Minimum Requirements for Wheel Slip Brake Control System Malfunction Signals —SAE J1230 OCT79

SAE Recommended Practice
Approved October 1979

THIS IS A PREPRINT WHICH IS SUBJECT TO REVISIONS AND CORRECTIONS. THE FINAL VERSION WILL APPEAR IN THE 1981 EDITION OF THE SAE HANDBOOK.

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MINIMUM REQUIREMENTS FOR WHEEL SLIP BRAKE CONTROL SYSTEM MALFUNCTION SIGNALS—SAE J1230 OCT79

SAE Recommended Practice

Report of the Brake Committee, approved October 1979.

1. Purpose—This SAE Recommended Practice establishes a uniform minimum set of functional areas to be monitored in the process of detecting malfunctions in discrete wheel slip brake control systems for motor vehicles, and establishes a minimum reaction to those detected malfunctions.

2. Scope—It is recognized that a malfunction in any one of the specified areas can degrade intended performance, but that levels of malfunction or combinations thereof must be considered by the vehicle designer in determining the point at which a failure indication is warranted. Consequently, the minimum reaction recommended by this document consists of making available a malfunction signal.

2.1 A discrete wheel slip brake control system is a wheel slip brake control system designed to control a single wheel, pair of wheels on the same axle, or other combination of wheels somehow coupled typically by a suspension, (such as a Tandem axle suspension).

2.2 A malfunction signal is the output or lack thereof given by a discrete wheel slip brake control system indicating the existence of a functional degradation as specified by Section 3 of this document. The malfunction signal may be indicated by visual, audio, electrical, or other appropriate means. When a visual malfunction indication involves a color, it shall be amber.

2.3 A failure warning signal is the signal given to the vehicle operator or inspector when certain malfunction signals or combinations thereof exist which result in unacceptable vehicle performance. The failure warning signal may be indicated by visual, audio, electrical, or other appropriate means. When a visual failure warning indication involves a color, it shall be red.

2.4 In motor vehicles, excluding trailers, the malfunction *or* failure warning indication shall be continuously available when the signal exists, providing that the vehicle electrical power system is intact and energized. As a minimum, failure warning must be visual.

2.5 In towed vehicles, or other vehicles without independent electrical power sources, the indication can be either active or nonactive.

2.5.1 If active, satisfactory system performance shall be indicated when the stoplight circuit is energized. Absence of this indication when the stoplight circuit is energized indicates existence of either a malfunction or a failure.

2.5.2 If nonactive, system condition shall be determinable with a minimum amount of effort on the part of the inspector.

3. Functional Monitoring

3.1 **Electrical Power**—Any failure within a system which causes detrimental loss of electrical power to any electronic control module within the discrete wheel slip brake control system shall result in a malfunction signal.

3.2 Loss of continuity of any speed sensor or its cable shall result in a malfunction signal. If the system contains more than one sensor, loss of electrical output from any one sensor at constant speeds above 20 mph may be used in place of the continuity criterion.

3.3 **Solenoid**—Loss of solenoid continuity shall result in a malfunction signal.

3.4 **Brakes**—Single electrical or electronic defects within a discrete wheel slip control system which totally deny braking action shall result in a malfunction signal, and the discrete wheel slip brake control system shall be capable of restoring braking action to the affected brakes.

3.5 **General**—Any cause, intentional by design, for disabling some or all of the discrete wheel slip brake control system shall result in a malfunction signal.