



*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  $\pm 0.13$  mm [ $\pm .005$  in.] 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 Pivot Connectors for printed circuit (pc) board applications. The connectors are available in one-, two-, and four-pair pc board mount.

These Insulation Displacement (ID) Contacts within the Pivot Connectors are designed to accept a wire size range of 24 to 22 AWG solid copper conductor wire. Pivot Connectors for pc board installation contain pre-installed contacts on 9.90 mm [.390 in.] centerlines. These connectors can be placed on the pc board manually. Pivot Connectors require no tooling for wire insertion or extraction.

When corresponding with TE Connectivity Personnel, use the terminology provided in this specification to facilitate your inquiries for information. Basic terms and features of this product are provided in Figure 1.

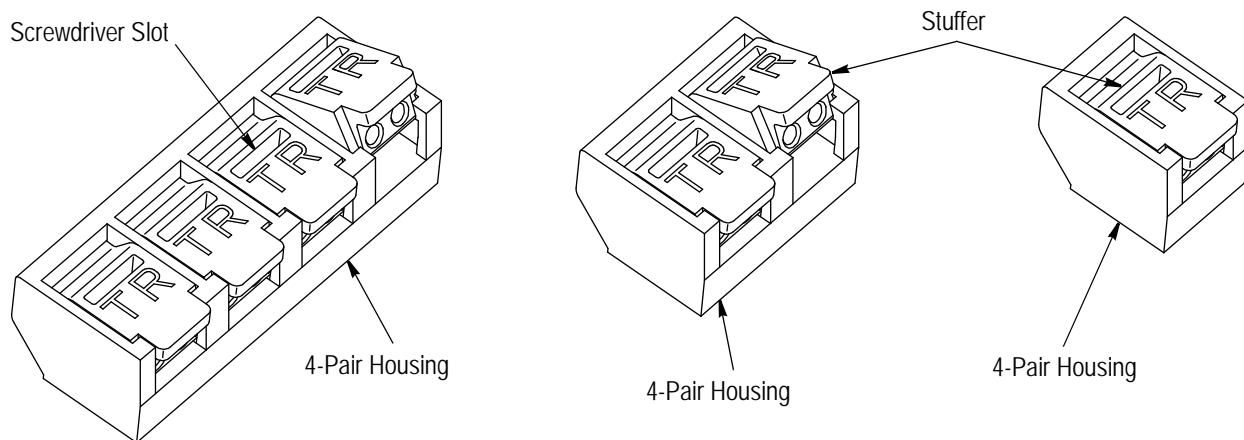


Figure 1

## 2. REFERENCE MATERIAL

### 2.1. Revision Summary

Revisions to this application specification include:

- New logo

### 2.2. Customer Assistance

Reference Product Base Part Number 1116161 and Product Code D913 are representative numbers of Pivot Connectors. Use of these numbers will identify the product line and help you to obtain product and tooling information. Such information can be obtained through a local TE Representative, by visiting our website at [www.te.com](http://www.te.com), or by calling PRODUCT INFORMATION or the TOOLING ASSISTANCE CENTER numbers at the bottom of this page.

### 2.3. Drawings

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

## 2.4. Manuals

Manual 402-40 is available upon request and can be used as a guide in soldering. This manual provides information on various flux types and characteristics along with the commercial designation and flux removal procedures. A checklist is included in the manual as a guide for information on soldering problems.

## 2.5. Specifications

Product Specification 108-1657 provides product performance requirements and test information.

## 3. REQUIREMENTS

### 3.1. Storage

#### A. Ultraviolet Light

Prolonged exposure to ultraviolet light may deteriorate the chemical composition used in the connector housing material.

#### B. Shelf Life

The connectors should remain in the shipping containers until ready for use to prevent deformation to the connectors. The connectors should be used on a first in, first out basis to avoid storage contamination that could adversely affect signal transmissions.

#### C. Chemical Exposure

Do not store connectors near any chemical listed below as they may cause stress corrosion cracking in the contacts.

Alkalies	Ammonia	Citrates	Phosphates	Citrates	Sulfur Compounds
Amines	Carbonates	Nitrites	Sulfur Nitrites		Tartrates

### 3.2. Special Characteristics

Pivot Connectors have an operating temperature range of  $-40^{\circ}$  to  $80^{\circ}\text{C}$  [ $-40^{\circ}$  to  $176^{\circ}\text{F}$ ]. These connectors contain tool-less ID Contacts for ease of termination. A screwdriver slot is provided for ease of wire removal. See Figure 2.

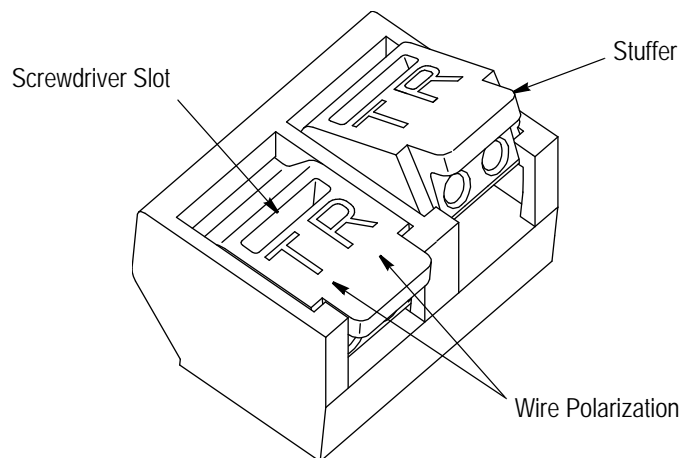


Figure 2

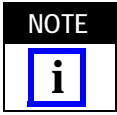
### 3.3. Wire Selection and Preparation

#### A. Type

The wire size range for these connectors is 24 through 22 AWG solid, copper wire with a maximum insulation diameter of 1.52 mm [.060 in.]. Contact the Product Information number at the bottom of page 1 for other wire sizes and types for application approval.

### B. Preparation

No wire preparation is required as the application process is insulation displacement by the contacts.



*DO NOT strip the insulation from the wire. A previously terminated wire should be cut off but retain a minimum of 6.35 mm [.250 in.] to provide a new end for termination.*

### 3.4. PC Board

#### A. Material and Thickness

The pc board material shall be glass epoxy (FR-4, G-10). The connectors have been designed to accommodate a pc board thickness range of 1.40 to 1.75 mm [.055 to .069 in.]. Contact the Product Information Center or the Tooling Assistance Center at the number listed at the bottom of page 1 for suitability of other board materials and thicknesses.

#### B. Tolerance

The maximum bow of the pc boards shall be 0.03 mm [.001 in.] over the length of the connector.

#### C. Layout

The mounting and contact holes in the pc board must be precisely located to ensure proper placement and optimum performance of the connector. Design the pc board using the dimensions provided in Figure 3.

*NOTE:* This pc board pattern is viewed from the solder side.

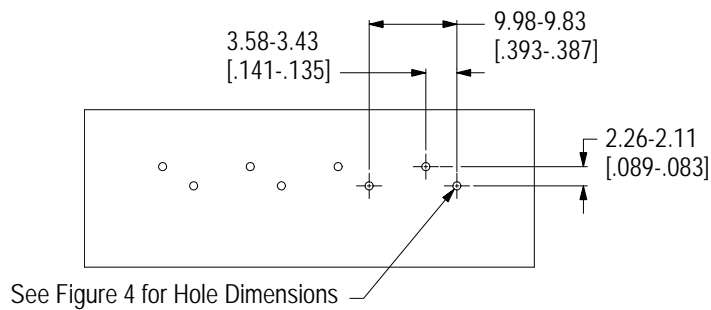


Figure 3

### 3.5. Contact Holes

If using a plated through hole in the pc board for Pivot Connectors, the contact holes must be drilled and plated to specific dimensions as shown in Figure 4.

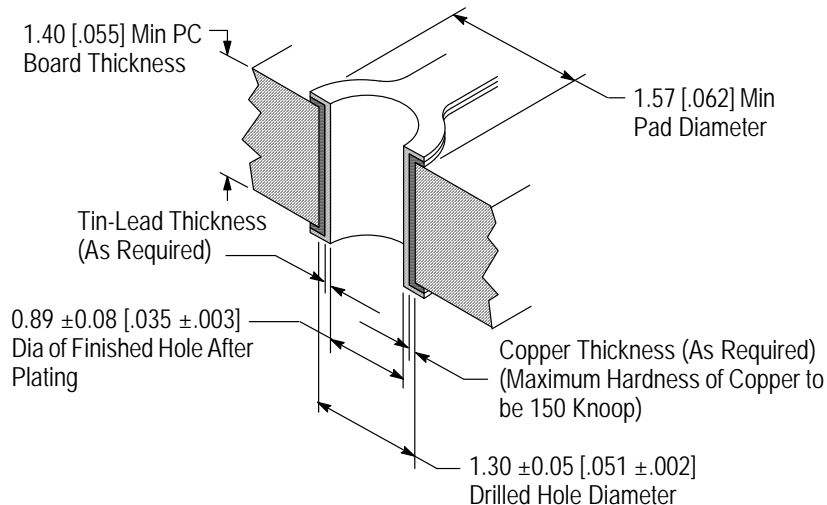


Figure 4

### 3.6. Connector Placement



The connector should be handled only by the housing to avoid deformation, contamination, or other damage to the contact tines.

Determine which hole in the pc board is to receive the number one contact tine, then orient the connector so the number one solder tine is aligned with the hole. Start all solder tines into the board, then press the connector until it seats on the pc board. Connector placement is done manually. These connectors may be stacked end-to-end if required. See Figure 5

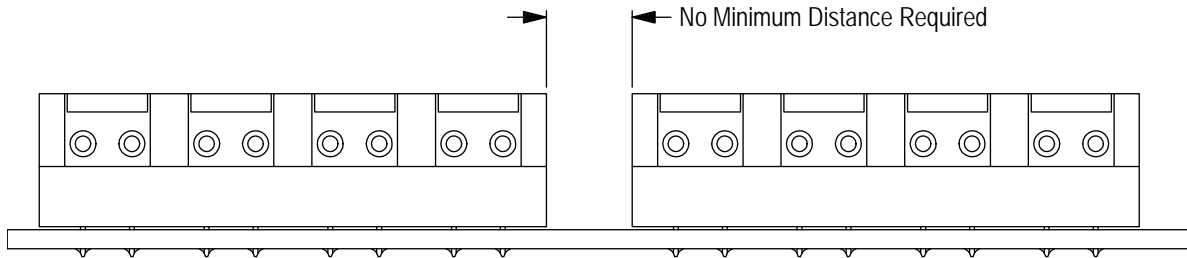


Figure 5

### 3.7. Soldering Receptacle Connectors

Pivot Connectors can be soldered with wave processes, provided the temperatures and exposure time are within the ranges specified in Figure 6. TE recommends the use of SN60 or SN62 solder for the connectors. Refer to Paragraph 2.4 for instructional material that is available for establishing soldering guidelines.

SOLDERING PROCESS	TEMPERATURE		TIME (At Max Temperature)
	CELSIUS	FAHRENHEIT	
Wave Soldering	265°	509°	5 Seconds

Figure 6

#### A. Flux Selection

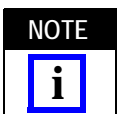
The connector solder tines must be fluxed prior to soldering with a mildly activated rosin base flux. Selection of the proper flux will depend on the type of pc board and other components mounted to the board. Additionally, the flux will have to be compatible with the wave solder line, manufacturing, and safety requirements.

#### 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. For a list of common cleaning solvents that will not affect the connectors or assemblies for the times and temperatures provided without any adverse effects on the connector assembly, refer to Figure 7.



Consideration must be given to toxicity and other safety requirements recommended by the solvent manufacturer. 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 earth 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)	TEMPERATURE (Maximum)
NAME	TYPE		
ALPHA 2110	Aqueous	1	132°C [270°F]
BIOACT EC-7	Solvent	5	100°C [212°F]
Butyl CARBITOL	Solvent	1	Ambient Room
Isopropyl Alcohol	Solvent	5	100°C [212°F]
KESTER 5778	Aqueous		
KESTER 5779	Aqueous		
LONCOTERGE 520	Aqueous		
LONCOTERGE 530	Aqueous		
Terpene	Solvent		

ALPHA, BIOACT, CARBITOL, KESTER, AND LONCOTERGE are trademarks of their respective owners.

Figure 7

**C. Drying**



*Excessive temperatures may cause housing degradation.*

Connectors can withstand a temperature of -40 to 80°C [-40 to 176°F]. Values may vary with different automatic cleaning equipment (see equipment manufacturer's recommendations).

**D. Checking Installed Connector**

All solder joints should conform to those specified in Workmanship Specification 101-21. The housing must seat on the pc board to within the tolerance shown in Figure 8.

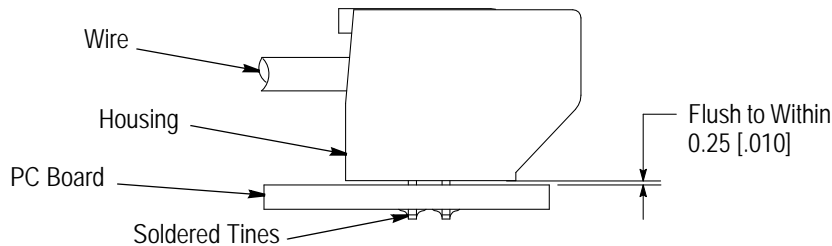


Figure 8

**3.8. Wire Location**

**A. Wire Insertion**

After the connector has been applied to the pc board, the unstripped wires may be inserted into the corresponding wire insertion hole of the stuffer. See Figure 9.

**B. Termination**

While holding the wires firmly in place, push down on the stuffer until it bottoms to terminate the wire. See Figure 9.

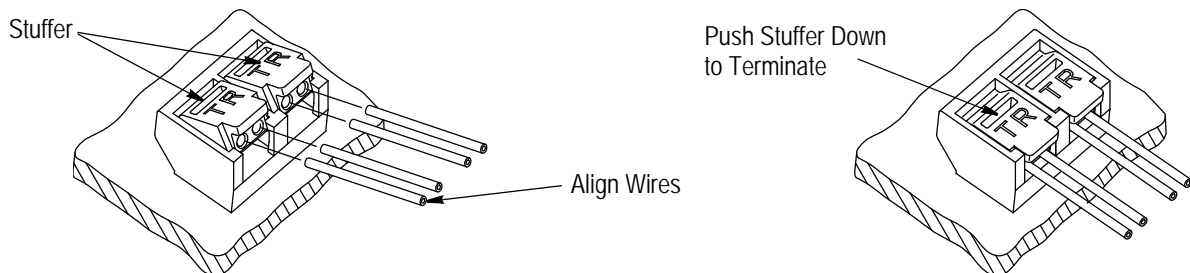


Figure 9

### 3.9. Wire Extraction

The wires may be removed by gently inserting a small screwdriver, or equivalent, into the wire removal slot until it bottoms. Gently pivot the stuffer until it stops (approximately 18°). Gently remove the wire from the contact and pull back on the wire until it is removed from the stuffer. See Figure 10.

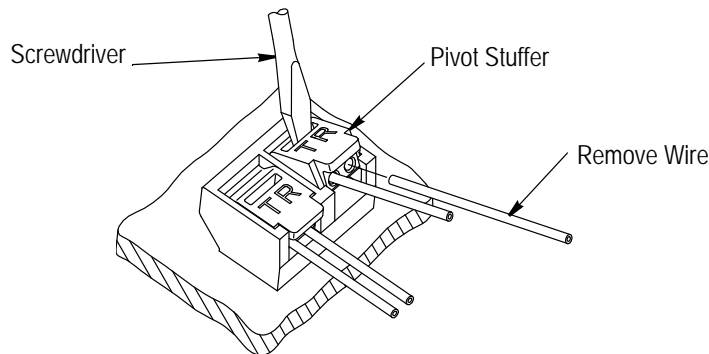


Figure 10

### 3.10. Connector Repair/Replacement

If the connector should become damaged, it must be replaced. The connector may be removed from the pc board by normal desoldering methods and replaced with a new connector.



*If the stuffer should become disengaged when removing a wire, it can be replaced by inserting the pivot end into the base of the connector and rotating it over the contacts until it is engaged.*

## 4. QUALIFICATION

Pivot Connectors are Listed by Underwriters Laboratories Inc. (UL) and Verified by UL to CSA International requirements in File No. E81956, Vol. 1, Section 14; and Recognized by UL in File No. 60677, Vol. 1, Section 10.

## 5. TOOLING

No special tooling is required for the installation or removal of Pivot Connectors. Only a typical flat-blade screwdriver found in most production or manufacturing facilities is needed to pivot the stuffer for wire insertion or removal.

A pc board support should be used to prevent bowing of the pc board during the placement of a connector on the board. It should have flat surfaces with holes or a channel wide enough and deep enough to receive the solder tines during installation of the connector on the board. See Figure 11.

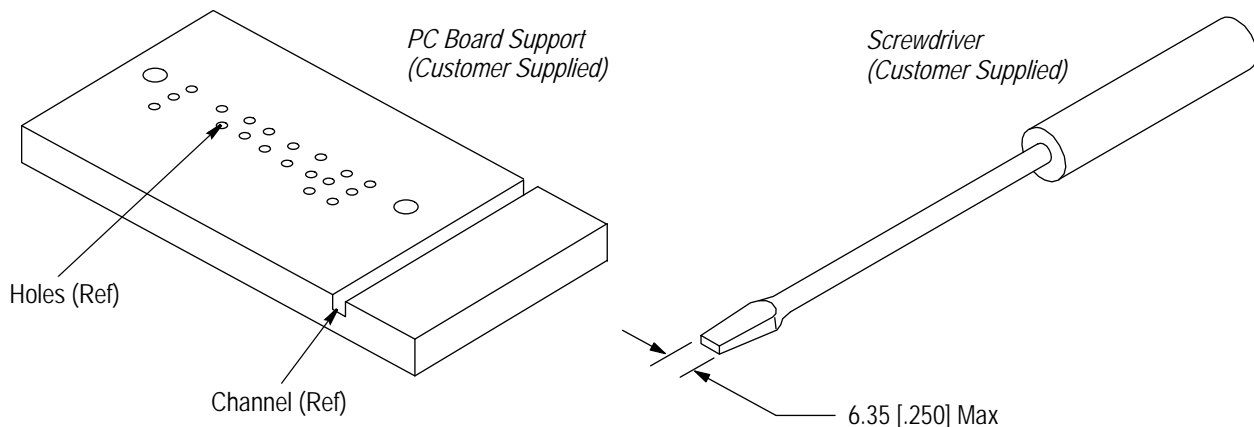
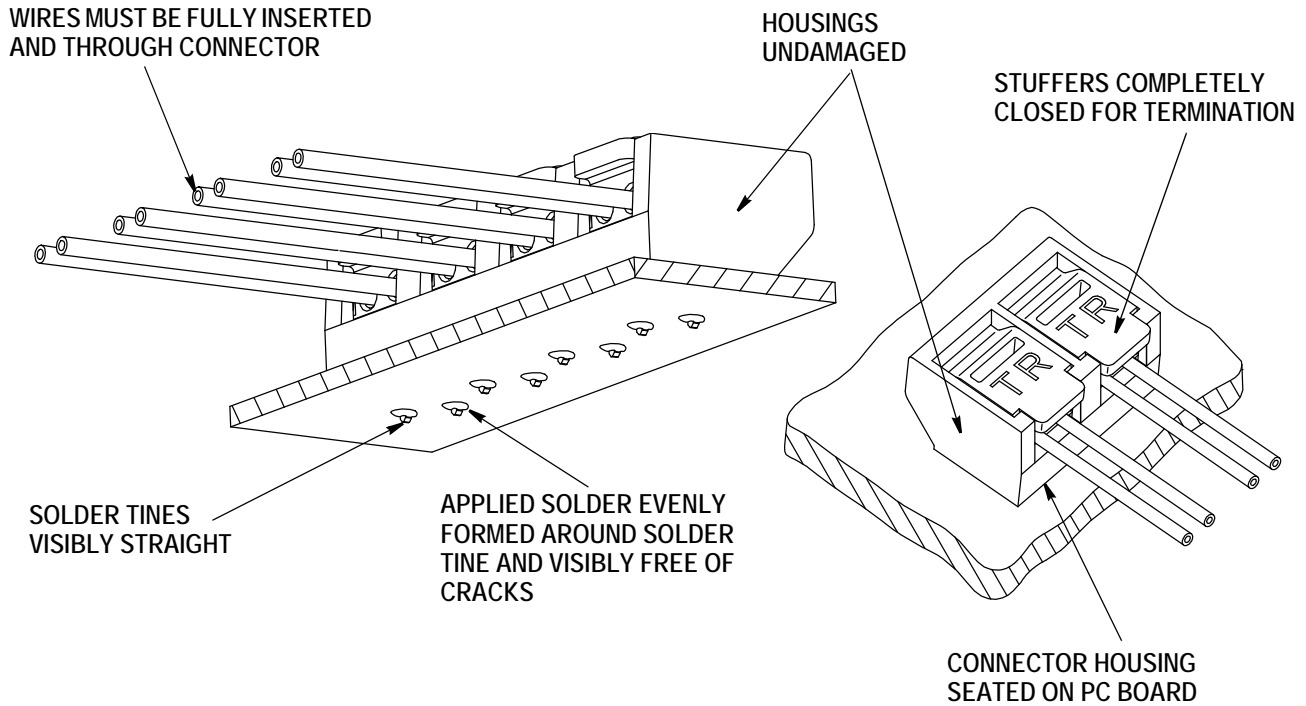


Figure 11

## 6. VISUAL AID

The illustration below shows a typical application of this product. This illustration should be used by production personnel to ensure a correctly applied product. Applications which DO NOT appear correct should be inspected using the information in the preceding pages of this specification and in the instructional material shipped with the product or tooling.



**FIGURE 12. VISUAL AID**