

molex®

**C-Grid® SL™ FFC Termination Kit
(For T2 and Terminator Crimp Module)
Order No. 63801-8550
Instruction Manual**


- Description
- Operation
- Maintenance




Table of Contents













Contents



C-Grid® SL™ FFC Termination Kit	1
Safety Warnings and Information	3
Tooling Technical Assistance	4
Principal Mechanical Parts of the FFC Termination Kit	5
Section 1	6
General Description	6
1.1 Description	6
1.2 Features	6
1.3 Technical Specification	6
1.4 Delivery Check	6
1.5 Crimp Tooling Accessories (optional)	6
1.6 Tools	6
1.7 Application Tooling Specification Sheets	6
Section 2	7
Set-Up and Operation	7
2.1 Crimp Module Preparation	7
2.2 Press Preparation	7
2.3 Shut Height	8
2.4 How to Manually Cycle the Press	8
2.5 FFC Termination Kit Installation in the Crimp Module	9
2.6 Crimp Module Installation and Removal	10
2.7 FFC Crimp Height Adjustment	11
2.8 Insulation Crimp Height Adjustment	12
2.9 Operation	12
Section 3	13
Troubleshooting	13
Section 4	14
Other Adjustments	14
4.1 Punch and Anvil Alignment	14
4.2 FFC Guide Adjustment	14
4.3 Slide Switch Adjustment	14
4.4 FFC Crimp Punch Installation and Removal	15
Section 5	16
Maintenance	16
5.1 Cleaning	16
5.2 Lubrication	16
5.3 Spare Parts	17
5.4 Perishable Parts	17
Section 6	18
6.1 Parts List and Assembly Drawing	18
6.2 Assembly	20
6.2 Guard Assembly	21
6.3 Product List	22

Safety Warnings and Information

	<p>Read and understand all of the instructions and safety information in this manual before operating or servicing this equipment.</p> <p style="text-align: center;"><u>Keep this manual available when using this equipment.</u></p> <p>Replacement manuals are available for download at www.molex.com.</p>
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SAFETY ALERT SYMBOL	
<p>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.</p>	
 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> WARNING</p> <p>Always wear proper eye protection when Operating or servicing this equipment.</p> <p>Failure to wear eye protection could result in serious eye injury from flying debris.</p>		<p> WARNING</p> <p>Excessive noise levels. Always wear proper ear protection when Operating or servicing this equipment.</p>
	<p> WARNING</p> <p>Never wear clothing or jewelry that is loose or that could potentially enter the equipment and get caught.</p> <p>Failure to observe this warning could result in severe injury or death.</p>		<p> WARNING</p> <p>Never install or service the press while connected to any electrical power source. Disconnect power by unplugging the press from its power source.</p> <p>Failure to observe this warning could result in severe injury or death.</p>
	<p> WARNING</p> <p>Never operate, service, install, or adjust this equipment without proper instruction or without first reading and understanding the instructions in this manual and all applicable press manuals.</p>		<p> WARNING</p> <p>Always hand cycle the module in the press to ensure the tooling is properly aligned.</p> <p>Failure to observe these precautions may result in injury or property damage.</p>

	<p>WARNING</p> <p>Never use this equipment in a press or wire processing machine without guards or safety devices that are intended to prevent hands from remaining in the die space. This equipment is supplied with no guards and is intended to be used with the guards the press and/or the wire processor. Failure to observe this warning could result in severe injury or death.</p>	<p>WARNING</p>  <p>Do not use compressed air to clean the equipment. The forces created by compressed air can force debris into the tool. Failure to observe these precautions may result in injury or property damage.</p>
<p>CAUTION</p> <p>The Molex Crimp Module is designed to operate ONLY in the TM-3000 and TM-4000 press with standard shut height at 135.80mm (5.346"). Installation in crimp presses with other than standard shut heights can cause severe tool damage. Check the shut height of the crimp press before operating the Crimp Module. Molex will not be liable for any damages as a result of installation in a crimp press with nonstandard or improperly set shut height. Failure to observe these precautions may result in injury or property damage.</p>		
<p>CAUTION</p> <p>Never perform any service or maintenance other than as described in this manual. Never modify, alter or misuse the equipment Molex crimp specifications are valid only when used with Molex terminals, applicators and tooling. 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 Molex application tools. 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 the applicator it is recommended to have the following: a copy of the *Tooling Manual*, the specific *Application Tooling Specification* and a person familiar with the application tool 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. 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
 Fax: +1 (630) 505-0049

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

Principal Mechanical Parts of the FFC Termination Kit

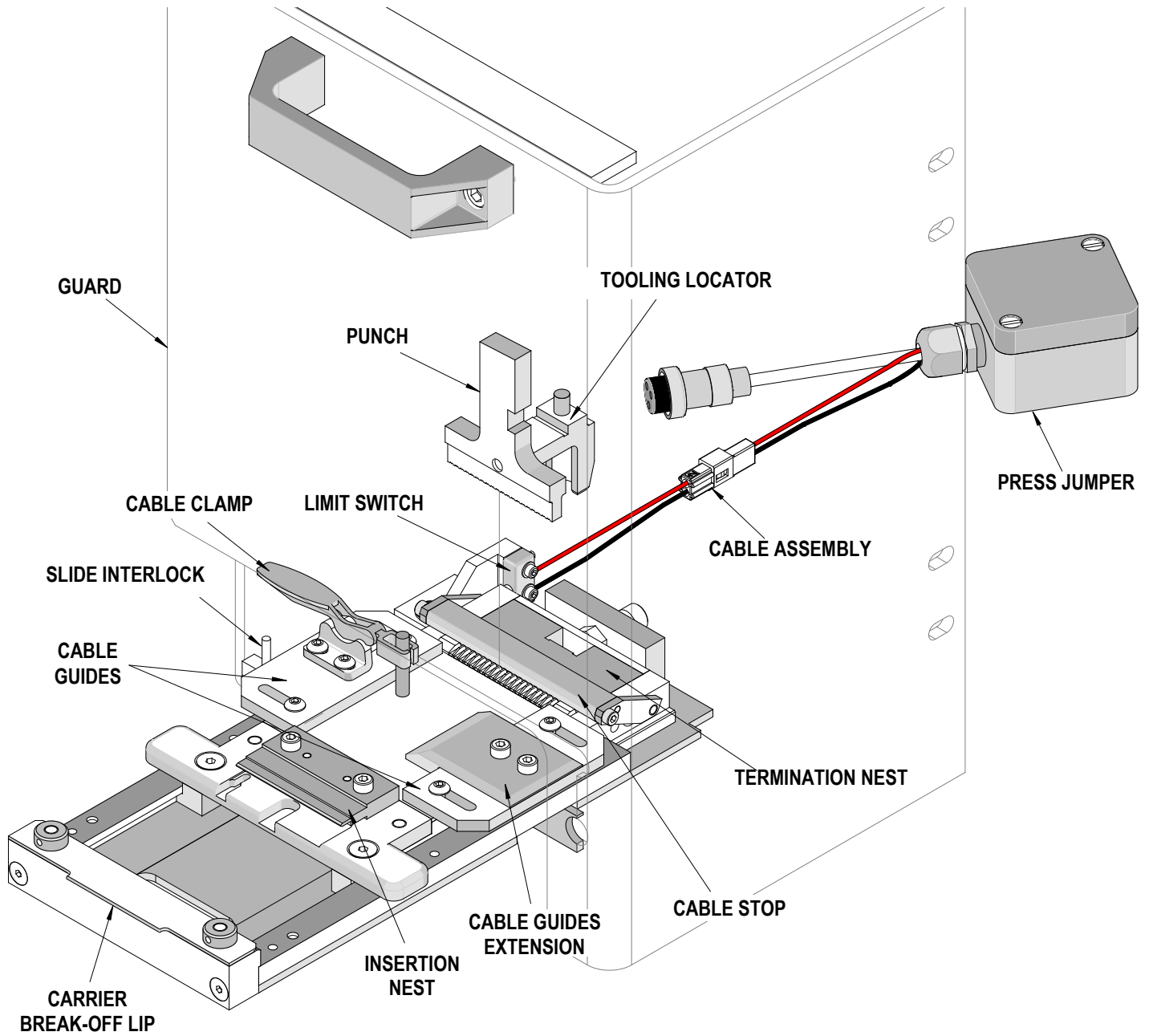


Figure 1-1

Section 1

General Description

1.1 Description

The C-Grid® SL™ FFC Termination Kit gives the T2 and Terminator Crimp Module the ability to crimp flat flex cable (FFC) to the 70430 series connectors using the TM-3000 or TM-4000 press

This FFC Termination Kit is installed ONLY in the Molex 63801-8500 T2 and Terminator Crimp Module. This unit will not work in other industry-standard presses.

Molex offers the following presses for operating the Crimp Module with the FFC Termination Kit:

- ✓ TM-3000 Press 120 V 60 Hz. **63801-7200**
- ✓ TM-3000 Press 240 V 50 Hz. **63801-7300**
- ✓ TM-4000 Press 240 V 60 Hz. **63801-7600**

1.2 Features

- Fine adjustment allows users to achieve FFC crimp height target by adjusting a wedge (0.74 mm total adjustment) for conductor crimp height.
- Built-in terminal insertion tool and carrier strip break-off tool.
- Quick crimp punch removal.
- Compatible ONLY with the Molex TM-3000 and TM-4000 Universal Presses

1.3 Technical Specification

Dimensions

(Lower Tooling Only)

Width:	145mm	(5.7")
Depth:	260mm	(10.2")
Height:	44mm	(1.7")

Weight (Termination Kit Only)

3.8kg (8.5lbs)

Guarding

The FFC Termination Kit is supplied with special guard panels that must be installed on the TM-3000 or TM-4000 press.



Do not operate the FFC Termination Kit without guard panels installed.

Product

C-Grid® SL™ FFC Single Row Assembly
Series 70430 and 70431, 2 through 20 circuits
See Product List for applicable part numbers.

1.4 Delivery Check

Carefully remove the FFC Termination Kit from its shipping container; note that the following items are included in the package:

TM-638018550 Operation Manual	1
FFC Termination Kit	1
Guard panels for FFC Kit	1
Safety Switch and bracket	1
Jumper wire assembly	1

1.5 Crimp Tooling Accessories (optional)

Molex Order No. 63800-2810 Eye loupe

1.6 Tools

The following tools are recommended for setup and adjustments to the applicator:

1. Metric and English hex wrench sets
2. Adjustable wrench
3. Feeler gages/ shim stock
4. Eye loupe (5X)

1.7 Application Tooling Specification Sheets

Termination specifications for the C-Grid® SL™ FFC product may be found in document number PS-70430, available on the Molex website.

Note: Document PS-70430 also includes dimensional requirements for the flat flex cable.

Section 2

Set-Up and Operation



Read the following instructions before attempting to terminate FFC product in the Crimp Module.

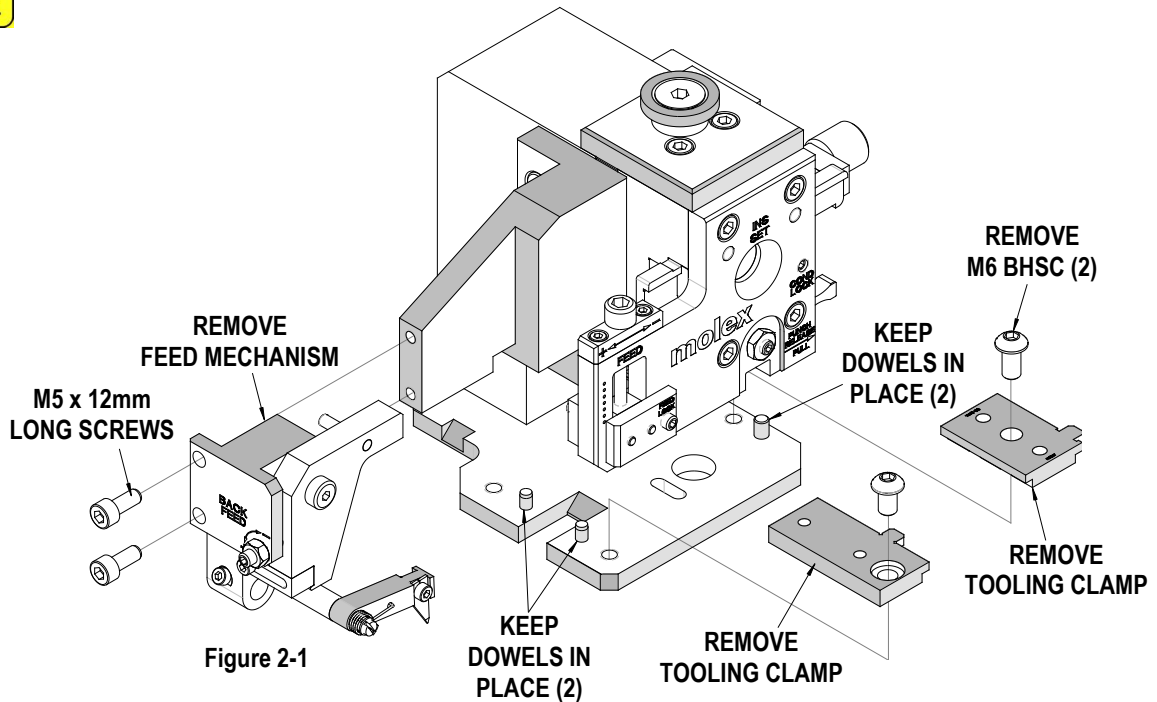


Figure 2-1

2.1 Crimp Module Preparation

For the FFC Termination Kit to be installed in the Crimp Module, the terminal feed mechanism and tooling clamps must be removed.

1. Using a 4mm hex wrench, remove the (2) M5 x 12mm long screws holding the feed mechanism to the module.
2. Keep the M5 x 12mm long screws; they will be used to mount a guard panel in this area.
3. Remove the M6 BHCS and the left and right tooling clamps. Leave the dowel pins in the base plate. See Figure 2-1.

2.2 Press Preparation

The press must have its foot switch cord disconnected and guard door removed.

At the back of the press, disconnect the 3-pin foot switch cord and the power cord. See Figure 2-2. For safety reasons, also disconnect the power cord.

To remove the press guard door, open the door and remove the (4) screws from the door hinges. See Figure 2-3.

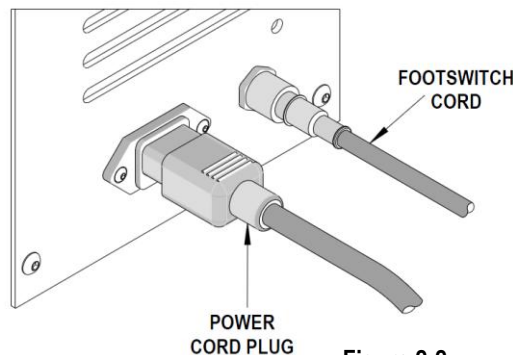


Figure 2-2

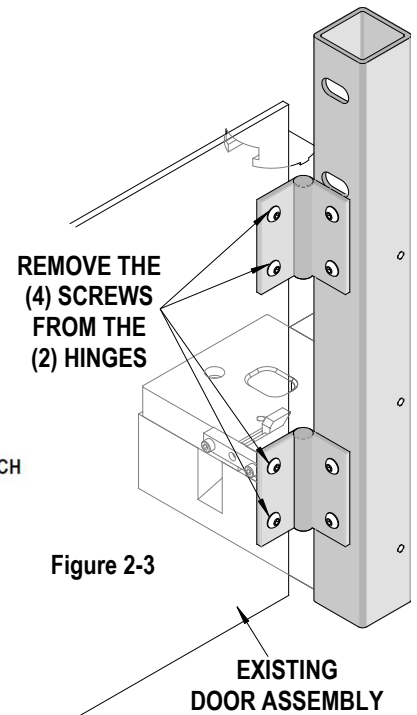


Figure 2-3

Install the guard door that is included with the FFC Termination Kit. Adjust the door on the hinges until it closes properly on the press.

2.3 Shut Height

The shut height for the Crimp Module is 135.80mm (5.346"). The shut height for the crimp press is calibrated using a Shut Height Gauge. See Figure 2-1. The gauge is designed to apply the proper load at 135.80mm (5.346") shut height. Molex offers an industry standard shut height gauge (order number 63800-7900) that will fit in the TM-3000 and TM-4000 crimp presses. It is recommended that the crimp press shut height be checked regularly.

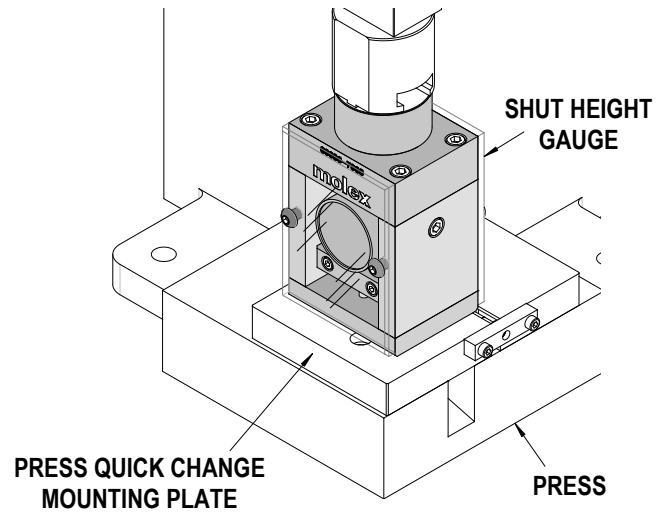


Figure 2-4

The Crimp Module is designed to operate in the TM-3000 and TM-4000 crimp presses with standard shut height of 135.80mm (5.346"). Installation in crimp presses with non-standard shut can cause severe tool damage. It is recommended before installation, a check of the shut height be performed. The correct shut height is required to prevent the FFC punch from striking the support anvil.

Measuring Press Shut Height



Always turn off and disconnect the power supply to the press.

1. Open the guard door.
2. Remove the applicator or Crimp Module from the press. See *Module Installation and Removal* (below) for additional information. Clean the bottom of the press ram and top of the quick change mounting plate.
3. Place the shut height gauge onto the press quick change mounting plate. Align the gauge to the ram as shown in Figure 2-4.
4. Manually cycle the press to the down stroke position. See Section 2.2, *How to Manually Cycle the Press*, or follow the TM-3000 Operation Manual (order number TM638017299) Section 3.3 *Manually Cycling the Press*.
5. Read the shut height measurement from the front of the gauge. Follow the gauge manufacturers' instruction; usually the gauge reads "0" when shut height is 135.80mm (5.346").
6. If adjustments are necessary, refer to the TM-3000 press manual for adjustment of the press shut height.
7. Repeat the above steps until the correct shut height is obtained.
8. Shut height gauges must be calibrated on a regular basis.

2.4 How to Manually Cycle the Press



Always turn off and disconnect the power supply to the press.



Always hand cycle the Crimp Module in the press to ensure the tooling is properly aligned.

Note: When the press guard is open make sure the power is disconnected from the motor (MOTOR ON light is not illuminated)

Hand cycling the press is necessary to confirm correct tool alignment and terminal feed adjustment. It also allows setup personnel to observe the crimping cycle in slow-motion.

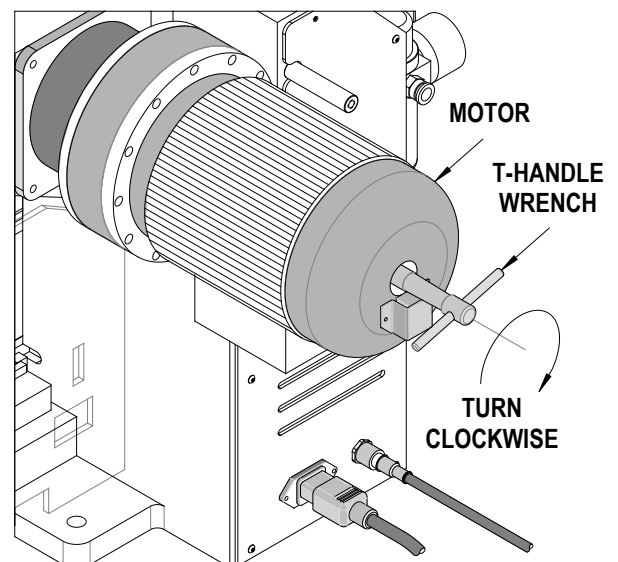


Figure 2-5

Manually Cycling the TM3000 and TM4000 Presses

1. Insert the hand-cycle T wrench (furnished with the press) through the access hole in the center of the motor's rear cover and locate it on the motor shaft. See Figure 2-5.
2. Rotate the wrench clockwise. This turns the motor and moves the ram down and up.
3. Always return the press ram back to top dead center to ensure that the ram is in the startup position.
4. Remove the T-handle wrench.



NOTE: When the T-handle wrench is inserted onto the motor shaft the power is automatically disconnected from the motor. Press the green MOTOR ON button to restore power to the motor.

2.5 FFC Termination Kit Installation in the Crimp Module

1. Remove the Crimp Module from the press.
2. Remove the M4 screw holding the ram in the frame. Pull the ram out of the frame.
3. Install the FFC crimp punch and Tooling Locator in the ram. See Figure 2-6.
4. Move the FFC slide back by pulling out the slide lock plunger, then pulling the slide back. See Figure 2-7.

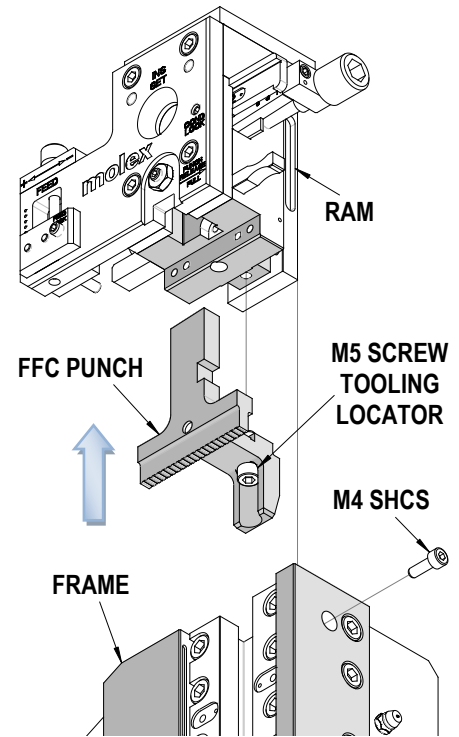


Figure 2-6

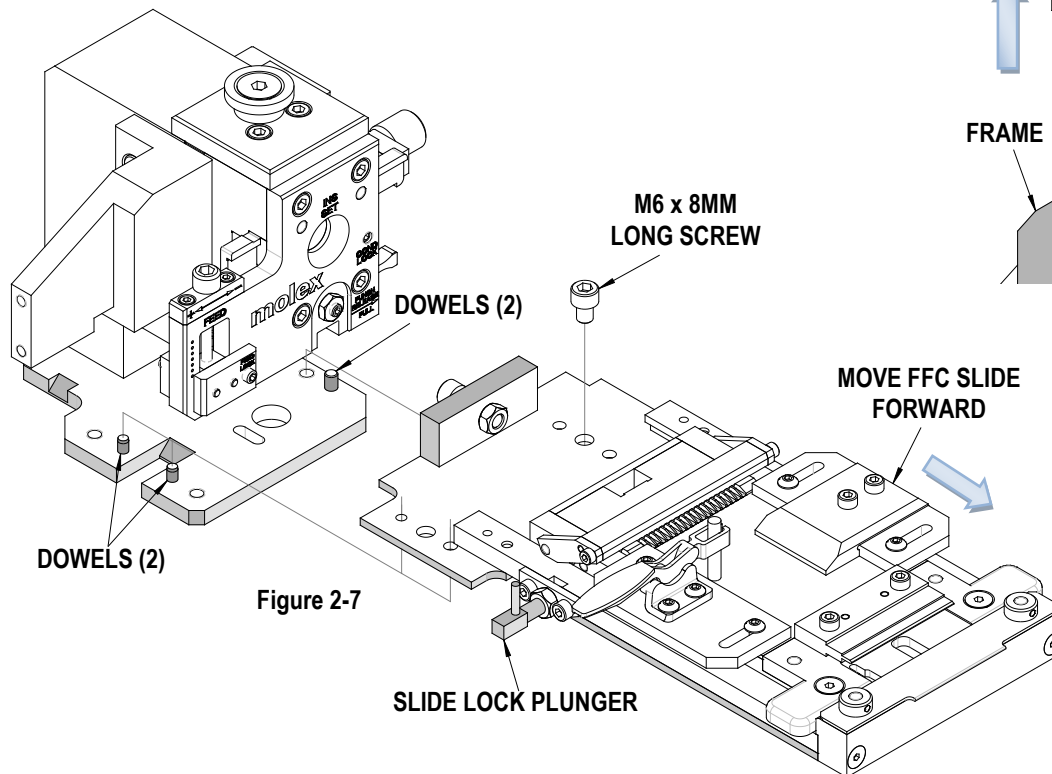


Figure 2-7

5. Locate the base plate of the FFC tooling on the four dowel pins protruding from the Crimp Module base plate. Fasten the right side of the FFC Baseplate to the crimp module with an M6 x 8mm long screw. See Figure 2-7.
NOTE: Do not use a screw longer than 8mm, otherwise the Crimp Module will not fit properly in the press.
6. The left side of the FFC base plate is clamped to the Crimp Module base plate with the slide safety switch bracket and an M6 x 16mm long screw. See Figure 2-8.
NOTE: Do not use a screw longer than 16mm, otherwise the Crimp Module will not fit properly in the press.
7. Place the ram back in the Crimp Module frame and tighten the M4 screw to prevent the ram from falling out.

2.6 Crimp Module Installation and Removal



Always turn off and disconnect the power to the press.

Installation

1. Open the press guard door.
2. Clean the quick change mounting plate of scrap or chips that may interfere with the Crimp Module installation.



Molex recommends a soft brush; **do not use** compressed air to clean the equipment. The forces created by compressed air can force debris into the tool.

3. To install the Crimp Module, follow the procedure below:
 - a. Using a 4mm hex wrench, turn the M5 socket head cap screw clockwise until the locking clamp is fully opened.
 - b. Slide the Module's ram adapter into the press ram yoke.
 - c. Pull the Crimp Module's frame down until the Module's base plate rests on the quick change mounting plate.
 - d. Visually align the Crimp Module's base plate notches on the left with the location clamps on the press quick-change mounting plate.
 - e. Slide the Crimp Module to the left until the two notches in the base plate engage against the location clamps. See Figure 2.9.
 - f. To lock the crimp module, turn the M5 socket head cap screw counterclockwise until tight.

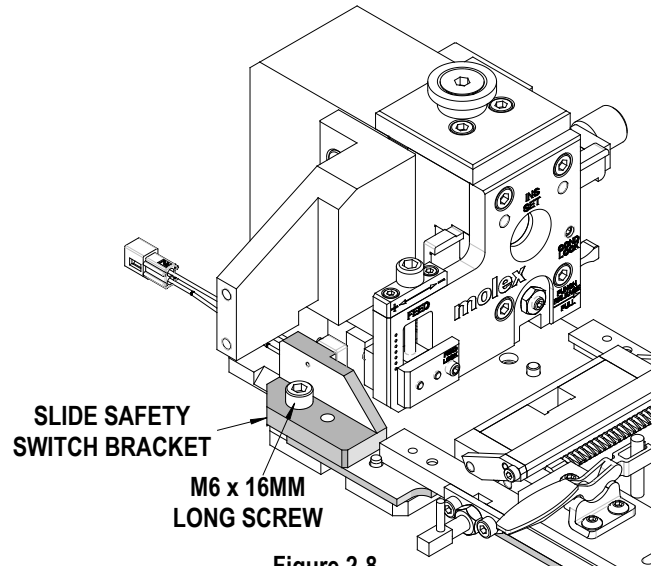


Figure 2-8

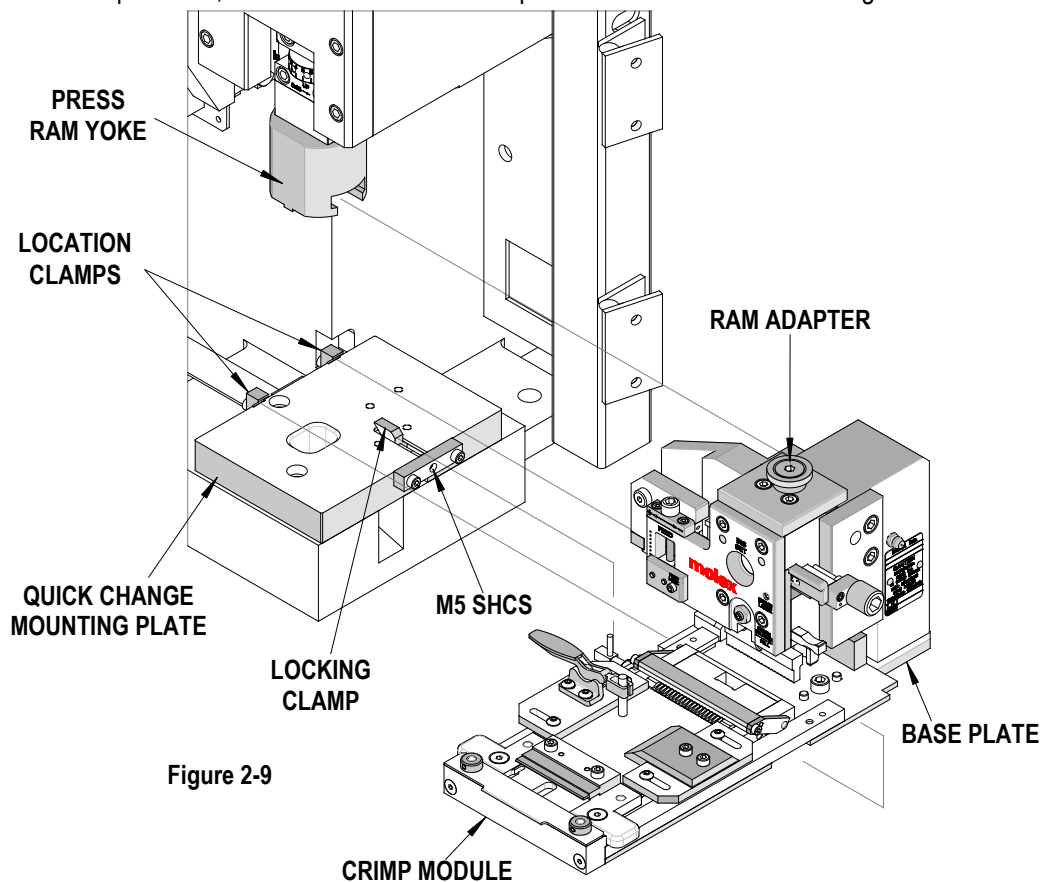


Figure 2-9

4. Install the side guard on the Crimp Module. Use the (2) M5 x12mm screws (see section 2.1) to fasten the guard on the Crimp Module. See Figure 2-10.
5. Close the press guard door.
6. Hand cycle the press. See Section 2.2 *How to Manually Cycling the Press*. Make sure the ram moves up and down freely.
7. Connect the jumper wire assembly. (This allows the press to cycle only if the FFC slide is fully pushed in AND the foot pedal is pressed). The two-wire connector from the slide safety switch cable gets plugged into the receptacle. The pigtail (with the 3-pin connector) from the jumper wire junction box is connected to the 3-pin connector on the back of the press. Finally, the foot switch cable is connected to the 3-pin connector on the jumper wire junction box. See Figure 2-11



M5 x 12mm
SCREWS

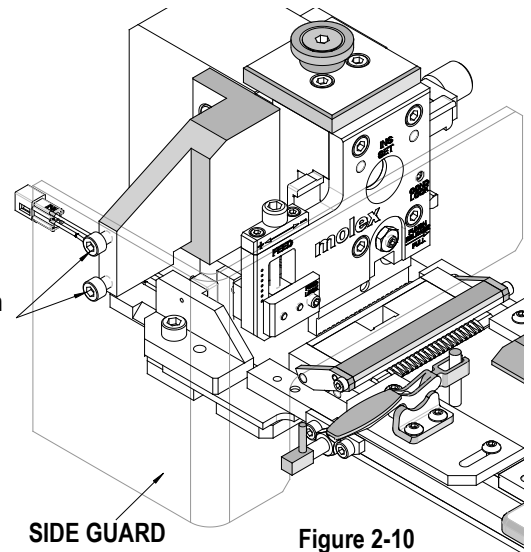


Figure 2-10

JUMPER WIRE ASSEMBLY

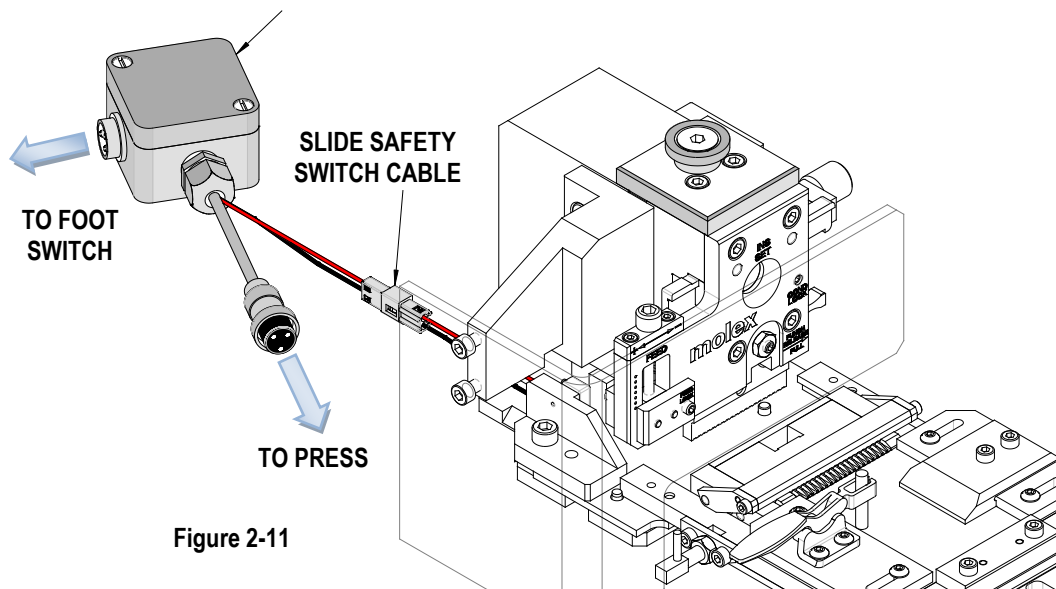


Figure 2-11

8. Reconnect power, turn on the press, and press the green MOTOR ON button.

Removal

Remove the Crimp Module by reversing the previous steps. When storing the Module, always leave an un-terminated FFC connector in the terminal nest to prevent damage to the FFC punch. See Section 5.5 *Storage*.

2.7 FFC Crimp Height Adjustment

1. Load FFC cable and an FFC connector in the tooling slide. Push the slide into the press and crimp the FFC under press power. Specifications for the FFC cable can be found in document PS-70430.
2. Inspect the quality of crimp and measure the crimp height. For FFC, a standard micrometer can be used. If adjustments are necessary, disconnect the power from the press. Open the guard door. The desired crimp height can be achieved by loosening the COND LOCK screw and turning the turning conductor cam adjusting knob clockwise to lower the crimp height or counterclockwise to raise the crimp height. Tighten the COND LOCK screw to prevent the conductor crimp adjustment from moving. See figure 2-12.



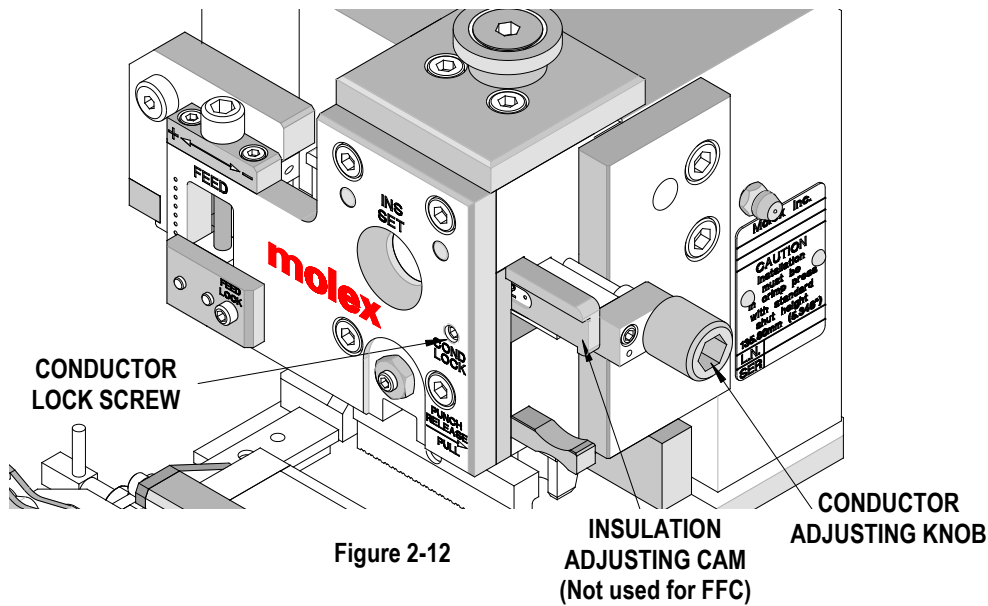


Figure 2-12

3. Close the guard door and repeat steps 1 – 3 until the desired crimp height is obtained.
4. Additional assessment of the FFC crimp should be done by micro-sectioning the crimped area. Molex does not offer equipment to do this.

2.8 Insulation Crimp Height Adjustment

The insulation adjusting cam of the Crimp Module has no influence on the FFC crimp height.

2.9 Operation



CAUTION: The operator and observers must wear eye protection when the press is in operation or being serviced.

CAUTION: *DO NOT* operate the TM3000 or TM4000 press without guards.

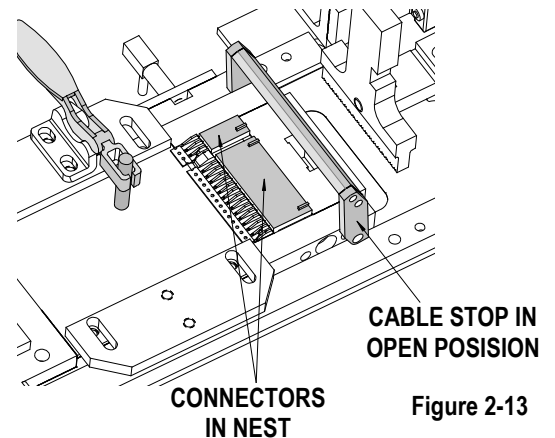


Figure 2-13

1. Lift the cable stop and load the connector(s) into the nest making sure the terminals are lined up in the terminal guides. (If terminating less than 20 circuits, it is preferable to center the connector in the nest.) See Figure-2-13.
2. Lower the cable stop onto the connector(s).
3. Place a cable between the guides and adjust the guides, if necessary, to center the cable over the connector but not so tight as to restrict cable handling. Then slide the cable up to the cable stop.

NOTE: It is important to press the front edge of the cable against the cable stop. This will achieve the proper location for the cable being pressed onto the connector.

4. Close the cable clamp located on the left side of the slide.
5. Slide the FFC nest into the press until the slide lock plunger clicks in. The nest position switch will not let the press cycle unless the nest is fully pushed in.
6. Push the foot pedal to cycle the press and terminate the connector(s) onto the cable.
7. Pull out the slide lock plunger and hold while sliding the FFC nest out of the press.
8. Remove the connector and cable assembly from the termination nest and load it into the insertion nest on the front of the FFC slide with the cable draped over the insertion bar. See Figure 2-14.

9. Place the second and third fingers of each hand around the handles on the insertion nest. Put the thumbs on the front of the insertion bar. While applying a light pressure with the index fingers on the cable over the carrier strip, squeeze the insertion nest toward the insertion bar. The carrier strip should drop into the slot in the insertion bar.

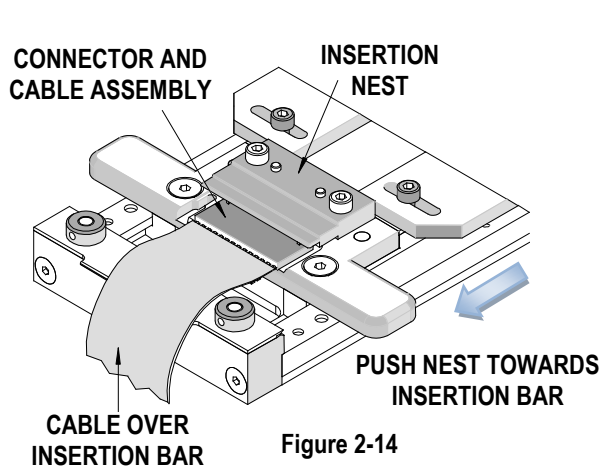


Figure 2-14

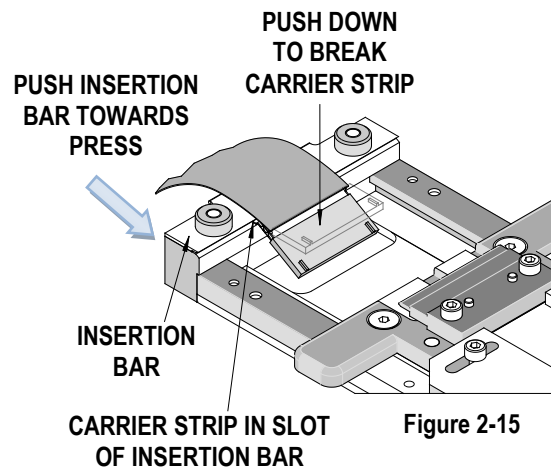


Figure 2-15

10. Continue to squeeze the insertion nest toward the insertion bar until the terminals are fully seated in the housing.
11. While holding the cable and connector back against the insertion bar, slide the nest and slide assembly away.
12. Push down on the connector to break the carrier strip off. The cable will spring the connector back up. See Figure 2-15.
13. Remove the completed harness.
14. Remove the carriers from the insertion bar by pushing the upper insertion bar forward. This will expel the carrier strips from the tool.

Section 3

Troubleshooting

Symptom	Cause	Section	Solution
FFC crimp height too high	▪ FFC crimp punch adjusted too high		Readjust crimp height
	▪ FFC crimp punch is worn		Replace punch
	▪ FFC being crimped is too thick		Review PS-70430
	▪ Wrong press shut height		Reset shut height
FFC crimp height too low	▪ FFC crimp punch adjusted too low		Readjust crimp height
	▪ FFC being crimped is too thin		Review PS-70430
	▪ Wrong press shut height		Reset shut height
FFC crimps damaged	▪ Worn FFC crimp punch		
	▪ Damaged anvil in housing nest		
	▪ Improper application		
FFC crimp not centered to trace of FFC	▪ FFC guide not adjusted		Adjust guide
	▪ FFC not clamped		Adjust clamp
	▪		
	▪		

Section 4

Other Adjustments

4.1. Punch and Anvil Alignment

The alignment of the punch and anvil is determined by the tooling locator mounted to the ram. As the tooling locator enters the rectangular opening behind the housing nest, it centers the tooling on the FFC slide to the FFC punch.

The FFC slide has an adjustable stop screw to prevent the slide from being pushed in too far. The stop screw should be adjusted so the slide goes slightly farther than necessary. The tooling locator can then pull the slide away from the stop screw.

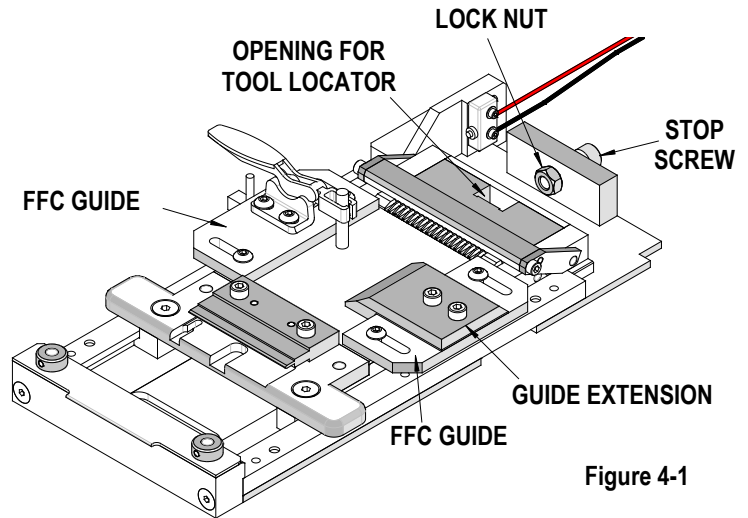


Figure 4-1

The stop screw should not be adjusted to cause binding between the FFC slide and tooling locator. See Figure 4-1.

4.2 FFC Guide Adjustment

The FFC guides assist the operator in alignment of the FFC to the connector terminals.

Use a 2.5mm hex wrench to loosen the screws holding the guide and adjust as necessary. For narrower cables, there is a guide extension that may be used. See Figure 4-1.

4.3 Slide Switch Adjustment

If the slide switch is not properly adjusted, the press may not cycle or it may cycle before the slide is fully pushed in. Adjustment of the slide switch should be done using a multi-meter or a test light.

1. To adjust the slide switch, move the FFC slide all the way into the press. Make sure the plunger has locked the slide in position.
2. Loosen M6 screw holding the slide switch mounting bracket and unplug the slide switch cable. Using a test light or multi-meter, move the slide switch bracket forward or back until the switch makes contact (test light goes on or meter reads zero ohms). See Figure 4-2.
3. Move the FFC slide in and out to ensure that the switch adjustment is stable. Tighten the M6 screw when adjustment is complete.

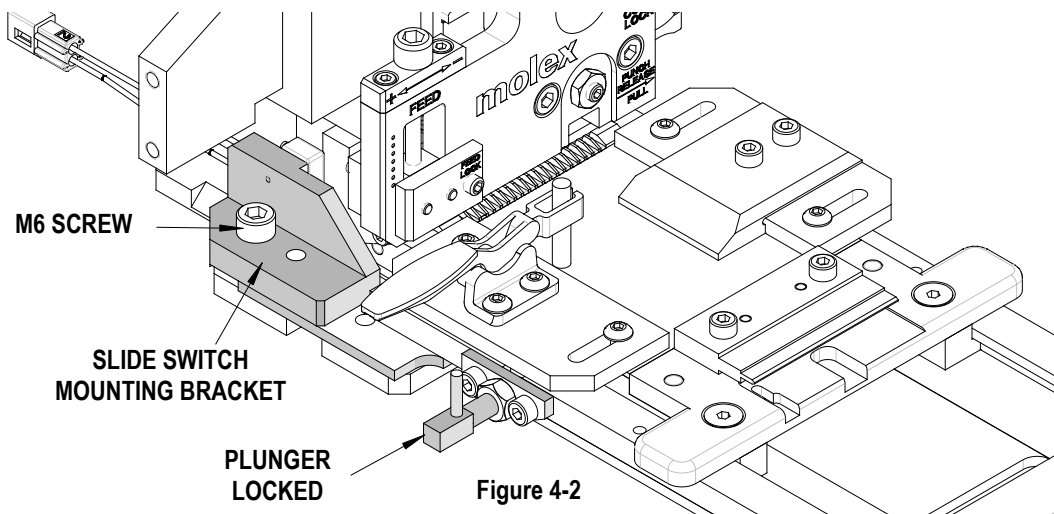


Figure 4-2

4.4 FFC Crimp Punch Installation and Removal



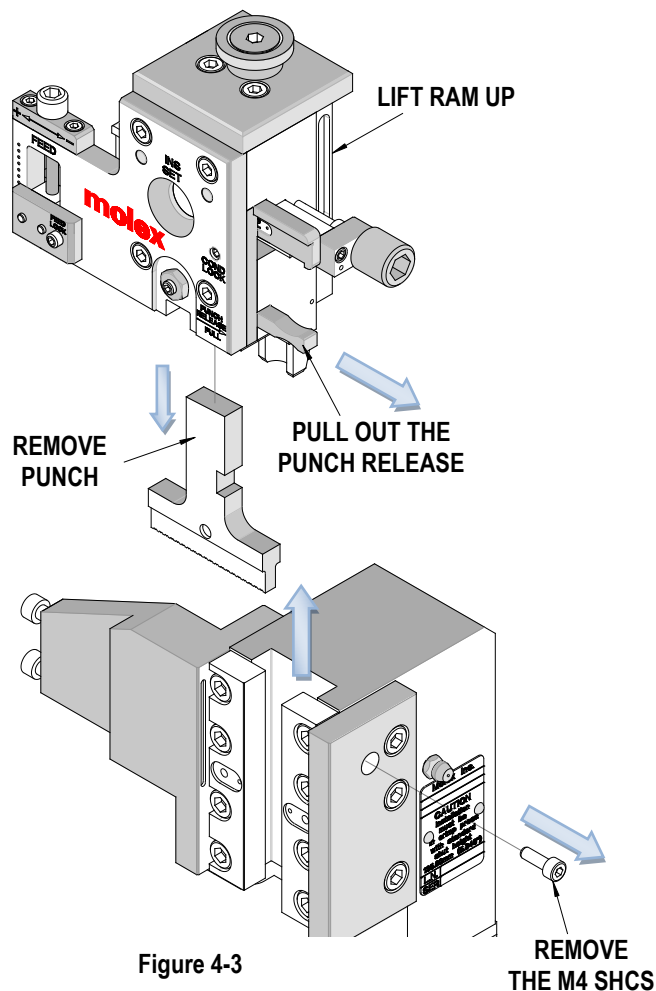
Always turn off and disconnect the power supply to the press.

NOTE: Always clean mounting surfaces of crimp tooling and tooling holders before installation.



Molex recommends a soft brush; **do not use** compressed air to clean the Crimp Module. The forces created by compressed air can force debris into the tool or at the operator.

1. Disconnect power from the press. Open the guard door.
2. Remove the Crimp Module from the press. See Section 2.3, *Crimp Module Installation and Removal*.
3. Use a 3mm hex wrench to remove the M4 socket head cap screw retaining the ram. See Figure 4.3.
4. Pull the ram out of the Crimp Module frame.
5. Pull out the punch release. While holding it out, pull the FFC crimp punch out of the bottom of the ram. See Figure 4.3.
6. Reverse the previous steps to reinstall the punch.



Section 5

Maintenance

5.1 Cleaning



Always turn off and disconnect the power supply to the press.



For efficient operation, the Crimp Module should be cleaned daily. Use a soft bristle brush to remove debris from critical areas such as the crimp tooling. For best results, remove the crimp tooling from the press. Brush and then use a clean cloth to wipe off the upper and lower tooling mounting areas. Before reinstalling tooling, wipe all sides of the punches and anvils with a clean cloth.

5.2 Lubrication



Always turn off and disconnect the power supply to the press.

1. Make sure the press ram is fully up.
2. Disconnect power from the press. Open the guard door.
3. Use a grease gun on the Zerk fitting to grease the ram guides. See Figure 5-1.
4. For the ram, use synthetic grease with Teflon® or an equivalent. (The Crimp Module is shipped greased with Permatex® No. 82329.)

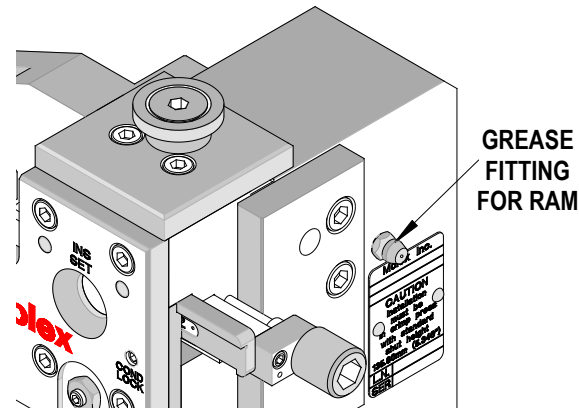


Figure 5-1



WARNING: Never use penetrants such as WD40 for any lubrication on the Crimp Module.

Preventive Maintenance Chart

An example of a maintenance chart is shown below. Use this chart to track the maintenance of your Crimp Module or use it as a template to create a schedule.

Daily: Clean. See Section 5.1.

As Required: Lubricate. See Section 5.2.

CHECK SHEET MONTH _____ YEAR _____

Week	Cycles	Daily Clean	Days of the Week							Notes
			MON	TUE	WED	THU	FRI	SAT	SUN	
1										
2										
3										
4										
Cleaning Reapply grease. Reapply oil	25,000	Yes								Soft Brush Industrial Degreaser
Inspect all tooling (Punch, anvil etc.) for wear	25,000	Yes								Replace if worn

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

5.3 Spare Parts

Customers are responsible for maintaining the Crimp Module. Spare parts are available. Moving and functioning parts can be damaged or wear out over time and will require replacement. Having some spare parts on-hand will reduce production down time. Recommended Spare Parts are noted as **RSP** in the Termination Kit parts list.

Recommended Spare Parts are noted as RSP in the Termination Kit parts list.

5.4 Perishable Parts



Perishable parts come in contact with the terminal or wire and tend to wear quickly or are fragile. At least one perishable tool kit should be on-hand to reduce production down time. Recommended Perishable Parts are noted as **PP** in the Termination Kit parts list.

Tooling Replacement Schedule

The following is offered as a general guideline for tooling replacement. The user should monitor their process and collect data on actual frequency as tool wear varies on different terminal materials and tool life can be increased with good maintenance practices or decrease with lack of maintenance.

Judgment on tool replacement should be based on the attributes of the crimp they produce.

Section 6

6.1 Parts List and Assembly Drawing

C-Grid® SL™ FFC Termination Kit 63801-8550				
Item	Order No.	Engineering No.	Description	Quantity
Perishable Tooling				
1	62201-4218	62201-4218	Carrier Bar	1 PP
2	62201-8705	62201-8705	Anvil	1 PP
3	62201-8709	62201-8709	Terminal Locator	1 PP
4	62201-8715	62201-8715	Termination Punch	1 PP
Other Components				
5	62200-6002	62200-6002	Left Gib	1
6	62200-6003	62200-6003	Gib	1
7	62200-6007	62200-6007	Slide Bar	1
8	62200-6008	62200-6008	Left Slide Bar	1
9	62200-6017	62200-6017	Locator Block	1
10	62200-6021	62200-6021	Spacer	1
11	62200-6022	62200-6022	Spring	1 RSP
12	62200-6026	62200-6026	Cable Stop Arm	2
13	62200-6027	62200-6027	Plunger Mount	1
14	62200-6028	62200-6028	Spring Support	1
15	62200-7721	62200-7721	Cable Assembly With Limit Switch	1
16	62200-7729	62200-7729	Stop Block	1
17	62201-4201	62201-4201	Base Plate	1
18	62201-4206	62201-4206	Nest Locator Bar	1
19	62201-4211	62201-4211	Plate	1
20	62201-4214	62201-4214	Back Bar	1
21	62201-8704	62201-8704	Connector Nest	1
22	62201-8712	62201-8712	Insert Nest	1
23	62201-8713	62201-8713	Insert Nest Cover	1
24	62201-8716	62201-8716	Cable Guide	2
25	62201-8725	62201-8725	Cable Stop	1
26	62201-8730	62201-8730	Cable Guide Extension	1
27	63600-0575	63600-0575	5mm I.D. Collar Set Screw	2
28	63600-0576	63600-0576	Toggle Clamp	1 RSP
29	63600-0621	63600-0621	Plunger	1 RSP
30	63801-7212	63801-7212	Guard Handle	1
31	63801-7287	63801-7287	Bracket Guard	1
32	63801-8551	63801-8551	Front Guard	1
33	63801-8552	63801-8552	Guard Side	1
34	63801-8553	63801-8553	FFC Switch Bracket	1
35	63801-8554	63801-8554	FFC Press Jumper	1
Hardware				
36	N/A	N/A	M2 by 12 Long SHCS	2**
37	N/A	N/A	M2 Flat Washer	2**
38	N/A	N/A	M3 by 8 Long SHCS	2**

C-Grid® SL™ FFC Termination Kit 63801-8550				
39	N/A	N/A	M4 by 6 Long BHCS	2**
40	N/A	N/A	M4 by 8 Long FHCS	8**
41	N/A	N/A	M4 by 8 Long SHCS	2**
42	N/A	N/A	M4 by 10 Long BHCS	2**
43	N/A	N/A	M4 by 10 Long SHCS	4**
44	N/A	N/A	M4 by 12 Long BHCS	4**
45	N/A	N/A	M4 by 12 Long SHCS	6**
46	N/A	N/A	M4 by 20 Long FHCS	2**
47	N/A	N/A	M5 by 10 Long FHCS	2**
48	N/A	N/A	M5 by 16 Long SHCS	1**
49	N/A	N/A	M6 by 8 Long SHCS	1**
50	N/A	N/A	M6 by 16 Long SHCS	3**
51	N/A	N/A	M6 by 20 Long SHCS	1**
52	N/A	N/A	M6 by 10 Hex Nut	2**
53	N/A	N/A	3mm by 8 Long Dowel Pin	4**
54	N/A	N/A	4mm by 10 Long Dowel Pin	6**
55	N/A	N/A	4mm by 12 Long Dowel Pin	2**
56	N/A	N/A	4mm by 16 Long Dowel Pin	2**
57	N/A	N/A	4mm by 20 Long Dowel Pin	2**
58	N/A	N/A	5mm by 12 Long Dowel Pin	4**
** Available from an industrial supply company such as MSC (1-800-645-7270).				

6.2 Assembly

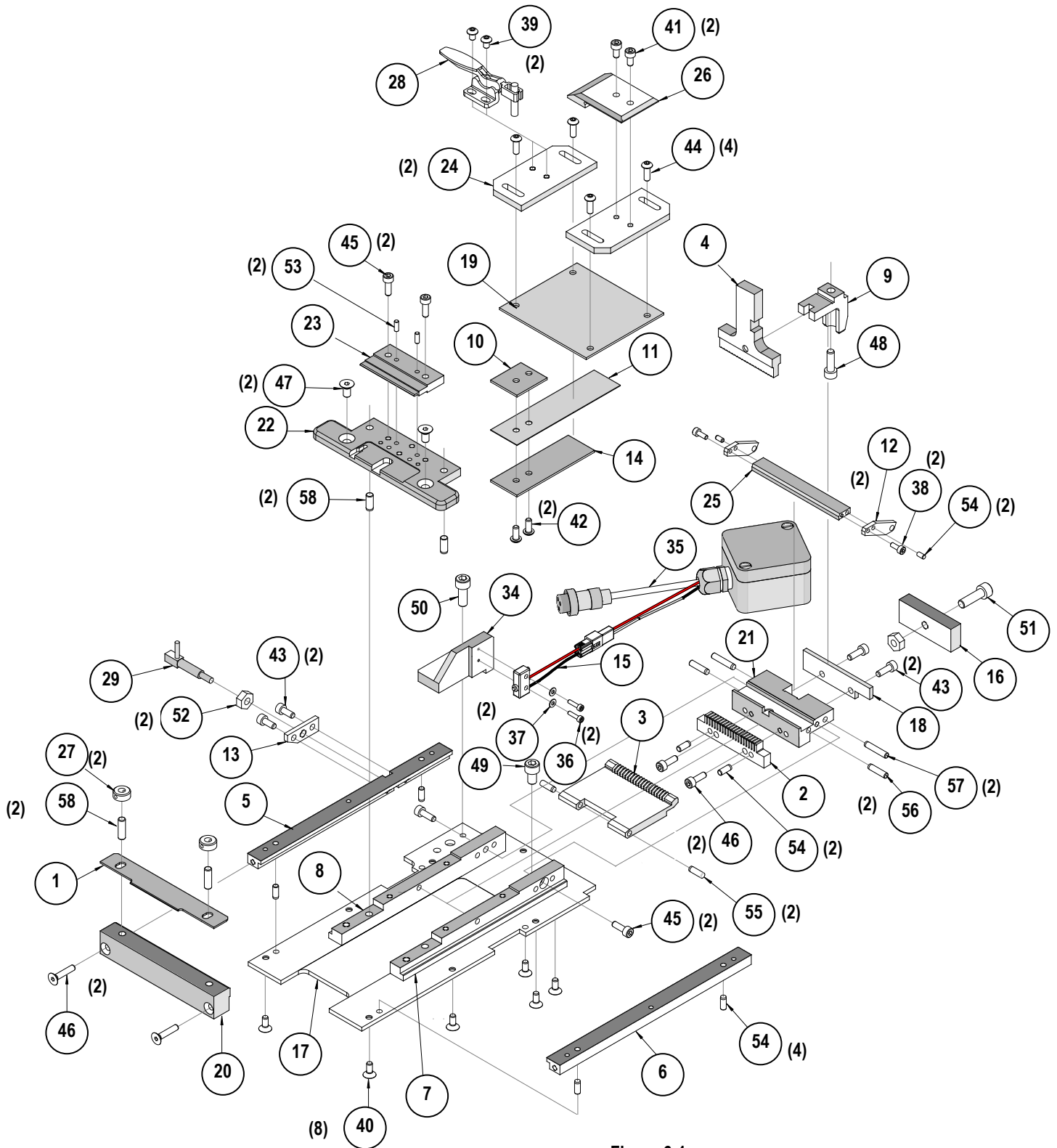


Figure 6-1

6.2 Guard Assembly

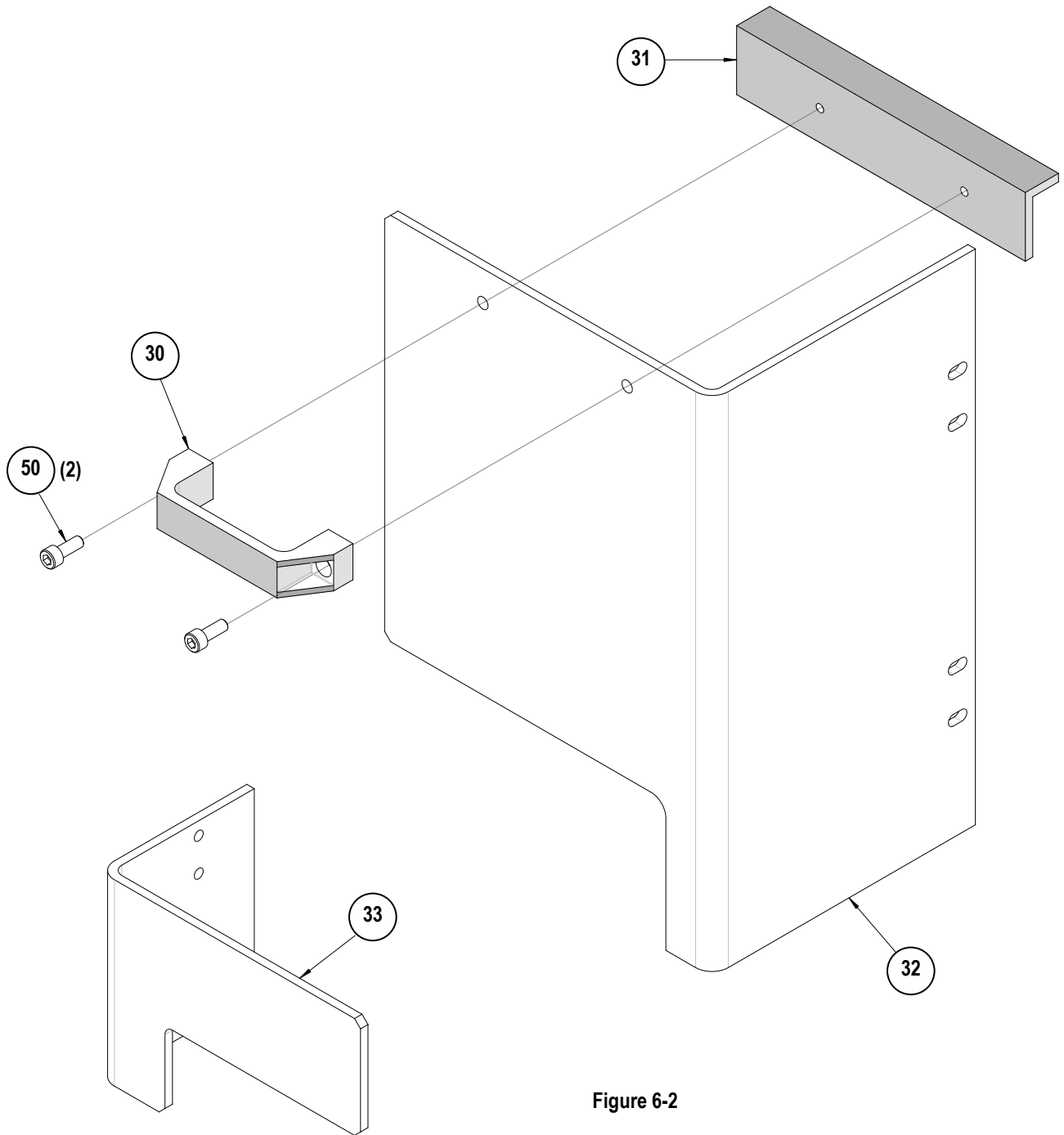


Figure 6-2

6.3 Product List

Terminal Series No.	Terminal Order No.							
70430	15-38-8020	15-38-8027	15-38-8028	15-38-8029	15-38-8030	15-38-8037	15-38-8038	15-38-8039
	15-38-8040	15-38-8047	15-38-8048	15-38-8049	15-38-8050	15-38-8057	15-38-8058	15-38-8059
	15-38-8060	15-38-8067	15-38-8068	15-38-8069	15-38-8070	15-38-8077	15-38-8078	15-38-8079
	15-38-8080	15-38-8087	15-38-8088	15-38-8089	15-38-8090	15-38-8097	15-38-8098	15-38-8099
	15-38-8100	15-38-8107	15-38-8108	15-38-8109	15-38-8110	15-38-8117	15-38-8118	15-38-8119
	15-38-8120	15-38-8127	15-38-8128	15-38-8129	15-38-8130	15-38-8137	15-38-8138	15-38-8139
	15-38-8140	15-38-8147	15-38-8148	15-38-8149	15-38-8150	15-38-8157	15-38-8158	15-38-8159
	15-38-8160	15-38-8167	15-38-8168	15-38-8169	15-38-8170	15-38-8177	15-38-8178	15-38-8179
	15-38-8180	15-38-8187	15-38-8188	15-38-8189	15-388190	15-38-8197	15-38-8198	15-38-8199
	15-38-8200	15-38-8207	15-38-8208	15-38-8209				
	15-47-4020	15-47-4021	15-47-4022	15-47-4023	15-47-4024	15-47-4025	15-47-4026	15-47-4027
	15-47-4030	15-47-4031	15-47-4032	15-47-4033	15-47-4034	15-47-4035	15-47-4036	15-47-4037
	15-47-4040	15-47-4041	15-47-4042	15-47-4043	15-47-4044	15-47-4045	15-47-4046	15-47-4047
	15-47-4050	15-47-4051	15-47-4052	15-47-4053	15-47-4054	15-47-4055	15-47-4056	15-47-4057
	15-47-4060	15-47-4061	15-47-4062	15-47-4063	15-47-4064	15-47-4065	15-47-4066	15-47-4067
	15-47-4070	15-47-4071	15-47-4072	15-47-4073	15-47-4074	15-47-4075	15-47-4076	15-47-4077
	15-47-4080	15-47-4081	15-47-4082	15-47-4083	15-47-4084	15-47-4085	15-47-4086	15-47-4087
	15-47-4090	15-47-4091	15-47-4092	15-47-4093	15-47-4094	15-47-4095	15-47-4096	15-47-4097
	15-47-4110	15-47-4111	15-47-4112	15-47-4113	15-47-4114	15-47-4115	15-47-4116	15-47-4117
	15-47-4120	15-47-4121	15-47-4122	15-47-4123	15-47-4124	15-47-4125	15-47-4126	15-47-4127
	15-47-4130	15-47-4131	15-47-4132	15-47-4133	15-47-4134	15-47-4135	15-47-4136	15-47-4137
	15-47-4140	15-47-4141	15-47-4142	15-47-4143	15-47-4144	15-47-4145	15-47-4146	15-47-4147
	15-47-4150	15-47-4151	15-47-4152	15-47-4153	15-47-4154	15-47-4155	15-47-4156	15-47-4157
	15-47-4160	15-47-4161	15-47-4162	15-47-4163	15-47-4164	15-47-4165	15-47-4166	15-47-4167
	15-47-4170	15-47-4171	15-47-4172	15-47-4173	15-47-4174	15-47-4175	15-47-4176	15-47-4177
	15-47-4180	15-47-4181	15-47-4182	15-47-4183	15-47-4184	15-47-4185	15-47-4186	15-47-4187
	15-47-4190	15-47-4191	15-47-4192	15-47-4193	15-47-4194	15-47-4195	15-47-4196	15-47-4197
	15-47-4220	15-47-4221	15-47-4222	15-47-4223	15-47-4224	15-47-4225	15-47-4226	15-47-4227
	15-47-4230	15-47-4231	15-47-4232	15-47-4233	15-47-4234	15-47-4235	15-47-4236	15-47-4237
	15-47-4242	15-47-4241	15-47-4242	15-47-4243	15-47-4244	15-47-4245	15-47-4246	15-47-4247
	15-47-4250	15-47-4251	15-47-4252	15-47-4253	15-47-4254	15-47-4255	15-47-4256	15-47-4257
	70430-0352	70430-0353	70430-1005	70430-1050	70430-4043	70430-4053		
	70430-4102	70430-4103	70430-4107	70430-4202	70430-4253			
	70430-5000	70430-5001	70430-5002	70430-5003	70430-5004	70430-5005	70430-5006	70430-5007
	70430-5008	70430-5009	70430-5010	70430-5011	70430-5012	70430-5013	70430-5014	70430-5015
	70430-5016	70430-5017	70430-5018					

Terminal Series No.	Terminal Order No.							
70431	15-38-9020	15-38-9022	15-38-9030	15-38-9032	15-38-9040	15-38-9042	15-38-9050	15-38-9052
	15-38-9060	15-38-9062	15-38-9070	15-38-9072	15-38-9080	15-38-9082	15-38-9090	15-38-9092
	15-38-9100	15-38-9102	15-38-9103	15-38-9110	15-38-9112			
	15-38-9120	15-38-9122	15-38-9130	15-38-9132	15-38-9140	15-38-9142	15-38-9150	15-38-9152
	15-38-9160	15-38-9162	15-38-9170	15-38-9172	15-38-9180	15-38-9182	15-38-9190	15-38-9192
	15-38-9220	15-38-9222	15-38-9230	15-38-9232	15-38-9240	15-38-9242	15-38-9250	15-38-9252
	15-47-4028	15-47-4038	15-47-4048	15-47-4058	15-47-4068	15-47-4078	15-47-4088	15-47-4098
	15-47-4108	15-47-4118	15-47-4128	15-47-4138	15-47-4148	15-47-4158	15-47-4168	15-47-4178
	15-47-4188	15-47-4198	15-47-4208	15-47-4218	15-47-4228	15-47-4238	15-47-4248	15-47-4258
	15-47-5020	15-47-5022	15-47-5024	15-47-5030	15-47-5032	15-47-5034	15-47-5040	15-47-5042
	15-47-5044	15-47-5050	15-47-5052	15-47-5054	15-47-5060	15-47-5062	15-47-5064	15-47-5070
	15-47-5072	15-47-5074	15-47-5080	15-47-5082	15-47-5084	15-47-5090	15-47-5092	15-47-5094
	15-47-5100	15-47-5102	15-47-5104	15-47-5110	15-47-5112	15-47-5114	15-47-5120	15-47-5122
	15-47-5124	15-47-5130	15-47-5132	15-47-5134	15-47-5140	15-47-5142	15-47-5144	15-47-5150
	15-47-5152	15-47-5154	15-47-5160	15-47-5162	15-47-5164	15-47-5170	15-47-5172	15-47-5174
	15-47-5180	15-47-5182	15-47-5184	15-47-5190	15-47-5192	15-47-5194	15-47-5200	15-47-5202
	15-47-5204	15-47-5210	15-47-5212	15-47-5214	15-47-5220	15-47-5222	15-47-5224	15-47-5230
	15-47-5232	15-47-5234	15-47-5240	15-47-5242	15-47-5244	15-47-5250	15-47-5252	15-47-5254
	704315050	704315080	704315100	704315110	704315200			

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