

Brake Performance—Crawler Tractors and Crawler Loaders

Foreword—This Document has not changed other than to put it into 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 crawler tractors and crawler loaders as identified in SAE J1057 and SAE J1116 and having a manufacturer's maximum specified speed of 16 km/h.

1.1 Purpose—To provide performance criteria for service brake systems, secondary brake systems, and parking brake systems for crawler tractors and crawler loaders.

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

SAE J727—Nomenclature—Crawler Tractor

SAE J732—Specification Definitions—Loaders

SAE J742—Capacity Rating—Loader Bucket

SAE J818—Rated Operating Load for Loaders

SAE J1057—Identification Terminology of Earthmoving Machines

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

3. Definitions

3.1 Crawler Tractor—Crawler tractor is defined in SAE J1057 and is illustrated with parts nomenclature in SAE J727. The tractor may, in addition, have any combination of attachments mounted on it that are formally approved by the machine manufacturer.

3.2 Crawler Loader—Crawler loader is defined in SAE J1057 and SAE J732. The loader may have any type of bucket or other tool, and any other combination of mounted attachments that are formally approved by the machine manufacturer.

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- 3.3 Brake Systems**—All the components which participate in stopping and holding the machine. Such systems consist of a control, means of power transmission, and the brake itself.
- 3.3.1 SERVICE BRAKE SYSTEM**—The primary system used for stopping and holding the machine.
- 3.3.2 SECONDARY BRAKE SYSTEM**—The system used for stopping the machine in the event of any single failure in the service brake system.
- 3.3.3 PARKING BRAKE SYSTEM**—The system used to hold a stopped machine in a stationary position.
- 3.3.4 COMMON COMPONENT**—A component that performs a function in two or more brake systems.
- 3.4 Brake(s)**—The component which directly applies a force to oppose movement of the machine. Brakes may, for example, be friction, electrical, or fluid types.
- 3.5 Slide**—Slide, as used in this criterion, is defined as no track rotation during machine movement.
- 3.6 Machine Mass—Crawler Tractor**—Operating mass of the machine up to the mass of the heaviest combination of equipment approved by the manufacturer of the machine, an operator of 75 kg, and with the machine fully fueled and serviced.
- 3.7 Machine Mass—Crawler Loader**—Operating mass of the machine up to the mass of the heaviest combination of equipment approved by the manufacturer of the machine, a loaded bucket per SAE J742 not to exceed rated load as defined in SAE J818, an operator of 75 kg, and with the machine fully fueled and serviced.
- 3.8 Brake Force**—Decelerating force due to the brake system, plus rolling resistance, but it does not include engine torque.
- 4. Brake System Performance**
- 4.1 Common Component**—The brake system may use common components. However, a failure of any single component, or a failure of any single common component, shall not reduce the effectiveness of the machine's stopping capability to less than the secondary stopping performance, as defined in 4.3.1.
- 4.2 Service Brake System**—The machine shall have a service brake system.
- 4.2.1 BRAKE PERFORMANCE**—The service brake system is tested by towing. The service brake system when fully applied on a machine moving in either forward or reverse shall cause the tracks to slide or develop a brake force in Newtons equal to 9.8 times the operating mass in kilograms.
- 4.3 Secondary Brake System**—The machine shall have a secondary brake system capable of being applied by a person seated in the operator's seat. It also may be applied automatically.
- 4.3.1 BRAKE PERFORMANCE**—The secondary brake system is tested by towing. The secondary brake system when fully applied on a machine moving in either forward or reverse shall cause at least one track to slide or develop a brake force in Newtons equal to 3.3 times the operating mass in kilograms.
- 4.3.2 SECONDARY BRAKE SYSTEM RELEASE**—The secondary brake system shall be arranged so that it cannot be released from the operator's seat unless immediate reapplication can be made from the operator's seat to meet the requirements of 4.3.1.