Toyota Alphard 3.0 V6 - Timing Belt Replacement

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Note: No special tools are required to carry out the task except for general workshop and hand tools.

Note: Disconnect the battery negative terminal before commencing work on the engine

First step is to loosen the Right-hand Front wheel nuts, raise the vehicle on that side and support on an axle stand. Undo the wheel nuts and remove the wheel.



Remove the plastic undertray at the lower part of the front bumper and also the one covering the auxiliary drivebelts under the wheel arch.



Remove the auxiliary drivebelts and place aside if reusing, although if worn, then replacement at this stage would be the sensible option and cost effective in the long run. Tip: keep the old belts (if still serviceable) in the boot as a spare if needed in a road-side breakdown situation.



Remove any electrical connections that are in the way and pull the loom in towards the engine and secure with a Bungy strap.



Next, you are ready to remove the top engine mount. Before proceeding, it will be necessary to support the engine by placing some wood between the trolley jack and the sump and gently raise the jack until the wood is just contacting but no more.

Remove any bracketry to gain access to the timing belt covers. The engine stabiliser bar is okay to be left in position or pushed over towards to the rear of the engine.



Loosen the crankshaft pulley bolt and undo a couple of turns. Using a suitable puller, slightly withdraw the pulley from the crankshaft, remove the bolt and then fully remove the pulley.



Once the upper and lower covers are removed you have then revealed the timing belt.



It can be a fiddle to remove the alloy engine bracket (use a female torx socket to remove the studs)



Replace the crankshaft pulley retaining bolt and tighten.

Now you are at the tricky stage of timing up the engine prior to removing the belt. This is a good time to have a short comfort break because the next stage will require some concentration.

Rotate the crankshaft pulley in a clockwise direction until all of the notches in the pulleys and castings are in alignment (see diagram).



The camshaft pulleys should now also align with their respective timing marks.



See diagram (below) for more information on the alignment marks.



Slacken off the tensioner and remove the timing belt.



Remove the tensioner, guide pulley and idler pulley.



At this stage, it would be prudent to replace the water pump as well as this is also part of the timing belt setup and if it starts to wear on the bearing or leak then it can compromise the engine durability and it is the additional time to replace it at a later date. Bear in mind, the bearing in the pump has also done the same amount of work as the other bearings!





On reassembly, it would be wise to use a thread locking adhesive to ensure that none of the fasteners loosen of with vibration from the engine. This should be applied sparingly to all crucial nuts and bolts within the engine.



When fitting the new tensioner, ensure that the retaining pin is still in situ. This must only be removed once the timing belt is in position and the tensioner can then apply pressure to the belt.



The belt should be positioned so that the timing points are still aligned and when you are happy, release the pin.



Check camshaft and crankshaft pulleys are positioned correctly then turn the crankshaft two complete turns (760 degrees) in a clockwise direction.



The timing marks should still be aligned correctly.

A final tighten and check on all components within the timing belt area and you are ready to replace the plastic covers and rebuild the engine in reverse of removal. Remember to apply thread lock to all vital fasteners.



Ensure all fasteners are torqued to the correct setting and refill cooling system (if drained)