SC430 timing belt and water pump replacement

Replaced my belt at 80,000 miles and 15 years on my 2004, my timing belt was still in good shape though a little wear on one of the edges.

If you are careful and take your time, this will take the entire weekend to complete. This includes cleaning parts as you go.

Strongly recommend using an Aisin TKT-021 kit, which includes the hydraulic tensioner. I purchased mine for $185 from SixityAuto.com, and came with a Mitsubishi belt. You should also buy a serpentine belt and change that as well, although mine looked great. You will need to purchase either Aisin AB1207B1 or Toyota FIPG #103 Form in Place Gasket. This is not in the kit and will cost another $17, but do not substitute other FIPG sealers. I used the Toyota brand and was very happy. You don't want a coolant leak and have to go back and pull parts off your engine again to repair it. I have used a JB Weld product for cooling systems (grey) in the past and it never cured on the inside. They are not all similar, the name brand products found at Auto Zone are all just 100% silicones and don't cure properly without air/humidity.

You do not need to remove the radiator, but drain the coolant including the engine block if you can find the ports, if not, when you pull the water pump, you will have a slight mess, but the coolant is non corrosive and can be washed up with water. When I use the term *right* or *left side*, that is the cars side as seen from the cockpit.

Here we go…

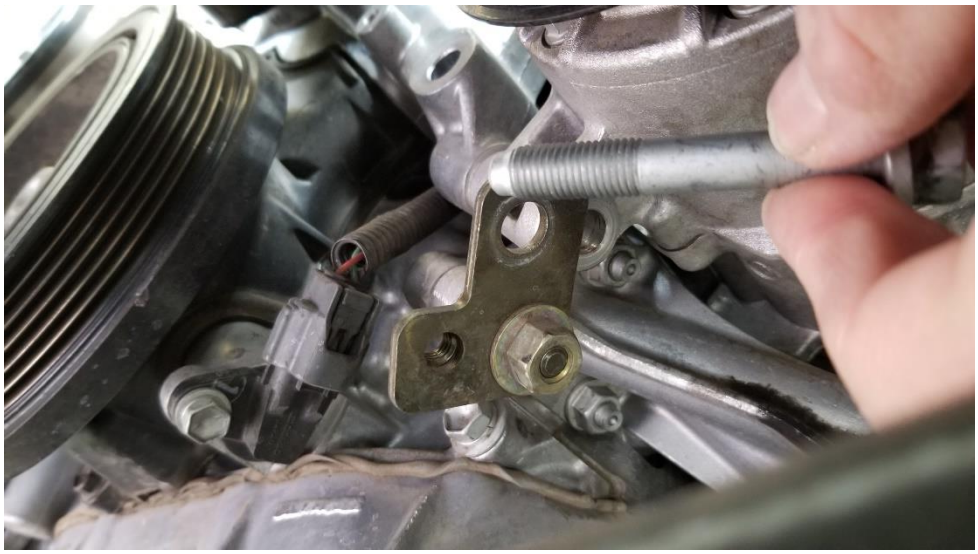
1. Remove the engine cover, two 10mm cap-nuts
2. Remove the air intake plenum on top of the radiator, 10mm bolt
3. Remove the air box, 3 bolts & mass airflow electrical connector
4. Remove the primary air intake box, 1 bolt, 2 hoses, 1 electrical connector.
5. Remove the air duct to the throttle body (good time to clean the throttle body, you will need to turn the ignition on and have a helper step on the gas pedal to open the throttle valve, then clean it)
6. Remove the negative terminal from the battery (you will be removing the main ground from the alternator – don't want sparks around that)
7. Remove the radiator overflow container
8. Remove the lower air dam (black plastic skid plate) under the car
9. Drain the radiator (do not remove the radiator) be careful, it's plastic!
10. Disconnect the top radiator hose from the radiator only, leave it attached on the engine end. Again, the radiator hose fitting is plastic – be careful.
11. Remove the fan shroud, 2 electrical connectors and 6 bolts

12. Remove the serpentine belt by turning the tensioner pulley center bolt CCW, see photo below

13. Remove the Right cam cover 3 bolts, 1 cap-nut
14. Remove the Left cam cover, 4 bolts, 1 cap-nut, grommet, electrical connector

    Note: I superglued the cam gasket to its cover to make the reinstall go easier

15. Remove the plastic water pump cover, 2 long bolts
16. Remove the top grooved idler pulley, center bolt
17. Remove the idler pulley assy, 2 bolts, 1 nut, the A/C unit also has a bolt that mounts to this.
18. Remove the A/C compressor bolts, there are 3 but the top one I could not remove as you can't get a socket on it and they were way too tight for a wrench, so I left it connected to the idler pulley assy and still gave me plenty of room to work. One of the A/C bolts has an angle bracket that swings out of the way with a socket wrench (see photo). There is also an electrical connector to be removed,



shown in the photo below. Removed the A/C unit with the idler assy and swing it out of the way and let it lie where it is.

19. Remove the power steering pulley, I had to use a small puller to get it off but came off very easily. (AutoZone free tool rental)
20. Remove the alternator from its mount and let it lie where it is, 1 bolt, 2 nuts
21. Remove the serpentine tensioner pulley assy, 1 bolt, 2 nuts
22. Turn the crankshaft pulley (tightening the bolt) until the crank is on the TDC mark and the two cams are on their timing marks.

23. Remove the hydraulic tensioner, 2 bolts. If you didn't buy a new one, you will need a vice to compress it then insert a pin or small allen wrench into the hole to retain it prior to installation.
24. Remove the timing belt (inspect it for any unusual conditions)
25. Remove the crank pulley, I used a pneumatic impact wrench (gun type) and the bolt came right off.
26. Remove the plastic crank cover
27. Remove the timing "star" washer/belt retainer and mark FWD or OUT on the forward-facing side. Feel the side against the belt and make sure it is smooth, I touched mine up with some fine sandpaper.
28. Remove the timing belt. My cams never rotated after removing the belt as suggested in some posts stating they are spring loaded. That made me happy.
29. Remove the radiator hose from the thermostat assy, and then the thermostat assy (2 bolts) you may need to tug on it as your fighting an o-ring seal on the bypass, then remove the smaller hose.
30. Remove the tensioner pulley (right side) and idler pulley (left side).
31. Remove the plastic triangle closeout on the water pump
32. Remove the water pump and gasket

Assembly, is in reverse. The timing belt will have marks for the left and right cams and a mark for the crankshaft. Make sure all three marks are right on before releasing the hydraulic tensioner.

Notice the crank alignment marks on the new belt and pull ring on the new hydraulic tensioner

If you have trouble getting the belt on, loosen the idler pulley and that will give you some slack. Don't forget to retorque it.

Once the new water pump is installed, fill the port opening with coolant, before you attach the thermostat assy. That will prevent cavitation of the water pump on engine start – it will take a few quarts. Clean the old FIPG material from the thermostat assy, make sure all the material is out of the groove and clean, do a final IPA wipe down to both mating surfaces. When adding new FIPG to this part, apply a 2-3mm bead to the outside perimeter of the groove, and not around the bolt holes. Do not get any FIPG in the groove, then attach it to the installed water pump within 10 minutes and torque down the two bolts. Let it dry over night before starting the engine. Toyota says 1 hour prior to starting the engine and 16 hours to fully cure. I didn't want to risk it so I let it cure overnight. Do not apply any FIPG to the water pump.

Probably a good idea to rotate the crank by hand (I didn't), two revolutions to make sure the belt is on correctly and all timing marks line up when the crank is back at TDC, of course, the belt marks will have disappeared out of view. Add Toyota coolant and burp the radiator as usual. I used 2 gallons.