

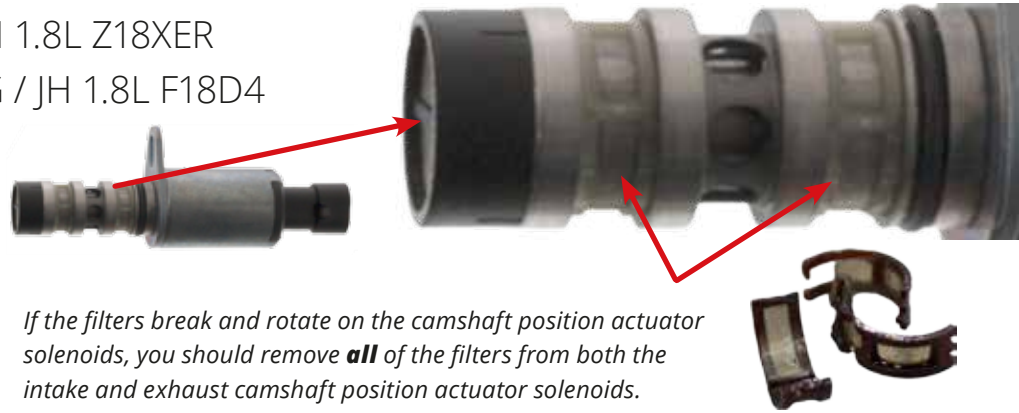
# Holden 1.8L Z18XER & F18D4 VVT Rattles

2007 - 2010 Holden Astra AH 1.8L Z18XER  
 2009 - 2016 Holden Cruze JG / JH 1.8L F18D4

All Head Services have had numerous occurrences where a customer has called after fitting a Z18XER or F18D4 cylinder head with the complaint of a rattle in the VVT (Variable Valve Timing) phasers, the check engine light is on, and the engine is lacking power. It could be a few things, but is it usually the first one.

The VVT system alters the cam timing via a cam phaser mounted in the cam sprocket. In these engines, the oil is directed to the phasers via the camshafts which are hollow. Inside each camshaft behind the VVT phaser bolts are black plastic oil flow tubes. These tubes direct the flow of the oil to the correct side of the phaser.

The usual cause of the rattles is when a new head or camshafts are fitted, and the plastic oil flow tubes are left out. The tubes are crucial for the correct flow of oil. Without the tubes in place, oil is not being fed to the VVT phasers which in turn causes the phasers to rattle, lack of power and DTC's recorded. The tubes **MUST** be fitted into the ends for the camshaft before the phasers and bolts are mounted.



*If the filters break and rotate on the camshaft position actuator solenoids, you should remove **all** of the filters from both the intake and exhaust camshaft position actuator solenoids.*

The above describes a reassembly error as the cause of the VVT rattles. However, there can be others.


If a vehicle presents with the same symptoms and the following DTC's:

- P0011: Intake camshaft position system performance
- P0014: Exhaust camshaft position system performance
- P000A: Intake camshaft position system slow response
- P000B: Exhaust camshaft position system slow response

The next thing to check is the filters on both the intake and exhaust camshaft position actuator solenoids (mounted on the sides of the head behind the timing belt). Remove the solenoids and check if the filters are broken. If so, this will allow the filters to rotate which

reduces the oil flow, and causes the same symptoms.

Holden has released a service fix which instructs technicians to remove **all** of the filters and refit the solenoids without filters. Their engineers have decided that the filters are only required when the engine is being run in, so it is OK to remove them. This should restore normal operation of the VVT system and the codes can be cleared and not return. If not, check for electrical faults and oil pressure issues. If both are OK, then replace the phasers.

The camshafts can also be fitted incorrectly, so they have been marked. The intake cam has a "G" beside the second last lobe. The exhaust cam has a "D" in the same place. An "I" and "E" would have made more sense, but who am I to judge. 



Oil flow tubes **MUST** be fitted into the end of the camshaft.



We would like to thank Geoff, from All Head Services, for sharing this practical information and photos [www.allhead.com.au](http://www.allhead.com.au)

