

# Leisure Marine and Small Engine Lubricants Section

## Recertified NMMA TC-W3® Lubricity Test

**SPECIFICATIONS**  
NMMA TC-W3®

**OBJECTIVE**  
The objective of this test is to evaluate the lubricity of a lubricant.

**FIELD SERVICE SIMULATED**  
All two-stroke cycle outboard engines are simulated.

**TEST FIXTURE**  
A Yamaha CE50S single-cylinder, air-cooled, two-stroke cycle, spark ignition engine is setup on a test bed and coupled to a high-speed 10 HP dynamometer. External cooling air is supplied to the engine by a variable delivery fan.

**TEST PARAMETERS**  
Each tightening begins with a stabilization period at the following conditions:

Engine, rpm	4000
Load	WOT
Spark plug gasket temperature, °F	338 (170°C)
Fuel/oil ratio	150:1

After stabilization, the cooling air is stopped and torque decrease is monitored as spark plug gasket temperature rises. Cooling air is restored when spark plug gasket temperature reaches 662°F (350°C). This procedure is repeated five times in each of two sets on both the reference and candidate lubricants.

**TEST PARTS EVALUATED**  
General engine condition is evaluated.

**USED LUBRICANT ANALYSIS**  
None.

**PASS/FAIL CRITERIA**  
The candidate mean torque drop must be less than or equal to the NMMA 3259 reference oil, using the 90% statistical confidence limits.

