

**Programmable DIP Shunts**
**NOTE**


All numerical values are in metric units [with U.S. customary units in brackets]. Dimensions are in millimeters [and inches]. Unless otherwise specified, dimensions have a tolerance of  $\pm 0.13$  [ $\pm 0.005$ ] and angles have a tolerance of  $\pm 2^\circ$ . Figures and illustrations are for identification only and are not drawn to scale.

**1. INTRODUCTION**

This specification covers the requirements for application of Programmable DIP (Dual In-Line Package) Shunts. Both types, standard and machine insertable, are used to manually program various types of electrical/electronic equipment. The shunt consists of a series of conductive straps packaged in a DIP configuration. The straps can be retained intact for a closed circuit or broken with a hand tool to produce an open circuit.

When corresponding with TE Connectivity personnel, use the terminology provided on this specification to help facilitate your inquiry for information. Basic terms and features of components are provided in Figure 1.

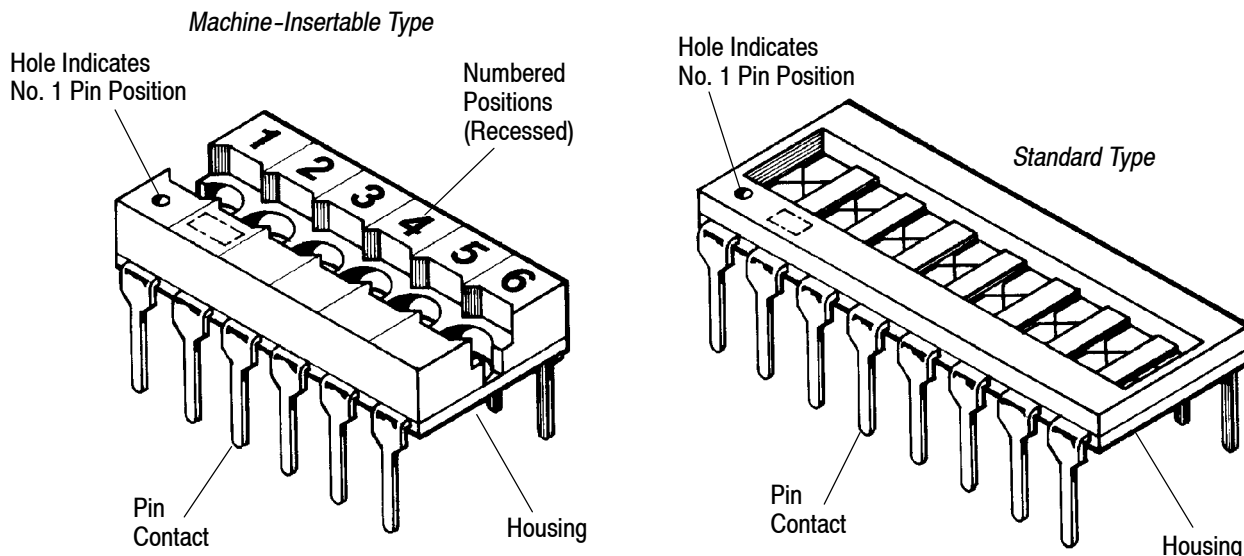


Figure 1

**2. REFERENCE MATERIAL**
**2.1. Revision Summary**

Per EC 0990-1008-98

- Updated document to corporate requirements.

**2.2. Customer Assistance**

Reference Part Number 435704 and Product Code 4544 are representative numbers of Programmable DIP Shunts. Use of these numbers will identify the product line and expedite your inquiries through a TE service network established to help you obtain product and tooling information. Such information can be obtained through a local TE Representative (Field Sales Engineer, Field Service Engineer, etc.) or, after purchase, by calling the Tooling Assistance Center or the Product Information number at the bottom of this page.

**2.3. Drawings**

Customer Drawings for specific products are available from the responsible TE 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 TE.

## 2.4. Product Specifications

Product Specification 108-7533 provides applicable performance tests and requirements for Programmable DIP Shunts.

## 2.5. Bulletins

Corporate Bulletin 401-52 is available upon request and can be used as a guide in soldering. This bulletin provides information on various flux types and characteristics along with the commercial designation and flux removal procedures. A checklist is attached to the bulletin as a guide for information on soldering problems.

## 2.6. Instructional Material

The following list includes Instruction Sheets (408-series) that provide assembly procedures for product, operation, maintenance and repair of tooling; and Application Specifications (114-series) that covers the requirements for application .

<u>Document Number</u>	<u>Document Title</u>
408-7768	Programmable Shunts for Dual In-Line Packages (DIP)
114-1063	Surface Mount Programmable DIP Shunts

## 3. REQUIREMENTS

### 3.1. Printed Circuit (PC) Board Layout

PC board layout requirements are shown in Figure 2.

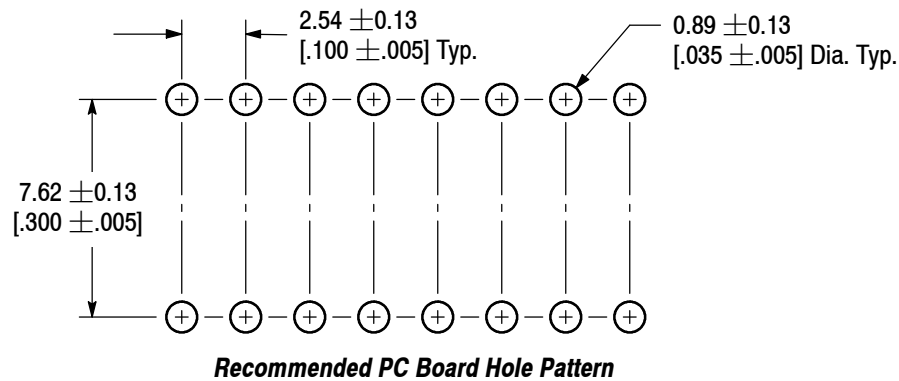


Figure 2

### 3.2. PC Board Thickness

The maximum recommended pc board thickness is 2.36 [.093].

### 3.3. Mounting Requirements

When installing the standard shunt, hold shunt at a slight angle and start one row of contact pins into contact holes. Do NOT over-insert. Shunt should be rotated until second row of contact pins is aligned with opposite row of contact holes. Make certain all contact pins have started entry into holes. Grip sides of shunt and push contact pins into holes until housing bottoms.

The machine-insertable shunt can be applied by commercially available integrated circuit (IC) insertion equipment (from Universal Instruments Corporation of Binghamton, NY or DynaPert Division of USM Corporation of Boston, MA, etc.). Follow machine manufacturer's requirements and instructions for machine insertion.

### 3.4. Soldering

#### A. Flux Selection

Pin contacts must be fluxed prior to soldering with a mildly active, rosin base flux. Selection of the flux will depend on the type of pc board and other components mounted on the board. Additionally, the flux must be compatible with the wave solder line, manufacturing, health, and safety requirements. Call the Product Information phone number at the bottom of page 1 for consideration of other types of flux. Some fluxes that are compatible with these connectors are provided in Figure 3.

FLUX TYPE	ACTIVITY	RESIDUE	COMMERCIAL DESIGNATION	
			KESTER <sup>⊞</sup>	ALPHA <sup>■</sup>
Type RMA (Mildly Activated)	Mild	Noncorrosive	186	611

⊞ Product of Kester Solder Co.    ■ Product of Alphametals Inc.

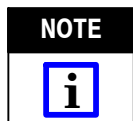
Figure 3

#### B. Cleaning

After soldering, removal of fluxes, residues, and activators is necessary. Consult with the supplier of the solder and flux for recommended cleaning solvents. The following is a listing of common cleaning solvents that will not affect the connectors for the time and temperature specified. See Figure 4.



*Consideration must be given to toxicity and other safety requirements recommended by the solvent manufacturer. Refer to the manufacturer's Material Safety Data Sheet (MSDS) for characteristics and handling of cleaners. Trichloroethylene and Methylene Chloride can be used with no harmful affect to the connectors; however TE does not recommend them because of the harmful occupational and environmental effects. Both are carcinogenic (cancer-causing) and Trichloroethylene is harmful to the earth's ozone layer.*



*If you have a particular solvent that is not listed, contact the Tooling Assistance Center or Product Information number at the bottom of page 1.*

CLEANER		TIME (Minutes)	TEMPERATURES (Maximum)	
NAME	TYPE		CELSIUS	FAHRENHEIT
Alpha 2110 <sup>■</sup>	Aqueous	1	130	266
Bioact EC-7 <sup>◆</sup>	Solvent	5	100	212
Butyl Carbitol <sup>●</sup>	Solvent	1	Room Ambient	
Isopropyl Alcohol	Solvent	5	100	212
Kester 5778 <sup>⊞</sup>	Aqueous	5	100	212
Kester 5779 <sup>⊞</sup>	Aqueous	5	100	212
Loncoterge 520 <sup>●</sup>	Aqueous	5	100	212
Loncoterge 530 <sup>●</sup>	Aqueous	5	100	212
Terpene Solvent	Solvent	5	100	212

■ Product of Fry's Metals, Inc.    ◆ Product of Petroferm, Inc.    ● Product of Union Carbide Corp.    ⊞ Product of Litton Systems, Inc.

Figure 4

#### C. Drying

When drying cleaned assemblies and printed circuit boards, make certain that the temperature does not exceeded 130°C [ 266°F]. Excessive temperatures may cause housing degradation and / or plating deterioration.

**D. Soldering Guidelines**

Programmable DIP shunts and pc boards can be soldered using wave soldering techniques. The temperatures and exposure time shall be within the ranges specified in Figure 5.

SOLDERING PROCESS	TEMPERATURE		TIME (At Max Temperature)
	CELSIUS	FAHRENHEIT	
WAVE SOLDERING	260**	500**	5 Seconds

\*\*Wave temperature

Figure 5

**4. QUALIFICATIONS**

Programmable DIP Shunts are not required to be listed or recognized by Underwriters Laboratories Inc. (UL) , or CSA International.

**5. TOOLING** (Figure 6)

Use Hand Tool 435862-1 for programming Programmable DIP Shunts.

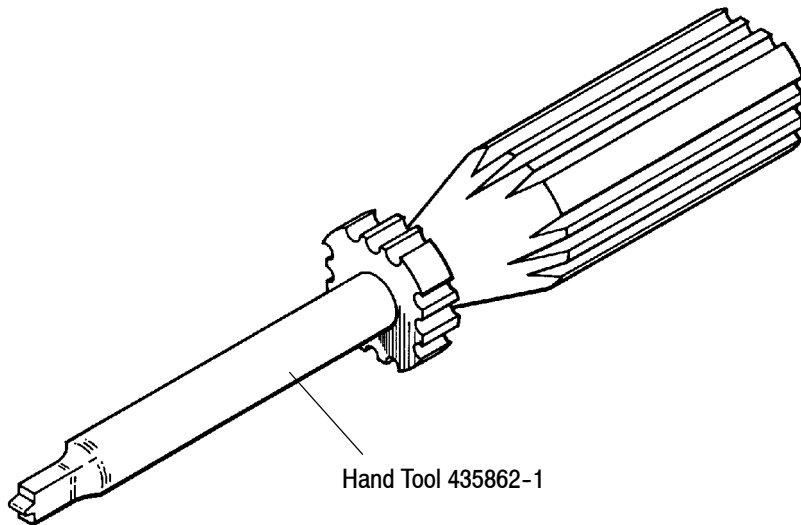
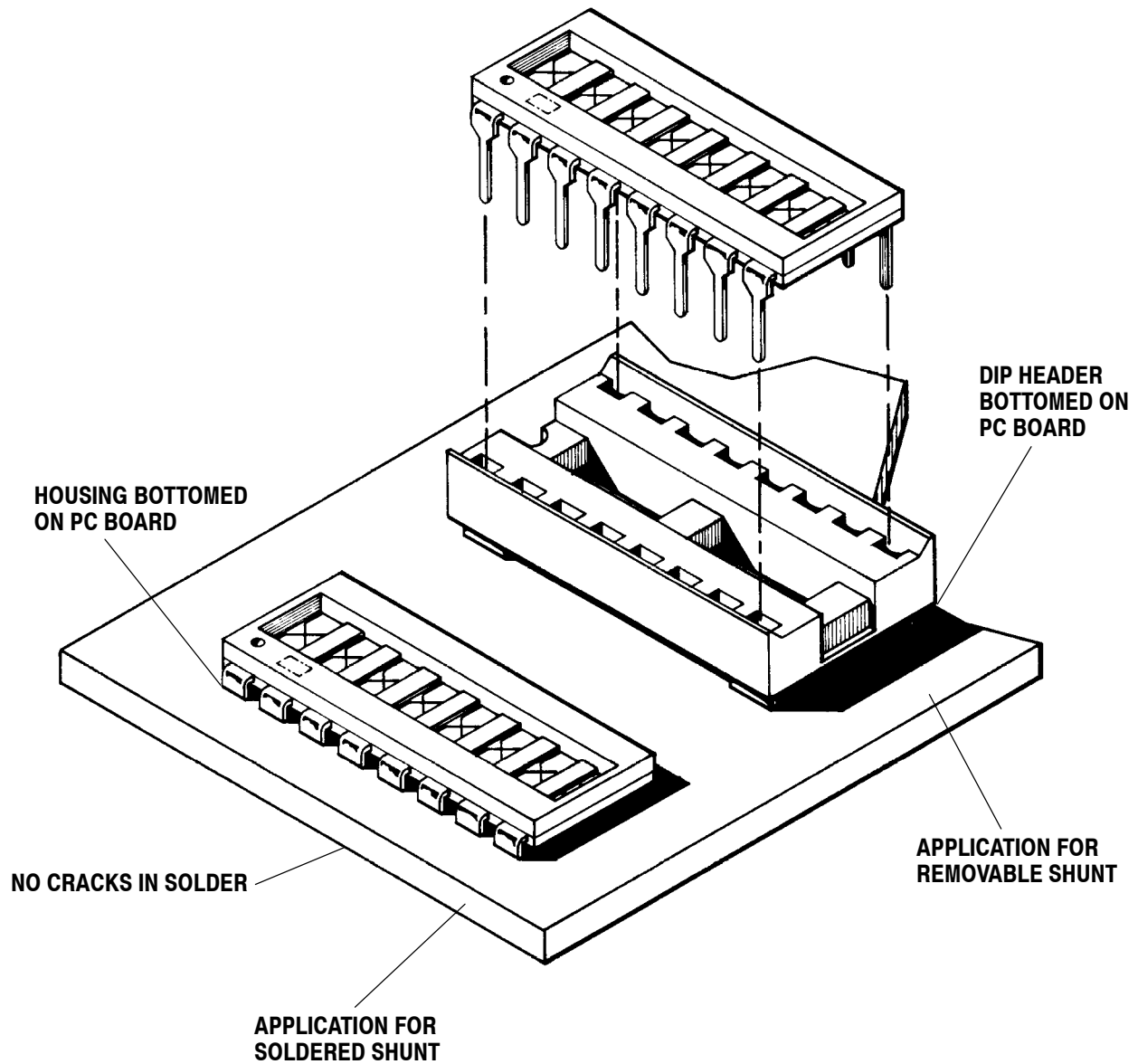


Figure 6

## 6. VISUAL AID

The following illustrations are to be used by production personnel to ensure properly applied product. The views suggest requirements for good applications. Applications considered visually incorrect should be inspected using the information in the main body of this document.



**FIGURE 7. VISUAL AID**