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INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

SURFACE VEHICLE RECOMMENDED PRACTICE

Submitted for recognition as an American National Standard

SAE J1223 | REV. MAY91

Issued 1980-12
Revised 1991-05-28

Superseding J1223 DEC80

MARINE CARBURETORS

(R) ***1. Scope***—This SAE Recommended Practice covers all carburetors used on permanently installed gasoline marine engines.

(R) **1.1 Purpose**—To recommend design practices and test procedures for carburetors used in a marine environment.

(R) ***2. References***

2.1 Applicable Documents—The following publications form a part of this specification to the extent specified herein.

2.1.1 ASTM PUBLICATIONS—Available from ASTM, 1916 Race Street, Philadelphia, PA 19103.

ASTM B117—Standard Method of Salt Spray (Fog) Testing

3. Design Practice

(R) **3.1** All vents and air bleeds shall normally be within the envelope of the air induction system. Vents or air bleeds external to the air induction system are permitted if they have flame arresting capability and are in compliance with all other requirements as stated in this document.

3.2 Each updraft and horizontal draft carburetor must have a device that:

3.2.1 Prevents fuel from being carried out of the carburetor and its induction system by the shock wave of a backfire or by reverse air flow; and

3.2.2 Returns collected fuel to the engine induction system after the engine starts.

3.3 All gaskets communicating to the outside of the carburetor shall be of a nonwicking type.

3.4 The carburetor shall be capable of operations throughout an ambient range from −7 to +80 °C (+20 to 176 °F) without failure.

3.5 The carburetor shall operate under conditions of 12 degree tilt from the carburetor design position.

(R) **3.6** The carburetor shall be capable of accommodating all pressures up to and including 0.05 MPa (7.5 psig) supply pressure without unseating the float mechanism.

4. Environmental Conditioning for Leakage Test

4.1 The carburetor shall be subjected to a storage temperature of −29 °C (−20 °F) for 48 h and returned to room temperature.

4.2 The carburetor shall be subjected to 1000 cycles of 13 to 17 g peak vertical accelerations at a rate of 80 cycles or less per minute with the duration at the base of the half-sine shock pulse a minimum of 6 ms, with the carburetor in its normal operating position.

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(R) 4.2.1 After the shock test described in 4.2 the steady state fuel delivery shall not change more than ±5% and no structural or mechanical failure of components is permissible.

4.3 The carburetor shall be mounted on an intake manifold, or sealed flange, with its flame arrestor, fuel, and vacuum lines attached (or line openings closed) and shall be subjected to a 96 h salt spray test at 35 °C (95 °F) per ASTM test B-117, using a 5% salt solution.

4.3.1 During the 96 h test, all linkage is to be cycled once during each 24 h interval.

4.3.2 After testing per 4.3, all moving parts shall operate without loss of function.

5. Leakage

5.1 There shall be no more than 5 cm^3 of fuel leakage external to the carburetor and its air induction system in 30 s when:

5.1.1 The fuel inlet shut-off valve is fixed in its full-open flow condition; and

5.1.2 Throttle plates are fixed at mid-position between closed and full-open. In the case of multiple throat carburetors having secondary throttle plates slaved to primary throttle plates, the primary plates may be so positioned as to allow the secondary plates to open no more than 50% to prevent fuel accumulation; and

5.1.3 The engine is cranked without starting for 30 s.

6. Identification

6.1 Evidence of compliance with this document shall be indicated by the marking "SAE J1223" together with the word "Marine" arranged in any suitable manner.

6.2 Marking should be as permanent in nature as practicable.

7. Notes

7.1 **Marginal Indicia**—The (R) is for the convenience of the user in locating areas where technical revisions have been made to the previous issue of the report. If the symbol is next to the report title, it indicates a complete revision of the report.

PREPARED BY THE SAE MARINE ENGINE FUEL SYSTEMS SUBCOMMITTEE OF
THE SAE MARINE TECHNICAL COMMITTEE

Rationale—During the review of Marine Carburetor Document J1223 DEC80, the Committee recommended the inclusion of paragraph 3.6 establishing a maximum fuel pressure limit at the carburetor inlet.

This was thought to be necessary at this time because of increased use of fuel injection systems whose inlet pressure normally exceed the working limit of a marine carburetor.

Relationship of SAE Standard to ISO Standard—Not applicable.

Application—This SAE Recommended Practice covers all carburetors used on permanently installed gasoline marine engines.

Reference Section

ASTM B117—Standard Method of Salt Spray (Fog) Testing

Committee Composition

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