Calibrating Fluid for Diesel Fuel Injection Systems —SAE J967c

SAE Recommended Practice
Last Revised October 1975

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LAND SEA AIR SPACE

PREPRINT

CALIBRATING FLUID FOR DIESEL FUEL INJECTION SYSTEMS—SAE J967c

SAE Recommended Practice

Report of Engine Committee approved August 1966 and last revised October 1975.

SCOPE—This SAE Recommended Practice defines the requirements of a calibrating fluid recommended for the flow bench testing, calibration, and flushing of fuel injection equipment, both in the laboratory and at service establishments.

PROPERTY REQUIREMENTS—The calibrating fluid shall be formulated from straight-run, low odor, fuel stocks, containing the additives as required to meet the specifications below:

Property	Specification Limit	Test Designation
Viscosity at 100°F (37.8°C)	2.40-2.85 (2.40-2.85) cSt (mm²/s)	ASTM D 445
Viscosity at 100°F (37.8°C)	34.0-35.5 SUS	ASTM D 2161
Specific gravity (60/60°F) (15.5/15.5°C)	0.820-0.830	ASTM D 1298
Gravity, API 60°F (15.5°C)	39-41	ASTM 287
Color, ASTM, max	3	ASTM D 1500
Color, ASTM, after storage of 6 months at 110 ±5°F (43.3 ±2.8°C), max.	4	ASTM D1500
Corrosion at 212°F (100°C), after 3 hours, copper	Pass - Classification 1	ASTM D 130
Galvanic corrosion	Pass - 10 days	FSTM 5322.1
Sulfur, % weight, max.	0.4	ASTM D 129
Distillation at 20% point, max.	470°F (243°C)	ASTM D 86
Flash point (P.M. closed cup), min.	170°F (76.7°C)	ASTM D 93
Trace sediment, % volume, max.	0.01	ASTM D 2273
Foaming tendency at 75°F (23.9°C) after 5 minutes blowing, ml, max.	50	ASTM D 892
Foam stability at 75°F (23.9°C) after 2 minutes settling, ml, max.	0	ASTM D 892
Rust protection (humidity cabinet) sand blasted panel	Pass - 100 hours Pass five out of six faces of three panels tested	ASTM D 1748

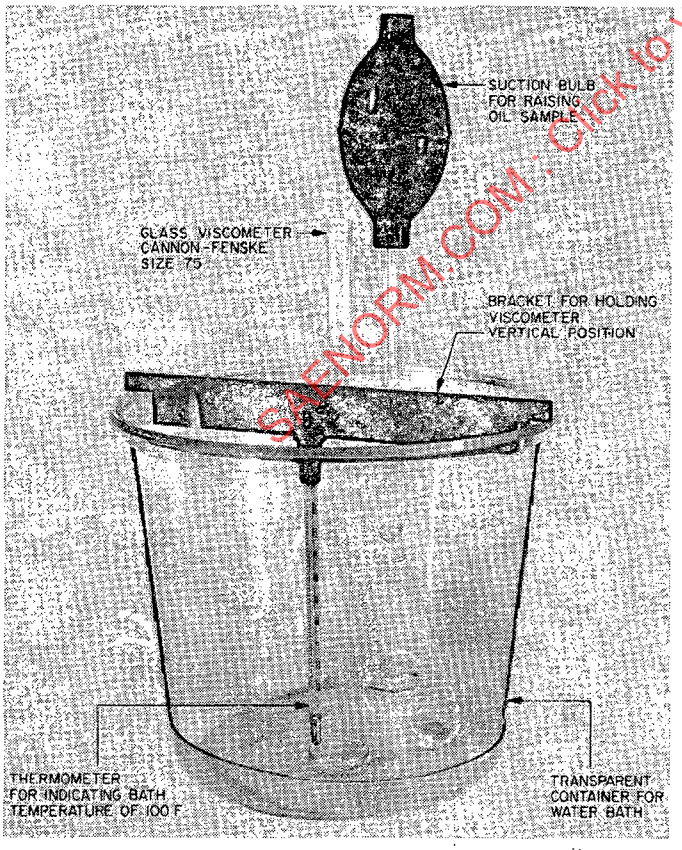

FIG. 1—VISCOMETER APPARATUS SETUP

The calibrating fluid must be nonirritating to the average skin. The rust and corrosion inhibiting and antiforming additives must remain in solution and maintain their effectiveness despite cyclic temperature variations of 100-150°F (37.8-121°C) imposed by testing.

The calibrating fluid should be anti-gumming, have good storage and thermal stability and shall be such that, without cleaning of the pump after calibration, proper functioning of the pump after the test is ensured after storage of the pump for a period of one year.

The calibrating fluid should be discarded when its viscosity in use rises above 3.2 cSt (36.6 SUS) at 100°F (37.8°C).

APPENDIX—METHOD FOR CHECKING VISCOSITY

PURPOSE—To provide a method for checking the viscosity of calibrating oil for conformance to the viscosity limits set forth in this recommended practice.

SCOPE—The apparatus and method described is intended for the use of service agencies to monitor the useful life of calibrating oil. The apparatus applies to oil only in the viscosity range specified in the recommended practice.

APPARATUS[1] —See Fig. 1.

1. Glass viscometer, Cannon-Fenske Routine, size 75, calibrated. See also ASTM D 445.
2. Thermometer, capable of liquid immersion and having good readability of temperature in the range of 100°F (37.8°C)
3. Transparent water bath container at least 6 in (150 mm) in diameter and approximately 7 in (175 mm) deep.
4. Bracket, wire form, or other holding device to support the viscometer vertically in the center of the water bath.
5. Clock or watch having sweep second hand.
6. Efflux time chart to relate viscometer instrument constant to SUS viscosity units specified in the recommended practice. (See Fig. 2.)

[1]Viscometer apparatus in kit form is available from Bacharach Instrument Co., 625 Alpha Drive, Pittsburgh, Pennsylvania 15238 under the part number 67-7075.