

INCH-POUND

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# DEPARTMENT OF DEFENSE HANDBOOK

SELECTION AND USE OF  
ELECTRICAL AND ELECTRONIC ASSEMBLIES,  
BOARDS, CARDS, AND ASSOCIATED HARDWARE



This handbook is for guidance only. Do not cite this document as a requirement.

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FOREWORD

1. This handbook is approved for use by all Departments and Agencies of the Department of Defense.
2. This handbook is for guidance only. This handbook cannot be cited as a requirement. If it is, the contractor does not have to comply.
3. This handbook provides a list of electrical and electronic assemblies, boards, cards, and associated hardware for use in the design of Department of Defense equipment. The application information and performance characteristics contained in this handbook are offered for guidance and are not to be considered as binding. Additions to this handbook will be made periodically as the referenced documents are updated.
4. Comments, suggestions, or questions on this document should be addressed to: Defense Supply Center, Columbus, ATTN: DSCC-VAC, Post Office Box 3990, Columbus, OH 43218-3990 or emailed to [5998.Documents@dla.mil](mailto:5998.Documents@dla.mil). Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <http://assist.daps.dla.mil/>.

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## 1. SCOPE

1.1 Scope. This handbook is for guidance only and cannot be cited as a requirement. If it is, the contractor does not have to comply. This handbook consists of the following:

- a. Selected standard items, for use in the design and manufacturer of Department of Defense equipment under the jurisdiction of the Department of Defense.
- b. Guides for the choice and application of items for use in Department of Defense equipment.

1.2 Purpose of this handbook.

- a. To provide the equipment designer with a selection of standard items for use in most Department of Defense applications.
- b. To control and minimize the variety of items used in Department of Defense equipment in order to facilitate logistic support of equipment in the field.
- c. To outline criteria pertaining to the use, choice, and application of items in Department of Defense equipment.

## 2. APPLICABLE DOCUMENTS

2.1 General. The documents listed below are not necessarily all of the documents referenced herein, but are those needed to understand the information provided by this handbook.

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.

## DEPARTMENT OF DEFENSE SPECIFICATIONS

- |                               |   |   |
|-------------------------------|---|---|
| MIL-A-24741                   | – | Assemblies, Metal Electrical Backplane, One and Two Layer, General Specification for.                     |
| MIL-A-28870                   | – | Assemblies, Electrical Backplane, Printed Wiring, General Specification for.                              |
| <a href="#">MIL-PRF-31032</a> | – | Printed Circuit Board/Printed Wiring Board, General Specification for.                                    |
| <a href="#">A-A-55563</a>     | – | Holder, Electrical Card, Metal Card Guide, General Requirements for.                                      |
| <a href="#">A-A-59590</a>     | – | Holder, Electrical Card, Wedge Retainers, 3 Piece, Screw Actuate Drive, General Requirements for.         |
| <a href="#">A-A-59789</a>     | – | Holder, Electrical Card, Wedge Retainers, 5 Piece, For Cold Plate Applications, General Requirements for. |

## DEPARTMENT OF DEFENSE STANDARDS

- |              |   |   |
|--------------|---|---|
| MIL-STD-2119 | – | Design Requirements for Printed-Wiring Electrical Backplane Assemblies. |
| MIL-STD-2198 | – | Design Requirements for Metal Electrical Backplane Assemblies.          |

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

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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.

## DRAWINGS

- 83023 – Retainer–Ejector, Electrical Card, Plastic.
- 84006 – Holder, Electrical Card, Card Guide, Shallow Channel, Plastic.
- 84101 – Holder, Electrical Card, Card Guide, Deep Channel, Plastic.
- 84103 – Holder, Electrical Card, Wedge Retainer, 3–Piece, Screw Actuated.
- 84168 – Holder, Electrical Card, Card Guide–Retainer, Lever Actuated, Metal.
- 84191 – Extractor, Electrical Card, Metal.
- 85033 – Holder, Electrical Card, Metal Card Guide, Zero Insertion Force.
- 85034 – Holder, Electrical Card, Metal, Card Guide.
- 85067 – Holder, Electrical Card, Card Guide, Non–Conductive Plastic, Anti–vibration.
- 85068 – Holder, Electrical Card, Card Guide, Plastic, Fastener Mounted.
- 86092 – Holder, Electrical Card, Card Guide–Retainer, Lever Actuated, Metal.
- 88052 – Holder, Electrical Card, Card Guide–Retainer, Screw Actuated, Metal.
- 89024 – Holder, Electrical Card, Wedge Retainer, 5–Piece, .250 Inch By .260 Inch Body Size.
- 89029 – Holder, Electrical Card, Card Guide, Conductive Plastic, Anti–vibration.
- 89064 – Holder, Electrical Card, Wedge Retainer, 5–Piece, .225 Inch by .225 Inch and .225 Inch By .260 Inch Body Size.

(Copies of these documents are available online at <http://www.dsccl.dla.mil/programs/milspec/> or from the Defense Supply Center, Columbus, ATTN: DSCC–VT, 3990 East Broad Street, Columbus, OH 43216–5000)

2.3 Non–Government publications. The following documents form a part of this document to the extent specified herein.

## IPC – ASSOCIATION CONNECTING ELECTRONICS INDUSTRIES (IPC)

- IPC–2221 – Generic Standard on Printed Board Design.
- IPC–T–50 – Terms and Definitions for Interconnecting and Packaging Electronic Circuits.
- IPC–D–322 – Guidelines for Selecting Printed Wiring Board Sizes Using Standard Panel Sizes.

(Application for copies should be addressed to IPC – Association Connecting Electronics Industries, 3000 Lakeside Drive, Suite 309 S, Bannockburn, IL 60015–1249 or <http://www.ipc.org/>.)

## 3. DEFINITIONS

3.1 Definitions.

3.1.1 Commercial Item Description (CID). A simplified product description that describes, by functional or performance characteristics, the available, acceptable commercial products that will satisfy the Government's needs.

3.1.2 DSCC drawing. A standardization document developed by, and available from, the Defense Supply Center, Columbus.

3.1.3 General specification. A general specification is prepared in the six–section format and covers requirements and test procedures that are common to a group of parts, materials, or equipment. It is used with specification sheets and master drawings; e.g., MIL–PRF–31032 for printed boards.

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3.1.4 Military Parts Control Advisory Group (MPCAG). A DoD organization which provides advice to the Department of Defense departments and contractors on the selection of parts in assigned commodity classes, and collects data on nonstandard parts for developing and updating Department of Defense specifications and standards.

3.1.5 Part or Identifying Number (PIN). Formerly part number (P/N).

3.1.6 Qualified Manufacturer List (QML). A document maintained by the Government qualifying activity which lists vendors who are officially approved by the Government.

3.1.7 Qualified Products List (QPL). A document maintained by the Government qualifying activity which lists vendors whose products are officially approved by the Government.

3.2 Other terms and definitions. Other terms and definitions may be found in IPC-T-50.

#### 4. GENERAL GUIDANCE

4.1 Item identification. PIN's and type designations are used to identify the items listed in this handbook and in the individual specifications.

4.2 Conflict of requirements. In the event of conflict between the technical requirements of items described in this handbook and the applicable specification or DSCC drawing, the specification or DSCC drawing should govern.

4.3 Criteria for inclusion in this handbook. The criteria for inclusion in this handbook are as follows:

- a. The items are classified in FSC 5998.
- b. The items are for general use in DoD equipment.
- c. The items are covered by CIDs, DoD specifications, or DSCC drawings.
- d. The items are available from at least one source.
- e. The items are to be used for design purposes in new equipment.

4.4 Order of preference. The order of preference is as follows:

- a. Non-Government Standard (NGS) parts.
- b. CID parts.
- c. DoD QML specification parts.
- d. DoD QPL specification parts.
- e. DoD drawing parts.
- f. Other parts.

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5. DESIGN GUIDANCE

5.1 Printed wiring board size. Whenever cost and technical requirements permit, preferred rigid printed wiring board sizes should be used. These printed wiring board sizes will facilitate the development and use of standardized insertion and extraction tools. The preferred printed wiring board sizes, are detailed in IPC-2221. Additional guidelines for selecting printed wiring board sizes can be found in IPC-D-322.

5.2 Rigid printed circuit and printed wiring boards. Rigid printed circuit and printed wiring boards for single-sided, double-sided, and multilayer printed wiring conformance information can be found in MIL-PRF-31032.

5.3 Flexible and rigid-flex wiring. Flexible and rigid-flex printed wiring conformance information can be found in MIL-PRF-31032.

5.4 Backplane assemblies, printed wiring. Electrical backplane printed wiring assemblies conformance information can be found in MIL-A-28870 and design information can be found in MIL-STD-2119.

5.5 Metal electrical backplane assemblies. Metal electrical backplane assemblies conformance information can be found in MIL-A-24741 and design information can be found in MIL-STD-2198.

5.6 Associated hardware.

5.6.1 Holders, electrical card.

5.6.1.1 Card guides. Circuit card assembly card guide selections are found in tables I through VIII for metal card guides, and tables IX through XII for plastic card guides.

5.6.1.2 Card holders (wedge retainers). Circuit card assembly wedge retainers are found in tables XIII through XXII.

5.6.2 Extractors and retainer-ejectors. Extractor and retainer-ejector selections are found in tables XXIII through XXV.



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TABLE I. Card guides, metal, with 2 offset mounting holes.

| Overall length                          |                                   | Style                                   | CID classification PIN 1/         |
|---|-----------------------------------|---|-----------------------------------|
| Inch                                    | mm                                |   |                                   |
| 1.4                                     | 35                                | Low profile, open ended w/flared entry  | AA55563/19@A14&                   |
|   |                                   | Low profile, open ended wo/flared entry | AA55563/20@A14&                   |
| 2.0                                     | 51                                | Open ended, w/flared entry              | AA55563/01@A20&                   |
|   |                                   | Open ended, wo/flared entry             | AA55563/02@A20&                   |
|   |                                   | Closed ended, w/flared entry            | AA55563/03@A20&                   |
|   |                                   | Closed ended, wo/flared entry           | AA55563/04@A20&                   |
|   |                                   | Low profile, open ended w/flared entry  | AA55563/05@A20&, /13@20&          |
|   |                                   | Low profile, open ended wo/flared entry | AA55563/06@A20&, /14@20&          |
|   |                                   | 2.5                                     | 64                                |
| Open ended, wo/flared entry             | AA55563/02@A25&                   |   |                                   |
| Closed ended, w/flared entry            | AA55563/03@A25&                   |   |                                   |
| Closed ended, wo/flared entry           | AA55563/04@A25&                   |   |                                   |
| Low profile, open ended w/flared entry  | AA55563/05@A25&, /13@25&, /17@25& |   |                                   |
| Low profile, open ended wo/flared entry | AA55563/06@A25&, /14@25&          |   |                                   |
| 3.0                                     | 76                                | Open ended, w/flared entry              | AA55563/01@A30&                   |
|   |                                   | Open ended, wo/flared entry             | AA55563/02@A30&                   |
|   |                                   | Closed ended, w/flared entry            | AA55563/03@A30&                   |
|   |                                   | Closed ended, wo/flared entry           | AA55563/04@A30&                   |
|   |                                   | Low profile, open ended w/flared entry  | AA55563/05@A30&, /13@30&, /17@30& |
|   |                                   | Low profile, open ended wo/flared entry | AA55563/06@A30&, /14@30&          |
| 3.5                                     | 89                                | Open ended, w/flared entry              | AA55563/01@A35&                   |
|   |                                   | Open ended, wo/flared entry             | AA55563/02@A35&                   |
|   |                                   | Closed ended, w/flared entry            | AA55563/03@A35&                   |
|   |                                   | Closed ended, wo/flared entry           | AA55563/04@A35&                   |
|   |                                   | Low profile, open ended w/flared entry  | AA55563/05@A35&, /13@35&, /17@35& |
|   |                                   | Low profile, open ended wo/flared entry | AA55563/06@A35&, /14@35&          |
| 4.0                                     | 102                               | Open ended, w/flared entry              | AA55563/01@A40&                   |
|   |                                   | Open ended, wo/flared entry             | AA55563/02@A40&                   |
|   |                                   | Closed ended, w/flared entry            | AA55563/03@A40&                   |
|   |                                   | Closed ended, wo/flared entry           | AA55563/04@A40&                   |
|   |                                   | Low profile, open ended w/flared entry  | AA55563/05@A40&, /13@40&, /17@40& |
|   |                                   | Low profile, open ended wo/flared entry | AA55563/06@A40&, /14@40&          |
| 4.5                                     | 114                               | Open ended, w/flared entry              | AA55563/01@A45&                   |
|   |                                   | Open ended, wo/flared entry             | AA55563/02@A45&                   |
|   |                                   | Closed ended, w/flared entry            | AA55563/03@A45&                   |
|   |                                   | Closed ended, wo/flared entry           | AA55563/04@A45&                   |
|   |                                   | Low profile, open ended w/flared entry  | AA55563/05@A45&, /13@45&, /17@45& |
|   |                                   | Low profile, open ended wo/flared entry | AA55563/06@A45&, /14@45&          |

See footnote at end of table.

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TABLE I. Card guides, metal, with 2 offset mounting holes – Continued.

| Overall length |     | Style                                   | CID classification PIN <u>1/</u>  |
|----------------|-----|---|-----------------------------------|
| Inch           | mm  |   |                                   |
| 5.0            | 127 | Open ended, w/flared entry              | AA55563/01@A50&                   |
|                |     | Open ended, wo/flared entry             | AA55563/02@A50&                   |
|                |     | Closed ended, w/flared entry            | AA55563/03@A50&                   |
|                |     | Closed ended, wo/flared entry           | AA55563/04@A50&                   |
|                |     | Low profile, open ended w/flared entry  | AA55563/05@A50&, /13@50&, /17@50& |
|                |     | Low profile, open ended wo/flared entry | AA55563/06@A50&, /14@50&          |
| 5.5            | 140 | Open ended, w/flared entry              | AA55563/01@A55&                   |
|                |     | Open ended, wo/flared entry             | AA55563/02@A55&                   |
|                |     | Closed ended, w/flared entry            | AA55563/03@A55&                   |
|                |     | Closed ended, wo/flared entry           | AA55563/04@A55&                   |
|                |     | Low profile, open ended w/flared entry  | AA55563/05@A55&, /13@55&, /17@55& |
|                |     | Low profile, open ended wo/flared entry | AA55563/06@A55&, /14@55&          |
| 6.0            | 152 | Open ended, w/flared entry              | AA55563/01@A60&                   |
|                |     | Open ended, wo/flared entry             | AA55563/02@A60&                   |
|                |     | Closed ended, w/flared entry            | AA55563/03@A60&                   |
|                |     | Closed ended, wo/flared entry           | AA55563/04@A60&                   |
|                |     | Low profile, open ended w/flared entry  | AA55563/05@A60&, /13@60&, /17@60& |
|                |     | Low profile, open ended wo/flared entry | AA55563/06@A60&, /14@60&          |
| 6.5            | 165 | Open ended, w/flared entry              | AA55563/01@A20&                   |
|                |     | Open ended, wo/flared entry             | AA55563/02@A20&                   |
|                |     | Closed ended, w/flared entry            | AA55563/03@A20&                   |
|                |     | Closed ended, wo/flared entry           | AA55563/04@A20&                   |
|                |     | Low profile, open ended w/flared entry  | AA55563/05@A20&, /13@20&          |
|                |     | Low profile, open ended wo/flared entry | AA55563/06@A20&, /14@20&          |
| 7.0            | 178 | Open ended, w/flared entry              | AA55563/01@A70&                   |
|                |     | Open ended, wo/flared entry             | AA55563/02@A70&                   |
|                |     | Closed ended, w/flared entry            | AA55563/03@A70&                   |
|                |     | Closed ended, wo/flared entry           | AA55563/04@A70&                   |
|                |     | Low profile, open ended w/flared entry  | AA55563/05@A70&, /13@70&          |
|                |     | Low profile, open ended wo/flared entry | AA55563/06@A70&, /14@70&          |
| 7.5            | 191 | Open ended, w/flared entry              | AA55563/01@A75&                   |
|                |     | Open ended, wo/flared entry             | AA55563/02@A75&                   |
|                |     | Closed ended, w/flared entry            | AA55563/03@A75&                   |
|                |     | Closed ended, wo/flared entry           | AA55563/04@A75&                   |
|                |     | Low profile, open ended w/flared entry  | AA55563/05@A75&, /13@75&          |
|                |     | Low profile, open ended wo/flared entry | AA55563/06@A75&, /14@75&          |

1/ The at sign (@) represents one of the 4 materials available, the letter "A" represents one of three materials available, and the ampersands (&) represents the one of the 11 protective finishes available.

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TABLE II. Card guides, metal, with 3 offset mounting holes.

| Overall length |     | Style                                   | CID classification PIN 1/         |
|----------------|-----|---|-----------------------------------|
| Inch           | mm  |   |                                   |
| 2.0            | 51  | Open ended, w/flared entry              | AA55563/07@A20&                   |
|                |     | Open ended, wo/flared entry             | AA55563/08@A20&                   |
|                |     | Closed ended, w/flared entry            | AA55563/09@A20&, /22@A20&         |
|                |     | Closed ended, wo/flared entry           | AA55563/10@A20&, /21@A20&         |
|                |     | Low profile, open ended w/flared entry  | AA55563/11@A20&, /15@20&          |
|                |     | Low profile, open ended wo/flared entry | AA55563/12@A20&, /16@20&          |
| 2.5            | 64  | Open ended, w/flared entry              | AA55563/07@A25&                   |
|                |     | Open ended, wo/flared entry             | AA55563/08@A25&                   |
|                |     | Closed ended, w/flared entry            | AA55563/09@A25&, /22@A25&         |
|                |     | Closed ended, wo/flared entry           | AA55563/10@A25&, /21@A25&         |
|                |     | Low profile, open ended w/flared entry  | AA55563/11@A25&, /15@25&, /18@25& |
|                |     | Low profile, open ended wo/flared entry | AA55563/12@A25&, /16@25&          |
| 3.0            | 76  | Open ended, w/flared entry              | AA55563/07@A30&                   |
|                |     | Open ended, wo/flared entry             | AA55563/08@A30&                   |
|                |     | Closed ended, w/flared entry            | AA55563/09@A30&, /22@A30&         |
|                |     | Closed ended, wo/flared entry           | AA55563/10@A30&, /21@A30&         |
|                |     | Low profile, open ended w/flared entry  | AA55563/11@A30&, /15@30&, /18@30& |
|                |     | Low profile, open ended wo/flared entry | AA55563/12@A30&, /16@30&          |
| 3.5            | 89  | Open ended, w/flared entry              | AA55563/07@A35&                   |
|                |     | Open ended, wo/flared entry             | AA55563/08@A35&                   |
|                |     | Closed ended, w/flared entry            | AA55563/09@A35&, /22@A35&         |
|                |     | Closed ended, wo/flared entry           | AA55563/10@A35&, /21@A35&         |
|                |     | Low profile, open ended w/flared entry  | AA55563/11@A35&, /15@35&, /18@35& |
|                |     | Low profile, open ended wo/flared entry | AA55563/12@A35&, /16@35&          |
| 4.0            | 102 | Open ended, w/flared entry              | AA55563/07@A40&                   |
|                |     | Open ended, wo/flared entry             | AA55563/08@A40&                   |
|                |     | Closed ended, w/flared entry            | AA55563/09@A40&, /22@A40&         |
|                |     | Closed ended, wo/flared entry           | AA55563/10@A40&, /21@A40&         |
|                |     | Low profile, open ended w/flared entry  | AA55563/11@A40&, /15@40&, /18@40& |
|                |     | Low profile, open ended wo/flared entry | AA55563/12@A40&, /16@40&          |
| 4.5            | 114 | Open ended, w/flared entry              | AA55563/01@A45&                   |
|                |     | Open ended, wo/flared entry             | AA55563/02@A45&                   |
|                |     | Closed ended, w/flared entry            | AA55563/03@A45&, /22@A45&         |
|                |     | Closed ended, wo/flared entry           | AA55563/04@A45&, /21@A45&         |
|                |     | Low profile, open ended w/flared entry  | AA55563/05@A45&, /15@45&, /18@45& |
|                |     | Low profile, open ended wo/flared entry | AA55563/06@A45&, /16@45&          |

See footnote at end of table.

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TABLE II. Card guides, metal, with 3 offset mounting holes – Continued.

| Overall length |     | Style                                   | CID classification PIN <sup>1/</sup> |
|----------------|-----|---|--------------------------------------|
| Inch           | mm  |   |                                      |
| 5.0            | 127 | Open ended, w/flared entry              | AA55563/01@A50&                      |
|                |     | Open ended, wo/flared entry             | AA55563/02@A50&                      |
|                |     | Closed ended, w/flared entry            | AA55563/03@A50&, /22@A50&            |
|                |     | Closed ended, wo/flared entry           | AA55563/04@A50&, /21@A50&            |
|                |     | Low profile, open ended w/flared entry  | AA55563/05@A50&, /15@50&, /18@50&    |
|                |     | Low profile, open ended wo/flared entry | AA55563/06@A50&, /16@50&             |
| 5.5            | 140 | Open ended, w/flared entry              | AA55563/01@A55&                      |
|                |     | Open ended, wo/flared entry             | AA55563/02@A55&                      |
|                |     | Closed ended, w/flared entry            | AA55563/03@A55&, /22@A55&            |
|                |     | Closed ended, wo/flared entry           | AA55563/04@A55&, /21@A55&            |
|                |     | Low profile, open ended w/flared entry  | AA55563/05@A55&, /15@55&, /18@55&    |
|                |     | Low profile, open ended wo/flared entry | AA55563/06@A55&, /16@55&             |
| 6.0            | 152 | Open ended, w/flared entry              | AA55563/01@A60&                      |
|                |     | Open ended, wo/flared entry             | AA55563/02@A60&                      |
|                |     | Closed ended, w/flared entry            | AA55563/03@A60&, /22@A60&            |
|                |     | Closed ended, wo/flared entry           | AA55563/04@A60&, /21@A60&            |
|                |     | Low profile, open ended w/flared entry  | AA55563/05@A60&, /15@60&, /18@60&    |
|                |     | Low profile, open ended wo/flared entry | AA55563/06@A60&, /16@60&             |
| 6.5            | 165 | Open ended, w/flared entry              | AA55563/07@A65&                      |
|                |     | Open ended, wo/flared entry             | AA55563/08@A65&                      |
|                |     | Closed ended, w/flared entry            | AA55563/09@A65&                      |
|                |     | Closed ended, wo/flared entry           | AA55563/10@A65&                      |
|                |     | Low profile, open ended w/flared entry  | AA55563/11@A65&, /15@65&             |
|                |     | Low profile, open ended wo/flared entry | AA55563/12@A65&, /16@65&             |
| 7.0            | 178 | Open ended, w/flared entry              | AA55563/07@A70&                      |
|                |     | Open ended, wo/flared entry             | AA55563/08@A70&                      |
|                |     | Closed ended, w/flared entry            | AA55563/09@A70&                      |
|                |     | Closed ended, wo/flared entry           | AA55563/10@A70&                      |
|                |     | Low profile, open ended w/flared entry  | AA55563/11@A70&, /15@70&, /18@70&    |
|                |     | Low profile, open ended wo/flared entry | AA55563/12@A70&, /16@70&             |
| 7.5            | 191 | Open ended, w/flared entry              | AA55563/07@A75&                      |
|                |     | Open ended, wo/flared entry             | AA55563/08@A75&                      |
|                |     | Closed ended, w/flared entry            | AA55563/09@A75&                      |
|                |     | Closed ended, wo/flared entry           | AA55563/10@A75&                      |
|                |     | Low profile, open ended w/flared entry  | AA55563/11@A75&, /15@75&, /18@75&    |
|                |     | Low profile, open ended wo/flared entry | AA55563/12@A75&, /16@75&             |

<sup>1/</sup> The at sign (@) represents one of the 4 materials available, the letter "A" represents one of three materials available, and the ampersand (&) represents the one of the 11 protective finishes available.

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TABLE II-1. Card guides, metal, medium profile, with center mounting holes (see figure 1).

| Overall length |     | Style                                  | CID classification PIN 1/ |
|----------------|-----|--|---------------------------|
| Inch           | mm  |  |                           |
| 2.0            | 51  | Without flared entry, 2 mounting holes | AA55563/23@#20&           |
|                |     | With flared entry, 3 mounting holes    | AA55563/24@A20&           |
| 2.5            | 64  | Without flared entry, 2 mounting holes | AA55563/23@A25&           |
|                |     | With flared entry, 3 mounting holes    | AA55563/24@A25&           |
| 3.0            | 76  | Without flared entry, 2 mounting holes | AA55563/23@A30&           |
|                |     | With flared entry, 3 mounting holes    | AA55563/24@A30&           |
| 3.5            | 89  | Without flared entry, 2 mounting holes | AA55563/23@A35&           |
|                |     | With flared entry, 3 mounting holes    | AA55563/24@A35&           |
| 4.0            | 102 | Without flared entry, 2 mounting holes | AA55563/23@A40&           |
|                |     | With flared entry, 3 mounting holes    | AA55563/24@A40&           |
| 4.5            | 114 | Without flared entry, 2 mounting holes | AA55563/23@A45&           |
|                |     | With flared entry, 3 mounting holes    | AA55563/24@A45&           |
| 5.0            | 127 | Without flared entry, 2 mounting holes | AA55563/23@A50&           |
|                |     | With flared entry, 3 mounting holes    | AA55563/24@A50&           |
| 5.5            | 140 | Without flared entry, 2 mounting holes | AA55563/23@A55&           |
|                |     | With flared entry, 3 mounting holes    | AA55563/24@A55&           |

1/ The at sign (@) represents the one of the 3 material available, and the ampersand (&) represents the one of the 8 protective finish available.

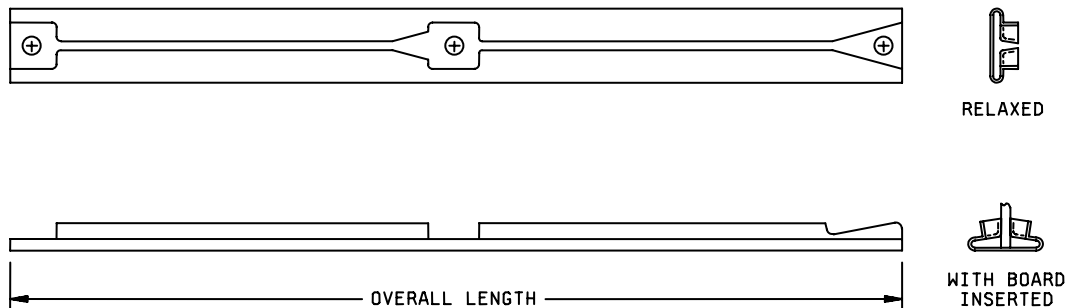


FIGURE 1. Card guides, metal, medium profile, with center mounting hole.

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w/CHANGE 1

TABLE III. Card guides, metal, slot width .0625 inch (1.59 mm).

| Overall length |     | Number of mounting holes | DSCC drawing PIN <sup>1/</sup>               |
|----------------|-----|--------------------------|--|
| Inch           | mm  |                          |  |
| 1.5            | 38  | 2                        | 85033-087, 088, 089, 090, 111, 112, 113, 114 |
| 2.0            | 51  | 2                        | 85033-091, 092, 093, 094, 115, 116, 117, 118 |
| 2.25           | 57  | 2                        | 85034-01, 13, 25, 37, 49, 55, 61, 67         |
| 2.5            | 64  | 2                        | 85033-095, 096, 097, 098, 119, 120, 121, 122 |
| 3.0            | 76  | 2                        | 84168-001, 002, 005, 006,                    |
| 3.0            | 76  | 3                        | 85033-099, 100, 101, 102, 123, 124, 125, 126 |
| 3.25           | 83  | 3                        | 85034-03, 15, 27, 39, 51, 57, 63, 69         |
| 3.5            | 89  | 2                        | 84168-009, 010, 013, 014                     |
| 3.5            | 89  | 3                        | 85033-103, 104, 105, 106, 127, 128, 129, 130 |
| 4.0            | 102 | 2                        | 84168-017, 018, 021, 022                     |
| 4.0            | 102 | 3                        | 85033-107, 108, 109, 110, 131, 132, 133, 134 |
| 4.25           | 108 | 4                        | 85034-05, 17, 29, 41                         |
| 4.5            | 114 | 2                        | 84168-025, 026, 029, 030                     |
| 4.5            | 114 | 3                        | 85033-001, 002, 003, 004, 009, 010, 011, 012 |
| 5.0            | 127 | 3                        | 84168-033, 034, 037, 038                     |
| 5.25           | 133 | 5                        | 85034-07, 19, 31, 43, 53, 59, 65, 71         |
| 5.5            | 140 | 3                        | 84168-041, 042, 045, 046                     |
| 6.0            | 152 | 3                        | 84168-049, 050, 053, 054                     |
| 6.0            | 152 | 4                        | 85033-017, 018, 019, 023, 024, 025           |
| 6.25           | 159 | 6                        | 85034-09, 21, 33, 45, 73                     |
| 7.0            | 178 | 3                        | 84168-057, 058, 061, 062                     |
| 7.0            | 178 | 4                        | 85033-211, 212, 217, 218                     |
| 7.5            | 191 | 3                        | 84168-065, 066, 69, 70                       |
| 8.0            | 203 | 5                        | 85033-199, 200                               |
| 8.25           | 210 | 8                        | 85034-11, 23, 35, 47                         |
| 8.5            | 216 | 3                        | 84168-073, 074, 077, 078                     |
| 10.0           | 254 | 6                        | 85033-205, 206                               |

<sup>1/</sup> DSCC drawing 85033 contains provisions for three finish options, optional housing index pins, optional hex head drive indexing, and whether the card guide comes assembled or in a disassembled kit form.

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w/CHANGE 1

TABLE IV. Card guides, metal, slot width .0937 inch (2.38 mm).

| Overall length |     | Number of mounting holes | DSCC drawing PIN <u>1/</u>                   |
|----------------|-----|--------------------------|--|
| Inch           | mm  |                          |  |
| 1.5            | 38  | 2                        | 85033-135, 136, 137, 138, 159, 160, 161, 162 |
| 2.0            | 51  | 2                        | 85033-139, 140, 141, 142, 163, 164, 165, 166 |
| 2.5            | 57  | 2                        | 85033-143, 144, 145, 146, 167, 168, 169, 170 |
| 3.0            | 76  | 2                        | 84168-003, 004, 007, 008                     |
| 3.0            | 76  | 3                        | 85033-147, 148, 149, 150, 171, 172, 173, 174 |
| 3.25           | 83  | 3                        | 85034-04, 16, 28, 40, 52, 58, 64, 70         |
| 3.5            | 89  | 2                        | 84168-011, 012, 015, 016                     |
| 3.5            | 89  | 3                        | 85033-151, 152, 153, 154, 175, 176, 177, 178 |
| 4.0            | 102 | 2                        | 84168-019, 020, 023, 024                     |
| 4.0            | 102 | 3                        | 85033-155, 156, 157, 158, 179, 180, 181, 182 |
| 4.25           | 108 | 4                        | 85034-06, 18, 30, 42                         |
| 4.5            | 114 | 2                        | 84168-027, 028, 031, 032                     |
| 4.5            | 114 | 3                        | 85033-005, 006, 007, 008, 013, 014, 015, 016 |
| 5.0            | 127 | 3                        | 84168-035, 036, 039, 040                     |
| 5.25           | 133 | 5                        | 85034-08, 20, 32, 44, 54, 60, 66, 72         |
| 5.5            | 140 | 3                        | 84168-043, 044, 047, 048                     |
| 6.0            | 152 | 3                        | 84168-051, 052, 055, 056                     |
| 6.0            | 152 | 4                        | 85033-020, 021, 022, 026, 027, 028           |
| 6.25           | 159 | 6                        | 85034-10, 22, 34, 46, 74                     |
| 7.0            | 178 | 3                        | 84168-059, 060, 063, 064                     |
| 7.0            | 178 | 4                        | 85033-213, 214, 219, 220                     |
| 7.5            | 191 | 3                        | 84168-067, 068, 071, 072                     |
| 8.0            | 203 | 5                        | 85033-201, 202                               |
| 8.25           | 210 | 8                        | 85034-12, 24, 36, 48                         |
| 8.5            | 216 | 3                        | 84168-075, 076, 079, 080                     |
| 10.0           | 254 | 6                        | 85033-207, 208                               |

1/ DSCC drawing 85033 contains provisions for three finish options, optional housing index pins, optional hex head drive indexing, and whether the card guide comes assembled or in a disassembled kit form.

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w/CHANGE 1

TABLE V. Card guides, metal, slot width .125 inch (3.18 mm).

| Overall length |     | Number of mounting holes | DSCC drawing PIN <sup>1/</sup>               |
|----------------|-----|--------------------------|--|
| Inch           | mm  |                          |  |
| 1.5            | 38  | 2                        | 85033-183, 184, 185, 186, 191, 192, 193, 194 |
| 2.0            | 51  | 2                        | 85033-187, 188, 189, 190, 195, 196, 197, 198 |
| 2.5            | 64  | 2                        | 85033-029, 030, 031, 032, 058, 059, 060, 061 |
| 3.0            | 76  | 3                        | 85033-033, 034, 035, 036, 062, 063, 064, 065 |
| 3.5            | 89  | 3                        | 85033-037, 038, 039, 040, 066, 067, 068, 069 |
| 4.0            | 102 | 3                        | 85033-041, 042, 043, 044, 070, 071, 072, 073 |
| 4.5            | 114 | 3                        | 85033-045, 046, 047, 048, 074, 075, 076, 077 |
| 5.0            | 127 | 4                        | 85033-049, 050, 051, 078, 079, 080           |
| 5.5            | 140 | 4                        | 85033-052, 053, 054, 081, 082, 083           |
| 6.0            | 152 | 4                        | 85033-055, 056, 057, 084, 085, 086           |
| 7.0            | 178 | 4                        | 85033-215, 216, 221, 222                     |
| 8.0            | 203 | 5                        | 85033-203, 204                               |
| 10.0           | 254 | 6                        | 85033-209, 210                               |

<sup>1/</sup> DSCC drawing 85033 contains provisions for three finish options (black anodize, chemical film, or unfinished), optional housing index pins, optional hex head drive indexing, and whether the card guide comes assembled or in a disassembled kit form.



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w/CHANGE 1

TABLE VI. Card guides, metal, screw actuated, slot width .025 to .079 inch (0.64 to 2.01 mm).

| Overall length |        | Number of mounting holes | DSCC drawing PIN <u>1/</u>   |
|----------------|--------|--------------------------|------------------------------|
| Inch           | mm     |                          |                              |
| 3.0            | 76.20  | 2                        | 88052-001*, 002*, 005*, 006* |
| 3.5            | 88.90  | 2                        | 88052-009*, 010*, 013*, 014* |
| 4.0            | 101.60 | 2                        | 88052-017*, 018*, 021*, 022* |
| 4.5            | 114.30 | 2                        | 88052-025*, 026*, 029*, 030* |
| 5.0            | 127.00 | 3                        | 88052-033*, 034*, 037*, 038* |
| 5.5            | 139.70 | 3                        | 88052-041*, 042*, 045*, 046* |
| 6.0            | 152.40 | 3                        | 88052-049*, 050*, 053*, 054* |
| 6.5            | 165.10 | 3                        | 88052-057*, 058*, 061*, 062* |
| 7.0            | 177.80 | 3                        | 88052-065*, 066*, 069*, 070* |
| 7.5            | 190.50 | 3                        | 88052-073*, 074*, 077*, 078* |
| 8.0            | 203.20 | 4                        | 88052-081*, 082*, 085*, 086* |
| 8.5            | 215.90 | 4                        | 88052-089*, 090*, 093*, 094* |
| 9.0            | 228.60 | 4                        | 88052-097*, 098*, 101*, 102* |
| 9.5            | 241.30 | 4                        | 88052-105*, 106*, 109*, 110* |
| 10.0           | 254.00 | 4                        | 88052-113*, 114*, 117*, 118* |
| 10.5           | 266.70 | 4                        | 88052-121*, 122*, 125*, 126* |
| 11.0           | 279.40 | 5                        | 88052-129*, 130*, 133*, 134* |
| 11.5           | 292.10 | 5                        | 88052-137*, 138*, 141*, 142* |
| 12.0           | 304.80 | 5                        | 88052-145*, 146*, 149*, 150* |

1/ The asterisk (\*) represents one of three protective finishes available.

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TABLE VII. Card guides, metal, screw actuated, slot width .080 to .145 inch (2.03 to 3.68 mm).

| Overall length |        | Number of mounting holes | DSCC drawing PIN <u>1/</u>   |
|----------------|--------|--------------------------|------------------------------|
| Inch           | mm     |                          |                              |
| 3.0            | 76.20  | 2                        | 88052-003*, 004*, 007*, 008* |
| 3.5            | 88.90  | 2                        | 88052-011*, 012*, 015*, 016* |
| 4.0            | 101.60 | 2                        | 88052-019*, 020*, 023*, 024* |
| 4.5            | 114.30 | 2                        | 88052-027*, 028*, 031*, 032* |
| 5.0            | 127.00 | 3                        | 88052-035*, 036*, 039*, 040* |
| 5.5            | 139.70 | 3                        | 88052-043*, 044*, 047*, 048* |
| 6.0            | 152.40 | 3                        | 88052-051*, 052*, 055*, 056* |
| 6.5            | 165.10 | 3                        | 88052-059*, 060*, 063*, 064* |
| 7.0            | 177.80 | 3                        | 88052-067*, 068*, 071*, 072* |
| 7.5            | 190.50 | 3                        | 88052-075*, 076*, 079*, 080* |
| 8.0            | 203.20 | 4                        | 88052-083*, 084*, 087*, 088* |
| 8.5            | 215.90 | 4                        | 88052-091*, 082*, 095*, 096* |
| 9.0            | 228.60 | 4                        | 88052-099*, 100*, 103*, 104* |
| 9.5            | 241.30 | 4                        | 88052-107*, 108*, 111*, 112* |
| 10.0           | 254.00 | 4                        | 88052-115*, 116*, 119*, 120* |
| 10.5           | 266.70 | 4                        | 88052-123*, 124*, 127*, 128* |
| 11.0           | 279.40 | 5                        | 88052-131*, 132*, 135*, 136* |
| 11.5           | 292.10 | 5                        | 88052-139*, 140*, 143*, 144* |
| 12.0           | 304.80 | 5                        | 88052-147*, 148*, 151*, 152* |

1/ The asterisk (\*) represents one of three protective finishes available.

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TABLE VIII. Card guides, metal, lever actuated, slot width .211 inch (5.36 mm) + PWB thickness.

| Overall length |        | Number of mounting holes | DSCC drawing PIN     |
|----------------|--------|--------------------------|----------------------|
| Inch           | mm     |                          |                      |
| 3.0            | 76.20  | 2                        | 86092-01, 02, 03, 04 |
| 3.5            | 88.90  | 2                        | 86092-05, 06, 07, 08 |
| 4.0            | 101.60 | 2                        | 86092-09, 10, 11, 12 |
| 4.5            | 114.30 | 2                        | 86092-13, 14, 15, 16 |
| 5.0            | 127.00 | 3                        | 86092-17, 18, 19, 20 |
| 5.5            | 139.70 | 3                        | 86092-21, 22, 23, 24 |
| 6.0            | 152.40 | 3                        | 86092-25, 26, 27, 28 |
| 7.0            | 177.80 | 3                        | 86092-29, 30, 31, 32 |
| 7.5            | 190.50 | 3                        | 86092-33, 34, 35, 36 |
| 8.0            | 203.20 | 4                        | 86092-37, 38, 39, 40 |

TABLE IX. Card guides, plastic, pylon mounted, shallow slot, slot width .078 inch (1.98 mm).

| Overall length |        | Number of snap pylons | DSCC drawing PIN |
|----------------|--------|-----------------------|------------------|
| Inch           | mm     |                       |                  |
| 2.5            | 63.50  | 2                     | 84006-01         |
| 3.0            | 76.20  | 2                     | 84006-02         |
| 3.5            | 88.90  | 2                     | 84006-03         |
| 4.0            | 101.60 | 2                     | 84006-04         |
| 4.5            | 114.30 | 2                     | 84006-05         |
| 5.0            | 127.00 | 2                     | 84006-06         |
| 5.5            | 139.70 | 2                     | 84006-07         |
| 6.0            | 152.40 | 2                     | 84006-08         |
| 6.5            | 165.10 | 2                     | 84006-09         |
| 7.0            | 177.80 | 2                     | 84006-10         |
| 7.5            | 190.50 | 2                     | 84006-11         |
| 8.0            | 203.20 | 2                     | 84006-12         |
| 8.5            | 215.90 | 3                     | 84006-13         |
| 9.0            | 228.60 | 3                     | 84006-14         |
| 9.5            | 241.30 | 3                     | 84006-15         |
| 10.0           | 254.00 | 3                     | 84006-16         |
| 10.5           | 266.70 | 3                     | 84006-17         |
| 11.0           | 279.40 | 3                     | 84006-18         |
| 11.5           | 292.10 | 3                     | 84006-19         |
| 12.0           | 304.80 | 3                     | 84006-20         |
| 12.5           | 317.50 | 3                     | 84006-21         |
| 13.0           | 330.20 | 3                     | 84006-22         |
| 13.5           | 342.90 | 3                     | 84006-23         |
| 14.0           | 355.60 | 3                     | 84006-24         |

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TABLE X. Card guides, plastic, pylon mounted, deep slot, slot width .080 to .132 inch (2.0 to 3.4 mm).

| Overall length |        | Number of snap pylons | Slot width |      | DSCC drawing PIN |
|----------------|--------|-----------------------|------------|------|------------------|
| Inch           | mm     |                       | Inch       | mm   |                  |
| 2.5            | 63.50  | 2                     | .080       | 2.03 | 84101-01         |
| 4.5            | 114.30 | 2                     | .080       | 2.03 | 84101-02         |
| 6.0            | 152.40 | 2                     | .080       | 2.03 | 84101-03         |
| 8.0            | 203.20 | 3                     | .080       | 2.03 | 84101-04         |
| 4.5            | 114.30 | 2                     | .132       | 3.35 | 84101-22         |
| 6.0            | 152.40 | 2                     | .132       | 3.35 | 84101-23         |
| 8.0            | 203.20 | 3                     | .132       | 3.35 | 84101-24         |

TABLE XI. Card guides, plastic, slot width .050 to .100 inch (1.27 to 2.54 mm).

| Overall length |        | Number of snap pylons | DSCC drawing PIN     |
|----------------|--------|-----------------------|----------------------|
| Inch           | mm     |                       |                      |
| 2.5            | 64     | 2                     | 85067-08, 09, 12     |
| 2.5            | 64     | 2                     | 89029-03, 04, 05, 06 |
| 3.5            | 89     | 2                     | 85067-07, 11         |
| 3.5            | 89     | 2                     | 89029-07, 08         |
| 4.125          | 10.78  | 2                     | 85067-05, 06, 10     |
| 4.125          | 10.78  | 2                     | 89029-09, 10, 11, 12 |
| 5.5            | 140    | 2                     | 85067-04             |
| 5.5            | 140    | 2                     | 89029-13             |
| 6.375          | 161.93 | 2                     | 85067-03             |
| 6.375          | 161.93 | 2                     | 89029-14, 15         |
| 6.875          | 174.63 | 2                     | 85067-02             |
| 6.875          | 174.63 | 2                     | 89029-16             |
| 7.0            | 178    | 2                     | 85067-01             |
| 7.0            | 178    | 2                     | 89029-17             |

TABLE XII. Card guide, plastic, fastener mounted, shallow slot, slot width .070 inch (1.78 mm).

| Overall length |       | Number of mounting holes | DSCC drawing PIN       |
|----------------|-------|--------------------------|------------------------|
| Inch           | mm    |                          |                        |
| 3.50           | 88.9  | 2                        | 85068-04               |
| 6.88           | 174.6 | 2                        | 85068-05               |
| 8.50           | 215.9 | 3                        | 85068-06               |
| 8.50           | 215.9 | 3                        | 85068-07 <sup>1/</sup> |

<sup>1/</sup> Slot width is .100 inch (2.54 mm).

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TABLE XIII. Card holders, 3 body wedge retainers, with lever action locking. 1/

| Mounting length |     | Number of mounting holes | Mounting method  | CID PIN 2/       |
|-----------------|-----|--------------------------|------------------|------------------|
| Inch            | mm  |                          |                  |                  |
| 2.8             | 71  | 2                        | Rivets or screws | A-A-59590/1*#28& |
| 3.0             | 76  | 2                        | Rivets or screws | A-A-59590/1*#30& |
| 3.8             | 96  | 2                        | Rivets or screws | A-A-59590/1*#38& |
| 4.0             | 101 | 2                        | Rivets or screws | A-A-59590/1*#40& |
| 4.8             | 121 | 2                        | Rivets or screws | A-A-59590/1*#48& |
| 5.0             | 127 | 2                        | Rivets or screws | A-A-59590/1*#50& |
| 5.8             | 147 | 2                        | Rivets or screws | A-A-59590/1*#58& |
| 6.0             | 152 | 2                        | Rivets or screws | A-A-59590/1*#60& |
| 6.8             | 172 | 2                        | Rivets or screws | A-A-59590/1*#68& |
| 7.0             | 177 | 2                        | Rivets or screws | A-A-59590/1*#70& |
| 7.8             | 198 | 2                        | Rivets or screws | A-A-59590/1*#78& |
| 8.0             | 203 | 2                        | Rivets or screws | A-A-59590/1*#80& |
| 8.8             | 223 | 2                        | Rivets or screws | A-A-59590/1*#88& |
| 9.0             | 228 | 2                        | Rivets or screws | A-A-59590/1*#90& |

1/ The wedge size is .225 by .260 inch (5.72 x 6.61 mm).

2/ The asterisk (\*) represent the one of the five protective finishes options available, the number sign (#) represents one of the four available mounting hole options, and the ampersand (&) represents the three facing options (left, right, or universal facing).

TABLE XIV. Card holders, 3 body wedge retainers, with ejection action. 1/

| Mounting length |     | Mounting method  | CID PIN 2/ 3/                       |
|-----------------|-----|------------------|-------------------------------------|
| Inch            | mm  |                  |                                     |
| 2.8             | 71  | Rivets or screws | A-A-59590/2*#28&, A-A-59590/25*#28& |
| 3.2             | 89  | Rivets or screws | A-A-59590/25*#32&                   |
| 3.5             | 76  | Rivets or screws | A-A-59590/2*#35&                    |
| 3.8             | 96  | Rivets or screws | A-A-59590/2*#38&, A-A-59590/25*#38& |
| 4.0             | 101 | Rivets or screws | A-A-59590/2*#40&                    |
| 4.8             | 121 | Rivets or screws | A-A-59590/2*#48&, A-A-59590/25*#48& |
| 5.8             | 147 | Rivets or screws | A-A-59590/2*#58&                    |
| 6.4             | 152 | Rivets or screws | A-A-59590/2*#64&, A-A-59590/25*#64& |

1/ The wedge size is .225 by .260 inch (5.72 x 6.61 mm).

2/ The asterisk (\*) represent the five protective finish options, the number sign (#) represents the four mounting hole options, and the ampersand (&) represents the three hardware options (lockwasher and flat washer, screw self-locking element, and a combination or both previous options).

3/ A-A-59590/25 covers card holders with visual lock indication.

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TABLE XV. Card holders, 3 body wedge retainer, .225 by .260 inch (5.72 x 6.61 mm) body size.

| Mounting length |       | Mounting method  | CID PIN <u>1/</u> <u>2/</u>                 |
|-----------------|-------|------------------|---|
| Inch            | mm    |                  |   |
| 1.8             | 45.7  | Rivets or screws | A-A-59590/5*#18&, /6*#18&                   |
| 2.3             | 58    | Rivets or screws | A-A-59590/5*#23&, /6*#23&                   |
| 2.8             | 71.1  | Rivets or screws | A-A-59590/3*#28&, /4*#28&, /5*#28&, /6*#28& |
| 3.0             | 76.2  | Rivets or screws | A-A-59590/3*#30&, /4*#30&, /5*#30&, /6*#30& |
| 3.5             | 88.9  | Rivets or screws | A-A-59590/3*#35&, /4*#35&, /5*#35&, /6*#35& |
| 3.8             | 96.5  | Rivets or screws | A-A-59590/3*#38&, /4*#38&, /5*#38&, /6*#38& |
| 4.8             | 121.9 | Rivets or screws | A-A-59590/3*#48&, /4*#48&, /5*#48&, /6*#48& |
| 5.3             | 134.6 | Rivets or screws | A-A-59590/3*#53&, /4*#53&, /5*#53&, /6*#53& |
| 5.5             | 139.7 | Rivets or screws | A-A-59590/3*#55&, /4*#55&, /5*#55&, /6*#55& |
| 5.8             | 147.3 | Rivets or screws | A-A-59590/3*#58&, /4*#58&, /5*#58&, /6*#58& |
| 6.1             | 154.9 | Rivets or screws | A-A-59590/3*#61&, /4*#61&, /5*#61&, /6*#61& |
| 6.3             | 160.0 | Rivets or screws | A-A-59590/5*#63&, /6*#63&                   |
| 6.7             | 170.2 | Rivets or screws | A-A-59590/3*#67&, /4*#67&, /5*#67&, /6*#67& |
| 6.8             | 172.7 | Rivets or screws | A-A-59590/5*#68&, /6*#68&                   |
| 7.3             | 185.4 | Rivets or screws | A-A-59590/5*#73&, /6*#73&                   |
| 7.8             | 198.1 | Rivets or screws | A-A-59590/5*#78&, /6*#78&                   |
| 8.3             | 210.8 | Rivets or screws | A-A-59590/5*#83&, /6*#83&                   |
| 8.8             | 223.5 | Rivets or screws | A-A-59590/5*#88&, /6*#88&                   |

1/ The asterisk (\*) represent the five protective finish options, the number sign (#) represents the four mounting hole options, and the ampersand (&) represents the three hardware options (lockwasher and flat washer, screw self-locking element, and a combination or both previous options).

2/ A-A-59590/4 covers card holders with visual lock indication, A-A-59590/5 covers card holders with screw retention, and A-A-59590/6 covers card holders with visual lock and screw retention.

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TABLE XVI. Card holders, 3 body wedge retainer, .220 by .220 inch (5.59 x 5.9 mm) body size.

| Mounting length |       | Mounting method  | CID PIN <u>1/</u> <u>2/</u>                  |
|-----------------|-------|------------------|--|
| Inch            | mm    |                  |  |
| 1.8             | 45.7  | Rivets or screws | A-A-59590/7*#18&, /8*#18&, /9*#18&, /10*#18& |
| 2.3             | 58.4  | Rivets or screws | A-A-59590/7*#23&, /8*#23&, /9*#23&, /10*#23& |
| 2.8             | 71.1  | Rivets or screws | A-A-59590/7*#28&, /8*#28&, /9*#28&, /10*#28& |
| 3.0             | 76.2  | Rivets or screws | A-A-59590/7*#30&, /8*#30&, /9*#30&, /10*#30& |
| 3.3             | 83.8  | Rivets or screws | A-A-59590/7*#33&, /8*#33&, /9*#33&, /10*#33& |
| 3.5             | 88.9  | Rivets or screws | A-A-59590/7*#35&, /8*#35&, /9*#35&, /10*#35& |
| 3.8             | 96.5  | Rivets or screws | A-A-59590/7*#38&, /8*#38&, /9*#38&, /10*#38& |
| 4.3             | 109.2 | Rivets or screws | A-A-59590/7*#43&, /8*#43&, /9*#43&, /10*#43& |
| 4.8             | 121.9 | Rivets or screws | A-A-59590/7*#48&, /8*#48&, /9*#48&, /10*#48& |
| 5.3             | 134.6 | Rivets or screws | A-A-59590/7*#53&, /8*#53&, /9*#53&, /10*#53& |
| 5.8             | 147.3 | Rivets or screws | A-A-59590/7*#55&, /8*#55&, /9*#55&, /10*#55& |
| 6.3             | 160.0 | Rivets or screws | A-A-59590/7*#63&, /8*#63&, /9*#63&, /10*#63& |
| 6.8             | 172.7 | Rivets or screws | A-A-59590/7*#68&, /8*#68&, /9*#68&, /10*#68& |
| 7.3             | 185.4 | Rivets or screws | A-A-59590/7*#73&, /8*#73&, /9*#73&, /10*#73& |
| 7.8             | 198.1 | Rivets or screws | A-A-59590/7*#78&, /8*#78&, /9*#78&, /10*#78& |
| 8.3             | 210.8 | Rivets or screws | A-A-59590/7*#83&, /8*#83&, /9*#83&, /10*#83& |
| 8.8             | 223.5 | Rivets or screws | A-A-59590/7*#88&, /8*#88&, /9*#88&, /10*#88& |

1/ The asterisk (\*) represent the three protective finish options, the number sign (#) represents the seven mounting hole options, and the ampersand (&) represents the three hardware options (lockwasher and flat washer, screw self-locking element, and a combination or both previous options).

2/ A-A-59590/8 covers card holders with visual lock indication, A-A-59590/9 covers card holders with screw retention, and A-A-59590/10 covers card holders with visual lock and screw retention.

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TABLE XVII. Card holders, 3 body wedge retainer, .240 by .180 inch (6.1 x 4.57 mm) body size.

| Mounting length |     | Mounting method  | CID PIN <u>1/</u> <u>2/</u>          |
|-----------------|-----|------------------|--------------------------------------|
| Inch            | mm  |                  |                                      |
| 1.8             | 46  | Rivets or screws | A-A-59590/11*#18&, A-A-59590/12*#18& |
| 2.8             | 71  | Rivets or screws | A-A-59590/11*#28&, A-A-59590/12*#28& |
| 3.0             | 76  | Rivets or screws | A-A-59590/11*#30&, A-A-59590/12*#30& |
| 3.5             | 89  | Rivets or screws | A-A-59590/11*#35&, A-A-59590/12*#35& |
| 3.8             | 97  | Rivets or screws | A-A-59590/11*#38&, A-A-59590/12*#38& |
| 4.0             | 102 | Rivets or screws | A-A-59590/11*#40&, A-A-59590/12*#40& |
| 4.5             | 114 | Rivets or screws | A-A-59590/11*#45&, A-A-59590/12*#45& |
| 4.8             | 122 | Rivets or screws | A-A-59590/11*#48&, A-A-59590/12*#48& |
| 5.0             | 127 | Rivets or screws | A-A-59590/11*#50&, A-A-59590/12*#50& |
| 5.8             | 147 | Rivets or screws | A-A-59590/11*#58&, A-A-59590/12*#58& |

1/ The asterisk (\*) represent the three protective finish options, the number sign (#) represents the seven mounting hole options, and the ampersand (&) represents the three hardware options (lockwasher and flat washer, screw self-locking element, and a combination or both previous options).

2/ A-A-59590/12 covers card holders with screw retention.

TABLE XVIII. Card holders, 3 body wedge retainer, .375 by .375 inch (9.53 x 9.53 mm) body size.

| Mounting length |     | Mounting method  | CID PIN <u>1/</u> <u>2/</u>                     |
|-----------------|-----|------------------|---|
| Inch            | mm  |                  |   |
| 2.8             | 71  | Rivets or screws | A-A-59590/13*#28&, /14*#28&, /15*#28&, /16*#28& |
| 3.3             | 84  | Rivets or screws | A-A-59590/13*#33&, /14*#33&, /15*#33&, /16*#33& |
| 3.8             | 97  | Rivets or screws | A-A-59590/13*#38&, /14*#38&, /15*#38&, /16*#38& |
| 4.3             | 102 | Rivets or screws | A-A-59590/13*#43&, /14*#43&, /15*#43&, /16*#43& |
| 4.8             | 114 | Rivets or screws | A-A-59590/13*#48&, /14*#48&, /15*#48&, /16*#48& |
| 5.3             | 127 | Rivets or screws | A-A-59590/13*#53&, /14*#53&, /15*#53&, /16*#53& |
| 5.8             | 147 | Rivets or screws | A-A-59590/13*#58&, /14*#58&, /15*#58&, /16*#58& |

1/ The asterisk (\*) represent the three protective finish options, the number sign (#) represents the seven mounting hole options, and the ampersand (&) represents the three hardware options (lockwasher and flat washer, screw self-locking element, and a combination or both previous options).

2/ A-A-59590/14 covers card holders with visual lock indication, A-A-59590/15 covers card holders with screw retention, and A-A-59590/16 covers card holders with visual lock and screw retention.



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TABLE XIX. Card holders, 3 body wedge retainer, .260 by .260 inch (6.61 x 6.61 mm) body size.

| Mounting length |     | Mounting method  | CID PIN <u>1/</u> <u>2/</u>                     |
|-----------------|-----|------------------|---|
| Inch            | mm  |                  |   |
| 2.8             | 71  | Rivets or screws | A-A-59590/17*#28&, /18*#28&, /19*#28&, /20*#28& |
| 3.8             | 97  | Rivets or screws | A-A-59590/17*#38&, /18*#38&, /19*#38&, /20*#38& |
| 4.8             | 122 | Rivets or screws | A-A-59590/17*#48&, /18*#48&, /19*#48&, /20*#48& |
| 5.8             | 147 | Rivets or screws | A-A-59590/17*#58&, /18*#58&, /19*#58&, /20*#58& |

1/ The asterisk (\*) represent the three protective finish options, the number sign (#) represents the four mounting hole options, and the ampersand (&) represents the three hardware options (lockwasher and flat washer, screw self-locking element, and a combination or both previous options).

2/ A-A-59590/18 covers card holders with visual lock indication, A-A-59590/19 covers card holders with screw retention, and A-A-59590/20 covers card holders with visual lock and screw retention.

TABLE XX. Card holders, 3 body wedge retainer, .500 by .450 inch (12.7 x 11.43 mm) body size.

| Mounting length |     | Mounting method  | CID PIN <u>1/</u> <u>2/</u>                     |
|-----------------|-----|------------------|---|
| Inch            | mm  |                  |   |
| 2.8             | 71  | Rivets or screws | A-A-59590/21*#28&, /22*#28&, /23*#28&, /24*#28& |
| 3.8             | 97  | Rivets or screws | A-A-59590/21*#38&, /22*#38&, /23*#38&, /24*#38& |
| 4.8             | 122 | Rivets or screws | A-A-59590/21*#48&, /22*#48&, /23*#48&, /24*#48& |
| 5.8             | 147 | Rivets or screws | A-A-59590/21*#58&, /22*#58&, /23*#58&, /24*#58& |

1/ The asterisk (\*) represent the three protective finish options, the number sign (#) represents the four mounting hole options, and the ampersand (&) represents the three hardware options (lockwasher and flat washer, screw self-locking element, and a combination or both previous options).

2/ A-A-59590/22 covers card holders with visual lock indication, A-A-59590/23 covers card holders with screw retention, and A-A-59590/24 covers card holders with visual lock and screw retention.

TABLE XXI. Card holders, 3 body wedge retainer, various body sizes.

| Mounting length |     | Mounting method  | DSCC PIN <u>1/</u>                      |
|-----------------|-----|------------------|---|
| Inch            | mm  |                  |   |
| 2.8             | 71  | Rivets or screws | 84103-01*, 08*, 15*, 18*, 25*, 32*, 38* |
| 3.0             | 76  | Rivets or screws | 84103-02*, 09*, 19*, 26*, 39*, 45*      |
| 3.5             | 89  | Rivets or screws | 84103-03*, 10*, 20*, 27*, 40*, 46*      |
| 3.8             | 97  | Rivets or screws | 84103-04*, 11*, 16*, 21*, 28*, 33*, 41* |
| 4.0             | 102 | Rivets or screws | 84103-47*                               |
| 4.5             | 114 | Rivets or screws | 84103-48*                               |
| 4.8             | 121 | Rivets or screws | 84103-05*, 12*, 17*, 22*, 29*, 34*, 42* |
| 5.0             | 127 | Rivets or screws | 84103-49*                               |
| 5.3             | 134 | Rivets or screws | 84103-06*, 13*, 23*, 30*, 43*           |
| 5.8             | 147 | Rivets or screws | 84103-07*, 14*, 24*, 31*, 44*           |
| 6.1             | 155 | Rivets or screws | 84103-36*                               |
| 6.7             | 170 | Rivets or screws | 84103-37*                               |

1/ The asterisk (\*) represents one of the two protective finish available.

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TABLE XXII. Card holders, 5 body wedge retainer, .250 by .260 (6.35 x 6.61 mm) body size.

| Mounting length |     | Number of mounting holes | Mounting method  | DSCC drawing PIN <sup>1/</sup> |
|-----------------|-----|--------------------------|------------------|--------------------------------|
| Inch            | mm  |                          |                  |                                |
| 2.8             | 71  | 2                        | Rivets or screws | 89024-01*#, 11*#               |
| 3.0             | 76  | 2                        | Rivets or screws | 89024-02*#, 12*#               |
| 3.5             | 88  | 2                        | Rivets or screws | 89024-03*#, 13*#               |
| 3.8             | 96  | 2                        | Rivets or screws | 89024-04*#, 14*#               |
| 4.0             | 101 | 2                        | Rivets or screws | 89024-05*#, 15*#               |
| 4.5             | 114 | 2                        | Rivets or screws | 89024-06*#, 16*#               |
| 4.8             | 121 | 2                        | Rivets or screws | 89024-07*#, 17*#               |
| 5.0             | 127 | 2                        | Rivets or screws | 89024-08*#, 18*#               |
| 5.5             | 139 | 2                        | Rivets or screws | 89024-09*#, 19*#               |
| 5.8             | 147 | 2                        | Rivets or screws | 89024-10*#, 20*#               |

<sup>1/</sup> The asterisk (\*) represent the two protective finish options, the number sign (#) represents the two mounting hole options.

TABLE XXIII. Card holders, 5 body wedge retainer, various body sizes.

| Mounting length |     | Body size   |             | Number of mounting holes | DSCC drawing PIN <sup>1/</sup>   |
|-----------------|-----|-------------|-------------|--------------------------|----------------------------------|
| Inch            | mm  | Inch        | mm          |                          |                                  |
| 5.0             | 127 | .225 x .260 | 5.72 x 6.61 | 2                        | 89064-50A#&, 50C#&, 50E#&, 50G#& |
| 5.0             | 127 | .225 x .225 | 5.72 x 5.72 | 2                        | 89064-50B#&, 50F#&               |
| 6.0             | 152 | .225 x .260 | 5.72 x 6.61 | 2                        | 89064-60A#&, 60C#&, 60E#&, 60G#& |
| 6.0             | 152 | .225 x .225 | 5.72 x 5.72 | 2                        | 89064-60B#&, 60F#&               |
| 6.5             | 165 | .225 x .260 | 5.72 x 6.61 | 2                        | 89064-65A#&, 65C#&, 65E#&, 65G#& |
| 6.5             | 165 | .225 x .225 | 5.72 x 5.72 | 2                        | 89064-65B#&, 65F#&               |
| 7.0             | 178 | .225 x .260 | 5.72 x 6.61 | 4                        | 89064-70D#&, 70H#&               |
| 7.5             | 190 | .225 x .260 | 5.72 x 6.61 | 4                        | 89064-75D#&, 75H#&               |
| 8.0             | 203 | .225 x .260 | 5.72 x 6.61 | 4                        | 89064-80D#&, 80H#&               |
| 8.5             | 216 | .225 x .260 | 5.72 x 6.61 | 4                        | 89064-85D#&, 85H#&               |

<sup>1/</sup> The number sign (#) represents the four mounting hole options and the ampersand (&) represents optional configurations.

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TABLE XXIII-1. Card holders, 5 body wedge retainer, various body sizes (see figure 2).

| Mounting length (L) |     | Body size (W x H) |             | Number of mounting holes | CID PIN <sup>1/</sup>       |
|---------------------|-----|-------------------|-------------|--------------------------|-----------------------------|
| Inch                | mm  | Inch              | mm          |                          |                             |
| 4.8                 | 122 | .225 x .260       | 5.72 x 6.61 | 2                        | A-A-59789/01&*50#, /02&*50# |
| 4.8                 | 122 | .225 x .225       | 5.72 x 5.72 | 2                        | A-A-59789/03&*50#, /04&*50# |
| 5.3                 | 135 | .225 x .260       | 5.72 x 6.61 | 2                        | A-A-59789/01&*55#, /02&*55# |
| 5.3                 | 135 | .225 x .225       | 5.72 x 5.72 | 2                        | A-A-59789/03&*55#, /04&*55# |
| 5.8                 | 147 | .225 x .260       | 5.72 x 6.61 | 2                        | A-A-59789/01&*60#, /02&*60# |
| 5.8                 | 147 | .225 x .225       | 5.72 x 5.72 | 2                        | A-A-59789/03&*60#, /04&*60# |
| 6.3                 | 160 | .225 x .260       | 5.72 x 6.61 | 2                        | A-A-59789/01&*65#, /02&*65# |
| 6.3                 | 160 | .225 x .225       | 5.72 x 5.72 | 2                        | A-A-59789/03&*65#, /04&*65# |

<sup>1/</sup> The ampersand (&) represents the configuration, the asterisk (\*) represents the four various finishes, and the number sign (#) represents the four mounting hole options.

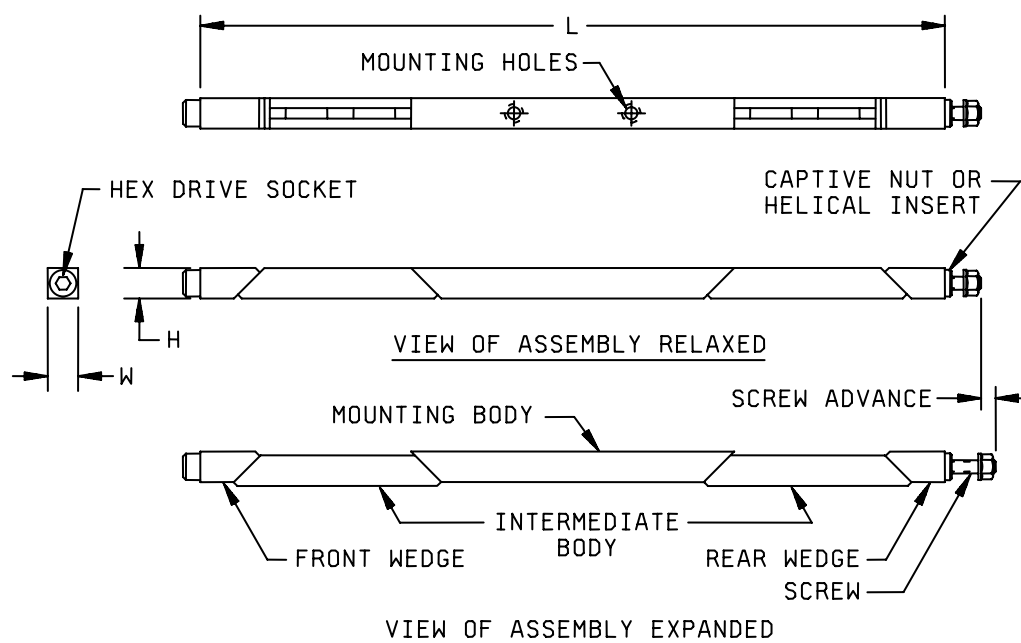


FIGURE 2. Card holders, 5 body wedge retainer, various body sizes

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TABLE XXIV. Retainer-ejector, electrical card, plastic.

| Slot width |      | Material                   | DSCC drawing PIN <u>1/</u> |
|------------|------|----------------------------|----------------------------|
| Inch       | mm   |                            |                            |
| .075       | 1.91 | Nylon                      | 83023-01*                  |
| .075       | 1.91 | Nylon                      | 83023-02*                  |
| .075       | 1.91 | Nylon                      | 83023-03*                  |
| .075       | 1.91 | Nylon                      | 83023-04*                  |
| .105       | 2.67 | Nylon                      | 83023-05*                  |
| .105       | 2.67 | Nylon                      | 83023-06*                  |
| .105       | 2.67 | Nylon                      | 83023-07*                  |
| .100       | 2.54 | Nylon                      | 83023-08*                  |
| .075       | 1.91 | Glass filled nylon         | 83023-09*                  |
| .140       | 3.56 | Glass filled nylon         | 83023-10*                  |
| .075       | 1.91 | Glass filled nylon         | 83023-11*                  |
| .075       | 1.91 | Glass filled nylon         | 83023-12*                  |
| .070       | 1.78 | Nylon                      | 83023-13*                  |
| .075       | 1.91 | Glass filled polycarbonate | 83023-14*                  |
| .070       | 1.78 | Nylon                      | 83023-15*                  |
| .100       | 2.54 | Nylon                      | 83023-16*                  |
| .140       | 3.56 | Glass filled polycarbonate | 83023-17*                  |
| .070       | 1.78 | Nylon                      | 83023-18*                  |
| .075       | 1.91 | Nylon                      | 83023-19*                  |
| .100       | 2.54 | Nylon                      | 83023-20*                  |
| .140       | 3.56 | Nylon                      | 83023-21*                  |
| .075       | 1.91 | Nylon                      | 83023-22*                  |
| .075       | 1.91 | Nylon                      | 83023-23*                  |
| .075       | 1.91 | Glass filled polycarbonate | 83023-24*                  |
| .100       | 2.54 | Glass filled polycarbonate | 83023-25*                  |
| .074       | 1.89 | Glass filled polycarbonate | 83023-26*                  |
| .100       | 2.54 | Glass filled polycarbonate | 83023-27*                  |
| .140       | 3.56 | Glass filled polycarbonate | 83023-28*                  |

1/ The asterisk (\*) represents one of six colors available.

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TABLE XXV. Extractor, electrical card, metal.

| Slot width |      | Configuration                     | DSCC drawing PIN <sup>1/</sup> |
|------------|------|-----------------------------------|--------------------------------|
| Inch       | mm   |                                   |                                |
| .040       | 1.02 | Angled handle,<br>no lock tab     | 84191-01*#, 84191-02*#         |
| .075       | 1.91 |                                   | 84191-03*#, 84191-04*#         |
| .105       | 2.67 |                                   | 84191-05*#, 84191-06*#         |
| .142       | 3.61 |                                   | 84191-07*#, 84191-08*#         |
| .165       | 4.19 |                                   | 84191-33*#, 84191-34*#         |
| .040       | 1.02 | Angled handle,<br>with lock tab   | 84191-09*#, 84191-10*#         |
| .075       | 1.91 |                                   | 84191-11*#, 84191-12*#         |
| .105       | 2.67 |                                   | 84191-13*#, 84191-14*#         |
| .142       | 3.61 |                                   | 84191-15*#, 84191-16*#         |
| .165       | 4.19 |                                   | 84191-35*#, 84191-36*#         |
| .040       | 1.02 | Straight handle,<br>with lock tab | 84191-17*#, 84191-18*#         |
| .075       | 1.91 |                                   | 84191-19*#, 84191-20*#         |
| .105       | 2.67 |                                   | 84191-21*#, 84191-22*#         |
| .142       | 3.61 |                                   | 84191-23*#, 84191-24*#         |
| .165       | 4.19 |                                   | 84191-37*#, 84191-38*#         |
| .040       | 1.02 | Straight handle,<br>no lock tab   | 84191-25*#, 84191-26*#         |
| .075       | 1.91 |                                   | 84191-27*#, 84191-28*#         |
| .105       | 2.67 |                                   | 84191-29*#, 84191-30*#         |
| .142       | 3.61 |                                   | 84191-31*#, 84191-32*#         |
| .165       | 4.19 |                                   | 84191-39*#, 84191-40*#         |

<sup>1/</sup> The asterisk (\*) represents protective finish and the number sign (#) represents the material. The finish options are black anodize (designator B), chemical film (designator C), chemical film with the electronic sensitive device symbol (designator E), and passivation (designator P) for corrosion stainless steel parts. The material options are aluminum alloy 5052-H32 (designator A), aluminum alloy 6061-T6 (designator T), and type 301 stainless steel (designator S).

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w/CHANGE 1

## 6. NOTES

6.1 Intended use. The purpose of this handbook is to provide standardized guidance in the preparation of DoD standards, handbooks, drawings, and bulletins to ensure the inclusion of data and descriptions essential to the selection and application of items and processes, and to aid in the use and analysis of DoD standardization documents.

### 6.2 Subject term (key word) listings.

- Backplane assembly
- Circuit card assembly
- Extractor, electrical card
- Holder, electrical card
- Printed circuit board
- Printed wiring board
- Retainer-ejector, electrical card

6.3 Change notations. The margins of this handbook are marked with vertical lines to indicate modifications generated by this change. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations.

#### Custodians:

- Army – CR
- Navy – EC
- Air Force – 11
- DLA – CC

Preparing activity:  
DLA – CC

Project 5998-2006-014

#### Review activities:

- Air Force – 99

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 <http://assist.daps.dla.mil>.