NATIONAL AIRCRAFT STANDARDS COMMITTEE

AIRCRAFT INDUSTRIES ASSOCIATION OF AMERICA, INC., 610 SHOREHAM BUILDING, WASHINGTON 5, D. C.

SPECIFICATION - AIRCRAFT SEATS AND BERTHS

This specification defines the minimum performance and safety standards for seats and berths to be installed in certificated aircraft.

1. APPLICABLE SPECIFICATIONS

1.1 The latest issue and amendment of the following documents are made a part of this specification by reference to the applicable sections hereinafter noted.

1.1.1 CAA Safety Regulation Release No. 259, "Compliance of Equipment and Materials Used in Air Carrier Aircraft with Fire Prevention Requirements".

2. TYPES

2.1 This specification covers all types of crew and passenger seats and berths for civil aircraft use in the following categories:

Type I	Transport
Type II	Normal - Utility
Type III	Acrobatic

3. MATERIAL AND WORKMANSHIP

3.1 Materials shall be of a quality which experience and/or tests have conclusively demonstrated to be suitable for use in aircraft seats and berths. Workmanship shall be consistent with high-grade aircraft manufacturing practice.

3.1.1 Protection: All members of the structure shall be suitably protected against deterioration or loss of strength in service due to weathering, corrosion, abrasion or other causes where the type of material requires such protection.

3.1.2 Fire Precaution: The covering and upholstery and all other exposed material used in the seat or berth shall have flame-resistant properties as specified by CAA Safety Regulation Release No. 259. If ashtrays are installed in, or attached to, the seat or berth, they shall be of a self-contained, completely removable type.

4. DETAIL REQUIREMENTS

(1) INACTIVE FOR NEW DESIGN
SEE NAS 809

4.1 Design

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4.1.1 General: The seat shall be designed so that in any of its adjustable positions and when installed facing in a specified direction or directions, it will provide protection for the occupant in a manner compatible with the function for which the seat is designed, i.e., pilot, cabin attendant, check pilot, passenger, and the like.

4.1.2 Strength: All seats and berths intended for single occupancy shall be designed for the ultimate loads specified in Table I to which occupants are subjected. The loads shall be considered as acting separately and shall be based on a passenger weight of 170 pounds for Type I and 190 pounds (includes parachute) for Types II and III. The sideward, upward and downward loads, as specified in Table I, are the minimums corresponding to flight and ground load conditions prescribed in the applicable Civil Air Regulations. The forward loads correspond to the emergency conditions prescribed in the applicable Civil Air Regulations. For seats intended for multiple occupancy the loads must be increased accordingly. Ultimate loads are 1.5 times the limit loads.

TABLE I

Force Direction	Type I	Type II*	Type III
Forward	1020 lbs. (6.0 g)	1710 lbs. (9.0 g)	1710 lbs. (9.0 g)
Sideward	255 lbs. (1.5 g)	285 lbs. (1.5 g)	285 lbs. (1.5 g)
Upward	340 lbs. (2.0g)	570 lbs. (3.0 g)	855 lbs. (4.5 g)
Downward	765 lbs. (4.5 g)	1254 lbs. (6.6 g)	1710 lbs. (9.0 g)

*Civil Air Regulations require use of parachute in utility category aircraft operated in acrobatic flight when carrying passengers.

4.1.2.1 Ultimate Load Strength: The seat or berth in any of its adjustable positions while installed facing in a specified direction or directions, when occupied by maximum number of occupants, shall be capable of withstanding ultimate loads without failure for at least three (3) seconds.

4.1.2.2 Limit Load Strength: The seat or berth in any of its adjustable positions shall be capable of withstanding the limit loads without suffering detrimental permanent deformation. At all loads up to

these limit loads the deformation shall be such as not to interfere with safe operation of the airplane. (Note: this limit load requirement is not applicable to the forward loading since it is an emergency condition).

4.1.3 Safety Belt Anchorages: When anchorages for safety belts are provided they shall be of a type which will permit self-aligning of the belt and fitting.

4.1.4 Shoulder Harness Anchorages: When anchorages for shoulder harnesses are provided, they shall be so located as to ensure they will be above the shoulder level of the occupant.

4.1.5 Projections: The surfaces of the seat shall be free from sharp edges or any projections which may chafe the safety belt or harness webbing. Projections, sharp corners, and other hazardous features, against which occupants may be thrown during a crash, shall be avoided insofar as possible. Any unavoidable features of this nature shall be adequately padded.

4.2 Marking: Each seat or berth shall be legibly and permanently marked with the following information:

Manufacturer's Name
Model Number or Model Name
Seat Type
Serial Number or Date of Manufacture
National Aircraft Standard Number (NAS____)

4.3 Qualification Tests: Tests shall be conducted as necessary to demonstrate the following: (a) that seats or berths manufactured in accordance with this specification are capable of supporting the limit loads without detrimental permanent deformation; (b) that, at all loads up to limit loads, the deformation shall be such as not to interfere with the safe operation of the aircraft; and (c) that the structure is capable of supporting the ultimate loads specified herein without failure for at least 3 seconds.

4.3.1 Detail Qualification Test Requirements: The seat or berth shall be loaded in tests such that the loads imposed on the seat or berth by the occupant(s) in conjunction with the safety belt or belts and their attachments are accurately simulated by means of a block or frame or dummy, said block or frame or

dummy being restrained in the seat or berth by the belt or belts attached to their fittings. The tests may be conducted in a jig simulating installation conditions.

4.3.1.1 When a seat or berth is to be installed or adjusts to face in other than the forward direction, sufficient tests shall be made to substantiate the seat strength for all intended positions.

4.3.1.2 When testing for a particular load condition of a vertically or horizontally adjustable seat, the most critical seat position associated with that load shall be used for the test.

4.3.1.3 Where the safety belt or belts or harness are not attached to the seat or berth structure, the seat or berth shall be tested for the loads which would be imposed on such installation.

4.3.2 Flame-Resistance Test of Seat Covers: Specimens of the seat covering and upholstery shall meet the tests outlined in CAA Safety Regulation Release No. 259.

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