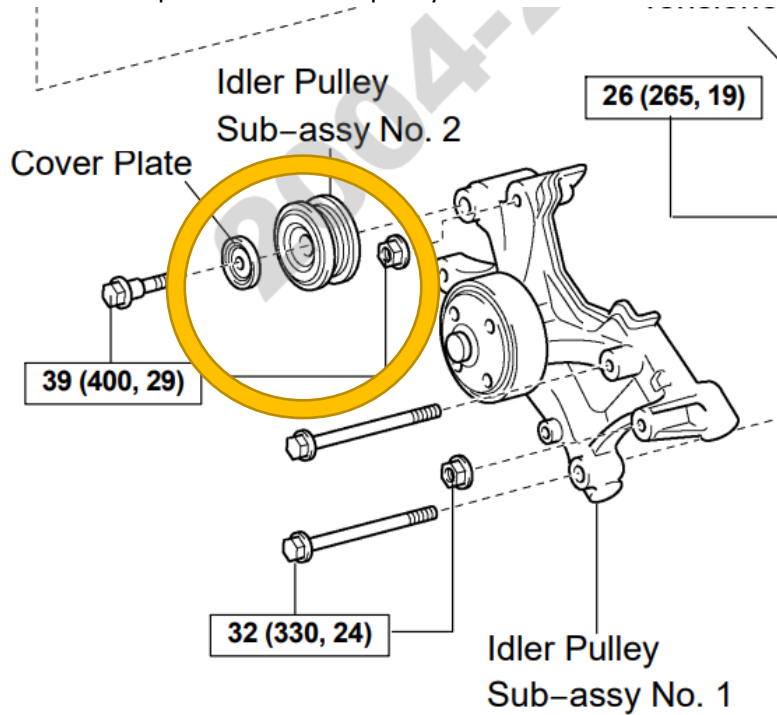


15. Remove the center timing belt cover, 2 bolts

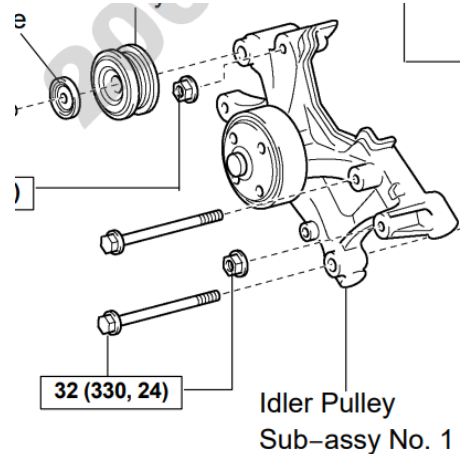


16. Remove the serpentine belt tensioner: 3 nuts in studs, one bolt, need to pull alternator partially off to get the tensioner assembly off.

17. Remove the serpentine belt idler pulley.



18. Remove the "idler pulley sub-assembly no. 1." 2–8 mm screws holding on a bracket, replace screws after removing bracket; 2 bolts going through, 1 nut, 2 screws coming from the side



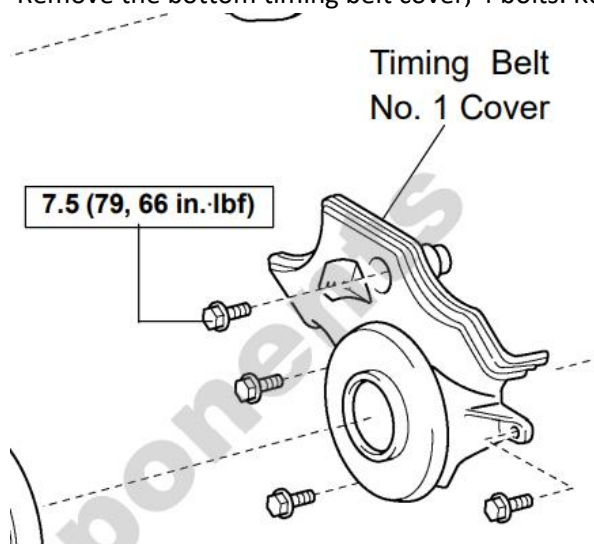
through the AC compressor

19. Check that the timing is lined up, refer to the video for details. Move to 50°. Watch the relevant part of the video a couple times.

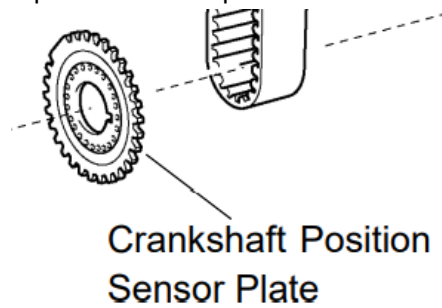
20. Remove the crankshaft bolt. I used the special tool, there are other ways as well.

21. Remove the crankshaft pulley. You may need the pulley removal tool.

22. Remove the bottom timing belt cover, 4 bolts. Keep them with the part.



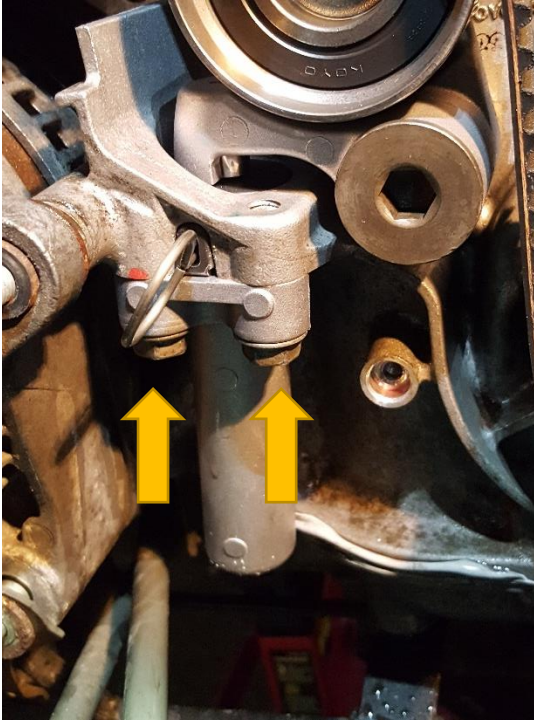
23. Remove the crankshaft position sensor plate. Mark the outside; the concave side faces out



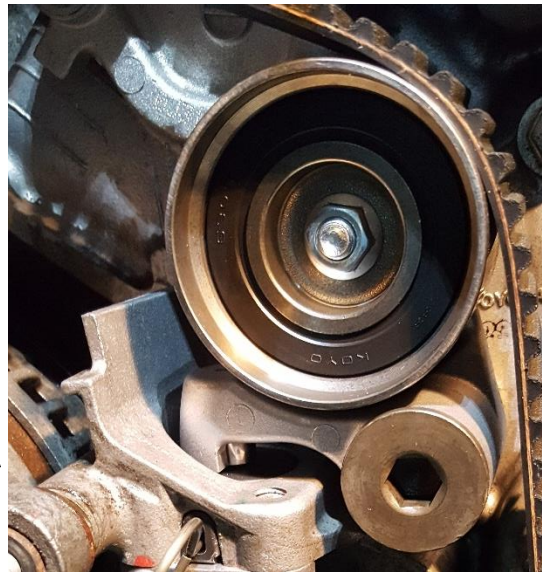
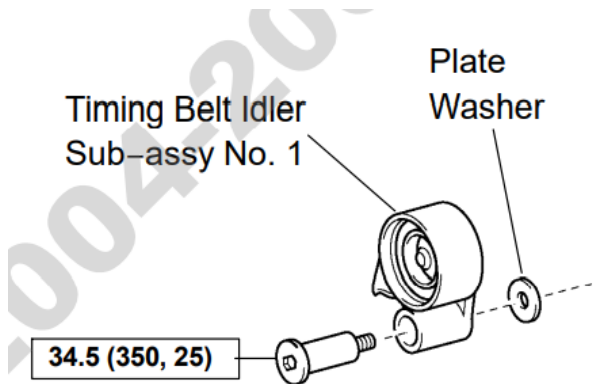
towards the radiator.

24. Mark the timing belt as shown in the video.

25. Remove the timing belt tensioner by alternating backing off the two screws a little at a time. The picture shows a new tensioner with the pin since I took the pictures during reassembly.



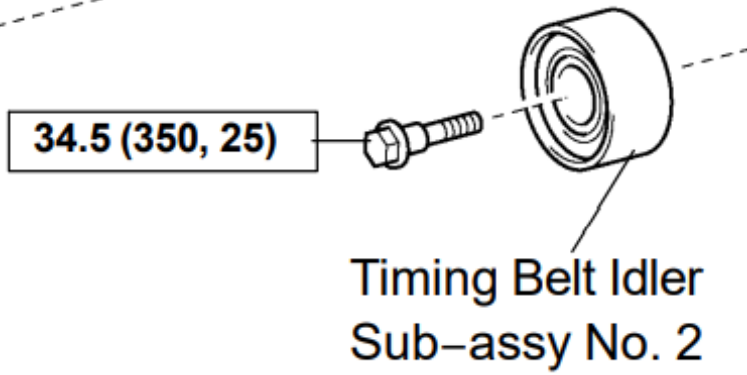
26. Remove the tensioner pulley. 10 mm hex bit. Don't lose the washer.



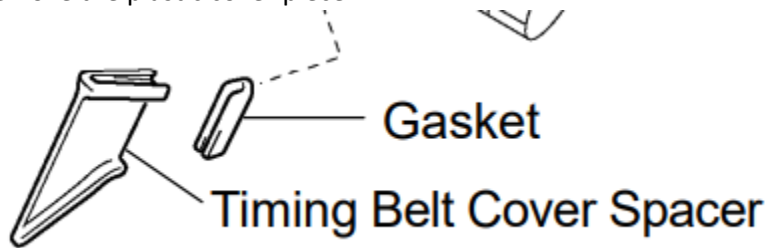
27. Transfer the marks over to the new belt as shown in the video.

28. Remove the nuts from the water pump studs

29. Remove the timing belt idler pulley



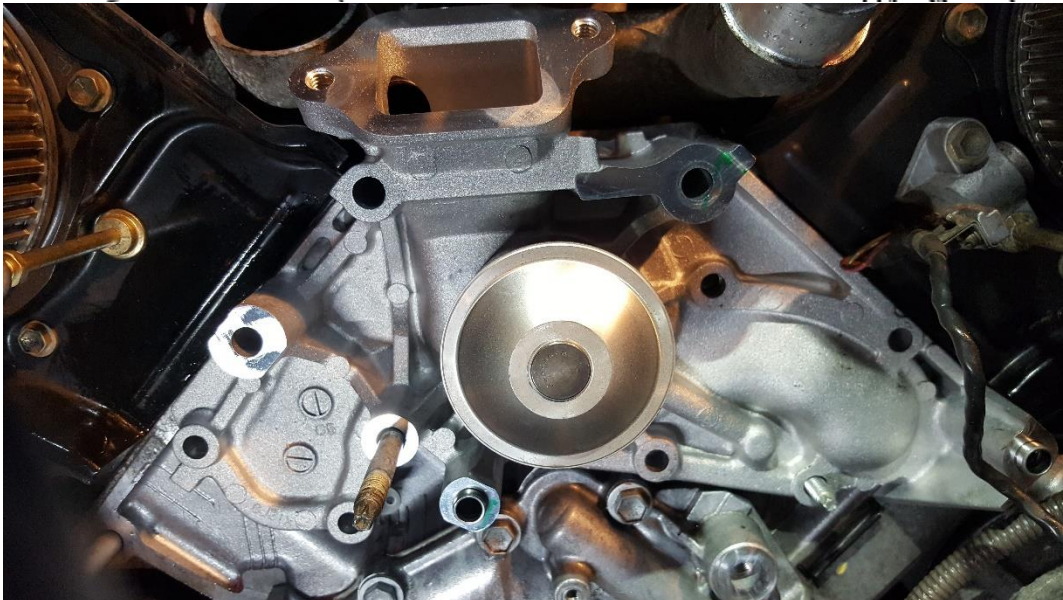
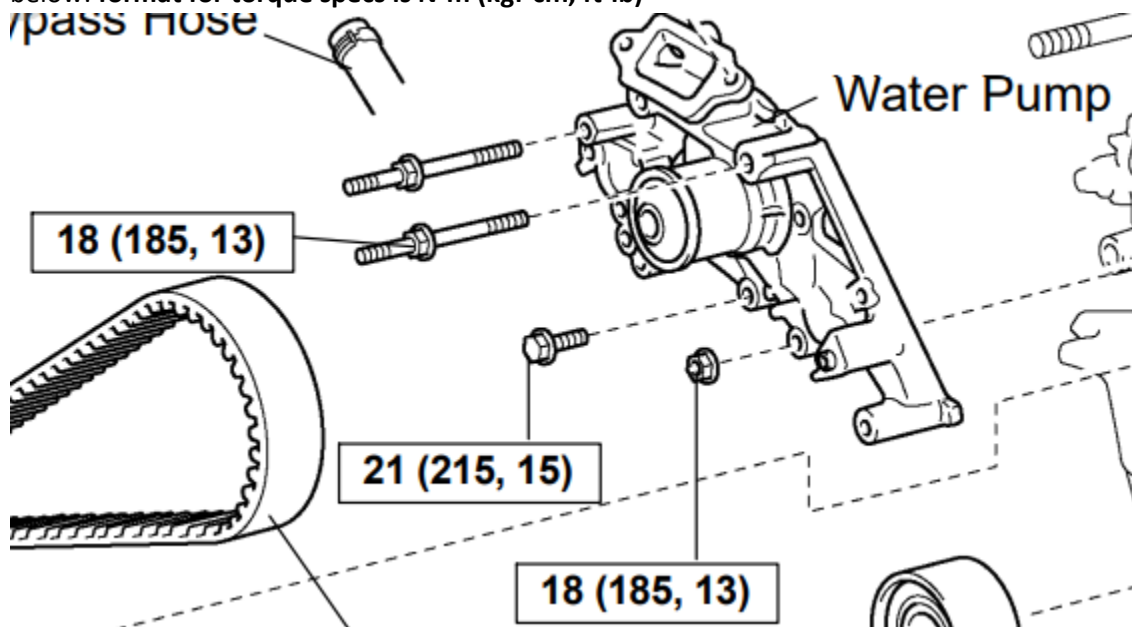
30. Remove the plastic cover piece



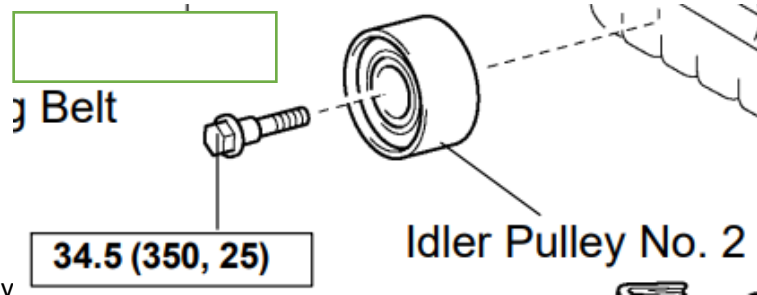
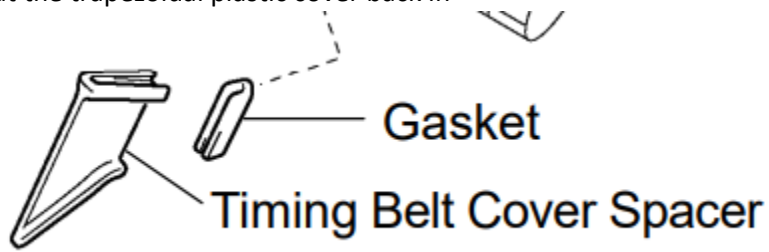
31. Remove the water pump. I pried gently in the corner by a tab. Coolant will likely come out, be ready to catch the drips.

Reassembly

1. Install the new water pump and gasket, new small O-ring that came with the kit. Torque specs below: **format for torque specs is N-m (kgf-cm, ft-lb)**



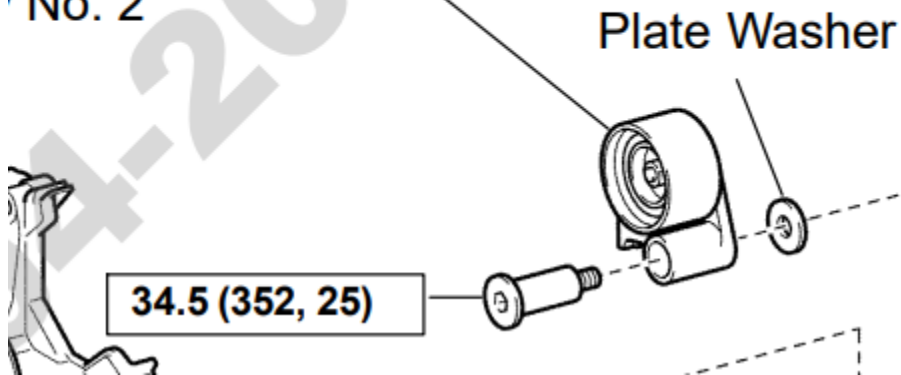
- Put the trapezoidal plastic cover back in



- Install the new idler pulley
- Install the new tensioner pulley

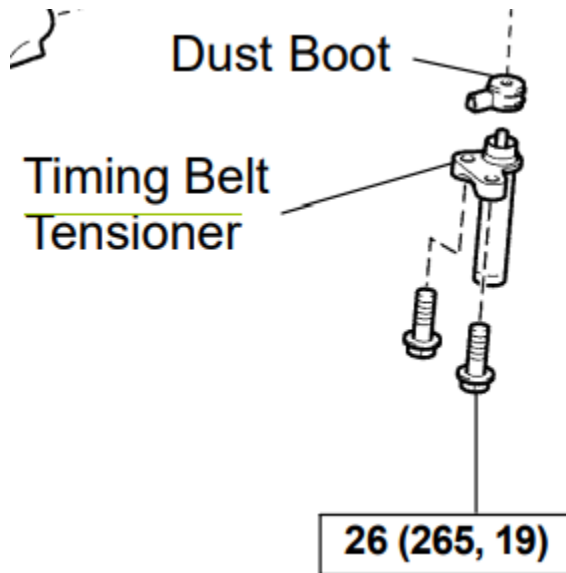
Timing Belt Idler Sub-assy No. 1

No. 2



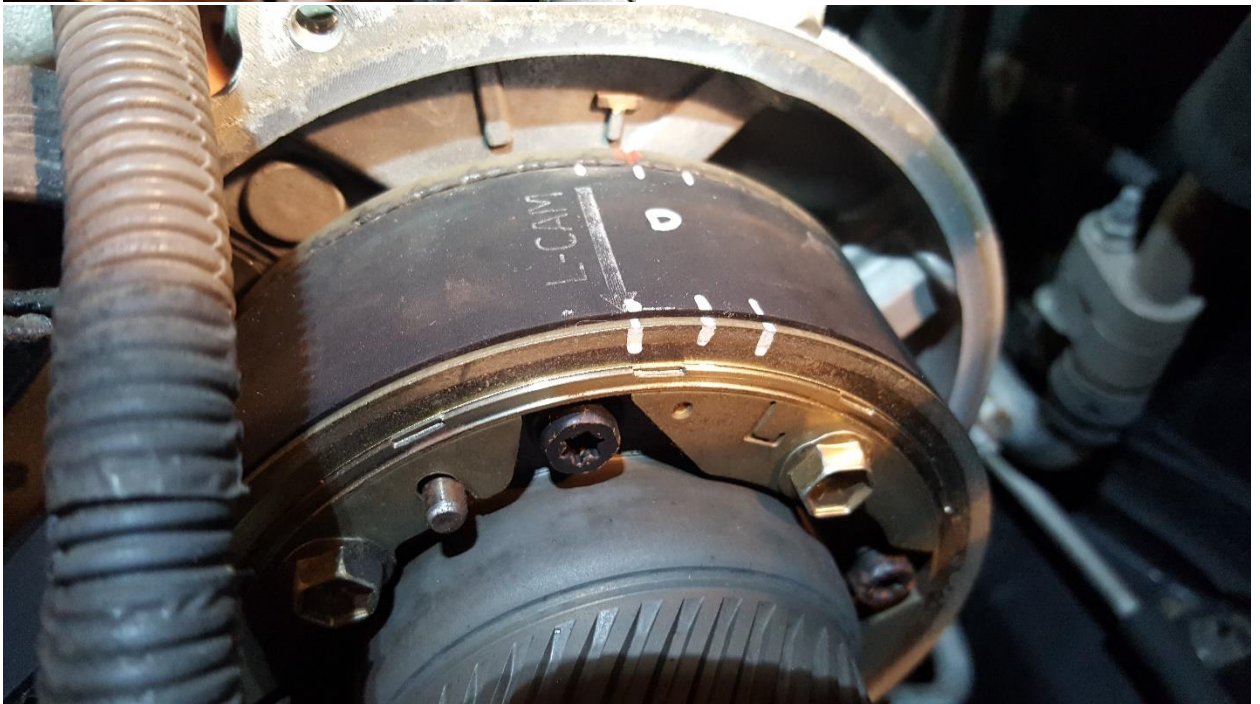
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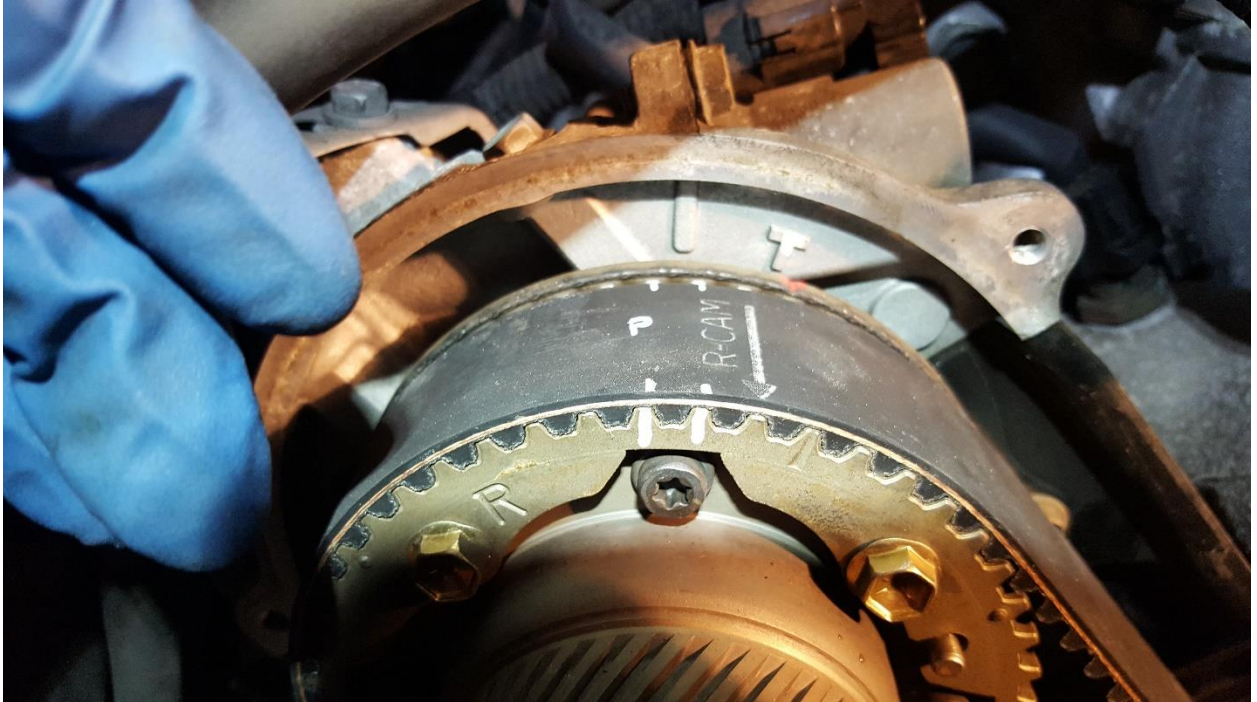
6. Install the tensioner. Just start the screws but don't tighten them all the way yet.



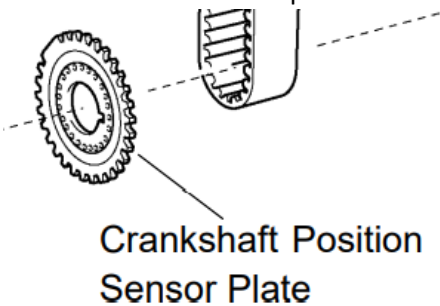
7. Put the new belt on, making sure to line up the marks like in the video.



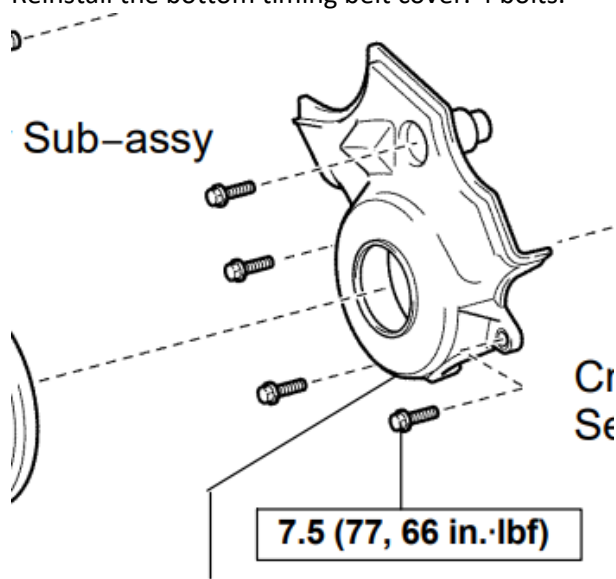




8. Finish tightening the tensioner bolts once the marks are lined up.
9. Rotate the crankshaft and make sure the timing marks are lined up properly. The video has details on this.
10. Once the timing is good, pull the pin on the new tensioner. I can't remember if I did this right after installing the belt or after making sure the timing was good. I couldn't get the belt on when the tensioner was screwed in all the way, so I think there's enough tension when the screws are tight without pulling the pin to check the timing.
11. Reinstall the crankshaft position sensor plate, concave side out towards the radiator.

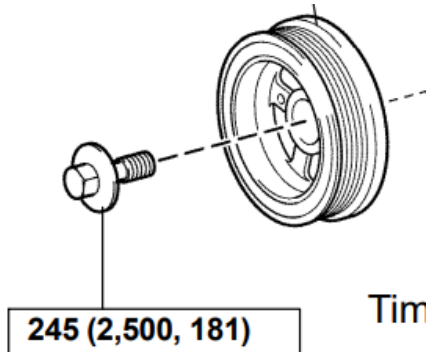


12. Reinstall the bottom timing belt cover. 4 bolts.

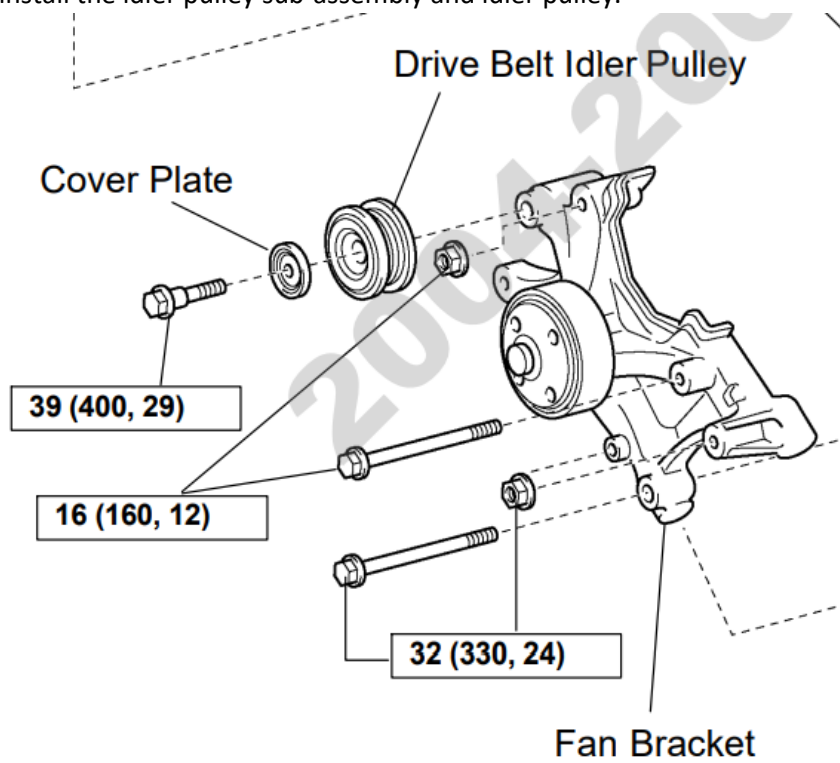


Timing Belt No. 1 Cover

13. Replace the crankshaft pulley. I wiped the inside of the pulley and the shaft clean, and put a very thin layer of marine grease and it slid on nicely by hand. Torque the crankshaft bolt however you decide to do it. I put medium loctite and used the pulley tool and tightened it to 150 ft-lbs with a torque wrench and then gave it a little extra with a breaker bar.

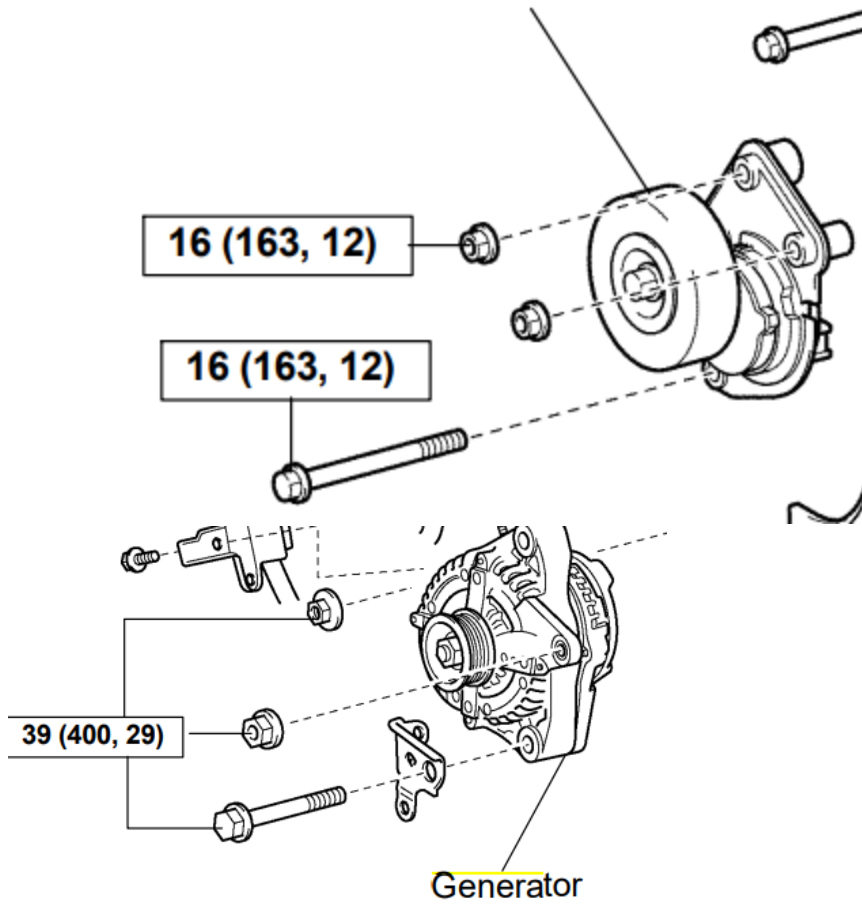


14. Reinstall the idler pulley sub-assembly and idler pulley.

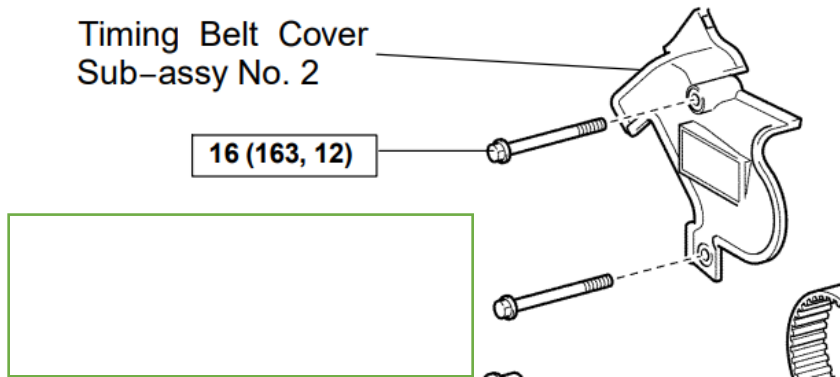


15. Install the serpentine belt tensioner pulley. You'll need to pull out the alternator again. Image included for alternator bolt torque spec.

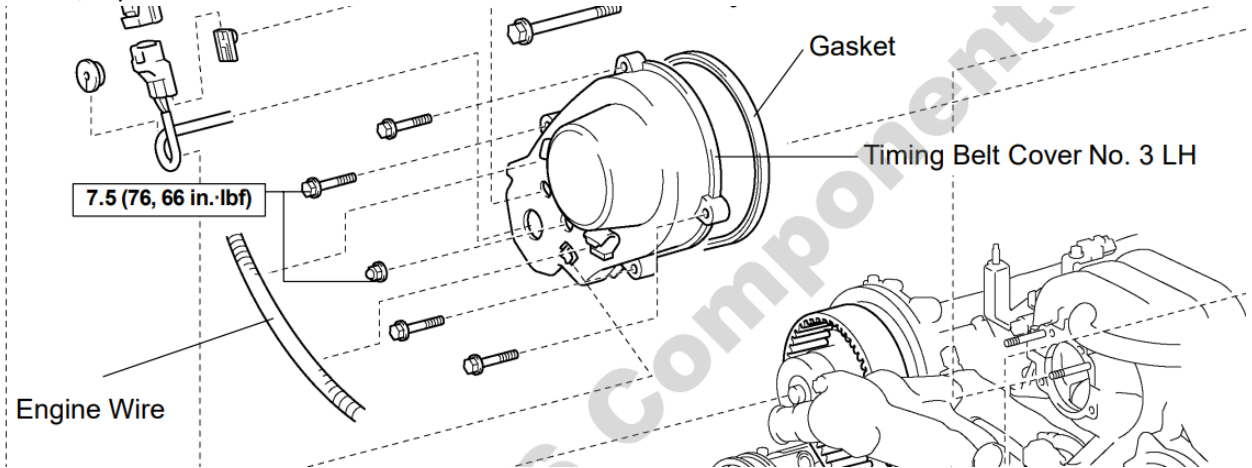
V-ribbed Belt Tensioner Assy



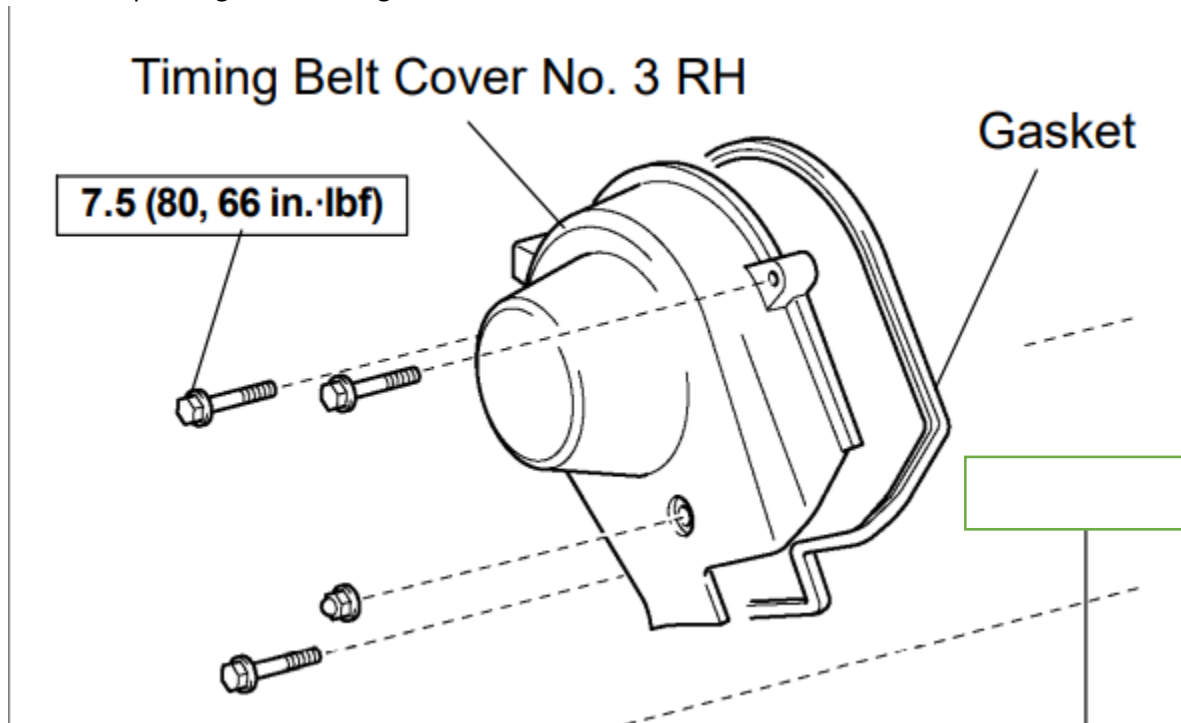
16. Install center timing belt cover.



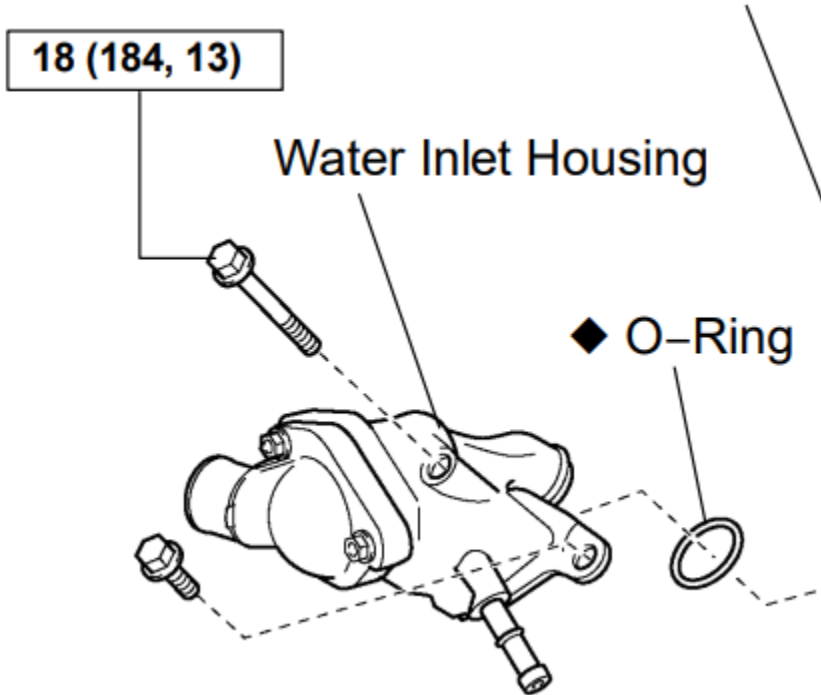
17. Install the driver's side timing belt cover. Feed the clip through the hole, make sure the gasket is seated, replace the hose bracket under the acorn nut.



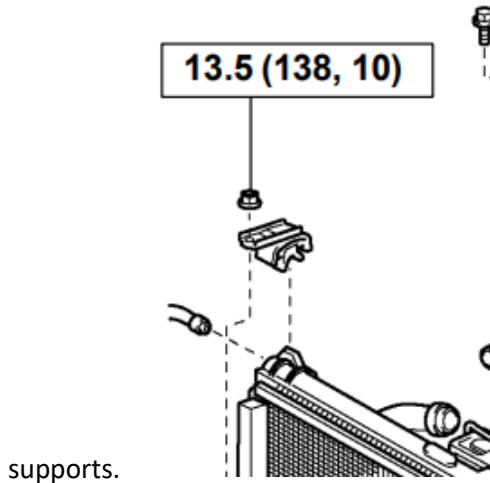
18. Install the passenger side timing cover.



19. Install the thermostat housing, apply a gasket maker. Follow instructions for gasket maker for when to apply, torque, etc.

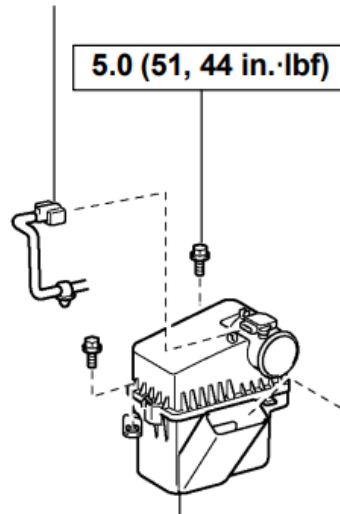


20. Install the radiator. Make sure the bottom radiator supports go into their holes. Reconnect the oil cooling tubes at the bottom, the electrical clip, top radiator hoses. Reinstall the upper



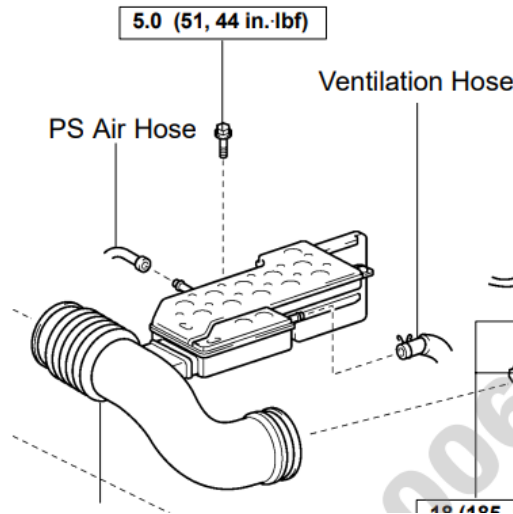
21. Reinstall the air cleaner assembly. Attach the hose and electrical clip in the back, 2 bolts, MAF

MAF Connector



clip. Air Cleaner Assy

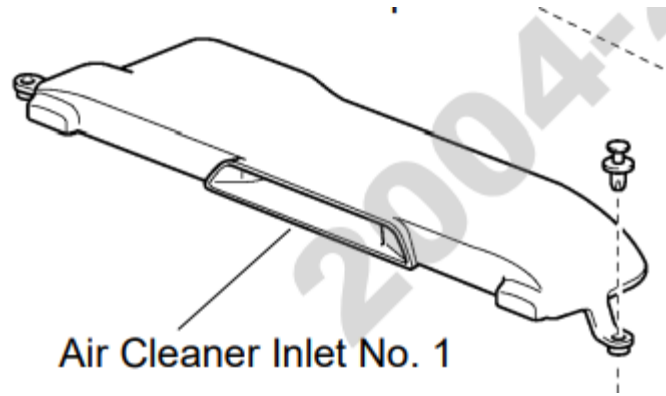
22. Install the air intake connector pipe. 1 screw, 2 hoses.



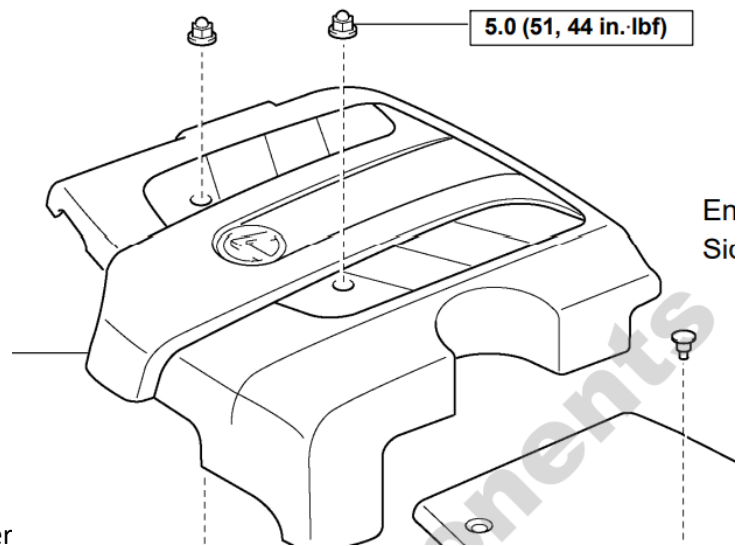
23. Reconnect the negative battery terminal.

24. Refill the radiator and reservoir.

25. Start the car, get air out of radiator.



26. Reinstall the air cleaner inlet



27. Reinstall the engine cover

28. Reinstall the side cover.

29. Reinstall the cover under the car.