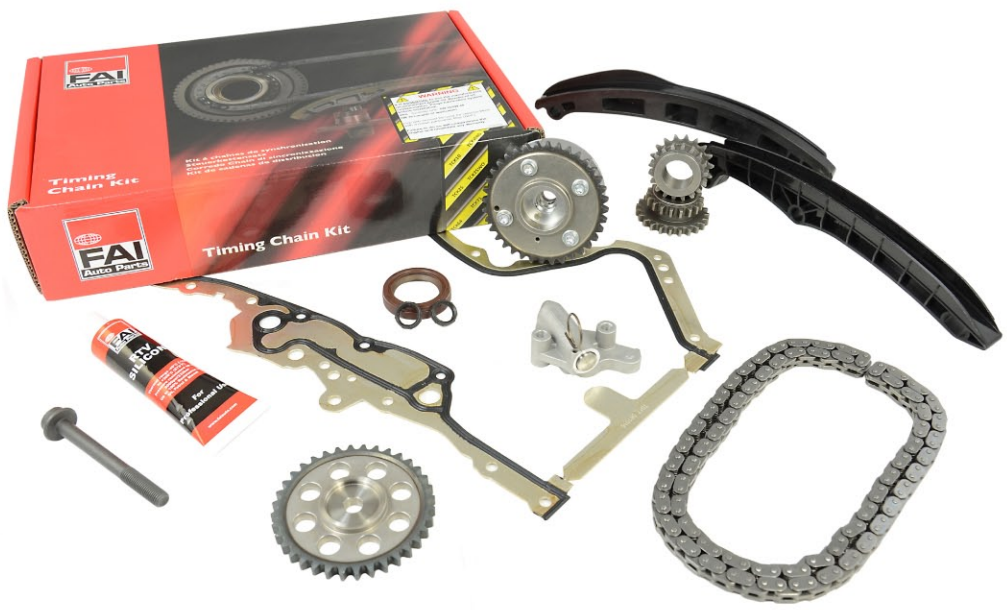
Common Timing Chain Kit faults and their diagnosis



Q: When does a Timing Chain need replacing ?

A: A timing chain will need replacing when the engine emits louder than normal noise, or the engine management light indicates a camshaft or crankshaft position error.

Q: Should I replace worn gears/sprockets ?

A: It is not good practice to fit a new chain to worn gears/sprockets. The worn teeth will cause the chain to operate outside of the specified tolerances, causing extra loading on the chain leading to premature wear and reduced service lifespan.

Q: What is Oil Contamination ?

A: Modern engines have oil changes/inspections at 20,000miles (32,000km). This extended period means that contaminants suspended in the oil can build up reducing the oils performance, blocking oil galleries and feed holes. Generally reducing the lubrication system efficiency. It is vital that this system is working efficiently to maintain performance and long service life of the mechanical and hydraulic components of the timing chain kit.

Q: What is misalignment ?

A: If any of the gears/sprockets are not in line with the other components the timing chain will be deflected from its correct path/route. The consequence being that the chain will be subjected to flextion forces that will compromise the chain construction reducing its service life and causing eventual failure.

Q: Why do timing chains become noisy ?

A: Chains become noisy when the force (tension) applied to them is less than the force induced by the engine rotation. This lack of tension allows the chain to oscillate and flex eventually causing metal fatigue and eventual failure.

Q: What causes a seized Tensioner ?

A: This can only be caused by lack of oil or engine overheating.

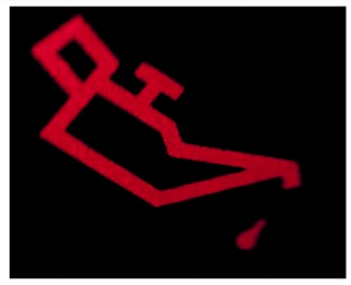
Q: What is best practise ?

A: Always fit a full timing chain kit with gears/sprockets to return the timing system back to the original tolerances. Make sure that the engine lubrication system is clean and working at full capacity. An engine flush is recommended prior to removing the faulty/worn timing chain kit.

Q: What causes a Broken chain ?

A: Chains will only break if they have been subjected to excessive or erratic loading.
This can be caused by a lack of tension, which is generated by a lack of hydraulic pressure within the timing chain tensioner due to:

1. a lack of oil.
2. blockage within the oil feed gallery
3. contamination within the oil
4. the wrong specification oil being used in the engine.
5. defective oil pump or pick up pipe.



Q: Should I replace the Variable Valve Timing (VVT) hub?

A: VVT hubs rely on oil feed to operate correctly and to keep lubricated. A failed or failing VVT hub indicates that the oil feed to the VVT hub is compromised due to:

1. a blockage
2. lack of oil in the engine
3. faulty oil feed sensor / regulator
4. the wrong oil has been used within the engine

The VVT hub has a direct affect on the loading placed onto the timing chain, if your timing chain has failed then the VVT hub must be replaced.
Not replacing the VVT hub will significantly reduce the service life of your replacement timing chain kit.

Q: How can I tell if the timing cover is not fitted correctly?

A: If a cover is not fitted correctly, the following symptoms will appear. Oil leaks, excessive noise (chain touching the cover) or if the timing cover includes the oil pump you can get a noise that sounds like a bee in a jam jar. Remove the cover, inspect all mating surfaces and dowels for damage. Replace with new if needed.

Q: How important is the Oil grade/quality ?

A: Oil is the life blood of any engine and it is vital that your engine is fitted with the correct specification. Not to do so will compromise ALL the hydraulic components including the timing chain tensioner(s). Which will ultimately lead to engine failure.

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