The Engineering Society For Advancing Mobility Land Sea Air and Space®
INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

SURFACE VEHICLE RECOMMENDED PRACTICE

SAE J903

REV. MAY1999

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Submitted for recognition as an American National Standard

(R) Passenger Car Windshield Wiper Systems

Foreword—This Document has also changed to comply with the new SAE Technical Standards Board Format. References were added as Section 2, Definitions changed to Section 3. All other section numbers have changed accordingly.

1. Scope—This SAE Recommend Practice establishes for passenger cars, light trucks, and multipurpose vehicles with GVW or 4500 kg (10 000 lb) or less:

a. Minimum performance standards for windshield wiper systems.
b. Test procedures that can be conducted on uniform test equipment by commercially available laboratory facilities.
c. Uniform terminology of windshield wiper system characteristics and phenomena consistent with those found in guides for the use of engineering layout studies to evaluate system performance.
d. Guides for the design and location of components of the systems for function, servicing of the system, etc.

The test procedures and minimum performance standards, outlined in this document, are based on currently available engineering data. It is the intent that all portions of the document will be periodically reviewed and revised as additional data regarding windshield wiping system performance are developed.

2. References

2.1 Applicable Publications—The following publications form a part of the specification to the extent specified herein. Unless otherwise indicated, the latest revision of SAE publications shall apply.

2.1.1 SAE PUBLICATION—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J941—Motor Vehicle Drivers' Eye Location

2.1.2 ASTM PUBLICATIONS—Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM D 518—Test Method for Rubber Deterioration—Surface Coating
ASTM D 1171—Test Method for Rubber Deterioration—Surface Ozone Cracking Outdoors or Chamber (Triangular Specimens)

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2.2 Related Publications—The following publications are provided for information purposes only and are not a required part of this document.

2.2.1 SAE PUBLICATIONS—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J680—Location and Operation of Instruments and Controls in Motor Truck Cabs
SAE J687—Nomenclature—Truck, Bus, Trailer

3. Definitions

3.1 Windshield Wiper System—The wiper system consists of all the apparatus for cleaning the exterior surface of windshield glazing, together with the necessary devices and controls to start and stop operation.

3.2 Wiper Blade—A device for cleaning the effective wiper pattern, capable of receiving tip load exerted by an arm, comprising a suitable superstructure, and supporting and controlling a wiper blade element.

3.3 Wiper Blade Element—The resilient member of the wiper blade that contacts the windshield glazing surface.

3.4 Wiper Arm—A device to interconnect the wiper blade and the output shaft of the wiper motor linkage assembly. The wiper arm has the dual function of:

a. Maintaining the wiper blade into its desired position throughout the wipe pattern
b. Exerting a load onto the wiper blade sufficient for its function

3.5 Linkage Assembly—The multi-component member that connects to the wiper arm(s) (where applicable) to transmit its action into accurate motion for driving the wiper arm(s).

3.6 Wiper Control Valve/Switch—The manually actuated mechanism that allows passage of pneumatic or electrical signal to the wiper motor for activating the wiper system into its various operating or non-operating modes.

3.7 Wiped Area—The specific areas on the windshield glazing surface which shall be covered by the effective wiper pattern. These areas were developed as being compatible with viewing requirements necessary to operate a passenger car, light truck, or multipurpose vehicle.

3.8 Eyellipse—A statistical representation of the driver's eye location in a motor vehicle, as defined in 4.1.5 of SAE J941 (latest version) regarding head turn. For the purpose of this document, the head turn consideration in 4.1.5 of SAE J941 will not be used. For individual-type passenger car seats, use A.2.2 of Appendix A of SAE J941.

3.9 Effective Wipe Pattern—That portion of the wet windshield glazing surface which is cleared when the wiper blade travels through a cycle with system on highest frequency. Minimum Wiped Area is defined in 4.1.1.

3.10 Cycle—A cycle shall consist of wiper blade movement during system operation from one extreme of the wiper pattern to the other extreme and return.

3.11 Tandem Pattern—The pattern produced by the wiper blades moving in the same direction across the windshield glazing surface simultaneously. See Figure 1.

3.12 Opposed Pattern—The pattern produced by the wiper blades moving in opposite directions across the windshield glazing surface simultaneously. See Figure 2.

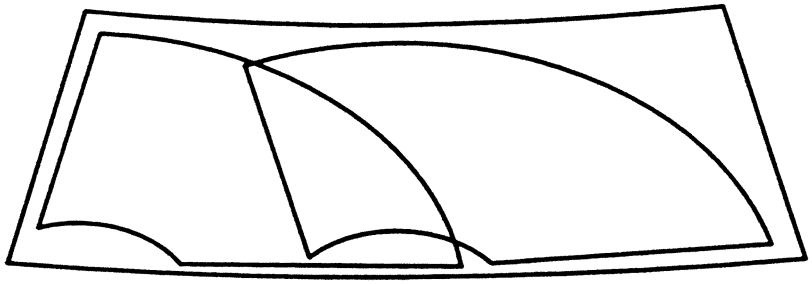

FIGURE 1—TANDEM PATTERN

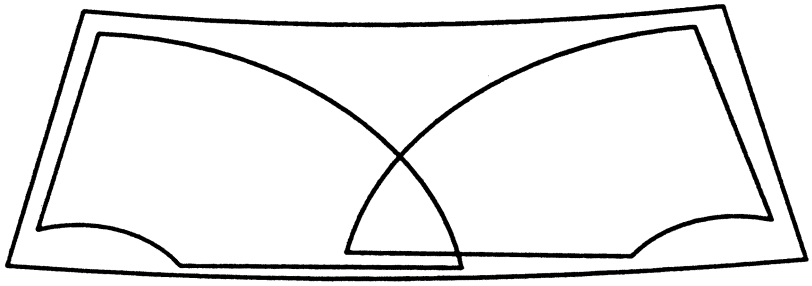

FIGURE 2—OPPOSED PATTERN

3.13 Single Arm Pattern—The pattern produced by a single wiper blade moving across the windshield glazing surface.

a. Single Arm (see Figure 3.)
b. Single Extending Arm (see Figure 4.)

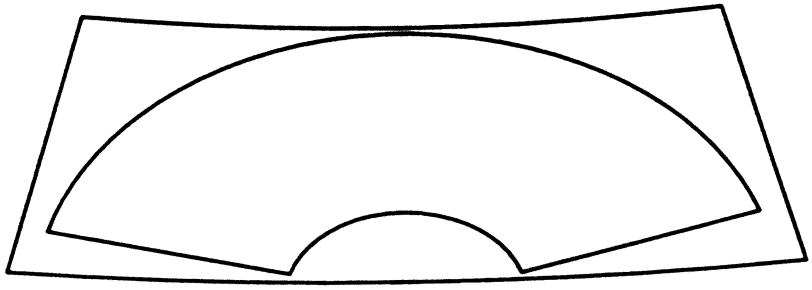

FIGURE 3—SINGLE ARM PATTERN