

**I-TRAC™ BACKPLANE and DAUGHTERCARD  
INSTALLATION and REPAIR TOOLING  
Operation Manual**

- Description
- Operation
- Maintenance

## **WARNING**

**NEVER** OPERATE, SERVICE, INSTALL, OR ADJUST TOOLING WITHOUT PROPER INSTRUCTION AND WITHOUT FIRST READING AND UNDERSTANDING THE INSTRUCTIONS IN THIS MANUAL.

**WORK SAFELY AT ALL TIMES**

**For Service, Contact Your  
Local Molex Sales Office**

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Visit our Web site at <http://www.molex.com/product/itrac.html>

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- 1 General Description and Available Presses
- 2 Installation and Operation
- 3 Maintenance, Spare Parts, Perishable Parts and Problem Checklist
- 4 Available Tooling
- 5 Repair and Replacement Procedures

## Section 1

### General Description and Available Presses

- 1.1 Description
- 1.2 Features
- 1.3 Technical Specifications
- 1.4 Delivery Check
- 1.5 Tools
- 1.6 Press Requirements

## General Description

### 1.1 Description

This manual covers the tooling available to press Molex I-Trac™ Backplane Power Modules, Backplane Connectors, and Daughtercard Modules into printed circuit boards. Repair tools and custom tools are also covered. The tooling is designed to go into a flat platen press. Operation is simple: Position a printed circuit board on the customer supplied support. Then pre-seat a connector(s) by hand into the pc board. Position the loading head into the connector. Actuate the press to press the connector into the board.

### 1.2 Features

The press-in tooling is designed so that one module will press in one connector, or several modules can be mounted in a tool holder and be used to press in any combination of connectors in one operation. See Section 4-2 (Ordering Instructions) for details.

### 1.3 Technical Specifications

#### Dimensions and Weight

The dimensions and weight depend on the tooling used and the size of the pc board support.

#### Rate

90 connectors pressed in (one at a time) per hour depending on operator skill.

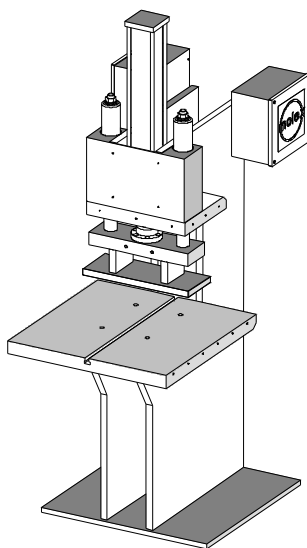


Figure 1-1  
62202-3800 8-TON PRESS

### 1.4 Delivery Check

Carefully remove the tooling from its shipping container and check to be sure what was received matches the purchase order and no damage has occurred.

### 1.5 Tools

A metric hex wrench set will be required to assemble or disassemble tooling mounted in holders (Optional).

#### Molex Presses

Molex offers a press that is suitable for this application. It is:

62201-3800 8-ton Pneumatic Flat Platen Press  
See Figure 1-1.

### 1.6 Press Requirements

This tooling is designed to fit in a flat platen (or flat rock) press, capable of 66N (15 lbs) of force per pin.

**Letter Description Dimension (min)**  
(See Figure 1-3)

A	Upper Platen	51 by 102 by 25.4mm (2 by 4 by 1")
B	Opening	89mm (3.5")
C	Throat	150mm (6")

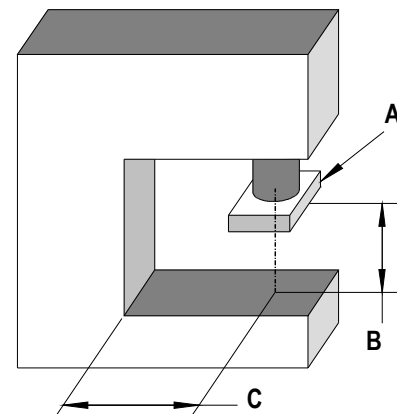


Figure 1-3  
PRESS THROAT DIMENSIONS

## Section 2

### Installation and Operation

- 2.1 Printed Circuit Board Support
- 2.2 Press Stroke Adjustment
- 2.3 Installation
- 2.4 Operation

## 2 Installation and Operation

### 2.1 Printed Circuit Board Support

The I-Trac™ tooling requires up to 4 lb. per pin of force to press the connectors into the printed circuit boards. Therefore, a backup or support is suggested to prevent damage to the printed circuit board. The support fixture should have clearance for the connector terminals when they protrude through the underside of the printed circuit board. It is also recommended that the support fixture have locating pins. Due to the custom nature of each application, Molex does not supply support and locating fixtures. The customer normally supplies these to fit their individual needs.

The following is one simple way of making a printed circuit board support and locating fixture:

1. Locate a suitable piece of material for the backup. It should be approximately 3/4 inch thick and same size or a little larger than the printed circuit board to be used. While aluminum could be used, a rigid nonconductive material such as a phenolic is preferred. (A stack of scrap printed circuit boards of suitable size could be fastened together and used.)
2. Obtain a scrap printed circuit board like the ones to be assembled. Attach this board to the material from step 1.
3. Using an oversize drill bit, drill through each hole where a pin from the connector will go. Drill deep enough into the lower material to be certain the pins do not bottom out when inserted (at least 5.0mm (0.20") deep).
4. Locate two (2) holes on the printed circuit board to use as locating points. Drill for and mount suitably sized dowel pins in these two locations on the support fixture.
5. Clear out the support for any components mounted on the underside of the printed circuit board.
6. Place a printed circuit board on top of the support, located by the two pins, and check that the holes for the connector pins are aligned.
7. Pre-insert a connector in the printed circuit board in the correct position.
8. Insert the press-in tool of proper size into the connector.
9. Place the support with the printed circuit board under the press ram.
10. Press the connector into the printed circuit board and observe for any deflection of the board when the ram is at the bottom of its stroke.

### 2.2 Press Stroke Adjustment

Most presses have some means of adjusting the stroke, please refer to the appropriate manual (for the press being used) for press stroke adjustments. The stroke should be adjusted so that when the press ram stops in the down position, the bottom of the connector is flush to 0.10mm (.004") above the surface of the Printed circuit board. See Figure 2-1.

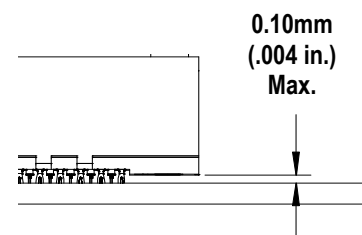


Figure 2-1  
MAXIMUM CLEARANCE WHEN  
CONNECTOR FULLY SEATED

### 2.3 Installation

The only installation required is when you need to install insertion modules into a tooling holder. To do this, use the following procedure:

1. Along the lower edge of the tooling holder is a row of M3 set screws, (See Figure 2-2), loosen these a few turns so that they do not protrude into the inside of the holder.

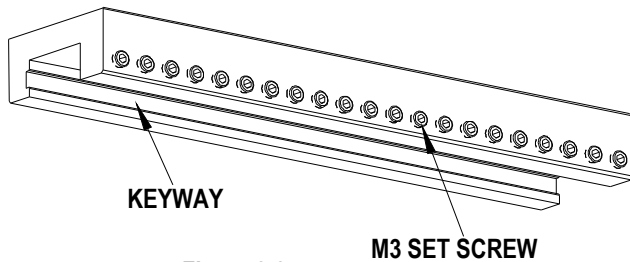


Figure 2-2  
TOOLING HOLDER

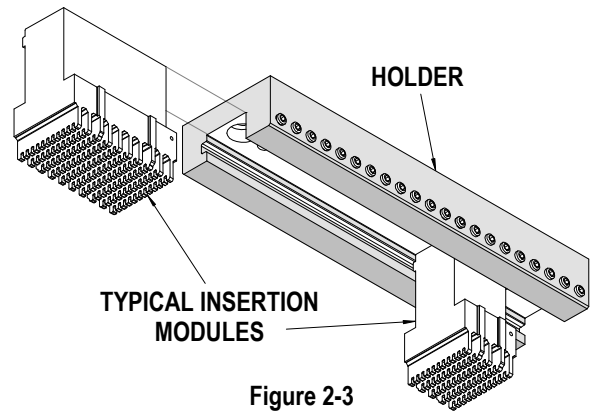


Figure 2-3  
MOUNTING INSERT MODULE IN A MOUNTING BLOCK

2. Slide the insertion modules into the tooling holder in the proper order. See Figure 2-3. The modules are keyed so that they cannot be put in backwards.
3. Now tighten the M3 set screws against the modules with two (2) set screws evenly spaced on a 10mm header insertion module and at least three (3) set screws evenly spaced on a 25mm header insertion module. Figure 2-4 shows a typical completed assembly.

**CAUTION:** Do not over tighten the setscrews; this could damage the insertion tool.

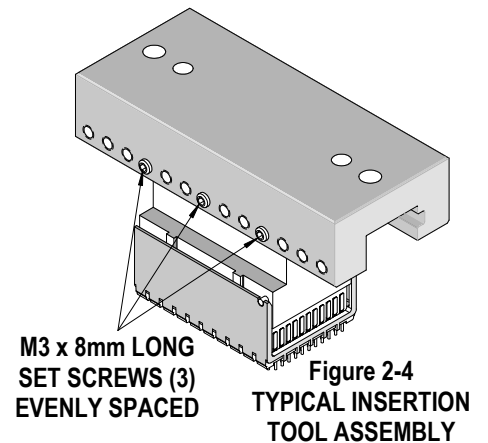


Figure 2-4  
TYPICAL INSERTION TOOL ASSEMBLY

**NOTE:** See Section 4 for details on selecting modules and Press-In tools combinations.

## 2.4 Operation

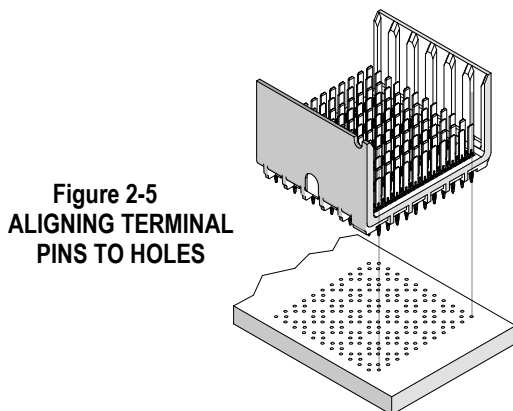


Figure 2-5  
ALIGNING TERMINAL PINS TO HOLES

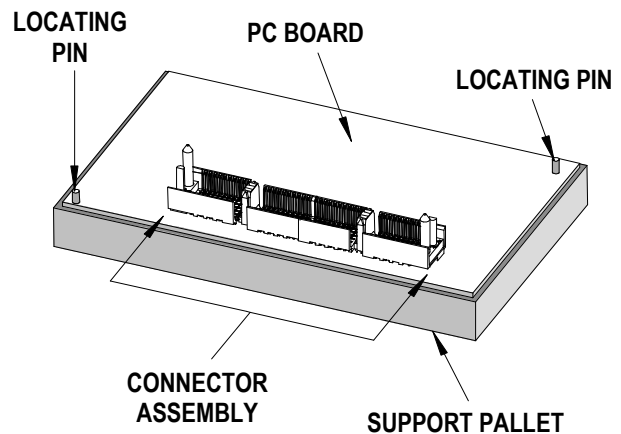


Figure 2-6  
CONNECTOR ASSEMBLY ON PC BOARD SUPPORT PALLET

### Backplane Signal Module Insertion Tooling

1. Carefully pre-seat, by hand, the backplane signal module(s) into the printed circuit board hole pattern. Make sure the connector(s) are oriented properly by confirming the location of the #1 circuit notch with respect to the printed circuit board layout. See Figure 2-5.
2. Locate the pre-loaded board into the support pallet (Optional). See Figure 2-6.



3. Locate the tooling assembly in the connector assembly, carefully checking alignment. The orientation feature on the tool must engage with the notch on the connector housing. See Figure 2-7.
4. Position the pre loaded support pallet under the press platen.
5. Cycle the press. See Section 2.1 (Press Stroke Adjustment).
6. When using the application tool and an appropriate press, seat the header assembly until there is less than 0.10mm (.004 in) clearance between the bottom of the plastic housing and the surface of the printed circuit board.
7. Remove the loaded support pallet.
8. Carefully remove the insertion tool assembly. Remove the printed circuit board.

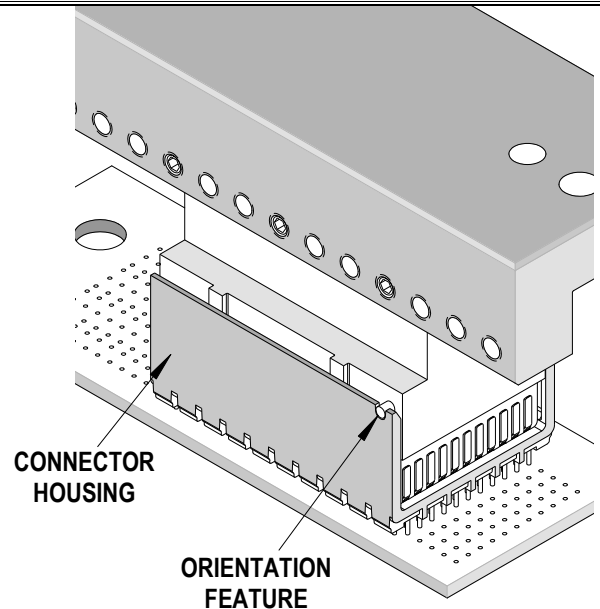


Figure 2-7  
TOOLING LOCATED IN THE  
CONNECTOR ASSEMBLY

### Daughtercard Insertion Tooling

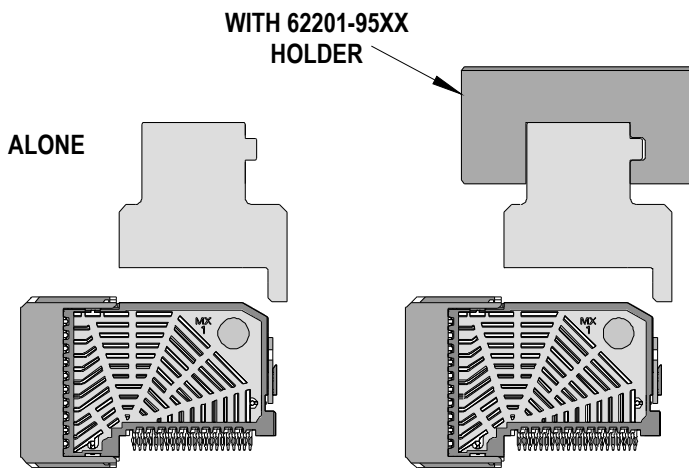


Figure 2-8

Operation for inserting Daughtercard assemblies is similar to backplanes and can be used alone or stacked in a tool holder for larger connector assemblies. See Figure 2-8.

1. Locate the Daughtercard connector assembly on the printed circuit board.
2. Pre-seat the assembly into the board by hand. Check for proper seating, without contact pins bending under the assembly after pre loading on to the Printed circuit board. See Figure 2-9.
3. Locate the printed circuit board with the connector assembly on the user supplied support pallet (Optional).
4. Position the insertion tooling on the connector assembly. See Figure 2-10. Position the printed circuit board under the press platen (Optional).

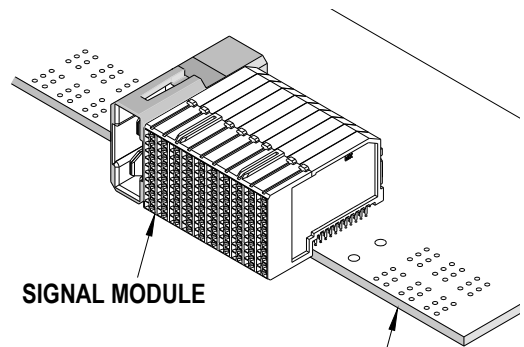


Figure 2-9  
TYPICAL DAUGHTERCARD  
ASSEMBLY ON THE PC BOARD

**CAUTION:** To prevent injury, never operate any press without the guards in place. Refer to the press manufacturer's instruction manual.

5. If using the support fixture and an appropriate press, seat the DaughterCard module until there is less than 0.10mm (.004 in) clearance between the bottom of the plastic housing and the surface of the printed circuit board.
6. Remove the loaded support pallet from the press.
7. Remove the insertion tool.
8. Carefully remove the assembled printed circuit board from the support pallet.

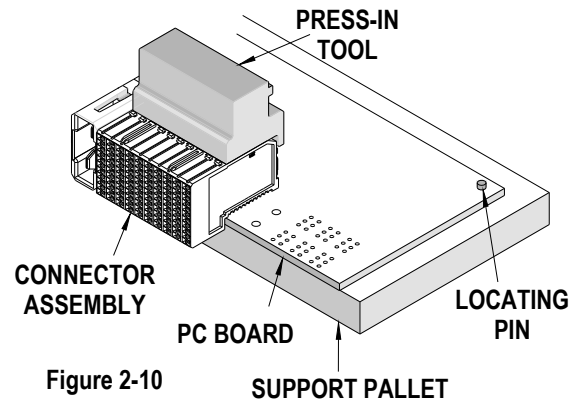


Figure 2-10

### Vertical Power Module Press-In Tooling

**CAUTION:** Vertical Power Module must be installed separately without any Backplane or DaughterCard assemblies in the combinations.

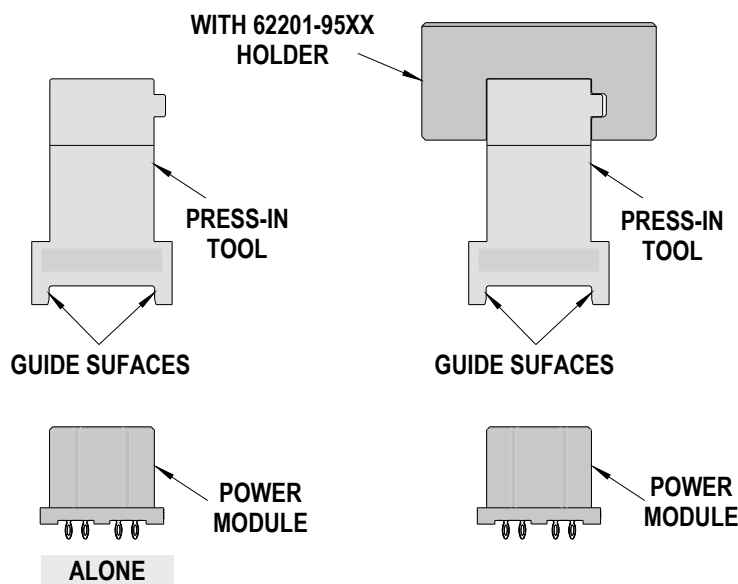


Figure 2-11

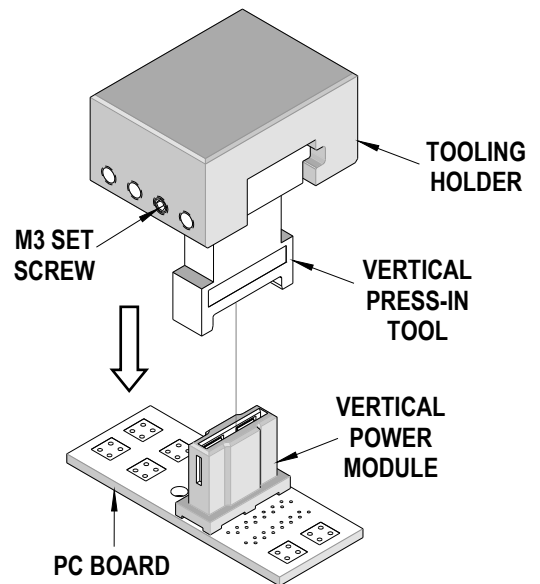


Figure 2-12

Depending on the number of modules to be installed and/or the press used, this tool can be used as a stand-alone or with a group of press-in tools, mounted in a 62201-95XX holder (ordered separately). See Figure 2-11.

1. If the tooling holder is being used, slide the insertion modules into the tooling holder in the proper order. The modules are keyed so that they cannot be put in backwards.
2. Now tighten the M3 set screws against the modules using the following setups:
  - One (1) set screw against modules under 10mm wide
  - Two (2) set screws evenly spaced on a 10mm wide power module.
  - At least three (3) set screws evenly spaced on a 25mm wide power module.
3. Carefully pre-seat, by hand, the vertical power module(s) into the printed circuit board hole pattern. See Figure 2-12. Make sure the module(s) are oriented properly to the printed circuit board layout.
4. Line-up the Press-In tool so that the guide surfaces on the tool are in line with the sides of the vertical power module. See Figure 2-11.

- Using the application tool and an appropriate press, seat the vertical power module until there is less than 0.10mm (.004 in) clearance between the bottom of the plastic housing and the surface of the printed circuit board.

**CAUTION:** To prevent injury, never operate any press without the guards in place. Refer to the press manufacturer's instruction manual.

### Right Angle Power Module Press-In Tooling

Depending on the number of connectors to be installed and/or the press used, this tool can be used alone or with a group of press-in tools, mounted in a 62201-95XX holder (ordered separately). See Figure 2-13 and 2-14.

- If the tooling holder is being used, slide the Press-In Tools into the tooling holder in the proper order. The Press-In Tools are keyed so that they cannot be put in backwards.
- Tighten the M3 set screws against the Press-In Tool using the following setups:
  - One (1) set screw is used against the Press-In Tool under 10mm guide module.
  - Two (2) set screws evenly spaced on a 10mm wide Press-In Tool.
  - At least three (3) set screws evenly spaced on a 25mm wide Press-In Tool.
- Carefully insert, by hand, the power module(s) into the printed circuit board hole pattern.
- Place the application tool on top of the power module with the back guide surface of the tool against the back of the power module. See Figure 2-14.
- Using the application tool and an appropriate press, seat the power module until there is less than 0.10mm (.004 in) clearance between the bottom of the plastic housing and the surface of the printed circuit board. See Figure 2-15.

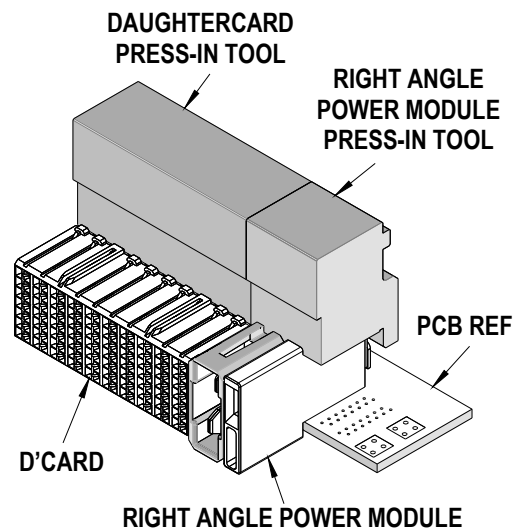


Figure 2-13  
STAND-ALONE

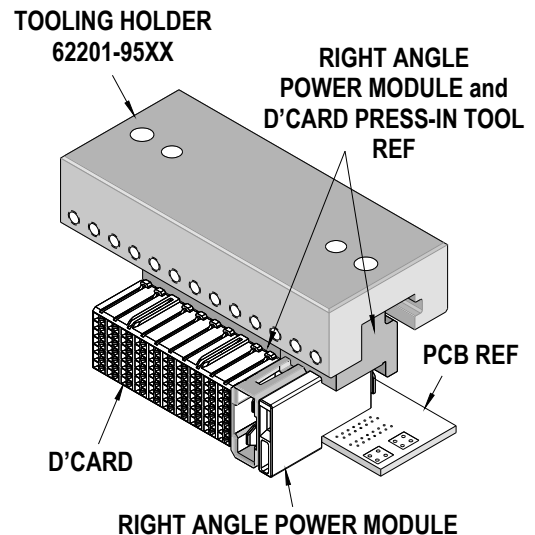


Figure 2-14  
Right angle power module is seated alongside the Daughtercard signal module. For ganged power modules, additional power module press-in-tools may be needed; see sales drawings for ganged product dimensions.

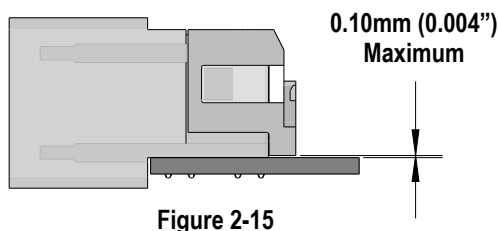


Figure 2-15

**CAUTION:** To prevent injury, never operate any press without the guards in place. Refer to the press manufacturer's instruction manual.

### Vertical Power Module Support Tooling

The I-Trac™ Vertical Power Module Support Tool is placed directly under the printed circuit board. This is done by placing the support tool under the power module or by moving the printed circuit board over the support tool. The method used will depend on the customer's application.

The Support Tool can be a stand-alone tool shown in Figure 2-16 or placed in a fixed position shown in Figure 2-17. The Support Tool may be held in place with M4 socket head cap screws (not included).

Be certain to orient the support tool properly under the printed circuit board. The slot of the support tool must be directly below the connector terminals that push through the printed circuit board when the Power Module is assembled to the board. See Figure 2-18.

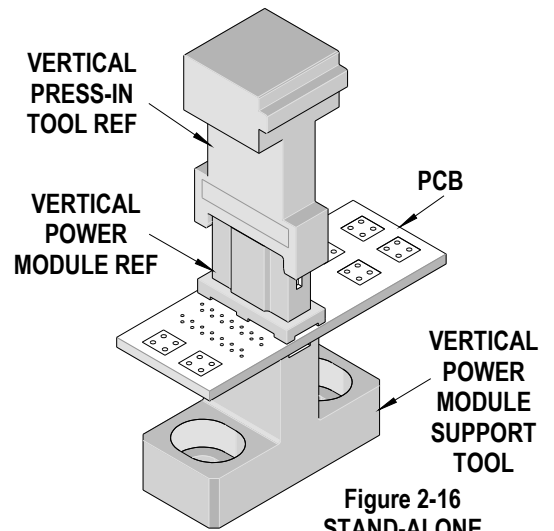


Figure 2-16  
STAND-ALONE

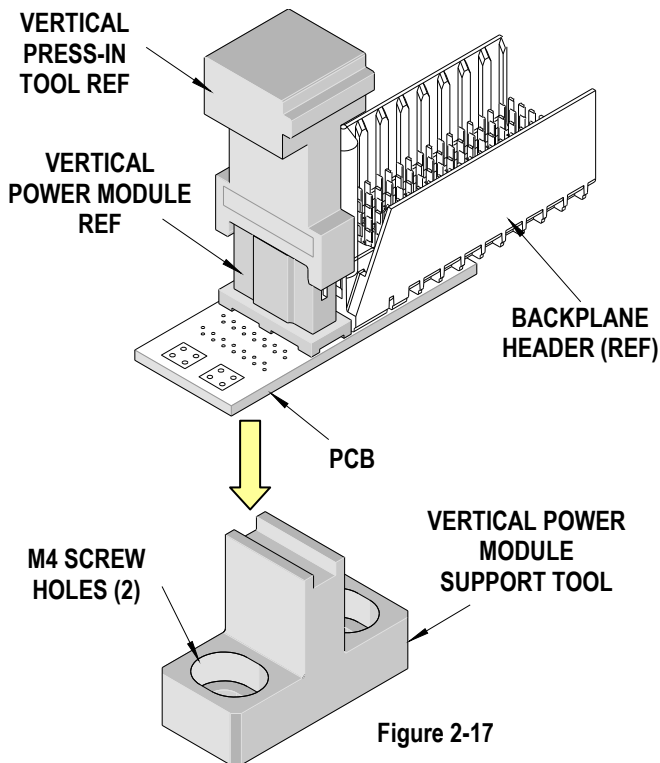


Figure 2-17

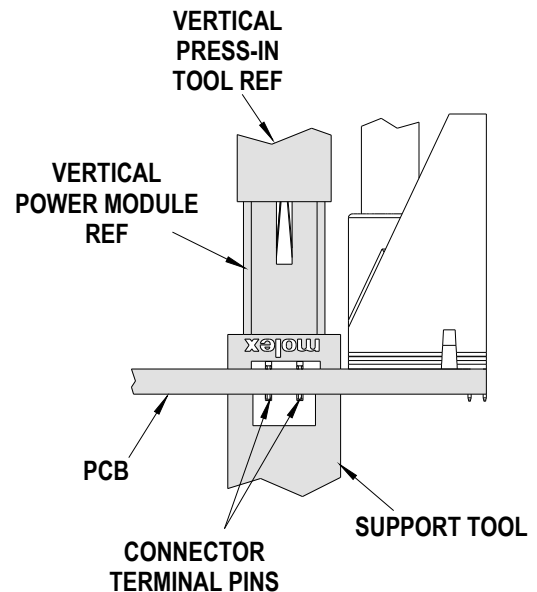


Figure 2-18  
(From Side View)

### Right Angle Power Module Support Tooling

**NOTE:** These tools are used only when installing I-Trac™ Right Angle Power Modules with no Daughtercard assemblies on either side, to provide printed circuit board support. See Figure 2-19.

The I-Trac™ Right Angle Power Module Support Tool is placed directly under the printed circuit board. This is done by placing the support tool under the power module or by moving the printed circuit board over the support tool. The method used will depend on the customer's application. See Figure 2-20 for example.

The Support Tool can be a stand-alone tool shown in Figure 2-19 or placed in a fixed position. The Support Tool may be held in place with M4 socket head cap screws (not included).

Be certain to orient the support tool properly under the printed circuit board. The slot of the support tool must be directly below the connector terminals that push through the printed circuit board when the Power Module is assembled to the board. See Figure 2-21.

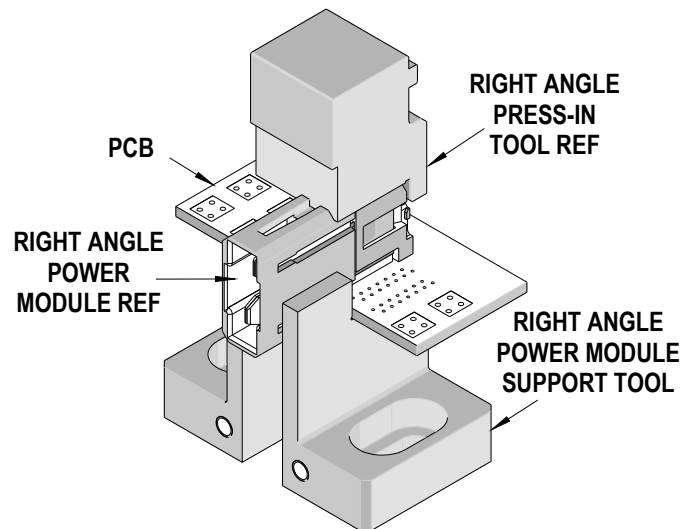


Figure 2-19  
STAND-ALONE

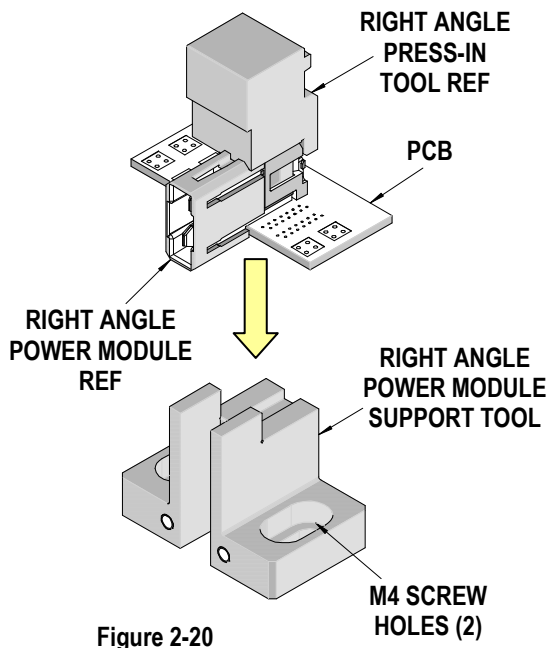


Figure 2-20

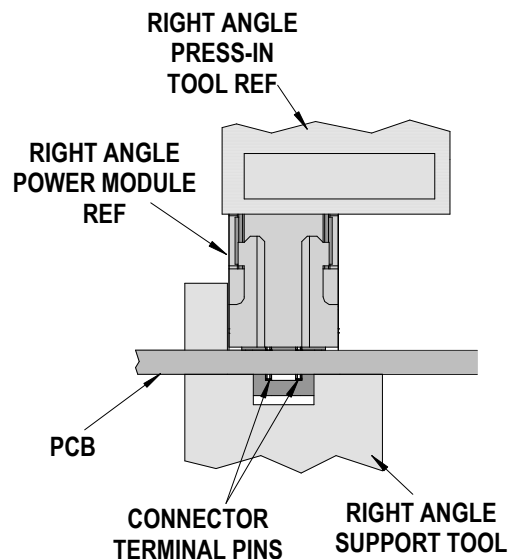


Figure 2-21  
(From Back View)

## Section 3

### MAINTENANCE

- 3.1      Cleaning
- 3.2      Lubrication
- 3.3      Troubleshooting

### 3.1. Cleaning

Once a day, the support fixture should be cleaned of dust and plating particles and other debris. Compressed air may be necessary to remove debris from the pin clearance holes.

**CAUTION:** Use extreme caution when using compressed air for cleaning, it can cause debris to get lodged in the tooling or come flying out at the operator. **USE** of proper safety glasses by the operator and onlookers is required.

### 3.2 Lubrication

There is no lubrication required on any of the I-Trac™ tooling. However, the presses each have their own requirements for lubrication and maintenance. The instruction manual for the specific press being used should be referred to. Molex provides a sheet for logging routine preventive maintenance in this section.

### 3.3 Troubleshooting

Symptom	Cause	Solution
Connector being damaged	▪ Press stroke set to low.	Refer to the appropriate press manual and adjust the stroke. See Section 2.2
	▪ Connector and/or tooling not properly aligned	Check Fixture and Repair as required.
		Check alignment of fixture in press
	▪ "Blades" on tooling bent or damaged	Check to be sure the press platen is pressing squarely on the tooling block. Replace tool.

## Section 4

### AVAILABLE TOOLS

#### 4.1 Standard Press-In-Tools

Table 4-1 Assembly Tooling for I-Trac™ Signal Headers

Table 4-2 Assembly Tooling for I-Trac™ Daughtercard Receptacles

Table 4-3 Standard Tool Holder for I-Trac™ Backplane Header Assembly

Table 4-4 Field Repair Tooling for I-Trac™ Backplane and Daughtercard Assemblies

#### 4.2 Standard Tool Ordering Procedure



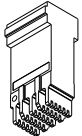
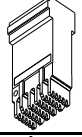
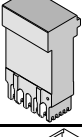
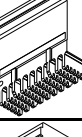
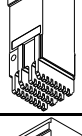
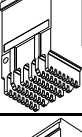
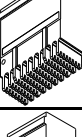
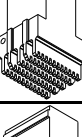
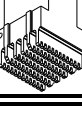
## 4.1 Standard Press-In-Tools

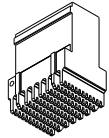
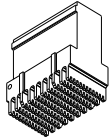
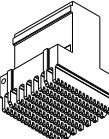
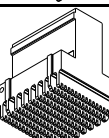
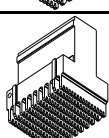
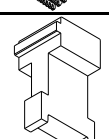
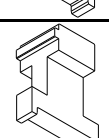
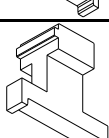
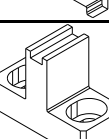
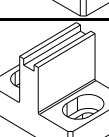
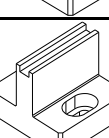
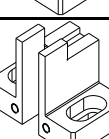
### Standard Insertion Tools

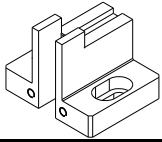
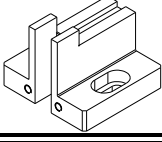
All the applicable I-Trac™ connectors and the standard tooling required for each connector are located in these tables.

**Table 4-1**

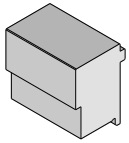
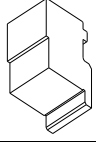
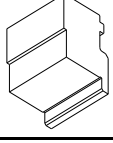
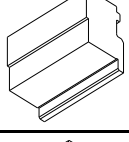
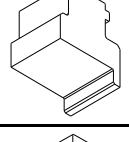
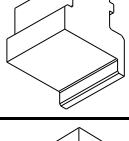
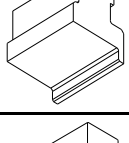
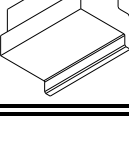
Assembly Tooling for I-Trac™ Backplane Signal Module (For use in standard tool holder)  
Refer to the individual instruction sheets for more information on Individual tools.

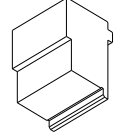
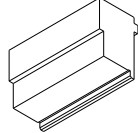
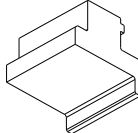
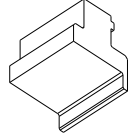
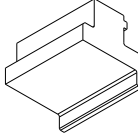
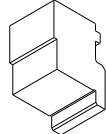
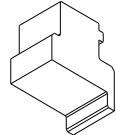
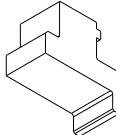
Product Number	Tool Description	Tool Size (Width)	Illustration
I-Trac™ Backplane Signal Module (5 row 5 column) (75985-*5**)	Press-In Tool 62201-8613	18.5mm (0.73")	
I-Trac™ Backplane Signal Module (5 row 6 column) (75985-*6**)	Press-In Tool 62201-8625	22.2mm (0.87")	
I-Trac™ Backplane Signal Module (5 row 6 column) (75985) Series	Press-In Tool 62201-8652	22.2mm (0.87")	
I-Trac™ Backplane Signal Module (5 row 10 column) (75985-*1**)	Press-In Tool 62201-8614	37.0mm (1.46")	
I-Trac™ Backplane Signal Module (7 row 4 column) (76015-*4**)	Press-In Tool 62201-8607	14.7mm (0.58")	
I-Trac™ Backplane Signal Module (7 row 6 column) (76015-*6**)	Press-In Tool 62201-8608	22.2mm (0.87")	
I-Trac™ Backplane Signal Module (7 row 10 column) (76015-*1**)	Press-In Tool 62201-8609	37.0mm (1.46")	
I-Trac™ Backplane Signal Module (11 row 5 column) (75705-*5**)	Press-In Tool 62201-8601	18.5mm (0.73")	
I-Trac™ Backplane Signal Module (11 row 6 column) (75705-*6**)	Press-In Tool 62201-8602	22.2mm (0.87")	

Product Number	Tool Description	Tool Size (Width)	Illustration
I-Trac™ Backplane Signal Module (11 row 8 column) (75705-*8**)	Press-In Tool 62201-8617	29.6mm (1.17")	
I-Trac™ Backplane Signal Module (11 row 10 column) (75705-*1**)	Press-In Tool 62201-8603	37.0mm (1.46")	
I-Trac™ Backplane Signal Module (15 row 8 column) (76035-*8**)	Press-In Tool 62201-8619	29.6mm (1.17")	
I-Trac™ Backplane Signal Module (15 row 9 column) (76035-*9**)	Press-In Tool 62201-8620	33.3mm (1.31")	
I-Trac™ Backplane Signal Module (15 row 10 column) (76035-*1**)	Press-In Tool 62201-8621	37.0mm (1.46")	
I-Trac™ Vertical Power Module (7 row) (78227 series)	Press-In Tool 62201-8630	19.0mm (0.75")	
I-Trac™ Vertical Power Module (11 row) (78232 series)	Press-In Tool 62201-8631	26.0mm (1.02")	
I-Trac™ Vertical Power Module (15 row) (78237 series)	Press-In Tool 62201-8632	34.0mm (1.35")	
I-Trac™ Vertical Power Module (7 row) (78227 series)	Support Tool 62201-8633	23.0mm (0.91")	
I-Trac™ Vertical Power Module (11 row) (78232 series)	Support Tool 62201-8634	23.0mm (0.91")	
I-Trac™ Vertical Power Module (15 row) (78237 series)	Support Tool 62201-8635	23.0mm (0.91")	
I-Trac™ Right-Angle Power Module (7 row) (78226 and 78228 series)	Support Tool 62201-8636	29.0mm (1.14")	

Product Number	Tool Description	Tool Size (Width)	Illustration
I-Trac™ Right-Angle Power Module (11 row) (78231 and 78233 series)	Support Tool 62201-8637	29.0mm (1.14")	
I-Trac™ Right-Angle Power Module (15 row) (78236 series)	Support Tool 62201-8638	29.0mm (1.14")	

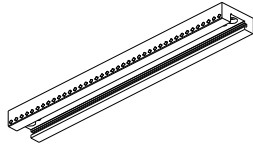
**Table 4-2**  
**Assembly Tooling for I-Trac™ (Daughtercard Receptacles)**

Product Number	Tool Description	Tool Size (Width)	Illustration
I-Trac™ Daughtercard Module (5 row 6 column) (75990) Series	Press-In Tool 62201-8653	22.1mm (0.87")	
I-Trac™ Daughtercard Module (7 row 4 column) (76020-***4)	Press-In Tool 62201-8610	14.9mm (0.59")	
I-Trac™ Daughtercard Module (7 row 6 column) (76020-***6)	Press-In Tool 62201-8611	22.3mm (0.88")	
I-Trac™ Daughtercard Module (7 row 10 column) (76020-***10)	Press-In Tool 62201-8612	36.9mm (1.45")	
I-Trac™ Daughtercard Module (11 row 5 column) (75710-***5)	Press-In Tool 62201-8604	19.1mm (0.75")	
I-Trac™ Daughtercard Module (11 row 6 column) (75710-***6)	Press-In Tool 62201-8605	22.3mm (0.88")	
I-Trac™ Daughtercard Module (11 row 8 column) (75710-***8)	Press-In Tool 62201-8618	29.5mm (1.16")	
I-Trac™ Daughtercard Module (11 row 10 column) (75710-***10)	Press-In Tool 62201-8606	36.9mm (1.45")	


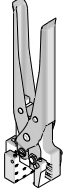
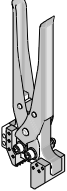
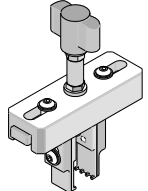

Product Number	Tool Description	Tool Size (Width)	Illustration
I-Trac™ Daughtercard Module (5 row 5 column) (75990-***5)	Press-In Tool 62201-8615	18.4mm (0.72")	
I-Trac™ Daughtercard Module (5 row 10 column) (75990-**10)	Press-In Tool 62201-8616	36.9mm (1.45")	
I-Trac™ Daughtercard Module (15 row 8 column) (76040-***8)	Press-In Tool 62201-8622	29.5mm (1.16")	
I-Trac™ Daughtercard Module (15 row 9 column) (76040-***9)	Press-In Tool 62201-8623	33.2mm (1.31")	
I-Trac™ Daughtercard Module (15 row 10 column) (76040-**10)	Press-In Tool 62201-8624	36.9mm (1.453")	
*I-Trac™ Right-Angle Power Module (7 row) (78229, and 78230 series)	Press-In Tool 62201-8627	15.0mm (0.59")	
*I-Trac™ Right-Angle Power Module (11 row) (78234, and 78235 series)	Press-In Tool 62201-8628	15.0mm (0.59")	
*I-Trac™ Right-Angle Power Module (15 row) (78239 series)	Press-In Tool 62201-8629	15.0mm (0.59")	

\* **NOTE:** For ganged power modules additional power module press-in tools may be needed, see the sales drawings for ganged product dimensions to select the amount of press-in tools.

**Table 4-3**  
**Standard Tool Holder for Back Plane Header Assembly**

Tool Description	Tool Length	Illustration
Tool Holder 62201-9501	24.0mm	
Tool Holder 62201-9502	72.0mm	
Tool Holder 62201-9503	156.0mm	
Tool Holder 62201-9504	216.0mm	
Tool Holder 62201-9509	254.0mm	
Tool Holder 62201-9511	304.8mm	
Tool Holder 62201-9512	406.4mm	

**Table 4-4**  
**Field Repair Tooling for I-Trac™ Backplane and Daughtercard Assemblies**

Product Number	Tool Description	Illustration
I-Trac™ Backplane 75705, 75991, 76015, 76029, 76030, and 76035 Series (7, 11, and 15 row)	Signal Contact Insertion Tool 62100-5110	
I-Trac™ DaughterCard Signal Module 7 Row (Series 76020), 11 Row (Series 75710), and 15 Row (Series 76040)	Module Removal Tool 62202-3000	
I-Trac™ DaughterCard Signal Module 5 Row (Series 75990), 7 Row (Series 76020), 11 Row (Series 75710), and 15 Row (Series 76040)	Module Removal Tool 62202-3500	
Backplane Header Removal Tool (75705, 76015, and 76035) Series	Backplane Header Removal Tool 62100-9610	
I-Trac™ Backplane 75705, 75991, 76015, 76029, 76030, and 76035 Series (7, 11, and 15 row)	Signal Contact Removal Tool Long Nose Pliers: Newark 96F8903 MSC 00321885	

## 4.1 Standard Tool Ordering Procedure

### Stacking Tooling

All the insertion tooling listed in Table 4-1 and 4-2 can be stacked in any combination to be able to simultaneously press in any arrangement of stacked connectors. Tooling holders are available in various lengths. Figure 4-1 shows a typical setup for an 11 row by 8 column backplane signal module in a standard tool holder.

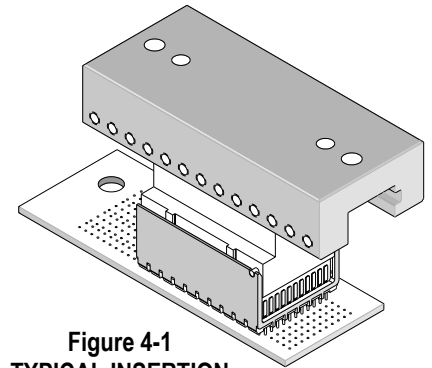


Figure 4-1  
TYPICAL INSERTION  
TOOL ASSEMBLY

### Ordering Tooling for Backplane Connectors

In order to insert a typical row of backplane connectors, it is necessary to select the individual insertion tools and then pick the appropriate tooling holder (See example).

### Basic Procedure

**CAUTION:** Vertical Power Module must be installed separately without any Backplane or DaughterCard assemblies in the combinations.

1. Determine the combination of signal modules to be inserted.
2. Select the proper press-in tools from Table 4-1 and Table 4-2.
3. Table 4-1 and Table 4-2 show the tool sizes. (L) Write down the length of each tool selected.  
**NOTE:** Make sure that if you require four of a particular tool, write down its length 4 times.
4. Total up these lengths.
5. Using the length just calculated, select the next largest tooling holder from Table 4-3. The tooling holder can be shorter than the total tooling but not by more than 0.5 mm per side.
6. All of the tools selected above must be ordered separately.

### Example

To be inserted: (1) 5 row by 5 column and (1) 11 row by 8 column Backplane Signal Module.

1. Look at Table 4-1 and find the required tools. In this case it would be a 62201-8613 and 62201-8617.
2. From Table 4-1 get the lengths of these tools. (Numbers may be rounded up) 62201-8613=18.5mm and 62201-8617=29.6mm.
3. Add these values totaling of 48.1mm, round up (49.0mm).
4. From the Tooling Holder list in Table 4-3, pick the 72.0mm long holder, part number 62201-9502.
5. Thus the order to Molex should include the following:

Quantity	Order No.	Description
1	62201-8613	5 row by 5 column Backplane Signal Module Press-In Tool
1	62201-8617	11 row by 8 column Backplane Signal Module Press-In Tool
1	62201-9502	72.0mm Long Tooling Holder

### Ordering Daughtercard Tooling

Daughtercard connectors only come in standard module sizes. The Daughtercard insertion modules lengths are based on the module size. Therefore, insertion tools can be used individually for a connector assembly or stacked in a tool holder for multiple connector assemblies. Select the specific tool for your connector from Table 4-3.

## Section 5

### Repair and Replacement

- 5.1 Backplane Repair Procedure
- 5.2 Daughtercard Repair Procedure
- 5.3 Glossary of Terms

## 5.1 I-Trac™ Backplane Repair Procedure:

### For the removal and replacement of Signal Pair pins.

The following tools are required:

- ✓ Signal Pin Replacement Tool 62100-5110
- ✓ Needle nose pliers (miniature) \*
- ✓ Tweezers \*

\* Not supplied by Molex

#### Removal

To remove damaged signal pins, grasp them with the needle nose pliers and pull straight up from the board. See Figure 5-1. In

some cases it may be necessary to straighten a bent pin with the tweezers to allow access with the pliers.

**NOTE:** Never reuse a backplane signal pin once it has been removed. In addition, no more than three pins should be pressed into any plated through hole. Replacement pins should be removed from a spare virgin connector.

#### Replacement

1. Place the replacement signal contact at the tip of the insertion tool and slide the contact so it rests underneath the terminal clamp. See Figure 5-2.

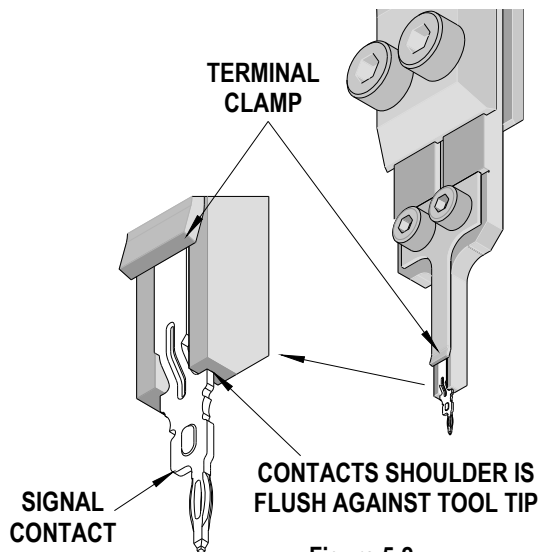


Figure 5-2

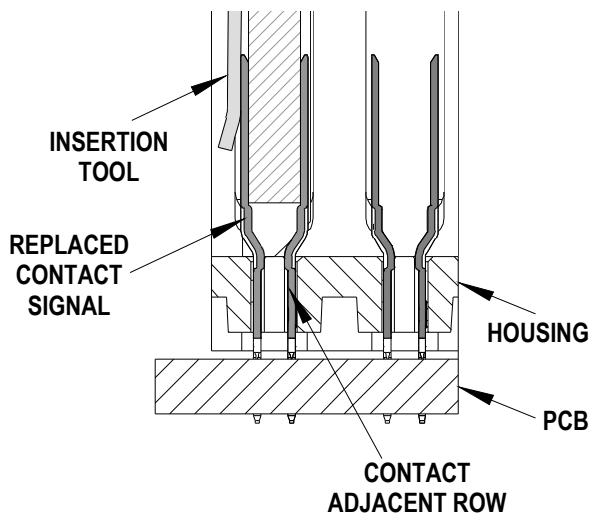


Figure 5-3

2. The signal contact will be guided using the groove located on the insertion tool and should be pushed all the way underneath the terminal clamp.
3. The signal contact is completely seated in the insertion tool when, the contacts shoulder is resting against the insertion tool tip and can no longer be moved up.
4. Make sure the signal contact is in the correct orientation. Check the column where the repair signal contact is being replaced and compare the column to the contact signal on the insertion tool. The two should be the same. The adjacent column is oriented in the opposite direction. See Figure 5-3.
5. Line-up the pins tip on the signal contact, with the hole in the signal module and push the pin tip with the insertion tool through the housing and the PRINTED CIRCUIT BOARD.

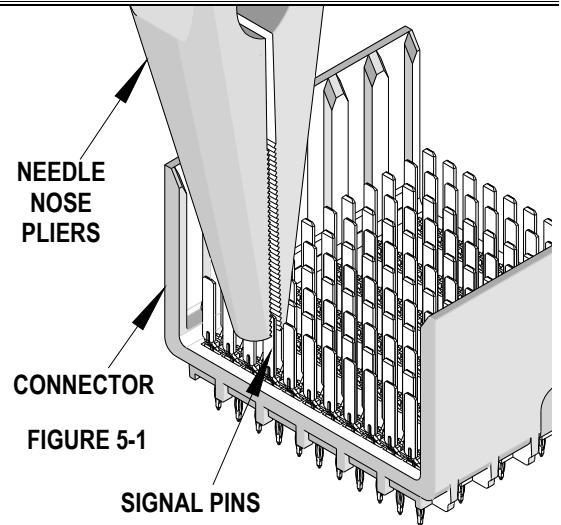


FIGURE 5-1

SIGNAL PINS



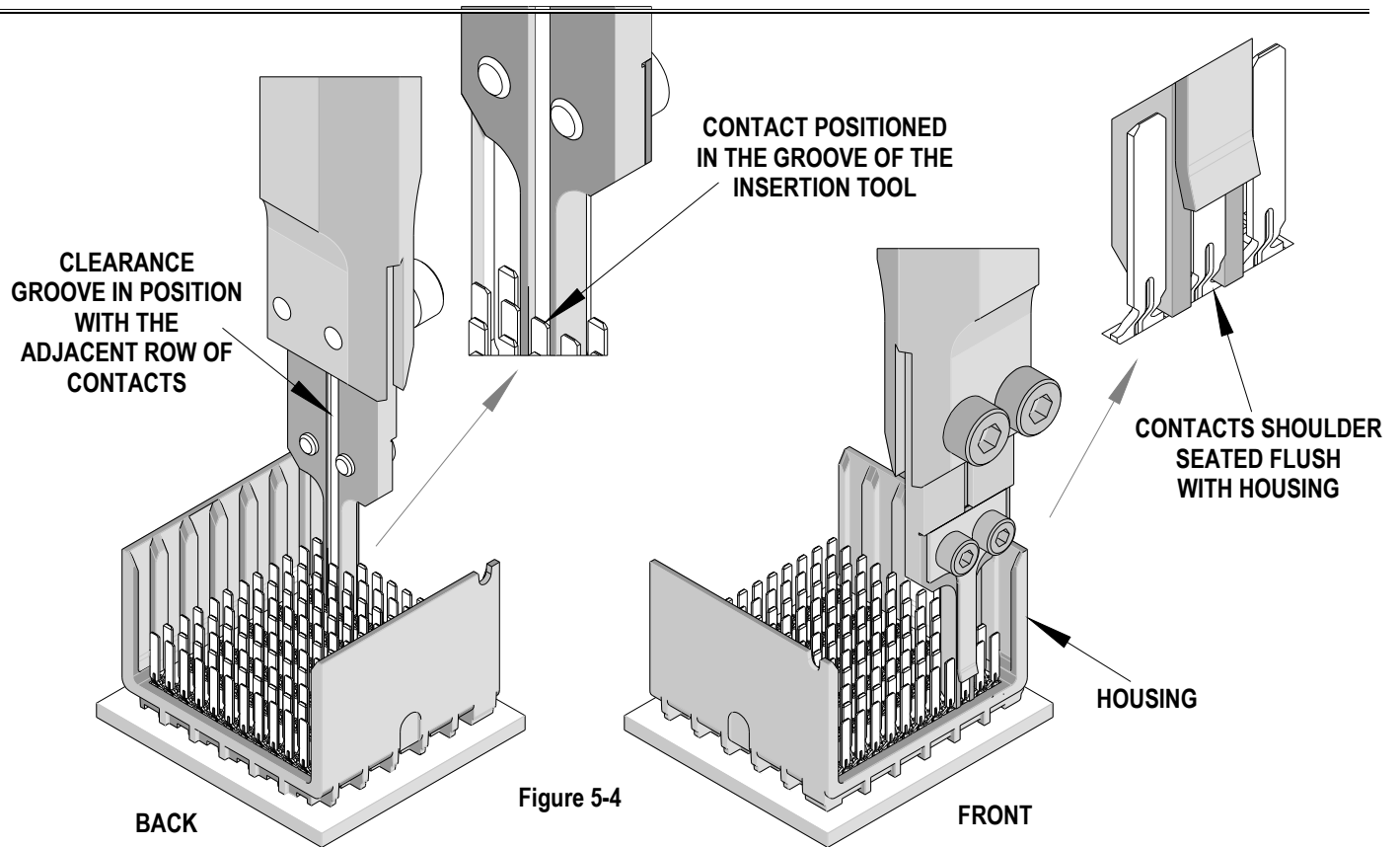


Figure 5-4

6. There is a clearance groove on the opposite side of the tool. When inserting the signal contact, make sure the adjacent row is positioned in this groove.
7. Continue pushing the signal contact until the insertion tool and terminal shoulder are seated securely to the inside housing surface. See Figure 5-4.
8. Pull the insertion tool straight up and remove. Check the final seating of the signal contact, the terminal shoulder should be seated flush with inside surface on housing.

## 5.2 I-Trac™ Daughtercard Repair Procedure:

**For the removal and replacement of Signal Modules.**

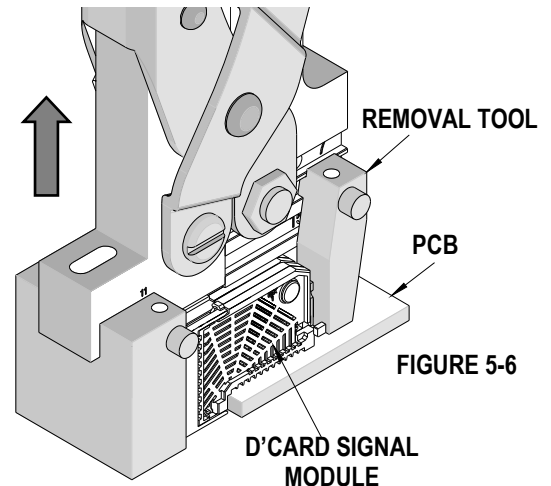
The following tools are required:

- ✓ Module Removal Tool 62202-3000
- ✓ Pallet to support Printed circuit board \*
- ✓ Small arbor press (optional)\*

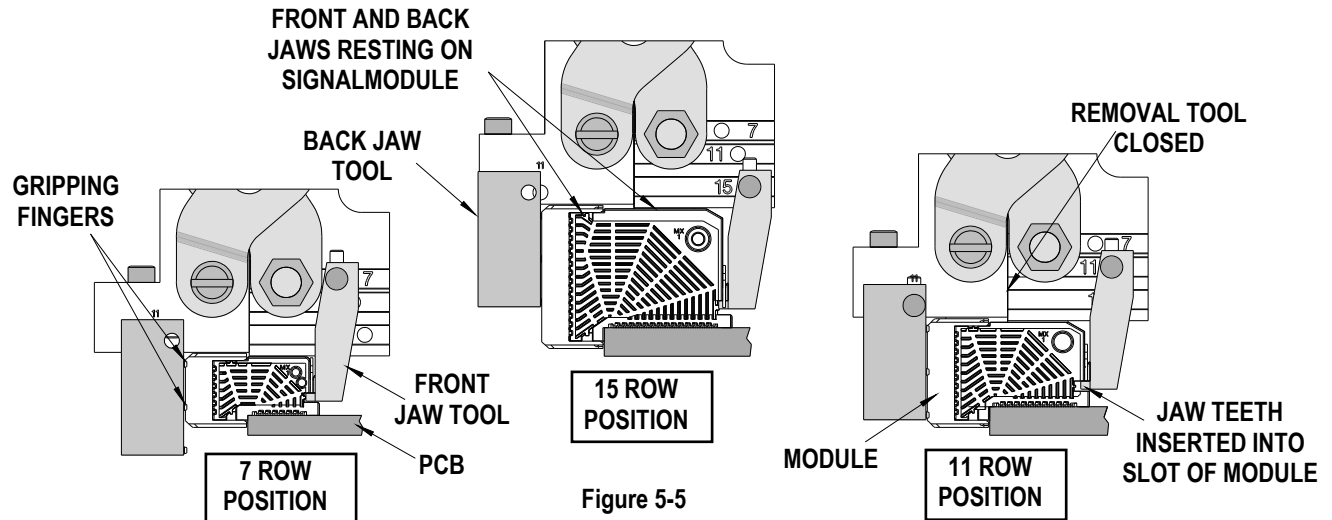
**\*Not supplied by Molex**

### Connector Removal

Before removing the DaughterCard Signal Module from the printed circuit board, the rows of the module have to be determined. This is required so the Removal tool jaws can be set-up correctly to match the proper DaughterCard Row Series. Count the number of rows on the Front Wafer Housing. See 62202-3000 Specification for set up.



1. Before removing individual modules be certain the tool is adjusted to the correct row size. See Figure 5-5.



2. Position the 62202-3000 Removal Tool over the defective module with the toothed jaw located over the mating end of the connector and the slotted jaw over the stiffener on the opposite end of the module.
3. While holding the tool in position over the module, squeeze the handles until the jaws clamp firmly. While applying pressure to the handles, pull straight up until the connector comes off the board. See Figure 5-6.

**Backplane Module Replacement**

Follow operation instruction from section 2.4.

**Power Module Removal**

Daughtercard power modules should be removed using pliers. Clamp the pliers over the mating and stiffener side of the module and pull up. Be careful of any adjacent signal modules while removing the powers.

**Power Module Replacement**

Follow operation instructions from section 2.4.

**5.3 Glossary of Terms:**

Backup (or Support) Pallet	A simple fixture used to locate and support a printed circuit while a compliant pin connector is being pressed into the pc board. Considerable force is required to press one of these connectors into a pc board, thus the pc board must be adequately supported to avoid being damaged. It must have adequate clearance for the terminals when they protrude through the pc board.
Compliant Pin Connector	A connector which has terminals that are designed to give slightly when pressed into a hole in a pc board so that the terminal (pin) makes solid electrical contact with the printed circuit board, alleviating the need for soldering.
Flat Platen Press	A press in which the upper tooling or die set is not attached to the press ram. The ram has a simple flat plate (or platen) attached to it. For this application, the upper tooling is positioned in the connector(s). The press ram comes down on top this tooling and presses on it. When the press ram goes back up, the upper tooling stays with the connector.
PC Board	Abbreviation for printed circuit board
Upper Tooling	The tooling that goes on top of the connector. It contains the mounting block and dies (or tools) necessary to properly apply pressure where required to push the connector terminals and locking posts into the holes in the printed circuit board.

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