

[INCH-POUND]
A-A-59590C
28 February 2010
SUPERSEDING
A-A-59590B
28 April 2005

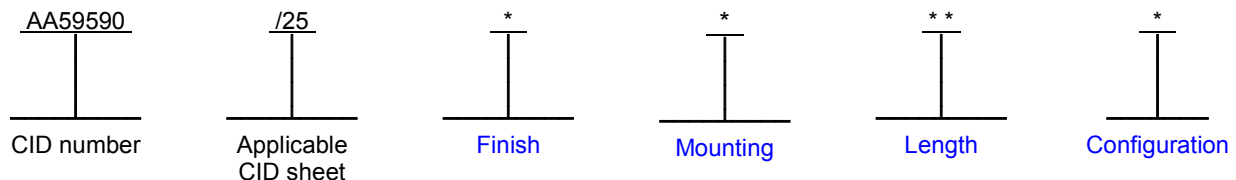
COMMERCIAL ITEM DESCRIPTION

HOLDER, ELECTRICAL CARD, WEDGE RETAINERS, 3 PIECE,
FOR COLD PLATE APPLICATIONS,
GENERAL REQUIREMENTS FOR

The General Services Administration has authorized the use of this commercial item description for all federal agencies.

1. **SCOPE.** This commercial item description (CID) covers the general requirements for a family of 3 piece card holders that use screw actuated wedge retainers to hold circuit card assemblies into their installed positions in heat sinking devices (cold plates, heat exchanger, etc.) or other applications. Card holders covered by this CID are intended to provide maximum contact between thermal paths on the circuit card assemblies and the heat sink surfaces and to provide resistance to shock and vibration. Requirements for specific card holders are covered in the individual CID specification sheets. Card holders covered by this CID are intended for commercial/industrial applications.

2. **CLASSIFICATION/PART OR IDENTIFICATION NUMBER (PIN).** This CID uses a classification system which is included in the Part Identification Number (PIN) as shown in the following example (see 7.1).



3. SALIENT CHARACTERISTICS.

3.1 **Interface and physical dimensions.** Card holders supplied to this CID shall meet the interface and physical dimensions as specified herein and on the applicable CID specification sheet.

3.2 **CID specification sheet.** The family of card holders for use on circuit card assemblies shall be in accordance with the requirements specified herein and the applicable CID specification sheet. In the event of conflict between this general CID and the applicable CID specification sheet, the latter shall govern.

3.3 **Material.** Materials shall be as specified herein and on the applicable CID specification sheet. However, when a definite material is not specified, a material shall be used which will enable the card holder to meet the performance requirements of this CID and the applicable CID specification sheet. Acceptance or approval of any constituent material shall not be construed as a guaranty of the acceptance of the finished product.

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any data that may improve this document should be sent to: Defense Supply Center, Columbus, ATTN: DSCC-VAC, Post Office Box 3990, Columbus, OH 43218-3990, facsimile (614) 693-1642, or electronic mail at 5998.Documents@dla.mil. Since contact information can change, you may want to verify the currency of the address information using the ASSIST Online database at <https://assist.daps.dla.mil/>.

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3.3.1 Body and wedges. The body and wedge material shall be aluminum alloy in accordance with [ASTM B221](#), [SAE AMS-QQ-A-200/8](#), or equivalent.

3.3.2 Captive nut (when applicable). The captive nut material shall stainless steel in accordance with [ASTM A582/A582](#) or equivalent.

3.3.3 Cup. The cup material for visual indicators shall stainless steel in accordance with [ASTM A240/A240M](#), [ASTM A582/A582](#), or equivalent.

3.3.4 Flat washer. The flat washer shall comply with [AIA/NAS NAS 620](#) or equivalent.

3.3.5 Lockwasher. The lockwasher shall comply with [AIA/NAS NAS M35338](#), [AIA/NAS NAS 1676](#), or equivalent.

3.3.6 Screw. The screw material shall be stainless steel in accordance with [SAE AMS-QQ-S-763](#), [ASTM A484/A484M](#), [ASTM A582/A582](#), or equivalent.

3.3.7 Screw retention lock nut (when applicable). When screw retention is specified, the lock nut used shall comply with [AIA/NAS M21042](#), [AIA/NAS M21043](#), or equivalent.

3.3.8 Spring. The spring material for visual indicators shall be stainless steel in accordance with [ASTM A313/A313M](#), [ASTM A580/A580](#), or equivalent.

3.4 Finish. Finish shall be as specified herein and on the applicable CID specification sheet.

3.4.1 Aluminum parts. Unless otherwise specified, all aluminum parts shall be finished as specified in [3.4.2](#) through [3.4.2.4](#) inclusive. Finish designators shall be as specified in [table I](#) and on the applicable CID specification sheet. A finish designator shall be included in the PIN.

3.4.2 Anodize. Anodized coatings are intended to provide surface corrosion resistance and have good dielectric properties. Two types of anodized finishes are available for extractors fabricated of aluminum, thin (or regular) anodize, and thick (or hard) anodize. A thin anodized coating applied to aluminum extractors provides good surface corrosion protection and medium abrasion resistance. A hard anodized coating applied to aluminum extractors provides excellent surface corrosion and abrasion resistance under severe service conditions.

3.4.2.1 Black anodized. Black anodize finish shall be in accordance with [MIL-A-8625](#), type II, class 2, or equivalent. Card holders assemblies with black anodized finished aluminum parts shall include a suffix "B" in the PIN.

3.4.2.2 Red anodized. Red anodize finish shall be in accordance with [MIL-A-8625](#), type II, class 2, or equivalent. Card holders assemblies with red anodized finished aluminum parts shall include a suffix "F" in the PIN.

3.4.2.3 Hard black anodized. Hard black anodize finish shall be in accordance with [MIL-A-8625](#), type III, class 2, or equivalent. Card holders assemblies with hard black anodized finished aluminum parts shall include a suffix "H" in the PIN.

3.4.2.4 Hard black anodized with dry film lubricant. Dry film lubricant applied over hard black anodize is for the reduction of wear and friction. The hard black anodize finish shall be in accordance with [MIL-A-8625](#), type III, class 2, or equivalent. The dry film lubricant shall be in accordance with [MIL-PRF-46010](#) or equivalent. Card holders assemblies with hard black anodized with dry film lubricant finished aluminum parts shall include a suffix "D" in the PIN.

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3.4.3 Chemical film. Chemical film finishes are primarily used for corrosion resistance where lower electrical resistance is required. A thicker, less conductive chemical film finish in accordance with [MIL-DTL-5541](#), type II, class 1A, applied to aluminum extractors provides better surface corrosion and abrasion resistance under severe service conditions than class 3 chemical film finish.

3.4.3.1 Chemical film, clear. Chemical film finish shall be in accordance with [MIL-DTL-5541](#), type II, class 1A, or equivalent. Card holders assemblies with clear chemical film finished aluminum parts shall include a suffix "R" in the PIN.

3.4.3.2 Chemical film, gold. Gold chemical film finish shall be in accordance with [MIL-DTL-5541](#), type II, class 1A, or equivalent. Card holders assemblies with gold chemical film finished aluminum parts shall include a suffix "C" in the PIN.

3.4.4 Nickel. Two types of nickel finishes are available for the aluminum parts of card holders. Electroless nickel deposits are used typically to provide a uniform build-up on intricate shapes whereas electrolytic plated nickel is less uniform in thickness on but provides higher hardness and corrosion resistance.

3.4.4.1 Nickel, electroless. Electroless nickel finish provides a hard and smooth surface and protects aluminum and aluminum alloys from corrosion, oxidation and wear. Electroless nickel finish shall be in accordance with [SAE AMS-QQ-N-290](#), [SAE AMS 2404](#), or equivalent. Card holders assemblies with electroless nickel finished aluminum parts shall include a suffix "E" in the PIN.

3.4.4.2 Nickel, electrodeposited. Electrodeposited nickel finish protects metals against corrosive attack in rural, industrial, and marine atmospheres and offers high hardness for wear and low friction. Electrodeposited nickel finish shall be in accordance with [SAE AMS 2403](#) or equivalent. Card holders assemblies with electrodeposited nickel finished aluminum parts shall include a suffix "P" in the PIN.

3.4.5 Stainless steel parts (when applicable). Stainless steel parts shall be subjected to passivation treatment in accordance with [SAE AMS-QQ-P-35](#), [MIL-S-5002](#), [SAE AMS 2700](#), or equivalent.

TABLE I. Card holder finishes.

Finish Designator	Finish	Reference document (or equivalent)	Paragraph
B	Anodize, black	MIL-A-8625 , type II, class 2	3.4.2.1
F	Anodize, red	MIL-A-8625 , type II, class 2	3.4.2.2
H	Anodize, hard black	MIL-A-8625 , type III, class 2	3.4.2.3
D	Anodize, hard black, with dry film lubricant	MIL-A-8625 , type III, class 2 and MIL-PRF-46010 (for dry film lubricant)	3.4.2.4
C	Chemical film, gold	MIL-DTL-5541 , class 1A	3.4.3.1
R	Chemical film, clear	MIL-DTL-5541 , class 1A	3.4.3.2
E	Nickel, electroless	SAE AMS-QQ-N-290 or SAE AMS 2404	3.4.4.1
P	Nickel, electrodeposited	SAE AMS 2403	3.4.4.2

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3.5 Interface and physical dimensions. The card holders shall be as specified herein and the applicable CID specification sheet. Tolerances, unless otherwise specified on the applicable CID specification sheet, shall be ± 0.10 (0.25 mm) for three place decimals and ± 0.02 (0.5 mm) for two place decimals.

3.5.1 Screw. The screw shall have an internal hex socket head for tool engagement and shall turn clockwise to secure the card holder and circuit card assembly into the applicable fixture. Unless otherwise specified, the internal hex socket head shall be .094 inch (2.38 mm) across flats.

3.5.2 Mounting options. The mounting options shall be as specified in 3.5.2.1 through 3.5.2.5, inclusive. Mounting option designators shall be included in the PIN (see [table II](#)).

3.5.2.1 No mounting holes. No mounting holes option is intended to be used when card holders are to be mounted with adhesives. Card holders not having mounting holes shall include a mounting designator "N" in the PIN.

3.5.2.2 Mounting holes. When mounting holes are required, the holes shall be spaced as indicated in the applicable CID specification sheet. When specified on the applicable CID specification sheet, card holder assemblies greater than 6.00 inches (152.4 mm) in length require additional mounting holes.

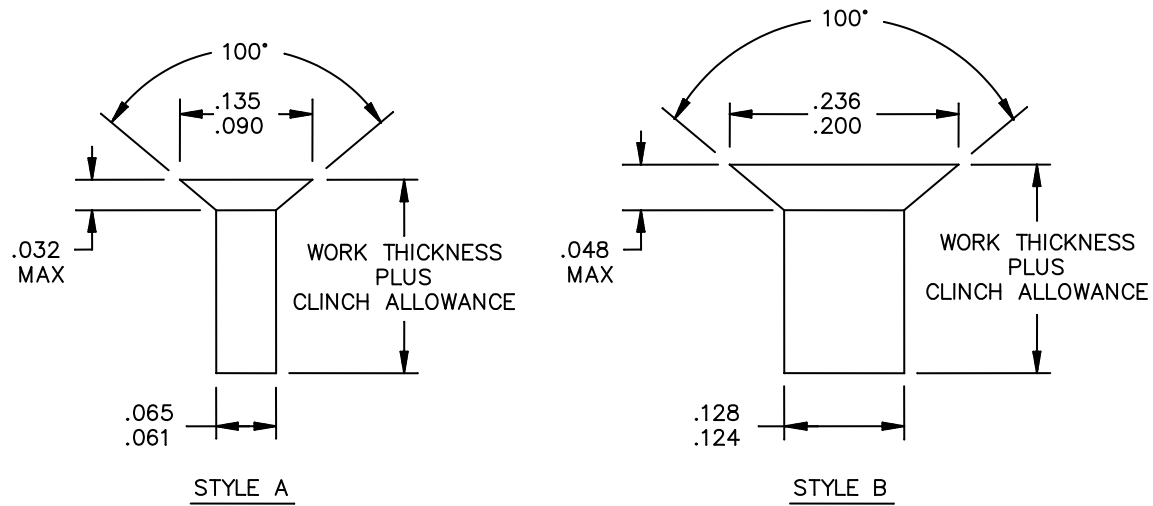
TABLE II. Mounting options.

PIN designation	Hole description
N	No mounting holes (for adhesive mounting or brazing)
J	Counterbore through holes, 2 places
T	Tapped 0–80 UNF holes, 2 places
V	Tapped 2–56 UNC holes, 2 places
K	Counterbore through holes, 3 places
R	Tapped 0–80 UNF holes, 3 places
S	Tapped 2–56 UNC holes, 3 places
F	Tapped, metric 2 x 0.4 holes, 2 places
G	Tapped, metric 2.5 x 0.45 holes, 2 places
L	Tapped, metric 2 x 0.4 holes, 3 places
M	Tapped, metric 2.5 x 0.45 holes, 3 places

3.5.2.3 Rivet mounting holes (counterbore and countersunk through holes). Unless otherwise specified on the applicable CID specification sheet, counterbore holes shall be .066 to .073 inch (1.68 to 1.85 mm) diameter through holes, countersunk 100 degrees by .140 inch (3.56 mm) diameter with an access/clearance counter bore hole of .156 inch (3.97 mm) diameter by a depth specified in [table III](#). Card holders using rivet mount holes shall include a mounting designator "J" or "K" in the PIN.

3.5.2.3.1 Rivet dimensions. The rivet styles typically used when rivet mounting holes is specified are depicted on [figure 1](#).

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Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm
.032	0.81	.061	1.55	.090	2.29	.128	3.25	.200	5.08
.048	1.22	.065	1.65	.124	3.15	.135	3.43	.236	5.99

NOTES:

1. Dimensions are in inches. Millimeters are given for general information only.
2. Unless otherwise specified, tolerances are ± 0.02 inch (0.5 mm) for two place decimals and ± 0.010 inch (0.25 mm) for three place decimals.

FIGURE 1. Suggested rivet dimension.TABLE III. Counter bore hole depth.

Counter bore hole depth ^{1/}	Applicable CID specification sheet
.135 (3.43 mm)	A-A-59590/11 and /12
.160 (4.06 mm)	A-A-59590/7, /8, /9, and /10
.200 (5.08 mm)	A-A-59590/1, /2, /3, /4, /5, /6, /17, /18, /19, /20, and /25
.300 (7.62 mm)	A-A-59590/13, /14, /15, and /16
.390 (9.91 mm)	A-A-59590/21, /22, /23, and /24

^{1/} Dimensions are in inches. Millimeters, in parenthesis, are given for information only.

3.5.2.4 Tapped holes, unified inch screw threads. Tapped holes shall be 0-80 UNF or 2-56 UNC through holes in accordance with [ASME B1.1](#) or equivalent. Card holders using unified inch screw thread tapped holes shall include the mounting designator "T", "V", "R", or "S", respectively in the PIN ([see table II](#)).

3.5.2.5 Tapped holes, metric M screw threads. Metric tapped holes shall be metric 2 x 0.4 or metric 2.5 x 0.45 through holes in accordance with [ASME B1.13](#) or equivalent. Card holders using metric M screw tapped holes shall include the mounting designator "F", "G", "L", or "M", respectively in the PIN ([see table II](#)).

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3.5.3 Expanded and relaxed dimensions. Expanded and relaxed dimensions shall be as specified in the applicable CID specification sheet.

3.5.4 Card holder length. Unless otherwise specified, the card holders length shall be the length of the body and wedge assembly (not to include hardware protrusion) in its relaxed state. The lengths available for a particular card holder shall be listed on the applicable CID specification sheet. Card holders length designator shall be included in the PIN. Examples of length designation (13th and 14th characters of PIN) are underlined in the PINs listed below:

1.80 inch (45.7 mm) card holder = AA59590/05CN18W;

3.00 inch (127.0 mm) card holder = AA59590/05CN30W;

8.30 inch (170.2 mm) card holder = AA59590/05CN83W.

3.5.5 Configuration Card holders may have various configurations on a particular specification sheet. The exact configuration of a card holder is determined by what optional hardware is needed for the application. Listed below is a compilation of the most common hardware options available on most of the specification sheets associated with this CID.

3.5.5.1 Lockwasher and flat washer. A lockwasher and flat washer located under the screw head will provide for additional resistance to loosening from shock and vibration. Card holders requiring a lockwasher and flat washer option shall include a suffix "W" in the PIN.

3.5.5.2 Screw self-locking element. The use of a screw self-locking element will provide prevailing torque for resistance to loosening from shock vibration. Unless otherwise specified, the self-locking element shall comply with MIL-DTL-18240 or equivalent. Card holders requiring a screw self-locking element shall include a configuration identifier "E" in the PIN.

3.5.5.3 Lockwasher, flat washer, and screw self-locking element. Card holders requiring a lockwasher, flat washer, and screw self-locking element option shall include a suffix "D" in the PIN.

3.5.5.4 Facing (left or right). Most card holders designs covered by the CID specification sheets can be used on both the top and bottom of a circuit card assembly for a given PIN. Figure 2 depicts a bottom mounted card holder. Card holders of this design are considered to have a universal facing. However, some card holder designs have a unique orientation when properly installed on a circuit card assembly. These card holders are available for mounting in either the left hand or right hand position. These type of card holders have PINs that include configuration designators to differentiate between the left or right facing.

3.5.6 Cold plate slot width dimension. Recommended slot width dimension (see figure 2) will be specified on the applicable CID specification sheet.

3.5.7 Nominal installation torque. When card holders are used in cold plate applications as depicted on figure 2, the nominal installation torque of each card holder shall be as specified on the CID specification sheet.

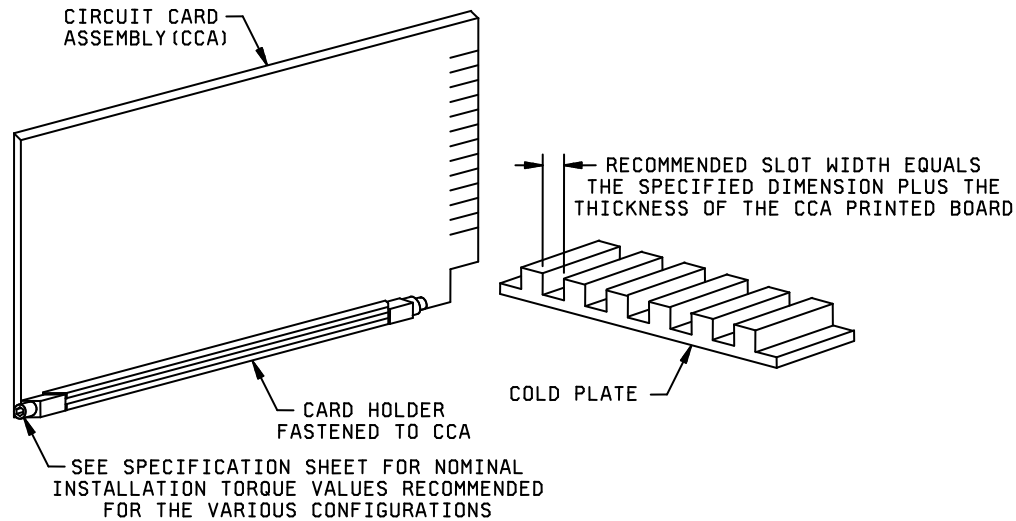
3.5.8 Disassembly. Unless otherwise specified by the CID specification sheet, card holders shall have the capability of being disassembled before or after mounting.

3.6 Marking. Card holders supplied to this CID can be marked with the manufacturer's standard commercial PIN when applicable. The PIN marked on the unit pack shall be the CID PIN.

3.7 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.8 Workmanship. Card holders shall be processed in such a manner as to be uniform in quality and shall be free from other defects that will affect life, serviceability, or appearance.

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FIGURE 2. Cold plate usage details.

4. **REGULATORY REQUIREMENTS.** The offeror/contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with paragraph 23.403 of the Federal Acquisition Regulation (FAR).

5. **PRODUCT CONFORMANCE PROVISIONS.**

5.1 Product conformance. The products provided shall meet the salient characteristics of this CID, conform to the producer's own drawings, specifications, standards, quality assurances practices, and be the same product offered for sale in the commercial market. The Government reserves the right to require proof of such conformance.

5.2 Market acceptance. The following market acceptance criteria are necessary to document the quality of the product to be provided under this CID.

- a. The company producing the item must have been producing a product meeting the requirements of this CID for at least 12 months.
- b. The company producing the item must have sold 100 units meeting the requirements of this CID in the commercial marketplace over the past 24 months.

5.3 Inspection requirements. Inspection and acceptance of material shall be in accordance with the requirements cited in the contract or purchase request.

6. **PACKAGING.** Preservation, packing, and marking shall be as specified in the contract or order.

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7. NOTES

7.1 PIN. The PIN should be used for Government purposes to buy commercial products to this CID. See section 2 for PIN format example.

7.2 Commercial and Government Entity (CAGE) code. For ordering purposes, inventory control, and submission of these card holders to DSCC under the Military Parts Control Advisory Group (MPCAG) evaluation program, CAGE code 58536 should be used.

7.3 Source of documents.

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-S-5002	–	Surface Treatments and Inorganic Coatings for Metal Surfaces of Weapon Systems.
MIL-DTL-5541	–	Chemical Conversion Coatings On Aluminum And Aluminum Alloys.
MIL-A-8625	–	Anodic Coatings For Aluminum And Aluminum Alloys.
MIL-DTL-18240	–	Fastener Element, Self-Locking, Threaded Fastener, 250°F Maximum.
MIL-PRF-46010	–	Lubricant, Solid Film, Heat Cured, Corrosion Inhibiting.

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

FEDERAL REGULATIONS

FAR	–	Federal Acquisition Regulations (FAR).
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(Copies of these documents are available online at <http://www.acqnet.gov/comp/far/index.html> or from the U.S. Government Printing Office, 732 North Capital Street, NW, Washington D.C. 20401.)

Other Publications

AEROSPACE INDUSTRIES ASSOCIATION (AIA)

AIA/NAS NAS 620	–	Washer, Flat, Reduced Outside Diameter.
AIA/NAS NAS 1676	–	Washer, Lock-Spring, Helical, Hi-Collar.
AIA/NAS NAS M35338	–	Washer, Lock-Spring, Helical, Regular (Medium) Series.
AIA/NAS M21042	–	Nut, Self-Locking, 450 Degrees F, Reduced Hexagon, Reduced Height, Ring Base, Non-Corrosion Resistant Steel
AIA/NAS M21043	–	Nut, Self-Locking, 800 Degrees F, Reduced Hexagon, Reduced Height, Ring Base, Corrosion Resistant Steel.

(Application for copies should be addressed to the Aerospace Industries Association, 1250 Eye Street, NW, Suite 1200, Washington, DC 20005-3924 or at URL: <http://www.aia-aerospace.org>.)

ASME INTERNATIONAL (ASME)

ASME B1.1	–	Unified Inch Screw Threads (UN and UNR Thread Form).
ASME B1.13	–	Metric Screw Threads: M Profile.

(Application for copies should be addressed to the ASME International, Three Park Avenue, New York, NY 10016-5990 or at URL <http://www.asme.org>.)

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ASTM INTERNATIONAL (ASTM)

ASTM A240/A240M	–	Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
ASTM A313/A313M	–	Standard Specification for Stainless Steel Spring Wire.
ASTM A484/A484M	–	Standard Specification for General Requirements for Stainless Steel Bars, Billets, and Forgings.
ASTM A580/A580	–	Standard Specification for Stainless Steel Wire.
ASTM A582/A582	–	Standard Specification for Free-Machining Stainless Steel Bars.
ASTM B221	–	Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

(Application for copies should be addressed to the ASTM International, P.O. Box C700, 100 Barr Harbor Drive, West Conshohocken, PA 19428–2959 or at URL: <http://www.astm.org>.)

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

SAE AMS–QQ–P–35		Passivation Treatments for Corrosion-Resistant Steel.
SAE AMS–QQ–A–200/8	–	Aluminum Alloy 6061, Bar, Rod, Shapes, Tube, and Wire, Extruded.
SAE AMS–QQ–N–290	–	Nickel Plating (Electrodeposited).
SAE AMS–QQ–S–763	–	Steel Bars, Wire, Shapes, and Forgings, Corrosion Resistant.
SAE AMS 2404	–	Plating, Electroless Nickel.
SAE AMS 2403	–	Plating, Nickel General Purpose.
SAE AMS 2700	–	Passivation of Corrosion Resistant Steels.

(Application for copies should be addressed to the SAE World Headquarters, 400 Commonwealth Drive, Warrendale, PA 15096–0001 or at URL: <http://www.sae.org>.)

(Industry association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

7.4 Ordering data. The contract or order should specify the following:

- a. CID document number, revision, and CID PIN.
- b. Product conformance provisions.
- c. Packaging requirements.

7.5 Government users. To acquire information on obtaining these card holders from the Government inventory system, contact Defense Supply Center, Columbus, ATTN: DSCC–CAC, Post Office Box 3990, Columbus, OH 43218–3990, by telephone (614) 692–7402, or via electronic mail at ActiveDevices.CAC@dsccl.dla.mil.

7.6 Assistance. Questions or comments pertaining to this document should be addressed to Defense Supply Center, Columbus, ATTN: DSCC–VAC, Post Office Box 3990, Columbus, OH 43218–3990; telephone (614) 692–0526; DSN 850–0526; facsimile (614) 693–1642; or electronic mail address 5998.Documents@dla.mil. This document is available for downloading at World Wide Web URL <http://www.dsccl.dla.mil>.

7.7 Environmentally preferable material. Environmentally preferable materials should be used to the maximum extent possible to meet the requirements of this specification. As of the dating of this document, the U.S. Environmental Protection Agency (EPA) is focusing efforts on reducing 31 priority chemicals. The list of chemicals and additional information is available on their website <http://www.epa.gov/osw/hazard/wastemin/priority.htm>. Included in the EPA list of 31 priority chemicals are cadmium, lead, and mercury. Use of these materials should be minimized or eliminated unless needed to meet the requirements specified herein (see section 3).

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7.7.1 Guidance on use of alternative parts with less hazardous or non-hazardous materials. This specification provides for a number of alternative plating materials via the PIN. Users should select the PIN with the least hazardous material that meets the form, fit and function requirements of their application.

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

MILITARY INTERESTS:

Custodians:

Army – CR
Navy – EC
Air Force – 85
DLA – CC

Review Activity:

Air Force – 99

CIVIL AGENCY COORDINATING ACTIVITY:

GSA – FAS

Preparing Activity

DLA – CC

Project 5998–2009–051

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.daps.dla.mil/>.