NMMA 40 HP General Performance Test

Specifications
- NMMA TC-W3®

Objective
- Evaluate the overall performance of a lubricant for application in two-stroke cycle, water-cooled, spark-ignition outboard engines.

Field Service Simulated
- Two-stroke cycle outboard engines operating on recommended fuel-lubricant ratios up to 100:1 using either premix or lubricant injection systems.

Test Fixture
- An OMC 40 hp, two-stroke cycle, water-cooled, spark-ignition outboard engine with specially designed pistons and rings is mounted in a 1700-gallon test tank.
- A closed coolant system maintains engine temperature and a special load wheel replaces the propeller to obtain proper rpm at wide-open throttle (WOT).

Test Parameters
- The test is conducted for 98 hours on a 55-minute WOT, five-minute idle cycle with a one-hour soak after each seven hours of running time.
- The following conditions are maintained throughout the test:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Engine speed, rpm</td>
<td>4500</td>
</tr>
<tr>
<td>Coolant-out temp, °C</td>
<td>77</td>
</tr>
<tr>
<td>Fuel flow, lb/hr</td>
<td>21.5</td>
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<tr>
<td>Fuel/lubricant ratio</td>
<td>100:1</td>
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</tbody>
</table>

Test Parts Evaluation
- General engine condition is evaluated, with particular emphasis on pistons and rings.

Used Lubricant Analysis
- None.

Pass/Fail Criteria
- Piston varnish, ring sticking, and general engine deposits are the primary evaluation areas.
- As good or better performance than NMMA 93738 reference lubricant is required within the specified tolerance in the areas of top ring sticking and average piston deposits.
We welcome your inquiries.

For additional information, please contact:

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