

CAVITY CENTERLINE SPACING	HOUSING			
	W/O MOUNTING EARS	W/MOUNTING EARS	W/THREADED INSERTS	W/POSTED CONTACTS
2.54 [.100]	583717	583718 583861	---	583894
3.18 [.125]	583873	583864	583891	---
3.96 [.156]	---	583859	---	---

Figure 1

## 1. INTRODUCTION

Twin Leaf PC Board Edge Connectors are designed for wire-to-pc board applications. To meet specific circuit requirements, housings are supplied (1) to be assembled using contacts, retaining springs, and keying plugs as needed, or (2) preloaded with 0.64 mm [.025 in.] square posted contacts.

This instruction sheet covers the contacts, accessories, mounting procedures, and pc board layout dimensions recommended for the Twin Leaf housings listed in the table in Figure 1. Read these instructions, and those referenced, before assembling the connector.

See Section 9, REVISION SUMMARY, for revision information.

### NOTE



All dimensions on this document are in metric units [with U.S. customary units in brackets]. Figures and illustrations are for identification only and are not drawn to scale.

## 2. DESCRIPTION

Twin Leaf housings are one-piece units molded from glass-filled nylon. Housings are obtainable with variations of 6 through 50 dual-cavity positions on 2.54 mm [.100 in.] centerlines; 6 through 44 positions on 3.175 mm [.125 in.] centerlines; and 6 through 28 positions on 3.96 mm [.156 in.] centerlines. Housings to be assembled, and housings preloaded with posted contacts, are available with and without mounting ears, and with threaded inserts. Refer to Figure 1.

Individual cavity identification is molded on the upper and lower rows, FRONT and REAR. Housings may be assembled to accept single or double-sided pc board applications.

CONTACT TYPE	CAVITY CENTERLINE SPACING	WIRE SIZE (AWG)	INSUL DIA.	CONTACT PART NUMBERS				HAND CRIMPING TOOL (DOCUMENT)
				STRIP FORM FOR		LOOSE PIECE		
				MINI-APPLICATOR	STANDARD APPLICATOR	PART NO.	COLOR CODE	
Crimp	2.54, 3.18, 3.96 [.100, .125, .156]	28-24	0.89-1.40 [.035-.055]	583616-2, -3, -8, -10	583616-6	583616-4, -5, -9, -11	Orange	90268-1 (408-7531)
	2.54, 3.18, 3.96 [.100, .125, .156]	24-20	1.22-1.52 [.048-.060]	583853-2, -3, -8, -10	583853-7	583853-4, -5, -9, -11	Green	91535-1 (N/A)
	3.18, 3.96 [.125, .156]	22-18	1.24-2.41 [.049-.095]	583649-2, -3, -4	---	583649-5, -6, -7	Violet	90264-1 (408-7551)
	3.18, 3.96 [.125, .156]	20-16	1.85-2.29 [.073-.090]	583875-2	---	583875-3	White	90285-1 (408-7583)
	2.16-2.67 [.085-.105]		530224-2	---	---			
Solder Eyelet	2.54, 3.18 [.100, .125]	---	---	---	---	583854-3, -5	---	---
Posted	2.54 [.100]	---	---	---	---	583879-4	---	---
	3.18 [.125]	---	---	---	---	583884-1	---	---

Figure 2

3. CONTACTS

**NOTE**  
*Contacts must be compatible with the housings. The cavity centerline spacing of the housing will determine the appropriate contacts.*

3.1. Selection

Refer to Figure 2, and then (1) determine the type of contact to be used, and the cavity centerline spacing of the housing; (2) for crimp type contacts, select wire within the specified size and insulation diameter; and (3) select the appropriate strip of loose piece contacts.

**NOTE**  
*Solder eyelet contacts are generally used for field repair, or when a hand crimping tool is not readily available.*

3.2. Crimping

Strip form contacts are designed to be crimped with a standard or miniature applicator in an automatic or semi-automatic machine. Consult your local Tyco Electronics Representative or contact the Tooling Assistance Center at the bottom of page 1 for assistance in selecting the applicator and machine that will best suit your production needs.

Loose piece contacts are designed to be crimped with hand crimping tools listed in Figure 2. A small color code dot appears on the underside of each contact, and above the crimp section on the compatible hand tool. Refer to the instruction sheet (See Figure 2) packaged with the tool for specific crimping procedures.

3.3. Insertion

An insertion tool is NOT required for inserting contacts into these connector housings. To insert a contact, proceed as follows:

1. Align the contact with the REAR of the contact cavity.
2. Position the contact so the springs are facing the center wall of the housing, between the upper and lower cavities. See Figure 3.

**NOTE**  
*The contact may be inserted straight into the cavity, or at a slight angle away from the centerline of the housing.*

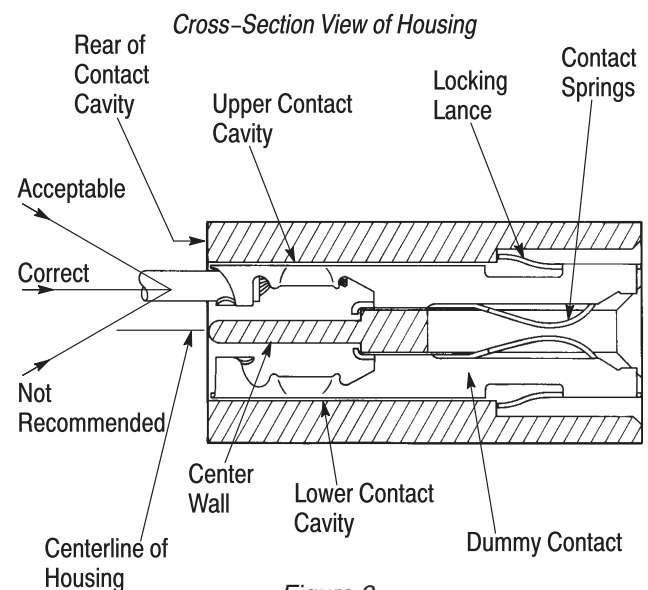


Figure 3



The contact must **NOT** cross the centerline of the housing or contact damage may result.

3. Grasp the wire directly behind the contact insulation barrel, and push the contact straight into the cavity until it bottoms with an audible click.
4. Pull back lightly on the wire to be sure the locking lance has locked in the cavity. Refer to Figure 3.

### 3.4. Extraction

Extraction Tool 91073 is designed for removing contacts from these connectors. Insert the releasing tip into the FRONT of the cavity between the contact and outer wall. Hold the tool against the connector and depress the extraction handle. Remove the tool and pull the contact out of the REAR of the cavity. Refer to Instruction Sheet 408-7529 packaged with the extraction tool for specific extraction procedures.

### 4. DUMMY CONTACTS (Figure 3)

Dummy contacts are pre-crimped standard contacts designed for use in double-sided pc board applications. These contacts provide additional mechanical pressure for partially loaded connectors, and are inserted and extracted the same as standard contacts. Dummy contacts should be placed in each empty cavity opposite a standard working contact.

### 5. RETAINING SPRINGS

Retaining springs are designed for use in single-sided pc board applications. They are inserted in the unused side of the connector to provide and balance the necessary board retention capabilities.

The recommended ratio for balanced retention is one retaining spring to six contacts. The minimum number of springs which should be used is one for every seven contact positions.

1. Align the short end of the retaining spring with the FRONT of the contact cavity.
2. Push the spring straight in until the short end snaps into place behind the cavity ridge. See Figure 4.

To extract a retaining spring, select one of the following methods.

1. Insert a jewelers screwdriver into the REAR of a cavity between the spring and center wall of the connector. Depress the short end of the spring, and push the retaining spring out the FRONT of the connector.

2. Use Extraction Tool 91073 (contact extraction tool). Insert releasing tip into the REAR of the cavity between the spring and center wall of the connector. Hold the tool against the connector and depress the extraction handle. Remove the tool and pull the retaining spring out the FRONT of the cavity.

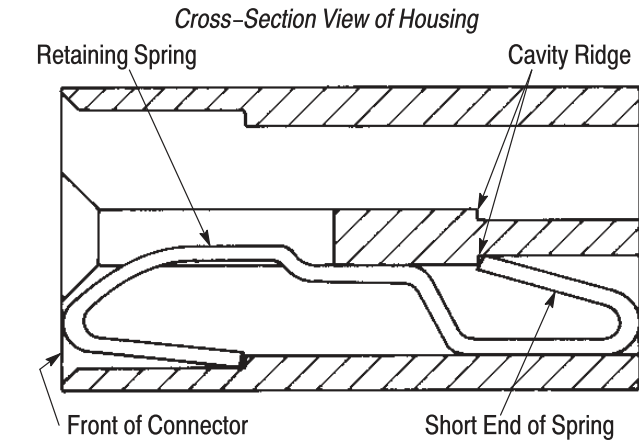


Figure 4

### 6. KEYING PLUGS

Connectors can be polarized with inter-contact keying plugs that fit into slots between contact cavities, or with on-contact keying plugs that fit into empty dual contact cavities (a dual position) in the connector. See Figure 5.

To insert an inter-contact keying plug, align the beveled corners with the "V" notches of an upper and lower rib on the FRONT of the connector. Insert the plug straight into the connector until it bottoms.

To insert an on-contact keying plug, align it with empty dual contact cavities on the FRONT of the connector. Insert the plug straight into the connector until the locking tabs snap over the BACK edge of the connector.

A slot must be cut in the pc board to accept the inter-contact or on-contact keying plug. Note that the slot for the inter-contact plug must be located between the circuit pads of the pc board, and the slot for the on-contact plug must be located on the circuit pad area of the pc board.

### 7. PANEL CUTOUT

Connectors that have mounting ears with or without threaded inserts are designed for panel mounting. The connector mounting location (FRONT or BACK) must be determined before making the panel cutout. FRONT mounting requires the use of a "C" dimension, while BACK mounting requires a "D" dimension. Refer to Figure 6. Note that the cutout for BACK mounting will be larger than the cutout for FRONT mounting.

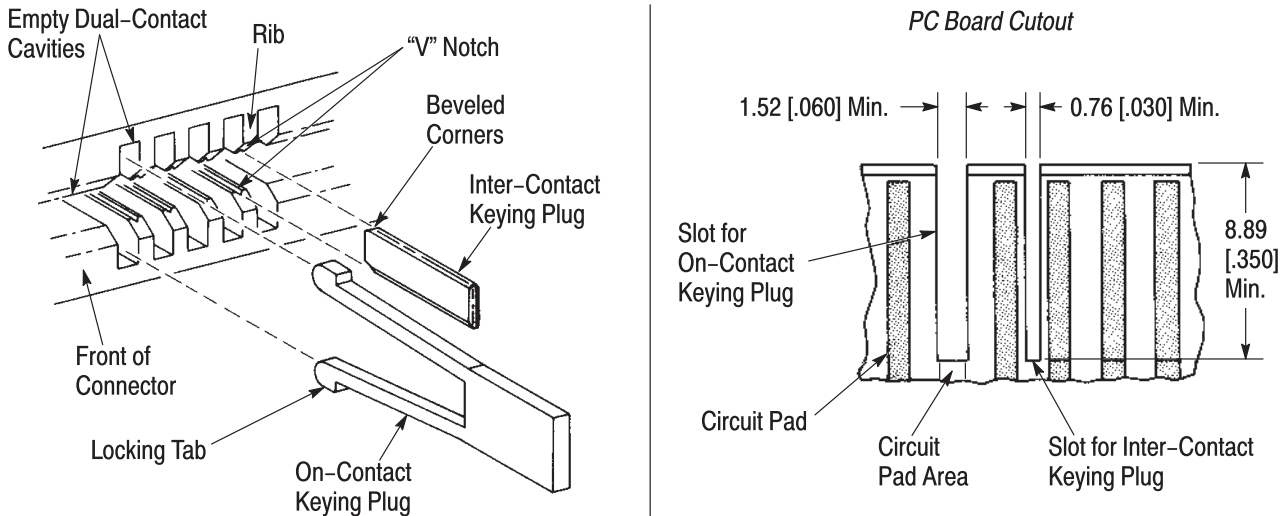


Figure 5

Before figuring the panel cutout dimensions, determine the cavity centerline spacing and the number of dual-cavity positions of the connector to be used. Then refer to the table in Figure 6 and proceed as follows:

1. Select the fixed dimensions ("A" and "B") according to the cavity centerline spacing.
2. Multiply the cavity centerline spacing by the number of dual positions. Add this dimension to the appropriate variable (base) dimensions from the table, (see note●●).

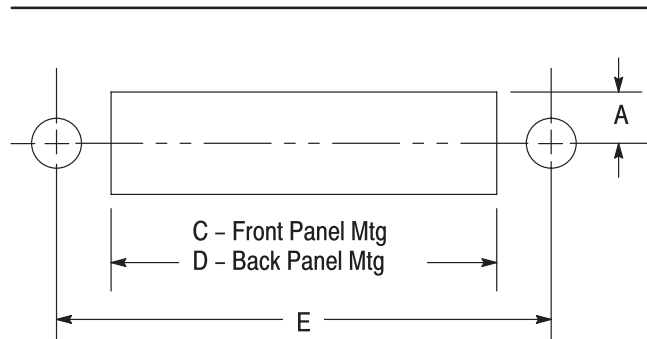
For example: A connector with 2.54 mm [.100 in.] cavity centerline spacing and 10 dual-cavity positions. Add 25.4 mm [1.000 in.] to "C" base or "D" base dimension, and 25.4 mm [1.000 in.] to "E" base dimension.

**NOTE** For 25.4 mm [1.000 in.] centerlines, the "E" base dimension is dependent on the connector base part number (see note†).

After making the cutout, (1) secure the connector (with mounting ears) to a panel with No. 4-40 screws, lock-washers, and nuts, or (2) secure the connector (with threaded inserts) to a panel with No. 4-40 UNC screws.

### 8. PC BOARD LAYOUT

These connectors are designed to accept a pc board 1.40-1.78 mm [.055-.070 in.] thick. The overall width of the pc board must be within  $\pm 0.13$  mm [.005 in.] to ensure alignment between the circuit pads and the contacts.



CAVITY CENTERLINE SPACING	FIXED DIM <sup>■</sup>		VARIABLE DIMENSIONS <sup>●●</sup>		
	A	B	C (Base)	D (Base)	E (Base)
2.54 [.100]	4.85 [.191]	9.70 [.382]	3.86 [.152]	8.43 [.332]	See Note†
3.18 [.125]	5.94 [.234]	11.91 [.469]	3.23 [.127]	8.05 [.317]	13.84 [.545]
3.96 [.156]	5.94 [.234]	11.91 [.469]	1.83 [.072]	9.14 [.360]	15.21 [.599]

■ Fixed dimensions ("A" and "B") are the same for all connectors with a given cavity centerline spacing.

●● Variable dimensions include the base dimensions provided "C" (base) and "E" (base), or "D" (base) and "E" (base), depending on front or back panel mounting, plus the result of multiplying the cavity centerline spacing by the number of dual positions.

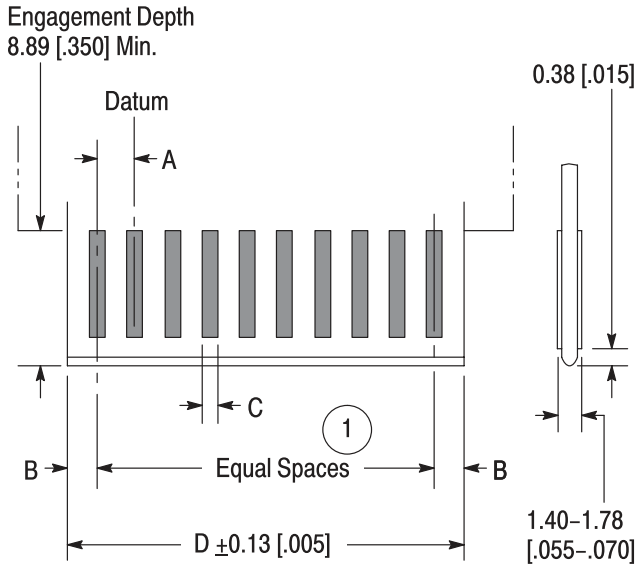
† Mounting hole dimension "E" (base) for connectors with cavities on 2.54 mm [.100 in.] centerlines will depend on the connector base part number.

Base part number 583861 or 583894; "E" (base) is 14.60 mm [.575 in.].

Base part number 583718; "E" (base) is 17.78 mm [.700 in.].

Figure 6

PC Board Layout



1 Equal spaces = total number of dual-cavity positions in connector, minus one, times cavity centerline dimension ("A").

Example: 6 dual-cavity position connector with 2.54 mm [.100 in.] centerlines.  $6 - 1 = 5 \times 2.54 \text{ mm [.100 in.]} = 12.7 \text{ mm [.500 in.]}$ .



**NOTE** All dimensions  $\pm 0.13 \text{ mm [.005 in.]}$  tolerance (except as noted). Tolerances are noncumulative. The "D" dimension is equal to the nominal card slot width on the respective housing minus 0.36 mm [.014 in.].

CAVITY CENTERLINE SPACING	DIMENSIONS		
	"A"	"B"	"C" +0.13 [.005] -0.00 [.000]
2.54 [.100]	2.54 [.100]	2.36 [.093]	1.32 [.052]
3.18 [.125]	3.18 [.125]	3.00 [.118]	1.98 [.078]
3.96 [.156]	3.96 [.156]	3.89 [.153]	2.39 [.094]

Figure 7

When using a pc board that is wider than the entry slot of the connector, a notch must be cut in the pc board to provide proper engagement. The engagement depth must be a minimum of 8.89 mm [.350 in.]. Refer to Figure 7 for the recommended pc board layout dimensions.

9. REVISION SUMMARY

The following changes have been made to this revision:

- Updated document to corporate requirements
- New format
- Deleted obsolete part numbers in table in Figures 1 and 2, and notes in Figure 6