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**NOT MEASUREMENT
SENSITIVE**

MIL-STD-130M
XX XXXXXXXX 200X
SUPERSEDING
MIL-STD-130L
10 October 2003

NOTE

This review draft incorporates recommended changes without notation. The reviewer is encouraged to review the entire text to assure proper context throughout.

**DEPARTMENT OF DEFENSE
STANDARD PRACTICE
IDENTIFICATION MARKING OF
U.S. MILITARY PROPERTY**



AMSC N/A

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FOREWORD

FOREWORD

- 1.** This standard is approved for use by all Departments and Agencies of the Department of Defense (DoD).
- 2.** This issue of MIL-STD-130 provides further clarification, increased insight and guidance for the implementation of machine-readable information (MRI) processes for item identification marking and facilitating automatic data capture. Based solely on non-Government standards, MRI provides a valuable tool for life-cycle asset management from acquisition through manufacture to logistics and final disposition. However, application of human-readable (HRI) item identification marking is still necessary for many end users of the identified item. Finding the most effective use of both, either singly or in combination, is the prime responsibility of the acquiring activity.
- 3.** This standard provides the criteria by which product designers develop specific item identification marking requirements. Product designers must include in product definition data specific requirements as to marking content, size, location, and application process. Simply stating in the product definition data that the marking be in accordance with this standard is not sufficient for initial manufacture and subsequent production of replenishment spare items.
- 4.** Definitions provided in Section 3 and used throughout this standard are oriented primarily towards the product designer's use of prevailing engineering documentation terminology. Some conflict with terminology applied throughout the Automatic Information Technology disciplines may occur. Every effort has been made to ascertain potential conflicts and provide clear definitions for application in this standard and to cite the published source of existing definitions used.
- 5.** Acquiring activities must also properly apply this standard in their contractual instruments. As with product designers, simply stating that items produced under a contract shall be marked per MIL-STD-130 is not sufficient. They must clearly state that item identification marking is required and that development of specific item marking requirements be based on the criteria provided in this standard.
- 6.** Comments, suggestion, or questions on this document should be addressed to: MSG/MMF, 4375 Chidlaw Rd., Bldg 262, Rm S008, Wright-Patterson AFB OH 45433-5006, or email to AFCode16@wpafb.af.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at www.dodssp.daps.mil.

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1. SCOPE

1.1 Scope. This standard provides the item marking criteria for development of specific marking requirements and methods for identification of items of military property produced, stocked, stored, and issued by or for the Department of Defense. This standard addresses criteria and data content for both human-readable information (HRI) and machine-readable information (MRI) applications of item identification marking.

1.2 Application exclusions. Military items covered by the following documents are excluded from the provisions of this standard unless otherwise specified in detail specifications, standards, or contracts.

SPECIFICATIONS

DEPARTMENT OF DEFENSE

| | |
|---------------|--|
| MIL-PRF-1 | Electron Tubes, General Specification for. |
| MIL-B-18 | Battery, Non-Rechargeable, Dry (<u>Inactive for new design</u>) |
| MIL-L-15040 | Label, Garment (Woven, Rayon) |
| MIL-PRF-19500 | Semiconductor Devices, General Specifications for |
| MIL-DTL-32075 | Label: For Clothing, Equipage, and Tentage, (General Use) |
| MIL-PRF-38534 | Hybrid Microcircuits, General Specification for |
| MIL-PRF-38535 | Integrated Circuits (Microcircuits) Manufacturing, General Specification for |
| MIL-R-81128 | Rocket Motors, Identification of Parts and Assemblies, Requirements for |

STANDARDS

DEPARTMENT OF DEFENSE

| | |
|---------------|--|
| MIL-STD-290 | Packaging and Marking of Petroleum and Related Products |
| MIL-STD-709 | Ammunition Color Coding |
| MIL-STD-792 | Identification Marking Requirements For Special Purpose Components |
| MIL-STD-1168 | Ammunition Lot Numbering |
| MIL-STD-1285 | Marking of Electrical and Electronic Parts |
| MIL-STD-13231 | Marking of Electronic Items |

INDUSTRY

| | |
|-----------------|---|
| SAE-AMS 2806 | Identification; Bars, Wire, Mechanical Tubing, and Extrusions; Carbon and Alloy Steels and Corrosion and Heat Resistant Steels and Alloys |
| SAE-AMS 2807 | Identification; Carbon and Low-Alloy Steels, Corrosion and Heat Resistant Steels and Alloys; Sheet, Strip, Plate, and Aircraft Tubing |
| SAE-AMS-STD-184 | Identification Marking of Aluminum, Magnesium, and Titanium |

| | |
|-----------------|--|
| SAE-AMS-STD-185 | Identification Marking of Copper and Copper Base Alloy Mill Products |
| SAE-ARP6002 | Hose, Standard, Marking, Aircraft |
| ASTM B660 | Standard Practices for Packaging/Packing of Aluminum and Magnesium Products (DoD adopted) |
| ASTM B666 | Standard Practice for Identification Marking of Aluminum and Magnesium Products. (DoD adopted) |

1.3 Application and tailoring. Evaluation by the acquiring activity of the requirements (sections, paragraphs, or sentences) in this standard is essential to determine the extent to which each requirement can be tailored and placed on contract in order to impose only the minimum essential needs of the Government.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, and 5 of this standard. This section does not include documents cited in other sections of this standard or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements cited in sections 3, 4, and 5 of this standard, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

SPECIFICATIONS

FEDERAL

| | |
|-----------|---|
| A-A-208 | Ink, Marking, Stencil, Opaque (Porous and Nonporous Surfaces) |
| A-A-56032 | Ink, Marking, Epoxy Base |

DEPARTMENT OF DEFENSE

| | |
|---------------|--|
| MIL-DTL-15024 | Plates, Tags and Bands for Identification of Equipment |
| MIL-DTL-31000 | Technical Data Packages |

STANDARDS

DEPARTMENT OF DEFENSE

| | |
|--------------|--|
| MIL-STD-1686 | Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices) |
|--------------|--|

HANDBOOKS

DEPARTMENT OF DEFENSE

| | |
|--------------|--|
| MIL-HDBK-263 | Electrostatic Discharge Control Handbook for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices) (Metric) |
|--------------|--|

MIL-HDBK-505 Definitions of Item Levels, Item Exchangeability, Models, and Related Items

MIL-HDBK-1812 Type Designation, Assignment and Method of Obtaining.

(Copies of these documents are available online at <http://assist.daps.dla.mil/quicksearch/> or www.dsp.dla.mil or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation or contract.

OFFICE OF THE UNDER SECRETARY OF DEFENSE

Department of Defense Unique Identification (UID) Policy Memo

Department of Defense Guide to Uniquely Identifying Items

(Copies of these documents are available on line at <http://www.acq.osd.mil/uid/policy.html> or from the Office of the Under Secretary of Defense, 3000 Defense Pentagon, Washington, DC 20301-3000)

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

NASA-STD-6002 Applying Data Matrix Identification Symbols on Aerospace Parts

NASA-HDBK-6003 Application of Data Matrix Identification Symbols to Aerospace Parts Using Direct Marking Methods/Techniques

(Copies of these documents are available on line at <http://standards.nasa.gov> or from USAInfo, 1092 Laskin Road, Virginia Beach, Virginia, 23451).

DEFENSE LOGISTICS INFORMATION SERVICE

DoD 4100.39-M Federal Logistics Information System (FLIS) Procedures Manual

(Copies of this document are available from the Defense Logistics Information Service (DLIS), 74 Washington Ave. N, Ste 7, Battle Creek, MI 49017-3084 or www.dlis.dla.mil.)

NATIONAL INDUSTRIAL SECURITY PROGRAM

DOD 5220.22-M National Industrial Security Program Operating Manual

(Copies of this document is available online at <http://www.dtic.mil/whs/directives/> or from the Superintendent of Documents, U. S. Government Printing Office, Washington, DC 20402-0001.)

2.3 Non-Government publications. The following document(s) form a part of this document to the extent specified herein. Unless otherwise specified, the issues of documents are those cited in the solicitation or contract.

AIR TRANSPORT ASSOCIATION OF AMERICA

ATA SPEC 2000 Chapter 9 – Automated Identification and Data Capture

(Copies are available from Air Transport Association of America, Inc., Distribution Center, PO Box 511, Annapolis Junction, MD 20701, or <http://www.airlines.org>)

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

- ASME Y14.24 - Types and Applications of Engineering Drawings (DoD adopted)
- ASME Y14.100 - Engineering Drawing Practices

(Copies are available from ASME Information Central Orders/Inquiries, P.O. Box 2300, Fairfield, NJ 07007-2300 or www.asme.org.)

AUTOMOTIVE INDUSTRY ACTION GROUP

- AIAG B-4 Parts Identification and Tracking Application Standard

(Copies of this document are available from Automotive Industry Action Group, Dept 77839, P.O. Box 77000, Detroit, MI 48277-0839, or <http://www.aiag.org>.)

EAN INTERNATIONAL UNIFORM CODE COUNCIL

- EAN.UCC General EAN.UCC Specifications

(Copies of this document are available from Uniform Code Council, 7887 Washington Village Dr., Dayton, OH 45459-8605, or <http://www.uc-council.org>.)

ELECTRONIC INDUSTRIES ALLIANCE

- EIA 649 National Consensus Standard for Configuration Management
- EIA 706 Component Marking Standard
- EIA 802 Product Marking Standard

(Copies of these documents are available from Electronic Industries Alliance (EIA), 2500 Wilson Blvd., Arlington, VA 22201, <http://www.eia.org>.)

**INTERNATIONAL ORGANIZATION FOR STANDARDIZATION /
INTERNATIONAL ELECTROTECHNICAL COMMISSION**

- ISO/IEC 15415 Bar Code Print Quality Test Specification – Two-dimensional symbols
- ISO/IEC 15416 Bar Code Print Quality Test Specification - Linear symbols
- ISO/IEC 15417 Bar Code Symbology Specification - Code 128
- ISO/IEC 15418 EAN/UCC Application Identifiers and Fact Data Identifiers and Maintenance
- ISO/IEC 15426-1 Bar Code Verifier Conformance Specification – Part I: Linear
- ISO/IEC 15434 Transfer Syntax for High Capacity ADC Media
- ISO/IEC 16022 Information Technology – International Symbology Specification – Data Matrix
- ISO/IEC 16388 Bar Code Symbology Specification - Code 39

(Copies of these documents are available from American National Standards Institute (ANSI), 25 West 43rd Street, 4th floor, New York, NY 10036, or <http://webstore.ansi.org/ansidocstore/>.)

SAE INTERNATIONAL

- SAE AS9132 Data Matrix (2d) Coding Quality Requirements for Parts Marking

(Copies of this documents are available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001 or <http://www.sae.org/servlets/index>)

2.4 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. DEFINITIONS

3.1 Acronyms used in this standard. The acronyms used in this standard are as follows:

- a. AIAG - Automotive Industry Action Group
- b. AIT - Automatic Identification Technology
- c. ASME - American Society of Mechanical Engineers
- d. CAGE - Commercial and Government Entity
- e. CCI - Controlled Cryptographic Items
- f. CDA - Current Design Activity
- g. CI - Configuration Item
- h. COTS - Commercial Off-The-Shelf
- i. DAI - Design Activity Identification
- j. DoD - Department of Defense
- k. DoDCP - Department of Defense Control Point
- l. D-U-N-S - Data Universal Numbering System (Dun & Bradstreet)
- m. EAN.UCC - EAN International.Uniform Code Council
- n. EIA - Electronic Industries Alliance
- o. EID - Enterprise Identifier
- p. ESDS - Electrostatic Discharge Sensitive
- q. HRI - Human-Readable Information
- r. IF - Intermediate Frequency
- s. ISO/IEC - International Organization for Standardization / International Electrotechnical Commission
- t. MRI - Machine-Readable Information
- u. MFR - Manufacturer
- v. NATO - North Atlantic Treaty Organization
- w. NCAGE - NATO Commercial and Government Entity
- x. NSN - National Stock Number
- y. ODA - Original Design Activity
- z. OTS - Off-The-Shelf
- aa. PIN - Part or Identifying Number
- ab. SER - Serial Number (alt. S/N, SERNO)
- ac. SOCN - Source Control Notation
- ad. SE - Support Equipment

- ae. TCIF - Telecommunications Industry Forum
- af. UID - Unique Identification
- ag. VICD - Vendor Item Control Drawing

3.2 Acquiring activity. The element of the agency/command that identifies and initiates a contract requirement or may have been tasked by another agency/command to be responsible for developing the contract requirement and monitoring the acquisitions.

3.3 Acquisition instrument identification number. The Government acquiring activity's contract or purchase order number. When an order shows both a contract number and a purchase order number, the number used is determined by the acquiring activity.

3.4 Activity identifier. A unique identifier used to distinguish one activity or organization from another activity or organization. Examples of activity identifiers include CAGE, NCAGE, D-U-N-S, EAN.UCC.

3.5 Altered, selected, or source control items. Items depicted on altered item, selected item, or source control drawings in accordance with the definitions and requirements contained in ASME Y14.24.

3.6 Assembly. A number of parts or subassemblies or combination thereof, that are joined together to perform a specific function and subject to disassembly without degradation of any of the parts. (e.g., power shovel-front, fan assembly, audio-frequency amplifier.) (see ASME Y14.100)

3.7 Commercial and Government Entity (CAGE) Code. A five-position alphanumeric code with a numeric in the first and last positions (e.g. 27340, 2A345, 2AA45, or 2AAA5), assigned to United States and Canadian organizations which manufacture and/or control the design of items supplied to a Government Military or Civil Agency or assigned to United States and foreign organizations, primarily for identifying contractors in the mechanical interchange of data. (see DoD 4100.39-M Volume 7)

3.8 Commercial item. A product, material, component, sub-system, or system sold or traded to the general public in the course of normal business operations at prices based on established catalog or market prices. (see MIL-DTL-31000) The items are also referred to as commercial off-the-shelf (COTS or OTS) products or commercial products.

3.9 Configuration Item (CI). A Configuration Item is an aggregation of hardware, firmware, or software that satisfies an end use function and is designated by the Government for configuration management.

3.10 Controlled Cryptographic Items (CCI). Cryptographic items which have been declassified.

3.11 Data Universal Numbering System (D-U-N-S). A nine-digit number, assigned by Dun & Bradstreet to each business location in their global database, widely used as a tool for identifying, organizing and consolidating information about businesses.

3.12 Design Activity. An organization that has, or has had, responsibility for the design of an item. (see ASME Y14.100)

3.12.1 Current Design Activity (CDA). The design activity currently responsible for the design of an item. This may be the original design activity or a design activity to which the design responsibility has been transferred. (see ASME Y14.100)

3.12.2 Design Activity Identification (DAI). A unique identifier that distinguishes an activity or organization from another activity or organization. Examples of activity identification include activity name, activity name and address, or CAGE Code. (see ASME Y14.100) Other examples include D-U-N-S, and EAN.UCC.

3.12.3 Original Design Activity (ODA). The design activity originally responsible for the design and identification of an item whose drawing number and activity identification is shown in the title block of the drawings and associated documents. (see ASME Y14.100)

3.13 Document. A term applicable to the specifications, drawings, lists, standards, pamphlets, reports, and printed, typewritten or other information, relating to the design, procurement, manufacture, testing, or acceptance inspection of items or services. (see ASME Y14.100)

3.14 Electrostatic Discharge Sensitive (ESDS) items. Electronic parts having sensitive characteristics (e.g., thin-layered internal composition) and delicate, miniaturized construction that are susceptible to damage or degradation, in various degrees, from environmental field forces (electrostatic, electromagnetic, magnetic, or radioactive). This susceptibility also extends to the standard electronic modules, printed circuit boards, printed wiring boards, and circuit card assemblies containing one or more of these sensitive electronic parts.

3.15 Enterprise Identifier (EID). An activity identifier code assigned to the entity that is responsible for assigning the unique identifier to an item. Enterprise identifier codes are uniquely assigned by a registration (or controlling) authority [e.g., Dun & Bradstreet's Data Universal Numbering System (D-U-N-S), Uniform Code Council (UCC)/European Article Number (EAN), Commercial and Government Entity (CAGE) Code, NATO CAGE (NCAGE) Code, Department of Defense Activity Address Code (DODAAC)].

3.16 Human-readable information (HRI) marking. Clear text conveying required information, fully visible and readable without the use of interpretative devices. HRI marking may be used alone to convey required information or may supplement machine-readable information marking.

a. The information content requirements of HRI marking, used alone for unaided human interpretation, are defined in 5.2.2.

b. HRI marking to supplement or accompany machine-readable information marking is defined within the specific guidance for the machine-readable information marking protocol utilized. (see 4.3)

3.17 Group. A collection of units, assemblies or subassemblies which is a sub-division of a set or system, but which is not capable of performing a complete operational function. (Examples: antenna group, indicator group.)

3.18 Item. A non-specific term used to denote any unit or product including materials, parts, assemblies, equipment, accessories, and computer software. (see ASME Y14.100)

3.19 Item identification. The part, identifying number, or descriptive identifier for a specific item along with the original design activity identification. (see ASME Y14.100)

NOTE: Not applicable to vendor item controlled items (see 4.16).

3.20 Legacy item. An item requiring marking with a UID, on which the UID was not

marked in data matrix code prior to the item's acceptance by the government.

3.21 Lot Number (LOT). The manufacturer's unique identity for a group of units of the same item that are processed, manufactured, or assembled under uniform conditions and are expected to function in a uniform manner. Lot Number, when linked with a DAI provides the permanent identification for a given group of items as long as they stay together as a group. The label "LOTNO" may be used with the lot number to avoid confusion with other identifiers and when marking space allows.

3.22 Machine-readable information (MRI) marking. A pattern of bars, squares, dots, or other specific shapes containing information interpretable through the use of equipment specifically designed for that purpose. The patterns may be visible or applied for infrared, ultra-violet, or other non-human visible reading capabilities including digital protocol applications. A MRI marking may be supplemented with human-readable information marking, additional MR/AIT, or both, as currently used with a bar code marking per ISO/IEC 15417, ISO/IEC 16022, and ISO/IEC 16388.

3.23 Manufacturer (MFR). An individual, company, corporation, firm, or Government activity who:

- a. Controls the production of an item, or
- b. Produces an item from crude or fabricated materials, or
- c. Assembles materials or components, with or without modification, into more complex items.

3.24 Manufacturer's identification. The actual manufacturer's name and activity identifier (see 3.3) that identifies the place of manufacture.

3.25 National Stock Number (NSN). A number assigned to each item of supply that is purchased, stocked, or distributed within the Federal Government.

3.26 NATO Commercial and Government Entity (NCAGE) Code. A five position alphanumeric code requiring an alpha in either the first or last position (e.g., AA123, 3AAAA, AAAA3, K2345 or 2345K), assigned to organizations located in North Atlantic Treaty Organization (NATO) member nations (excluding U.S. and Canada) and other foreign countries which manufacture and/or control the design of items supplied to a Government Military Activity or Civil Agency. (Excerpted from: DoD 4100.39-M Volume 7)

3.27 Nomenclature. The combination of approved item name and military type designation as assigned by the DoDCP (see MIL-HDBK-1812).

3.28 Part. One item, or two or more items joined together, that is not normally subject to disassembly without destruction or impairment of designed use. (e.g., transistor, composition resistor, screw, transformer, and gear) (see ASME Y14.100)

3.29 Part or Identifying Number (PIN). The identifier assigned by the design activity or by the controlling nationally recognized standard that uniquely identifies (relative to that design activity) a specific item. (see ASME Y14.100).

3.30 Registration number. The number assigned by the Government to an individual unit of a group of items. The number indicates Government ownership, responsibility, and accountability (e.g., vehicle registration numbers).

3.31 Repairable. Having the capability of being repaired.

3.32 Serial number. An identifying number assigned sequentially by the manufacturer, or assigned subsequent to manufacture by another entity. In conjunction with a manufacturer's identification (CAGE Code, NCAGE Code, D-U-N-S, etc.), the serial number uniquely identifies a single item only within the manufacturer's enterprise or within a group of similar items. For HRI marking the prefix identifier "SER", "S/N", or "SERNO" or may be used with the serial number to avoid confusion with other identifiers and when marking space allows.

3.33 Set. A unit or units and necessary assemblies, subassemblies and parts connected or associated together to perform an operational function. (Examples: radio receiving set; sound measuring set, which includes parts, assemblies and units such as cable, microphone and measuring instruments; radar homing set). Set is also used to denote a collection of like parts such as a tool set or a set of tires.

3.34 Special characteristics. The pertinent rating, operating characteristics, and other information necessary for identification of the item.

3.35 Specification data. Information such as specification number, type, grade, class, or other identifying data.

3.36 Subassembly. Two or more parts that form a portion of an assembly or a unit replaceable as a whole, but having a part or parts which are individually replaceable. (Examples: gun mount stand, window sash, recoil mechanism, floating piston, telephone dial, (IF) strip, mounting board with mounted parts, power shovel dipper stick.) (see MIL-HDBK-505)

3.37 Unique Identification (UID) (see 6.4.1). A combination of data elements for an item that is globally unique and unambiguous, ensures data integrity and data quality throughout life of the item, and supports multi-faceted business applications and users. Unique identifiers rely upon two methods of serialization: (1) Serialization within the enterprise (see Figures 2.a, 2.b, 2.e, 2.f and 2.g), and (2) Serialization within the original part number of the enterprise (see Figures 2.c, 2.d and 2.h).

3.38 Unit. An assembly or any combination of parts, subassemblies and assemblies mounted together, normally capable of independent operation in a variety of situations. (Examples: Hydraulic jack, electric motor, electronic power supply, internal combustion engine, electric generator, radio receiver.) This term replaces the term "component." NOTE: The size of an item is a consideration in some cases. An electric motor for a clock may be considered a part because it is not normally subject to disassembly. (see MIL-HDBK-505)

3.39 U.S. The abbreviation used on items (e.g., vehicles and industrial production equipment) to denote Government ownership and to comply with public law or other Government regulations.

3.40 U.S. military property. Government owned property within DoD jurisdiction.

3.41 Warranty. The contractual agreement between the Government and the contractor relative to the nature, usefulness, or condition of the item(s) furnished under the contract. Warranty duration is expressed in terms of hours, days, months, number of operations, etc. Warranty markings give notice to a user whether the item(s) is subject to the warrant provisions.

4. GENERAL REQUIREMENTS

4.1 Methods of applying. The required marking shall be applied to an identification plate (see Figure 1); tag or label securely fastened to the item or shall be applied directly to the surface

of the item and compatible with 4.2, 4.5, and 4.7. The design activity shall specify the actual method(s) to be used in applying markings. Recommended marking methods are shown in Table 1 with recommended selection criteria shown in Table 2.

a. Marking materials creating hazardous conditions shall not be used.

b. When items cannot be physically marked or tagged because of lack of marking space (or because marking or tagging would have a deleterious effect), the detailed marking requirements specified in section 5 shall be applied to the container in addition to, or in combination with, the identification marking information specified in MIL-STD-129. When combining marking requirements with MIL-STD-129, the manner, method, form, and format of MIL-STD-129 shall be followed and the informational requirements of this standard shall be fulfilled.

4.2 Location, size, and content. Whenever practicable, the location of the marking on the item shall ensure its visibility during normal operational use of the item. Marking size shall satisfy the legibility requirements of 4.5.

4.2.1 Uniquely Identified Items. The acquiring activity will specify unique item identification requirements in the contract. Unique identification will be used to provide visibility of items in life cycle acquisition, financial and logistics management processes.

4.2.1.1 Requirements. The acquiring activity will specify unique identification requirements by including the Defense Federal Acquisition Regulations Supplement (DFARS) clause 252.211-7003 and its requirements in the contract.

4.2.1.2 Unique Identification Constructs. The methods of UID construction are determined by the enterprise's serialization protocol (see Table 3).

a. Construct #1 – enterprise identifier and a serial number unique within the assigning activity (see Figures 2.a, 2.b, 2.e, 2.f and 2.g), or

b. Construct #2 – enterprise identifier, part number and a serial number unique within the product identified (see Figures 2.c, 2.d and 2.h)

NOTE: The enterprise that serializes the item shall normally assign the UID. Enterprises are responsible to assure that globally unique identifiers result from their serialization protocols. When using Construct #2, enterprises must assure uniqueness of both part number and serial number assignments. When instances of duplicate part number assignments may arise within the enterprise, enterprises may choose to utilize Item Identification (see 3.18) by modifying the part number by making the original design activity CAGE Code the first five characters of the part number encoded in the data matrix code, within the defined character field length.

4.2.1.3 Data Carrier. The UID data carrier shall be the data matrix symbol with error correction code 200 from ISO/IEC 16022. The use of the data matrix may be supplemented with other data carriers, such as linear bar codes (see figures 2.a – 2.h for examples). Table 4 contains selection criteria for selecting marking symbology and human readable information scenarios for use in UID.

4.2.1.4 Syntax. The UID data elements shall be encoded in the data matrix symbol using the syntax of ISO/IEC 15434 with format 05 for Application Identifiers (AIs) and format 06 for Data Identifiers (DIs). The DoD assigned format DD shall be used for Text Element Identifiers (TEIs) (see 6.4.1). The use of DIs is illustrated in figures 2.a – 2.d, TEIs are illustrated in figures 2.e and 2.f, and AIs are illustrated in figures 2.g and 2.h.

4.2.1.5 Semantics. The UID data elements shall be described by the semantics of ISO/IEC 15418 for AIs and DIs and Air Transport Association Common Support Data Dictionary for TEIs. The preferred semantics for use in UID are shown in Table 5.

4.2.1.6 Human-readable information for UID. In addition to machine-readable information encoded in the data carrier, the requiring activity shall specify the use of human-readable information unless the necessary marking space is unavailable (see 5.2.1). The preferred human-readable information for use in UID, with alternative language, is shown in Table 6.

4.2.1.7 Assignment of UID to Legacy Items. In cases where the original enterprise identifier, part number and serial number can be identified, the UID assigned and marked on the item will normally consist of the enterprise identifier of the enterprise that assigned the serial number, the part number and the serial number (Construct #2). In cases where the original serial number cannot be determined or where the uniqueness of the original serial number cannot be assured, the item may be re-serialized, using the enterprise identifier of the entity that assigns the new serial number. In the case of an item not serialized by the manufacturer, where a subsequent determination is made that the item requires serial management, the item may be serialized, using the enterprise identifier of the entity that assigns the serial number.

4.2.2 Non-serialized items. Non-serialized items shall be marked with human or machine readable marking as specified on the contract or order and shall have the following minimum information content applied:

- a. Applicable Enterprise Identifier
- b. Original PIN

4.2.3 Delineation of marking requirements. All aspects of item identification marking shall be specified directly or by reference on the document delineating the item to be marked.

4.3 Machine-readable information (MRI) marking protocol. When MRI marking is specified in the contract or order, data encoding shall include the minimum set of data elements necessary to provide unique item identification (UID). The acquiring activity will specify one or more of the following general standards as applicable.

- a. Syntax for high capacity media shall comply with ISO/IEC 15434. (NOTE: Linear bar code symbols do not require syntax.)
- b. Semantics should comply with ISO/IEC 15418.

4.3.1 Air Transport Association (ATA). When specified in the contract or order, manufacturers that implement the ATA product marking standards shall mark military parts and components in accordance with:

- a. For linear bar code symbols: ATA SPEC 2000.
- b. For high capacity automatic data capture: ISO/IEC 15434 syntax with DoD assigned format DD (TEIs) (see 6.4.1).

4.3.2 Automotive Industry Action Group (AIAG). When specified in the contract or order, manufacturers that implement the AIAG standards shall mark military parts and components in accordance with the AIAG B-4 standard as applicable (see Figure 3).

4.3.3 Electronic Industries Alliance (EIA) and Telecommunications Industry Forum (TCIF). When specified in the contract or order, manufacturers that implement the EIA

standards shall mark military parts and components in accordance with the EIA 802 and 706 standards as applicable. Although other manufacturer codes are allowable under this standard, CAGE code identified with the appropriate Data Identifier is the recommended manufacturer ID. Multiple manufacturer IDs are allowable (see Figure 4).

4.3.4 EAN International.Uniform Code Council (EAN.UCC). When specified in the contract or order, manufacturers that implement the EAN.UCC standards shall mark military parts components in accordance with the EAN.UCC standards as applicable (see Figure 5).

4.3.5 National Aeronautics and Space Administration (NASA). NASA aerospace marking standards shall be implemented only on those DoD actions directly supporting NASA programs. When specified in the contract or order, manufacturers that implement the NASA aerospace marking standards shall mark parts and components in accordance with NASA-STD-6002 as applicable. Detailed how-to guidance for implementing NASA-STD-6002 requirements is provided in NASA-HDBK-6003.

4.3.6 Other. When MRI marking is specified in the contract or order, manufacturers that do not follow one of the established standards above shall mark military parts and components in accordance with the EIA 802 and 706 standards as specified in the contract or order.

NOTE: Submission of industry/association marking standards and conformance articles to be considered for certification and inclusion in this standard shall be made to the HQ DLA Logistics AIT Office at Chief, DoD Logistics AIT Office, DLA, 8725 John Kingman Road, STOP 6205, Ft. Belvoir, VA. 22060-6221.

4.4 MRI marking quality standards. Linear and 2D MRI symbology, when applied, shall be at least a 3.0 (“grade B”) as described below and maintain a minimum 2.0 (“grade C”) quality over the service life of the item marked.

4.4.1 Linear Bar Codes. Linear bar code symbols shall be Code 39 symbols per ISO/IEC 16388, the ratio of the wide element to the narrow element shall be within the range of 2.5:1 to 3.1:1. The narrow element dimension (X dimension) range should be from .0075 inch (0.19 mm) to 0.015 inch (0.38 mm). For acceptance the symbol shall have a minimum print quality of 3.0/05/6xx, where the minimum grade is 3.0, measured with an aperture size of 0.127 mm (0.005 inch) with a light source wave length of 6xx nm in accordance with ISO/IEC 15416. For imager based verifier devices, synthetic aperture shall be used. The methodology for measuring the print quality shall be as specified in ISO/IEC 15416.

4.4.2 Data Matrix Symbol. The symbol shall be ECC 200 from ISO/IEC 16022. Minimum cell sizes and quality levels shall be as defined below for each type of data matrix symbol.

4.4.2.1 Direct Part Markings. Symbol data cell sizes and shapes vary between marking processes and techniques and may be modified to overcome the adverse lighting affects caused by surface roughness, geometry and deterioration anticipated during manufacturing, maintenance and operational use. Overall symbol size and shape is also influenced by the amount of data encoded within the symbol and available marking space. Quality verification systems should be configured to support a wide range of different data cell and symbol sizes.

a. The minimum module/cell size shall be .0075 inch (0.19mm) and no larger than .020 inch (.51mm) unless otherwise stipulated in the contract or purchase order. Cells in dot peen marks shall have a diameter nominally 90% of the cell dimension, no smaller than 80% and no larger

than 100%. When module/cell sizes below .0075 in. (0.19mm) are stipulated in the contract or purchase order, any special reading equipment and minimum quality levels required shall also be stipulated in the contract or purchase order.

b. For acceptance the symbol shall have a minimum print quality of 3.0 (grade B) when verified in accordance with ISO 15415 using any combination of three angles of illumination (30°, 45° and 90°) and three synthetic aperture sizes (.006 in. (.15mm), .011 in. (.28mm), and .016 in. (.40mm)). All three angles are specifically called out as options in ISO 15415 with 45° being the default. The best combination may be selected and the resulting grade shall be deemed as the grade for that part. It is not necessary for all parts to be graded under all of the allowed conditions. When a grade is reported for a part it shall be fully specified so that the aperture and illumination used for verification is known.

NOTE: Users are referred to NASA-STD-6002 for information related to symbol density and recommended data cell sizes by application.

4.4.2.2 Printed labels. Minimum cell size shall be within a range of 0.0075 inch (0.19 mm) to 0.015 inch (0.38 mm). For acceptance the symbol shall have a minimum print quality of 3.0/05/6xx, where the minimum grade is 3.0, measured with an aperture size of 0.127 mm (0.005 in) with a light source wave length of 6xx nm in accordance with ISO/IEC 15415. The methodology for measuring the print quality shall be as specified in ISO/IEC 15415.

4.5 Permanency and legibility. Direct identification marking and identification plates, tags, or labels used shall be as permanent as the normal life expectancy of the item and be capable of withstanding the environmental tests and cleaning procedures specified for the item to which it is affixed. If it is not possible to mark an item with MRI that will survive its entire life cycle, including, if reparable, the rebuild process, the item will be marked in a way that is likely to survive its anticipated life cycle up to the point of rebuild. The rebuild process must then ensure that the UID is linked with the item until the part can be remarked with the original UID data prior to leaving the rebuild facility. Legibility shall be as required for ready human or machine readability as applicable. Information contained on identification plates shall be of a color that is in contrast to the color of the surface of the plate.

a. For the human readable information aspect of MRI, the recommended and minimum text character heights are:

| | Character Height (Centimeters) | Character Height (Inches) | Character Height (Points) |
|-------------|-----------------------------------|------------------------------|------------------------------|
| Recommended | 0.2 cm | 0.08 in | 5.76 pts |
| Minimum | 0.125 cm | 0.05 in | 3.6 pts |

4.6 Identification plates, tags and bands. Metal and stiff plastic identification plates, tags and bands, along with their attaching provisions, shall have all burrs and sharp edges removed (see MIL-DTL-15024).

4.7 Deleterious effect. Marking of items shall be accomplished in a manner that will not adversely affect the life and utility of the item.

4.8 Altered or selected items (see 3.4). When an item is altered or selected, the PIN assigned by the design activity specifying the alteration or selection shall be used to identify the item.

4.8.1 UID applicable items (see 6.4.1). Alteration or selection of UID applicable items will not affect the original UID.

a. Construct #1 – The original PIN shall be removed or obliterated if this can be done without damage to the item. The altered or selected item PIN assigned shall replace the original PIN as described in Figures 2.a, 2.b 2.e, 2.f and 2.g.

b. Construct #2 – The original PIN shall not be removed from the label or obliterated. The altered or selected item PIN assigned shall be added as described in Figures 2.c, 2.d and 2.h. If the item bears a PIN in addition to the original PIN, only that PIN shall be replaced, as described in Figures 2.c, 2.d, and 2.h.

4.8.2 Non-UID applicable items. The PIN shall be removed or obliterated, if this can be done without damage to the item, and replaced with the altered or selected item PIN.

4.9 Abbreviated information. When MRI marking requirements are specified in the contract or order, they shall be in accordance with 4.2. When size limitations, cost, adverse impacts, or other considerations preclude marking all applicable information on an item (i.e., some marking space does exist and the conditions of 4.1.b are not met), only the most essential information as specified or approved by the acquiring activity shall be included.

4.10 Unknown identification information. Where identification information is unavailable to a manufacturer at the time of fabrication, space shall be left for subsequent placement of this information.

4.11 Information not required. Special characteristics may be omitted from the identification plate, if the pertinent information is on a manufacturer's data plate on the item, provided the manufacturer's plate meets the permanency and legibility requirements of this standard.

4.12 Type of lettering. Letters shall be capitals without serifs (sans-serifs) such as Arial, Futura, Gothic, or other sans-serifs font. Numerals shall be Arabic except when Roman numerals are used for type designation per applicable Government or industry specifications and standards. Characters generated by automation processes (e.g., interactive graphics systems or stencils) shall be permitted. Hand lettering shall be allowed on an exception basis only.

4.13 Variable marking information. When applicable (i.e., required by detail specification or in the acquisition document), the following information shall be marked on the item in addition to the detail requirements in section 5 herein:

- a. Specification data (see 3.33)
- b. Date of acceptance.
- c. Date of manufacture.
- d. Registration number (see 3.28).
- e. Weight and volume.
- f. Lot number (see 3.19).
- g. Technical manual number.
- h. Matched set identification.
- i. Additional data identified by contract.

4.14 Source control items. When marking source control items, they shall be marked with

the design activity CAGE or NCAGE, the source control notation (SOCN), and the source control PIN; (example: 12345SOCN80678932). When specified by the acquiring activity, the item manufacturer shall be identified as described in 5.2.1.2. The vendor's identification and identifying number need not be removed.

4.15 U.S. marking to indicate Government ownership. The designation "U.S." shall be marked only when specified in the detail (commodity) specification, or in the acquisition document (see 5.4.1.f, 5.4.2.f, 5.4.3.h).

4.16 Vendor item control items. Items depicted on Vendor Item Control Drawings (VICD) shall be marked with the manufacturer's (vendor's) PIN preceded by the manufacturer's identification (see 3.22). The VICD number shall not be used to physically re-identify the item from the original design activity part number. In the event that a vendor item control item is a commercial off-the-shelf (COTS) item (see 3.7), refer to 5.1.2.a

NOTE: When the acquiring document cites a VICD number for the item being acquired, the manufacturer's (vendor's) PIN, prefixed with the manufacturer's CAGE or NCAGE, shall be used as the identifying number in lieu of the VICD number when marking of items to this standard is required by the acquiring document.

5. DETAILED REQUIREMENTS

5.1 General. Unless otherwise specified in the contract or order, human-readable marking shall be applied. When MRI marking is specified, the acquiring activity shall specify the type to be used.

5.1.1 Information content. Full identification of the item(s) marked shall be contained in the marking applied, whether human or machine-readable. MRI structure shall conform to the type specified by the acquiring activity.

5.1.2 Exemptions. Unless otherwise specified by contract or order, the following exemptions apply:

a. COTS (see 3.7) items marked with commercial identification (firm name, logo, part number, etc.), not subject to UID identification marking criteria and which present no identification difficulty may be exempt from additional marking requirements. This exemption extends to COTS items identified on a VICD.

b. Parts within an assembly, or a subassembly, not subject to removal, replacement, or repair.

c. When parts are deemed too small for application of complete marking in accordance with 5.2.1, a logo or other abbreviated marking shall be substituted for the DAI.

5.2 Parts

5.2.1 Machine-readable information (MRI) marking. The acquiring activity shall specify the type of MRI marking to be used and clarify minimum DoD required information content. Information content requirements not included in standard MRI protocols (see 4.3) shall be specified in the contract or order. The acquiring activity will make sure that the MRI protocol implemented is compatible with established DoD MRI system(s) identified for materiel management. Data Matrix, ECC 200 per ISO/IEC 16022, is the minimum requirement for MRI.

a. Optimum marking includes Data Matrix, linear symbols, and human-readable information.

- b. Where space is limited, the linear symbol marking may be omitted (see Figure 6).
- c. To accommodate severe space limitations, supplemental human readable information may also be omitted.

5.2.1.1 Minimum information content. Minimum information content shall be provided in the MRI marking to clearly identify the source of the marked item. This information shall be specified by the acquiring activity and includes, but is not limited to:

- a. Applicable Enterprise Identifier (see 3.14)
- b. Serial number (see 3.30) or other traceability number, when applicable
- c. PIN (see 3.27) Where instances of duplicate part number assignments may rise within the enterprise, enterprises may choose to utilize Item Identification (see 3.18) by modifying the part number by making the original design activity CAGE Code the first five characters of the part number encoded in the data matrix code, within the defined character field length.

5.2.1.2 Controlled items. Items controlled through application of serial number or other item tracking methodology shall be clearly identified (see 4.2).

5.2.2 Human-readable information (HRI) marking. When HRI part marking (see 3.15.a) is applied exclusive of MRI, parts shall be individually marked with applicable item identification information.

5.2.2.1 Marking when the manufacturer is the design activity. When the manufacturer is also the design activity for the part, the marking shall be arranged as follows:

- a. When the manufacturer is the original design activity.

69806 - 1234567-101 --Original Design Activity PIN (see 3.27)

|_____ Original DAI (see 3.11.2)

- b. When the manufacturer is the current design activity but is not the original design activity.

69806 - 1234567-101 -- Original Design Activity Item Identification (see 3.18)

CDA - 07873 -- Current Design Activity DAI (see 3.11.2)

5.2.2.2 Marking items acquired from manufacturers other than the design activity. The notation (MFR), followed by the manufacturer's identification (see 3.22), shall be marked below the design activity's item identification (or near it if space does not permit). The markings shall be arranged as follows:

- a. When the design activity is the original design activity.

69806 - 1234567-101 -- Original Design Activity Item Identification (see 3.18)

MFR - 20001 -- Manufacturer's identification (see 3.22)

- b. When the design activity is not the original design activity.

69806 - 1234567-101 -- Original Design Activity Item Identification (see 3.18)

CDA - 07873 -- Current Design Activity DAI (see (3.11.2)

MFR - 20001 -- Manufacturer's identification (see 3.21)

ALTERNATE METHOD

69806 - 1234567-101 - Original Design Activity Item Identification (see 3.18)

CDA - 07873 MFR - 20001 -- Manufacturer's identification (see 3.22)

|___ Current Design Activity DAI (see 3.11.2)

5.2.2.3 Marking in licensee-licensor agreement. In licensee-licensor agreement, the requirements of 5.2.2.2 shall apply to the licensee when manufacturing parts in accordance with the licensor's design.

5.2.2.4 Marking items acquired from, but not manufactured by, the design activity. When the design activity uses subcontractors for the manufacture of an item, but retains full design control, quality assurance control, and full responsibility to the acquiring activity for the delivered product, the requirements of 5.2.2.1 apply. When any portion of design control, quality control, or delivered product warranty responsibility is delegated to such subcontractor, the requirements of 5.2.2.2 apply.

5.3 Subassemblies and assemblies that do not require identification plates.

5.3.1 Marking information. MRI marking is not applicable unless otherwise required in the contract or order (see 5.1.). Subassemblies and assemblies shall be individually marked with the information specified in 5.2.2.1 and 5.2.2.2 except that the notation "ASSY," shall be used in place of a dash (or slant) as follows:

69807ASSY7654321-101 - DAI, ASSY, and identifying PIN

NOTE: When subassemblies and assemblies cannot be physically marked as specified, the information shall be marked on an identification tag and attached securely to the uninstalled subassemblies or assemblies furnished as spares.

5.4 Unit, group, sets, and other items. An item of military property consisting of one piece, or two or more pieces joined together which are not normally subject to disassembly without destruction of the designed use or which are not normally disassembled (e.g., electric clock motor), shall be marked as a part (see 5.1.2.b). Manufacturer's identification (CAGE), serial number, and NSN shall be applied with MRI marking only when specified in the contract or order (reference figure 7).

- a. Applicable Enterprise Identifier (see 3.14)
- b. Serial number (see 3.20) or other traceability number, when applicable
- c. PIN (see 3.27)
- d. Nomenclature (see 3.25)
- e. Acquisition instrument identification number (see 3.2)
- f. * Lot number (see 3.19)
- g. * U.S. (see 3.37 and 4.15).
- h. * Special characteristics (see 3.32).
- i. * NSN (see 3.23).

NOTE: Asterisk denotes optional information when specifically cited in the contract or purchase order.

5.5 Maintenance actions. When specified in the contract, purchase, or repair order, original identification marking shall be supplemented with information identifying repair or overhaul actions. This information shall be applied in close proximity to and readable in the same manner as the original identification marking. Method of marking shall provide permanency and legibility (4.5) required of original identification marking. Supplemental information to be applied shall include as a minimum:

- a. Activity identifier (3.3) of the repair or overhaul facility.
- b. Date of repair or overhaul action.
- c. Applicable warranty extensions (3.39).
- d. Contract, purchase, or repair order number as specified by the issuing activity.

5.6 Items identified by military or industry association specifications and standards.

Items identified by numbers derived from military specifications, military standards, or industry association standards (e.g., MS, NAS) shall be marked with the military or industry association identifying number (without the DAI), and the actual manufacturer's identification prefixed by "MFR" separate from the PIN (e.g., separate line). Otherwise, these items shall be marked as specified in 5.2, 5.3, or 5.4.

5.7 Warranted items. When specifically required by a contract statement of work or other contract clause, warranted items shall be marked in a conspicuous location to give notice that the item(s) are subject to warranty. The marking shall contain, as a minimum, the statement "WARRANTED ITEM" and the period or conditions of warranty (i.e., hours of operation, cycles of operation, time since manufactured, etc.) (see figure 8).

5.8 Security classification. When required by acquisition document, classified items shall be marked in a conspicuous manner to provide notice that the item(s) are subject to security restrictions. Classified marking shall be in accordance with DOD 5220.22-M.

5.9 Electrostatic Discharge Sensitive (ESDS) items.

- a. Electrical and electronic parts classified as sensitive to damage from electrostatic discharge in accordance with MIL-STD-1686 and MIL-HDBK-263 shall be marked with the ESDS symbol (see figure 9) (see 6.4.3).
- b. Assemblies containing ESDS parts shall be marked with the ESDS symbol. This symbol shall be so located as to be readily visible when the assembly is installed in its next higher assembly, if applicable. When the physical size of the assembly precludes direct marking of the ESDS symbol, the symbol shall be marked on an identification tag that shall be securely attached to the assembly. The ESDS unit pack shall be marked as specified in MIL-STD-129.
- c. Equipment enclosures containing ESDS parts or assemblies shall be marked with the ESDS symbol and an ESDS label (see figure 9). The symbol and caution note shall be located in such a position as to be readily visible to personnel prior to gaining access to the ESDS parts or assemblies. Where space permits, these markings shall be on the access door or cover of the equipment enclosure.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. This standard provides the criteria for development of item identification marking requirements and methods for identification of items of military property produced, stocked, stored, and issued by or for the Department of Defense. This document is to be tailored by the acquiring activity.

6.2 Tailoring for MRI marking requirements. When MRI marking is required, it is vital that the acquiring activity specifies the type of marking to be provided. Bar Code marking per ANSI/AIM BC1, widely used within the Department of Defense, is generally considered the

standard machine-readable code system. When specifying other systems, the acquiring activity must consider the application and user of the items marked, availability of code reading capabilities, and compatibility with potential future data and materiel management systems.

6.3 Subject term (key word) listing.

- Bar code
- CAGE code
- Control item
- Controlled cryptographic item
- Design activity
- Design activity identification (DAI)
- D-U-N-S
- Electrostatic Discharge Sensitive (ESDS)
- Human-readable information
- Identification plate
- Legibility
- Machine-readable information
- National Stock Number (NSN)
- NCAGE code
- Part or Identifying Number (PIN)
- Permanency
- Security
- Serial Number
- Unique Identification (UID)

6.4 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

6.4.1 Unique Identification (UID). This revision implements Policy for Unique Identification (UID) of Items issued by the Office of the Under Secretary of Defense (Acquisition, Technology and Logistics). References to this policy memo and related implementation guide provide the user with significant insight for meeting requirements for UID, including the collaborative AIT solution for “DD” format code. The UID policy, with associated guidance, is available at <http://www.acq.osd.mil/uid> Due to the continually evolving nature of the associated guidance, users are cautioned to ascertain they have the most current version prior to implementation on solicitations and contracts.

6.4.2 MRI marking guidance. This revision expands coverage of machine-readable protocol guidance. However, this increased coverage is not intended to promote the application of MRI marking, or to reduce the application of traditional HRI marking. It is the responsibility of the user to determine the appropriate use of each according to the needs of the items being marked and applicable acquisition, operational, and logistics requirements.

6.4.3 Identifiers. Recognition is extended in this revision to the increasing use of D-U-N-S

as an activity identifier and to MRI protocol as delineated in EAN.UCC. This standard does not dictate or advocate the use of either of these identification protocols over the use of CAGE or NCAGE. Specific identification system implementation is dependant on the item(s) to be identified and requirements identified by the user of this standard.

6.4.4 ESDS symbol. The circular ESDS symbol has been deleted to remove any inference that continued use of this obsolete symbol in new actions was appropriate. However, when compatibility with existing systems and materiel currently using the circular ESDS symbol is deemed necessary, the user may so designate.

| Marking Methods | Depth of Marking | Recommended Use |
|--|---|--|
| Metal Stamp | Variable, dependent on material | Metal or nonmetal parts that will not deform under the stamping pressure required. Also, the alteration of the surface roughness finish will not be detrimental to proper functioning |
| Dot peening | | Metal or nonmetallic parts that may deform if metal stamped |
| Engraving | | Sheet metal fabrication that will deform if metal stamped. Functional marking with colored filler |
| Electrical arc pencil | | Sheet metal fabrication that will deform if metal stamped, irregular surface |
| Embossing | | Thin sheet metal, plastics on nonfunctional surfaces. |
| Cast or forged | | Castings or forgings - characters raised or depressed depending on method of manufacture, unless otherwise specified on the drawing. Marking should be used on non-machined surfaces only. |
| Molded | | Usually plastic or rubber parts, may be either raised or depressed, unless otherwise specified. |
| Electro-chemical etch (electrolytic process) | | Characters normally depressed, but may be raised. Used on fine surface finishes without protective coating, also high hardness parts (RC 50 or higher). |
| Rubber stamp stencil | | Fabrics, wood, plastics. On metal parts with protective finish (i.e., phosphate) cover with clear lacquer. Apply before oiling. Also temporary marking; work in progress. |
| Decalcomania | | Instructional plates, part identification, when other methods are not available, temporary marking, protect with clear lacquer. Apply before oiling. |
| Metal or plastic tags | | When other methods are not available. |
| Laser engraving | Variable, dependent on material <u>2/</u> | Very good resolution of alpha numeric and machine-readable marking (<u>1/</u>) symbology. Character height and width range from .007 to 4.0 inches. |

1/ For bar code application, see ANSI/AIM BC1.

2/ Marking can be controlled by energy input so as to mark a .002-inch (50 microns) plating without penetration to the base metal or to make .003 to .005 inch (76 to 127 microns) deep marks on polymers.

TABLE 1. Marking methods. 1/

(This table is given only as a guide and these methods are not mandatory.)

MIL-STD-130M (21 September 2004 Draft)

| Protective finish | Surface roughness in inches (metric) | Marking method | Remarks |
|---|--|--|--|
| No protective finish or a coating of light oil applied after marking. | 125 microinches (3.2 microns) or coarser | Cast, forged, molded | Specify "raised" or "depressed" only when necessary; used on non-machined surfaces. |
| | | Metal stamp | On machined surfaces |
| | 125 to 63 microinches (3.2 to 1.6 microns) | Molded, engraved metal stamp, electric arc pencil, dot peen | Specify "depressed", when marking a functional surface. |
| Phosphate, dry film, anodize, or plating | 125 microinches (3.2 microns) or coarser | cast, forged, molded, metal stamped | Specify "depressed" when marking a functional surface, plus mark prior to application of finish. |
| | | Laser engraved | As above; may be marked after anodizing or plating. |
| | 125 to 63 microinches (3.2 to 1.6 microns) | Molded, engraved metal, stamp, electric arc pencil, dot peen | As above, plus mark prior to application of finish |
| | | Laser engrave | On ground or sanded surfaces after anodize or plating. |
| | 63 microinches (1.6 microns) or finer | Decalcomania | Apply over protective coating before oiling, cover with clear lacquer or equivalent |
| | | Laser engrave | Specify depth of penetration, especially on plated surfaces. |
| | All surfaces | Rubber stamp stencil | Apply over protective finish before oiling. Use ink in accordance with A-A-208, type I, or an equivalent type, cover with clear lacquer on nonporous surfaces. |
| Paint | All surfaces | Rubber stamp, stencil, decalcomania | As above. |
| | 125 microinches (3.2 microns) or coarser | | Painted, machined surfaces. |
| | 125 to 63 microinches (3.2 to 1.6 microns) | | Painted, ground, or sanded surfaces |
| | 63 microinches (1.6 microns) or finer | | Do not penetrate dry film thickness. |
| Epoxy or urethane coating | All surfaces | Rubber stamp, stencil, marking machine, decalcomania, hand brush | For marking of printed wiring boards and assemblies. Epoxy base fungus resistant, non-conducting ink in accordance with A-A-56032 may be used |

TABLE 2. Criteria in selection of marking methods.
(This table is given only as a guide and these methods are not mandatory.)

| | UID Construct #1 | UID Construct #2 |
|---|---|---|
| Based on current enterprise configurations | If items are serialized within the Enterprise: | If items are serialized within Part Number: |
| UID is derived by concatenating the data elements IN ORDER: | Issuing Agency Code * Enterprise ID Serial Number | Issuing Agency Code * Enterprise ID Original Part Number Serial Number |
| Optional Data Identified on Assets Not Part of the UID (Separate Identifier) | Current Part Number ** | Current Part Number |
| <p>*The Issuing Agency Code (IAC) represents the registration authority that issued the enterprise identifier (i.e., Dun and Bradstreet, UCC.EAN). The IAC can be derived from the data qualifier for the enterprise identifier and does not need to be marked on the item.</p> <p>** In instances where the original part number changes with new configurations (also known as part number roll), the current part number may be included on the item as a separate data element for traceability purposes.</p> | | |

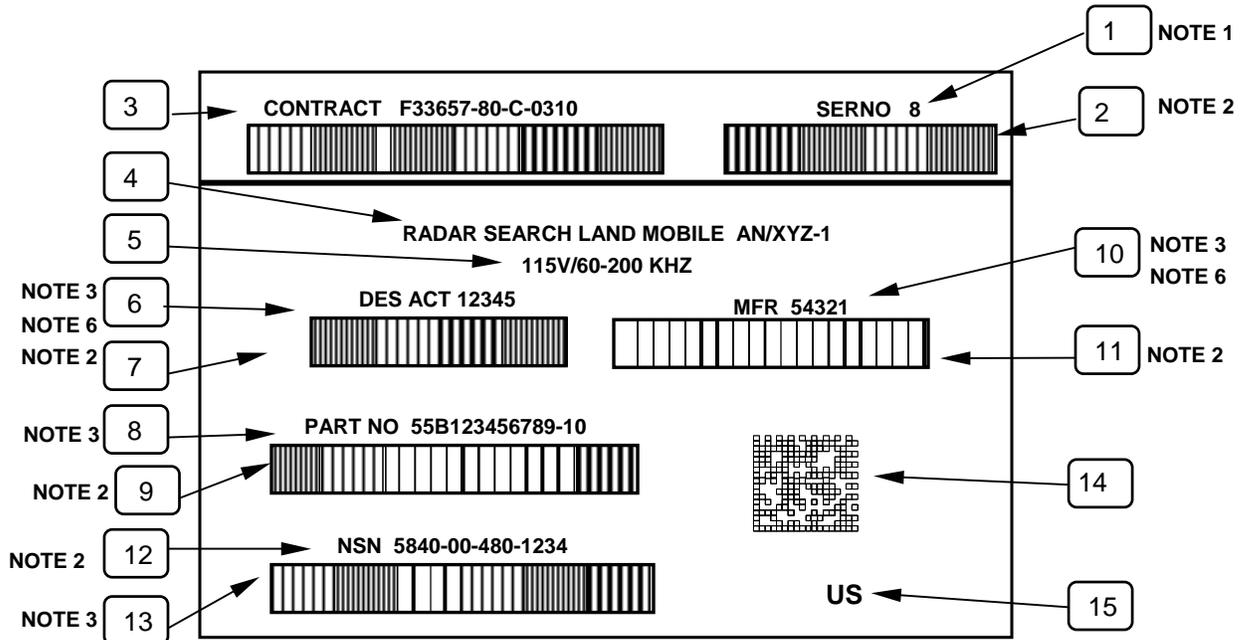
TABLE 3. Unique Identification (UID) Constructs. /1

NOTE: This table is reproduced from Table 3 of the *Department of Defense Guide to Uniquely Identifying Items*.

| UID | Basic Marking | Basic + HRI | Basic + HRI + Linear |
|--------------------|---|--|---|
| Construct #1 |   | <div data-bbox="570 543 846 646"> MFR 1U2R7 SER MH80312 </div> <div data-bbox="570 674 846 743"> PNR F1002003000400AP </div> | <div data-bbox="938 543 1239 680"> MFR 1U2R7  SER MH80312  </div> <div data-bbox="938 709 1344 779"> PNR F1002003000400AP  </div> |
| Construct #2 |   | <div data-bbox="521 858 891 989"> EID CAGE 1U2R7 ORIGINAL PART NO F1002003000400AP SER NO MH80312 </div> <div data-bbox="521 1020 891 1089"> CURRENT PART NO F1002003000400BP </div> | <div data-bbox="938 800 1330 1024"> EID CAGE 1U2R7  ORIGINAL PART NO F1002003000400AP  SER NO MH80312  </div> <div data-bbox="938 1052 1330 1129"> CURRENT PART NO F1002003000400BP  </div> |
| Selection criteria | Limited marking space available | Provide for HRI at organizational and intermediate maintenance levels | Provide additional redundant read capability for existing laser scanners |

Note: In cases of severe space limitations, only one data matrix may be used and may include the current part number.

TABLE 4 Marking Symbology and Human Readable Information Scenarios for Use in UID



- | | |
|--|--|
| 1. Serial Number | 9. Bar coded PIN when NSN not available (see figure 7) |
| 2. Bar coded serial number (see figure 7) | 10. Manufacturer activity identifier (see 3.3) |
| 3. Acquisition Instrument identification no. | 11. Bar coded manufacturer activity identifier (see 3.3 and figure 7) |
| 4. Nomenclature (item name and type designation) | 12. NSN |
| 5. Special characteristics | 13. Bar coded NSN (see figure 7) |
| 6. Design activity identification (DAI) (see 3.3 and figure 7) | 14. 2-D/Matrix Bar Code compilation of identification data (UID when applicable) |
| 7. Bar coded DAI (see figure 7) | 15. Government ownership designation |
| 8. Part or Identifying Number (PIN) | |

NOTES:

1. This example is given only as a guide and should not be considered a mandatory format. For this example, both linear and 2-D/matrix bar coding is used as the Machine-Readable Information (MRI) marking.
2. Linear bar code density is 6.5 to 9.4 characters per inch, height is .125-inch minimum.
3. Items 1, 6, 8, 10 and 12 are used for Human-Readable Information (HRI) purposes for the associated bar code or MRI marking.
4. Additional information as applicable may be integrated into the identification plate or may be applied.
5. Permanent information including bar coding or other MRI marking may be included on a plate separate from the variable information plate.
6. Activity identifier and design activity identification (DAI) examples are CAGE Code. Other identifier information such as D-U-N-S FAN UCC, DODAAC, etc. will require a longer number

FIGURE 1. Example of identification plate

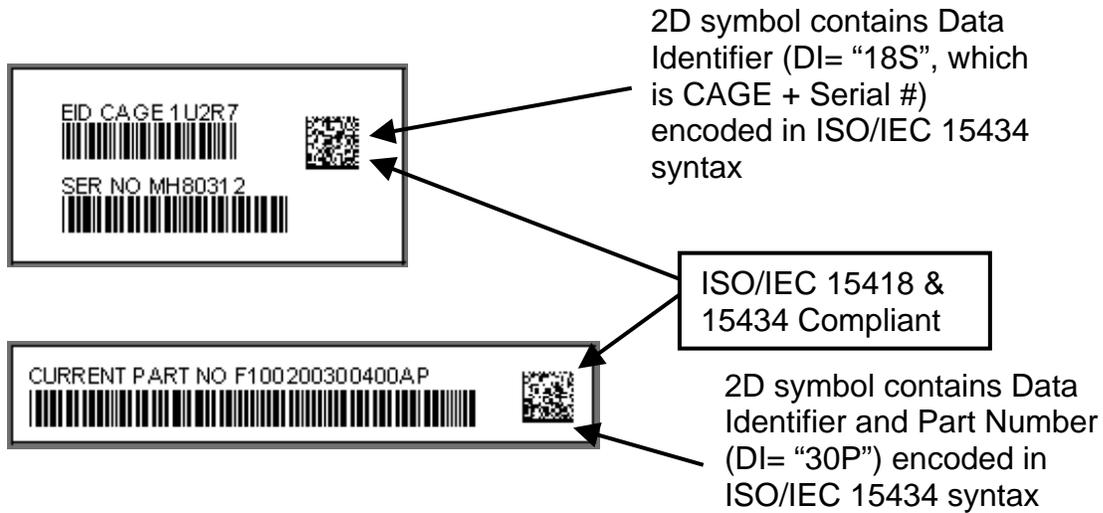


FIGURE 2.a Example of Label with Linear (Optional) and Data Matrix Using Data Identifiers in Construct #1 for New Item

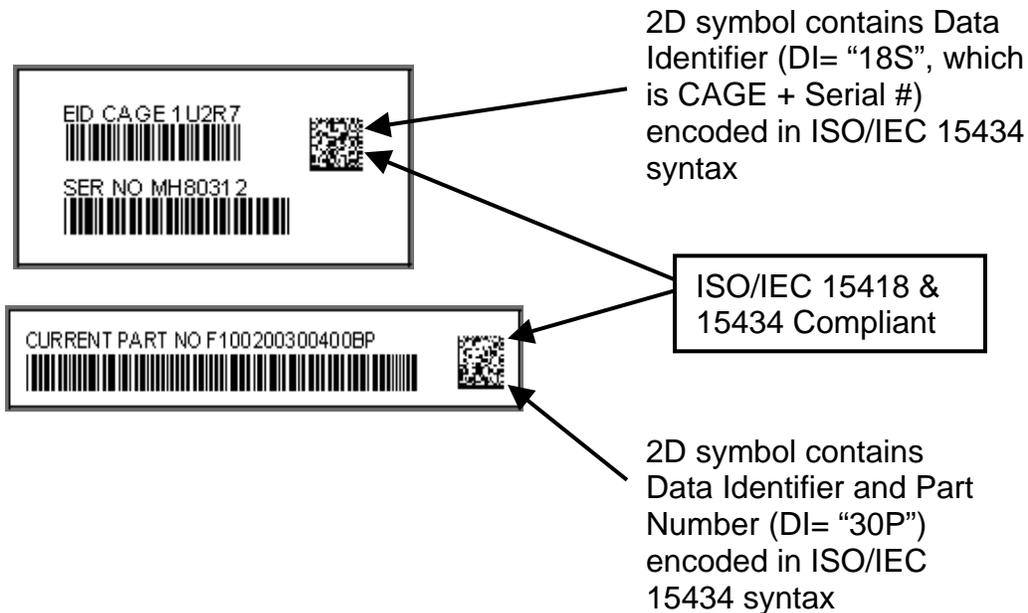


FIGURE 2.b Example of Label with Linear (Optional) and Data Matrix Using Data Identifiers in Construct #1 for Modified Item

Note: Construct #1: The item UID is established by the enterprise's identification and a serial number unique for that enterprise and is provided in the permanent upper label. The bottom label portion initially includes the current part number, which is the same as the original part number for a new item (Figure 2.a). The bottom label is replaced with a label containing a revised part number when modification of the item requires a new current part number be established (Figure 2.b).

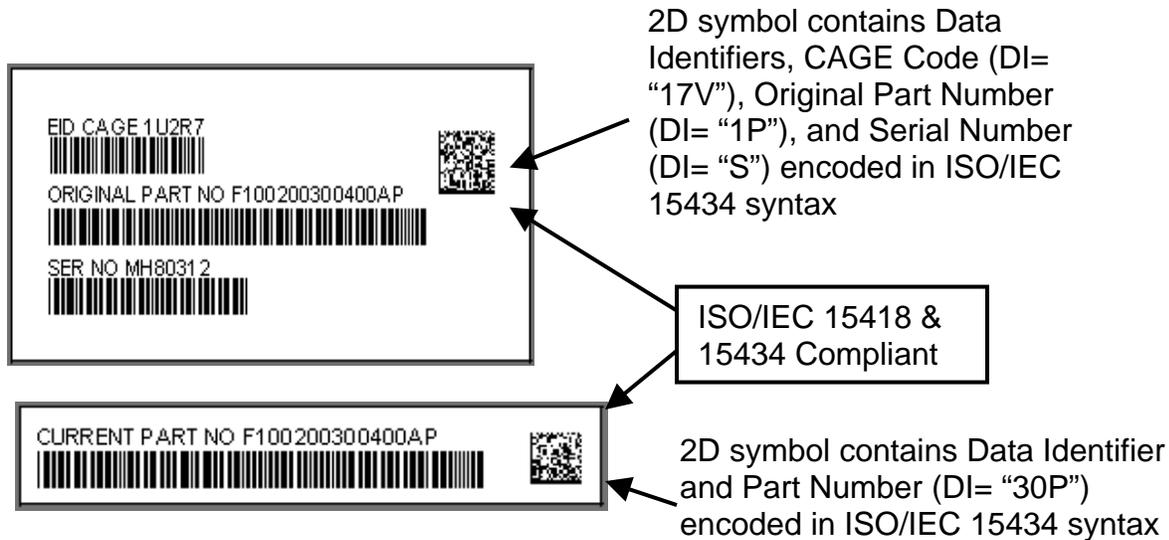


FIGURE 2.c Example of Label with Linear (Optional) and Data Matrix Using Data Identifiers in Construct #2 for New Item

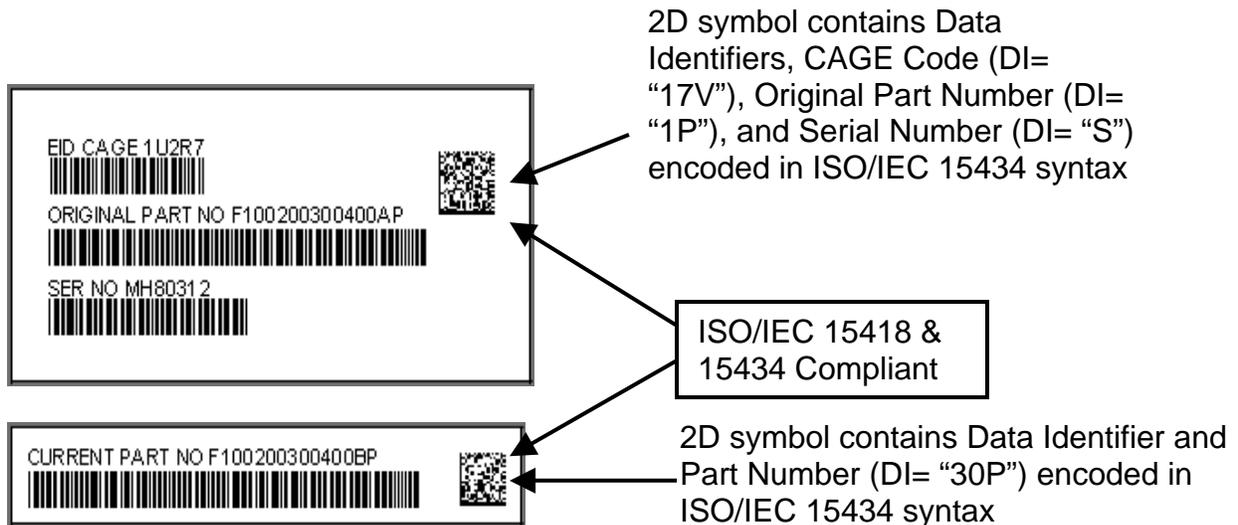


FIGURE 2.d Example of Label with Linear (Optional) and Data Matrix Using Data Identifiers in Construct #2 for Modified Item

Note: Construct #2: The item UID is established by the enterprise's identification, product part number and a serial number unique within that original part number. All three data elements are included on the single permanent upper label. The additional bottom label includes the current part number, which is the same as the original part number for a new item (Figure 2.c). The bottom label is replaced with a label containing a revised part number when modification of the item requires a new current part number be established (Figure 2.d).

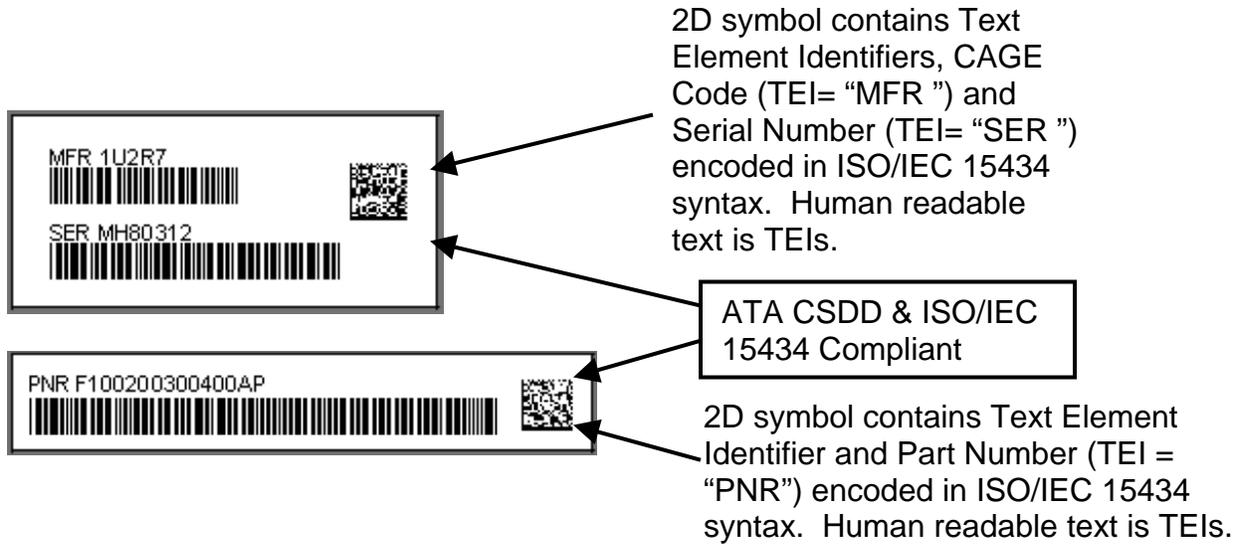


FIGURE 2.e Example of Label with Linear (Optional) and Data Matrix Using Text Element Identifiers Construct #1 for a New Item

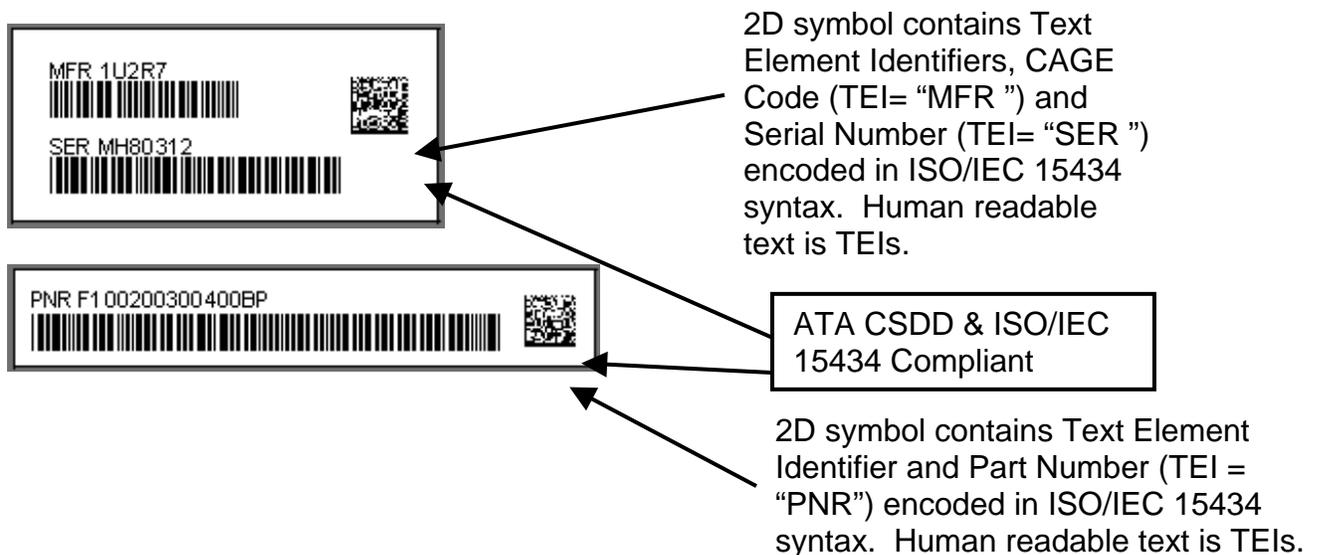


FIGURE 2.f Example of Label with Linear (Optional) and Data Matrix Using Text Element Identifiers Construct #1 for a Modified Item

Note: Construct #1 using TEIs: The available TEIs listed in ATA CSDD permit the use of Construct #1 for an item UID. The UID is established by the enterprise’s identification and a serial number unique within that enterprise identifier. The current part number is shown as a separate label in Figure 2.e in the instance of a new item. The bottom label is replaced with a label containing a revised part number when modification of the item requires a new current part number be established, as shown in Figure 2.f.

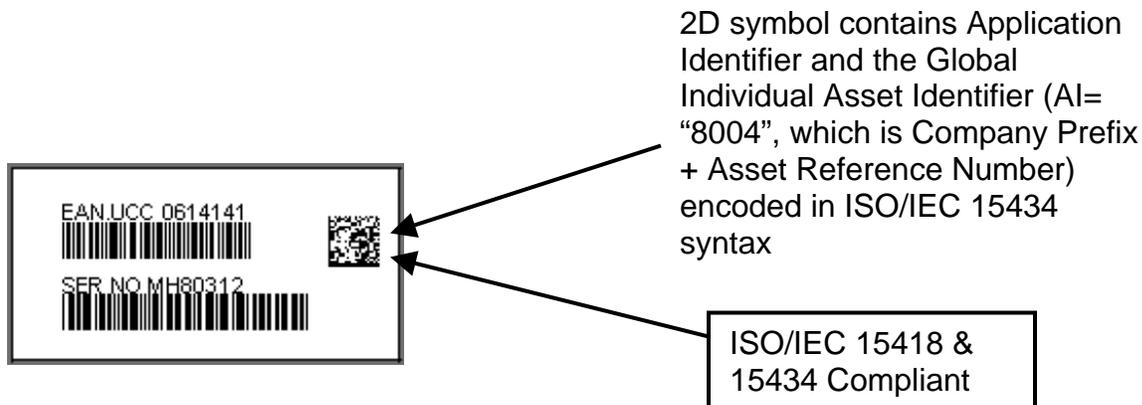


FIGURE 2.g Example of Label with Linear (Optional) and Data Matrix Using Application Identifiers in Construct #1

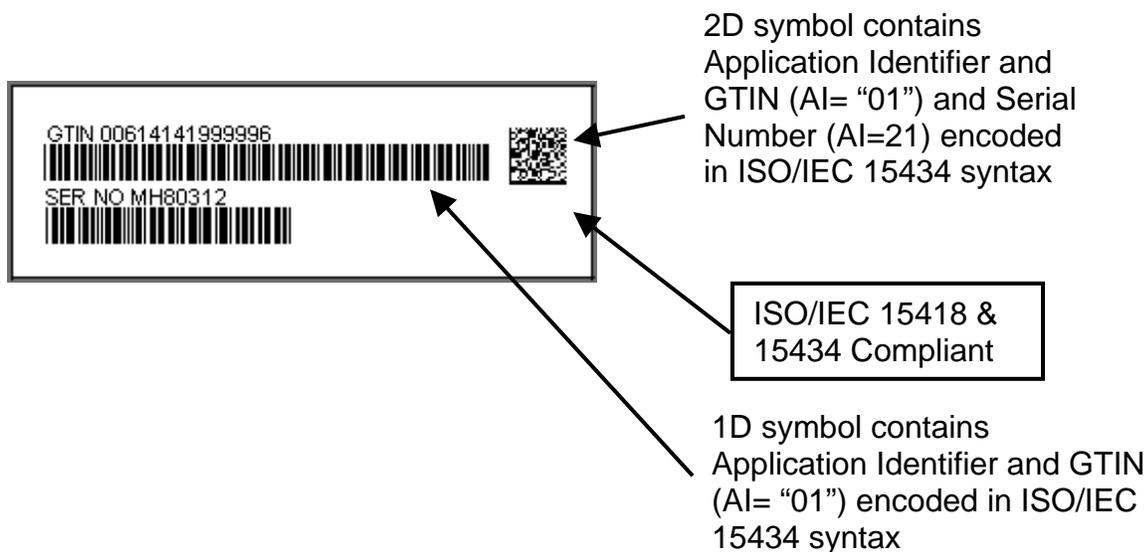


FIGURE 2.h Example of Label with Linear (Optional) and Data Matrix Using Application Identifiers in Construct #2

Note: Construct #1 and #2 using AIs: These constructs have to follow the EAN.UCC General Specifications. Construct #1 is the Global Individual Asset Identifier. Construct #2 is the Global Trade Item Number (GTIN) plus a serial number. The EAN.UCC company prefix (0614141) is embedded in the GTIN, which does not change for a product.

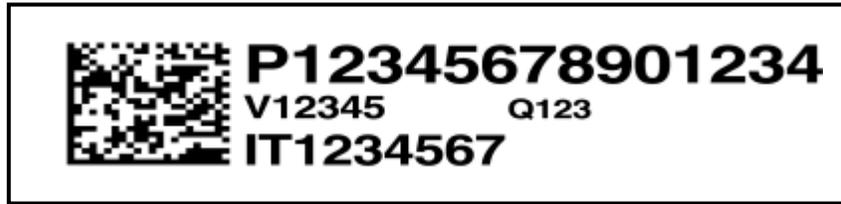


FIGURE 3. Example of AIAG B-4 Label

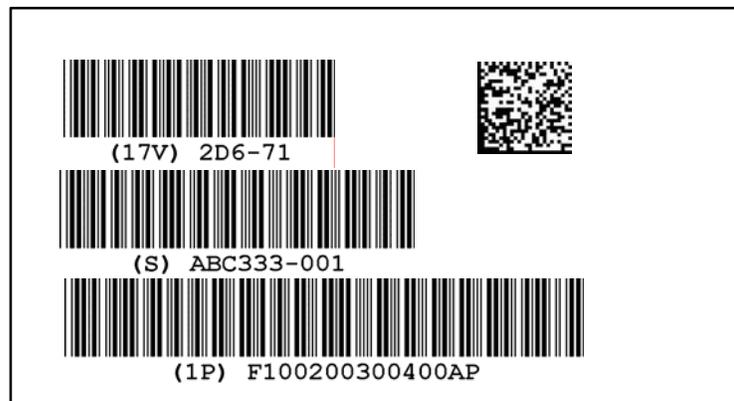


FIGURE 4. Example of EIA Label



FIGURE 5. Example of EAN.UCC Label

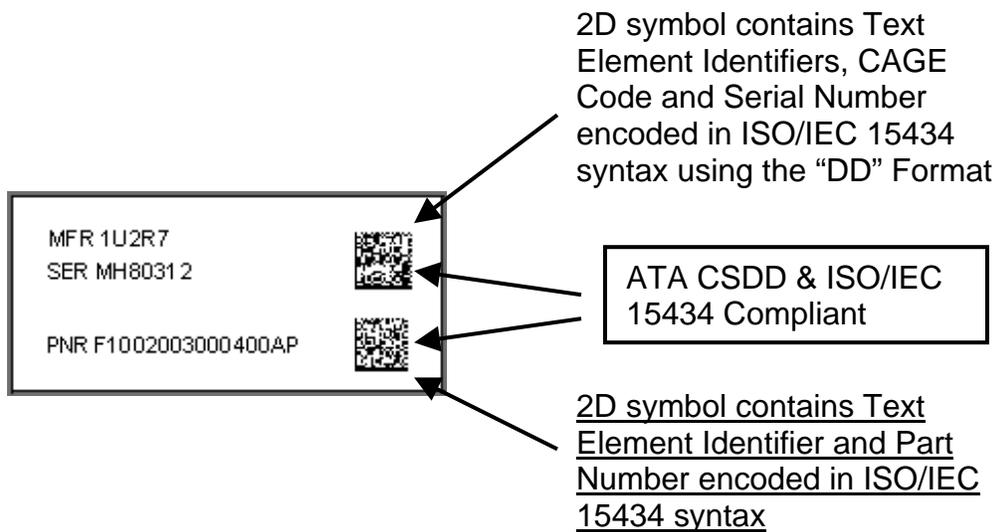


FIGURE 6 Example of Label Where the Linear Symbol Has Been Omitted Due to Limited Space

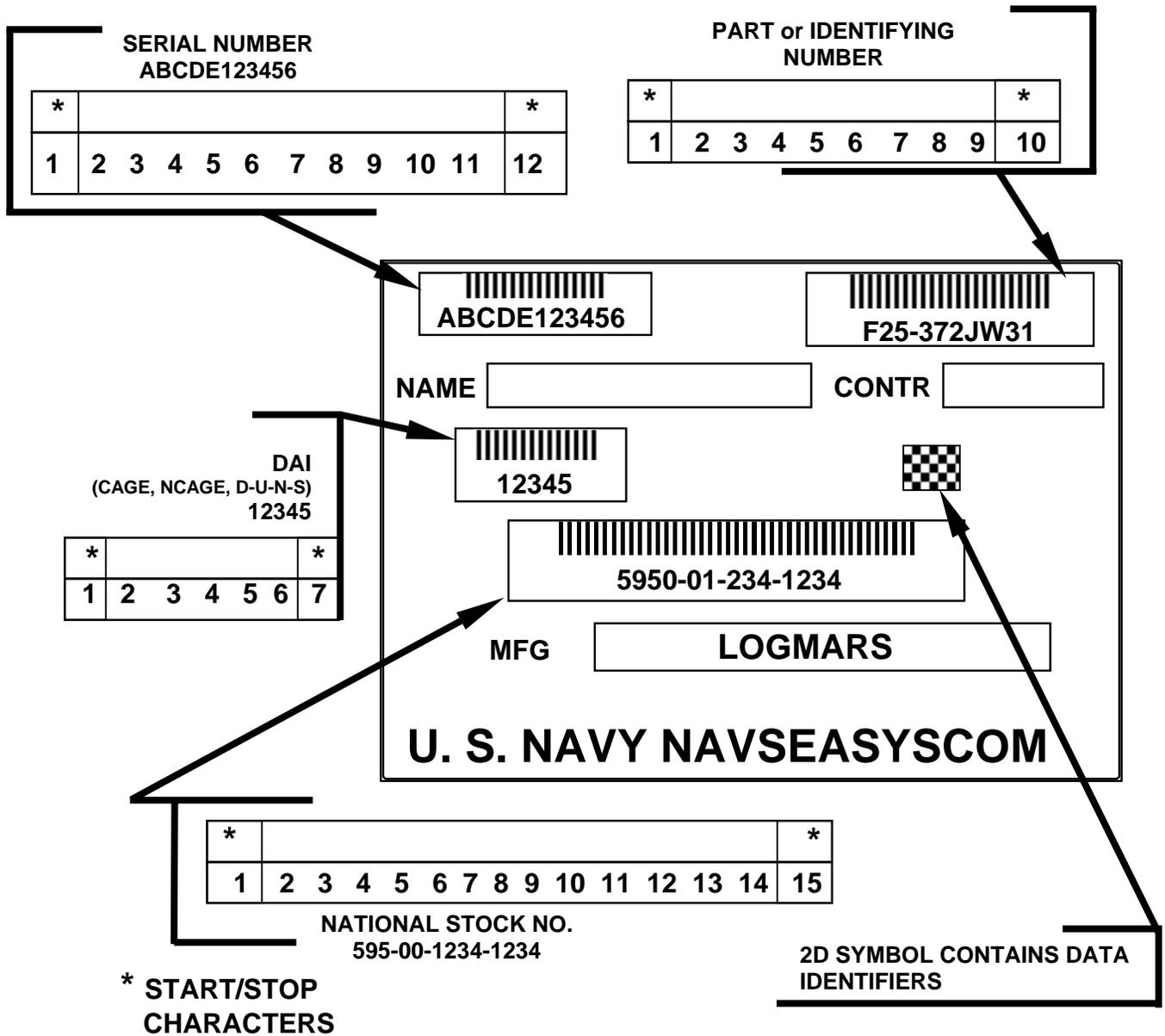
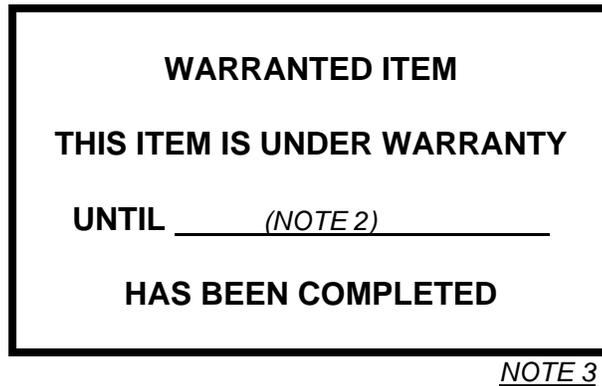
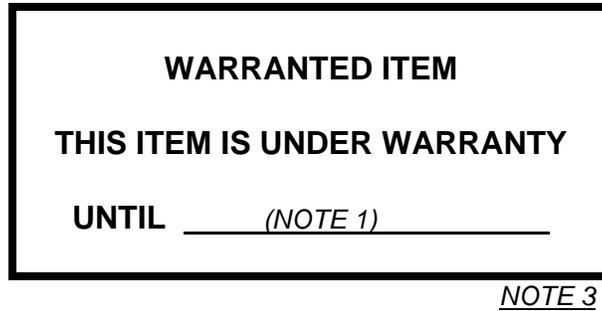


FIGURE 7. Example of MRI marking for identification plate.



- Note 1** - Indicate expiration date
- Note 2** - Indicate condition of use (i.e., hours of operation, time since manufacture)
- Note 3** - These examples are provided as a guide only and should not be considered mandatory.

FIGURE 8. Examples of warranty markings.

(Symbol)



(LABEL)

**CAUTION
CONTAINS PARTS AND ASSEMBLIES
SUSCEPTIBLE TO DAMAGE BY
ELECTROSTATIC DISCHARGE (ESD)**

FIGURE 9 Electrostatic Discharge (ESD) sensitive identification

CONCLUDING MATERIAL

Custodians:

Army - AR
Navy - AS
Air Force - 16
DLA - DH

Preparing Activity:

Air Force - 16
(Project SESS-2004-001)

Review Activities:

Army - AT, AV, CR, CR4, EA, MI, SM
Navy - MC, OS, SH, TD, YD
Air Force - 11
DLA - CC, DP, GS, IS

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