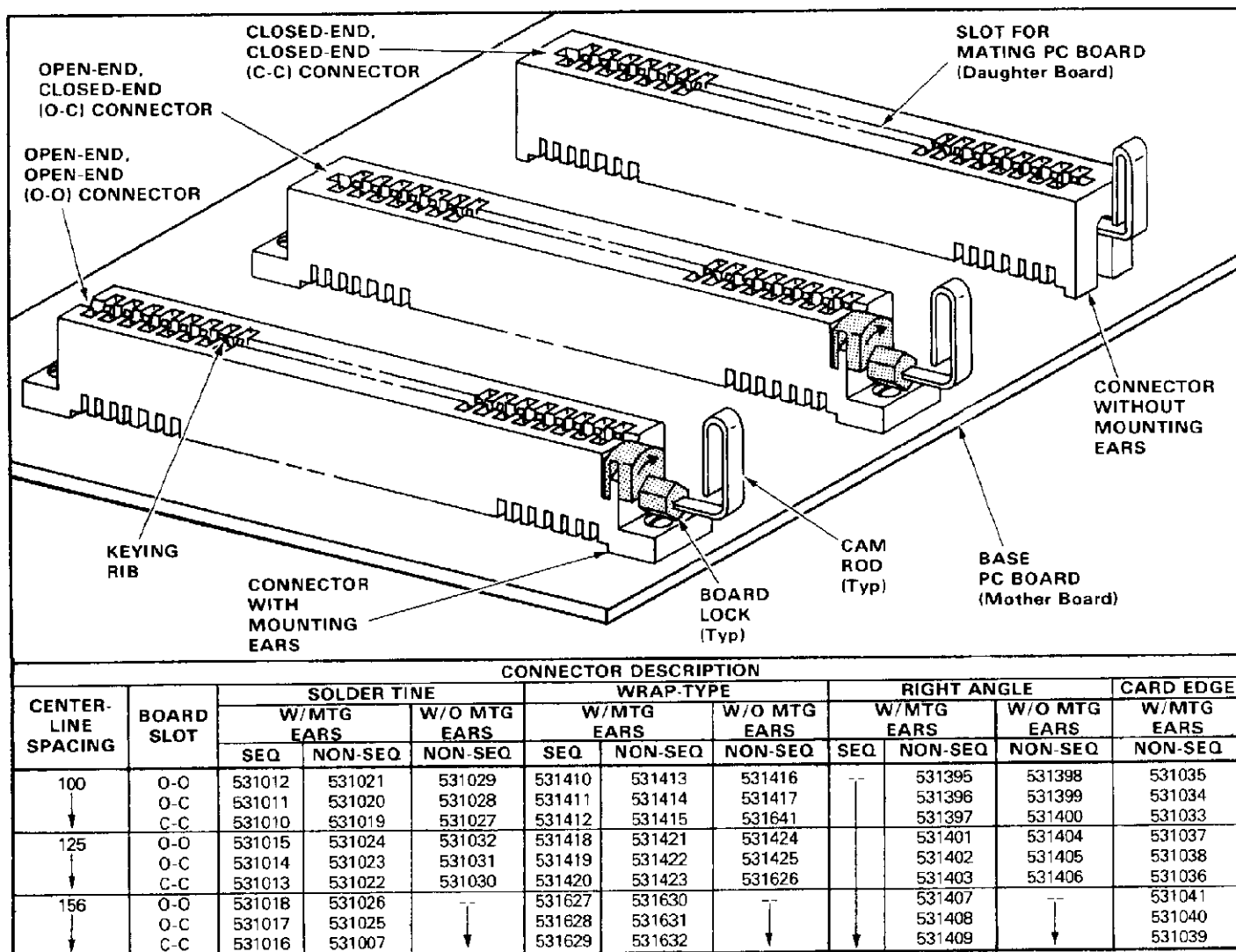


**AMP**AMP INCORPORATED  
Harrisburg, Pa. 17105**AMP★ ROTARY CAM, ZERO INSERTION FORCE (ZIF)  
CONNECTORS WITHOUT WIPING ACTION**

Instruction Sheet

**IS 7911**

RELEASED 3-8-82

**Fig. 1****1. INTRODUCTION**

This instruction sheet (IS) covers installation of AMP Rotary Cam, Zero Insertion Force (ZIF) Connectors without wiping action. See Figure 1.

Read this material thoroughly before starting assembly.

**NOTE**

*All dimensions on this sheet are in inches.*

**2. DESCRIPTION**

These connectors prevent wear on contacts and printed circuit (pc) board pads by eliminating resistant forces during insertion and extraction of pc boards. They are available with two rows of contacts with .200 in. between them and in-row contact centerline spacing of .100, .125, or .156 in. The connectors accept pc boards with .054- through .070-in. thickness.

Each connector consists of a housing, contacts, cam followers, and a cam rod. In addition, open-ended connectors have a board lock. In operation, the stainless-steel cam rod lifts the phenolic cam followers which pushes the contacts outward and allows force-free insertion of the mating pc board. Reversing rotation of the cam rod lowers the cam followers and allows the contacts to close on the pc board pads to provide electrical continuity when the system is energized.

There are several cam followers in each connector. The separation between the followers allows for keying. Two followers sizes (height variations) are available. When all followers are the same height, all contacts will open simultaneously. When different height followers are used, contacts will open sequentially (ie, larger followers will open contacts first).

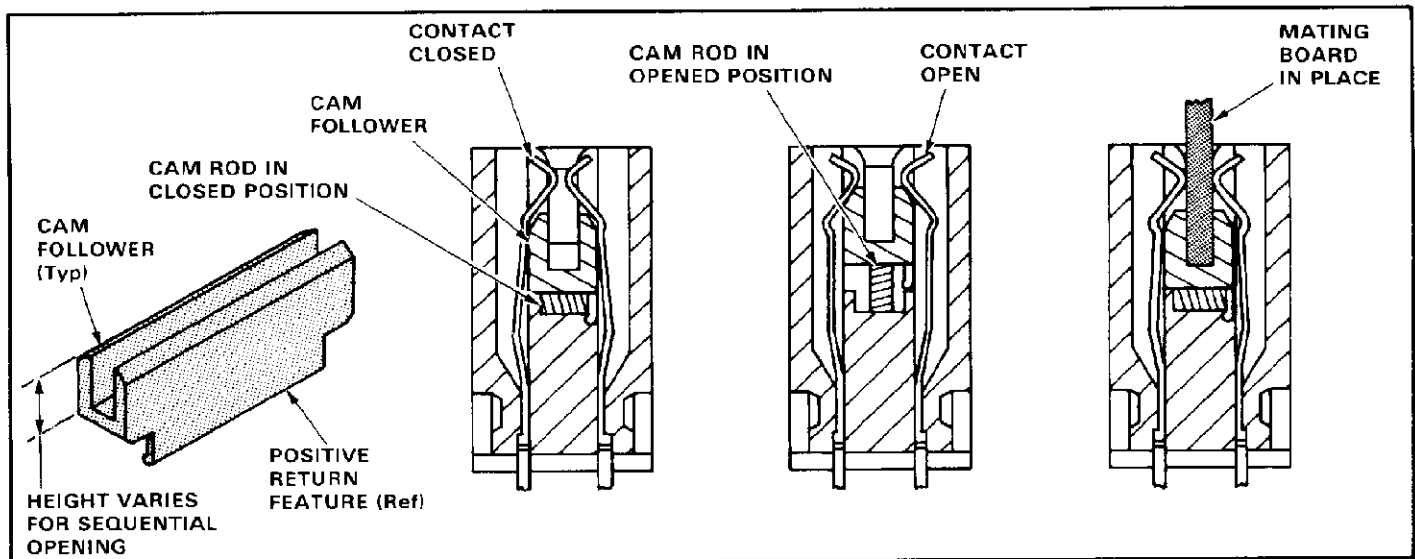


Fig. 2

The mating ends of the various contacts are identical. The circuit ends are available with either solder tines (straight), card edge tines (contoured), right-angle solder posts (.025 in. square), or in-line, wrap-type posts (.025 in. square).

Accessories include keying plugs for C-C connectors that provide connector polarization, protective covers that keep debris out of unused connectors, custom cam rods that are used to actuate several connectors mounted end to end, and mounting blocks for attaching card edge connectors to the edge of pc boards. See Figures 5, 6, 9, 11, 12, and 13.

### 3. INSTALLING CONNECTORS

Two connectors can be operated with one cam rod by mounting the connectors end to end (in tandem); however, the total contact pairs must not exceed 110. The mounting ears of end-to-end connectors should be as close as possible with the distance of connectors totaling 110 contact pairs not exceeding 1/16 in.

#### NOTE

*A board lock may be used only on the first connector. See Figure 3.*

Use the following procedure to determine the maximum distance between mounting ears of end-to-

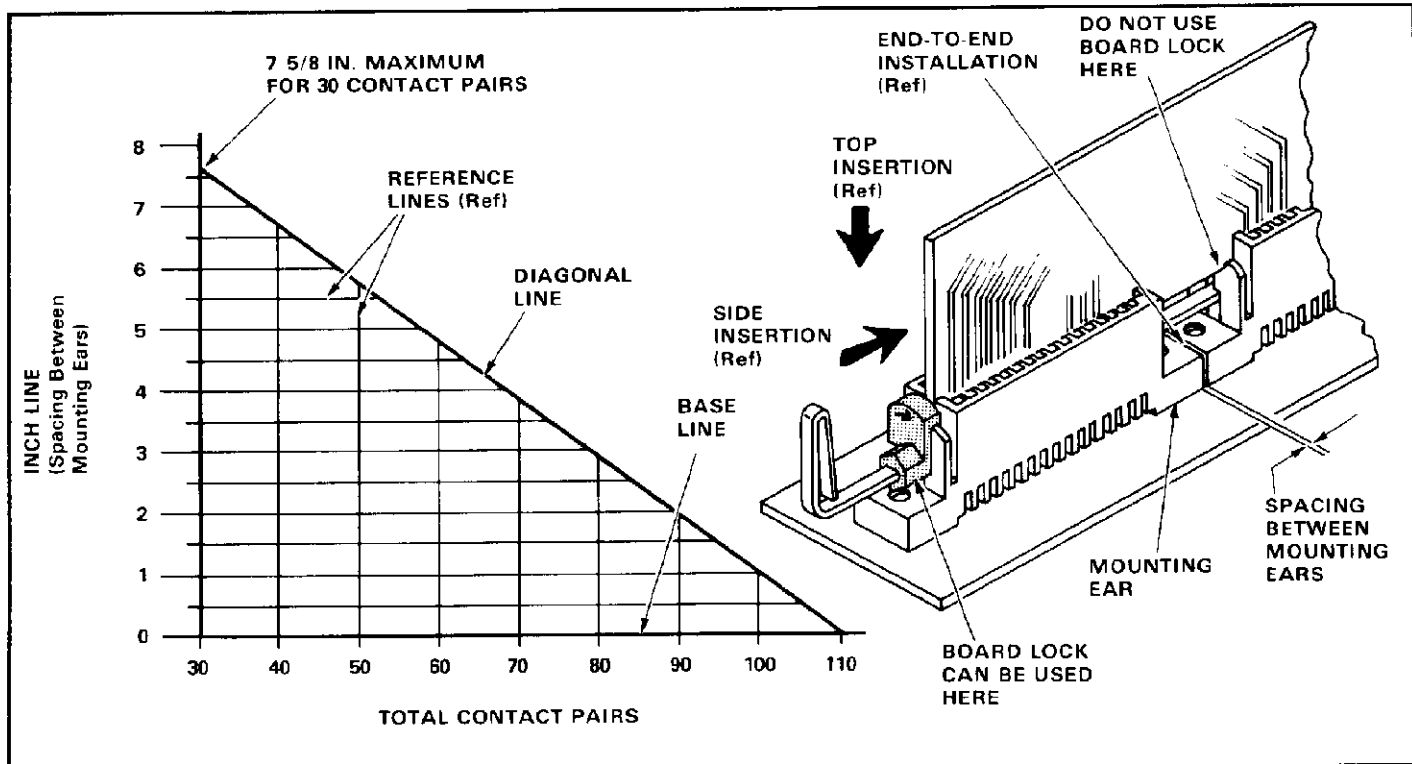


Fig. 3

end connectors. We suggest that you make a sample setup, including the insertion of the mating pc board in the connector board slot, to make sure all components are aligned before permanently securing the connectors.

Add the contact pairs of the two connectors you are going to mount, then refer to the graph in Figure 3 for the allowable distance between connectors.

**NOTE**

*An example would be 28- and 22-position connectors. The 50 total positions, which from the graph in Figure 3, allows approximately 5 3/8 in. between connectors. (It's always better to be under, rather than over, the approximate dimension.)*

#### A. Surface Mounting (Solder Tine and Posted Contacts – Figure 4)

The procedures explained in the following text cover basic applications. If you have a special application or need additional information, contact your local AMP representative.

**NOTE**

*Wrap-type connectors can be soldered to a pc board or they can be panel mounted as described in Paragraph C, Panel Mounting.*

1. Using the dimensions provided in Figure 4, make a layout on the base pc board.
2. Align one row of contacts and start them into the holes in the pc board.
3. Rotate the connector until the second row of contacts is aligned and started into the second row of holes.

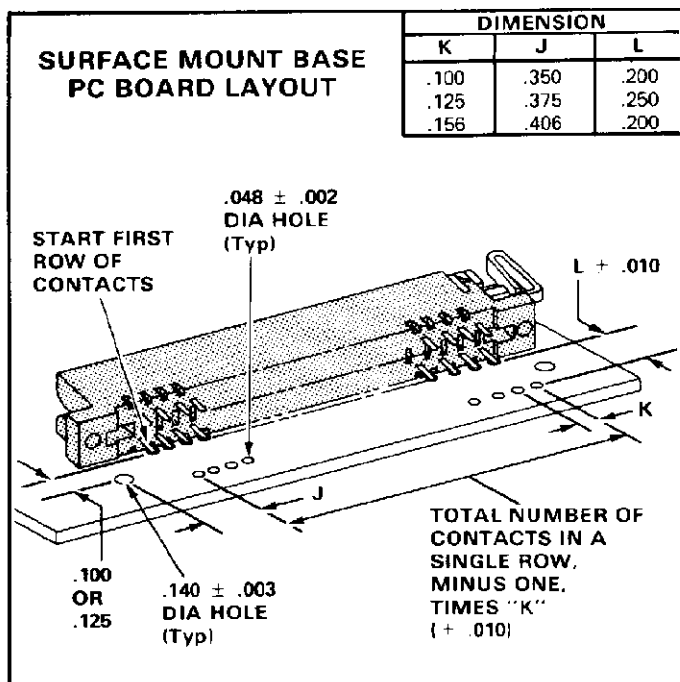


Fig. 4

4. Make sure all contacts are started into the holes, then push evenly on the connector until the housing seats on the pc board.
5. If the connector has mounting ears, secure it to the board (or panel) using No. 4 machine screws and nuts.

#### B. Edge Mounting (Card Edge Contacts – Figure 5)

1. Select a base pc board and connector of the size specified for your application.
2. Using the number of contact positions and the centerline spacing of the contacts, make a pad layout on the board using .052-in.-wide by .350-in.-long pads.

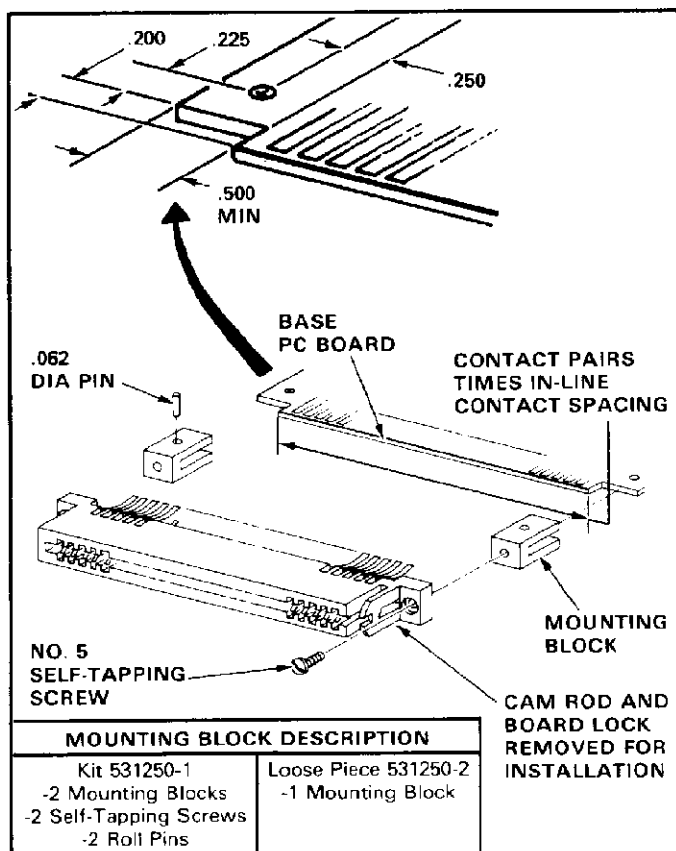


Fig. 5

3. If the connector has mounting ears, secure it to the pc board using AMP Mounting Bracket 531250 (see Figure 5).
4. Solder the contacts to the pc board using the soldering technique described in Paragraph 4, SOLDERING.

#### C. Panel Mounting (Wrap-Type Connectors)

1. Make a layout on the panel using the dimensions provided in Figure 6.
2. Position the connector on the FRONT of the panel and secure it with No. 4-40 screws, lockwashers, and nuts. See Figure 6.

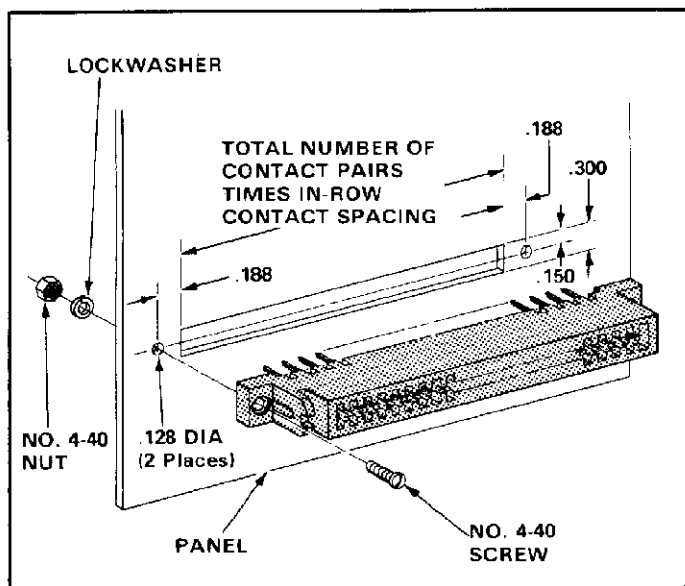


Fig. 6

#### 4. SOLDERING

Certain cleaning procedures that must be observed BEFORE and AFTER soldering are covered in the following text. See Figure 7 for list of cleaning solvents.

##### RECOMMENDED CLEANING SOLVENTS

1. Isopropyl Alcohol
2. Chlorothene
3. Freon TE
4. Freon TF
5. Freon TC
6. Freon EH

Fig. 7

##### CAUTION

When applying flux and solder — use extreme care to prevent either from entering the cam area. Otherwise, excessive force will be needed to turn the cam and continuity can be affected.

##### NOTE

The connectors will withstand temperatures up to 105° F (higher under closely controlled periods of time). Heat-sink clips can be used to dissipate heat from the connectors.

4. Clean the assembly with a good commercial cleaner that will not affect plastic or paint. See listing in Figure 7.

##### CAUTION

If the connector has a board lock, the lock must be removed before cleaning. Close the contacts, pull the ram rod out of the connector, and remove the lock. Check the configuration of the split tip before replacing the ram rod. See Figure 11.

5. Allow connector to dry. If applicable, replace board lock.

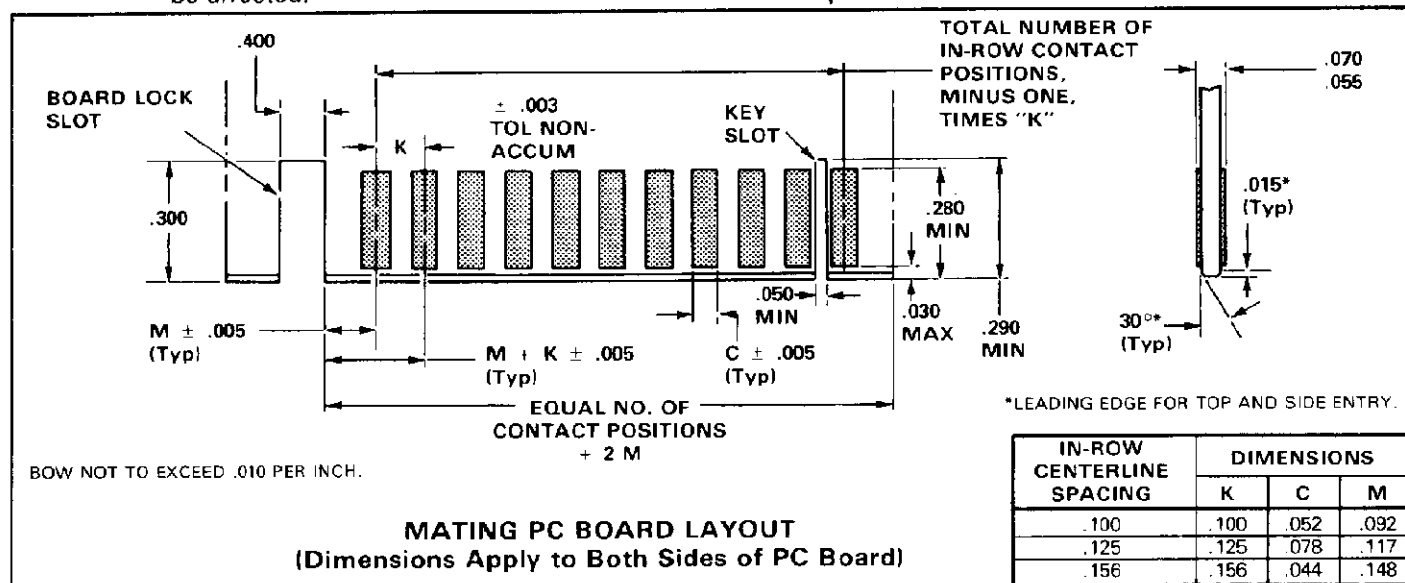


Fig. 8

## CAUTION

*Cleaning time, temperature, and solution could cause ink markings to come off. Test cleaning procedures should be made with sample connectors to prevent removal of markings on production connectors.*

## 5. PC BOARD LAYOUT (Figure 8)

Refer to the dimensions in Figure 8 for the mating pc board layout. Notice that cutout dimensions have been included for the board lock and keying plug features (the exact location will depend on your application).

## NOTE

*If the mating pc board is to be used for side entry into the connector, the leading edge of the board must be tapered with a 30° lead-in chamfer.*

The finished pc board circuit pads should be free of cracks and depressions. There are two plating techniques that we recommend.

The preferred technique is .000050 in. to .00010 in. of low-stress nickel under .000030 in. minimum of non-porous, high-purity soft gold. The gold should be a high-purity (99.9% pure, 80 Knoop gold) to ensure bridging of cracked nickel plating and to ensure the best contact surface.

The alternate plating technique that we recommend is close adherence to Military Standard 275 which specifies .000050 in. minimum gold over .00020 in. minimum of low-stress nickel.

## CAUTION

*To limit flexure or internal plating cracks, nickel plating should not exceed .00030 in.*

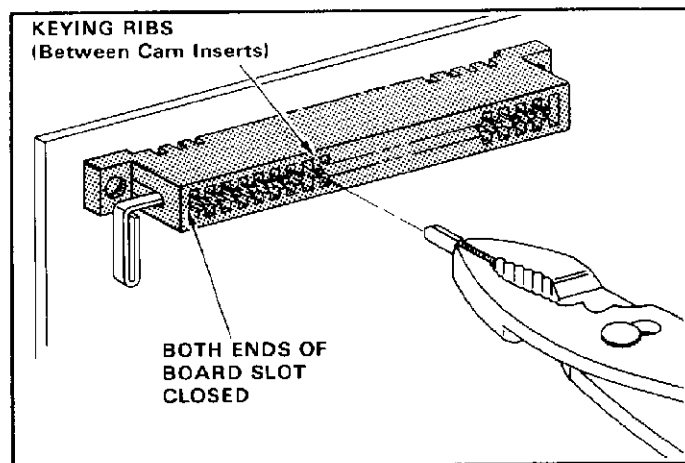


Fig. 9

## 6. KEYING (Figure 9)

Intercontact Keying Plugs 530977-1 are designed to polarize connectors that have both ends closed. To install, grip the flat end of the plug with a pair of needle-nosed pliers and insert the plug straight into the connector between the two applicable keying plug ribs until bottomed.

## CAUTION

*Keying plug ribs are located between cam inserts. Do NOT key the connector at any other location.*

## 7. CAMMING (Figure 10)

When the cam rod can easily be slid in and out of the connector, the contacts are in a closed position. With the cam rod in this position, the contacts can be opened by rotating the cam rod **CLOCKWISE** 90 degrees.

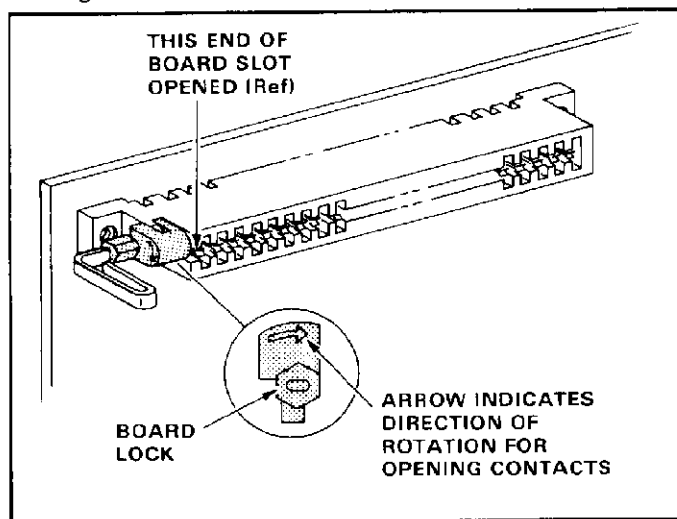


Fig. 10

## NOTE

*Custom cam rods can be made from AMP Cam Rod Material 531004-1. The tip must be split and tapered inward to prevent interference during insertion and extraction of the cam rod. See Figure 11.*

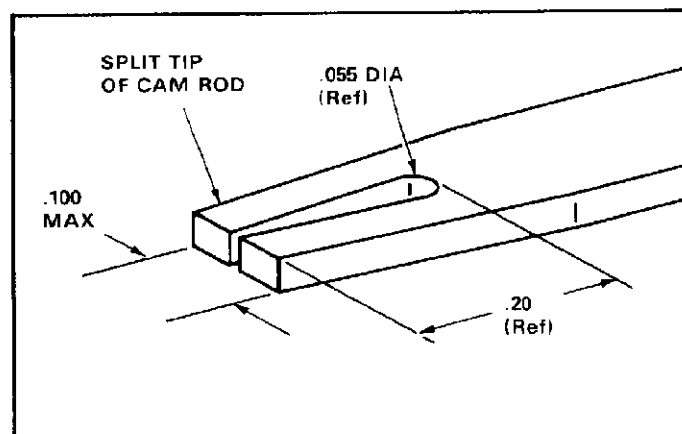


Fig. 11

## 8. DUST COVER INSTALLATION (Figure 12)

Dust covers are supplied in strips of 3 feet and are recommended for connectors not in use to prevent debris and contaminants from affecting the contacts. To install them, determine the width of the pc board slot, cut a piece from the dust cover strip to that length, open contacts, insert cover, and close contacts. To remove dust cover, open contacts and pull cover straight out of connector.

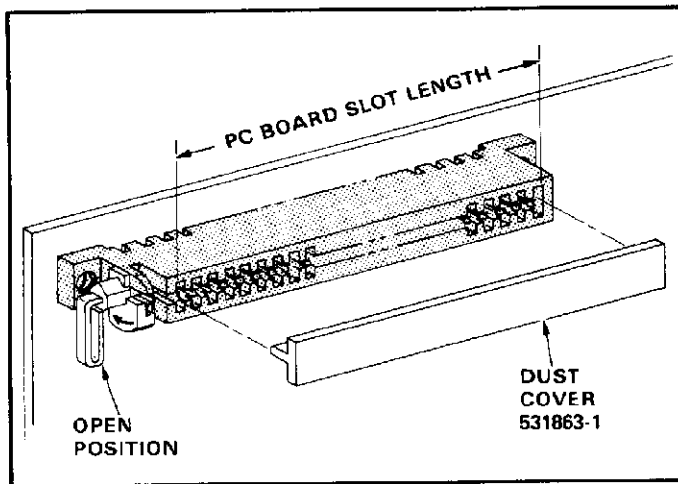


Fig. 12

### 9. MOUNTING BLOCK INSTALLATION (Figure 5)

AMP Mounting Blocks 531250 are designed to hold edge-mount connectors to pc boards. To install them, first make a cutout on the edge of the pc board using the dimensions shown in Figure 5. Attach the mounting block to the board with .062-in.-diameter pins. Use No. 5 self-tapping screws to secure the connector to the mounting blocks.

### 10. CLEANING CONNECTORS

Connectors suspected of contamination should be cleaned as follows:

1. If connector is equipped with a board lock, remove cam rod, remove board lock, and re-install the cam rod.
2. Open the contacts by rotating the cam rod CLOCKWISE 90 degrees.
3. Clean the contacts with a suitable solvent (see listing in Figure 7) and a stiff bristled brush.
4. Air-dry the connector with filtered compressed air.

#### WARNING

*Compressed air for cleaning and drying must be reduced to less than 30 psi, and effective chip guarding and personal protective equipment (including eye protection) must be used.*

5. If applicable, remove cam rod and replace board lock. See Figure 13 for proper orientation.

#### NOTE

*Always check tip of cam rod before extraction and insertion to be sure it is not deformed and will not damage the components. See Figure 11.*

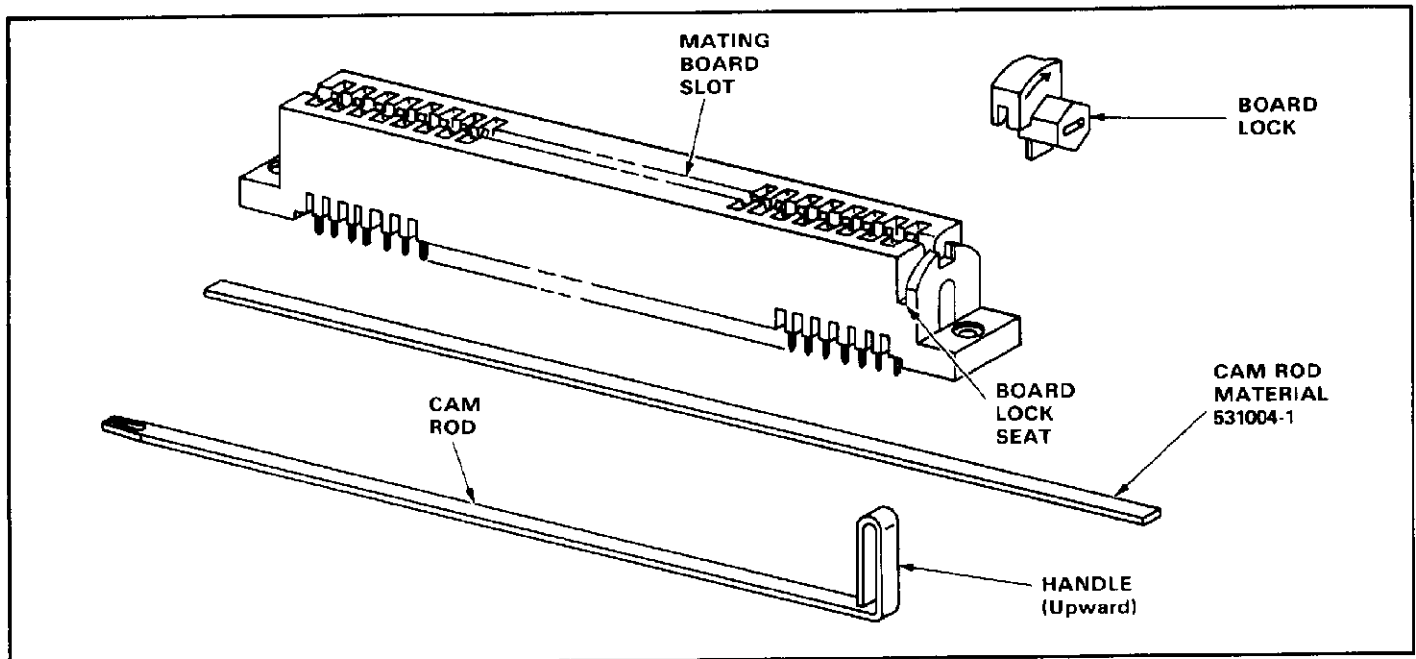


Fig. 13