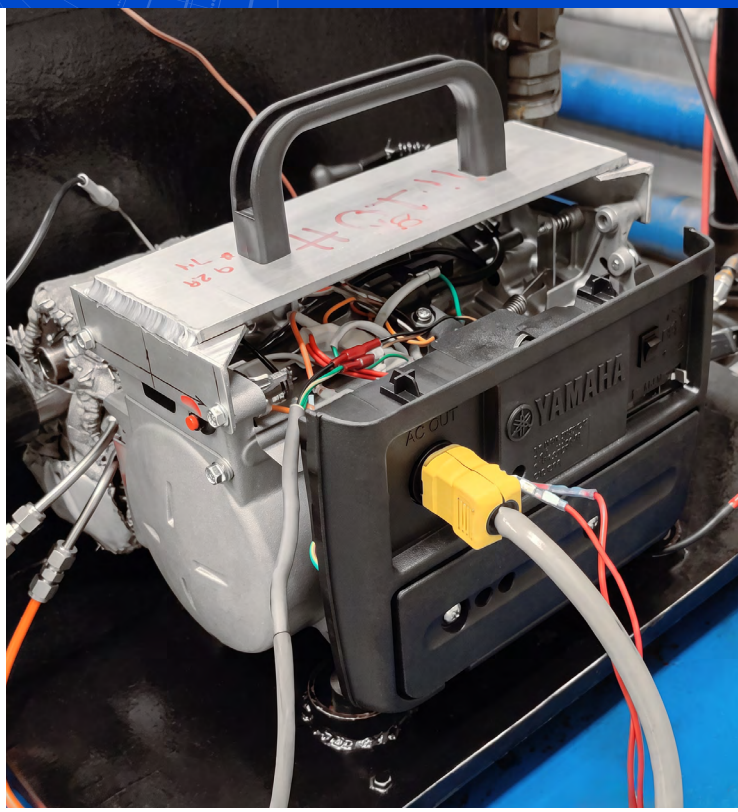
SOUTHWEST RESEARCH INSTITUTE®

Fuels and Lubricants Research Division

JASO M343-18 Exhaust System Blocking Test



Specifications

- JASO
- ISO 13738

Objective

- Evaluate the degree of engine output decrease due to deposits of carbon on the exhaust system and other components in relation to a lubricant used in two-stroke cycle engines.

Field Service Simulated

- Two-stroke cycle gasoline engine operation such as motorcycle, utility, and outboard engines.

Test Fixture

- A Yamaha ET-1, single-cylinder, forced air cooled, two-stroke cycle, spark-ignition engine is modified for testing by removing the fuel tank, installing a pressure tap in the reed valve block, and fitting the muffler assembly with exhaust gas temperature and sample taps.
- All baffles and insulation are removed and discarded.

Test Parameters

- A complete test program consists of "A" and "B" tests using two engines running simultaneously, one engine with the candidate lubricant and the other with Jatre reference lubricant.
- Each engine and exhaust system are thoroughly de-carbonized before starting a test.
- The "B" test is conducted by exchanging the lubricants in the engines; i.e., the engine that ran the reference lubricant for the "A" test will run the candidate lubricant for the "B" test.
- The test is conducted using premixed gasoline at 5:1 fuel/lubricant ratio.
- Cycle time is maintained at 120 ±45 seconds during the test.
- The exhaust gas CO %, engine speed at 800 W load, and cycle time are established within the first 10 minutes.
- Engines are operated at the following conditions until intake manifold pressure is greater than -2.0 kPa:

Parameter	No Load	800 W
Engine speed, rpm	~3600	3600
Inlet pressure, kPa	Record	< –2.0
Exhaust gas temp, °C	310	370
Exhaust gas CO concentration, %	4.5	4.5

Test Parts Evaluation

- None.

Used Lubricant Analysis

- None.

Pass/Fail Criteria

- Lubricants in each grade correspond to the following two-stroke cycle lubricants:
  - The FB and EGB grades correspond to lubricants that have high performance in lubricity, but are non-low-smoke type.
  - The FC and EGC grades correspond to lubricants typical of low-smoke type lubricants in the Japanese market.
  - The FD and EGD grades correspond to lubricants that have greater detergency performance as identified in International Standard 13738.

Grade	Minimum Exhaust Smoke Index
FB, EGB	45
FC, EGC	90
FD, EGD	90

We welcome your inquiries.

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