

ANSI/ASABE S648-3 MAR2020

Agricultural Field Equipment Braking — Part 3: Requirements for Self-Propelled and Special Self-Propelled Machines



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Developed with the assistance of the members of the Association of Equipment Manufacturers (AEM), members of the Farm Equipment Manufacturers Association (FEMA) and members of the Agricultural Manufacturers of Canada (AMC). Approved as an ASABE and American National (ANSI) standard March 2020.

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1 Purpose

The purpose of this part of ANSI/ASABE S648, when used in conjunction with ANSI/ASABE S648-1, is to establish specific requirements, minimum performance criteria and performance test procedures that are common to self-propelled and special self-propelled agricultural machines.

2 Scope

This part of ANSI/ASABE S648 establishes test procedures and performance requirements for braking of self-propelled machines (SPM) and special self-propelled machines (SSP).

The requirements and minimum performance criteria are directed to operation and parking of agricultural equipment having a maximum design ground speed greater than 6 km/h (3.7 mile/h).

3 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ANSI/ASABE S648-1, Agricultural Field Equipment Braking — Part 1: General Requirements

ANSI/ASABE S648-4, Agricultural Field Equipment Braking — Part 4: Requirements for Towed Vehicles

ANSI/ASABE S648-5, Agricultural Field Equipment Braking — Part 5: Requirements for the Interface between Towing Vehicle and Towed Vehicles

4 Terms and Definitions

For the purposes of this document, the terms and definitions found in ANSI/ASABE S648-1 apply.

5 Requirements

5.1 Requirements applying to the construction and fitting of braking components

5.1.1 The braking components shall be designed, constructed and fitted as to enable the vehicle to comply with the following requirements in normal use.

5.1.1.1 These components shall be designed, constructed and fitted to resist the corrosion and aging phenomena to which it is exposed.

5.1.1.2 Brake linings shall not contain asbestos.

5.2 Brake system operation

5.2.1 All brake system controls shall be capable of being applied by an operator from the operator position.

5.2.2 Service brake system controls and parking brake system controls shall comply with ASABE/ISO 15077.

5.2.3 The force applied to the control device to meet the required stopping performance shall not exceed 600 N (135 lbf) for a foot operated control device and 400 N (90 lbf) for a hand operated control device. (see ISO 5697)

5.3 Service brake system

5.3.1 Operation

5.3.1.1 The service brake system shall have graduated braking.

5.3.1.2 The operator shall be able to operate the service brake system from the operating position while retaining control of the steering device with one hand.

5.3.1.3 Auxiliary braking devices, e.g. retarder, variable-ratio drive, engine exhaust brake, etc., may be considered part of the service brake system if one of the following conditions is met:

- the device is actuated simultaneously by the braking control; or
- auxiliary braking is automatic with normal braking procedure; or
- the manufacturer designates such device as a braking system.

5.3.1.4 If other systems receive power from the service brake system, any failure of those systems that reduces service brake system performance shall be considered as a failure in the service brake system.

5.3.1.5 The vehicle shall satisfy the prescribed stopping distance and preferably satisfy the prescribed mean fully developed deceleration for the relevant vehicle.

5.3.2 Differential service braking

5.3.2.1 Differential service braking can be obtained by providing two independent brake circuits, each connected to a separate right or left brake device.

5.3.2.2 The operator shall not be able to initiate differential service braking above 40 km/h (25 mile/h).

5.3.3 Braking system components

5.3.3.1 Service brake system, secondary braking system and parking brake system may share common components for functions and do not have to be three independent and separate systems.

5.3.3.2 Each brake control device (excluding endurance braking system control device) shall be designed in such a way that it returns to the fully-off position when released. This requirement shall not apply to a parking brake system control device (or that part of a combined control device) when it is mechanically held in an applied position.