

1. INTRODUCTION

This specification covers the requirements for application of AMP-HDI* .100 Centerline Connectors and related items. The connectors are available in four types; vertical pin assemblies with ACTION PIN* contacts or solder posts, right-angle receptacle assemblies with solder tails, right-angle pin assemblies with solder posts, and three-row assemblies designed to fit Eurocard footprints.

NOTE: All dimensions are given in inches unless otherwise specified.

2. REFERENCE DOCUMENTS

- 2.1. AMP* Product Specification 108-9063 outlines performance requirements.
- 2.2. AMP Corporate Bulletin No. 52 provides information for soldering.
- 2.3. The following AMP Instruction Sheets contain information as listed:
 - IS 6909 and IS 9007 - Product cross-referencing by part numbers.
 - IS 6626 and IS 9178 - Clinching tools for keying.
 - IS 9038 - Seating tools for vertical pin assemblies.
 - IS 9141 - Alignment tools for right-angle receptacle assemblies.
- IS 6921, IS 9142 and IS 9185 - Contact removal and replacement tooling.
- 2.4. AMP Customer Manual CM 5567 provides information pertaining to the H-Frame power unit.

3. NOMENCLATURE

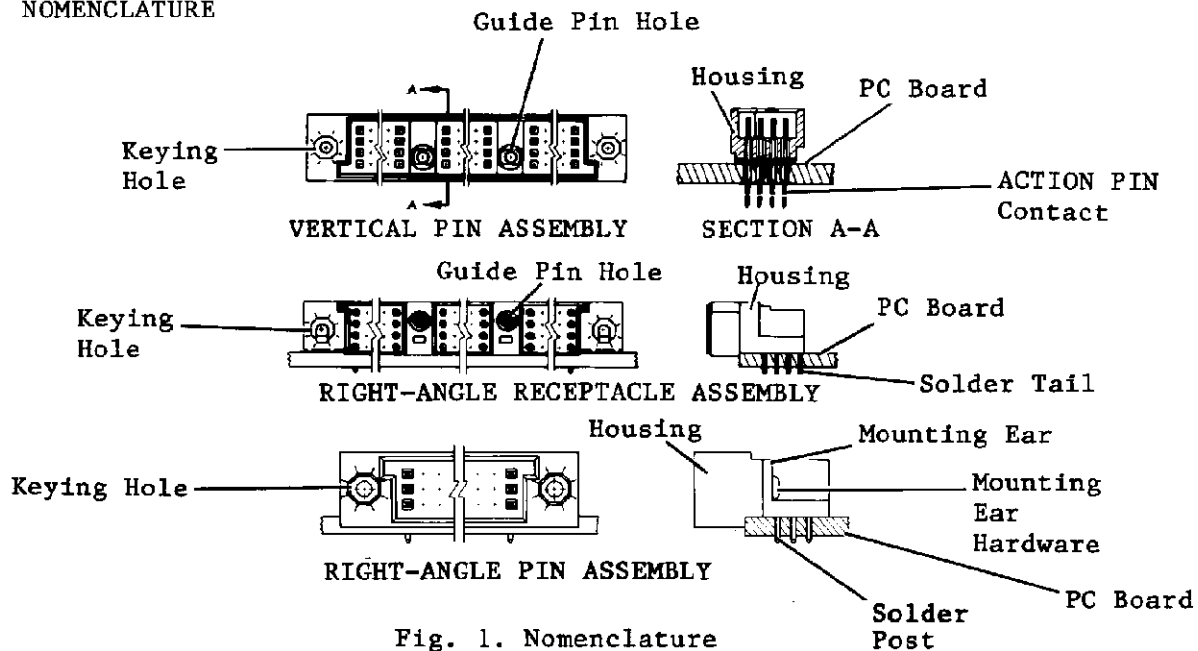


Fig. 1. Nomenclature

* TRADEMARK OF AMP INCORPORATED

| | | | | | | | |
|-----|----------------------|--|-----|---|--|--|------------------|
| | | | | APPLICATION SPECIFICATION | | AMP AMP INCORPORATED Harrisburg, Pa. 17105 | |
| | | | | ENGINEERING APPROVAL & DATE AL SKOPIC 5-5-87 | | | NO. 114-09008 |
| | | | | PAGE 1 OF 12 | | TITLE AMP-HDI CONNECTORS | |
| A | Rev. per ECN AB-2140 | | | | | | |
| LTR | REVISION RECORD | | APP | DATE | | | |

4. REQUIREMENTS

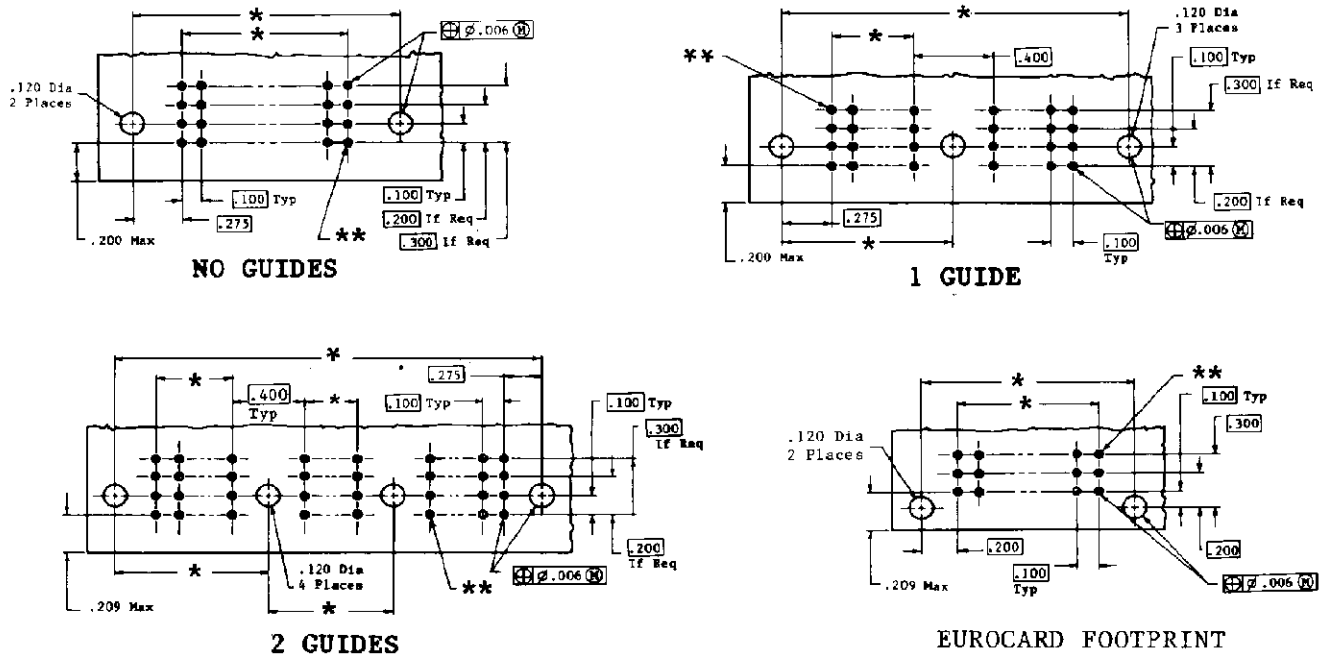
4.1. Printed circuit board requirements are as follows:

A. Board thickness shall be as follows:

1. Vertical pin assemblies with ACTION PIN contacts require a minimum pc board thickness of .084.
2. Vertical pin assemblies with solder posts require a pc board thickness of .062 to .125.
3. Receptacles and right-angle pin assemblies with solder tails or posts .120 long require a pc board thickness of .062.
4. Receptacles and right-angle pin assemblies with solder tails or posts .180 long require a pc board thickness of .093 to .125.

B. Board layout shall be as specified in Figure 2.

RECEPTACLES AND RIGHT-ANGLE PIN ASSEMBLIES



* Consult the appropriate AMP customer drawing for these dimensions.

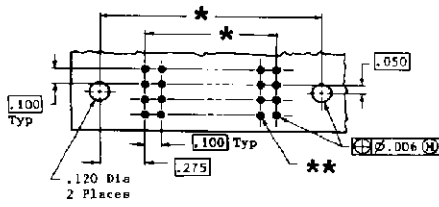
** See chart for hole size.

| HOLE DIA | PAD DIA |
|---------------|--------------------|
| .037-.043 (a) | Hole Dia Plus .020 |

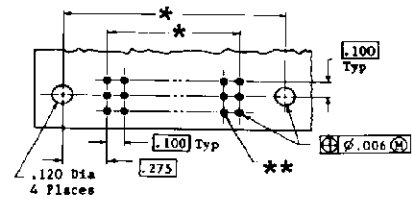
(a) Using a 1.15 mm diameter drill.

Fig. 2. PC Board Layout

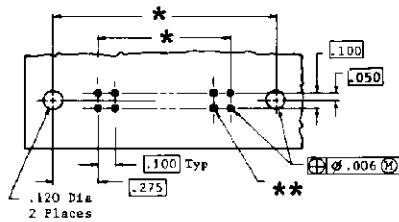
VERTICAL PIN ASSEMBLIES



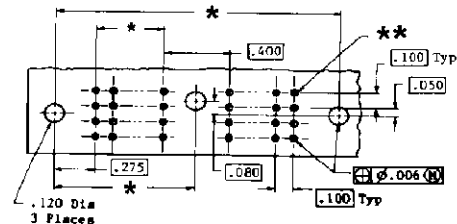
4 ROW/NO GUIDE



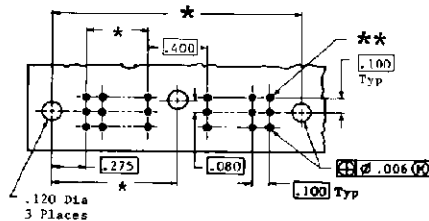
3 ROW/NO GUIDE



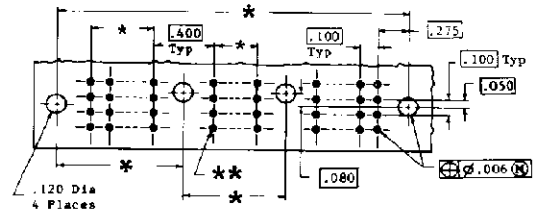
2 ROW/NO GUIDES



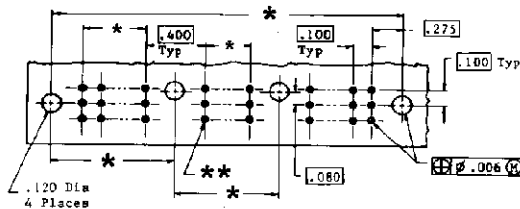
4 ROW/1 GUIDE



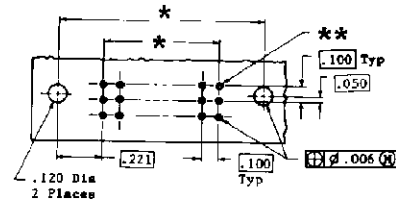
3 ROW/1 GUIDE



4 ROW/2 GUIDES



3 ROW/2 GUIDES



EUROCARD FOOTPRINT

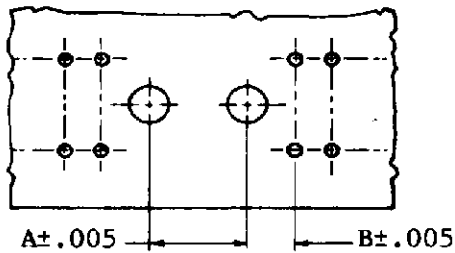
* Consult the appropriate AMP customer drawing for these dimensions.
 ** See chart for hole size.

| HOLE (a) DIA | PLATING THICKNESS | | HOLE DIAMETER | | COPPER HARDNESS (KNOOP) | PAD DIAMETER (MIN) | CONTACT TYPE |
|-----------------|-------------------|-------------------|------------------|-----------------|-------------------------------|--------------------------|-----------------|
| | COPPER | TIN/LEAD (MIN) | AFTER PLATING | AFTER REFLOW | | | |
| .0452 | .001-.003 | .0003 | .037-.043 | .036-.043 | 150 Max | .062±.0010 | ACTION PIN |
| .0452 | NOT PLATED - THRU | | | | | .065±.0010 | |
| .037-.043 | | | | | | Hole Dia Plus .020 | Solder |

(a) Using a 1.15 diameter drill.

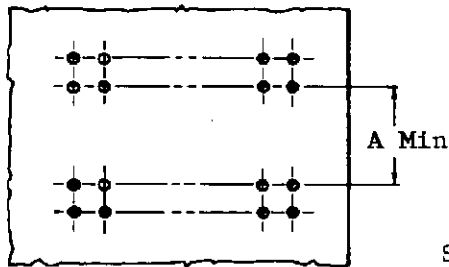
Fig. 2 PC Board Layout (cont.)

C. End-to-end applicator tooling clearances are functions of the housings. Side-to-side clearances are functions of the housings, post or tail lengths, and heights of components mounted on daughter boards. Clearance envelope requirements shall be as indicated in Figure 3.



| CONNECTOR TYPE | A | B |
|--|------|------|
| Vertical Pin | .310 | .275 |
| Vertical Pin with Eurocard Footprint | .198 | .221 |
| Receptacle and Right-Angle Pin | .310 | .275 |
| Receptacle and Right-Angle Pin with Eurocard Footprint | .205 | .200 |

END-TO-END CLEARANCE



| SOLDER POSTS | A |
|--------------|------|
| .120 | .290 |
| .180 | .350 |

SIDE-TO-SIDE CLEARANCE

Fig. 3. Clearance Envelope

4.2. Ancillary items may be obtained from AMP Incorporated to expand the capabilities of a board system using AMP-HDI connectors.

A. External keying provides 64 positions for connector polarization. Each connector keying area is number coded to aid in key positioning. Key application is illustrated in Figure 4; complete information on key part numbers, installation, and tooling is contained in IS 6626 and IS 9178.

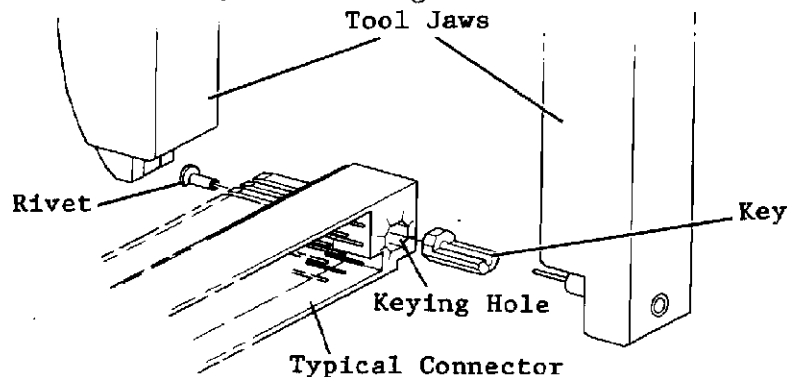
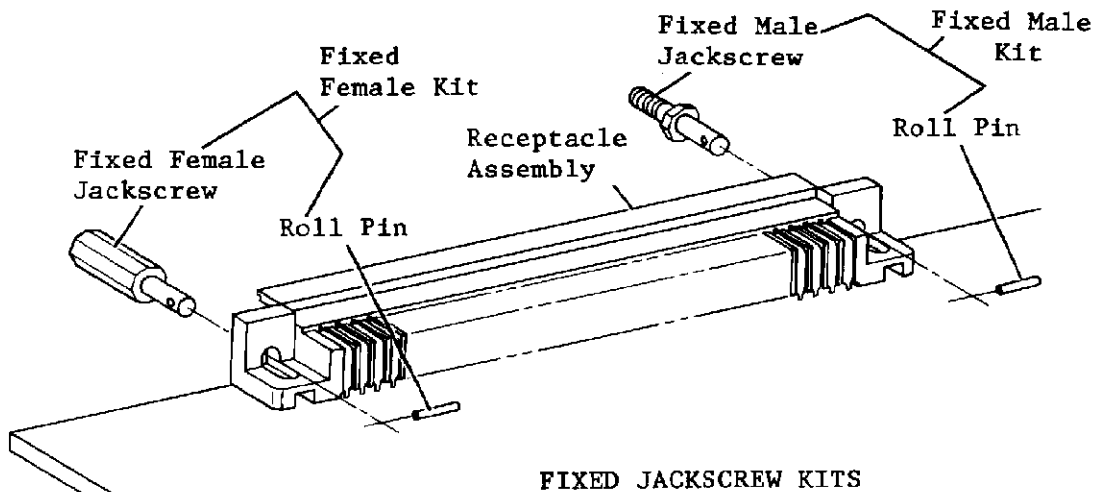


Fig. 4. Keying

B. Polarization with a positive, quick-mate/unmate feature can be achieved through the use of jackscrew hardware kits. Jackscrews are **available** in **male** and **female** versions; **fixed** for use with receptacles and **turnable** for use with pin assemblies. Figure 5 illustrates the kits and shows special assembly requirements for turnable jackscrews. For complete information pertaining to jackscrew hardware kits see IS 6909.

NOTE: Jackscrews and external keys are mutually exclusive. If a large number of same-size connectors is to be used, the keys offer the greatest polarization advantage.

C. IS 6909 also contains information pertaining to the use of guide pins. Guide pins help with the alignment of large-size connectors, allowing reliable mating with as much as .080 total misalignment. The guide pins are available separately or in kits which include attaching hardware (see Figure 5).



NOTE: Fixed kits should be assembled to receptacle prior to seating of the receptacle.

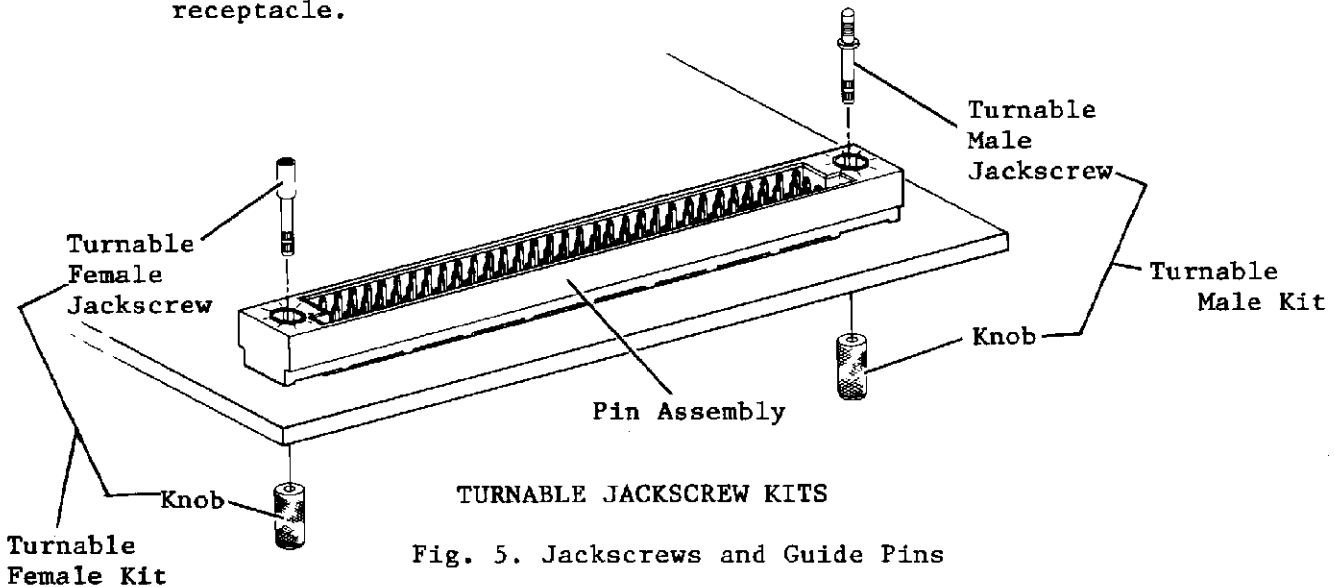
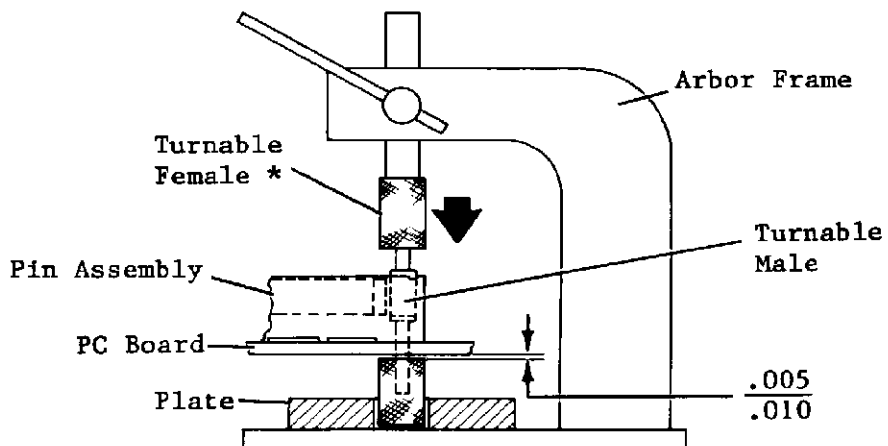
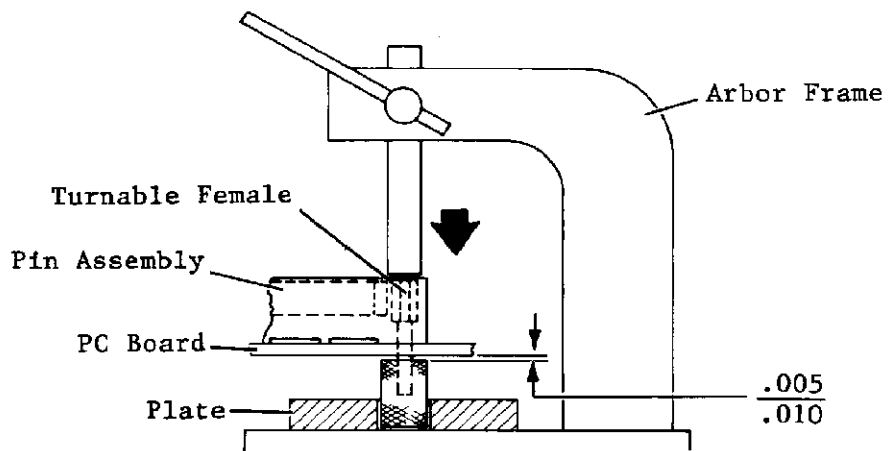


Fig. 5. Jackscrews and Guide Pins



*Assemble to turnable male; push to indicated dimension, then remove female.

ASSEMBLY OF TURNABLE MALE



ASSEMBLY OF TURNABLE FEMALE

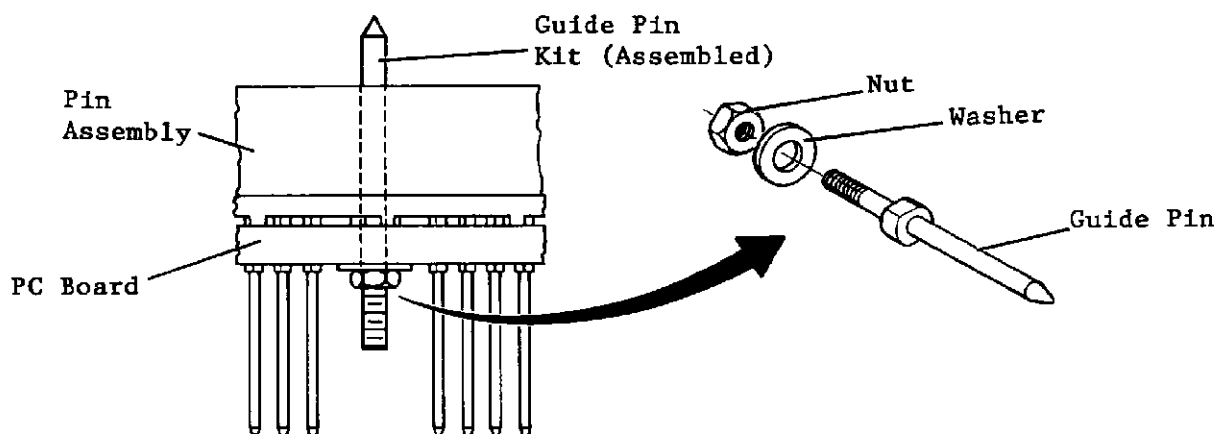


Fig. 5. Jackscrews and Guide Pins (cont.)

D. Mating capabilities may be expanded through use of a shroud. When a shroud is used, the operator shall ensure that the proper size is selected and that the shroud is applied in correct polarization to its mating connector. The shroud shall be manually pressed over the pins until it bottoms evenly on the mother board as shown in Figure 6.

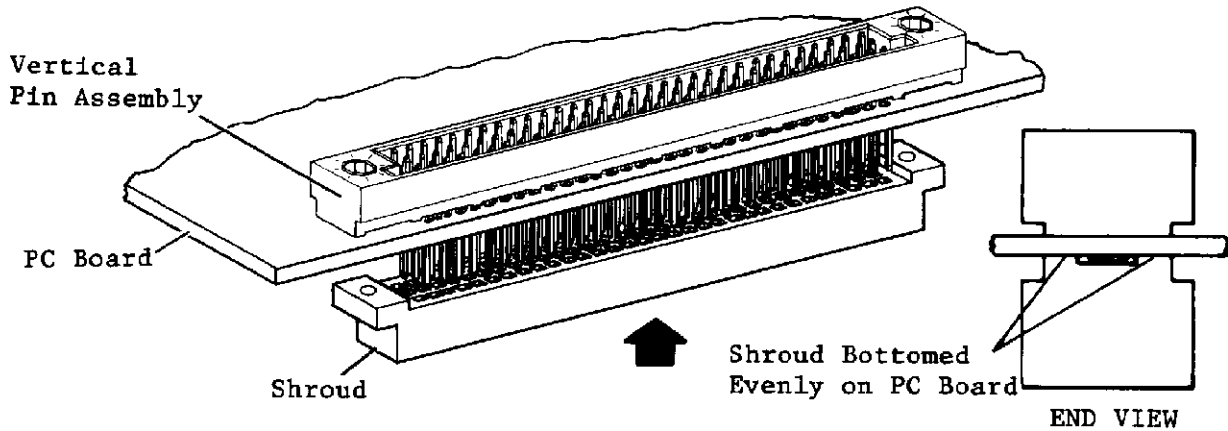


Fig. 6. Shroud Application

E. The right-angle pin assemblies contain .025-sq. solder posts but no method of attachment to the pc board. It is recommended that AMP Mounting Ear Kits No. 533050-1 for three-and four-row right-angle pin assemblies, and No. 533069-1 for two-row pin assemblies be used to secure the products to the board.

The kits are purchased as separate items from the pin assembly. A typical application is shown in Figure 7.

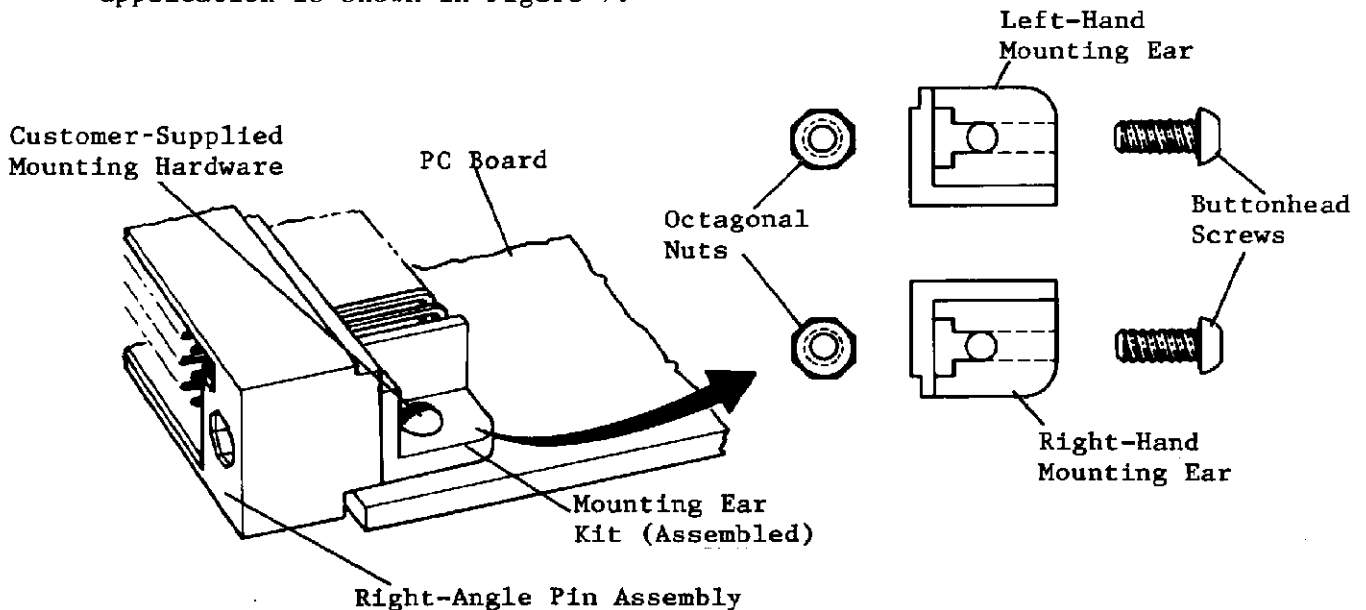


Fig. 7. Mounting Ear Kit

4.3. The alignment tool shown in Figure 8 is used to align solder tails of receptacle assemblies, facilitating a smooth seating process. For complete information on proper tool selection and use, refer to IS 9141.

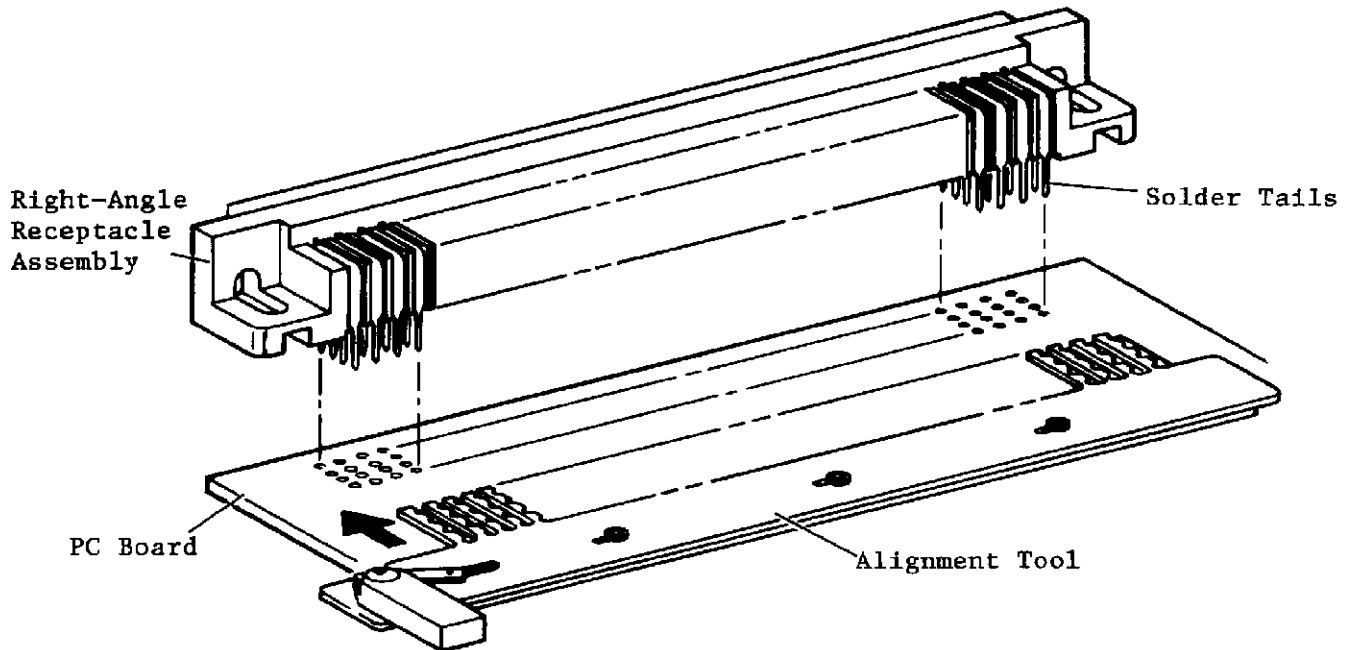


Fig. 8. Alignment Tool

4.4. Cleaning and Soldering shall be according to the following guidelines:

- A. Solder tails and posts shall be fluxed prior to soldering using a medium active rosin or a medium to highly active organic flux. Proper flux selection depends on the type of printed circuit board and any components already mounted. Flux must also be compatible with customer's flow solder line and with manufacturing and safety requirements.
- B. Removal of fluxes, residues, and activators is mandatory. Cleaning procedures are chosen by the customer and depend on the type of flux used on his solder line.
- C. AMP Corporate Bulletin No. 52 is available upon request and can be used as a guide in soldering. This bulletin gives various flux types and characteristics along with commercial designation and flux removal procedures. A checklist is attached to the bulletin to aid in obtaining information pertaining to soldering problems.

4.5. Vertical pin assemblies with ACTION PIN contacts shall be seated with the assistance of the following tools as shown in Figure 9.

- A. A board support shall be supplied by the customer which provides sufficient clearance for posts during seating of the connector.
- B. AMP Seating Tool 58172-[] shall be used to seat the connector. See IS 9038 for tool selection and use.

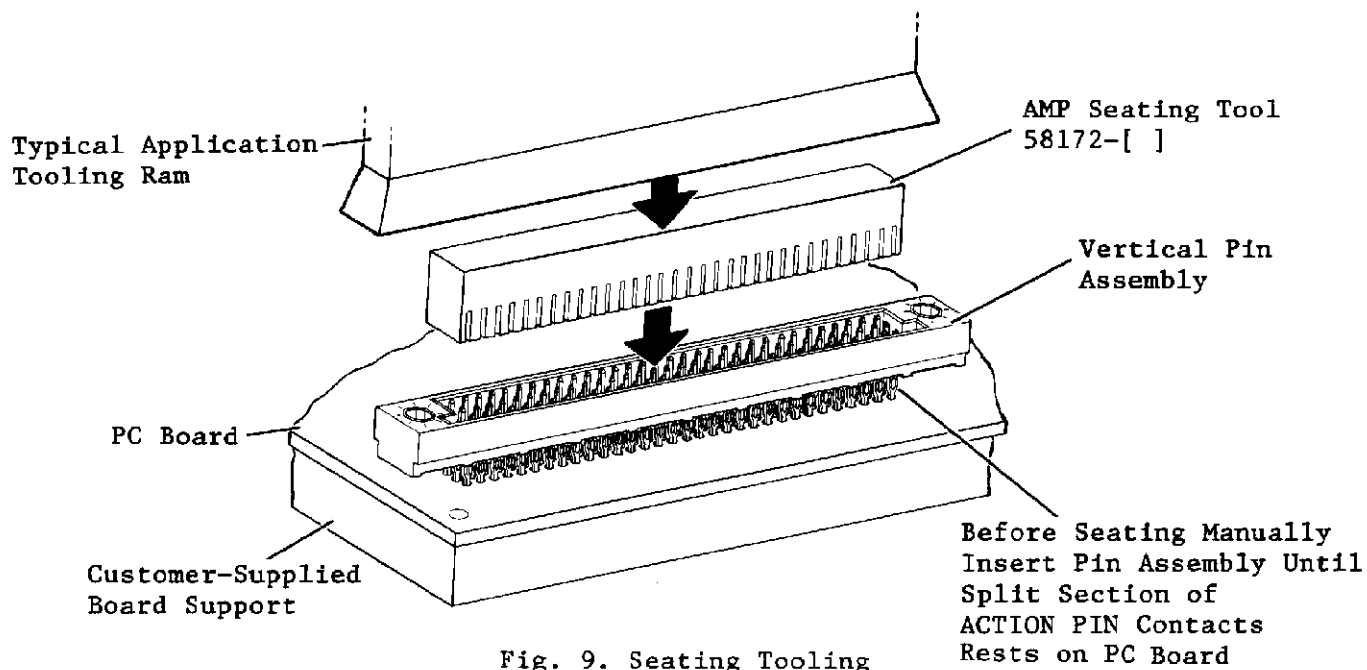


Fig. 9. Seating Tooling

4.6. Seated AMP-HDI connectors shall meet the requirements of Figure 10.

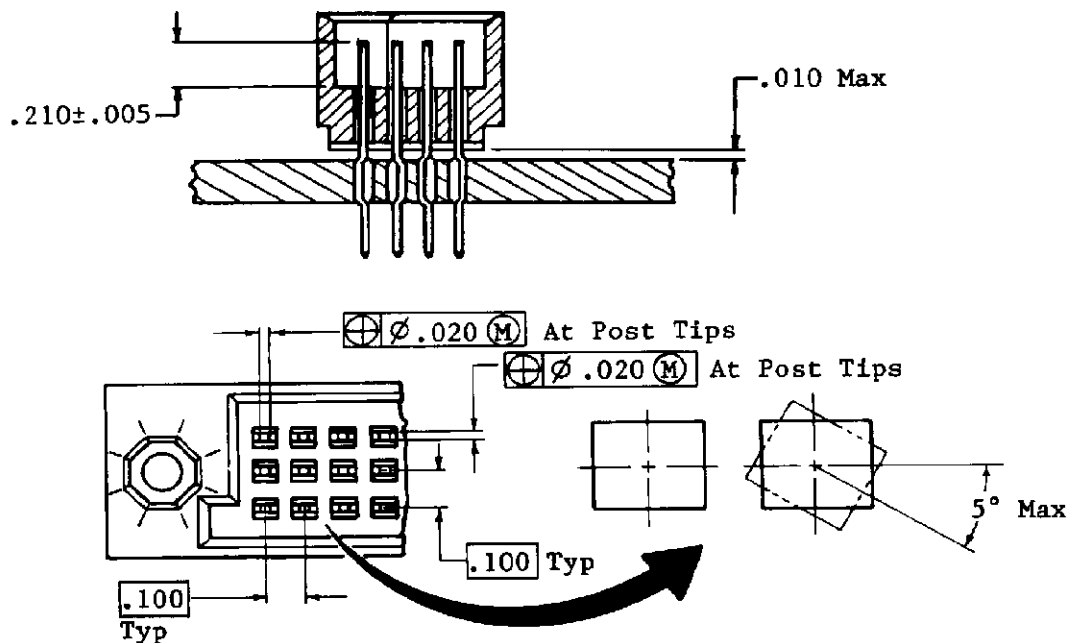
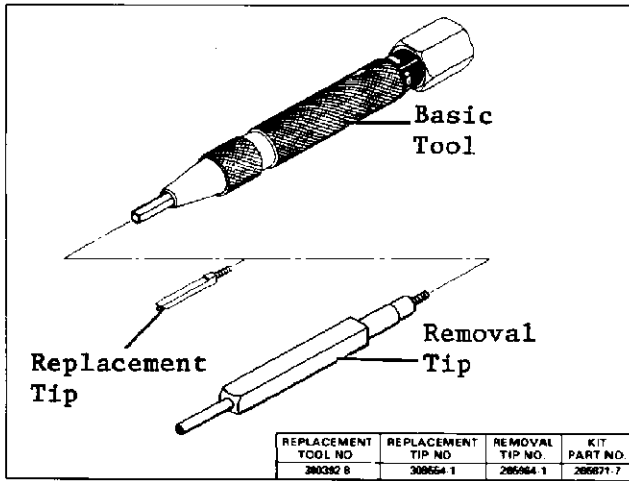


Fig. 10. Seated Connector Requirements

4.7. CAUTION: When using an electrical test probe to inspect a connector, probe the solder side and NOT the mating face side of the contacts. This should ensure that damage will not occur to the connector housing.

4.8. Damaged individual ACTION PIN contacts can be removed and replaced using AMP Pin and Contact Replacement Tool Kit 265871-7 (see IS 9142), or AMP Contact Removal Tool 58209-1 (see IS 9185). These tools are illustrated in Figure 11.

NOTE: If the damaged contact is soldered to the PC board, a hot soldering iron tip held against the contact will allow removal using the above-mentioned tooling. DO NOT hold soldering iron against the PC board or panel. To clean and size the hole for contact replacement use a .038 inch drill bit. DO NOT re-use damaged contacts.



PIN AND CONTACT
REPLACEMENT TOOL KIT 265871-1

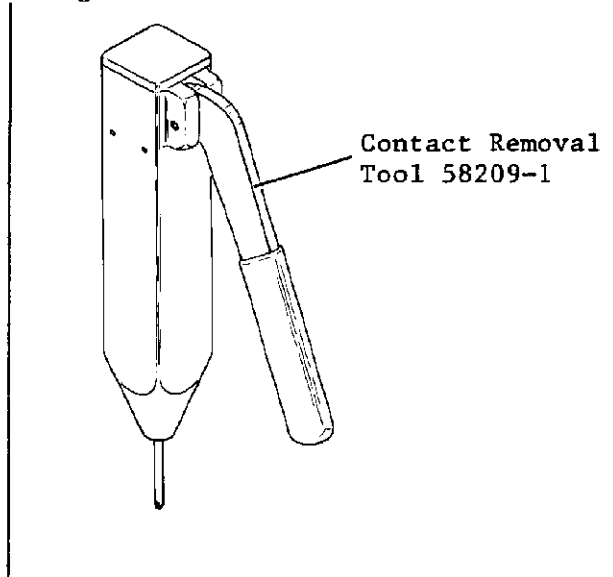


Fig. 11. ACTION PIN Contact Replacement Tooling

4.9. Damaged individual solder contacts in receptacle assemblies can be removed and replaced using AMP Repair Kit 888223 (see Is 6921). Figure 12 illustrates the kit.

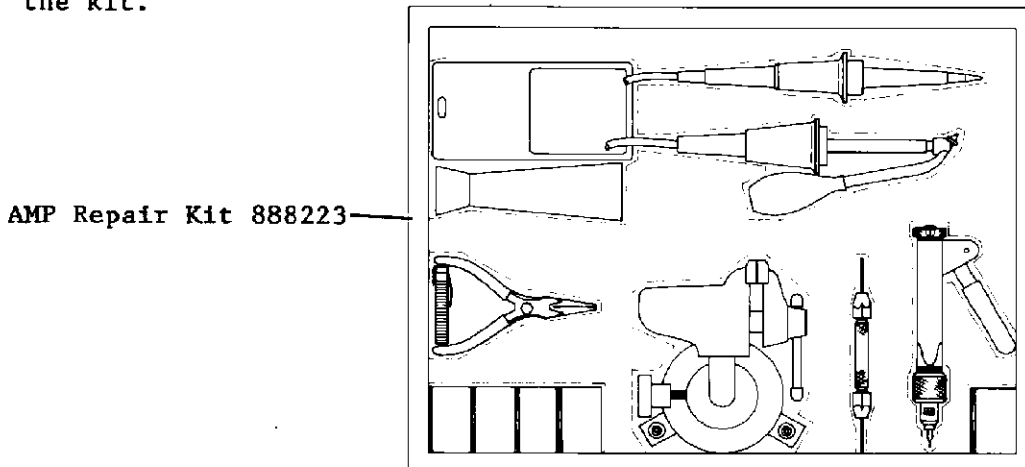


Fig. 12. Repair Kit for Right-Angle Receptacle Contacts

5. TOOLING TYPES

5.1. Vertical pin assemblies with ACTION PIN contacts shall be seated by using the AMP 10/20-Ton H-Frame Power Unit Machine 803880-6. In conjunction with the unit, use the proper seating tool 58172-[] as outlined in paragraph 4.5.B. of this specification. For complete information pertaining to the H-Frame machine see CM 5567.

5.2. Connectors with solder tails or posts shall be applied manually and soldered in place in compliance with the requirements of this specification.

6. QUALIFYING SUPPORT

All AMP-HDI connectors are UL recognized and CSA certified.



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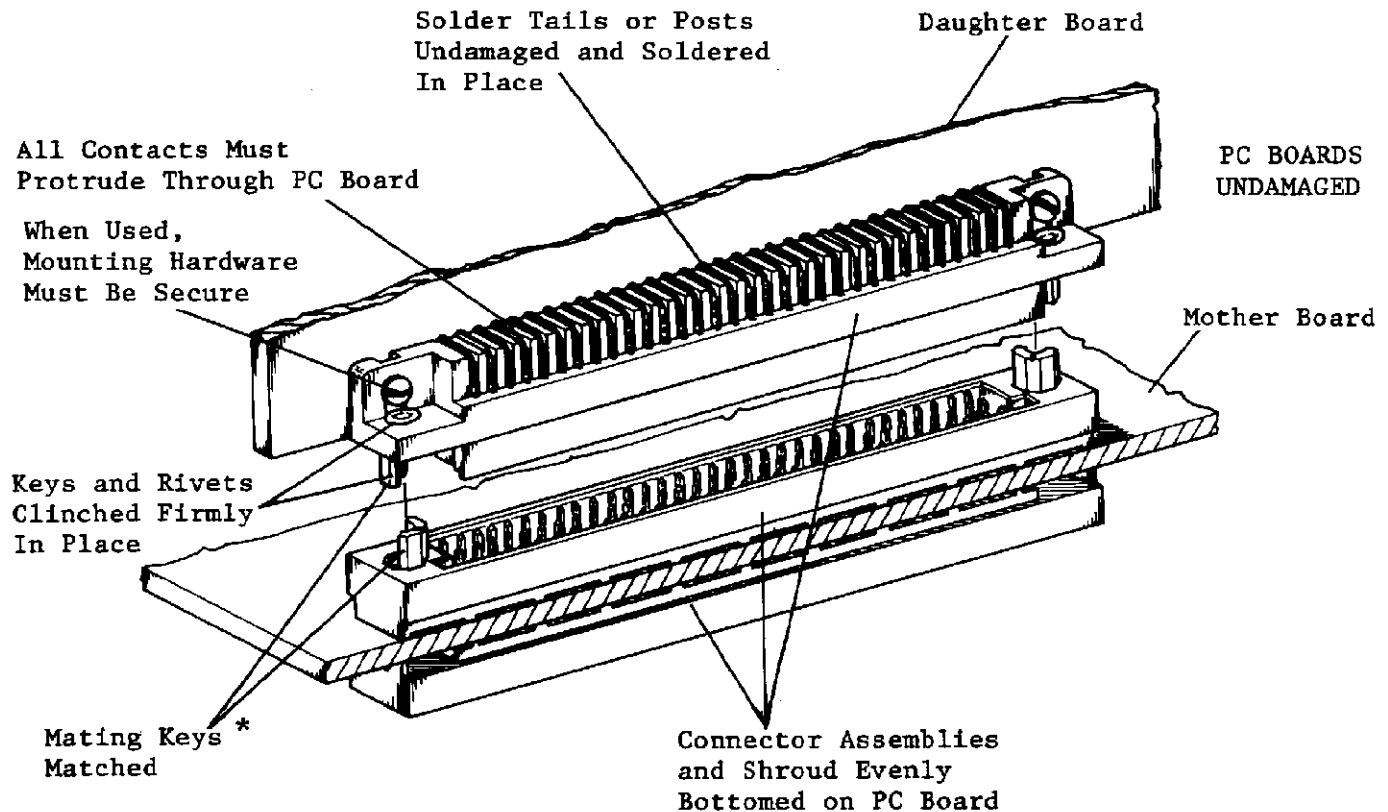
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7. VISUAL AID

Figure 13 illustrates a sample system utilizing AMP-HDI connectors, and is to be used by production personnel to visually ensure a properly seated connector.



* Jackscrews may be installed at this location rather than keys, but must also be properly matched.

Fig. 13. Visual Aid

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