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Superseding ARP4102/2

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.

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