Southwest Research Institute®

Fuels and Lubricants Research Division

Sequence VH Engine Test

(ASTM D8256)

Specifications

ILSAC, GF-6, SN, SN PLUS, SPObjective

- Evaluate the performance of a lubricant in controlling low-temperature engine deposits under operating conditions deliberately selected to accelerate deposit formation.

Field Service Simulated

- Moderate-temperature taxi service, urban and suburban delivery service, commuter service.

Test Fixture

- 2013 Ford 4.6 L fuel-injected, eight-cylinder, gasoline engine with roller followers, coolant-jacketed rocker covers, and camshaft baffles.

Test Parameters

- The test duration is 216 hours involving 54 cycles, each cycle consisting of three different operating stages.
- Fuel containing sludge precursors is used, and engine blow-by is intentionally increased.
- Rocker cover jacket temperature is cycled.

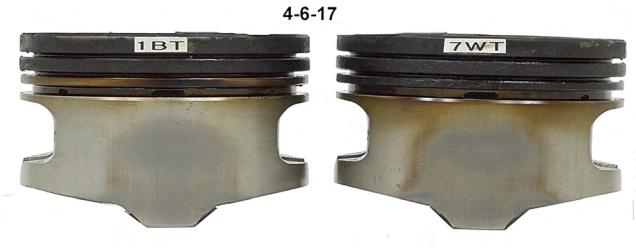
Test Parts Evaluation

Test Condition	Stage 1	Stage 2	Stage 3
Time, minutes	120	75	45
Engine speed, rpm	1200	2900	700
Intake manifold absolute pressure, kPa	69	66	record
Lubricant temp, °C	68	100	45
Coolant temp, °C	57	85	45
Rocker cover temp, °C	29	85	29

- Sludge deposits are rated on rocker arm covers, rocker arm cover baffles, timing chain cover, oil pan baffle, oil pan, and valve decks.
- Varnish deposits are rated on piston skirts (thrust) and rocker arm cover baffles.
- Piston compression rings are inspected for "hot" and "cold" sticking.
- Clogging of oil pump screen and piston oil rings is rated.

Used Lubricant Analysis

- Viscosity @ 40°C and 100°C (ASTM D445)
- Pentane insolubles (ASTM D893 B)
- Fuel dilution (ASTM D3525 modified)
- Total base number (ASTM D4739) Wear metals (ASTM D5185)



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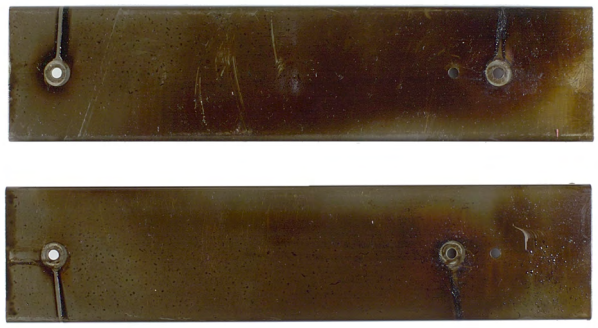
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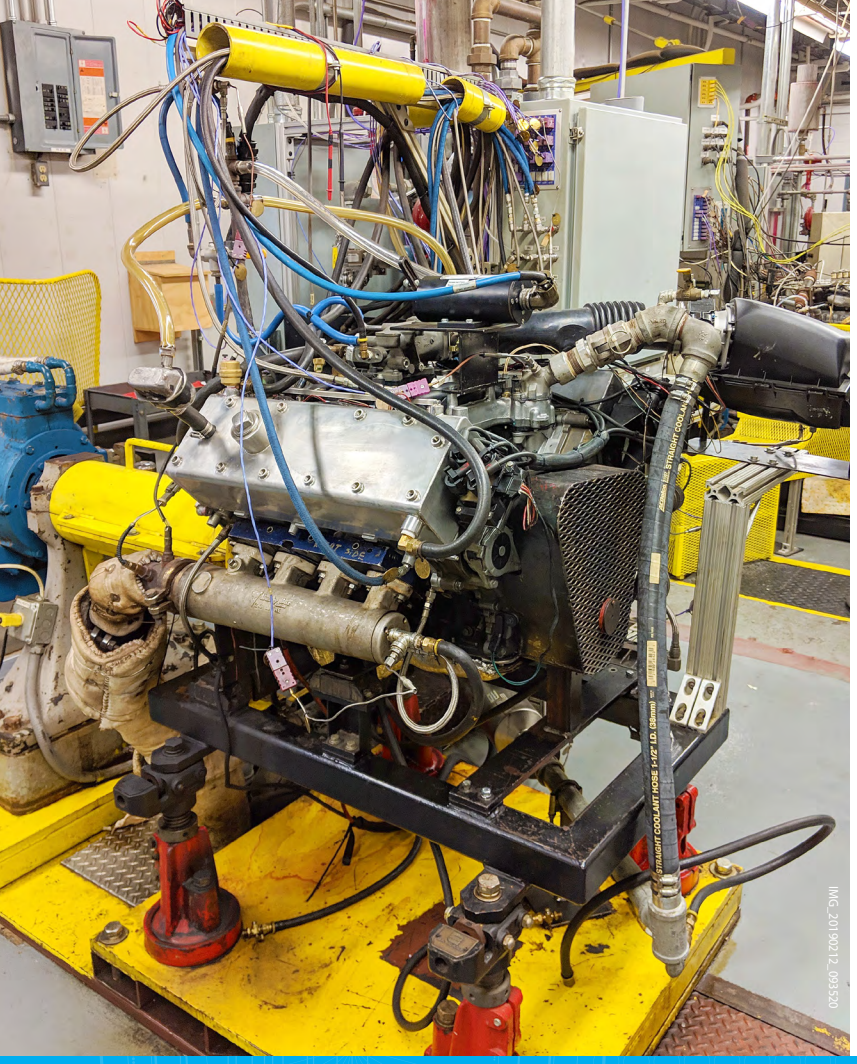
Pass/Fail Criteria

Parameter	SP/GF-6 Pass Limit
Average engine sludge	7.6
Rocker cover sludge	7.7
Average engine varnish	8.6
Piston skirt varnish	7.6
Oil screen clogging, %	rate & report
Hot stuck compression rings	none



We welcome your inquiries.
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