

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 [$\pm .005$] 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 requirements for application of MICTOR Right-Angle (Straddle Mount) Plugs and Receptacles designed for pc boards. The connectors have an in-row contact spacing on 0.64 [.025] centerlines. There are designs to accommodate 38 through 266 contact positions. The connectors are designed for manual or robotic placement on pc boards of various thicknesses.

Plug and receptacle connectors are available in various stack heights (see Figure 1), and right-angle designs. Receptacle Connectors are available in right-angle configurations which mate with either vertical or right-angle plugs. The date code and position one indicator are marked on the side of the housings of all connectors.

Figure 1 provides connector features and terms used throughout this specification. Use these terms when corresponding with Tyco Electronics Personnel to facilitate assistance.

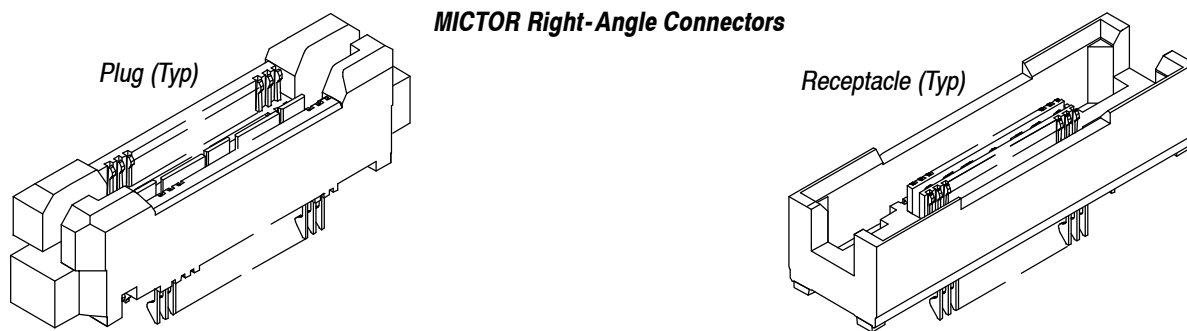


Figure 1

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
- Changed dimension in pc board layout in Figure 4

2.2. Customer Assistance

Reference Product Base Part Number 767006 and Product Code 2438 are representative numbers of the MICTOR Right-Angle Plug and Receptacle Connectors. These numbers are used in a service network of customer service to access tooling and product application information. This service is provided by your local Tyco Electronics Representative or, after purchase, by calling the Tooling Assistance Center or the Product Information number at the bottom of this page.

2.3. Engineering Drawings

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

2.4. Specifications

A. Product Specifications

Product Specifications 108-1422 and 108-1422-1 provide product performance requirements and test information.

B. Test Specification

Solderability Specification 109-11-1 provides requirements and evaluation methods.

2.5. 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 attached to the manual as a guide for information on soldering problems.

2.6. Instructional Material

The following list includes available instruction sheets (408-series) that provide assembly procedures for product, operation, maintenance and repair of tooling for MICTOR Right-Angle Connectors.

<u>Document Number</u>	<u>Document Title</u>
408-4334	Slitting Tool 767527-[]
408-4335	Application Tool 767511-[]

3. REQUIREMENTS

3.1. Product Materials

MICTOR Connector Housings are constructed of a high temperature thermoplastic – Liquid Crystal Polymer, UL94V-0. The plug and receptacle signal contacts are made of high reliability copper alloy, and the ground buses are made from brass and phosphor bronze. The mating interface of the signal contacts and ground buses are underplated with nickel and finished with gold plating or palladium nickel with gold flash. The solder leads and tines have 60/40 matte tin-lead or matte tin plating.

3.2. Storage

Connectors are packaged and shipped in protective anti-static tubes or pocket tape which can be used for automated placement of the connector to the pc board. Connectors should remain in the containers until ready for use to prevent physical damage to the housings and contacts. The connectors should be used on a first in, first out basis to avoid storage contamination that could adversely affect signal transmissions and solderability of the contact tines.

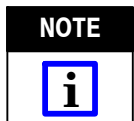
3.3. Polarization



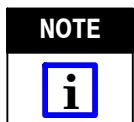
The right-angle plugs and receptacles do not have an orientation feature and should be oriented to the pc board in accordance with the information given in Instruction Sheet 408-4335.

3.4. Circuit Identification

Right-angle plugs and receptacles are marked with a No. 1 pin identifier. See Figure 1.



There is no industry standard for the callout of the part number numbering sequence for MICTOR Connectors. It is up to customer discretion. However, the most common method is to start with pin number 1 and continue the numbering sequence (1, 2, 3, 4, etc.) down that side of the connector, then continue directly opposite the number 1 pin on the other side to number the pins to the other end of the connector.



MICTOR Connectors are available in 38-position increment sizes (19 signal contacts per side). Each 38-position increment has five ground bus solder leads that are commoned internally with the connector.

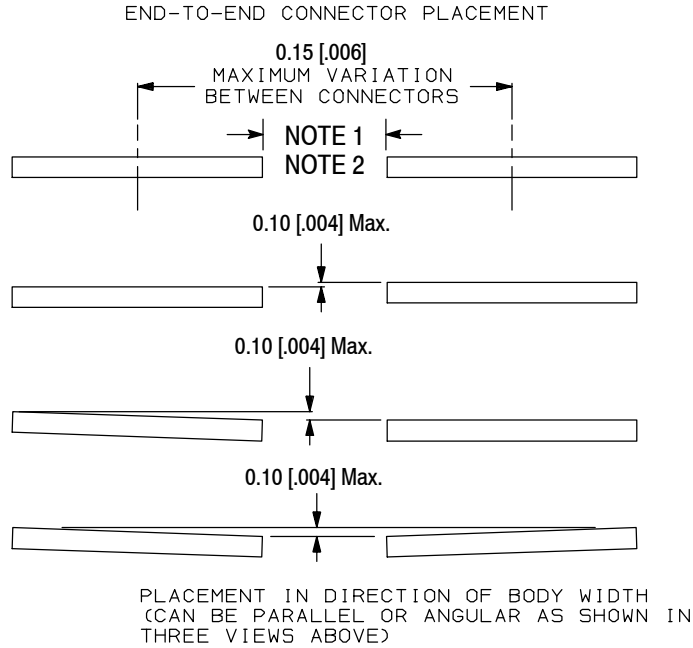
3.5. Spacing

A. Connector Alignment



Tyco Electronics does not recommend the use of more than two mating pairs of connectors between two pc boards; if more than two pairs of mating connectors are necessary to meet design requirements, consult the Product Information number located at the bottom of page 1.

In applications involving multiple connectors per pc board, special attention must be paid to ensure the orientation of connectors on one pc board are correctly matched to the connectors on the mating board. Connectors can be placed in close proximity to each other on the pc board. The dimensions provided do NOT include space needed for other pc board components or robotic tooling. Check spacing requirements for other components before making your placement layout on the pc board. Figure 2 provides recommended placement variations to ensure vertical board-to-board plug and receptacle mating and unmating.



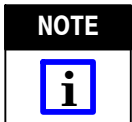
NOTE 1: A 0.13 [0.005] minimum gap should be established between connector ends.

NOTE 2: Maximum distances between connectors should be contingent upon consideration of thermal expansion coefficient differentials of pc boards and any fixtures on a pc board that may be used to maintain connector position during reflow.

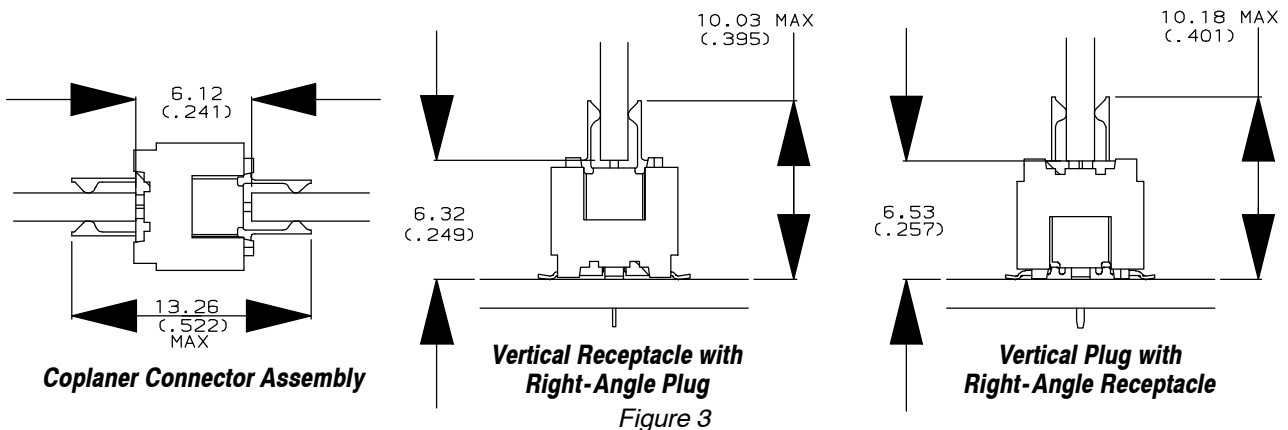
Figure 2

B. Board-to-Board Spacing

Board-to-board stacking heights for the MICTOR Right-Angle Connectors are provided in Figure 3.



The dimension provided does not include the paste thickness between the solder tines and solder pads of both connectors.



3.6. PC Boards for MICTOR Connectors

A. Tolerance

At the time of connector placement, the coplanarity of the pad pattern must be held to 0.05 [.002] maximum. We recommend a solder mask to minimize solder bridging between pads. The mask must not exceed the height of the pad by more than 0.05 [.002]. Maximum allowable bow of the pc board shall be 0.10 [.004] over the length of the connector.



Since the connector housings may rest on top of the solder mask, an excessively high mask will allow too much space between the solder tine and pad for a good solder joint. A solder joint under these conditions would be weak, and would not provide long term performance for the connector.

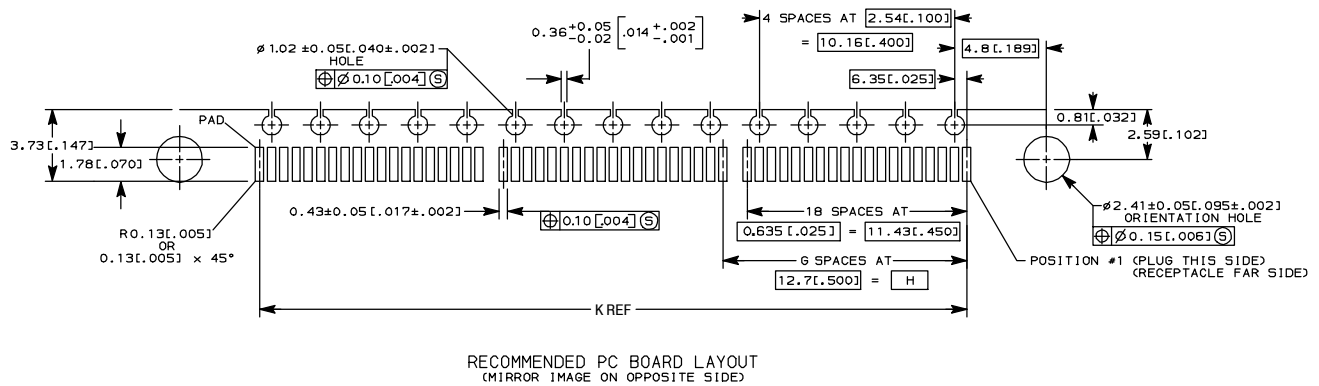
B. Material and Thickness

PC board material shall be glass epoxy (FR-4 or equivalent) and have nominal thickness of 1.57 ±0.15 [.062 ±.006] or 2.36 ±0.20 [.093 ±.008] or 3.00 ±0.18 [.118 ±.007] to ensure good interconnection to the pc board with and without hold-downs. Call the Product Information number at the bottom of page 1 for suitability of other materials or thicknesses. A solder mask is recommended when soldering connectors. Those most suitable are Liquid Photo Imageable and Dry Film.

C. PC Board Layout

1. Right-Angle Connectors

Recommended pc board patterns for right-angle connectors are provided in Figure 4.



RECOMMENDED PC BOARD LAYOUT FOR MICTOR 0.64 [0.025] RIGHT ANGLE PLUG & RECEPTACLE CONNECTORS

NOTE: Annular rings of 1.27 [.050] diameter around bus vias is recommended. If annular rings diameter must be different from recommended 1.27 [.050], hold spacing between annular rings and signal pads 0.51 [.020] min to minimize potential of solder bridging. Slots through the hole to the edge of the pc board are added at assembly by tooling available from Tyco Electronics. Reference Paragraph 5.3 and Instruction Sheet 408-4334, recommended pc board thicknesses: 1.57 ±0.16 [.062 ±.006], 2.36 ±0.20 [.093 ±.008], or 3.00 ±0.18 [.118 ±.007].

NO of POSITIONS	DIMENSION "G"	DIMENSION "H"	DIMENSION "K"
266	6	76.2 [3.000]	87.63 [3.450]
228	5	63.5 [2.500]	74.93 [2.950]
190	4	50.8 [2.000]	62.23 [2.450]
152	3	38.1 [1.500]	49.53 [1.950]
114	2	25.4 [1.000]	36.83 [1.450]
76	1	12.7 [.500]	24.13 [.950]
38	0	0 [.000]	11.43 [.450]

Figure 4



Tyco Electronics does not recommend the use of more than two mating pairs of connectors between two pc boards; if more than two pairs of mating connectors are necessary to meet design requirements, consult the Product Information number located at the bottom of page 1.

2. Recessed Printed Circuit Boards with Right-Angle Connectors

Figure 5 provides dimensional information for applying right-angle connectors to a recessed pc board. The actual recessed width is equal to the distance between the tooling holes as shown on the customer drawings, plus two times the “A” dimension shown at the bottom of Figure 5. The clearance dimensions on pc board 1 are needed to accommodate connector application tooling (Reference Figure 6 of Instruction Sheet 408-4335).

Do NOT place Board 2 components in proximity to Board 1. If requirements exist, the applied components should be laid out and be evaluated, using the pivoting point location as a guide, for component clearance during mating and unmating. Dimension “L” shows the distance from the end of the connector placed on Board 2 to either the end of Board 2, or to the outer dimension of any component attached to board 2 on the side opposite the board 2 connector, whichever is greater.

Using the desired recessed depth “D” and the previous directions and dimensions, the proper recessed area can be determined for safe mating and unmating.

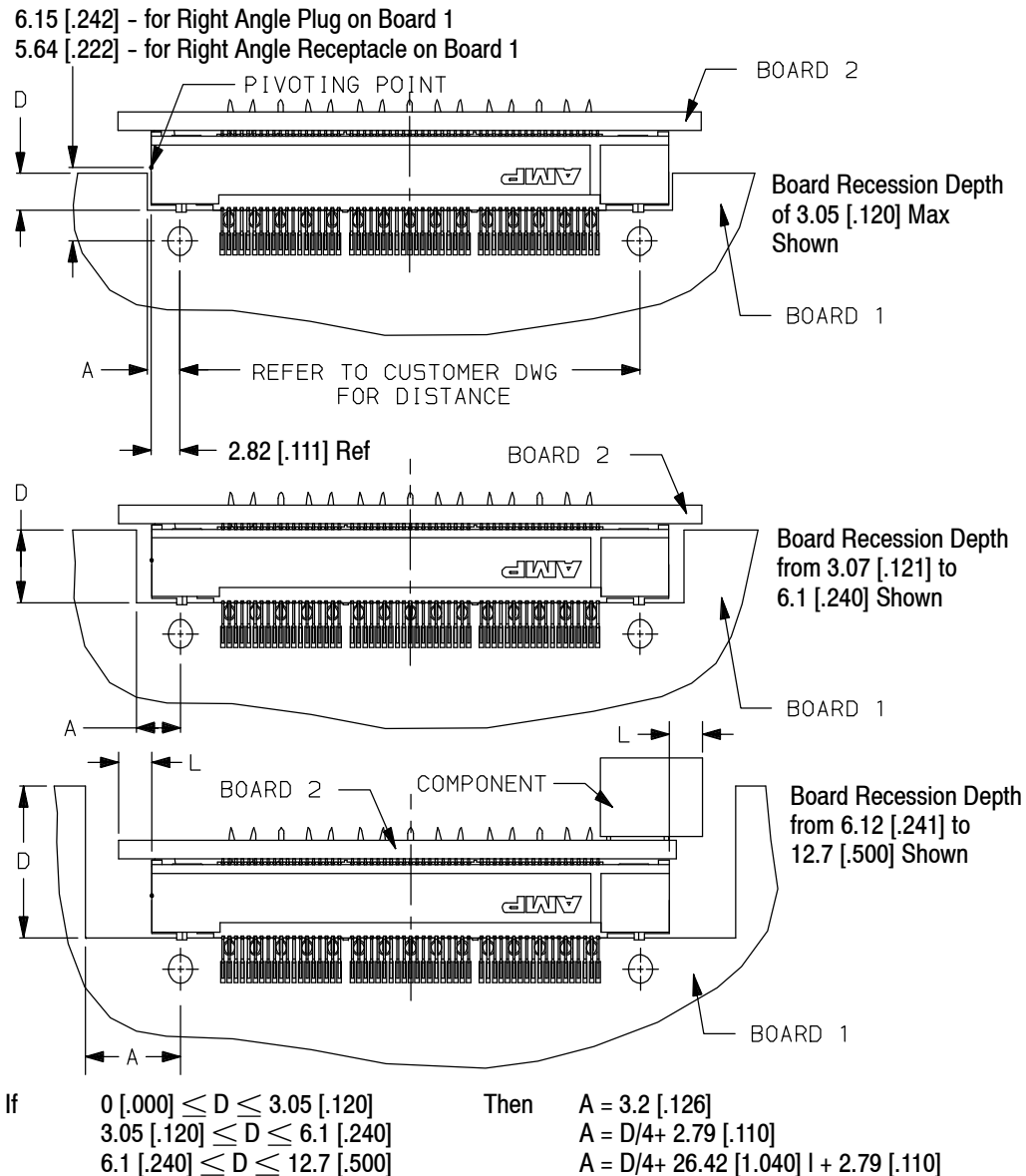


Figure 5

3.7. Processing

MICTOR Connectors utilize hybrid style surface mount solder leads. The signal contact leads are true surface mount leads, while the ground bus contacts have through-hole style leads. Connectors are typically processed using the intrusive solder reflow technique. Solder paste is deposited over the ground bus lead holes at the same time it is placed on the signal lead pads. The ground bus leads are pressed through the solder paste as the connectors are placed on the pc boards. The solder is drawn into the holes as the connector is exposed to reflow temperatures.

There are two methods available for reflow processing right-angle connectors. Their general sequences run as follows:

Method I (One Pass Method)

1. Print solder paste on all locations of pc board side 1 (excluding half moon).
2. Print solder paste on all of pc board side 2 (including half moon).
3. Place surface mount components on both sides of pc board.
4. Place right-angle MICTOR Connector on pc board.
5. Complete oven reflow process.

Method II (Two Pass Method)

1. Print solder paste on all locations of pc board side 1 (excluding half moon).
2. Place surface mount components on pc board side 1 (exclude right-angle MICTOR Connector).
3. Complete oven reflow process.
4. Print solder paste on pc board side 2 (including half moon).
5. Flux pads on side 1 with RMA type flux. Alternately, side 1 contacts could also be fluxed, but great care would have to be taken to prevent altering their positional condition.
6. Place surface mount components on pc board side 2.
7. Place right-angle MICTOR Connector on pc board.
8. Complete oven reflow process.

NOTE

PC Boards must meet the solderability requirements of IEC 60512-12-1 (512-6: 1984 Test 12a).



A. Stencil

The stencil aperture is determined by the circuit pad size and stencil thickness. It may be any shape as long as it prevents solder bridging from one pad to another. Generally, the thinner stencil will need a larger aperture to maintain the given volume of solder paste. The formulas for calculating the apertures are:

Right-Angle Plugs and Receptacles

Method I (One Pass Method - Reference Figure 6)

(Both sides)	Volume of paste deposit per pad for contact = 0.082 mm^3 [.000005 in ³]
(Side 2)	Volume of paste for half moon = 0.0662 mm^3 [.000004 in ³]
(Both sides)	Width of pc board contact circuit pad = 0.43 mm [.017 in]
(Side 2)	Width of half moon = $2 \times \text{radius} = 2 \times 0.53 = 1.06 \text{ mm}$ [$2 \times .021 = .042 \text{ in}$]
(Both sides)	Area of stencil aperture of contact circuit pad = $1.27 \times 0.43 = 0.55 \text{ mm}^2$ [$.050 \times .017 = .0008 \text{ in}^2$]
(Side 2)	Area of stencil aperture of half moon = $1/2 (\pi \times 0.53^2) = 0.44 \text{ mm}^2$ [$1/2 (\pi \times .021^2) = .0007 \text{ in}^2$]
(Both sides)	Length of stencil aperture of contact circuit pad = 1.27 mm [.050 in]

Method II (Two Pass Method - Reference Figure 7)

- (Side 1) Volume of paste deposit per pad for contact = 0.115 mm³ [.000007 in³]
- (Side 2) Volume of paste deposit per pad for contact = 0.082 mm³ [.000005 in³]
- (Side 2) Volume of paste for half moon = 0.0662 mm³ [.000004 in³]
- (Both sides) Width of pc board contact circuit pad = 0.43 mm [.017 in]
- (Side 2) Width of half moon = 2 x radius = 2 x 0.53 = 1.06 mm [2 x .021 = .042 in]
- (Side 1) Area of stencil aperture of contact circuit pad = 1.78 x 0.43 = 0.765 mm² [.070 x .017 = .001 in²]
- (Side 2) Area of stencil aperture of contact circuit pad = 1.27 x 0.43 = 0.55 mm² [.050 x .017 = .0008 in²]
- (Side 2) Area of stencil aperture of half moon = 1/2 (π x 0.53²) = 0.44 mm² [1/2 (π x .021²) = .0007 in²]
- (Side 1) Length of stencil aperture of contact circuit pad = 1.78 mm [.070 in]
- (Side 2) Length of stencil aperture of contact circuit pad = 1.27 mm [.050 in]



Although the Two Pass Method works quite well, allowing for efficient placement of other SMT components on both sides of the pc board, it is occasionally stricken with MICTOR signal lead true position problems resulting in solder bridging that requires rework. Since the signal lead true position of side 1 leads may be affected as a result of the leads deflecting off the "nose" of the solidified solder mounds, alternate pad configurations may be used to produce solder mounds that would provide "funneling" effect to help center the signal leads on the pads as they ride up on the solder mounds. One such alternate pattern is suggested in Figure 7.



All traces must be covered by solder mask in the solder deposit area. Exposed traces could cause bridging and create a short, or wick solder away from the solder tines, producing a weak solder joint.



The recommended aperture width is 0.43 [.017] for the right-angle connector circuit contact pads. It may be wider; however, care must be given to ensure against solder bridging during processing.

The recommended solder stencil layouts for MICTOR SMT Connectors are shown in Figures 6 and 7.

Right-Angle Connectors

0.64 [.025] Center Line
38-Position Shown

Method I (One Pass Method)

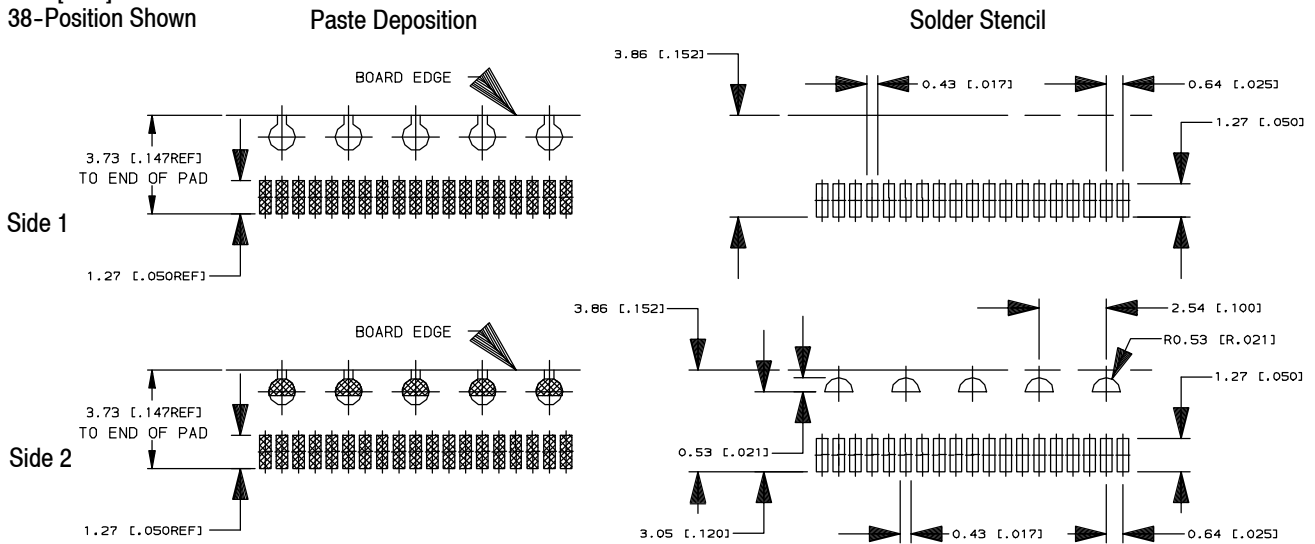


Figure 6

Right-Angle Connectors
 0.64 [.025] Center Line
 38-Position Shown

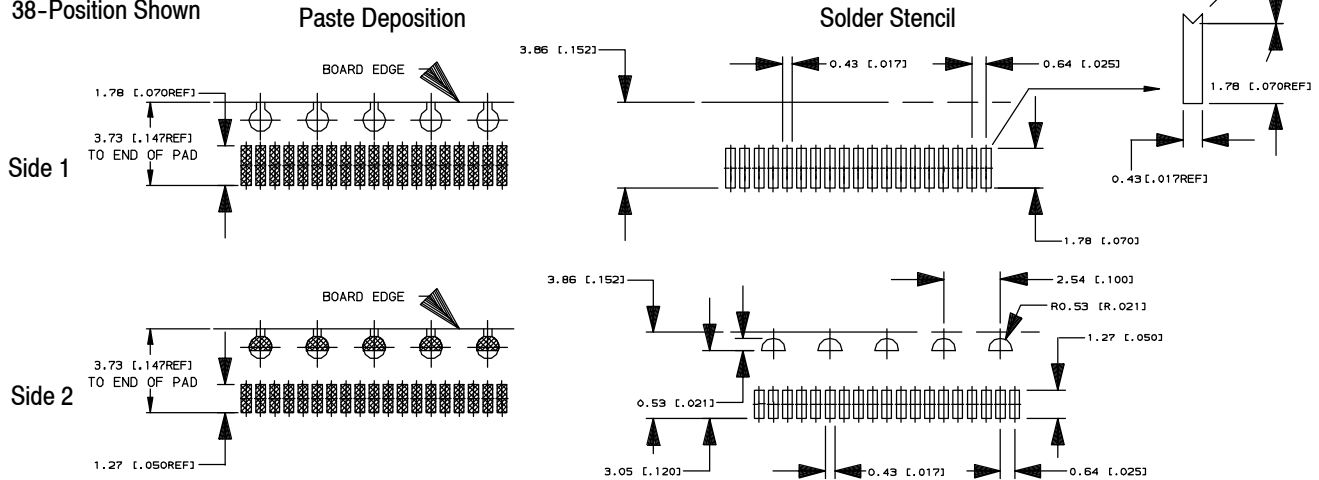


Figure 7

B. Solder Mask

Solder mask is recommended between all pads, ground bus vias, and angular rings. If a trace is run between adjacent pads on the solder side of the pc board, a solder mask **MUST** be applied over the trace to prevent bridging and wicking of solder away from the contact solder tines. Additionally, there should be solder mask covering any traces in the area surrounding the bus lead solder deposit. Liquid photo imageable or dry film solder masks, in step with modern processing techniques are recommended.

C. Recommended Solder Paste Characteristics

1. Alloy type shall be either 63Sn/37Pb or 60Sn/40Pb for connectors with Sn/Pb plated leads; or 95.5Sn/4.0Ag/0.5Cu for connectors with Sn plated leads.
2. Flux shall be RMA type.
3. Solids by weight shall be 85% minimum.
4. Mesh designation -200 to +325 (74 to 44 square micron openings, respectively).
5. Minimum viscosity of screen print shall be 5×10^5 cp (centipoise).
6. Minimum viscosity of stencil print shall be 7.5×10^5 cp (centipoise).

D. Solder Volume

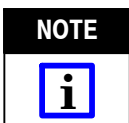
Solder volume for each circuit pad and bus tine opening is calculated by multiplying the pad length by the pad width by the stencil thickness (Volume=LxWxT). The recommended volume for these connectors is determined with a mean stencil thickness of 0.15 [.006]:

1. Solder Volume on Right-Angle Circuit Pads
 (Side 1, 2) $1.78 \times 0.43 \times 0.15 = 0.115 \text{ mm}^3$ per pad
 $[\text{.070} \times \text{.017} \times \text{.006} = \text{.000007 in}^3]$ per pad

 (Side 2) $1.27 \times 0.43 \times 0.15 = 0.082 \text{ mm}^3$ per pad
 $[\text{.050} \times \text{.017} \times \text{.006} = \text{.000005 in}^3]$ per pad
2. Solder Volume on Right-Angle Half Moon Opening
 (Side 2) $1/2 (\pi \times 0.53^2 \times 0.66) = 0.29 \text{ mm}^3$ per opening
 $[1/2 (\pi \times \text{.021}^2 \times \text{.026}) = \text{.000018 in}^3]$ per opening



Paste volumes in excess of those recommended could result in excessive solder wicking onto the solder tine, resulting in reduction of tine compliance and/or solder joint failure.



More technical information may be available from the manufacturer of the stencil.

E. Right-Angle Connector Placement

The right-angle plug and receptacles are positioned on the edge of the pc board with its signal tines soldered to both sides. Bus tines are retained in slots from bus vias that are sheared by a slitting tool. Typically, the pc board using this connector will be two sided. Side 1 should have the paste applied for all other components and ONLY the signal pads for the connector. Apply all other components and reflow.

Side 2 paste will include all other components, signal pads, and the “half moon” for the bus vias as shown in Figure 7.

Flux the reflowed signal pads on Side 1 prior to placing the connector on the pc board. Refer to the instructions packaged with both the slitting and application tools for specific application procedures.



Connectors are available in shipping tubes or on tape reels and should be placed directly from the package to the pc board. Tyco Electronics does NOT recommend emptying them from the package into piles or in bowl feeders prior to placement.



Connectors should be handled only by the ends. DO NOT touch the solder tines, as moisture from the hands will contaminate the soldering process and lead position or coplanarity may be compromised.



Optimally, the connector solder tines should be centered on the pc board pads. However, slight misalignment is permissible. See Figure 8.

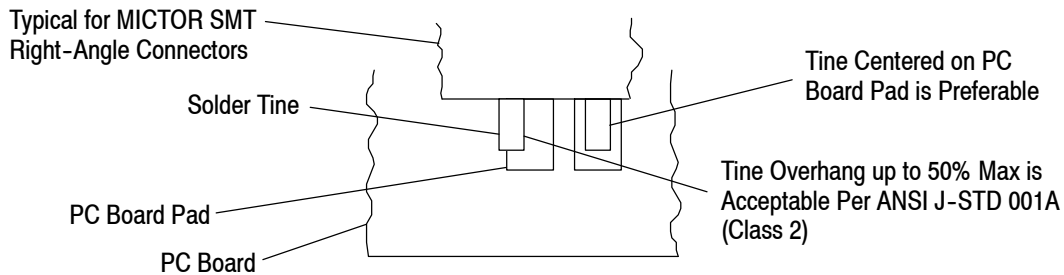
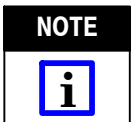


Figure 8

F. Soldering



Manual 402-40 provides some guidelines for establishing soldering practices.

1. Fluxing (Right-angle connector, two pass method only)

The contact solder tines and, if applicable, attaching hardware 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 oven reflow line, manufacturing, health, and safety requirements. Call the Product Information 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 9.

FLUX TYPE	ACTIVITY	RESIDUE	COMMERCIAL DESIGNATION	
			KESTER▲	ALPHA⊞
Type RMA (Mildly Activated)	Mild	Noncorrosive	185/197	611

▲Trademark of MacDonald & Co. ⊞ Designation of Alpha Metals Inc.

Figure 9

2. Techniques

It is recommended that the connector be soldered using convection, vapor phase (VPR), double sided non-focused infrared (IR), or equivalent soldering technique provided the temperatures and exposure time are within the ranges specified in Figure 10.

SOLDERING PROCESS	TEMPERATURE		TIME (At Max Temp)
	CELSIUS	FAHRENHEIT	
PARTS WITH TIN-LEAD PLATED LEADS			
Vapor Phase Soldering	215	419	5 Minutes
Convection Reflow Soldering	230	446	5 Minutes
PARTS WITH TIN PLATED LEADS			
Vapor Phase Soldering	245	473	30 Seconds
Convection Reflow Soldering	260	500	30 Seconds

Figure 10

3. Connector Capacity

Connectors will withstand the maximum temperature time limits specified in Figure 10.

4. Reflow Parameters

Due to the many variables involved with the reflow process (ie, component density, orientation, etc), we recommend that the user conduct trial runs under actual manufacturing conditions to ensure product and process compatibility.

G. Cleaning

After soldering, removal of fluxes, residues, and activators is necessary. Consult with the supplier of the solder paste and flux for recommended cleaning solvents. The following is a listing of common cleaning solvents that will not affect the connectors. The connectors will be unaffected by any of these solvents for 5 minutes at 105°C [221°F]. See Figure 11.

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



Even when using “no clean” solder paste, it is imperative that the contact interface be kept clean of flux and residue, since it acts as an insulator. Flux may migrate under certain conditions with elevated temperatures and, therefore, cleaning is necessary even with “no clean” paste.

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

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

Figure 11



MICTOR Connectors are not designed to function as pc board stiffeners. Thermal flexing of the pc board will result in either the connector body following the pc board contour or lifting off the board.



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, Tyco Electronics 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 Product Information number at the bottom of page 1.

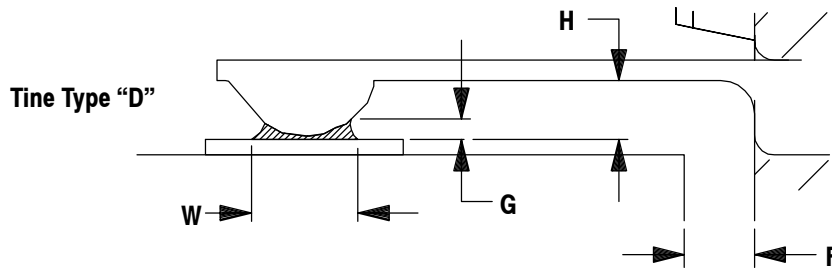


H. Drying

Air drying of cleaned connectors is recommended. Temperature for the connectors should not exceed -55 to 105°C [-67 to 221°F]. Degradation of the housings could result from extreme temperatures.

I. Checking Installed Connector

The connector assembly should be soldered to the pc board as shown in Figures 12 and 13.



CONNECTOR TYPE	CONTACT TINE TYPE	DIMENSION				
		W (Min.)	H	F	G (Min.) FILLET HEIGHT	
					HEEL FILLET	SIDE FILLET
RIGHT-ANGLE PLUG 1.57 [.062] PC BOARD	D	0.61 [.024]	0.50 [.0195]	0.25 [.010]	30% of H	15% of H
RIGHT-ANGLE PLUG 2.36 [.093] PC BOARD	D	0.61 [.024]	0.50 [.0195]	0.25 [.010]	30% of H	15% of H
RIGHT-ANGLE RECEPTACLE 1.57 [.062] PC BOARD	D	0.61 [.024]	0.61 [.024]	0.43 [.017]	24% of H	15% of H
RIGHT-ANGLE RECEPTACLE 2.36 [.093] PC BOARD	D	0.61 [.024]	0.50 [.0195]	0.25 [.010]	30% of H	15% of H

Figure 12

CAUTION

All MICTOR Connectors should have soldered ground bus leads. These leads are NOT designed for press-fit.



NOTE: Solder fillets should be observable on both sides of the lead, between the lead and the inner rim of the hole. The solder does not have to extend over the top and bottom of the lead.

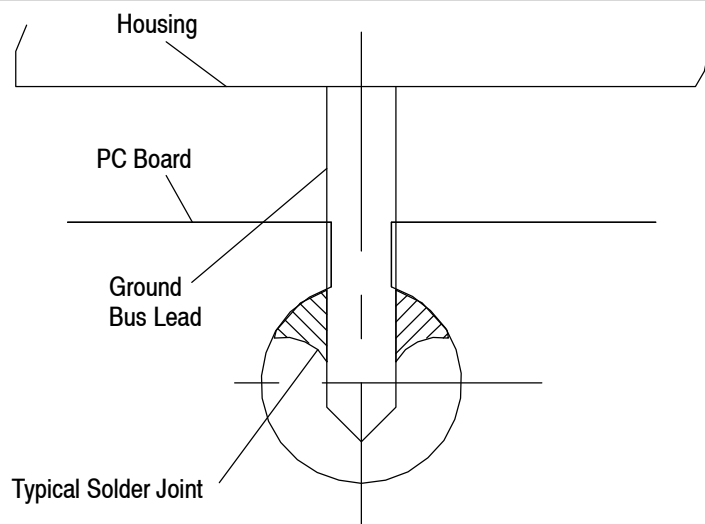


Figure 13

3.8. Dust Covers



When using dust covers (Part Number Series 767141) on MICTOR Right-Angle Plugs, covers may be removed by sliding them off along the length of the connector or peeling them off by prying one end up first. However, the covers should only be applied by snapping them directly on by lining up the entire dust cover over the connector mating face and pushing the cover directly onto the connector until it snaps in place. Dust covers should not be applied by sliding them onto the connector from the end.

3.9. Mating and Unmating



Uneven or off-angle forces during mating and unmating of MICTOR Connectors may cause overstress and damage to the contacts, housings or solder joints. Severe side-to-side rocking motions should be prohibited.

Unmating MICTOR Connectors by lifting one end of the connector (peeling) is permitted. However, this should only be done to initiate separation of the mated contacts at one end of the connector. The separation angle should be kept as low as possible as the contacts continue to unmate, thereby spreading out the unmating forces over the length of the connectors. The connectors should not be “peeled” beyond a 20° angle.

Miniaturization is a design feature of these connectors and the systems in which they are used. Component density, connector location, and pc board size may make it difficult to remove the connector. Two methods are recommended to facilitate removal. If unmating board-to-board connectors, the preferred method is to have one of the pc boards securely fastened and adequately supported to withstand the pulling force applied to the other pc board. The second method is to construct a tool for your system design that will produce a straight-away separation of the connectors. See Figure 14.



Application of unmating forces to the pc boards should be done within close proximity of the connector (preferably within 25.4 [1.000] on 1.57 [.062] thick pc boards). Stress on the solder joints will increase as the force is applied further from the connector.

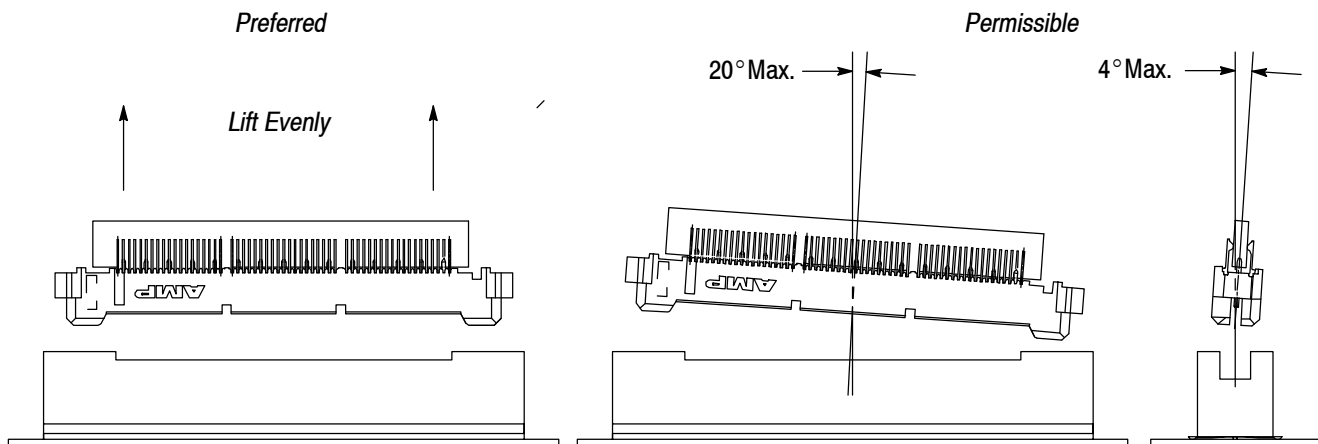


Figure 14

3.10. Repair/Removal

Connectors may be removed from the pc board by standard de-soldering methods. Damaged connectors must be replaced.

Suppliers of removal equipment for MICTOR Vertical and Right-Angle Connectors are as follows:

Automated Production Equipment Corp.
142 Peconic Ave.
Medford, NY 11763
(516) 654-1197

Air Vac Engineering
30 Progress Ave.
Seymour, CT 06483
(203) 888-9900
www.air-vac-eng.com

Conceptronic Incorporated
6 Post Rd.
Portsmouth, NH 03801
(603) 431-6262

4. QUALIFICATIONS

MICTOR Connectors have been Recognized by Underwriters Laboratories (UL) in file No. E28476, and Certified by CSA International in Certificate No. 7189A-852.

5. TOOLING

5.1. PC Board Support

A pc board support must 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 large enough to clear the bus leads. Refer to Figure 15.

5.2. Robotic Equipment

MICTOR Connectors are pick-and-place compatible. They are normally packaged in tubes, but vertical receptacles and plugs are also available in pocket tape (with or without vacuum pick-up caps). MICTOR Vertical Receptacles and Plugs may be applied using robotic grippers or vacuum heads. Right-angle (straddle mount) connectors may be applied manually (using the appropriate application tool, Reference Paragraph 5.4), or robotically. If a robot is used, an inserter head must be used that conforms to the same requirements as the head used on the manual applicator.

Robotic placement equipment should be capable of accurately locating connectors for pc board insertion using the connector datum surfaces detailed on the customer drawing. Several robotic companies have experience with placing MICTOR Connectors and can be called upon for assistance. They are:

Universal Instruments Corporation
P.O. Box 825
Binghamton, NY 13902
(607) 779-7522
www.uic.com

Panasonic Factory Automation
9377 West Grand Ave.
Franklin Park IL 60131
(847) 288-4400
www.panasonicfca.com

Robodyne
2818 Anthony Lane South
Minneapolis, MN 55418
(612) 789-5277
www.robodyne.com

Fuji America Corporation
171 Corporate Woods Parkways
Vernon Hills, IL 60061
(847) 913-0162
www.fujiamerica.com

5.3. Slitting Tool

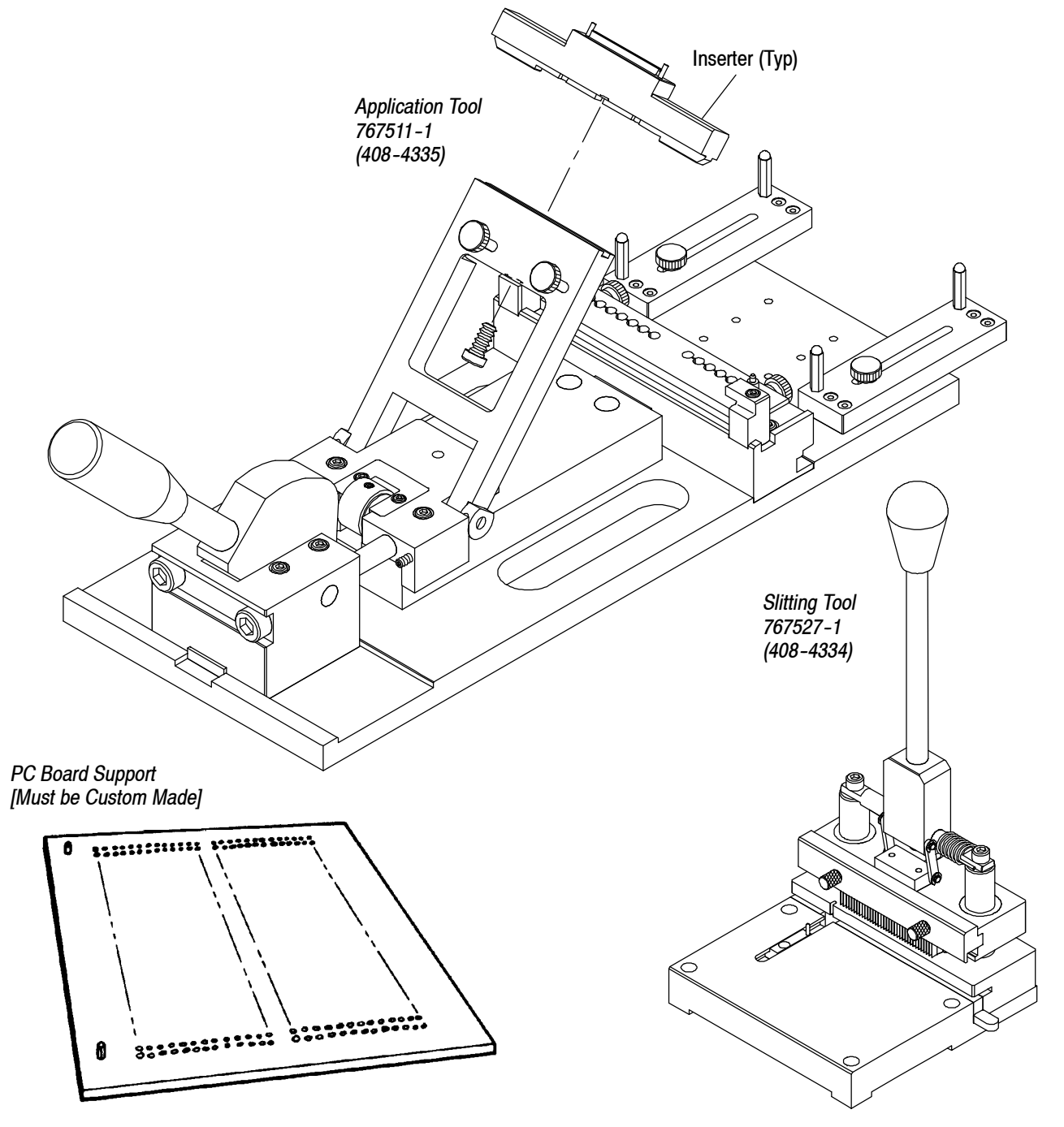
Slitting Tool 767527-1 is used to prepare the pc board for mounting the MICTOR SMT Right-Angle Connectors. The tool cuts a slit in the center of the bus vias located at the edge of the pc boards. See Figure 15.

5.4. Application Tool

Application Tool 767511-1 is used to mount MICTOR SMT Right-Angle Connectors onto the edge of the pc board. This tool uses various sized inserters based on the connector size for mounting the connectors to the pc board. The inserters do not come with the application tool and must be ordered separately. See Figure 15.



Application of MICTOR Right-Angle Connectors without the use of this tooling may result in damaged connectors and/or severe solder bridging.



CONNECTOR SIZE	INSERTER PART NUMBER	
	PLUG	RECEPTACLE
38	767514-1	767570-1
76	767514-2	767570-2
114	767514-3	767570-3
152	767514-4	767570-4
190	767514-5	767570-5
228	767514-6	767570-6
266	767514-7	767570-7

Figure 15

6. VISUAL AID

Figure 16 shows a typical application of MICTOR SMT Connectors. This illustration should be used by production personnel to visually ensure suitable applications. Installations which appear visually incorrect should be inspected using the dimensional information given in the preceding pages of this application specification.

NOTE: PIN NUMBER 1 IDENTIFIER AND THE NUMBER 1 LOCATOR ON THE PC BOARD FOOTPRINT MUST BE ALIGNED PRIOR TO MOUNTING. SEE INSTRUCTION SHEET 408-4335.

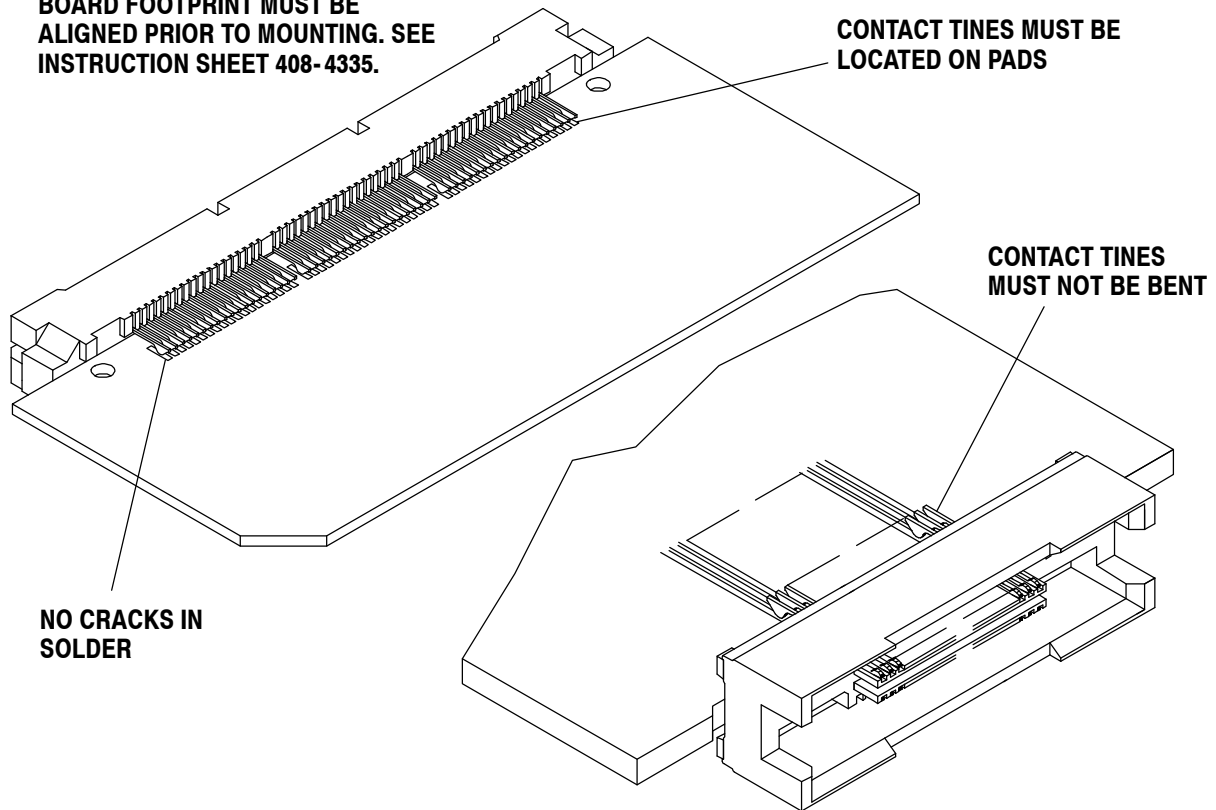


FIGURE 16. VISUAL AID