

AEROSPACE RECOMMENDED PRACTICE

SAE ARP4102/2

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Automatic Braking System (ABS)

RATIONALE

This document has been determined to contain basic and stable technology which is not dynamic in nature.

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1. SCOPE:

- 1.1 This document recommends design criteria for an Automatic Braking System. The ABS shall enhance braking performance under most aircraft configurations and all runway conditions.

2. REFERENCES:

- 2.1 Documentation: This annex should be used in conjunction with the ARP4102 Core Document. The following documents may also be applicable:

- SAE S-7 ARP4101, Flight Deck Layout and Facilities
- SAE S-7 ARP4102/4, Flight Deck Alerting System
- SAE S-7 ARP4105, Nomenclature and Abbreviations for Use on the Flight Deck

3. OPERATIONAL REQUIREMENTS:

3.1 General:

The system shall:

- a. optimize brake application and maintain a constant deceleration during landing roll
- b. provide full braking in case of rejected take-off (RTO)
- c. provide symmetric brake application
- d. reduce pilot workload

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- 3.1.1 Reliability and performance of the system shall be such as to inspire pilot confidence. A single failure shall not cause inadvertent brake application.
- 3.1.2 The ABS shall be compatible with the anti-skid system and shall be usable with the normal and alternate braking system.
- 3.1.3 Use of the system in routine operation shall not lead to abnormal wear of tires and brakes.

3.2 Functional Requirements:

- 3.2.1 A minimum of three levels of deceleration shall be provided for landing which shall be manually selectable.

MIN (LO)	approximately 0.1 g to 0.2 g
MED	approximately 0.2 g to 0.3 g
MAX	maximum available

For RTO level, MAX shall be available. If more levels are available, automatic selection as a function of speed reached prior to rejection is desirable.

- 3.2.2 Arming: Shall occur as follows:

- for landing by initial selection of the desired deceleration level, inflight or during rollout
- for RTO by selection of MAX (RTO, as appropriate) prior to or during ground run and advancing throttles to the take-off range.

When armed, the system shall be ready for immediate triggering.

Disarming: Shall occur through appropriate brake application, manual selection or by advancing throttles after having landed.

- 3.2.3 Brake application shall be triggered as follows:

- for landing when extending ground spoilers
- for RTO when retarding throttles

Unless provided by the anti-skid system, wheel spin-up protection shall be provided for touchdown and bounce. Brake application should not cause excessive aircraft derotation (nose wheel lowering).

Reselection of deceleration level shall be possible during rollout.

- 3.2.4 It shall be possible to conveniently override or deactivate the system at any time without exposing the system to inadvertent deactivation while maintaining visual contact with the runway.