

REVISIONS																	
LTR	DESCRIPTION								DATE				APPROVED				
A	Redrawn with change. Replace canceled military specifications with industry replacements. Editorial changes throughout.								20 May 2003				R. Taylor				
B	Added new source CAGE (66886) and Part Identifying Numbers								2 December 2004				R. Taylor				
C	Updating references and editorial changes throughout.								14 January 2014				Abdo Abdouni				
CURRENT DESIGN ACTIVITY CAGE CODE 037Z3 HAS CHANGED NAMES TO: DLA LAND AND MARITIME COLUMBUS, OHIO 43218-3990																	
Prepared in accordance with ASME Y14.100																	
REV																	
PAGE																	
REV STATUS	REV	C	C	C	C	C	C	C	B	B	B	B	C	C			
OF PAGES	PAGE	1	2	3	4	5	6	7	8	9	10	11	12				
PMIC N/A		PREPARED BY William Carpenter						DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43216-5000									
Original date of drawing 26 April 1996		CHECKED BY James P. Donohue						TITLE CONNECTOR, HIGH DENSITY, BLADE AND FORK, BACKPANEL, EIGHT ROW, 372 CONTACT POSITIONS									
		APPROVED BY Randy Larson															
		SIZE A	CAGE CODE 037Z3					DWG. NO. 93003									
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1. SCOPE

1.1 Scope. This drawing outlines the requirements for a specific member of a family of compact high contact density (.050 inch (1.27 mm)), high performance two-piece electrical connectors. These connectors are intended for printed circuit board (plug in dual heat sinked daughter board modules, and fixed backplanes) applications utilizing surface mount daughter board and compliant pin backpanel termination techniques. The connector family includes members, which provide combinations of low power signal contacts, power contacts, shielded contacts and optical termini. The connector family offers severe operating environment performance capability, such as protective hoods, contact sealing, interfacial seals, electrostatic shielding and other advanced capabilities.

This connector family is organized and fabricated utilizing modular design, with available connector module blocks which can be grouped to provide for combinations of low power signal contacts, fiber optic termini, power contacts, and shielded contacts. Specific implementation groupings of these module blocks constitute elements of the connector family. This specific requirements drawing details a back panel member of the connector family.

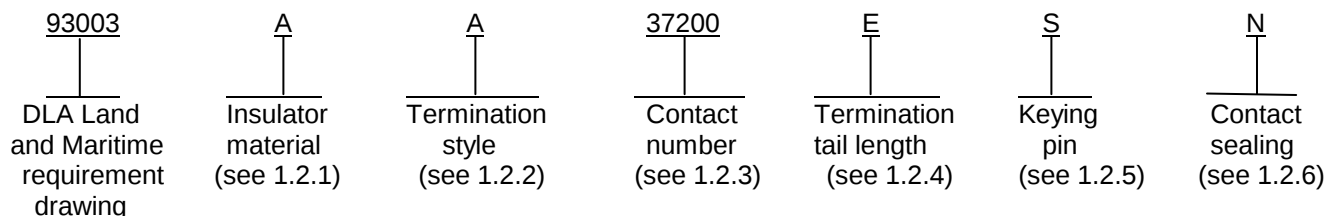
This family member is composed of a grouping of:

- a. 9 insulator block contact assemblies for low power fork type contacts.

Which provides for a total of 372 signal contacts. The back panel connector assembly also includes an electrostatic shield which mates with a daughter card connector metal shroud, providing an electrostatic shield for all contacts in the connector pair.

This assembly mates with DLA Land and Maritime drawing 93002 daughterboard connector. The back panel connector insulator blocks also provide for installation of three connector keying bushings and allows for use of a center guide pin. This family member does not include module blocks, which contain fiber optics, power, or shielded contact elements. Other members of this connector family, which include these additional capabilities, are included DLA Land and Maritime drawings, 93003 through 93013 and 02007.

1.2 Part or Identifying Number (PIN). The complete PIN shall be as specified on the item requirements drawing and constructed using the following format:



1.2.1 Insulator material. Insulator material shall be fabricated using one of the following plastic materials:

A - Thermoplastic, type GPT-30F in accordance with MIL-M-24519, or ASTM-D5138.

1.2.2 Termination style. Connectors shall be terminated using the following termination techniques:

A - Compliant pin termination.

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1.2.3 Contact number. The PIN shall include 5 digits to identify the total number of contacts. The first three digits will identify the number of signal contacts, with the following two digits identifying the number of special contacts (shielded, fiber optic, power).

An example follows:

372 00*

Number of signal contacts (3 digits required)

Number of special contacts (2 digits required)

* 00 - No special contacts in this drawing.

1.2.4 Termination tail length. The PIN will include a single character (A thru F) taken from table I, which will identify the termination tail length, allowing for use in various thickness backplanes, and also possible additional wire wrapping of the termination tails.

TABLE I. Termination tail length. 1/ 2/ 3/

Term type	Termination tail 4/ length X dim (mm)
A	.160 (4.06)
B	.220 (5.59)
C	.310 (7.87)
D	.350 (8.89)
E	.400 (10.16)
F	.490 (12.45)

1/ Dimensions are in inches.

2/ Metric equivalents are in parentheses.

3/ Metric equivalents are given for information only.

4/ X dimension is a reference dimension only.

1.2.5 Keying pins. The PIN will contain a single character for this feature.

S - To be ordered separately, see table II.

TABLE II. Keying feature.

Shape of key	Manufacturers PIN	Vendor CAGE
D	564-0287-000	77820
	096-0010-171	61947
V	564-0288-000	77820
	096-0011-171	61947

1.2.6 Sealing. The PIN will contain a single character (N or S) to indicate if the connector termination area is sealed from the contact blades, which extend above the connector insulator blocks. (CONTACT SEALING IS NOT AVAILABLE)

N - Contact sealing not available.

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2. APPLICABLE DOCUMENTS

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

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks of the exact revision listed below form a part of this specification to the extent specified herein.

SPECIFICATIONS

DEPARTMENT OF DEFENSE

MIL-M-24519 - Molding Plastic, Electrical, Thermoplastic.

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

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

DLA LAND AND MARITIME

89065 - General Specification for High Performance, High Density, Two Piece, Printed Circuit Board Connectors.

(Copies of these documents are available online at <http://www.dscc.dla.mil/Programs/MilSpec/> or from the Defense Supply Center Columbus, ATTN: VAI, P.O. Box 3990, Columbus, OH 43218-3990.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract (see 6.2).

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A582/A582M - Free Machining Stainless and Heat Resisting Steel Bars.
ASTM B194 - Copper - Beryllium Alloy Plate, Sheet, Strip, and Rolled Bar.
ASTM B488 - Electrodeposited Coatings of Gold for Engineering Uses.
ASTM B768 - Copper-Cobalt-Beryllium Alloy and Copper-Nickel-Beryllium Alloy Strip and Sheet.
ASTM D5138 - Standard Classification System and Basis for Specification for Liquid Crystal Polymers Molding and Extrusion Materials (LCP)

(Copies of these documents are available online from <http://www.astm.org/> or ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, Pennsylvania, USA 19428-2959.)

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NCSL INTERNATIONAL

NCSL-Z540.3 - Requirements for the Calibration and Measuring and Test Equipment.

(Copies of this document are available online from <http://www.ncsli.org/> or National Conference of Standards Laboratories (NCSL), 2995 Wilderness Place Suite 107, Boulder, Colorado, 80301-5404).

SAE INTERNATIONAL

SAE-AMS-2404 - Nickel, Electroless, Plating.
SAE-AMS-QQ-N-290 - Nickel Plating (Electrodeposited).
SAE-AMS2700 - Passivation of Corrosion-Resistant Steel.

(Copies of these documents are available online from <http://www.sae.org/> or SAE World Headquarters, 400 Commonwealth Drive, Warrendale, PA 15096-0001).

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein (except for related specification sheets), the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 DLA Land and Maritime requirements. The individual item requirements shall meet the requirements of DLA Land and Maritime drawing 89065 for blade and fork type connectors except as specified herein. Any requirements included in this drawing shall be in addition to, or supersede those requirements included in DLA Land and Maritime drawing 89065. In case of conflict between the requirements detailed in this drawing and those details in DLA Land and Maritime drawing 89065, the requirements of this drawing shall take precedence.

3.2 Design configuration. The design, construction, and physical dimensions shall be as specified on figures 1, 2, 3, 4 and DLA Land and Maritime drawing 89065. In case of conflict between this drawing and DLA Land and Maritime drawing 89065, this drawing shall govern.

3.2.1 Design documentation. The design documentation shall be in accordance with DLA Land and Maritime drawing 89065 and be retained by the manufacturer, but be available for review by the contracting activity DLA Land and Maritime, or contractor upon request.

3.3 Electrical and environmental performance characteristics. The electrical and environmental characteristics shall be in accordance with DLA Land and Maritime drawing 89065 unless otherwise specified in this drawing.

3.4 Marking. The connector shall be marked with the DSCC drawing PIN, the manufacturers name or CAGE code, and the production date code in accordance with DLA Land and Maritime drawing 89065. The marking shall be permanent and legible in accordance with DLA Land and Maritime drawing 89065. PIN marking position and details shall be as indicated in 1.2. Backplane kits can be marked on shipping containers.

3.5 Material requirements. The materials to be used in construction and fabrication shall be as specified in this drawing. Materials required, but not specified in this drawing shall be in accordance with DLA Land and Maritime drawing 89065.

3.5.1 Connector materials.

3.5.1.1 Connector insulator. The connector insulator blocks shall be fabricated from thermoplastic, glass reinforced, in accordance with MIL-M-24519, type GPT-30F.

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3.5.1.2 Tuning fork contact and termination tails. Tuning fork contacts and termination tails shall be Beryllium copper as specified in ASTM-B194 C17200, or ASTM-B768.

3.5.1.2.1 Tuning fork contact and termination tail finish. The tuning fork contacts and termination tails shall be gold plated, over all areas, in accordance with ASTM-B488, type II, code C, class 1.27 (50 microinches) minimum, over 50 to 150 microinches of nickel in accordance with SAE-AMS-QQ-N-290, class 2.

3.5.1.3 EMI shield. The EMI shield shall be constructed from beryllium copper in accordance with ASTM-B194/B194M or ASTM-B768.

3.5.1.3.1 EMI shield finish. The EMI shield finish shall be nickel in accordance with AMS 2404.

3.5.1.4 Polarizing key material. The key pin shall be stainless steel in accordance with ASTM A582/A582M, 300 series, low magnetic permeability.

3.5.1.4.1 Polarizing key finish. The polarizing key finish shall be passivated in accordance with SAE AMS2700.

4. VERIFICATION

4.1 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. Qualification inspection (see 4.2).
- b. Conformance inspection (see 4.3).

4.1.1 Equipment calibration. All test equipment and inspection facilities used in the performance of any test shall be maintained in a calibration system in accordance with NCSL Z540.3.

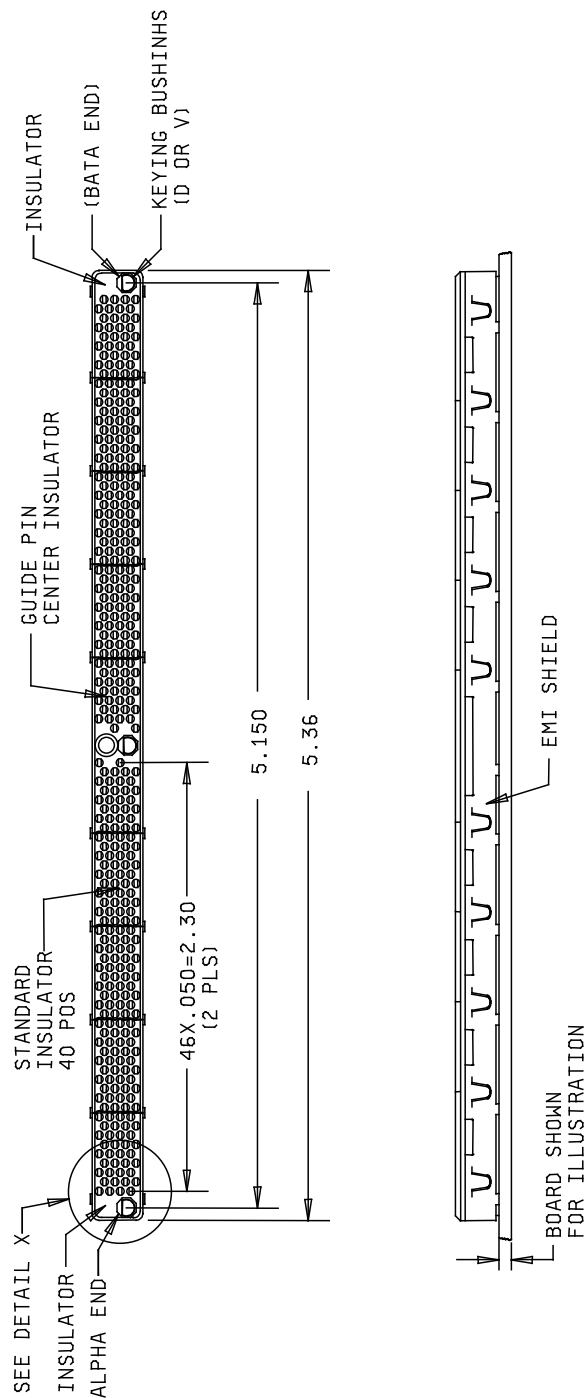
4.2 Qualification inspection. Qualification inspection for connectors specified herein shall not be required.

4.3 Conformance inspection. Shall be in accordance with DLA Land and Maritime drawing 89065.

4.4 Certification as an approved source of supply. In order to be listed as an approved source of supply for connectors, a manufacturer shall:

- a. Agree to make available to DLA Land and Maritime, upon request, all pertinent test data on the subject part indicating compliance to the tests outlined in 89065.
- b. Provide to DLA Land and Maritime-VAI, or its designated agent, upon request, free of charge and without obligation, a current production sample from its production line, of the quantity of units required of the types specified.

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Inches	mm
.050	1.27
2.30	58.42
5.150	130.81
.36	136.14

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for information only.

FIGURE 1. Connector face view.

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SIZE

A

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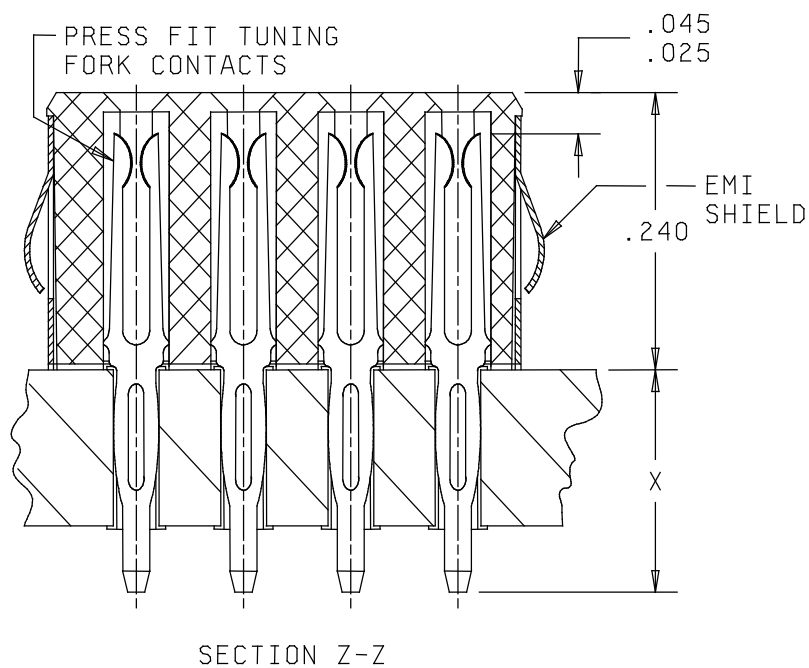
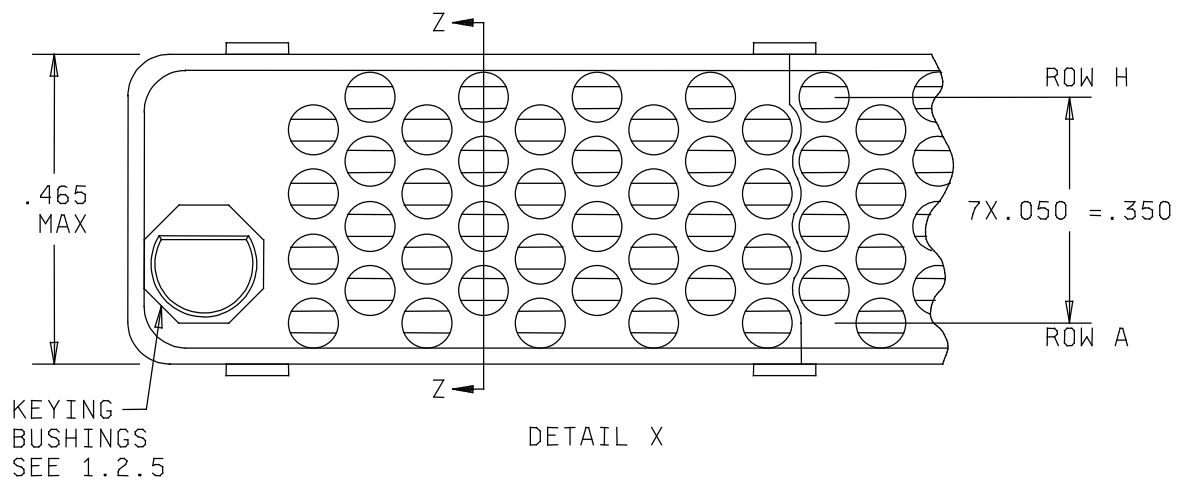
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Inches	mm
.025	0.64
.045	1.14
.050	1.27
.160	4.06
.240	6.10
.350	8.89
.465	11.81
2.30	58.42
5.150	130.81
5.36	136.14

(See table I for X dimension)

(Shown installed in PWB) rotated 90° CW

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for information only.

FIGURE 2. Connector cross sectional view.

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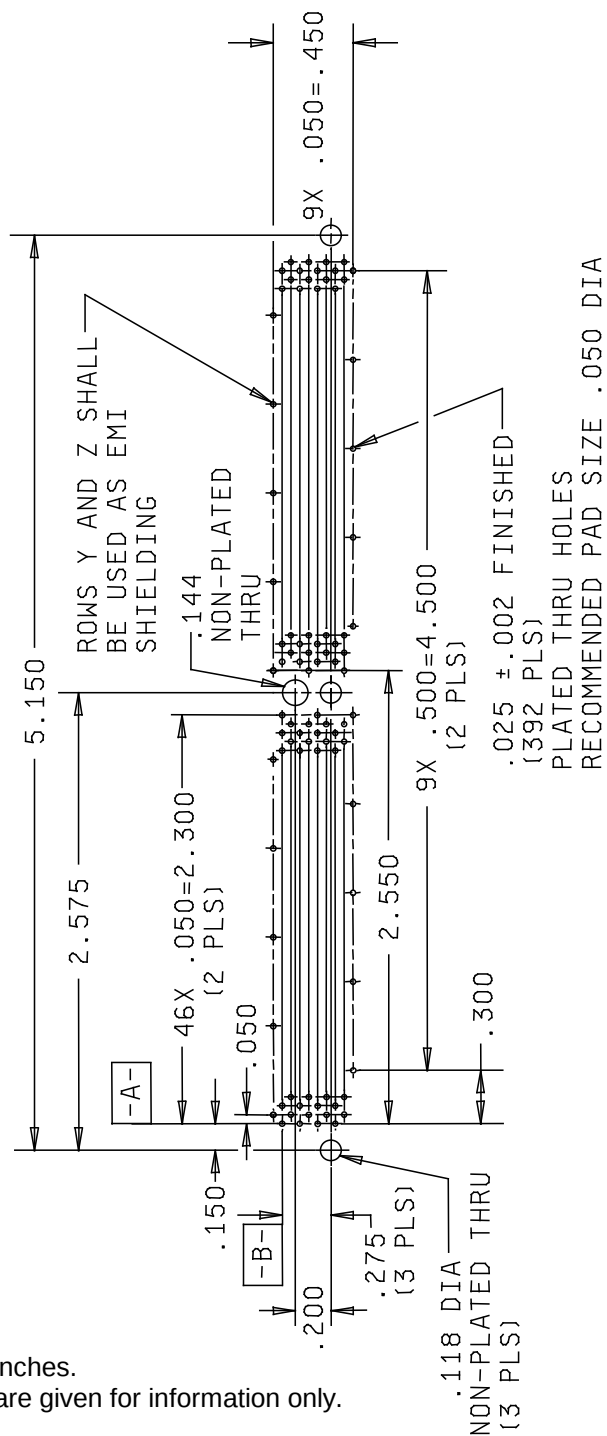
B

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Inches	mm
.002	0.05
.025	0.64
.050	1.27
.118	3.00
.144	3.66
.150	3.81
.200	5.08
.275	6.99
.300	7.62
.450	11.43
.500	12.70
2.300	58.42
2.550	64.77
4.500	114.30
5.150	130.81

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for information only.

Printed circuit backplane grid layout
(Connector side)

FIGURE 3. Printed wiring board layout.

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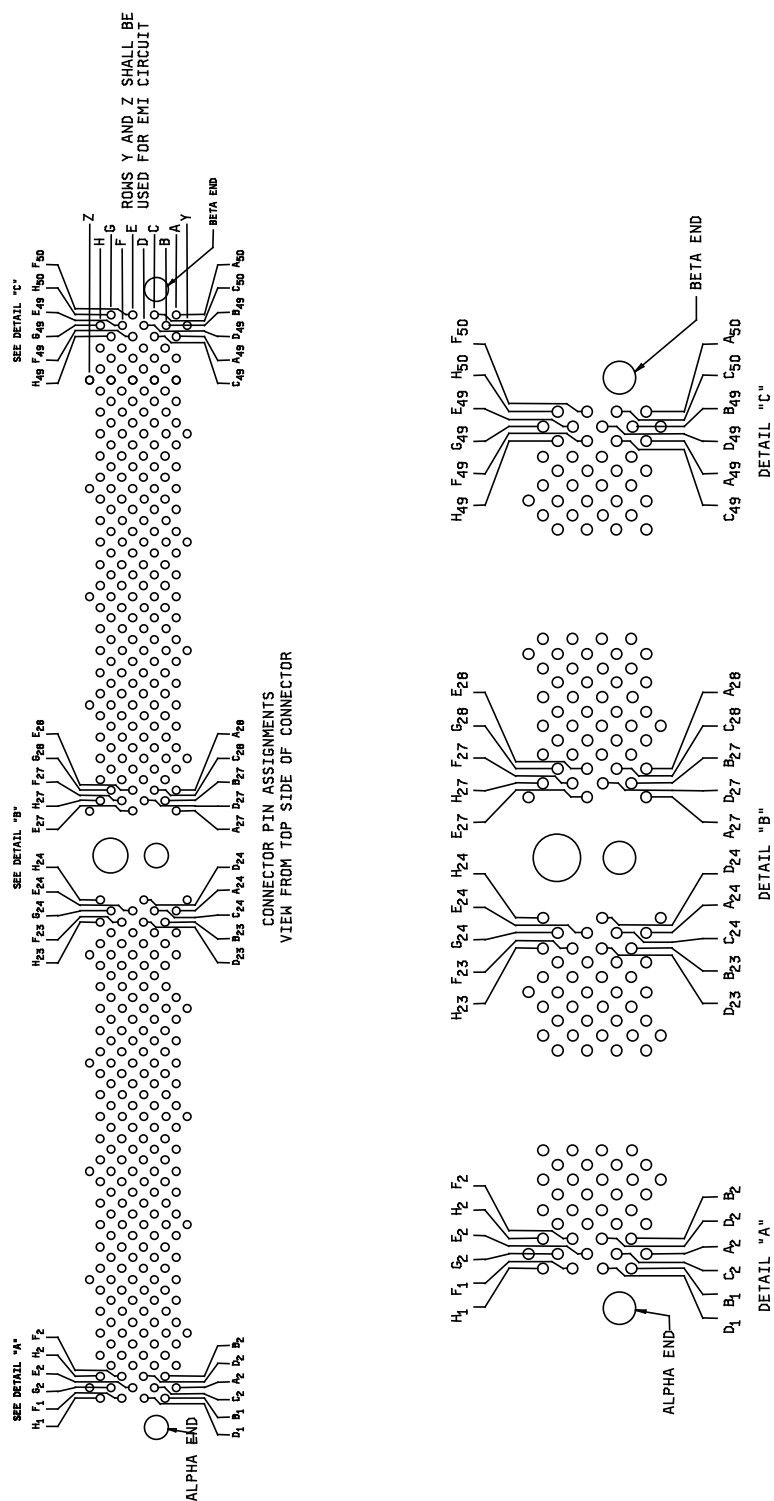


FIGURE 4. Printed wiring board layout.

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A

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5. PACKAGING

5.1 **Packaging.** For acquisition purposes, the packaging requirement shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Service or Defense Agency, or within the military service's system commands. Packaging data retrieval is available from the managing Military Department or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

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

6.1 **Intended use.** Connectors conforming to this drawing are intended for use when military specifications do not exist and qualified military connectors that will perform the required function are not available for OEM application. This drawing is intended exclusively to prevent the proliferation of unnecessary duplicate specifications, drawings, and stock catalog listings.

6.2 **Acquisition requirements.** The acquisition document should specify the following:

- a. Complete PIN.
- b. Requirements for delivery of one copy of the quality conformance inspection data pertinent to the connector inspection lot to be supplied with each shipment by the connector manufacturer, if applicable.
- c. Requirements for certificate of compliance, if applicable.
- d. Requirements for notification of change of product or process to contracting activity, if applicable.
- e. Packaging requirements.

6.3 **Replaceability.** Connectors covered by this drawing will replace the same generic connectors covered by a contractor prepared specification or drawing.

6.4 **Comments.** Comments on this drawing should be directed to DLA Land and Maritime-VAI, Columbus, Ohio 43218-3990, or telephone (614) 692-0530 or by e mail to RectangularConnector@dsccl.dla.mil.

6.5 **Submission of certificate of compliance.** The certificate of compliance submitted to DLA Land and Maritime-VAI, prior to listing as an approved source of supply, shall state that the manufacturer's product meets the requirements of the applicable DLA Land and Maritime requirements drawings and stated herein.

6.6 **Mating connectors.** These connectors mate with backplane mounted connectors specified in DLA Land and Maritime drawing 93002.

6.7 **Generic test data.** Generic test data may be used to satisfy the requirements of 4.4. Generic test data shall be on date coded connectors no more than 1 year old, with the same material, design, and manufacturing processes. The vendor is required to retain the generic data for a period of not less than 3 years from the date of shipment.

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6.8 Approved sources of supply. Approved sources of supply are listed herein. Additional sources will be added as they become available. The vendors listed have agreed to the contents of this drawing and a certificate of compliance has been submitted to DLA Land and Maritime-VAI.

DLA Land and Maritime drawing PIN	Vendor CAGE Number	Vendor similar PIN <u>1/</u>
93003AA37200ASN	61947 77820 66886	000207-0004 552-0258-000 620202-01
93003AA37200BSN	61947 77820 66886	000207-0007 552-0797-000 620202-02
93003AA37200CSN	61947 77820 66886	000207-0005 552-0798-000 620202-03
93003AA37200DSN	61947 77820 66886	000207-0042 552-0799-000 620202-04
93003AA37200ESN	61947 77820 66886	000207-0015 552-0800-000 620202-05
93003AA37200FSN	61947 77820 66886	000207-0016 552-0801-000 620202-06

1/ Caution: Parts must be purchased to this DLA Land and Maritime PIN to assure that all performance requirements and tests are met.

Vendor CAGE
number

66886

77820

61947

Vendor name
and address

AbelConn, LLC
9210 Science Center Dr
New Hope, MN 55428-3621

Amphenol Backplane Systems
18 Celina Avenue
Nashua, NH 03063

Itron Corporation
3131 South Austin Avenue
Cicero, IL 60804

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