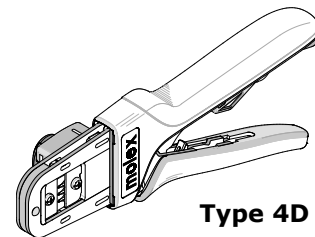# molex

**Order Number
200218-2200**

Application Tooling Specification

Type 4D

FEATURES

- A full cycle ratcheting hand tool ensures complete crimps
- Ergonomic soft grip handles for comfortable crimping
- A precision, user-friendly terminal locator wire stop holds terminals in the proper crimping position
- Right- and left-handed applications
- Dies and locator from this tool can be used in the Battery-Powered Tool Order No. 63816-0270 (110 V) or 63816-0280 (220 V), with the use of the 63816-0800 Crimp Head
- Many different tool kits can be used with a single Battery-Powered Crimp Tool
- This tool is IPC/WHMA-A-620 Class 2 compliant, as indicated on page 2
- This tool is RoHS compliant; however, RoHS compliance is not required

SCOPE

Products: Mini-Fit Jr. Male and Female Crimp Terminals, 16 AWG.

Terminal Series No.	Terminal Order No.				Wire Size	Insulation Diameter		Strip Length	
	Loose Piece		✱Reel		AWG	mm	In.	mm	In.
5556	39-00-0078	39-00-0174	39-00-0077	39-00-0173					
	39-00-0080	39-00-0180	39-00-0079	39-00-0179					
	39-00-0090	39-00-0186	39-00-0089	39-00-0185					
	39-00-0094	39-00-0199	39-00-0093	39-00-0198					
	39-00-0113	39-00-0205	39-00-0112	39-00-0204					
	39-00-0119	39-00-0212	39-00-0118	39-00-0211					
	39-00-0142	39-00-0218	39-00-0141	39-00-0217					
	39-00-0158	39-00-0448	39-00-0157	39-00-0447					
	39-00-0168		39-00-0167						
5558	39-00-0082	39-00-0131	39-00-0081	39-00-0130	16	1.80-3.10	.071-.122	3.00-3.50	.118-.138
	39-00-0084	39-00-0148	39-00-0083	39-00-0147					
	39-00-0096	39-00-0224	39-00-0095	39-00-0223					
	39-00-0100	39-00-0450	39-00-0099	39-00-0449					
	39-00-0125		39-00-0124						
44476	44476-3112		44476-3111						
44478	44478-3112	44478-3212	44478-3111	44478-3211					
44485	44485-3212	44485-3412	44485-3211	44485-3411					
	44485-3312		44485-3311						
45750	45750-3112	45750-3212	45750-3111	45750-3211					
46012	46012-3142	46012-3152	46012-3141	46012-3151					
	46012-3242	46012-3252	46012-3161	46012-3241					
			46012-3251						
46018	46018-3542		46018-3541						
✱Customer to cut off terminal from reel: 0.20mm (.008") maximum cut-off tab.									
+See conditions on page 3.									

DEFINITION OF TERMS
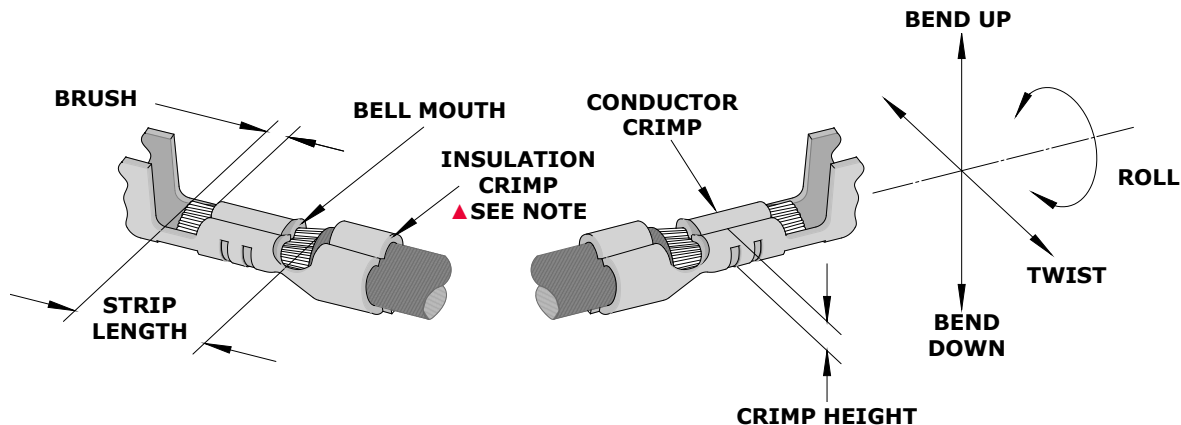
The above terminal drawing is a generic terminal representation. It is not an image of a terminal listed in the scope.

CONDITIONS

After crimping, the conductor profiles should measure the following:

Terminal Series No.	Wire Size	Conductor Crimp				Insulation Crimp				Pull Force Minimum		Locator Color	Profile		
		Height (Ref.)		Width (Ref.)		Height (Ref.)		Width (Ref.)					A	B	C
	AWG	mm	In.	mm	In.	mm	In.	mm	In.	N	Lb.				
5556	16	1.14-1.24	.045-.049	1.95	.077	2.85	.112	2.50	.098	68.5	15.40	Red			X
						2.85	.112	2.75	.108				X		
						3.35	.132	3.25	.128					X	
5558	16	1.14-1.24	.045-.049	1.95	.077	2.85	.112	2.50	.098	68.5	15.40	Blue			X
						2.85	.112	2.75	.108				X		
						3.35	.132	3.25	.128					X	
44476	16	1.14-1.24	.045-.049	1.95	.077	2.80	.110	2.50	.098	68.5	15.40	Red			X
						2.80	.110	2.75	.108				X		
						3.35	.132	3.25	.128					X	
44478	16	1.14-1.24	.045-.049	1.95	.077	2.85	.112	2.50	.098	68.5	15.40	Blue			X
						2.85	.112	2.75	.108				X		
						3.35	.132	3.25	.128					X	
44485	16	1.14-1.24	.045-.049	1.95	.077	2.85	.112	2.50	.098	68.5	15.40	Red			X
						2.90	.114	2.75	.108				X		
						3.35	.132	3.25	.128					X	
45750	16	1.14-1.24	.045-.049	1.95	.077	2.85	.112	2.50	.098	68.5	15.40	Red			X
						2.80	.110	2.75	.108				X		
						3.35	.132	3.25	.128					X	
46012	16	1.14-1.24	.045-.049	1.95	.077	2.80	.110	2.50	.098	68.5	15.40	Blue			X
						2.85	.112	2.75	.108				X		
						3.35	.132	3.25	.128					X	
46018	16	1.14-1.24	.045-.049	1.95	.077	2.80	.110	2.50	.098	68.5	15.40	Yellow			X
						2.85	.112	2.75	.108				X		
						3.35	.132	3.25	.128					X	

To achieve IPC/WHMA-A-620 Class 2 crimps, the following overall wire insulation diameter ranges are recommended:

- **Profile A:** 2.20-2.60mm (.087-.102") or UL1007
- **Profile B:** 2.85-3.15mm (.112-.124") or UL1015
- **Profile C:** 1.75-2.45mm (.069-.097") or UL1061

Tool Qualification Notes

1. Pull force should be measured with no influence from the insulation crimp.
2. The above specifications are guidelines to an optimum crimp.

▲Insulation Crimp Note

Due to the terminal's insulation grip design or insulation diameter range, this tool uses overlap form geometry in the insulation punch. This produces an overlap insulation crimp (A620-compliant). Although the insulation punch profile may appear lopsided, this is a normal condition for this tool. See figure to the right. (Some tools with multiple crimp pockets may not have the overlap profile on all pockets).

OVERLAP FORM GEOMETRY

PUNCH

OVERLAP INSULATION CRIMP

ANVIL
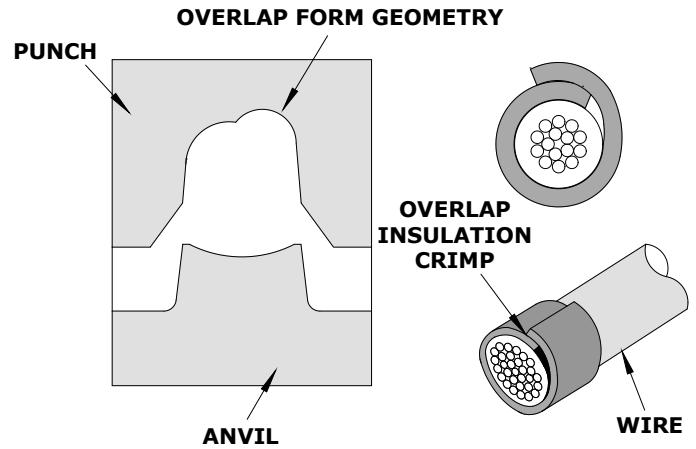
WIRE

Note

A crimp height chart is provided with this document as a reference only. Due to the wide range of wires, strands, insulation diameters and durometers available, actual crimp height measurements may very slightly. An occasional destructive pull force test should be performed to check hand tool crimp. Pull force value must exceed the minimum pull force specifications listed.
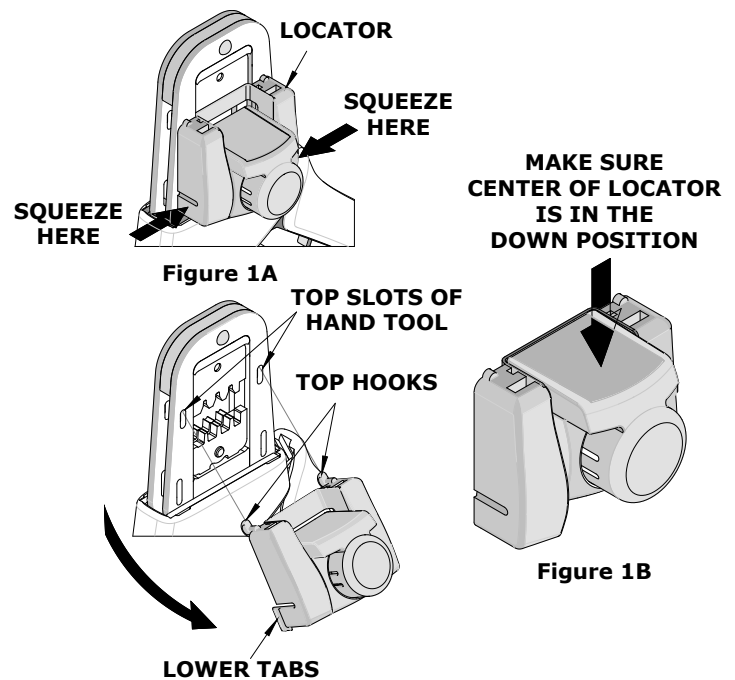
SETUP

Locator Replacement

Refer to the above chart to determine the correct locator based on your specific crimping application. Match the terminal series number to the appropriate locator color.

Note: You must install the correct locator prior to operating this hand tool.

See the parts list on the last page of this document for the proper locator order number. Follow the steps below to replace the locator:

1. Open the hand crimp tool.
2. Squeeze gently on the lower area shown in Figure 1A with your thumb and index finger. The lower tabs of the locator should disengage from the hand tool.
3. Lift and pull away from the hand tool. The top locator hooks should slip out of the top slots easily. See Figure 1A.
4. To install the new locator, make sure the hand tool is in the open position.
5. Press the center of the locator down as far as it will go as shown in Figure 1B.
6. Holding onto the lower part of the locator with your thumb and index finger, insert the locator's top hooks (2) into the hand tool's top slots.
7. Rotate the locator down, and press the lower tabs into the two bottom slots of the hand tool. To secure the locator into place, the lower tabs must snap into place on the hand tool frame.
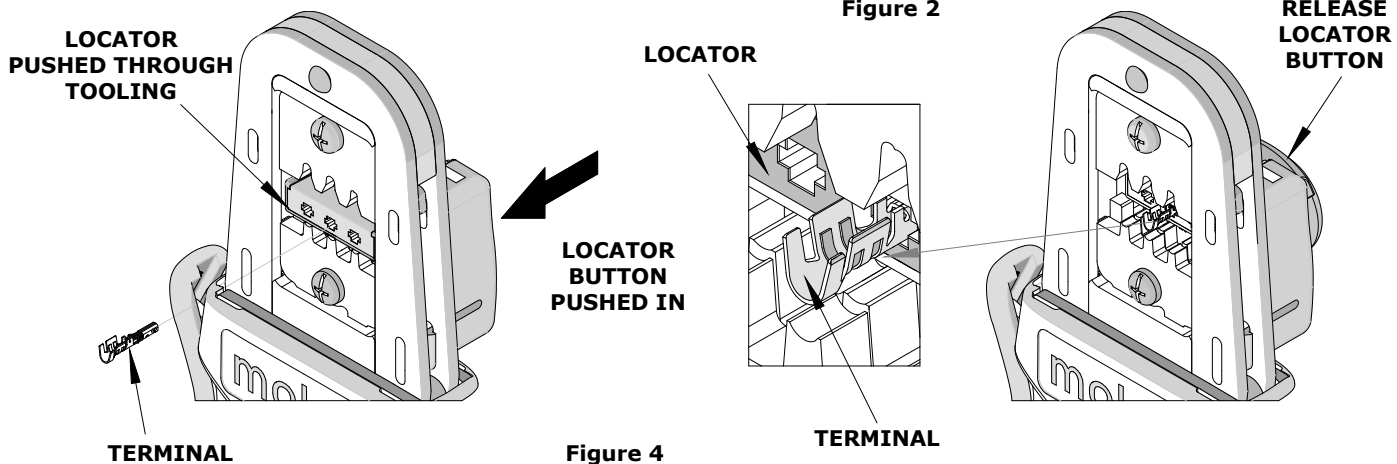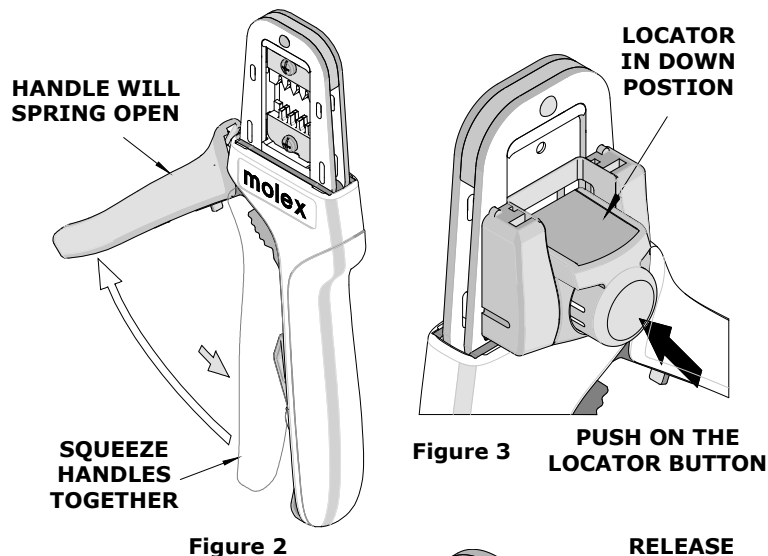
LOCATOR

SQUEEZE HERE

SQUEEZE HERE

MAKE SURE CENTER OF LOCATOR IS IN THE DOWN POSITION

Figure 1A

TOP SLOTS OF HAND TOOL

TOP HOOKS

LOWER TABS
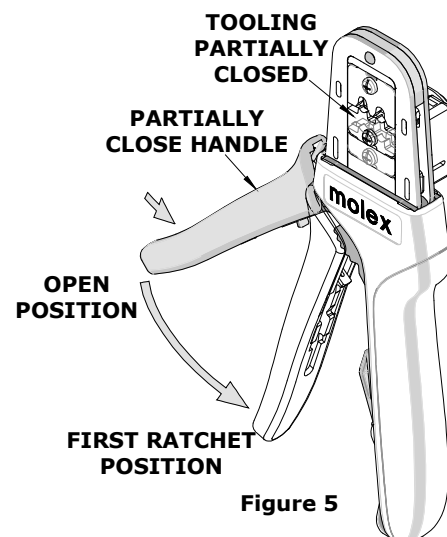
Figure 1B

OPERATION

⚠️ **CAUTION:** Crimp only the Molex terminals listed in the scope for this tool. Do not crimp hardened objects as damage can occur to the tool frame or crimp dies.

Open the tool by squeezing the handles together. At the end of the closing stroke, the ratchet mechanism will release the handles, and the hand tool will spring open. See Figure 2.

HANDLE WILL SPRING OPEN

SQUEEZE HANDLES TOGETHER

Figure 2

LOCATOR IN DOWN POSTION

Figure 3

PUSH ON THE LOCATOR BUTTON

LOCATOR PUSHED THROUGH TOOLING

LOCATOR BUTTON PUSHED IN

TERMINAL

Figure 4

LOCATOR

TERMINAL

RELEASE LOCATOR BUTTON

Crimping Terminals

1. Select the desired terminal listed in the preceding charts.
2. Make sure the center of the locator is in the down position. With the locator attached, push the locator button on the back of the hand tool to bring the locator forward through the tooling. See Figure 3.
3. While holding the locator button in, load the terminal into the proper nest opening in the locator based on the wire gauge or terminal type markings on the hand tooling. See Figure 4.
4. Release the locator button, allowing the locator to return to the crimping position.
5. Close the tool handle, but stop before reaching the first ratchet position. See Figure 5.
6. Insert the properly stripped wire above the terminal and against the wire stop. See Figure 6.
7. Start the crimp cycle by squeezing the tool handles. Allow the tooling to lower the stripped wire into the uncrimped terminal until the ratchet mechanism cycle has been completed. See Figure 7. Release the handles to open the jaws.

TOOLING PARTIALLY CLOSED

PARTIALLY CLOSE HANDLE

OPEN POSITION

FIRST RATCHET POSITION

Figure 5

Doc. No: ATS-2002182200
Revision: D
Release Date: 11-30-17
Revision Date: 11-17-21
UNCONTROLLED COPY
Page 4 of 8

TERMINAL

PRE-STRIPPED WIRE

WIRE AGAINST THE WIRE STOP

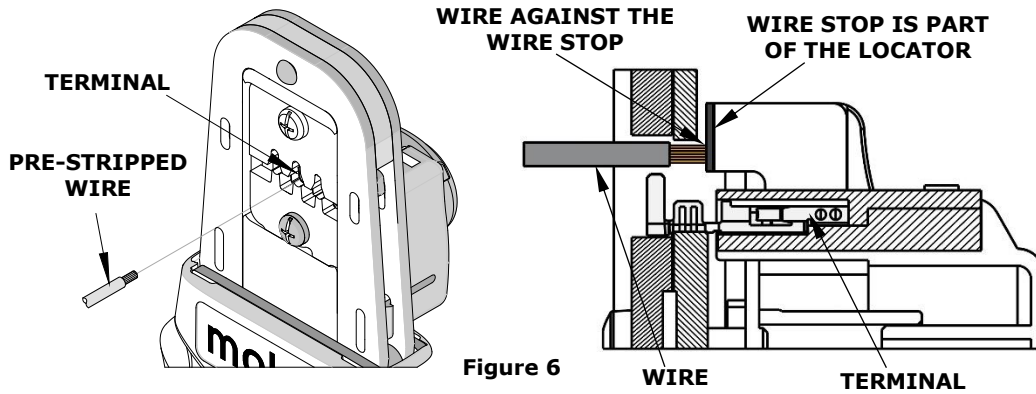**WIRE STOP IS PART OF THE LOCATOR**

Figure 6

WIRE

TERMINAL

Note: The tamper-proof ratchet action will not release the tool until it has been fully closed.

8. Remove the crimped terminal from the terminal locator by pulling on the wire.
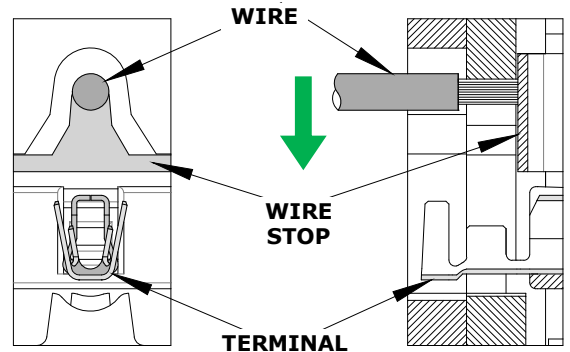9. Visually inspect the crimped terminal for proper crimp location.

WIRE

WIRE STOP

TERMINAL

Figure 7

Right- or Left-Hand Operation

This hand tool can be converted from a right-handed application to a left-handed application. It is necessary to reverse the tooling if using the left-handed application along with the locator. Follow the steps below:

1. The locator must be removed before reversing the tooling.
2. Remove the M3 BHCS, which is holding the upper tooling.
3. Flip the upper tooling to the opposite side, and replace the M3 BHCS. Make sure the small markings on the front and back of the hand tool frame match up and are on the outside of the hand tool frame. See Figures 8 and 9.
4. Do the same thing with the lower tooling, and tighten the M3 screws. Be sure the small markings line up.
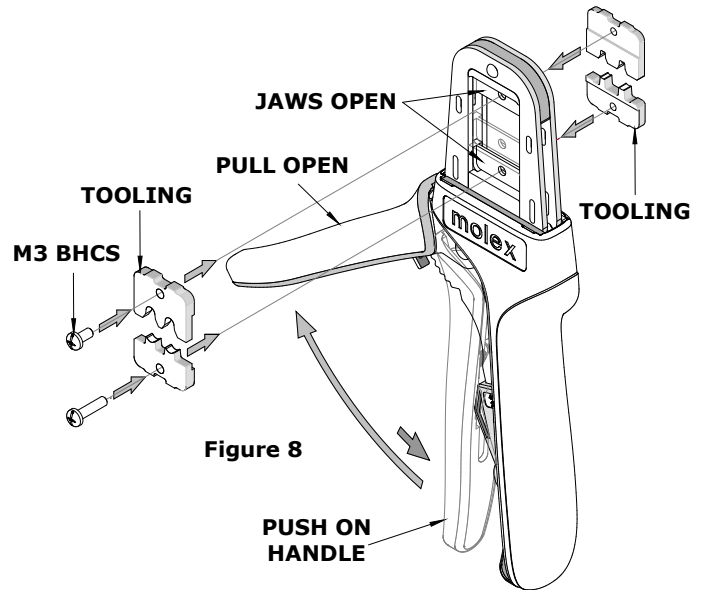5. Reinstall the locator by following the instructions in the locator replacement section.

JAWS OPEN

PULL OPEN

TOOLING

M3 BHCS

TOOLING

Figure 8

PUSH ON HANDLE
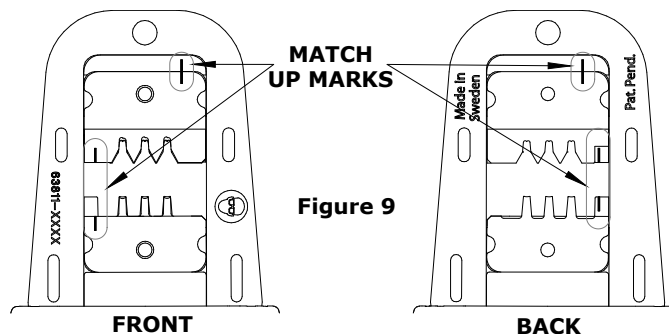
MATCH UP MARKS

Figure 9

FRONT

BACK

MAINTENANCE

It is recommended that each operator of the tool be made aware of and responsible for the following maintenance steps:

1. Remove dust, moisture and other contaminants with a clean brush or a soft, lint-free cloth.
2. Do not use any abrasive materials that could damage the tool.
3. Make certain all pins, pivot points and bearing surfaces are protected with a thin coat of high-quality machine oil. Do not oil excessively. The tool was engineered for durability, but like any other equipment, it needs cleaning and lubrication for a maximum service life of trouble-free crimping. Light oil (such as 30 weight automotive oil) used at the oil points every 5,000 crimps or 3 months will significantly enhance the tool life.
4. Wipe excess oil from the hand tool, particularly from the crimping area. Oil transferred from the crimping area onto certain terminations may affect the electrical characteristics of an application.
5. When the tool is not in use, keep the handles closed to prevent objects from becoming lodged in the crimping dies, and store the tool in a clean, dry area.
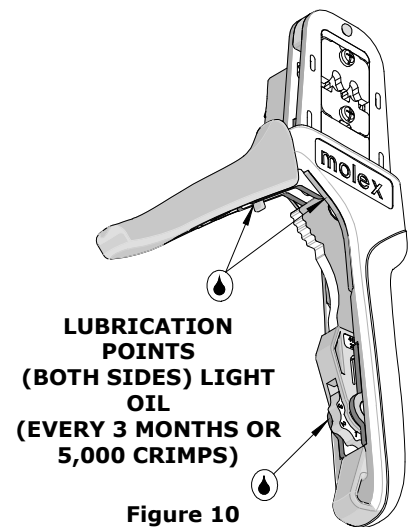
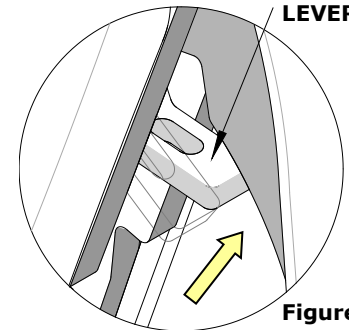**LUBRICATION POINTS (BOTH SIDES) LIGHT OIL (EVERY 3 MONTHS OR 5,000 CRIMPS)**

Figure 10

Miscrimps or Jams

Should this tool ever become stuck or jammed in a partially closed position, **do not** force the handles open or closed. The tool will open easily by pressing up on the ratchet release lever in the movable handle. See Figure 11.

RATCHET RELEASE LEVER

Figure 11

How to Adjust Tool Preload (See Figure 12)

Hand tool frame preload is factory preset to ensure crimp quality. It may be necessary over the life of the tool to adjust tool handle preload force. Listed below are the steps required to adjust the crimping force of the hand tool to obtain proper crimp conditions:

1. Open the hand tool.
2. Close the handle 2 ratchet clicks.
3. Hold the hand tool in the palm of your hand as shown in Figure 12. Using your index finger, squeeze the link toward the top of the hand tool frame. This will release the preload adjustment wheel.
4. Rotate the setting wheel counterclockwise to increase handle force. The numbers will display higher. To decrease handle force, rotate the setting wheel clockwise.
5. Release the link to lock the setting wheel in place.
6. Check the crimp specifications, or conduct a pull test after tool handle preload force is adjusted.
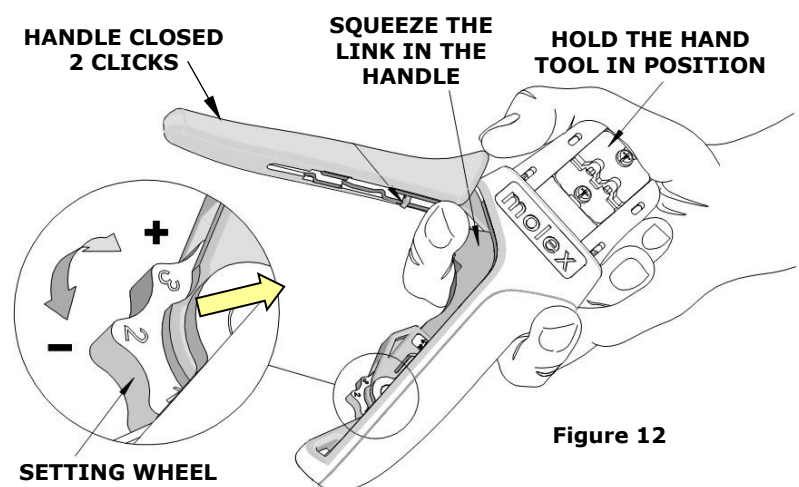
HANDLE CLOSED 2 CLICKS

SQUEEZE THE LINK IN THE HANDLE

HOLD THE HAND TOOL IN POSITION

SETTING WHEEL

Figure 12

Warranty

This tool is for electrical terminal crimping purposes only. This tool is made of the best quality materials. All vital components are long-life tested. All tools are warranted to be free of manufacturing defects for a period of 30 days. Should such a defect occur, Molex will repair or exchange the tool free of charge. This repair or exchange will not be applicable to altered, misused or damaged tools. This tool is designed for hand use only. Any clamping, fixturing or use of handle extensions voids this warranty.

CAUTION: Molex crimp specifications are valid only when used with Molex terminals and tooling.

CAUTIONS:

1. Manually powered hand tools are intended for low-volume use or field repair. This tool is NOT intended for production use. Repetitive use of this tool should be avoided.
2. Insulated rubber handles are not protection against electrical shock.
3. Wear eye protection at all times.
4. Use only the Molex terminals specified for crimping with this tool.

Certification

Molex does not certify or re-certify hand tools but rather supplies the following guidelines for customers to re-certify hand tools:

- This tool is qualified to pull force only. See the Molex website for the Quality Crimp Handbook for more information on pull testing.
- If the tool does not meet minimum pull force values, handle preload should be increased, and the pull test should be rerun (See How to Adjust Preload).
- When the hand tool is no longer capable of achieving minimum pull force, it should be taken out of service and replaced.

PARTS LIST

Item Number	Order Number	Description	Quantity
REF	200218-2200	Hand Crimp Tool	Figure 13
1A	200218-2275	Locator Assembly (Red)	1
1B	200218-2276	Locator Assembly (Blue)	1
1C	200218-2277	Locator Assembly (Yellow)	1
2	63810-0104	Spring, Return	1
3	63810-0105	Spring, Ratchet	1

RATCHET RELEASE LEVER
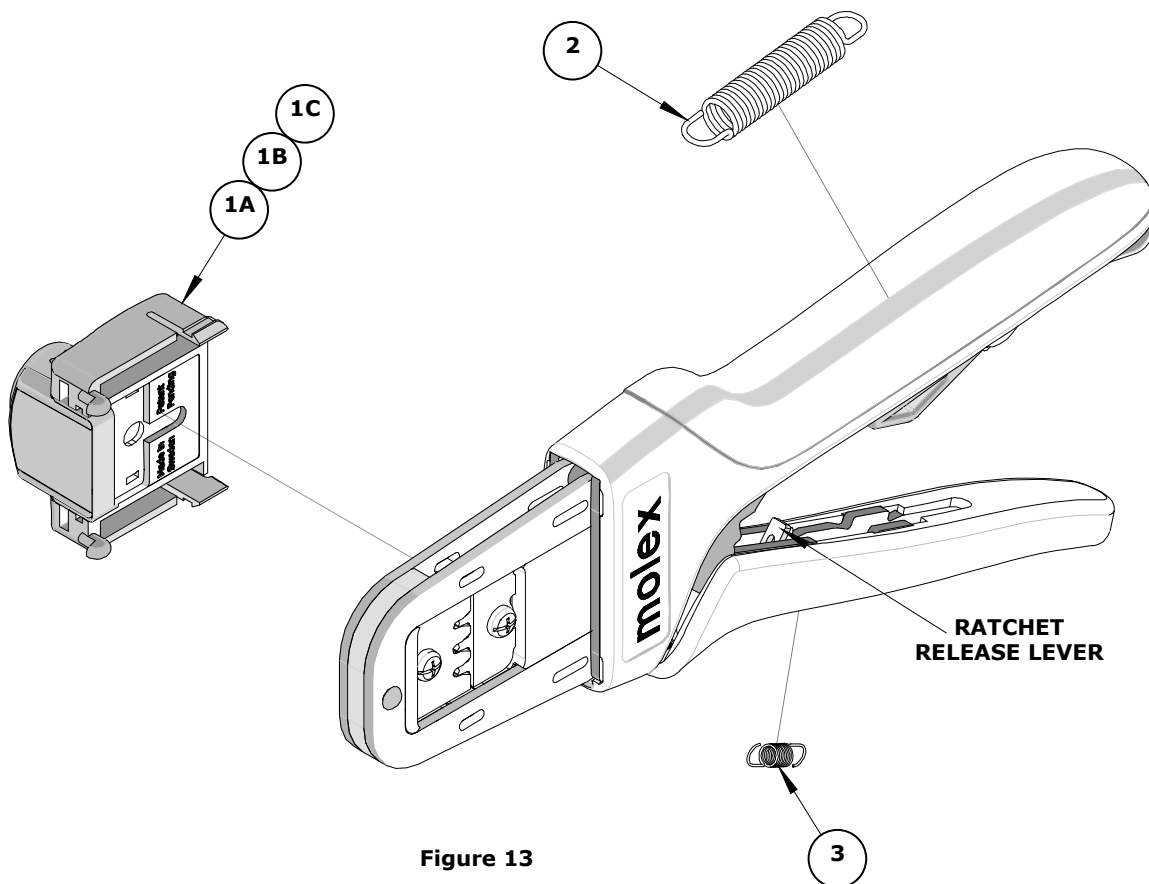
Figure 13

Application Tooling Support

Phone: (402) 458-TOOL (8665)
E-Mail: toolingsupport@molex.com
Website: www.molex.com/applicationtooling

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