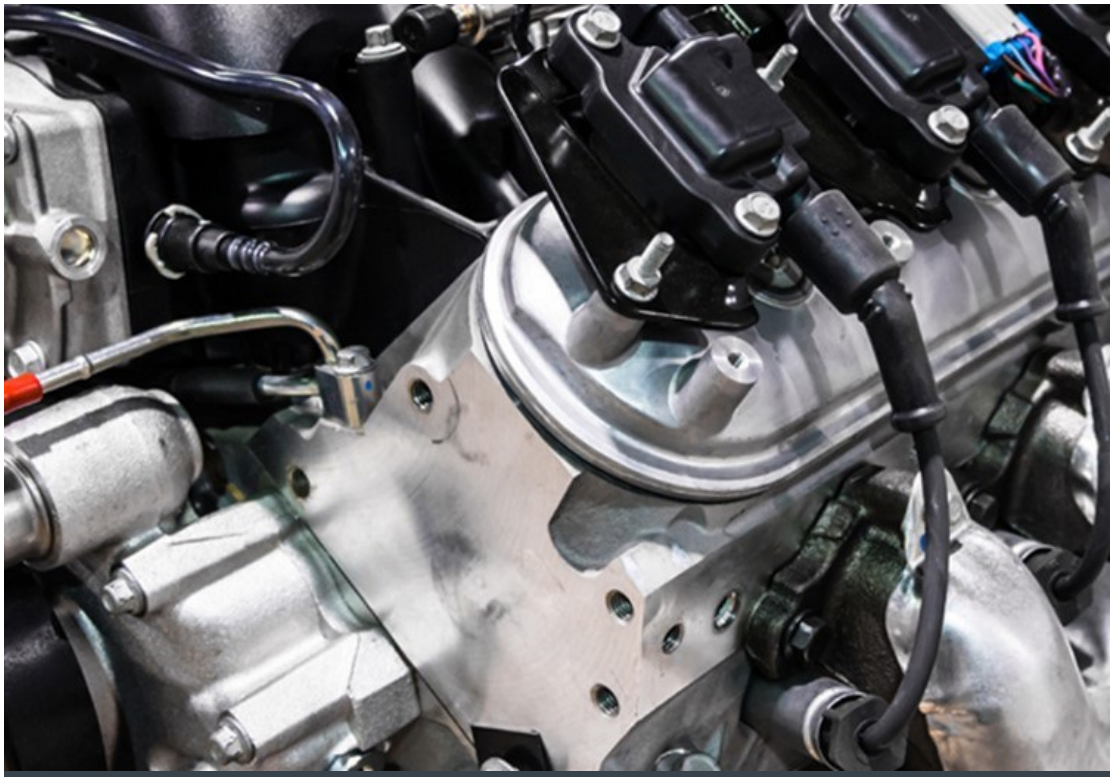
INSIGHT
FROM INFINEUM INTERNATIONAL LIMITED

ILSAC GF-6 engine tests

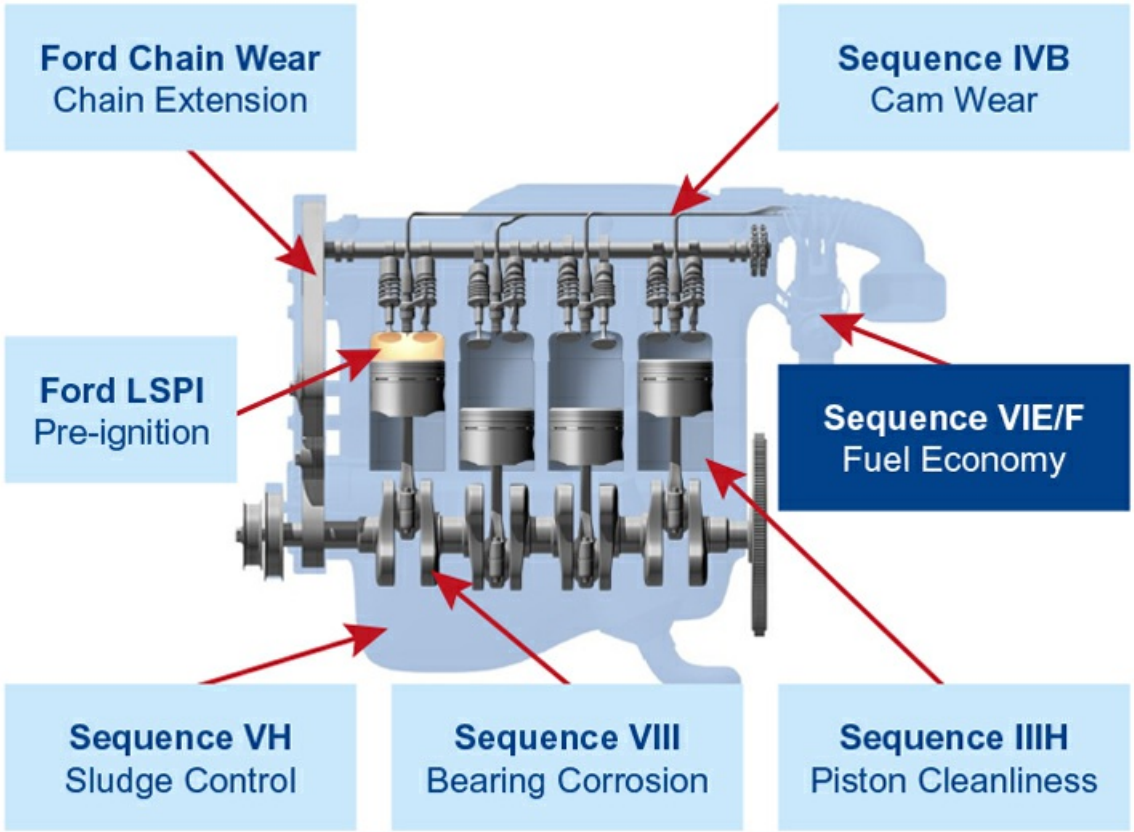


The ILSAC GF-6 category has been designed using a combination of new and legacy tests to meet OEM requirements for enhanced performance while also improving fuel economy.

ILSAC GF-6 was requested in 2012 and, at the time, the launch was scheduled for 2016. However, this has been a very complex process, which has involved the replacement of four engine tests and the introduction of three new ones – a record amount of change for any category development. Only the Sequence VIII remains unchanged.

	Test	Parameters	Reason for change
Revised	Sequence IIIH	Oxidation & deposits Aged oil viscosity Phosphorus retention	Modern engines run hotter with smaller sumps & require additional protection over GF-5
Revised	Sequence IVB	Valve train wear	Test engine replacement
Revised	Sequence VH	Sludge & varnish	Parts availability issues
Revised	Sequence VIE	Fuel economy	Parts availability issues
New	Sequence VIF	Fuel economy	Needed for SAE 0W-16 grade
	Sequence VIII	Bearing corrosion & shear stability	
New	Sequence IX	Pre ignition	OEMs are pushing engine operation into zones for FE that can result in LSPI
New	Sequence X	Timing chain wear	OEMs are concerned about wear in the real world and have no measurement test for this area

By including new limits and new tests, ILSAC GF-6 delivers improved deposits control, wear protection and efficiency as OEMs push the engine design envelope for performance, longevity and fuel economy. The new category also addresses two specific operational issues by providing LSPI protection (consistent with API SN PLUS) and, a newly added element, timing chain wear protection. In addition to better fuel economy across today's ILSAC viscosity grades, ILSAC GF-6 establishes a specification that now enables lower viscosity SAE 0W-16 oils to be introduced to support fuel economy improvement with a Certification Mark.



> *The completion of seven new ASTM engine test standards for a new API ILSAC category was unprecedented.*

It consumed a huge amount of industry resource and contributed to the delay in its introduction. Delays in test readiness resulted from multiple part changes, shifts in severity during development and the complexity of test procedure creation and standardisation.

All stakeholders are keen for an improved oil category development process to reduce complexity, time, and funding. API is currently sponsoring the Lubricants Specification Development Review Group to investigate changes in these processes.

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