

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 ± 0.13 [± 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 SDL Top-Entry and Side-Entry PC Board Receptacle Connectors. These receptacle connectors are all shielded for protection from EMI/RFI. The top-entry receptacle connectors are available in two standard versions; one has grounding posts, the other does not. The side-entry receptacle connectors are grounded at the panel; they may be purchased with pc board ground legs or with boardlocks (which are also board grounded). Also available is a side-entry version with the mounting flanges offset to allow the receptacle connectors to be stacked closely together; and a flangeless version.

When corresponding with TE Connectivity Personnel about this product, 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.

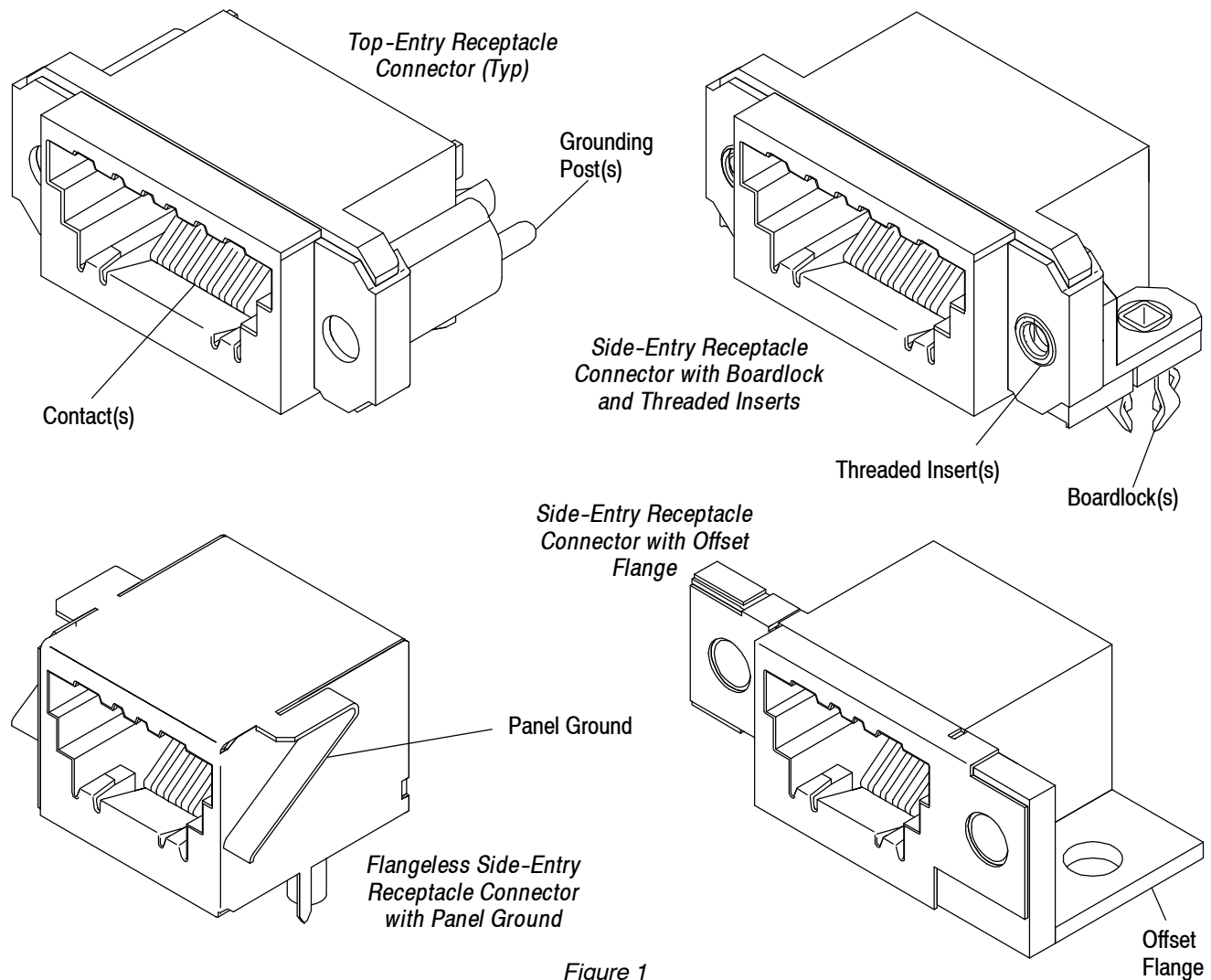


Figure 1

2. REFERENCE MATERIAL

2.1. Revision Summary

This paragraph is reserved for a revision summary covering the most recent additions and changes made to this specification which include the following:

- Updated document to corporate requirements
- New logo

2.2. Customer Assistance

Reference Base Part Number 520459 and Product Code 1002 are representative numbers which identify the SDL Receptacle Connectors. Use of these numbers will identify the product line and expedite your inquires through a service network established to help you obtain product and tooling information. Such information can be obtained through a local TE Representative or, after purchase, by calling the Tooling Assistance Center or Product Information number at the bottom of page 1.

2.3. Drawings

Customer Drawings for product part numbers are available from the service network. The information on these drawings takes priority if there is a conflict with this specification or with any other technical documentation supplied by TE.

2.4. Manuals

Manual 402-40 is available upon request and can be used as a guide to soldering. This manual provides information on various flux types and characteristics 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 108-2047 provides product performance and test information. Application Specification 114-2086 covers SDL 36 Series and 50 Series Flat Cable Plug Connectors; and Application Specification 114-2090 covers SDL Shielded 36 Series and 50 Series Round Cable Plug Connectors.

2.6. Instructional Material

Instruction Sheet 408-9072 provides information relating to component selection for SDL Plugs and Receptacle Connectors, tooling selection, and assembly procedures for the plugs.

3. REQUIREMENTS

3.1. Storage

A. Ultraviolet Light

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

B. Shelf Life

The receptacle connectors should be used on a first in, first out basis to avoid storage contamination that could adversely affect electrical continuity.

C. Chemical Exposure

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

| | | | | | |
|----------|------------|----------|------------|----------|------------------|
| Alkalies | Ammonia | Citrates | Phosphates | Citrates | Sulfur Compounds |
| Amines | Carbonates | Nitrites | Sulfides | Nitrites | Tartrates |

NOTE

Where the above environmental conditions exist, phosphor-bronze contacts are recommended instead of brass if available.

3.2. Receptacle Connector Selection

Figure 2 lists the available sizes for each receptacle connector version. Part numbers and further selection information is given in 408-9072 (SDL Plugs and Receptacle Connectors).

| RECEPT AND GROUND TYPE | VERSIONS | | | | | | SIZE (POSN) | REFERENCE FIGURES | | |
|------------------------|--------------|-----------------|-----------------|---------------|-------------|------------|-------------|-------------------|----------|----------|
| | PANEL GROUND | PC BOARD GROUND | THREADED INSERT | OFFSET FLANGE | BOARD LOCKS | FLANGELESS | | PANEL MOUNT | PC BOARD | HARDWARE |
| Top-Entry | ✓ | | | | | | 4, 6, 8, 16 | 3C | 4A | 7A |
| | ✓ | ✓ | ✓ | | | | 8 | 3C | 4B | 7C |
| | ✓ | | ✓ | | | | 4, 8, 16 | 3C | 4A | 7B |
| | | ✓ | | | | | 16 | 3A | 4C | 7D |
| Side-Entry | ✓ | | | | | | 4, 6, 8, 16 | 3C | 5A | 7E |
| | ✓ | ✓ | | | | | 4, 6, 8, 16 | 3C | 5B | 7E |
| | ✓ | ✓ | ✓ | | ✓ | | 4, 6, 8, 16 | 3C | 5C | 7F |
| | ✓ | ✓ | | | | ✓ | 4 | 3B | 5D | 7G |
| | | ✓ | | | | ✓ | 4 | 3B | 5D | 7G |
| | ✓ | | | ✓ | | | 4, 6, 8, 16 | 3D | 5E | 7H |

Figure 2

3.3. Panel Mounting Requirements (Figure 3)

Mounting panel thickness shall not exceed 3.18 mm [.125 in.] for the offset flange receptacle connector. Mounting panel thickness shall not exceed 6.35 mm [.250 in.] for all other receptacle connector styles.

When a panel is used, mounting hardware is required except for top-entry with shield ground tab receptacle connectors (screw only required for boardlock version). Refer to Figure 7 for recommended panel mounting hardware types and arrangements.

Refer to the table in Figure 2 for the panel mount figure reference.

3A

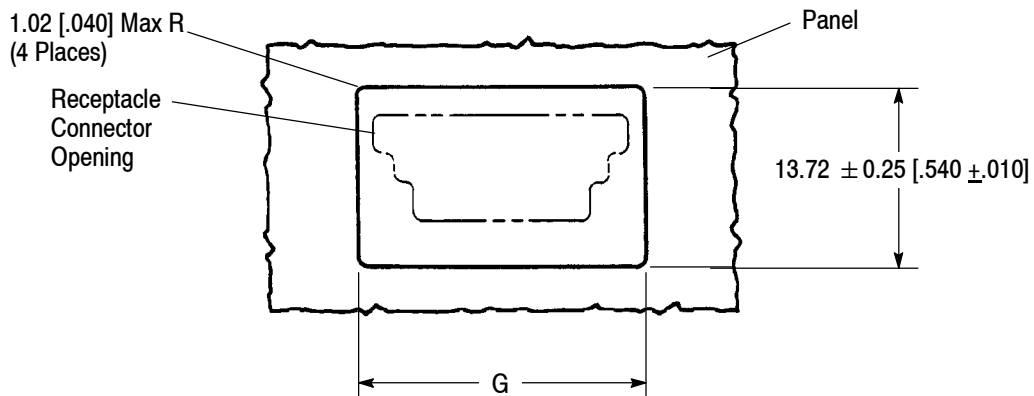
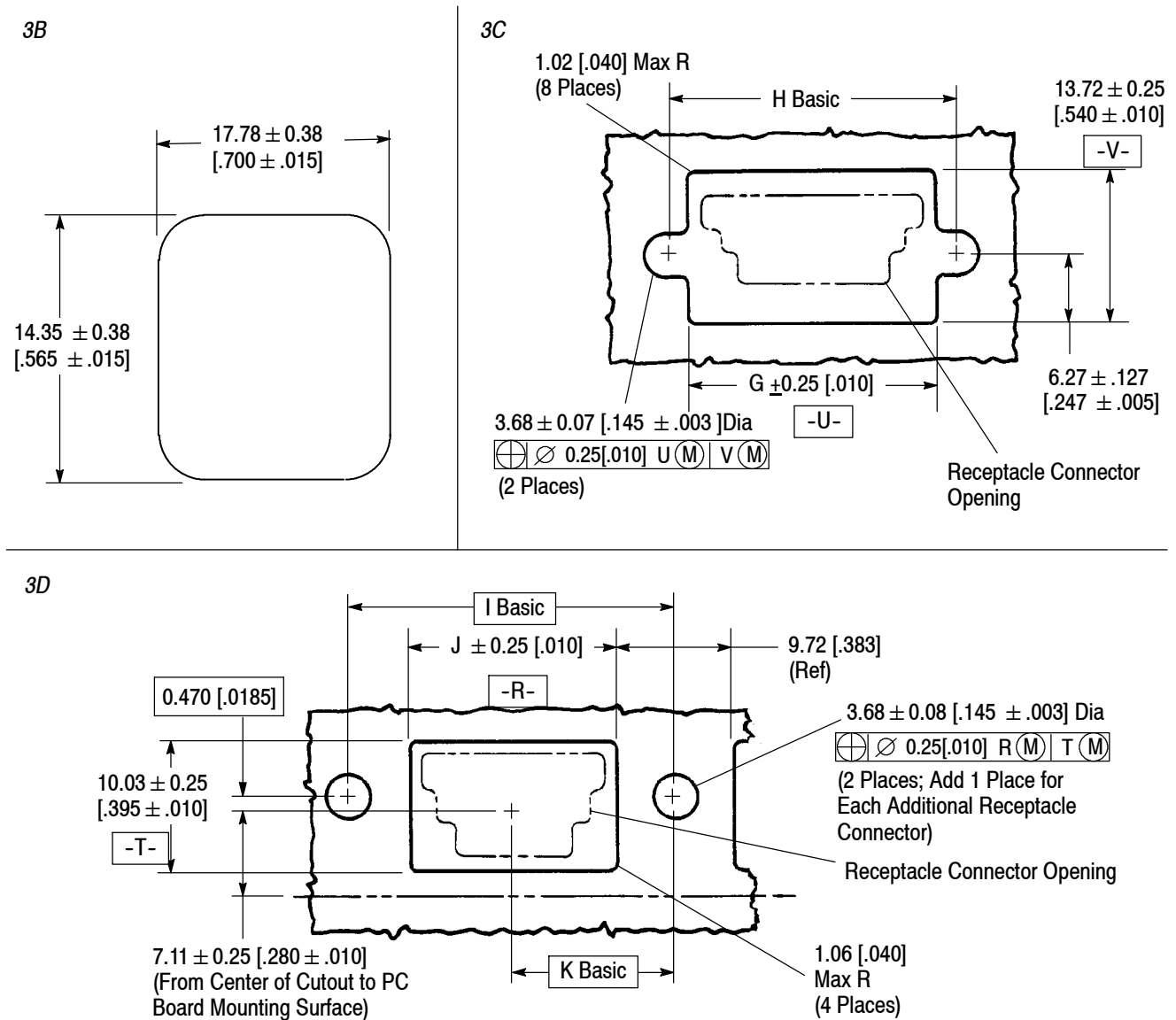


Figure 3 (cont'd)



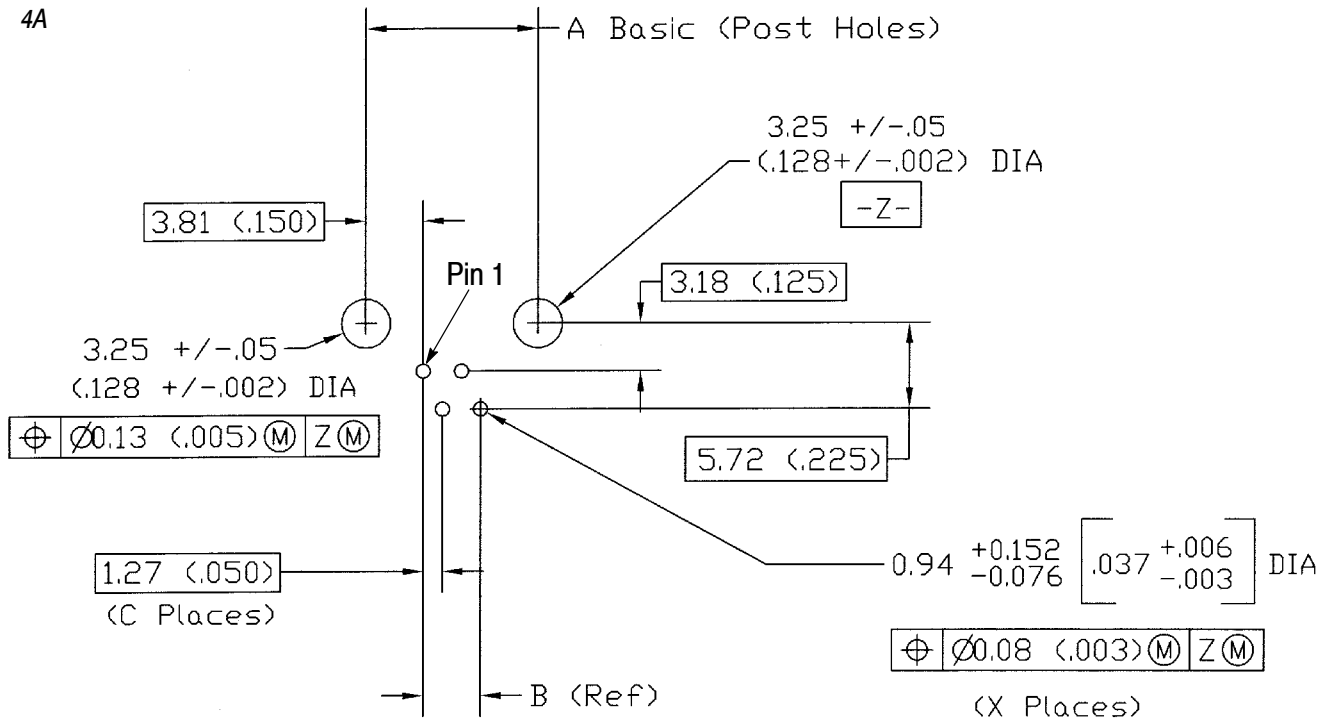
| NUMBER OF POSITIONS | DIMENSIONS | | | | |
|---------------------|---------------|---------------|---------------|---------------|----------------|
| | G | H | I | J | K |
| 4 | 17.28 [.700] | 21.59 [.850] | 26.24 [1.033] | 16.51 [.650] | 13.119 [.5156] |
| 6 | 20.32 [.800] | 24.13 [.950] | 28.78 [1.133] | 19.05 [.750] | 14.389 [.5665] |
| 8 | 22.86 [.900] | 26.67 [1.050] | 31.32 [1.233] | 21.59 [.850] | 15.659 [.6165] |
| 16 | 33.02 [1.300] | 36.83 [1.450] | 41.48 [1.633] | 31.75 [1.250] | 20.738 [.8165] |

Figure 3 (end)

3.4. Printed Circuit Board Requirements

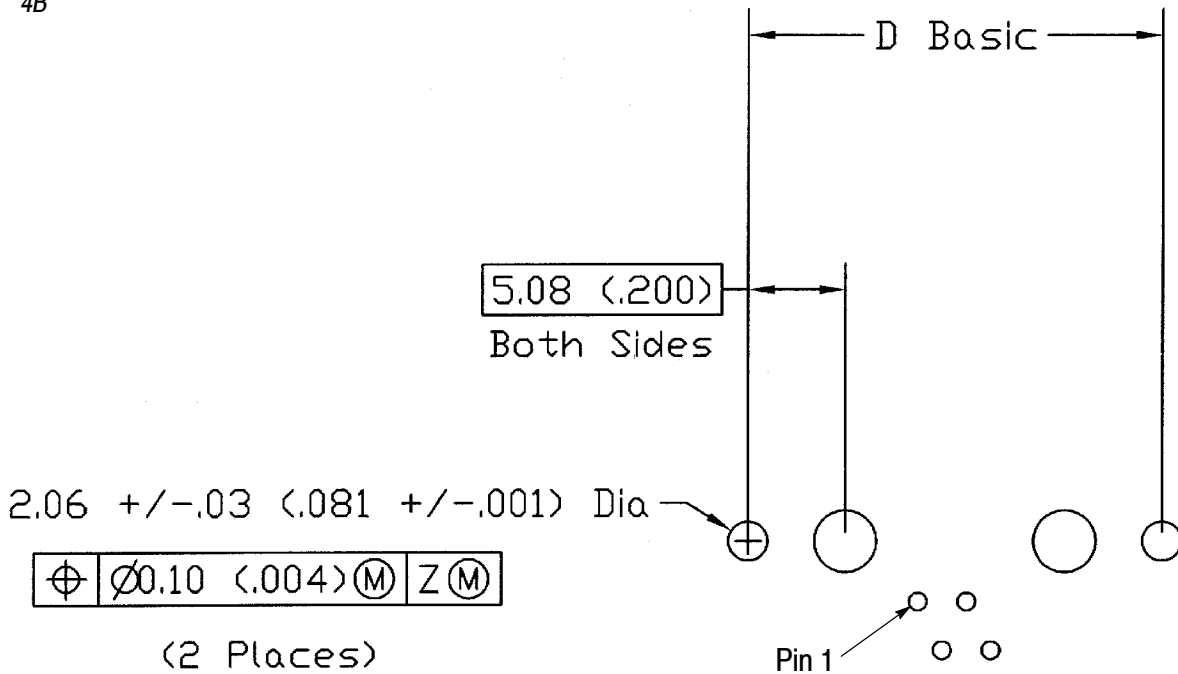
- A. All SDL receptacle connectors require a pc board thickness of 1.45 mm [.057 in.] to 2.54 mm [.100 in.].
- B. Refer to the table in Figure 2 for pc board layouts. PC board layouts for top-entry are referenced in Figure 4.

4A



NOTES: a. Receptacles mounted on opposite side of layout shown.
b. 4-position shown.

4B

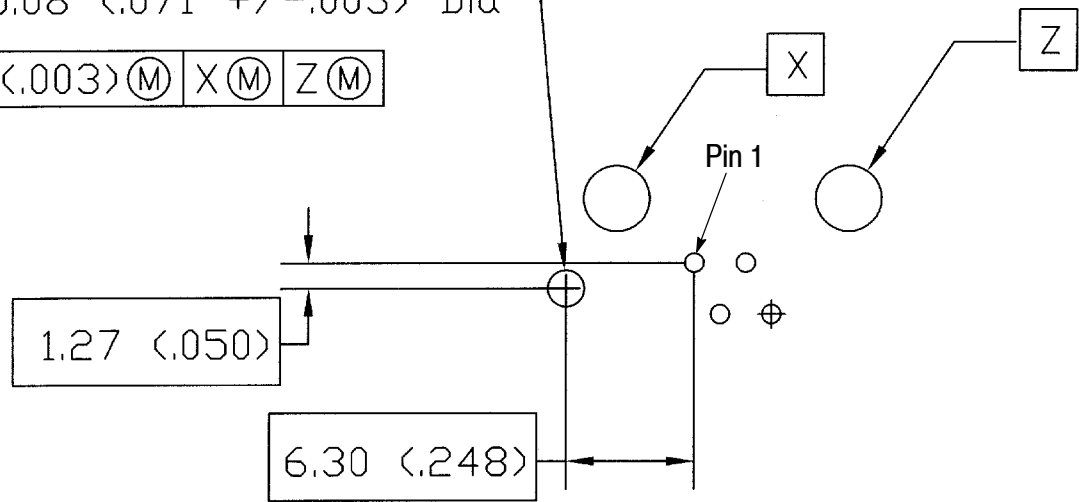
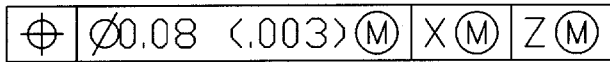


NOTES: a. Receptacles mounted on opposite side of layout shown.
b. 4-position shown.
c. See Figure 4A for dimensions and datums not shown.

Figure 4 (cont'd)

4C

1.80 +/- 0.08 (.071 +/- .003) Dia



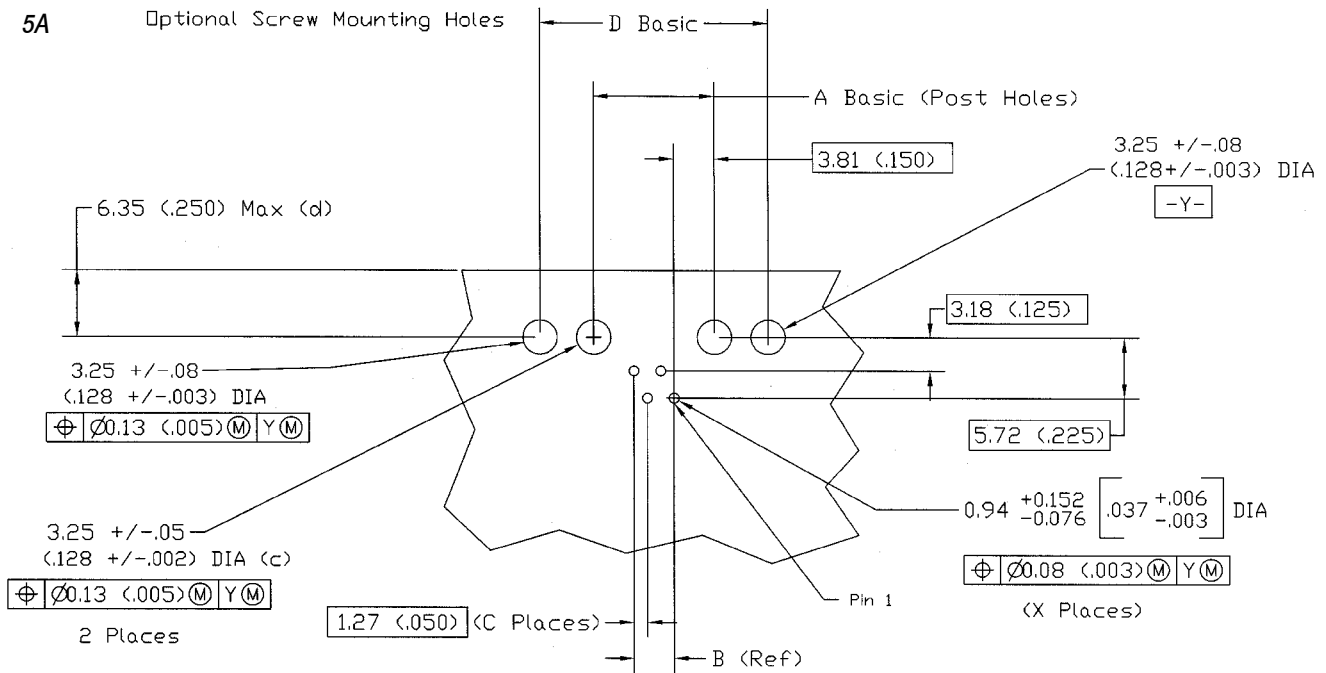
- NOTES: a. Receptacles mounted on opposite side of layout shown.
 b. 4-position shown.
 c. See Figure 4A for dimensions and datums not shown.

Figure 4 (end)

C. PC board layouts for side-entry are located in Figure 5.

5A

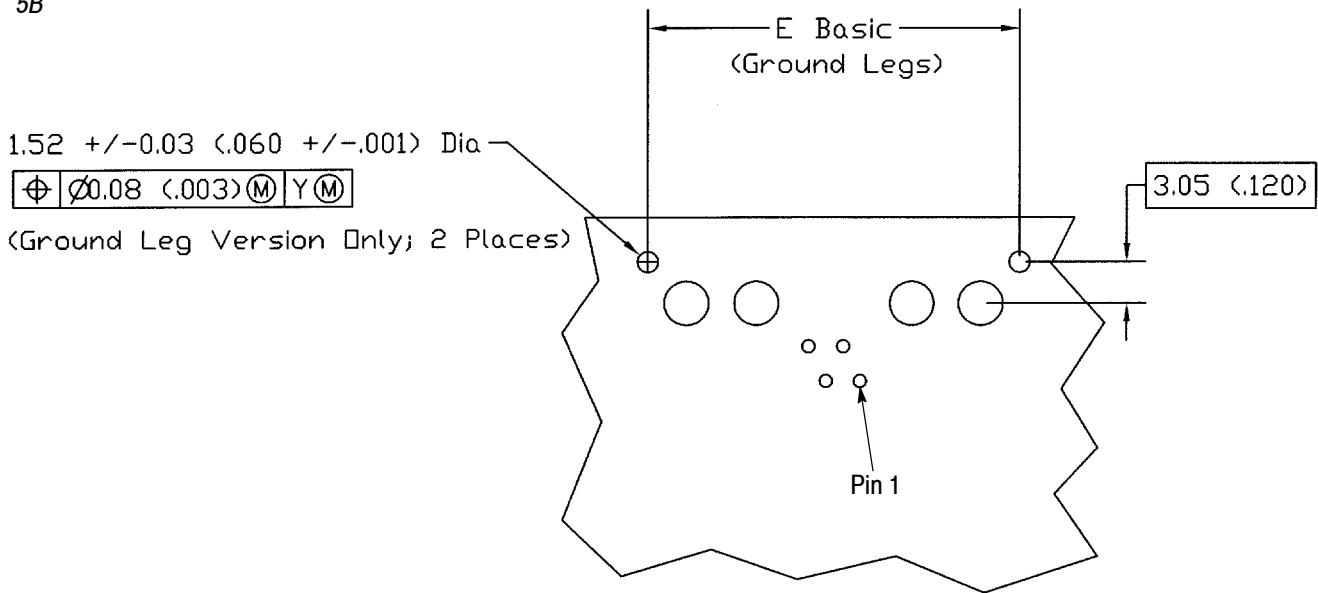
Optional Screw Mounting Holes



- NOTES: a. Receptacles mounted on opposite side of layout shown.
 b. 4-position shown.
 c. Use this dimension for seating machine forces greater than 35.6 N [8 lb.]. For forces 35.6 N [8 lb.] or under, use 3.45 +/- 0.05 mm [.136 +/- .002 in.].
 d. This dimension may vary with specific application techniques and pc board configurations, but shall not be more than the maximum dimension shown.

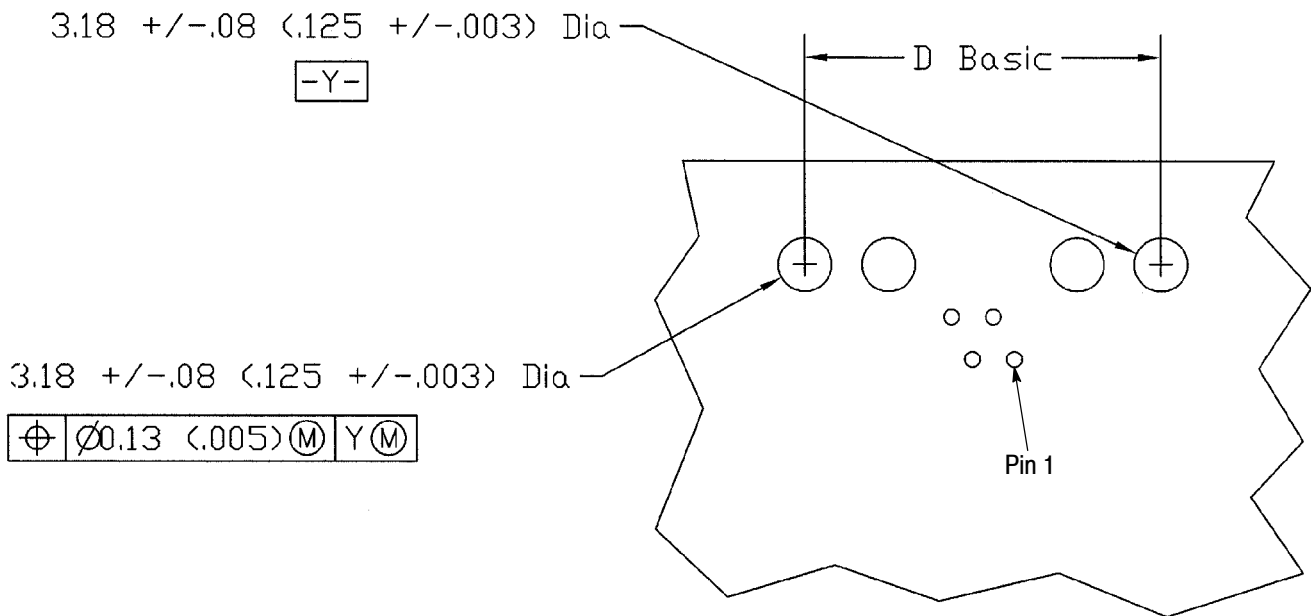
Figure 5 (cont'd)

5B



- NOTES: a. Receptacles mounted on opposite side of layout shown.
 b. 4-position shown.
 c. See Figure 5A for dimensions and datums not shown.

5C



- NOTES: a. Receptacles mounted on opposite side of layout shown.
 b. 4-position shown.
 c. See Figure 5A for dimensions and datums not shown
 d. Boardlock design is grounded to both the panel and the pc board making it necessary to run trace material around and in the boardlock retention holes.

Figure 5 (cont'd)

D. These receptacle connectors may be used with or without plated through holes. If plated, the drilled hole size plating types and plating thickness are dependent on your application requirements. The finished hole size must be as stated to provide unrestricted insertion and ensure adequate application of solder to the tines. See Figure 6.

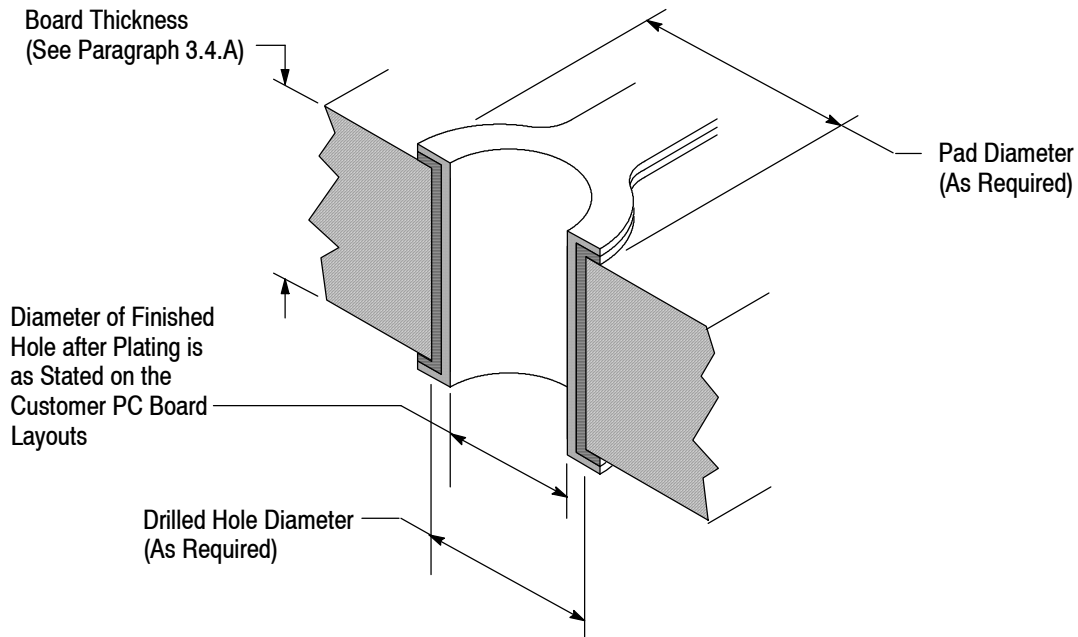


Figure 6

3.5. Receptacle Connector Spacing

Top-entry receptacles may be placed adjacent to each other with no interference to mating connectors. Except for offset flange versions, side-entry receptacles may be placed adjacent to each other with no interference to mating connectors. Offset flange connectors shall be placed at a distance of "I Basic" in Figure 3D.

3.6. Receptacle Connector Placement

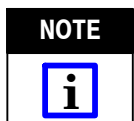


The connector should be handled only by the housing to avoid deformation, contamination, or other damage to the contact tines.

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 evenly on the connector until the flange and mounting bracket seat on the pc board.

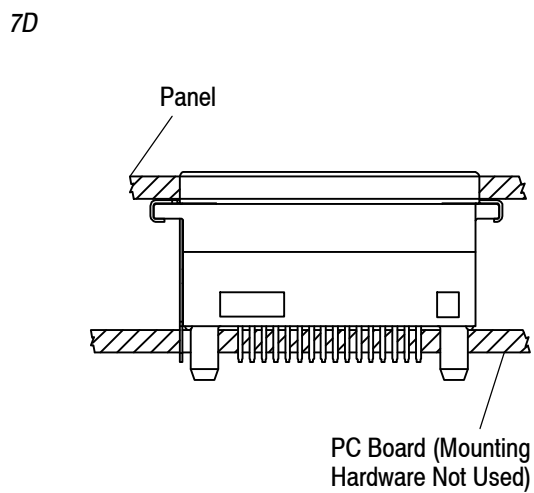
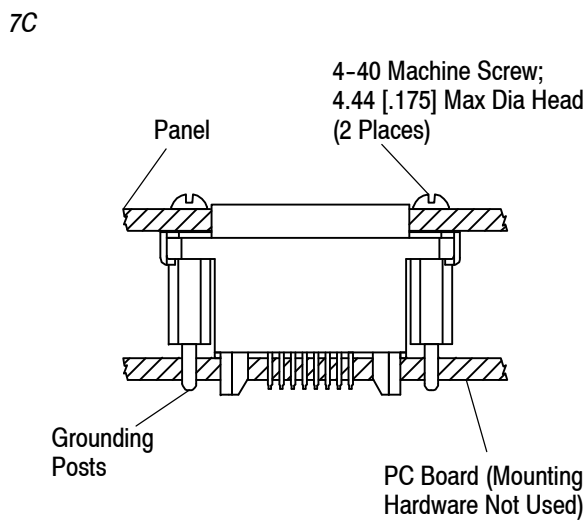
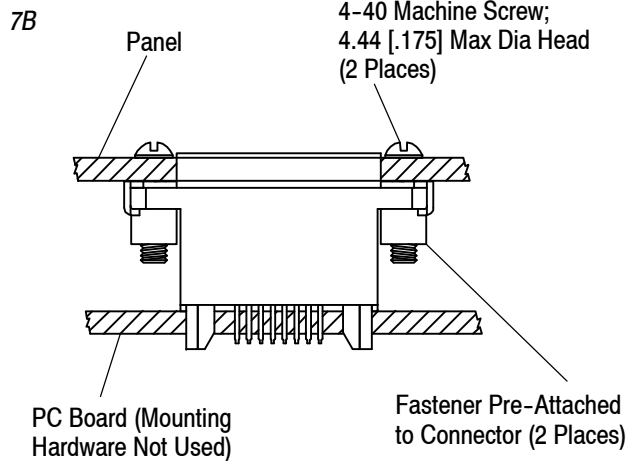
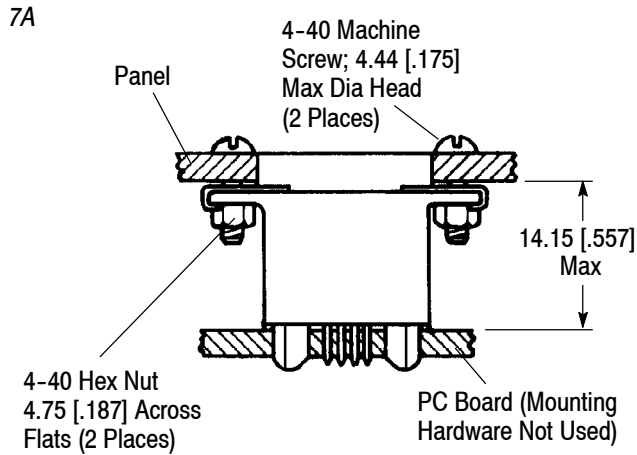
3.7. Mounting Requirements

PC board mounting hardware is required on the top-entry board-grounded receptacle connector. The top-entry panel grounded version uses no board mounting hardware. Hardware for pc board mounting is optional with all other receptacle connector styles. Recommended hardware types and arrangements are shown in Figure 7.



Fasten the receptacle connectors to the board BEFORE soldering. When mounting a series of stacked offset flange receptacle connectors, ALL the receptacle connectors should be fastened before soldering any of them to the board. AFTER the soldering process and flux removal, the receptacle connector(s) may be panel mounted if required for the specific application.

Top-Entry Receptacle Connector Mounting (Panel Grounded)



Side-Entry Receptacle Connector Mounting

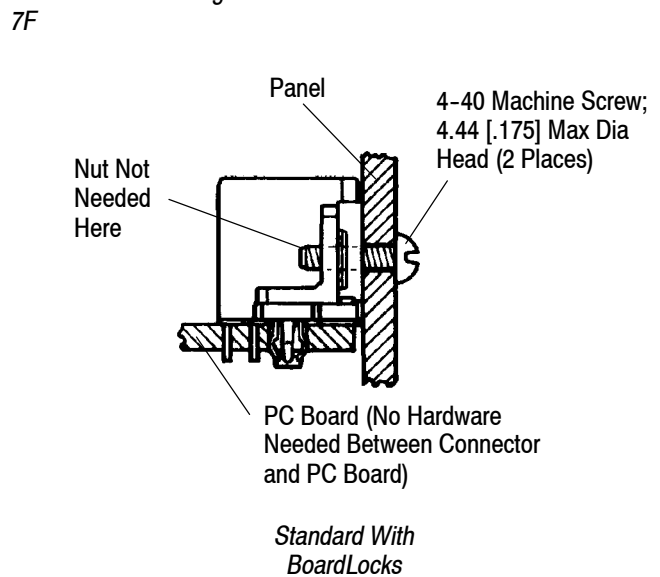
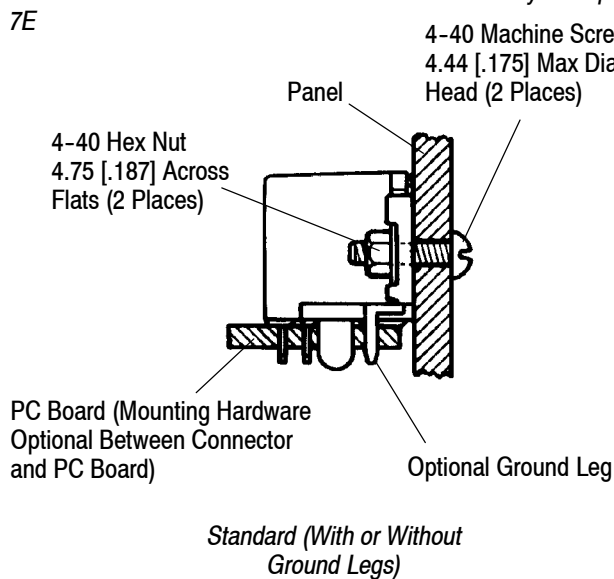
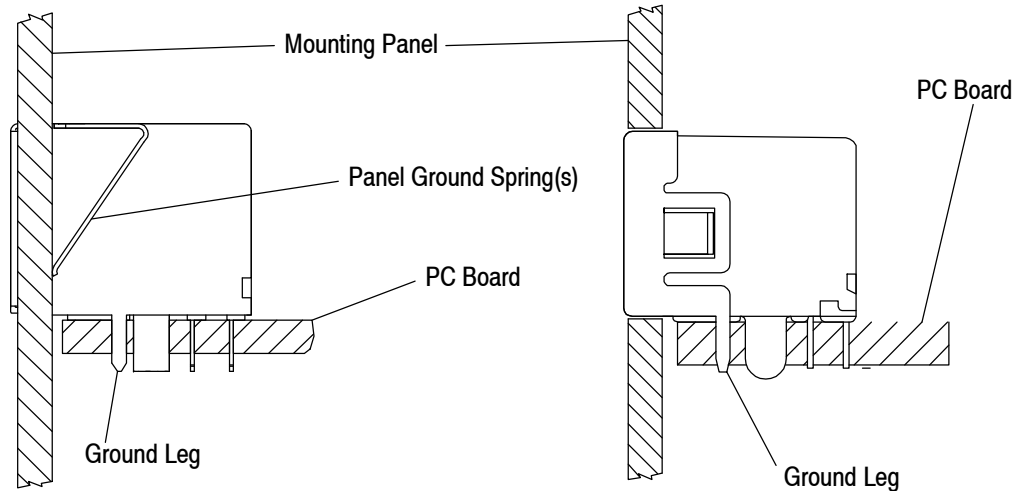
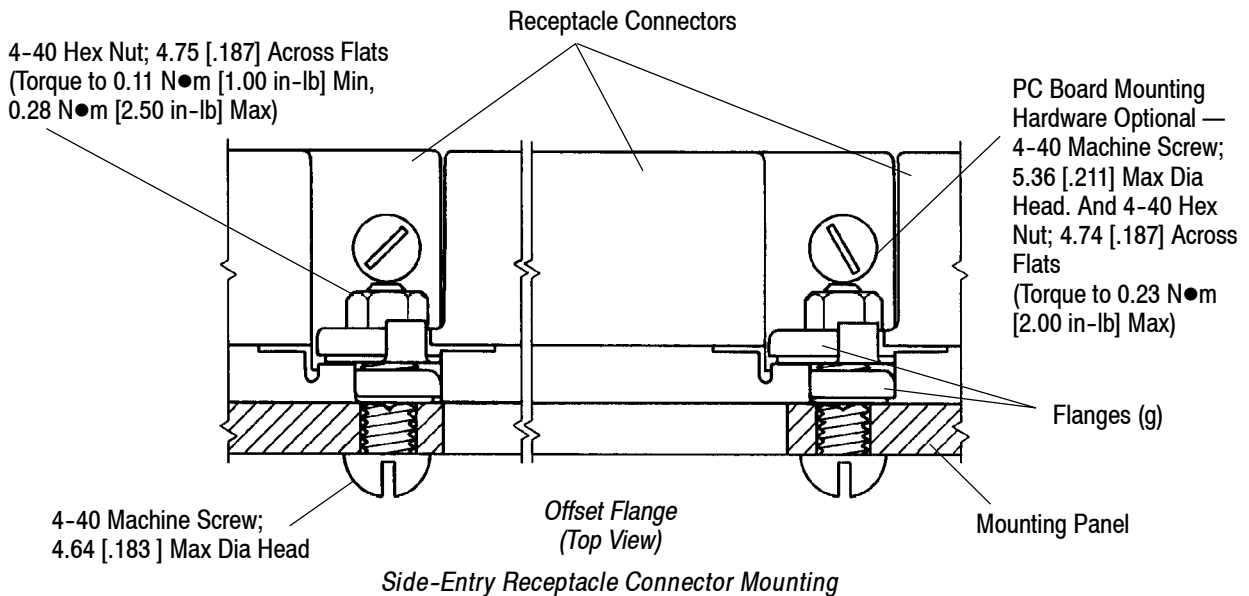


Figure 7 (cont'd)

7G



7H



NOTE: When mounting an offset flange receptacle connector with no adjacent receptacle connector on the recessed side, insert a shim or washer with a thickness of $2.54 \pm .254$ [$.100 \pm .010$] between the flange and mounting panel.

Figure 7 (end)

3.8. Soldering

A. Flux Selection

Contact solder tines 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 8.

| FLUX TYPE | ACTIVITY | RESIDUE | COMMERCIAL DESIGNATION | |
|--------------------------------|----------|--------------|------------------------|-------|
| | | | KESTER | ALPHA |
| Type RMA (Mildly Activated) | Mild | Noncorrosive | 186 | 611 |

Figure 8

KESTER and ALPHA are trademarks of their respective owners.

B. Soldering Guidelines

The receptacle connectors can be soldered using wave, double sided non-focused infrared reflow processes (IR) or equivalent soldering techniques. The temperatures and exposure time shall be within the ranges specified in Figure 9. We recommend using 60 Sn/40 Pb or 62 Sn/36 Pb/2 Ag solder for these receptacle connectors.

NOTE Manual 402-40 provides some guidelines for establishing soldering practices. Refer to Paragraph 2.4, Manuals.



NOTE Receptacle connectors must be clamped, weighted, or screwed down when going through wave soldering.



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

** Wave Temperature

Figure 9

C. Chemical Exposure Limitations

The SDL plugs are molded from a polycarbonate resin which can be adversely affected by strong commercial and industrial cleaners, solvents, and thinners containing hydrocarbons, amines, esters, and ketones. The use of these types of products should be avoided in the general area of any polycarbonate material.

Cleaners must be free of dissolved flux and other contaminants. We recommend cleaning with the pc board on its edge. If using an aqueous cleaner, we recommend standard equipment such as a soak-tank or an automatic in-line machine. See Figure 10.

DANGER 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.



NOTE 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 | Aqueous | 1 | 132 | 270 |
| BIOACT EC-7 | Solvent | 5 | 100 | 212 |
| Butyl CARBITOL | Solvent | 1 | Room Ambient | |
| Isopropyl Alcohol | Solvent | 5 | 100 | 212 |
| KESTER 5778 | Aqueous | 5 | 100 | 212 |
| KESTER 5779 | Aqueous | 5 | 100 | 212 |
| LONCOTERGE 520 | Aqueous | 5 | 100 | 212 |
| LONCOTERGE 530 | Aqueous | 5 | 100 | 212 |
| Terpene Solvent | Solvent | 5 | 100 | 212 |

Figure 10

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

D. Drying

When drying cleaned connector assemblies, make certain that temperature limitations are not exceeded: -55° to 125°C [-67° to 257°F]. Excessive temperatures may cause housing degradation.

3.9. Receptacle Connector Seating Requirements

The seated receptacle connector shall be flush with the surface of the pc board within the limits shown in Figure 11.

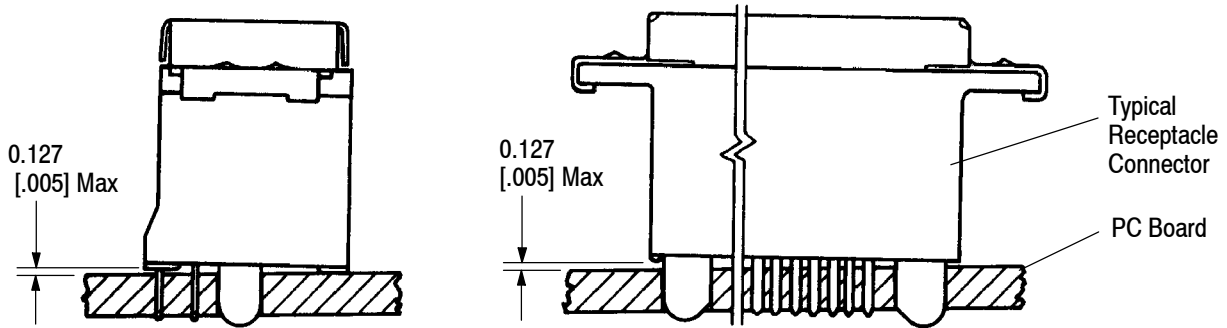


Figure 11

3.10. Repair/Removal

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



When repairing or replacing SDL PC Board Receptacle Connectors, be careful not to damage other pc board components during the desoldering process.

4. QUALIFYING SUPPORT

SDL Top-Entry and Side-Entry PC Board Receptacle Connectors are Recognized by Underwriters Laboratories Inc. (UL) in File No. E28476, and Certified to CSA International in File No. LR7189.

5. TOOLING TYPES

5.1. Seating Tools

No tooling is required for hand seating of SDL Receptacle Connectors. Robotic or automatic machine seating may be used if approved by TE Engineering, and if the machine grips the receptacle connector as shown in Figure 12.

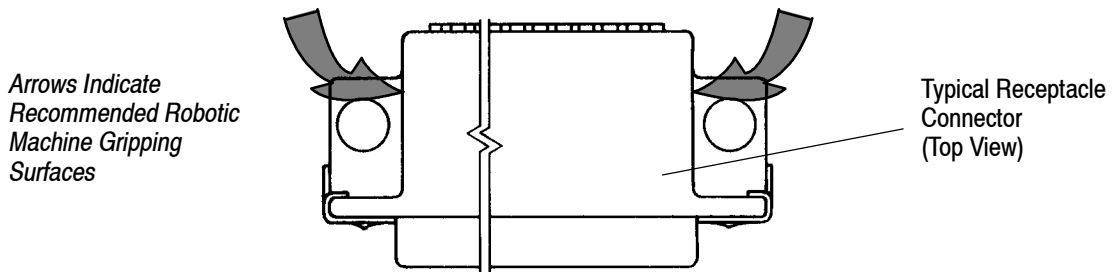


Figure 12

5.2. PC Board and Panel Mounting Tools

Use common tooling to attach mounting hardware.

5.3. PC Board Support

A pc board support must be used to prevent bowing of the pc board during placement of a connector on the board and during formation of eyelets when applicable. See Figure 13. It should have flat surfaces with holes or a channel large enough to receive eyelets and allow for their formation.

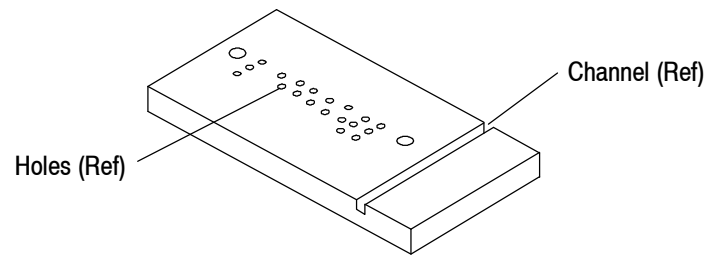


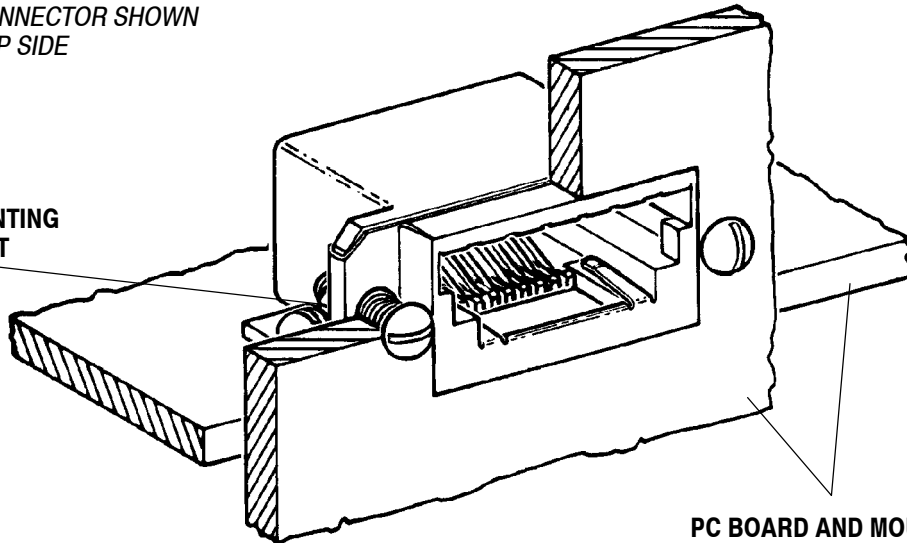
Figure 13

6. VISUAL AID

Figure 14 is to be used by production personnel to visually ensure a properly applied product. Sample SDL Receptacle Connectors are shown as they should appear for best quality termination. Applications which are NOT visually correct should be inspected using the information in the main body of this specification and in the instructional material shipped with the product or tooling.

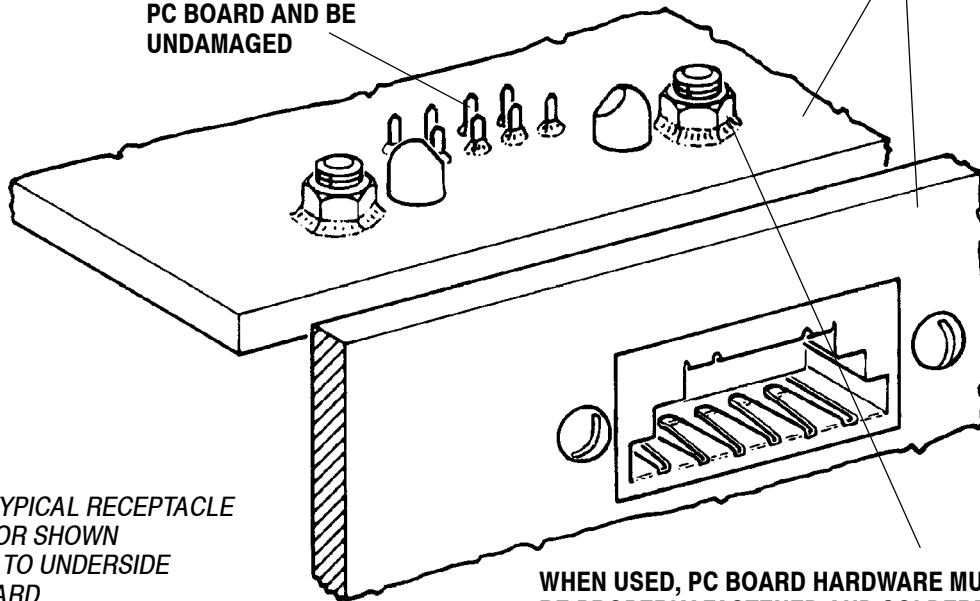
VIEW OF TYPICAL
RECEPTACLE CONNECTOR SHOWN
MOUNTED TO TOP SIDE
OF PC BOARD

ALL PANEL MOUNTING
HARDWARE MUST
BE SECURE



PC BOARD AND MOUNTING
PANEL UNDAMAGED BY SEATING
AND HARDWARE ATTACHMENT
OPERATIONS

SOLDER TINES MUST
PROTRUDE THROUGH
PC BOARD AND BE
UNDAMAGED



VIEW OF TYPICAL RECEPTACLE
CONNECTOR SHOWN
MOUNTED TO UNDERSIDE
OF PC BOARD

WHEN USED, PC BOARD HARDWARE MUST
BE PROPERLY FASTENED AND SOLDERED (BOARDLOCK
VERSION NEEDS NO BOARD MOUNTING HARDWARE,
AND WILL APPEAR DIFFERENT THAN APPLICATION
ILLUSTRATED)

FIGURE 14. VISUAL AID