

SAE J1667 Snap-Acceleration Procedure Summary

Vehicle Preparation & Safety Check	
Transmission	Manual: Neutral Automatic: Park
Wheels	Chocked or immobilized
Air Conditioning	Off
Engine Brake	Deactivated
Anything altering normal acceleration	Deactivated
Throttle / Governor	Functioning normally
Exhaust Leaks	Fixed
Caution: Blue Smoke	Unburned hydrocarbons (oil or malfunctioning nozzle)
Caution: White Smoke	Water vapor (possible coolant leak)

Ambient Air Test Conditions	
Altitude	1,500 ft above sea level see Appendix B
Air Temperature	Below 38°F or above 86°F see Appendix B
Wind	Avoid or Use wind-sheltered area
Dry Air Density	0.0567 to 0.0771 lbm/ft ³ see Appendix B
Humidity	Avoid fog, rain, & snow

Smokemeter Calibration	
Warm-up	Warm & stabilize per manufacturer
Zero	No blockage of light beam & Adjust to 0.0% ± 1.0% Opacity
Full Scale	Completely block out light & Adjust to 100% ± 1.0% Opacity
Span (if required; K readout meters)	Use known neutral density filter & adjust to ±0.10 m ⁻¹

Test Validation Criteria	
Zero Shift	± 2.0% Opacity or ±0.10 m ⁻¹ smoke density (K)
Range of Test Snaps	5% Opacity difference max. or 0.50 m ⁻¹ (K) max.

Smokemeter Installation	
If Results in Units of Opacity	Get engine power from tune-up label or literature
Full Flow End-of-Line Meters	
• Light Beam Axis	Perpendicular to exhaust flow
• Light Beam Distance	As close as possible 2.76 inch maximum
Sampling Meters	
• Inserted	Upstream facing exhaust flow
• Distance from pipe wall	0.197 inch (5 mm) Minimum
Tachometer	Useful. Calibrate to manufacturer specs.

