

1. INTRODUCTION

This specification covers the requirements for application of AMP Chevron I Connectors with staggered row contacts on .025 in. centers. There are connectors available for surface-mount printed circuit board applications, and for free-hanging ribbon cable applications. They are designed to be assembled by hand.

NOTE Unless otherwise specified, all dimensions are in inches and have a tolerance of .005 inch.

2. REFERENCE MATERIAL

2.1. Product Part Numbers and Product Codes

Each AMP Product is assigned a part number, and product codes are assigned to unique designs within a product family. Continuous product development renders an up-to-date listing of all numbers impractical. The following are provided to facilitate correspondence: Product Part Number 213143 and Product Code 5146.

2.2. Customer Drawing

An AMP Customer Drawing is available for each part number assigned to this product family. In the event of a variance between this specification and the customer drawing, the customer drawing information will take precedence.

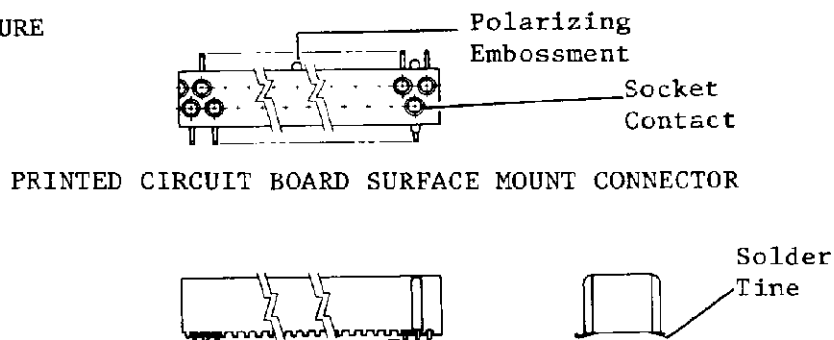
2.3. Product and Test Specifications

See AMP Product Specification 108-10054 for tests and performance requirements, and AMP Test Specification 109-00011 for the procedure used for testing.

2.4. Related Documents

The preceding material pertains to the Chevron I Product Family only, while the following documents pertain to generalities that apply to products of similar design. Refer to AMP Workmanship Specification 201-21 for workmanship standards and AMP Bulletin No. 52 for recommendations pertaining to soldering techniques.

3. NOMENCLATURE



PRINTED CIRCUIT BOARD SURFACE MOUNT CONNECTOR

Fig. 1 Nomenclature (cont)

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		APPLICATION SPECIFICATION		AMP AMP INCORPORATED Harrisburg, Pa. 17105	
		ENGINEERING APPROVAL & DATE Jeff Norton 8/11/87			NO. 114-10034
		PAGE 1 of 7	TITLE CHEVRON I CONNECTORS FOR PRINTED CIRCUIT BOARD AND RIBBON CABLE APPLICATIONS		
LTR	REVISION RECORD				

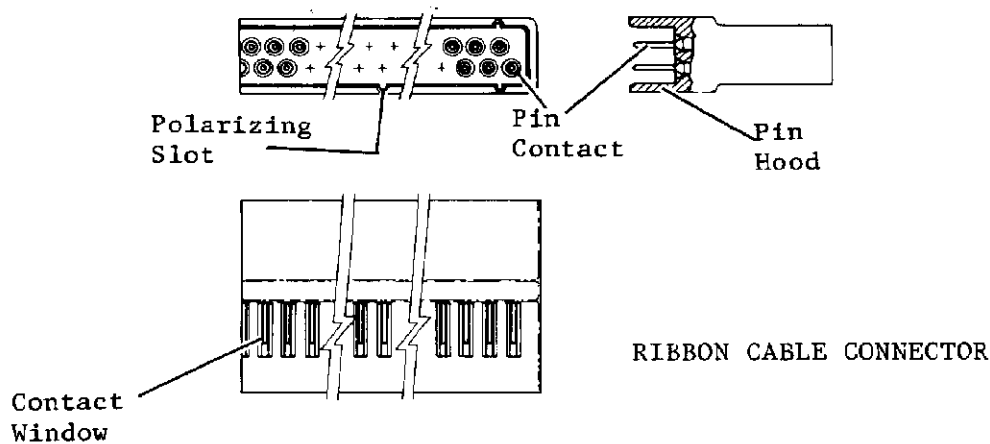


Fig. 1 Nomenclature (end)

CAUTION The precision formed contacts are small and delicate and should be protected from inadvertent damage. We recommend that they be kept in their package container until ready for use.

4. REQUIREMENTS

WARNING Safety glasses should be worn during assembly of these connectors, especially during cable stripping and vapor phase soldering.

4.1. Printed Circuit Board Connectors

A. Print Circuit Board Layout

The following statements and the layout recommendations shown in Figure 2, apply to printed circuit board connectors.

1. Maximum allowable bow of the pc board shall be $\pm .002$ over the length of the connector.
2. Coplanarity of plated pads on the pc board shall be .001 maximum.
3. If a solder mask is used, there must be clearance around the pads as defined in Figure 2.
4. The circuit pads on the pc board shall meet the requirements of AMP Test Specification 109-00011-1.

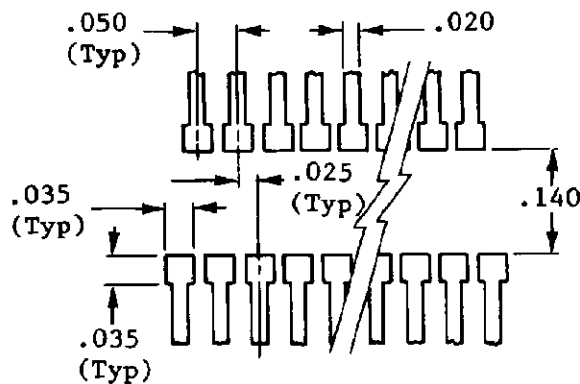


Fig. 2 PC Board Layout

B. Connector Placement

1. The connectors should be handled by the housings only and never by the solder tines. It is imperative that the connectors are not used as a mechanical support for packaging designs, neither before or after soldering.
2. A minimum of .475 in. is required for clearance around the connector to allow for mating. More space may be required if mechanical holddown devices are used, or if trace designs dictate the need for more space.
3. The connector should be placed evenly between the solder pad rows and the solder tines should be centered on the solder pads.

4.2. Ribbon Cable Connectors

A. Cable Preparation

1. The cable must be stripped with a precision made stripping tool using the dimensions shown in Figure 3. We recommend the use of the Carpenter Model 47B* Flat Cable Stripper or equivalent.
2. The conductors must be protected from cuts, nicks, and deformation. They must be straight and parallel to each other to ensure proper insertion.

B. Connector Assembly

1. The cable conductors must be inserted straight into the connector. As the conductors enter they will deflect on an integral ramp in the connector and be positioned in the appropriate contact area.

CAUTION The cable is not properly inserted until all conductors are visible in the contact windows and seated on the contacts.

2. The cable must be held firmly in place until the conductors are soldered. This can be done by placing the connector in a fixture and holding the cable in position by hand or by mechanical means.

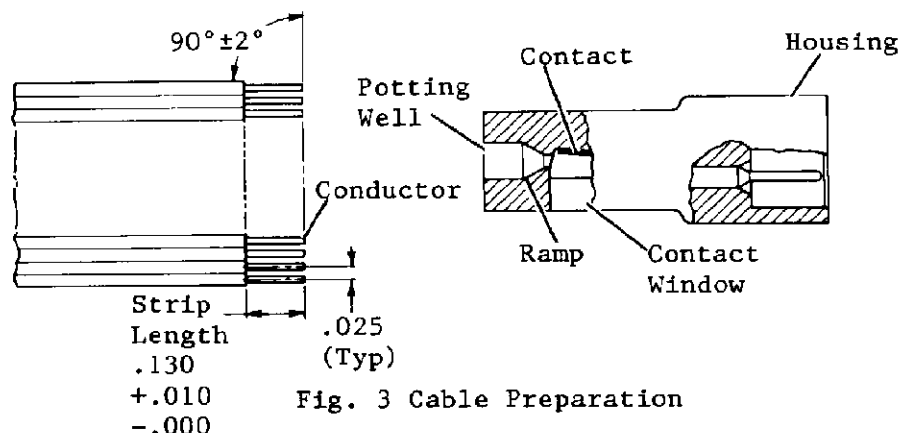


Fig. 3 Cable Preparation

* Produced by Carpenter Manufacturing Company, Manlius NY.

4.3. Soldering

A. General

1. The connectors are compatible with vapor phase and infrared reflow processes. For suitability with other reflow techniques, consult with AMP Engineering.
2. Temperature for soldering the connector should not exceed 220° C for more than 2 minutes.
3. Other guidelines for soldering and soldering variables can be found in AMP Corporate Bulletin referenced in Paragraph 2, REFERENCE MATERIAL.

B. Solder Paste Selection

Solder paste must be applied evenly to all conductors to be soldered. When soldering a ribbon cable connector, a small tool should be used to insert paste through the contact window and onto the conductors.

1. Alloy type should be SN 60, SN 63, or another one meeting QQ-S-571.
2. Flux shall be an RMA Type.
3. Paste shall be 85% minimum solids by weight.
4. Mesh particle size of -200 to +325 is recommended.
5. Ideal paste volume requirements are to be 3.584×10^{-6} cu in. (Due to loss resulting from paste adhering to equipment, you should make an allowance for 20% more than the calculated amount.)

CAUTION Use solder paste vendor's specification for recommended paste processing. Additional information on soldering processes and variables can be found in the AMP Corporate Bulletin referenced in Paragraph 2, REFERENCE MATERIAL.

C. Solder Paste Application

Solder paste can be deposited with either a stencil or a screen, the following examples are shown for each method of deposit. More technical information is available from the manufacturer of the stencil or screen.

1. If a stencil is used, it should be .008 in. thick with an opening that will prevent bridging from deposits extending beyond pad edges.
2. If a screen is used, the percentage of open area is dependent on the mesh count and weave thickness of the solder screen. For example, an 80 mesh screen with a nominal weave thickness of .008 in. has a 49.5% open area. The amount of paste deposited through a solder screen is dependent on the aperture dimensions, the wire mesh, and an emulsion thickness. For an 80 mesh screen with the same aperture dimensions as used in the stencil example No. 2 above (.040 x .075), the thickness of the emulsion can be calculated by:

$$\text{Weave } T_e = T_p - (T_w \cdot A_o) = .008 \text{ in.} - (.008 \text{ in.} \times .495) = .004 \text{ in.}$$

EXPLANATION: Let T_e = Screen emulsion thickness
 T_w = Screen weave thickness
 A_o = Decimal equivalent of percent open area
 T_p = Thickness of deposited solder paste

By varying the aperture size and/or the emulsion thickness, the recommended paste volume can be achieved.

NOTE: Using paste volumes in excess of those recommended could result in excessive wicking of reflowed solder up the solder time lead resulting in a reduction of lead compliance and potential solder joint failure.

D. Cleaning

Flux, residue, and activator removal is a necessity. The best cleaning solvents will depend on the recommendations of the manufacturer for the particular solder paste and flux used in soldering. After soldering and cleaning, the connector should be turned up-side-down to allow it to drain. The AMP Corporate Bulletin Number referenced in Paragraph 2, REFERENCE MATERIALS, has additional information on cleaning techniques.

E. Cleaning Solvents

The housing materials are unaffected by many cleaning solvents. The following solvents are approved for use on the connectors for a period of 5 minutes at 105°F. If you are using some other solvent in your system, consult AMP Engineering to assure compatibility with these connectors.

Freon TA**

Freon TE**

Freon TF**

Freon TMS**

CAUTION Consideration must be given to toxicity and other safety requirements recommended by the solder manufacturer.

** Manufactured by E.I. DuPont de Nemours and Co., Incorporated.



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F. Inspection

The solder joints must be inspected before applying potting compound. The leads should be approximately centered on the pads and a solder fillet should have an evenness around each pad/lead area. Refer to your own soldering standards and Paragraph 2, REFERENCE MATERIAL for additional solder requirements.

G. Potting Compound

A small bead of potting compound can be applied to solder tines of pc board connectors and in the potting well of ribbon cable connectors to increase strength of termination. Make sure potting compound will not interfere with connector mating or other components on the pc board. See Figure 4.

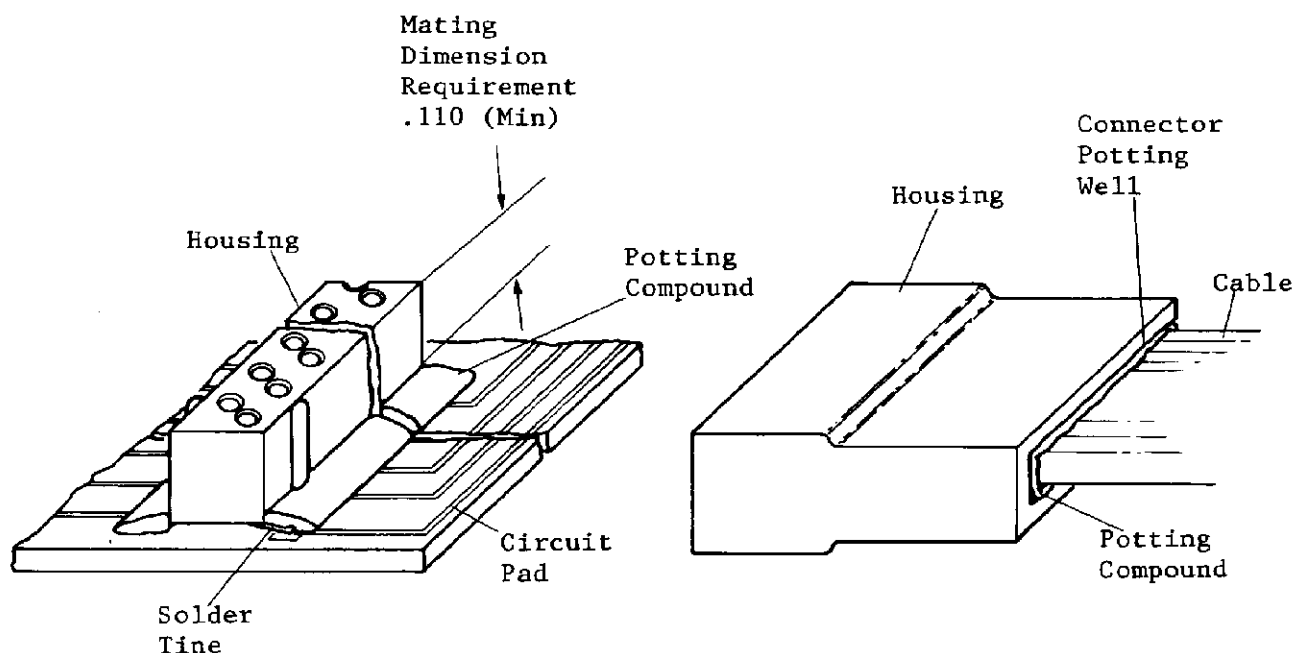


Fig. 4 Potting Compound Application

5. VISUAL AID

Figure 5 serves as a visual aid for properly applied product. For detailed inspection, refer to the references throughout this specification.

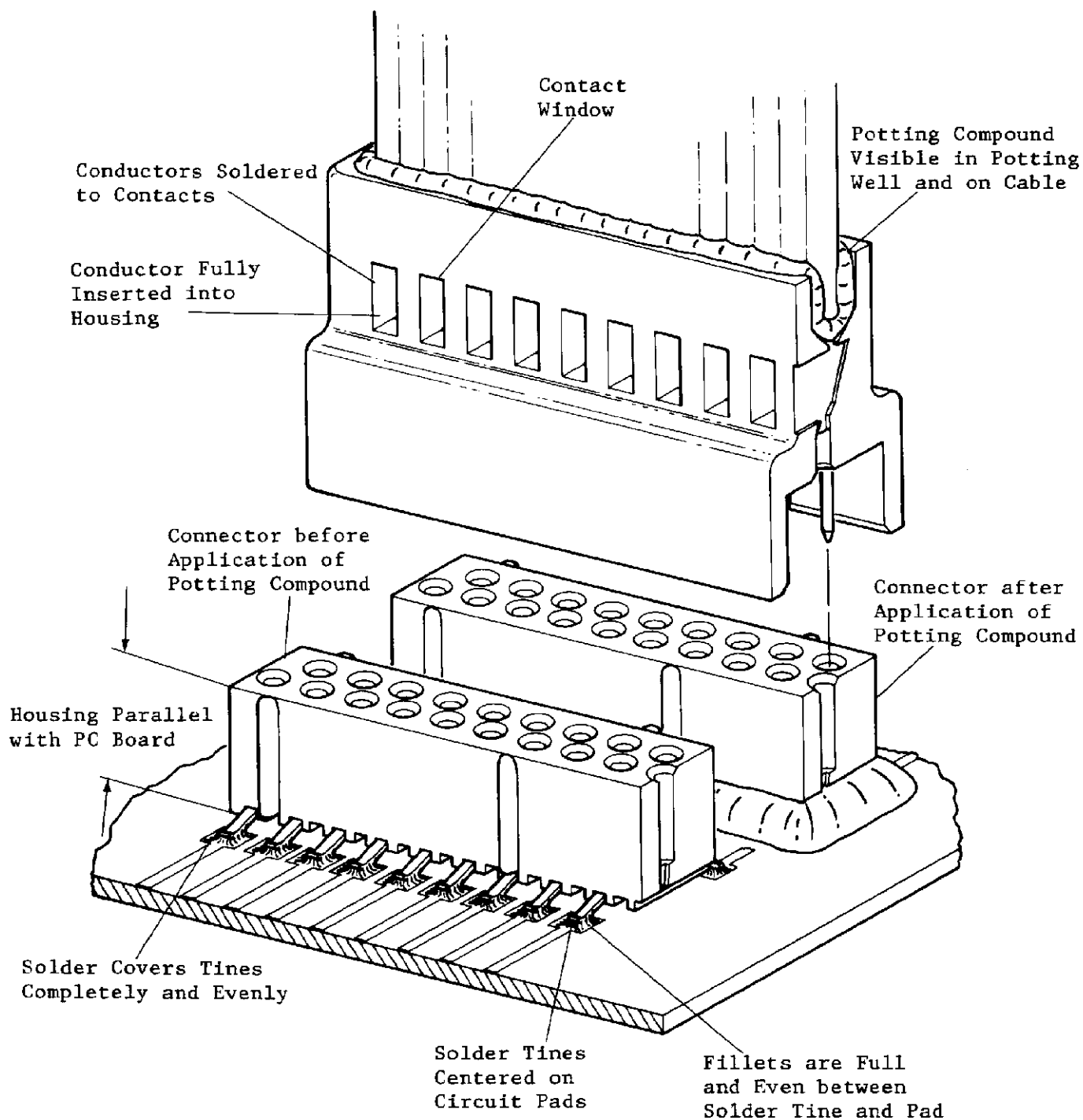


Fig. 5 Visual Aid

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