



SURFACE VEHICLE STANDARD

J1789™

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Superseding J1789 AUG2014

Self-Propelled Sweepers and Scrubbers Braking Performance

RATIONALE

SAE J1789 to be amended to update its reference to SAE J2130. SAE J2130 has been cancelled and replaced by SAE J2130-1 and SAE J2130-2.

1. SCOPE

This SAE Standard applies to self-propelled, rider operated sweepers and scrubbers as defined in SAE J2130 with maximum machine level surface speeds up to 32 km/h. Machines capable of speeds equal to and greater than 32 km/h are not covered by this document.

1.1 Purpose

1.1.1 To provide minimum performance criteria for service braking systems, secondary stopping systems and parking brake systems for self-propelled street sweepers, industrial sweepers, and industrial scrubbers.

1.1.2 To provide test criteria by which machine braking system performance may be verified.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

SAE J2130-1	Identification of Self-Propelled Sweepers and Cleaning Equipment Part 1 - Machines with a Gross Vehicle Mass Greater than 5000 kg
SAE J2130-2	Identification of Self-Propelled Sweepers and Cleaning Equipment Part 2 - Machines with a Gross Vehicle Mass Up to 5000 kg

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Documents

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2.1.2 ISO Publications

Copies of these documents are available online at <http://webstore.ansi.org/>.

ISO 6014:1986 Earth-Moving Machinery - Determination of Ground Speed

ISO 6016:1982 Earth-Moving Machinery - Methods of Measuring the Masses of Whole Machines, Their Equipment and Components

ISO 9248:1992 Earth-Moving Machinery - Units for Dimensions, Performance and Capacities, and Their Measurement Accuracies

3. DEFINITIONS

3.1 SELF-PROPELLED SWEEPERS AND SCRUBBERS

Machines for sweeping and scrubbing floors and roads, as defined in SAE J2130-1 and SAE J2130-2.

3.2 BRAKE SYSTEMS

All the components which combine together to stop and/or hold the machine. Such systems include the control(s), means of brake actuation, and the brake(s).

3.3 SERVICE BRAKE SYSTEM

Primary system used for stopping and holding the machine.

3.4 SECONDARY BRAKE SYSTEM

System used for stopping the machine in the event of any single failure in the service brake system.

3.5 PARKING BRAKE SYSTEM

System used to hold a stopped machine in a stationary position.

3.6 BRAKE SYSTEM COMPONENTS

3.6.1 BRAKE CONTROL(S)

Component(s) directly activated by the operator to cause a force to be transmitted to the brake(s).

3.6.2 BRAKE ACTUATION SYSTEM

All components between the control(s) and the brake(s) which connect them functionally.

3.6.3 BRAKE(S)

Components which directly apply a force to oppose movement of the machine. Brakes may, for example, be of friction, electrical, hydrostatic, or other fluid types.

3.7 COMMON COMPONENTS

Components that perform a function in two or more brake systems.

3.8 MACHINE MASS

Mass of the machine that includes the heaviest combination of manufacturer approved equipment and components (i.e., cab, protective structures, etc.), rated payload, an operator of 75 kg, full fuel, lubricating, hydraulic, and cooling systems. The machine mass and payload distribution shall be according to the manufacturer's specification.

3.9 STOPPING DISTANCE, s

Distance travelled by the machine from the point on the test course at which the machine brake control is initially actuated to the point where the machine comes to a complete stop.

3.10 BURNISH

Procedure to condition the frictional surfaces of the machine brake(s).

3.11 BRAKE SYSTEM PRESSURE

Fluid pressure available to the brake control.

3.12 BRAKE APPLICATION PRESSURE

Fluid pressure measured at the brake.

3.13 MODULATED BRAKING

Capability to continuously and progressively increase and decrease the braking force by operation of the brake control.

3.14 TEST COURSE

Surface upon which the test is carried out.

3.15 COLD BRAKES

Expression designating brakes, where:

- The brakes have not been actuated in the previous 1 hour, or
- The brakes have been cooled to 100 °C or less when measured on the brake disk or on the outside of the brake drum, or
- In the case of totally enclosed brakes, including oil-immersed brakes, the temperature measured on the outside of the housing closest to the brake is below 50 °C or within the manufacturer's specifications.

3.16 MAXIMUM MACHINE LEVEL SURFACE SPEED (V)

Machine speed in kilometers per hour, determined in accordance with ISO 6014.

4. INSTRUMENT ACCURACY

Test instruments used to carry out the required measurements shall conform to the requirements of ISO 9248.

5. GENERAL REQUIREMENTS

The following requirements for brake systems apply to all machines described in Section 1.

5.1 Required Brake Systems

5.1.1 The machine shall have the following brake systems:

- a. A service brake system.
- b. A secondary brake system.
- c. A parking brake system.