

Leisure Marine and Small Engine Lubricants Section

ASTM D 4857 Yamaha Y-350M2 Detergency Test

SPECIFICATIONS

ASTM TC: Sequence I

OBJECTIVE

The purpose of this test is to evaluate the ability of a lubricant to prevent ring sticking and engine deposit formation.

FIELD SERVICE SIMULATED

Field service is typical of large displacement air-cooled engines in off-road use.

TEST FIXTURE

A Yamaha RD350B twin cylinder, air-cooled, two-stroke cycle, spark-ignition engine is set up on a test bed with a modified fuel system and coupled to a 50-HP dynamometer. The separate cylinder arrangement of this engine allows simultaneous evaluation of a reference and candidate lubricant. A variable delivery fan supplies cooling air to the engine.

TEST PARAMETERS

The test is conducted for 20 hours on a 5-minute idle cycle, 25-minute part throttle at 6000 rpm, with a one-hour soak period after each 150 minutes of running time. Air/fuel ratio and plug temperatures are closely controlled. Fuel/oil ratio is 50:1. Test conditions are as follows:

	5-Minute	25-Minute
Rpm	2200	6000
Power	Record	8.5
Spark plug gasket temp, °F	Record	375 (190.6°C)
AFR	Record	12:5

TEST PARTS EVALUATED

Piston assembly and general engine condition are evaluated at the end of the test.

USED LUBRICANT ANALYSIS

None.

PASS/FAIL CRITERIA

As good or better than ASTM 606 reference oil within the specified tolerance on average piston varnish and second ring sticking, exhaust port blocking, and plug fouling is required. The candidate may not scuff the piston.

