



SURFACE VEHICLE STANDARD

J1511™

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Superseded by ISO 5010

Steering for Off-Road, Rubber-Tired Machines

RATIONALE

This document is being cancelled and superseded by ISO 5010.

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This Technical Report has been declared "CANCELLED" as of July 2019, and has been superseded by ISO 5010. By this action, this document will remain listed in the respective index, if applicable. Cancelled Technical Reports are available from SAE.

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This document is technically equivalent to ISO 5010 for off-road machinery.

Foreword—This Document has also changed to comply with the new SAE Technical Standards Board Format.

- 1. Scope**—This SAE Standard applies to off-road rubber-tired machines having rated speed capability exceeding 20 km/h.

Only the following machine categories in SAE J1116 are included in the scope of this document.

- a. Earthmoving
- b. Other than earthmoving: except rollers and compactors
- c. General purpose industrial
- d. Forestry
- e. Specialized mining machinery

Applicable steering systems include the following means of providing power for steering:

- a. Manual steering
- b. Power-assisted steering
- c. Full-power steering

This document does not imply that secondary steering is mandatory. However, if secondary steering is provided, performance and test requirements are included.

- 1.1 Purpose**—This document specifies steering system performance and test criteria, including optional secondary steering systems, which enable uniform evaluation of the steering capability of rubber-tired, off-road work machines.

2. References

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

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

SAE J53 OCT84—Minimum Performance Criteria for Emergency Steering of Wheeled Earthmoving Construction Machines

SAE J1116 JUN86—Categories of Off-Road Self-Propelled Work Machines

SAE J1473 OCT90—Braking Performance—Rubber Tired Earthmoving Machines

2.1.2 ISO PUBLICATIONS—Available from ANSI, 11 West 42nd Street, New York, NY 10036-8002.

ISO 5010:1992(E)—Earth-moving machinery—Rubber-tyred machines—Steering requirements

3. Definitions

3.1 Steering System—A system including all machine elements between the operator and the ground contacting wheels used in steering the machine.

3.2 Manual Steering System—A system depending exclusively on the muscular power of the operator to effect steering of the machine.

3.3 Power-assisted Steering System—A system employing auxiliary power source(s) to supplement the muscular power of the operator to effect steering of the machine. Without auxiliary power source(s), the machine can be steered with muscular power only.

3.4 Full-power Steering System—A system in which steering is provided by power source(s). Without the power source(s), the machine cannot be steered with muscular power only.

3.5 Secondary Steering System—The system used to steer the machine in the event of failure of the normal power source(s) or engine stoppage.

3.6 Power Source

3.6.1 NORMAL POWER SOURCE—The means for providing power to effect steering in either power-assisted or full-powered steering systems; e.g., hydraulic pump, air compressor, electric generator.

3.6.2 SECONDARY POWER SOURCE—The means for providing power to the secondary system; e.g., hydraulic pump, air compressor, accumulator, battery.

3.7 Failure Of Normal Power Source—The complete and instantaneous loss of the engine or the normal steering power source output.

3.8 Steering Control Element—Manual control means by which the operator provides muscular power inputs to the steering system to effect the desired steering of the machine, including the typical steering wheel or other control means.

3.9 Steering Effort—The force exerted by the operator on the steering control element in order to steer the machine.

3.10 Tire Track Circle—The maximum diameter of the tire track path on the ground surface determined in accordance with 8.1.