

|     |        |  |                          |
|-----|--------|--|--------------------------|
| REV | REASON | PREPROGRAMMED PRINTED<br>CIRCUIT BOARD<br>DIP SWITCHES | ENGINEERING RELEASE DATE |
|     |        |  | 10-4-89                  |
|     |        |  | APPROVAL                 |
|     |        |  | HAROLD LEITER            |

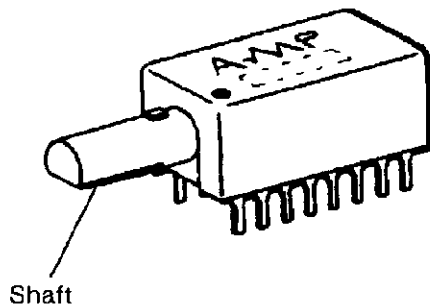
**1. INTRODUCTION**

This specification covers the requirements for application of AMP\* Preprogrammed Printed Circuit (PC) Board Dual In-Line Package (DIP) Switches.

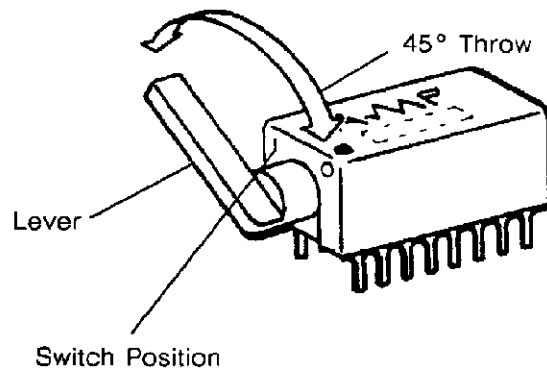
Switches are manually actuated and are designed for wave soldering or hand soldering into pc boards or insertion into AMP DIP sockets with in-row contact centerline spacing of .300 inches. Switches come in three actuation styles and three stamping legend styles (see Figure 1). All switches are bottom sealed. The screwdriver-slot style is available with or without tape seal. The four-pole, double-throw switches described in Figure 1 have been designed for logic level circuitry. See Figure 2 for switch settings. On lever style switches refer to zero and 15 (or F) position for settings.

**NOTE** All dimensions are given in inches unless otherwise specified. Metric equivalents may be obtained by multiplying the dimensions by 25.4.

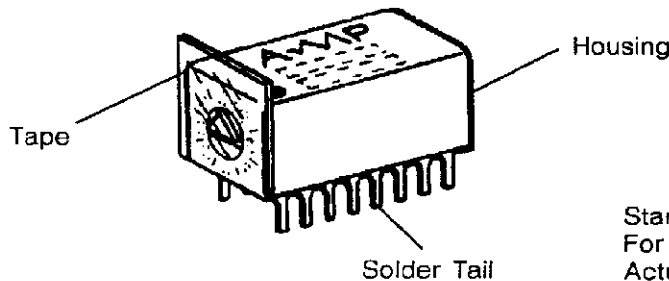
**EXTENDED-SHAFT STYLE**



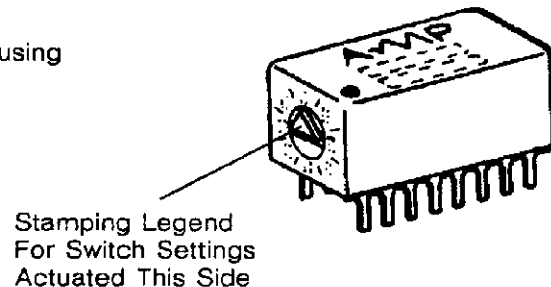
**LEVER STYLE**



**TAPED SCREWDRIVER-SLOT STYLE**



**SCREWDRIVER-SLOT STYLE**



**Fig. 1. Product Features**

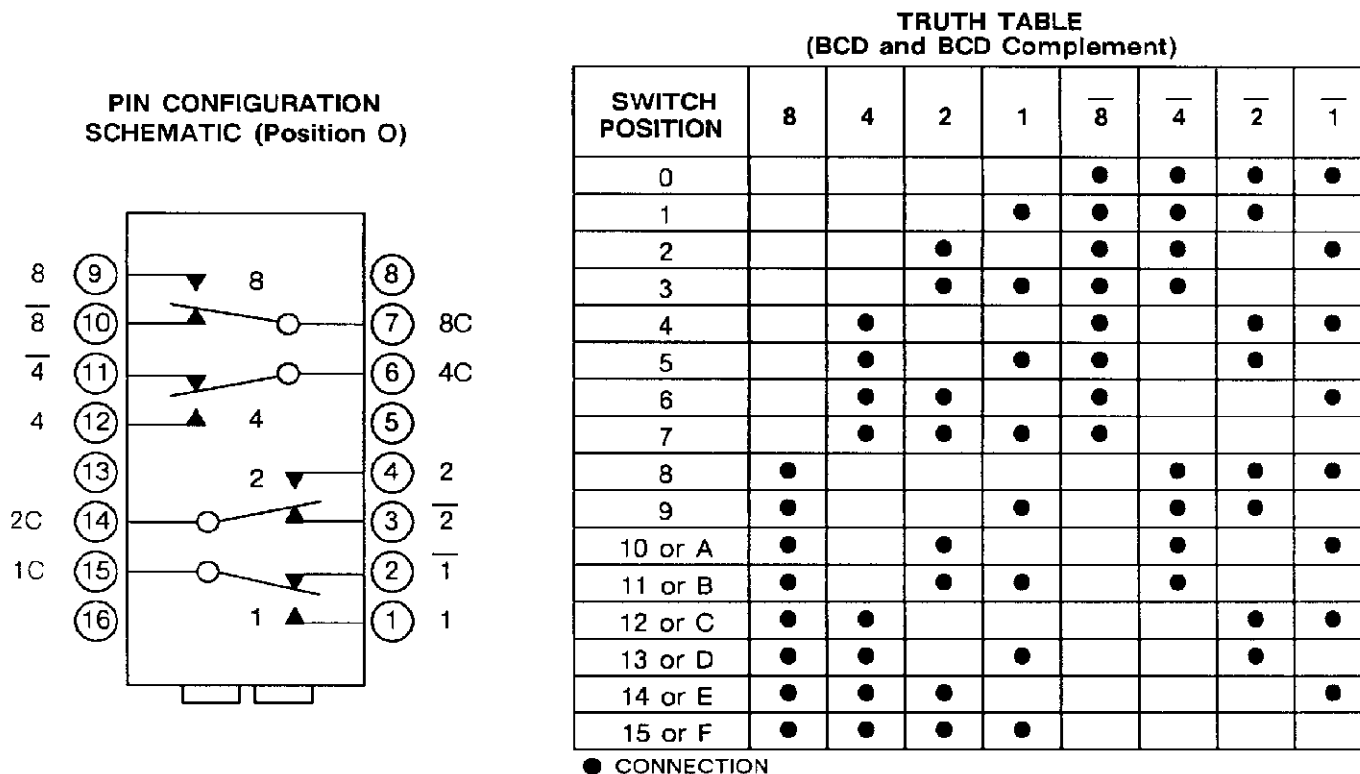


Fig. 2. Switch Settings

**2. REFERENCE MATERIAL**

**2.1. Customer Assistance**

Reference Part Number 53137 and Product Code 2419 are representative numbers that identify the preprogrammed printed circuit board DIP switches. These numbers are used in the AMP network of customer service to access tooling and product application information. This service is provided by your local AMP Representative (Field Sales Engineer, Field Application Engineer, etc) or, after purchase, by calling the CUSTOMER HOTLINE number at the top of page 1.

**2.2. Engineering Drawings**

Customer Drawings for specific products are available from the responsible AMP Engineering Department via the service network. The information contained in the Customer Drawings takes priority if there is a conflict with this specification or with any other technical documentation supplied by AMP Incorporated.

**2.3. Specifications**

AMP Product Specification 108-7066 provides performance requirements and test data relating to AMP Preprogrammed Printed Circuit (pc) Board DIP Switches.

**2.4. Instructional Material**

AMP Instruction Sheet IS 6811 provides information pertaining to the installation of the preprogrammed switches.

**3. REQUIREMENTS**

**3.1. PC Board Layout**

The board layout requirements are shown in Figure 3.

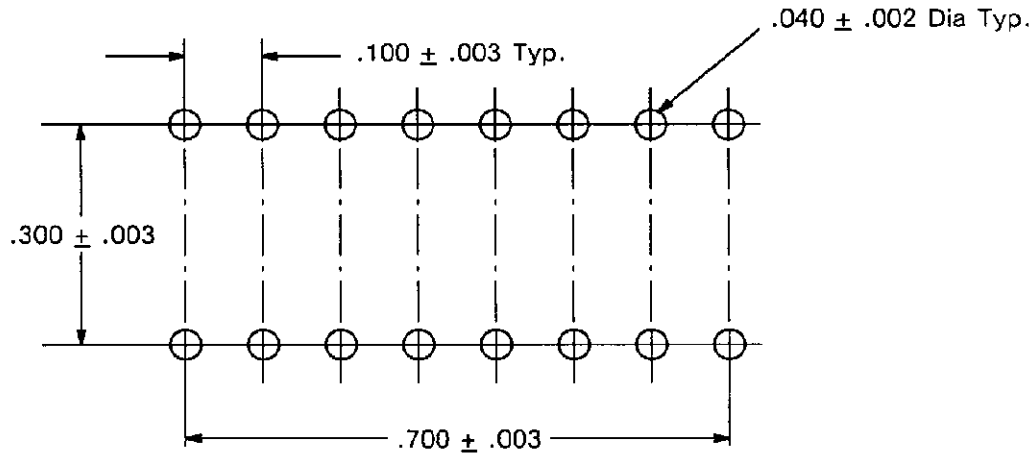


Fig. 3. Recommended Board Hole Pattern

**3.2. PC Board Thickness**

The maximum recommended pc board thickness is .093.

**3.3. Mounting Requirements**

When installing the preprogrammed switch, hold switch at a slight angle and start one row of contact leads into contact holes. Do NOT overinsert. Switch should be rotated until second row of contact leads have started entry into holes. Grip sides of housing and push contact pins into holes until housing bottoms. To hold switch in place during wave soldering, the four outside contact leads may be clinched at 45°. See Figure 4.

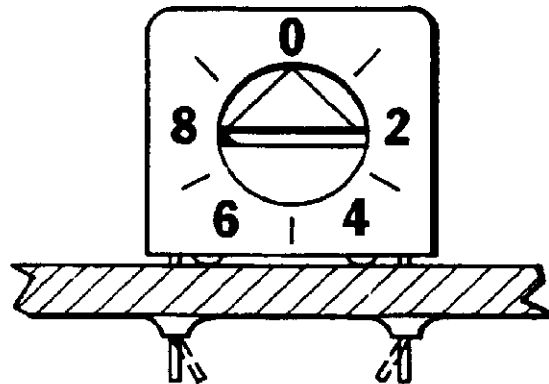


Fig. 4. Clinched Solder Tails

**3.4. Soldering**

**A. Flux Selection**

Prior to soldering, the solder tails shall be fluxed with a mildly activated rosin base flux. Proper flux selection will depend on the type of pc board used, and any components mounted on the board. Flux must also be compatible with the customer's flow solder line, as well as with manufacturing and safety requirements.

**B. Soldering Guidelines**

Refer to Paragraph 2.4. for instructional material that may be helpful in establishing guidelines for soldering.

**C. Drying**

When drying cleaned assemblies and pc boards, make certain that temperature does not exceed 130°C. Excessive temperatures may cause housing degradation.

### 3.5. Cleaning

#### A. Cleaning Solvents and Aqueous Cleaners

Most solvents and aqueous cleaners used for pc board cleaning are safe for plastic and epoxy bonding materials. The solvents and cleaners must be free of dissolved flux and other contaminants and must NOT exceed the recommended safe temperature provided by the manufacturer. The aqueous cleaners will not effect the seals as long as the percentage of cleaner to water and the temperature (recommended by the manufacturer) are not exceeded. Recommended cleaning solvents and aqueous cleaners are shown in Figure 5.

| SOLVENTS          | CLEANERS     |
|-------------------|--------------|
| Freon† TMS        | Alpha 2100   |
| Freon TMC         | Alpha 2110   |
| Terpene Solvent   | Kester‡ 5779 |
| Freon TP 35       | Kester 5778  |
| Freon TE 35       | Lonco 520    |
| Alpha 1001        | Lonco 530    |
| Alpha 1003        | Kenco 2230   |
| Freon TF          |              |
| Freon SMT         |              |
| Isopropyl Alcohol |              |

† Trademark of DuPont  
 ‡ Trademark of Macdonald & Co.

Fig. 5. Cleaning Solvents and Aqueous Cleaners

#### B. Recommended Soldering and Cleaning Systems

Wave soldering and automatic in-line cleaning are recommended for the sealed switch. Hand soldering and hand cleaning are recommended for the unsealed switch.

Determine the type of cleaning flux to be used and refer to Figure 6 for recommended soldering and cleaning processes.

| CLEANING FLUX   |  |   |
|---|--|---|
| ORGANIC   | RA (Active) ROSIN  | RMA (mildly Active) ROSIN   |
| 1. Heat<br>2. Solder<br>3. Wash in tap water or saponifier●<br>4. Rinse in tap or de-ionized water<br>5. Dry in ambient air or radiant heater | 1. Heat<br>2. Solder<br>3. Wash saponifier<br>4. Rinse in tap or de-ionized water<br>5. Dry in ambient air or radiant heater | 1. Extra preclean<br>2. Heat<br>3. Solder<br>4. Wash saponifier<br>5. Rinse in tap or de-ionized water<br>6. Dry in ambient air or radiant heater |

● REDUCES RESIDUE TO SOAP

Fig. 6. Cleaning Fluxes

#### C. Vapor Cleaning and Submersion

Vapor cleaning (with the pc board on edge) is preferred over submersion in a liquid cleaner. Unsealed switches should not be submerged due to contaminants in the cleaning bath.

**CAUTION**

*Do NOT ultrasonically clean sealed switches.*

#### D. Exposure

The sealed switch will withstand cleaning solvents and aqueous cleaners for a five minute exposure time without degradation to seal and/or product performance.

**WARNING**

*111 Trichlorethane is not recommended for use because of the health hazards associated with this solvent.*

4. VISUAL AID

Figure 7 shows typically applied AMP Preprogrammed PC Board DIP Switches. The illustration depicts, in general, the conditions that production personnel should check to ensure a properly applied product. Applications which are not visually correct should be dimensionally inspected using the information given in the main body of this specification.

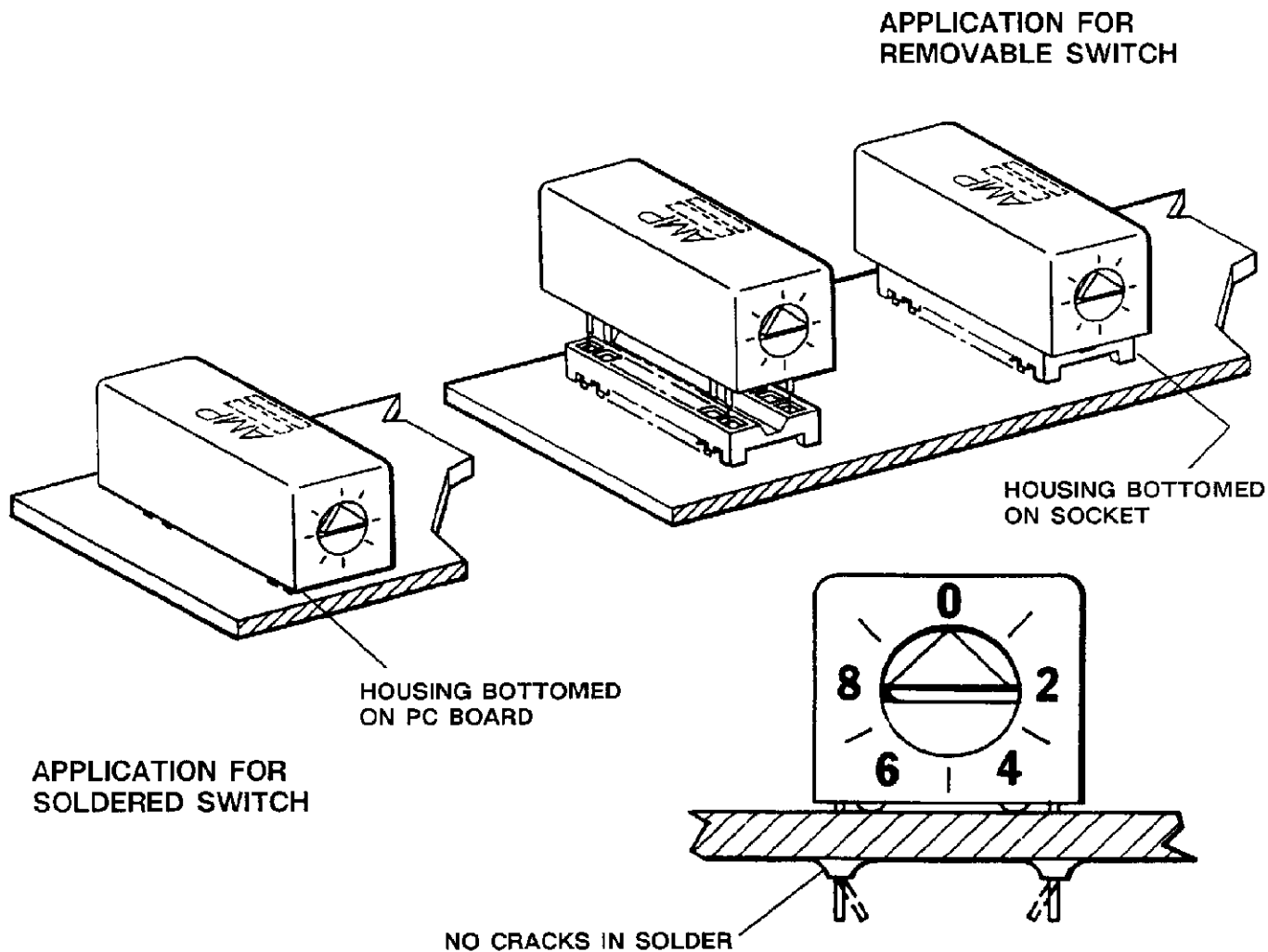


FIG. 7. VISUAL AID