Well after some messing I managed to sort it out myself.....

Cam belt change on VX220 turbo (ZLET engine)

By Chris Kaven (RONBOT)

This guide is based on my experience of carrying out a cam belt change on my VX220 turbo. I have done a few cam belts on various engines in the past and fully expected this one to be one of the most challenging due to the tight engine package on the VX. In actual fact it turned out one of the easiest and I would say that anyone who has a reasonable amount of experience of working on engines could probably complete the job using this guide.

There is a very good guide on the ZLET forum (http://www.zlet.co.uk) for a cam belt change on the ZLET engine installed in the Zafira and MK4 Astra GSI. I have used this as a basis. Although the basics are the same, I have tried to make my guide more specific to the VX220. There is also a Haynes manual available for the 2.0L NA engine fitted to the above vehicles and I believe the cam belt change method is the same between NA & turbo variants of this engine.

Note this guide should not be confused as a guide for the 2.2L NA engine also fitted to the VX, which has a cam chain and not a belt. This is a guide only and I will not be responsible for any damage caused to your vehicle.

First is the list of tools you will need. Pay particular note to the female Torx sockets, as these probably will not be standard items in your tool kit. It is also advisable to purchase the cam-locking tool that holds the cam positions fixed once the belt has been removed. You can do without this tool but it does make the job a lot harder and it can be brought for less than £10 delivered.

1/2" drive pull bar
pointed pliers
2 x 1/2" drive extension bars
1/2" drive clutch drive (or a ratchet)
3/8" drive clutch drive (or a ratchet)
2 x 3/8" drive extension bars
17mm, 15mm, 13mm spanner
13mm short 3/8" drive socket

17mm socket

1/2" to 3/8" converter

E14 torx socket

6mm allen key

E10 torx socket

6mm allen key socket

3/8" wobble drive

No.2 philips screwdriver

large flat screwdriver

25 torx socket or screwdriver

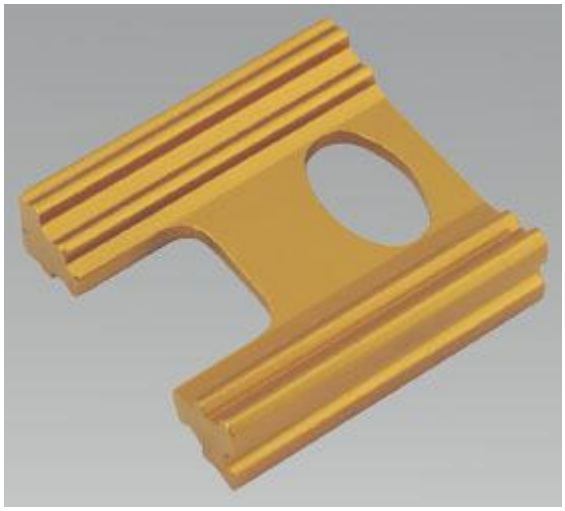
paint stick

cam locking tool

10 mm socket and spanner

3 large zip ties

Sealey **cam** locking tool VSE1701



· Ensure engine is cold.

· Disconnect Battery, (you can leave it on if you are brave. I did)

· Loosen drivers wheel. Jack up car and place axle stand in a suitable place as a fail-safe.

· Remove rear undertray (from memory there are 5 bolts along the back, 3 either side and 2 allen key bolts in the middle).

· Remove drivers side wheel and wheel arch liner. The liner has 4 bolts at the rear and 3 plastic screws at the front. View should now look like this.

· Remove high-pressure duct (intercooler to intake manifold pipe). There is a jubilee clip at each end and zip ties at three places along the tube that you will need to cut off. See below

Engine bay should now look like this.

· Place jack under sump to support the engine in preparation for engine mount removal. A piece of wood should be used in between to avoid damage to the sump.

· Remove engine mount. This is held on by three bolts on the engine side and one that attaches the rubber mount to the bracket.

· Release alternator **belt** tension by tuning central tensioner bolt clockwise. You should see the tensioner move round and the **belt** can then be released. The tensioner pulley then needs to be removed by undoing the bolt anticlockwise as normal.

· Remove bottom alternator **belt** pulley from crank pulley. This is held on by 4 Torx bolts.

· Remove top and bottom **cam belt** covers. Each cover is held on by 2 Torx bolts.

View should now look like this

· Find mark on each **cam** pulley and the crank pulley and mark with paint pen to aid visual

identification. These need to be aligned with the marks on the back of the cam cover and the rear crank pulley cover as shown.

Before attempting to turn engine to align the marks, it is useful to remove the spark plugs to

reduce the force required to turn the crank pulley. This is also a good opportunity to check the plugs for condition.

· Remove black cover on top of engine. This slides and lifts off. Disconnect coil pack connector and remove coil pack (2 torx bolts). Remove spark plugs.

The marks should all align at Top Dead Centre TDC cylinder 1. To do this turn the crank pulley clockwise. NEVER EVER TURN THE PULLEY ACW IF YOU GO TOO FAR GO ROUND CW ANOTHER TWO TURNS TILL YOU GET IT RIGHT/ The timing marks are a depression in the bottom pulley (shown with white paint on at 6 o'clock) which lines up with a notch on the back plate. The **cam** pulleys have notches in (painted in white on the pic at 12 o'clock) and notches in the housing behind. If the **cam** pulleys are 180 deg out turn the crank one whole revolution. Insert the **cam** locking tool. The cams may need some gentle rocking to get the tool in as it is a tight fit.

· As a final check before removing the old **belt**, count the number of teeth between each **cam** pulley mark. If you are not using the locking tool, it is very important to check that the number of teeth between the **cam** pulley marks is the same once the new **belt** is fitted. It is quite easy to have all the marks almost aligned and have the **belt** one tooth out. If you have the locking tool this is not so important. You can double-check but as the cams won’t have moved there shouldn’t be an issue.

· Slacken the central **cam** **belt** tensioner bolt and then turn the adjuster clockwise to slacken **belt** using a suitable 6mm Allen key in the Allen key hole. A pic of the tensioner is shown below.

· Remove old **belt**.

· Remove old tensioner.

· Fit new tensioner but do not tighten the central bolt.

· Check for oil & water leaks, repair as necessary.

· Ensure crankshaft has not moved - if so gently reposition.

· Check the two idler pulleys for looseness and see if they spin freely. They should be tight with no play. I had brought the complete **cam** **belt** kit, which includes new idler pulleys so I replaced them anyway. Take note which way round they go as each one is opposite to the other.

· Fit the new **belt** over the pulleys. Don't rush. It can take some time to get all the marks spot on and to have the same number of teeth between the cams.

· Once you think you have it, turn an Allen key in the Allen key-hole on the tensioner anticlockwise until the pointer reaches the "NEW belt" marker. IMPORTANT always tighten the tensioner anticlockwise.

· Check timing marks are still aligned. I found that when tensioning the **belt**, the crank pulley turns very slightly so you may have to account for this movement as you tension the **belt** by having the **cam** pulley slightly miss-aligned before tensioning. If the marks don't quite align, don't be afraid to release the tensioner and have another go, you should get the marks all

spot on with the **belt** tensioned before continuing.

· Once you are happy, tighten the central bolt on the tensioner and then remove the cam-locking tool.

· Turn the engine two complete turns clockwise to TDC - if you go too far do not wind back anticlockwise, go on another 2 turns until you are at TDC. Check all timing marks line up and tensioner is still as you set it.

· If all ok you can now re fit everything back together in reverse order. If marks do not align, re-insert **cam** locking tool, loosen central tensioner bolt, release tensioner and have another go.

· After refitting top and bottom **cam** covers it is worth starting the engine to ensure no rubbing occurs. Remember to ensure vehicle is stable and all tools are clear before starting engine and do not run the engine for too long in this state, as alternator will not be charging the battery.

· Refit bottom alternator **belt** pulley, alternator **belt** tensioner pulley and engine mount.

· Refit alternator **belt**, intake pipe (with new zip ties), wheel arch liner, rear undertray and wheel.

· Start engine, check all is well and pour yourself a well deserved pint.

Maybe this can now be added to the useful posts section

RED VX220 turbo