

molex[®]

**Terminal Stick Insertion Tool
Operation Manual
Order No. 62200-1700**

For LFH™ Series 71624 and 70984


- Description
- Operation
- Maintenance




Table of Contents








Contents

- Terminal Stick Insertion Tool**1
- Safety Warnings and Information**3
- Tooling Technical Assistance**4
 - Section 15
 - General Description5
 - 1.1 Description.....6
 - 1.2 Features6
 - 1.3 Technical Specifications6
 - 1.4 Delivery Check6
 - 1.5 Tools.....6
 - 1.6 Installation6
 - 1.7 Products6
 - Section 27
 - Setting Up And Operation7
 - Principal Mechanical Parts of the Terminal Stick Insertion Tool8
 - 2.1 Adjustments.....9
 - 2.2 Operation.....10
 - Section 312
 - Maintenance12
 - 3.1 Cleaning13
 - 3.2 Lubrication.....13
 - 3.3 Perishable Parts14
 - 3.4 Preventive Maintenance Chart14
 - 3.4 Troubleshooting.....14
 - Section 415
 - 4.1 Main Parts List and Assembly16
 - 4.2 Parts List Insertion Fixture17
 - 4.3 Parts List Tool Kit19

Safety Warnings and Information

	<p>Read and understand all of the instructions and safety information in this manual before operating or servicing this tool.</p> <p style="text-align: center;"><u>Keep this manual available when using this tool.</u></p> <p>Replacement manuals are available for download at www.molex.com.</p>
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SAFETY ALERT SYMBOL	
This symbol is used to call your attention to hazards or unsafe practices which could result in an injury or property damage. The signal word, defined below, indicates the severity of the hazard. The message after the signal word provides information for preventing or avoiding the hazard.	
 DANGER	<p>DANGER: Indicates an imminently hazardous situation which, if not avoided, could result in death or serious injury.</p>
 WARNING	<p>WARNING: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.</p>
 CAUTION	<p>CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. CAUTION may also be used to alert against unsafe practices associated with events that could lead to personal injury.</p>

	<p style="text-align: center;"> WARNING</p> <p>Never Operate, service, or adjust this machine, or install termination tooling, without proper instruction and without first reading and understanding the instructions in this manual.</p>		<p style="text-align: center;"> WARNING</p> <p>Always wear proper eye protection when Operating or servicing this tool.</p> <p>Failure to wear eye protection could result in serious eye injury from flying debris.</p>
	<p style="text-align: center;"> WARNING</p> <p>Do not use compressed air to clean this equipment. The forces created by compressed air can force debris into the tool.</p> <p>Failure to observe these precautions may result in injury or property damage..</p>		
<p style="text-align: center;"> CAUTION</p> <p>Never perform any service or maintenance other than as described in this manual.</p> <p>Never modify, alter or misuse the equipment</p> <p>Failure to observe this precaution may result in injury and property damage.</p>			

Tooling Technical Assistance

Molex offers tooling technical assistance for customers who may need some guidance for tooling adjustments. This support can be obtained by calling either of the two numbers listed below and asking for the Molex Tooling Group.

Call Toll Free 1-800-786-6539 (US) 1-630-969-4550 (Global).

This assistance is limited to the operation and set-up of a customer's Molex Stick Insertion Tool. Questions with regard to Molex connector products or how to identify the proper tooling and/ or tooling documentation should be directed to your local Molex personnel or Customer Service Representative.

When calling for service on this tool it is recommended to have the following: a copy of the Operation Manual, the Specific Application Tooling Specification Sheet and a person familiar with the tools should be present. The following information is also recommended to supply:

1. Customer name
2. Customer address
3. Person to contact such as (name, title, e-mail, and telephone number)
4. Tools order number (Lease number also if applicable)
5. Serial number (Lease number also if applicable)
6. Molex Connector product order number
7. Urgency of request
8. Nature of problem

Molex Application Tooling Group

2200 Wellington Court
Lisle, IL 60532, USA
Tel: +1 (630) 969-4550
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Visit our Web site at <http://www.molex.com>

Section 1

General Description

- 1.1. Description
- 1.2. Features
- 1.3. Technical Specifications
- 1.4. Delivery Check
- 1.5. Tools
- 1.6. Installation
- 1.7. Products

General Description

1.1 Description

The Molex 62200-1700 Stick Insertion Fixture is used to load four LFH™ contact terminal sticks into a shielded housing. The four LFH™ terminal sticks are loaded into a drawer and the shielded housing is placed into a sliding nest. Then the cable is secured under the cable clamp. Insertion occurs when the lever is pulled.

1.2 Features

- Four LFH™ terminal sticks are inserted into the shielded housing simultaneously.
- The terminal stick holding drawer includes a feature to prevent loading the LFH™ terminal sticks, and the shielded housing upside-down.
- The insertion lever has a positive stop for consistent insertions, ensuring no damage to the shield or terminal sticks.
- The insertion lever can be positioned for either a right handed or left handed operator.
- The stick drawer has 1/4 turn screws on the drawer cover making it easier to load and unload the LFH™ terminal sticks and shielded housing.

1.3 Technical Specifications

Dimensions

Height	130mm (4.70")
Width	400mm (15.70")
Depth	225mm (8.90")
Weight	11.8kgf (26.0lbs.)

Production Rate:

This insertion tool loads up to 25 shield assemblies per hour depending on the operator's skill.

1.4 Delivery Check

Carefully remove the Terminal Stick Insertion Tool from its shipping container. Check to see that following items are included in this package:

<u>Decription:</u>	<u>Quantity</u>
62200-1700 Terminal Stick Insertion Tool	1
TM-6220017000 Instruction Manual	1
62200-0734 Plug Removal Tool	1

1.5 Tools

The following tools are recommended for setup and adjustments to the this tool.

- ✓ Metric Hex Wrench Set
- ✓ 6 inch Adjustable Wrench

1.6 Installation

Before attempting to operate the Terminal Stick Insertion Tool, be sure it is securely fastened to a clean, study work bench or table in a well-lighted area. Fasten the base with four M8 screws, of sufficient length for the table top. (Not supplied). See Figure 1-1.

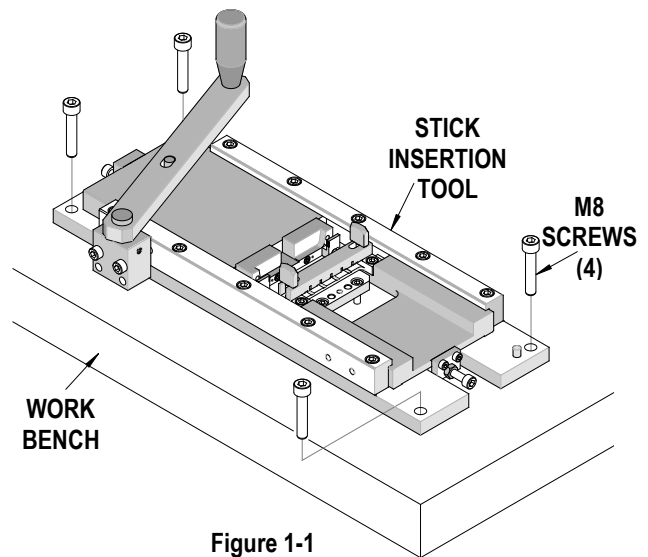


Figure 1-1

Damage to the shield assembly and/or injury to the operator could result were the tool to move during insertion. Be sure there is ample room around the tool to allow easy loading and operation.

1.7 Products

Order No.		Description
70984-4009	70984-4010	1.27mm (.050") Pitch LFH™ Matrix 50
70984-4011		I/O Shield Cable Kit, Terminal Stick, 40 Circuits
71624-3000	71624-3001	1.27mm (.050") Pitch LFH™ Matrix 50
		I/O Shield Cable Kit, Subassembly, 160 Circuits

Section 2

Setting Up And Operation

2.1. Adjustments

2.2. Operation

Principal Mechanical Parts of the Terminal Stick Insertion Tool

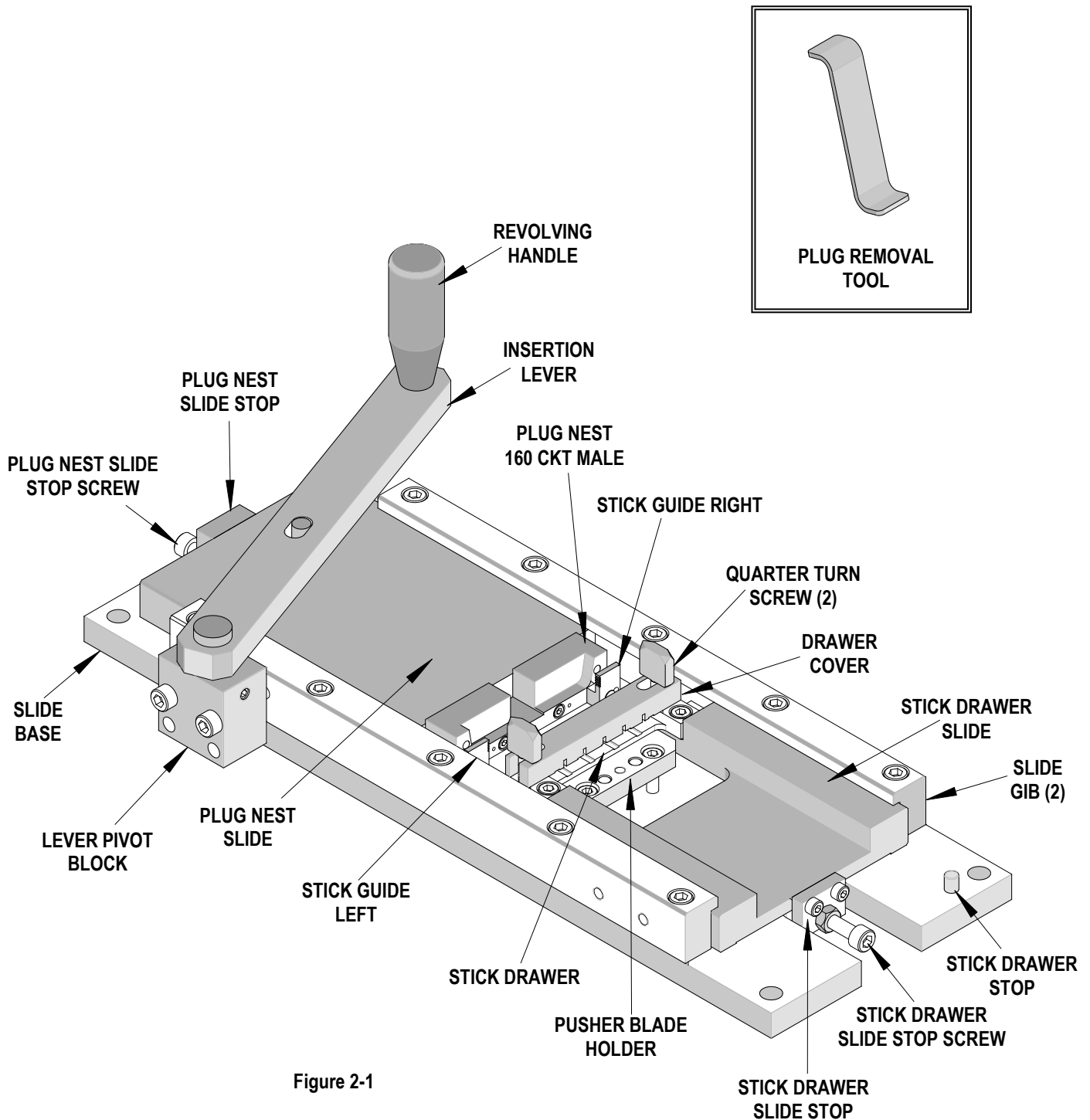


Figure 2-1

Set Up

The Terminal Stick Insertion Tool has been factory set and should not need any adjustments. However, over time if there are some adjustments needed follow the steps below.

2.1 Adjustments

Plug Nest Slide Stop

The forward (insertion) position of the plug nest is controlled by a plug nest slide stop screw. To adjust the plug nest:

1. Loosen the lock nut on the plug nest slide and turn the slide stop screw counterclockwise several turns. See Figure 2-1.
2. Make a sample assembly and check alignment.

Note: Care must be taken when inserting the terminal sticks. There is no stop only the pusher blades.

3. Leave the plug nest in the inserted position. Keep the shield assembly in the nest and adjust the slide stop screw clockwise until the stop screw *just starts* to move the plug nest back.
4. Tighten the lock nut.
5. The back (retracted) position of the plug nest is controlled by the pin travel in the slot on the insertion lever. No adjustment is needed.

Stick Drawer Slide

The forward (loading) position of the stick drawer is controlled by a stick drawer slide stop screw. See Figure 2-1.

The screw is adjusted until the bottom of the narrow groove (that the pusher blade travels through) just barely touches the back of the pusher blades.

This will keep the pusher blades from being damaged if the stick drawer is pushed into them. The stick drawer stop will prevent the stick drawer slide from leaving the tool.

Slide Gib

If either slide has excessive side clearance, faulty insertions may result. There are two slide gibs to guide both slides.

Loosen the screws on one of the gibs and move the gib until the side clearance is minimized but the slide can still move freely.

Left or Right Handed Operation

The insertion lever can be installed on either the left side or the right side of the insertion tool depending on the operator's preference. To adjust the lever:

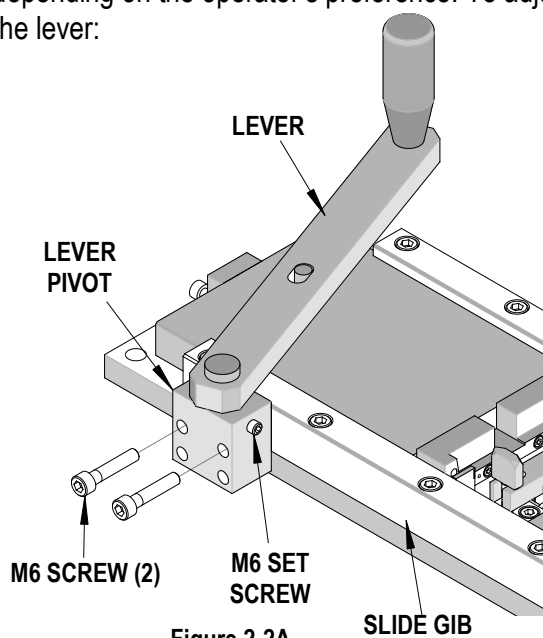


Figure 2-2A

1. Remove the two M6 screws from the lever pivot mounted to the side gib. See Figure 2-2A.

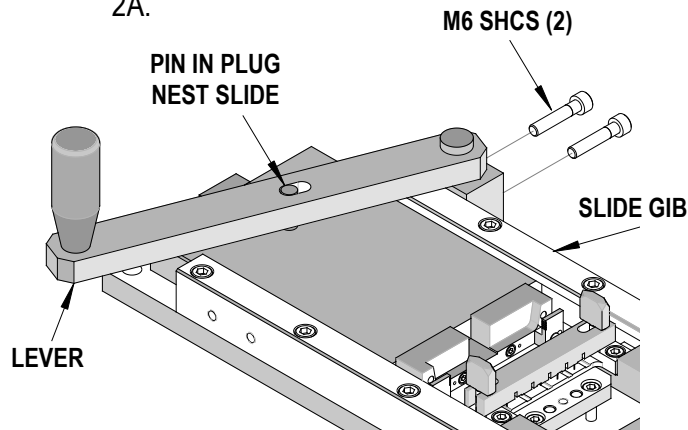


Figure 2-2B

2. Lift up the entire lever and rotate the handle with the mounting block to the opposite side of the tool.
3. Place the lever over the pin in the plug nest slide.
4. Tighten the two M6 screws. See Figure 2.2B.

2.2 Operation

1. Load the shielded housing into the plug nest. The plug nest can be loaded only one way. See Figure 2-3. The long side of the "D" shell is towards the top of the nest.

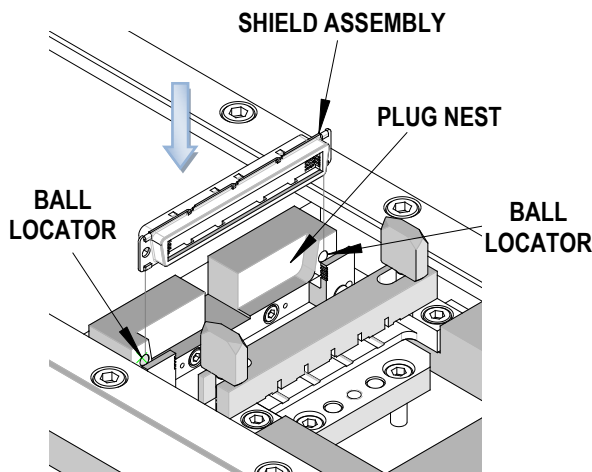


Figure 2-3

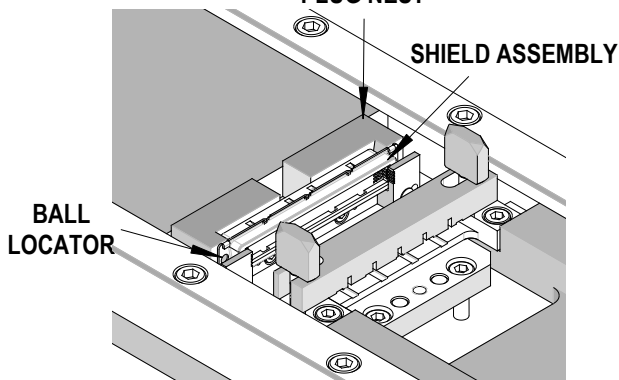


Figure 2-4

Note: Make sure that the back of the shield faces the stick drawer (the mating end of the shield faces away from the stick drawer).

2. The screw holes in the shield should also "pop" into the ball locators in the nest. See Figure 2-4.

3. Make sure that the stick drawer is pushed forward until it stops.
4. Remove the drawer cover by turning the two quarter-turn screws 90° so that the head of the screw can be inserted into the slot on the cover and the cover can be pulled up. See Figure 2-5.

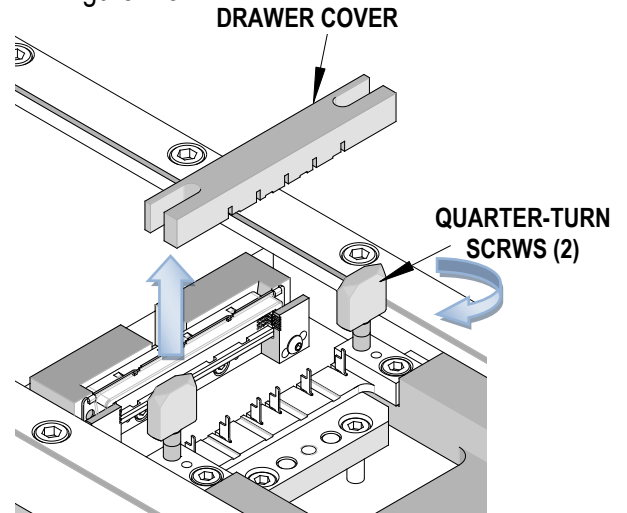


Figure 2-5

5. Place the bottom row LFH™ stick assembly into the drawer. The stick drawer has small slots and grooves in it which it accepts the stick latches to avoid loading a stick upside down. See figure 2-6.

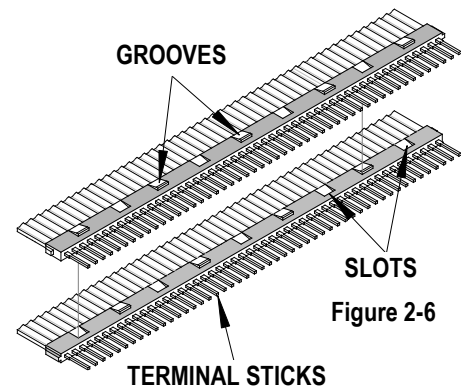


Figure 2-6

6. Repeat step 5 for the remaining LFH™ terminal sticks in the connector. The groove orientation on the terminal sticks must be the same for all the sticks; if it is not, the sticks will not stack properly. See Figure 2-7.

Note: Even if the sticks have no wires terminated to them, they still must be loaded in the drawer. The tooling is designed to accept (4) sticks only.

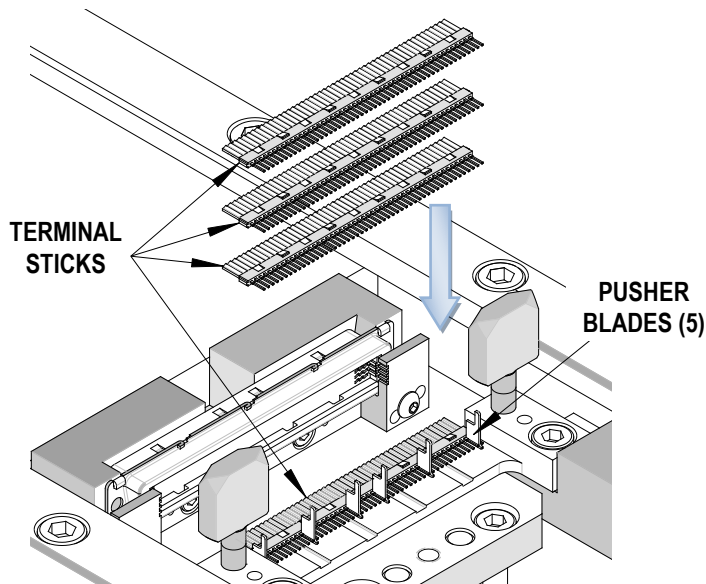


Figure 2-7

7. Insert the cover over the two quarter-turn screws and rotate the head of the screws 90° to lock. The cover should hold sticks in place for insertion and is not meant to clamp stacked terminal sticks.
8. If the cover does not snap into position, one or more of the LFH™ terminal sticks in the drawer were loaded upside - down.
9. Remove the LFH™ terminal sticks and restack them, then close the cover. See Figure 2-7.
10. Slowly pull the handle on the insertion lever towards the LFH™ terminal sticks. When the terminal sticks have started into the shield housing, quickly follow through with the handle motion, until it stops. It is important to "feel" the start of the terminal sticks into the shield; if a lot of resistance is felt, move the insertion lever back to check for misalignment or obstructions.
11. It is very important to quickly snap the terminal sticks into the housing. Due to the shear properties of the LFH™ terminal sticks over mold material, a slowly loaded assembly will probably have sheared latches, resulting in low terminal retention force. If they are quickly snapped into the housing, the latches will not have time to shear, and retention forces will be much higher. Refer to the application

- specification document no. AS-71624-001 for housing assembly dimensional requirements.
12. In the fully inserted position, lift the drawer cover up by turning the two quarter-turn screws 90°. See Figure 2-8.

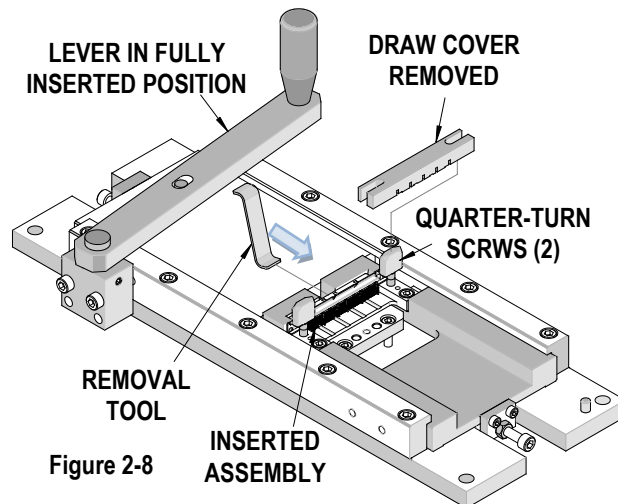


Figure 2-8

13. Using the plug removal tool, Order No. 62200-0734, lift the finished assembly out of the shield nest.
14. There is a cleared - out area in the center of the shield nest for the plug removal tool to enter. Remove the inserted assembly from the cable clamp. See Figure 2-9.
15. Return the nests back to their starting positions.

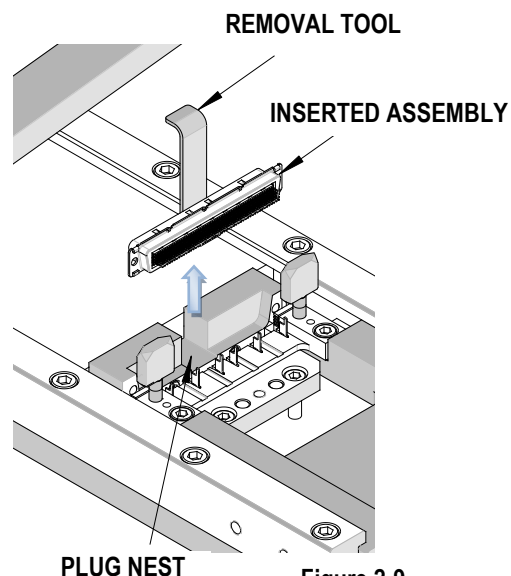


Figure 2-9

Section 3

Maintenance

- 3.1. Cleaning
- 3.2. Lubrication
- 3.3. Perishable Parts
- 3.4. Troubleshooting

3.1 Cleaning

For efficient operation, this tool should be cleaned daily with a soft bristle brush to remove any debris and plating dust from the slide area and the two nests. For continuous operation this may have to be done several times throughout the day.

See Section 3.4 for recommended Preventive Maintenance Schedule.

When it is necessary to change tooling, care should be taken to remove any debris from tapped holes or mounting surfaces. Debris can prevent tooling from being properly locked into position.

NOTE: Using compressed air to clean tooling is *not* recommended. Chips can wedge in the tooling and/or fly at an operator.

3.2 Lubrication

1. Oil all moving parts of this tool.
2. Sparingly lubricate the sliding parts approximately every month with SAE 10W motor oil or equivalent.
3. Lubricate with multipurpose synthetic lubricant with Teflon or an equivalent. Molex ships its presses pre-greased with Permatex multi-purpose synthetic grease with Teflon No. 82329. SAE 10 non-detergent oil or light spindle oil or 3-in-1 oil should be used on pivot points.

WARNING: Never use a penetrant such as WD40 for any lubrication on this tool.

4. Lubricate all points shown in Figures 3-1 with the specified oil and grease (or equivalent).

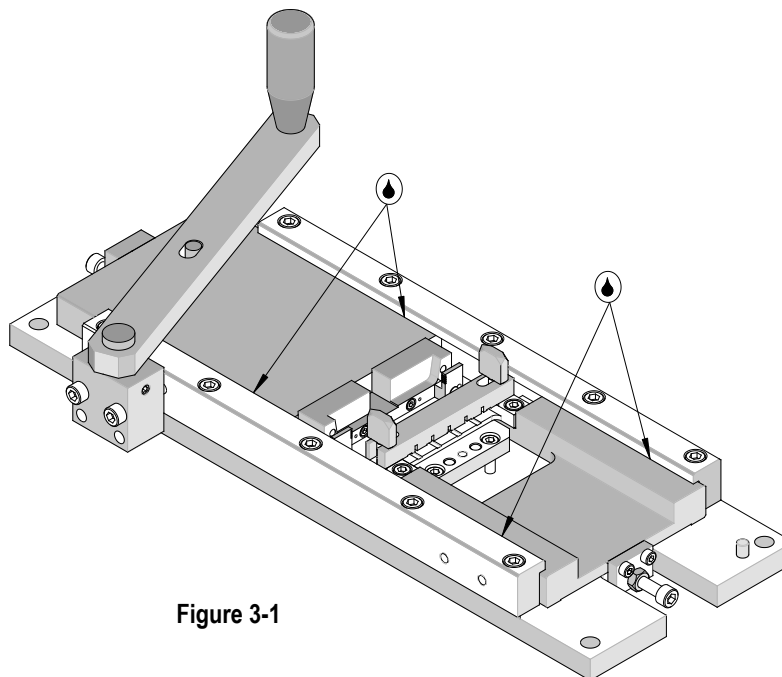


Figure 3-1

3.3 Perishable Parts

Customers are responsible for maintaining this tool. Perishable parts are those parts that come in contact with the product and will wear out over time. Molex recommends that all customers keep at least one set of the perishable tool kit in stock at all times. This will reduce the amount of production down time. These parts are identified in the parts list in Section 4.

3.4 Preventive Maintenance Chart

An example of a maintenance chart is shown below. Copy and use this chart to track the maintenance of your Press or use this as a template to create your own schedule or use your company's standard chart, if applicable.

Daily: Clean. See Section 3.1.

Monthly: Clean as necessary, See Section 3.1.

Lubricate sliding parts, See Section 3.2.

CHECK SHEET MONTH _____ YEAR _____

Week	Daily Clean	Days of the Week							Solution
		MON	TUE	WED	THU	FRI	SAT	SUN	
1									
2									
3									
4									
Cleaning Reapply greasing Reapply oil	Yes								Soft Brush Industrial Degreaser
Inspect all tooling for wear	Yes								Replace if signs of wear.

Schedule should be adjusted up or down depending on usage. Molex recommends that a log of preventive maintenance be kept with the press.

3.4 Troubleshooting

Symptom	Cause	Solution
Poor terminal retention	Terminal sticks not fully inserted	Check forward position of plug nest slide. Adjust if necessary. See <i>Adjustments</i> Section 2.1.
	Insertion lever slowly inserted	After the contacts have started into the shield, the insertion lever must be "snapped" in to position to avoid shearing the terminal stick latches.
	Terminal stick to shield misaligned	Make sure that there is not excessive side clearance in the slides. If there is, adjust one slide gib. See <i>Adjustments</i> Section 2.1.
	Shield not located in nest	Make sure that the shield has snapped into the nest and is located by the spring loaded balls. Section 2.2.
Shield or terminal damaged	Terminal stick to shield misalignment	Make sure that there is not excessive side clearance in the slides. If there is, adjust one slide gib. See <i>Adjustments</i> Section 2.1.
	Shield not located in nest.	Make sure that the shield has snapped into the nest and is located by the spring loaded balls. Section 2.2.
	Terminal stick(s) loaded upside down	All four terminal sticks must be in the proper orientation, otherwise shield damage will result. See Section 2.2.

Section 4

- 4.1 Main Parts List and Assembly Drawing
- 4.2 Insertion Fixture Parts List and Assembly Drawing
- 4.3 Tool Kit Parts List and Assembly Drawing

4.1 Main Parts List and Assembly

62200-1700 Terminal Stick Insertion Tool Figure 4-1					
Item	Order No	Engineering No.	Description	Notes	Quantity
1	62200-0700	62200-0700	Terminal Stick Insertion Fixture	Figure 4-3	1
2	62200-1000	62200-1000	Terminal Stick Insertion Slide 160 Circuit Tool Kit	Figure 4-2	1

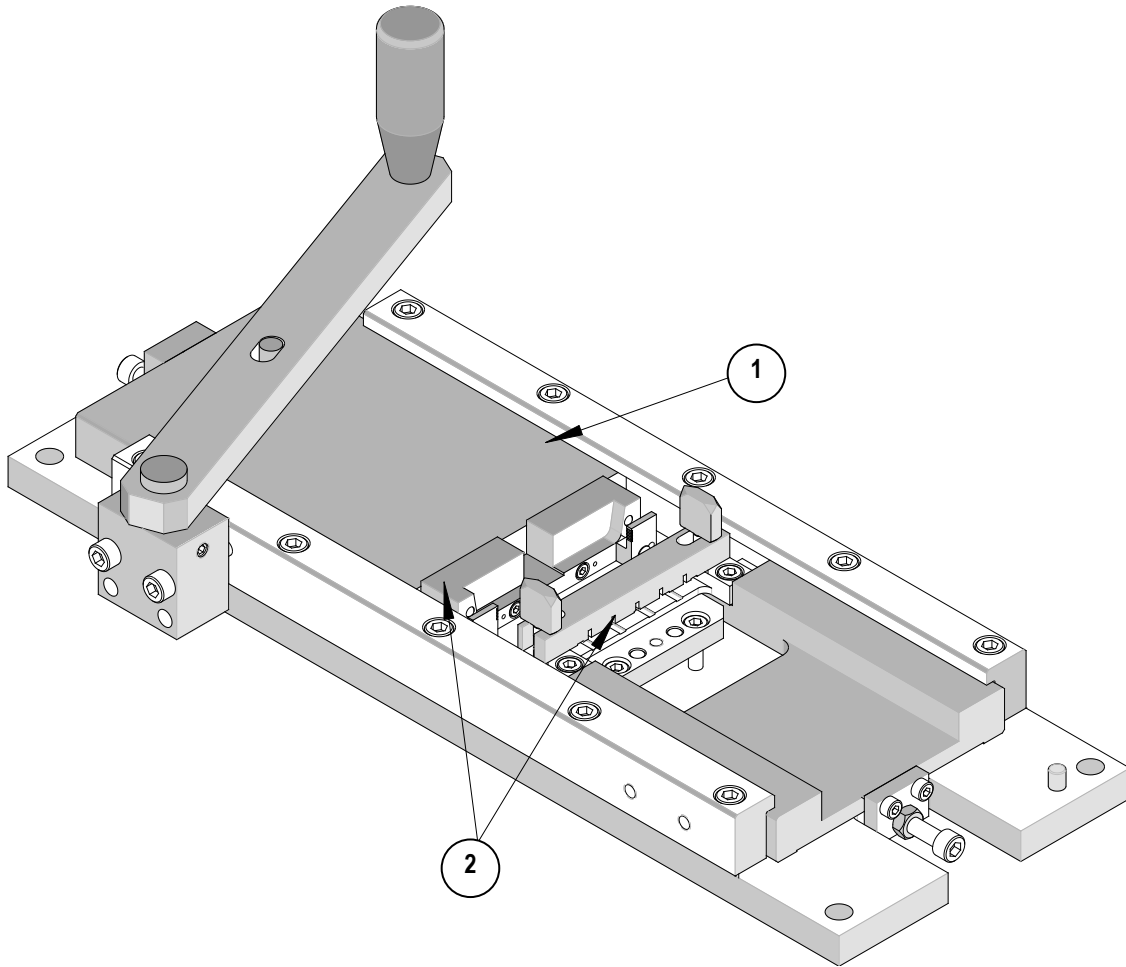


Figure 4-1

4.2 Parts List Insertion Fixture

62200-0700 Terminal Stick Insertion Fixture Figure 4-2					
Item	Order No	Engineering No.	Description	•PP	Quantity
1	62200-0723	62200-0723	Slide Base		1
2	62200-0724	62200-0724	Slide Gib		2
3	62200-0725	62200-0725	Stick Drawer Slide		1
4	62200-0726	62200-0726	Plug Nest Slide		1
5	62200-0727	62200-0727	Lever Pivot Block		1
6	62200-0728	62200-0728	Insertion Lever		1
7	62200-0730	62200-0730	Lever Pivot Pin		1
8	62200-0731	62200-0731	Plug Nest Slide Stop		1
9	62200-0732	62200-0732	Stick Drawer Slide Stop		1
10	62200-0734	62200-0734	Plug Removal Tool		1
11	63600-0135	63600-0135	Handle Revolving M8		1
Hardware					
12	N/A	69809-1620	M6 by 20 Long Dowel		1**
13	N/A	69901-1416	M4 by 16 Long SHCS		2**
14	N/A	69901-1616	M6 by 16 Long SHCS		2**
15	N/A	69901-1630	M6 by 30 Long SHCS		12**
16	N/A	69901-1635	M6 by 35 Long SHCS		2**
17	N/A	69904-3612	M6 by 12 Long Set Screw Cup		1**
18	N/A	69907-1600	M6 Hex Nut		2**
• PP - Part is a Perishable Part.					
** Available from an industrial supply company such as MSC (1-800-645-7270).					

Assembly Insertion Fixture

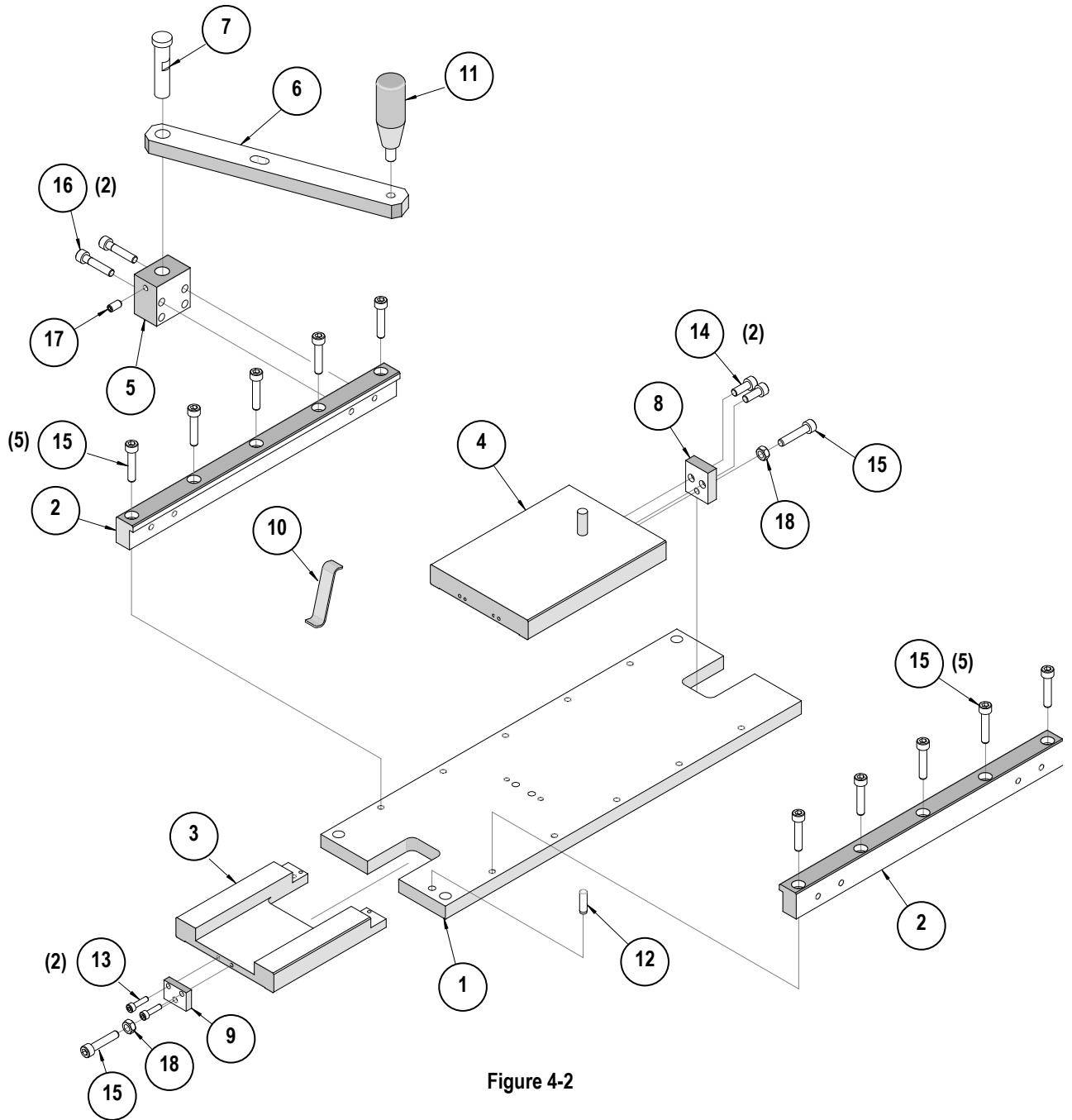


Figure 4-2

4.3 Parts List Tool Kit

62200-1000 Terminal Stick Insertion Slide 160 Circuit Tool Kit Figure 4-3					
Item	Order No	Engineering No.	Description	•PP	Quantity
1	11-32-7560	AM-63527A111	Carbide Ball 5/32" Diameter		2
2	11-32-7805	AM-63529A211	Quarter Turn Screw M5		2
3	11-31-3069	AM-61125-200-59	Compression Spring		2
4	62200-0818	62200-0818	Pusher Blade	PP	5
5	62200-1003	62200-1003	Stick Drawer 160 Circuit		1
6	62200-1004	62200-1004	Drawer Cover 160 Circuit		1
7	62200-1011	62200-1011	Plug Nest 160 Circuit Male		1
8	62200-1012	62200-1012	40 Circuit Stick Guide Right		1
9	62200-1013	62200-1013	40 Circuit Stick Guide Left		1
10	62200-1019	62200-1019	Pusher Blade Holder		1
11	62200-0721	62200-0721	Pusher Blade Clamp		1
Hardware					
12	N/A	69809-1308	M3 by 8 Long Dowel		8**
13	N/A	69809-1616	M6 by 16 Long Dowel		2**
14	N/A	69901-1320	M3 by 20 Long SHCS		2**
15	N/A	69901-1510	M5 by 10 Long SHCS		2**
16	N/A	69901-1514	M5 by 14 Long SHCS		2**
17	N/A	69902-1312	M3 by 12 Long BHCS		2**
18	N/A	69903-1310	M3 by 10 Long FHCS		3**
19	N/A	69904-3510	M5 by 10 Long Set Screw Cup		2**
• PP - Part is a Perishable Part.					
** Available from an industrial supply company such as MSC (1-800-645-7270).					

Assembly Tool Kit

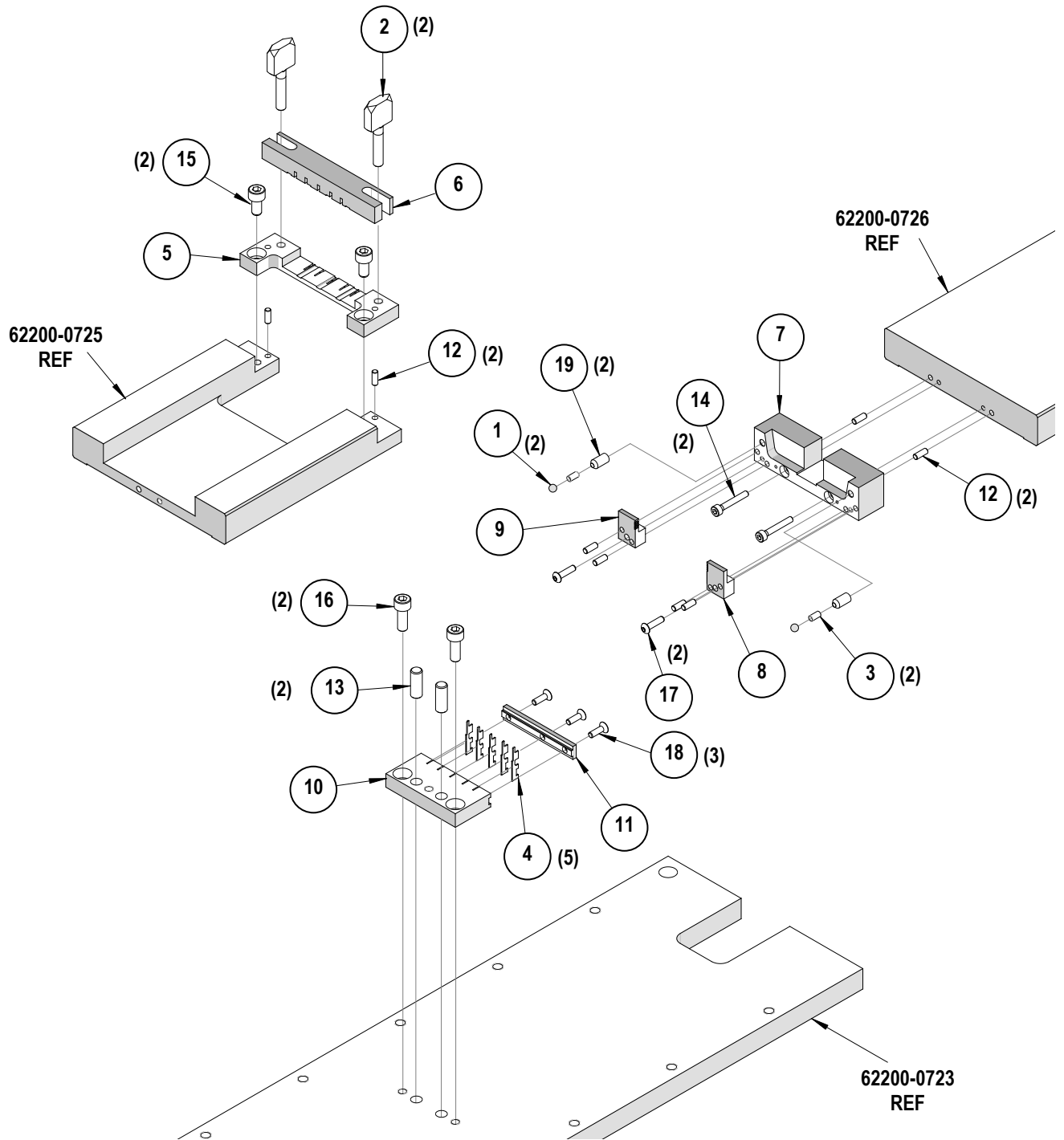


Figure 4-3

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