

(R) Retardation Capability of Off-Highway Dumpers and Scrapers

Foreword—This Document has also changed to comply with the new SAE Technical Standards Board format. Definitions have changed to Section 3. All other section numbers have changed accordingly.

1. Scope—This SAE Standard applies to off-highway dumpers and scrapers equipped with an auxiliary retarder.

1.1 Purpose

1.1.1 To define test procedures for verifying that the machine will at least meet the manufacturer's published continuous retarding capability curve.

1.1.2 To recommend a common format for reporting retardation performance.

2. References

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

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

SAE J1473—Braking Performance—Rubber-Tired Earthmoving Machines

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

ISO 3450—Earth-moving machinery—Wheeled machines—Performance requirements and test procedures for braking systems

3. Definitions

3.1 Continuous Retarding Capability—The steady-state energy absorption rate at which the stated critical parameters of the machine's retarding system are stabilized and are not exceeded.

NOTE—The critical parameters must be defined by the manufacturer. The critical parameters will depend upon the retarder system design.

3.2 An Auxiliary Retarder—An energy absorbing device normally used to control the speed of the machine while descending grades.

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3.3 Maximum Continuous Power—The value describing the maximum descend speed and rimpull force which can be obtained without exceeding the manufacturer's critical parameters.

4. Methods of Testing—Satisfactory results from any one of the following methods will constitute verification of the published curve:

4.1 Towing

4.2 On-Grade

4.3 Dynamometer

5. Test Procedure

5.1 Facilities and Instrumentation

5.1.1 FACILITIES

5.1.1.1 Towing and On-Grade Test—The test course shall consist of a hard, dry surface (ground moisture may be present to the extent that it does not adversely affect the braking surface) with a well compacted base. The course shall be of sufficient length, smoothness, and uniformity to assure maintaining required test speed. Additionally, when using the towing test, the average grade in the direction of travel must be within $\pm 1\%$.

5.1.1.2 Dynamometer Test—Driving equipment may consist of motors, monitoring dynamometers, or rolls which shall be used within their manufacturer's stated range of limitations.

5.1.2 INSTRUMENTATION

5.1.2.1 A means to measure and record these parameters within the specified accuracy:

TABLE 1—PARAMETERS

Parameter	Instrument Accuracy
Towing Force	$\pm 3\%$
Machine Speed	$\pm 3\%$
Machine Mass	$\pm 2.5\%$
Dynamometer Power	$\pm 5\%$
Stated Critical Parameters	$\pm 3\%$
Ambient Temperature	$\pm 1\text{ }^{\circ}\text{C}$
Grade Slope	$\pm 0.5\text{ degrees}$

5.2 Test Requirements

5.2.1 Test to be conducted with the retarding system fully serviced and adjusted to the manufacturer's specifications.