TECHNICAL SPECIFICATION

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Aircraft — Integrated data processing materials management — Bar coding

Aéronefs — Gestion des matériels par traitement informatisé de données intégrées — Codes à barres

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ISO/TS 21849 was prepared by Air Transport Association of America, Inc. (as Chapter 9 of ATA SPEC2000, Revision 2001.1) and was adopted (without modification except those stated in Clause 2 of this document) by Technical Committee ISO/TC 20, *Aircraft and space vehicles*.

iii

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Aircraft — Integrated data processing materials management — Bar coding

1 Scope

This Technical Specification establishes the requirements for receipts and permanent bar code identification in the field of integrated data processing management for aircrafts.

NOTE   It has been noted that the use of certain ISO documents prepared by ISO/IEC JTC 1/SC 31, *Automatic identification and data capture*, might be appropriate in the application of this Technical Specification. This matter will be addressed in the ongoing revision of this Technical Specification.

2 Requirements

Requirements are the technical recommendations made in Chapter 9, Sections 9-1 and 9-4, together with certain amended data elements, of the following publication (reproduced on the following pages and in Annex A), which is adopted as a Technical Specification:

ATA SPEC2000, Revision 2001.1, *Integrated data processing materials management, Chapter 9, Bar coding*

Manufacturers and suppliers can obtain CAGE/NCAGE Code information at URL: http://www.ccr.dlis.dla.mil/ or call for assistance at 1-888-227-2423. Non-U.S. Companies use same WWW address, then select Non-U.S. Registrants on the home page.

For the purposes of international standardization, the modifications outlined below shall apply to the specific clauses and paragraphs of publication ATA SPEC2000, Revision 2001.1.

Page 4

This part is information which is relevant to the Air Transport Association of America, Inc. (ATA) publication only.

Page 12, 7.1

Correct the error that was introduced when reproducing the original document, ATA SPEC2000, Revision 2001.1. Replace

"(Figure 9-4.7.)", "(Graphic Removed During Production -Duplicate)", "Figure 9-4.8. Data in Data Matrix Format"

by "Figure 9-4.7. Example of Data Matrix Format- In-Service Part".

Page 13, 8.1.1

Correct the error that was introduced when reproducing the original document, ATA SPEC2000, Revision 2001.1. Replace

"8.1.1"

by "8.1"

and replace

"Figure 9-4.9"

by "Figure 9-4.8".

3 Revision of Chapter 9 of ATA SPEC2000, Revision 2001.1

It has been agreed with the Air Transport Association of America, Inc. that ISO/TC 20 will be advised in the event of any revision or amendment of Chapter 9 of SPEC2000, Revision 2001.1. To this end, Aerospace Industries Association of America Inc. (AIA) will act as a liaison body between ATA and ISO. ISO/TC 20 will also advise ATA and AIA of any revision or amendment to ISO/TS 21849.

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Air Transport Association

SPEC 2000
e-business standards

Integrated Data Processing Materiels Management

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b09ad99949a2/iso-ts-21849-2003

**Revision 2001.1
(9th Revision)**

SPEC2000 Program
Air Transport Association of America, Inc.
1301 Pennsylvania Ave., N.W.
Washington, DC 20004-1707

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Chapter 9.   Bar Coding

9-1.   Introduction

Accuracy of information exchanged within the airline industry can be improved by using methods other than manual keying. An alternative is machine-readable code as exemplified by bar code.

Bar code technology provides an accurate, easy, and inexpensive method of data storage and data entry for computerized information management systems.

Establishment of a common set of specifications provides the base on which to build specific requirements for the exchange of supply information.

1. Policy

The airline industry designates specific bar code symbologies which are detailed in the respective sections of this chapter. Use of bar codes should be a cooperative effort by trading partners within the industry to achieve improved data accuracy and productivity while reducing cost.

2. Purpose

To define the applications for bar code technology within the material management activities in the airline industry.

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3. Guidelines

ISO/TS 21849:2003

The bar code symbologies used in this specification should be in accordance with Automatic Identification Manufacturers (AIM) Uniform Symbology specifications. The print quality should be in accordance with the American National Standards Institute (ANSI) Bar Code Print Quality - Guideline [ANSI X3.182-1990 (R1995)] with a minimum Grade C print quality. An ANSI print quality grade of 'C' is the minimum acceptable standard.

When using the Data Matrix symbology, both the square and rectangular formats are acceptable. The Data Matrix Error Correction Code200 (ECC200) specified by AIM is the only acceptable version. Direct Part Mark (DPM) quality ratings are still in development at this time.

Only valid character, defined as part of the bar code character set and the ATA Common Support Data Dictionary (CSDD) should be used.

4. Data Text

All bar codes shall have the data printed in text above, below, or adjacent to the printed bar code symbols.

The interpretation of the pertinent encoded bar code data shall be presented in a human-readable font. The data text of the bar code shall represent the encoded data. The data text is intended to be used only for human recognition and is not intended to be machine readable.

9-4   Permanent Bar Code Parts Identification

1. Command Code

Not Applicable

1.1. Purpose

In order that automated processes may be used in parts handling, and to facilitate "cradle-to-grave" tracking of serialized parts, an industry task force has defined a **Permanent Bar Code specification** that uses Code 39, Code 128 or Data Matrix symbology. Code 128 is the preferred linear symbology for Permanent Parts Identification.

Traditionally, aircraft parts manufacturers have used Part Number and Serial Number in combination to uniquely identify a part. However, where a modification affecting form, fit, or function is applied to the part, the airworthiness authorities require a new part number to be assigned. This process breaks the Part/Serial Number relationship used to track the part, thereby presenting problems for the owners, users, and repairers of the part. This specification defines the data format for a universal serial number that provides a 'social security number' concept to uniquely identify the part throughout its life.

This specification defines standard data and formats for the identification of both new and in-service parts:

A Part Serial Number (SER) or Unique Component Identification Number (UCN), along with a code identifying the party assigning it, will uniquely identify the part throughout its life, whether or not the Part Number changes. The combination of the CAGE Code plus the unique SER/UCN number creates a 'social security number' for the part. Parts already in service may be labeled using the owner/user's CAGE Code instead of the manufacturer's. However, this does not preclude a manufacturer's code being used where the permanent bar code identity is retroactively applied by the manufacturer, the manufacturer's agent, or the owner when in receipt of the manufacturer's authority. When the original Serial Number for an in-service part is not unique to the manufacturer, the manufacturer should assign a separate UCN. To maximize consistency, the MFR, or SPL should always be the first data element in the bar code.

From a data perspective, the MFR and SPL represent the same type of data, specifically, a company's five character CAGE Code (outside North America it is called the NATO Manufacturers Supplier Code). From a labeling perspective, the MFR or SPL are used to represent whether the manufacturer or someone else had the responsibility for marking the parts and insuring that the Serial Number (or UCN) is unique. Similarly, the SER and UCN are also the same type of data. Typically, the MFR would have the numbering authority to insure that the SER is unique within their CAGE Code when the part is new. Any other company marking an In-Service part with the SPEC2000 data format would use the SPL/UCN combination.

The bar coded information will consist of a **Text Element Identifier (TEI)** and the corresponding data. The text of the data will be printed adjacent to the bar code to allow part identification without bar code reader equipment. As a goal, all parts should be identified by bar code unless technically impractical. For some parts (e.g., jet engine parts) the technology may not yet exist to label/mark the parts.

Serialized parts require different identification than non-serialized parts.

The bar code shall be on the part itself or on one or more data plates/labels, depending on shape and technical constraints.

There are two categories of parts: Serialized and Non-Serialized, each having different data requirements. See following outline:

Category A – Serialized Parts

I. **New** Serialized Part Marking (Ref. [Figure 9-4.1.)

   preferred MFR/SER and PNR

II. **In-Service** Serialized Part Marking (Ref. [Figure 9-4.2)
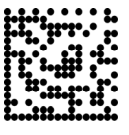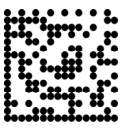
   preferred SPL/UCN

Category B - Non-Serialized Part Marking

   MFR/PNR Solution

2. *Category A* - Serialized Parts

(Tracked, non-tracked, uniquely identified, critical, regulatory requirements, etc.)

Figure 9-4.1.   I. New Serialized Parts

Data Elements	1-D Linear Barcode (Preferred on Data Plates)	2-D Data Matrix (Preferred on Direct Part Marking)
MFR / SER	MFR 12345 SER ABC123	MFR 12345 * SER ABC123 Encoded in Data Matrix: MFR 12345/SER ABC123 * Human Readable Interpretation does not include embedded slash "/" . No Carriage Return is encoded in 2-D Data Matrix.
PNR	PNR F100F200	PNR F100F200 (Conditional on DPM Applications)
DMF (Conditional Data Element)	DMF 082000	DMF 082000