

**PROPER USE GUIDELINES**

Cumulative Trauma Disorders can result from the prolonged use of manually powered hand tools. Hand tools are intended for occasional use and low volume applications. A wide selection of powered application equipment for extended-use, production operations is available.

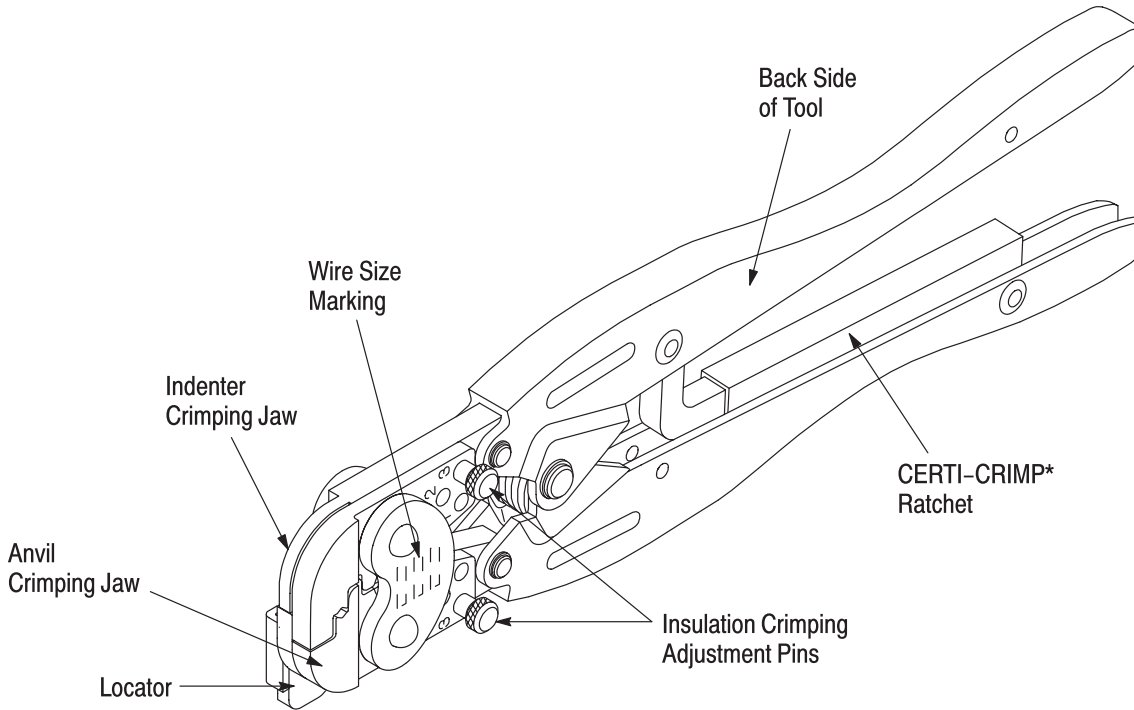



Figure 1

**1. INTRODUCTION**

STRATO-THERM Hand Crimping Tools 46673, 46673-1, and 46988 are used to crimp high-temperature and heat-resistant STRATO-THERM terminals and splices onto wire sizes 22 through 14 AWG.


**NOTE**  All dimensions on this document are in metric units [with U.S. customary units in brackets]. Figures and illustrations are for identification only and are not drawn to scale.

Reasons for reissue of this instruction sheet are provided in Section 7, REVISION SUMMARY.

**2. DESCRIPTION**

Each hand tool features an indenter crimping jaw, an anvil crimping jaw, locator, two insulation crimping adjustment pins, and a CERTI-CRIMP ratchet. The hand tool has the wire size marked on the BACK side of the tool. The locator positions the terminal or splice between the crimping jaws. The insulation crimping adjustment pins are used to regulate the crimp height of the insulation barrel sleeve.

The CERTI-CRIMP ratchet assures full crimping of the terminal. Once engaged, the ratchet will not release until the tool handles have been FULLY closed. See Figure 1.

**CAUTION**  The crimping jaws bottom before the CERTI-CRIMP ratchet releases. This design feature ensures maximum electrical and tensile performance of the crimp. Do NOT re-adjust the ratchet.

**3. CRIMPING PROCEDURE**

1. Strip wire using the recommended strip-length dimensions provided in Figure 2.

TOOL	WIRE	
	SIZE (AWG)	STRIP LENGTH
46673	22-16	5.16-5.94 [.203-.234]
46673-1•		
46988	16-14	

• For wires with thin-wall insulation

Figure 2

2. To open the crimping jaws, close the tool handles until the CERTI-CRIMP ratchet releases. Note that the tool handles cannot be opened until they are FULLY closed.



*Closing the tool handles too tight will deform the terminal or splice.*

3. Push the locator up and, from the FRONT side of the tool, insert the terminal or splice wire barrel sleeve into the crimping jaws making sure that the edge of the wire barrel sleeve rests against the locator. See Figures 3 and 4.



*The wire barrel sleeve on high-temperature terminals and splices is color coded orange. Heat-resistant terminals and splices are not color coded. Refer to Figure 5.*

4. Close tool handles just enough to hold the terminal or splice within the crimping jaws.

**Terminal Crimp**

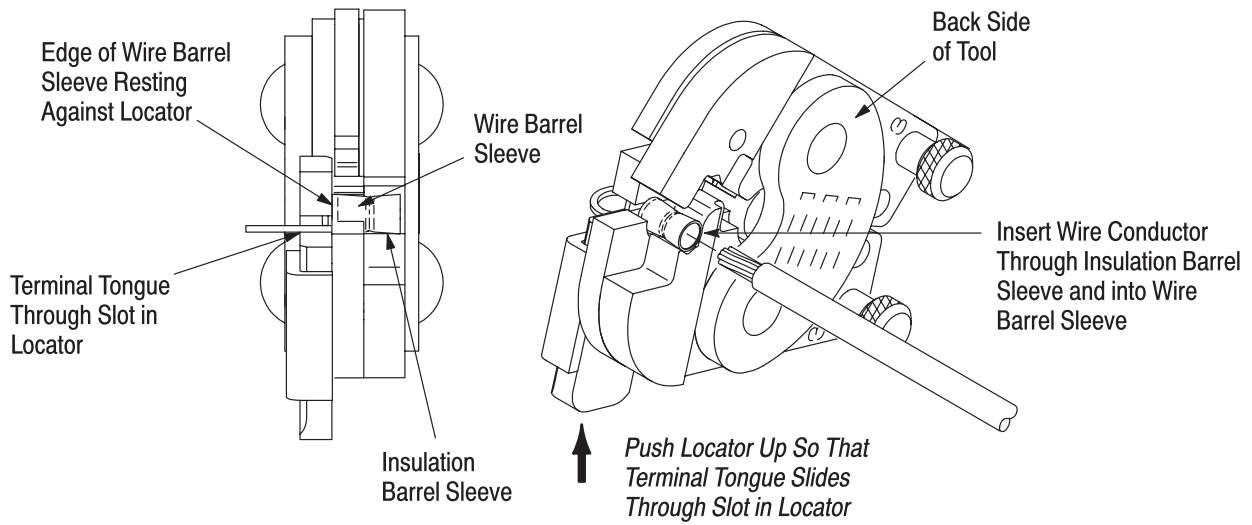


Figure 3

**Splice Crimp (First Crimp)**

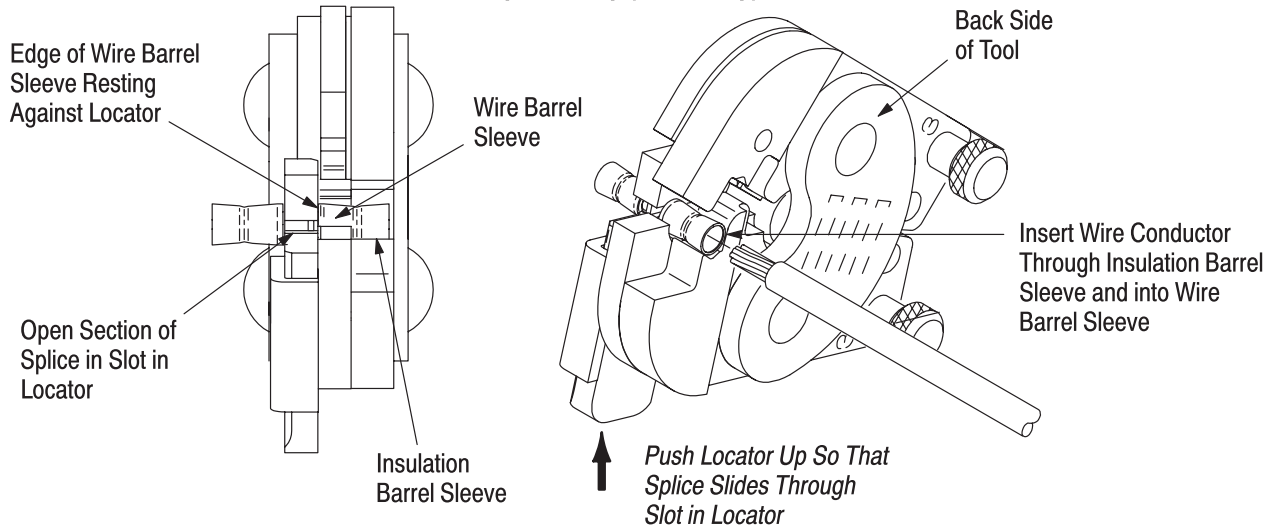


Figure 4

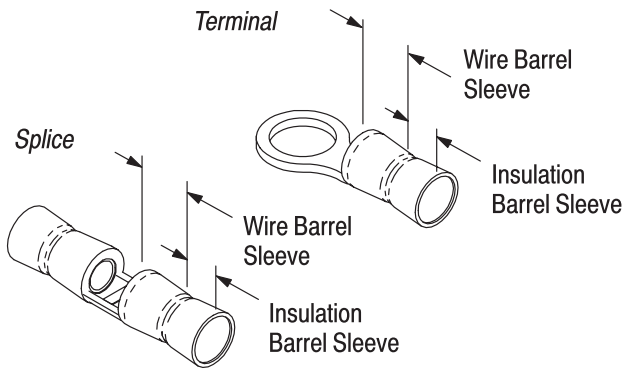


Figure 5

6. Hold wire in place and close the tool handles FULLY to crimp the terminal or splice. Allow tool handles to open FULLY. Remove the crimped terminal or splice from the crimping jaws.

7. To crimp the other half of the splice, reposition the uncrimped sleeve in the crimping jaws as described in Step 3. Follow Steps 4 through 6 to complete the crimp.

**NOTE** *If the splice cannot be turned around to position the uncrimped sleeve in the crimping jaws, turn the tool around.*

8. Inspect the crimp. Refer to Figure 6 for a properly crimped terminal and splice. Check the insulation grip on the crimped terminal or splice. Refer to Section 4, INSULATION CRIMPING ADJUSTMENT.

**NOTE** *The hashmark code on the bottom of the wire barrel sleeve created by the tool should match the hashmark code referenced with the appropriate tool. See Figure 6.*

**4. INSULATION CRIMPING ADJUSTMENT**

The hand tool has three insulation crimping adjustment positions to adjust the wire insulation grip: 1—Tight, 2—Medium, and 3—Loose. To obtain the desired insulation grip, proceed as follows:

1. Insert insulation crimping adjustment pins into Position 3 as shown in Figure 1.
2. Position terminal or splice in crimping jaws as described in Section 3, Step 3.
3. Insert an UNSTRIPPED wire into only the insulation barrel sleeve of the terminal or splice.
4. Perform a test crimp as described in Section 3, Step 6. Remove the crimped terminal or splice and check the insulation support. Bend the wire back and forth once. The insulation barrel sleeve should retain grip on the wire insulation. If the wire pulls out, move the insulation crimping adjustment pins to the next tighter position (Position 2) and proceed to Step 5. If the wire does not pull out, the pins are properly adjusted and the tool is ready for crimping.
5. Perform another test crimp as described in Step 4. Adjust pins, as necessary, until the desired insulation grip is obtained. Do not use a tighter setting than is required.

**NOTE** *The insulation crimping adjustment pins must be located in the same adjustment position.*

**Properly Crimped Terminal and Splice**

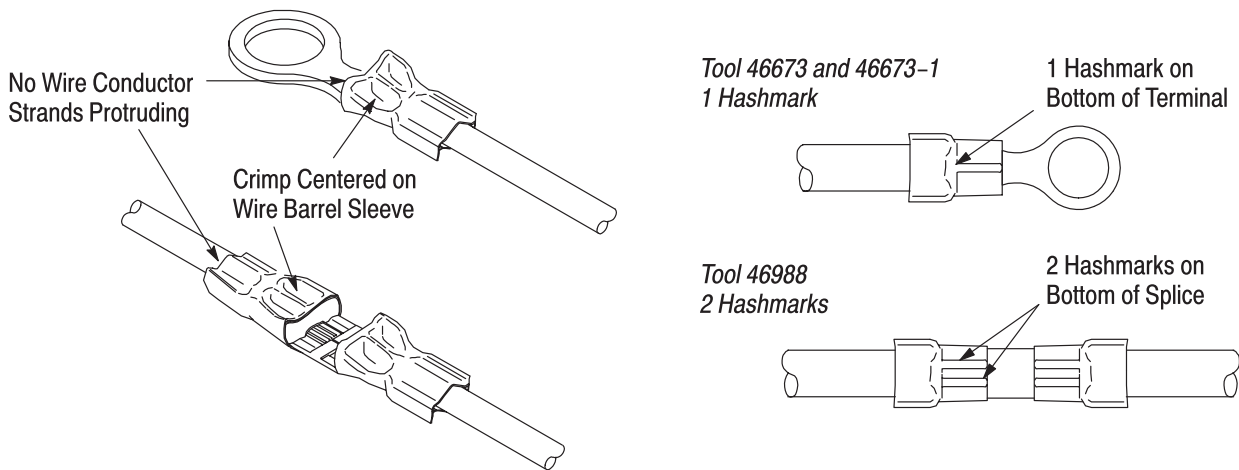


Figure 6

**5. MAINTENANCE AND INSPECTION PROCEDURE**

It is recommended that a maintenance and inspection program be performed periodically to ensure dependable and uniform terminations. Frequency of inspection should be adjusted to suit your requirements through experience and depends on:

1. The care, amount of use, and handling of the hand tool.
2. The presence of abnormal amounts of dust and dirt.
3. The degree of operator skill.
4. Your own established standards.

The hand tool is inspected and calibrated before being shipped; however, it is recommended that the tool be inspected immediately upon arrival to ensure that the tool has not been damaged during shipment.

**5.1. Daily Maintenance**

1. The hand tool should be immersed (handles partially closed) in a reliable commercial degreasing compound to remove accumulated dirt, grease, and foreign matter. When degreasing compound is not available, tool may be wiped clean with a soft, lint-free cloth. Do NOT use hard or abrasive objects that could damage the tool.
2. Make certain that the retaining pins are in place and that they are secured with retaining rings.
3. All pins, pivot points, and bearing surfaces should be protected with a thin coat of any good SAE 20 motor oil. Do not oil excessively.
4. When the tool is not in use, keep handles closed to prevent objects from becoming lodged in the crimping jaws. Store the tool in a clean, dry area.

**5.2. Lubrication**

Lubricate all pins, pivot points, and bearing surfaces with SAE 20 motor oil as follows:

- Tool used in daily production—lubricate daily
- Tool used daily (occasional)—lubricate weekly
- Tool used weekly—lubricate monthly

Wipe excess oil from tool, particularly from crimping area. Oil transferred from the crimping area onto certain terminations may affect the electrical characteristics of an application.

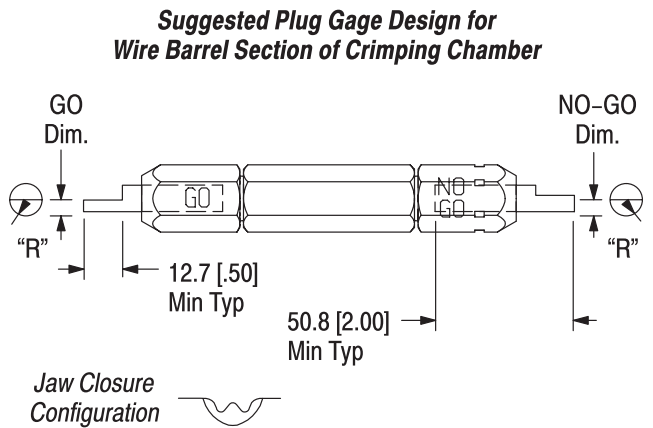
**5.3. Visual Inspection**

1. Close tool handles until ratchet releases and then allow them to open freely. If they do not open quickly and fully, the spring is defective and must be replaced. See Section 6, REPLACEMENT AND REPAIR.

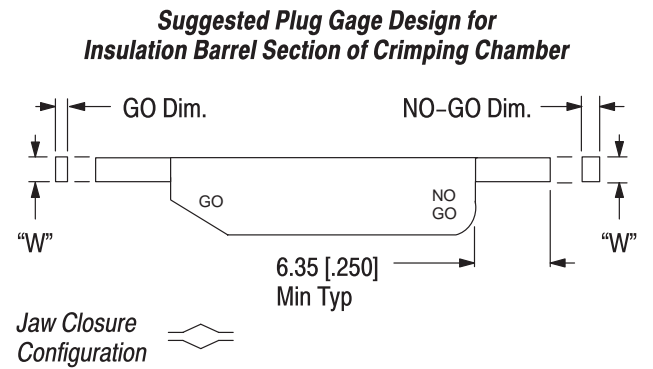
2. Inspect head assembly for worn, cracked, or broken jaws. If damage is evident, return the tool for evaluation and repair. Refer to Section 6, REPLACEMENT AND REPAIR.

**5.4. Gaging the Crimping Chamber**

This inspection requires the use of plug gages conforming to the dimensions provided in Figure 7. Tyco Electronics does not manufacture or market these gages.



HAND TOOL	GAGE ELEMENT DIMENSIONS		
	GO	NO-GO	"R" (Radius)
46673 46673-1	1.499-1.506 [.0590-.0593]	1.648-1.651 [.0649-.0650]	1.57 [.062]
46988	1.702-1.709 [.0670-.0673]	1.851-1.854 [.0729-.0730]	



HAND TOOL	GAGE ELEMENT DIMENSIONS		
	GO	NO-GO	"W" (Width) (Max)
46673 46673-1	0.762-0.770 [.0300-.0303]	1.267-1.270 [.0499-.0500]	3.05 [.120]
46988	1.016-1.024 [.0400-.0403]	1.521-1.524 [.0599-.0600]	

Figure 7

To gage the crimping chamber, proceed as follows:

1. Remove traces of oil or dirt from the crimping chamber and plug gages.
2. Remove locator assembly.



**DO NOT** lose spring in locator assembly.

3. Close the tool handles until the crimping jaws have bottomed. Do NOT force jaws beyond initial contact.
4. Align the GO element with the wire barrel section of the crimping chamber. Push element straight into the crimping chamber without using force. The GO element must pass completely through the crimping chamber. See Figure 8.
5. Align the NO-GO element and try to insert it straight into the same section of the crimping chamber. The NO-GO element may start entry, but must not pass completely through the crimping chamber. See Figure 8.
6. Re-install locator assembly.
7. Insert tool insulation crimping adjustment pins into Position 1.
8. With crimping jaws bottomed, check the insulation barrel section of the crimping chamber as described in Steps 4 and 5.

If the crimping chamber conforms to the gage inspection, the tool is considered dimensionally correct, and should be lubricated with a THIN coat of any good SAE 20 motor oil. If not, the tool must be returned for further evaluation and repair. Refer to Section 6, REPLACEMENT AND REPAIR.

For additional information regarding the use of a plug gage, refer to Instruction Sheet 408-7424.

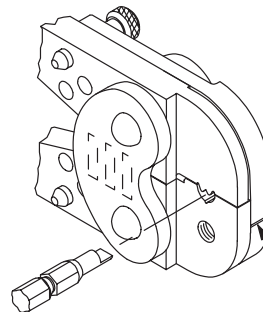
### 5.5. CERTI-CRIMP Ratchet Inspection

The CERTI-CRIMP ratchet feature on the hand tools should be checked to ensure that the ratchet does not release prematurely, allowing the jaws to open before they have fully bottomed. Obtain a .025 mm [.001 in.] shim that is suitable for checking the clearance between the bottoming surfaces of the crimping jaws. Proceed as follows:

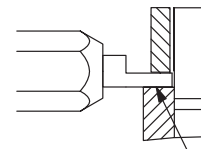
1. Select the *maximum* size wire for the tool and a terminal or splice.
2. Position the terminal or splice and wire between the crimping jaws as described in Section 3.
3. Hold wire in place and squeeze tool handles until the CERTI-CRIMP ratchet releases. Hold the

handles in this position, maintaining just enough tension to keep the jaws closed.

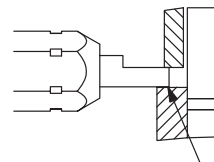
#### Inspection of Wire Barrel Section of Crimping Chamber



Jaws Bottomed But Not Under Pressure



GO Element Must Pass Completely Through Crimping Chamber



NO-GO Element May Start Entry, But Must Not Pass Completely Through Crimping Chamber

#### Inspection of Insulation Barrel Section of Crimping Chamber

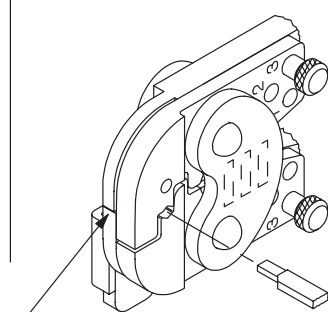


Figure 8

4. Check the clearance between the bottoming surfaces of the crimping jaws with the .025 mm [.001 in.] shim. If the clearance is .025 mm [.001 in.] or less, the ratchet is considered satisfactory. If the clearance exceeds .025 mm [.001 in.], the ratchet is out of adjustment and must be repaired. Refer to Section 6, REPLACEMENT AND REPAIR.

### 6. REPLACEMENT AND REPAIR

Replaceable parts are listed in Figure 9. Parts other than those listed in Figure 9 should be replaced to ensure quality and reliability of the tool. Order replacement parts through your Tyco Electronics Representative, or call 1-800-526-5142, or send a facsimile of your purchase order to 1-717-986-7605, or write to:

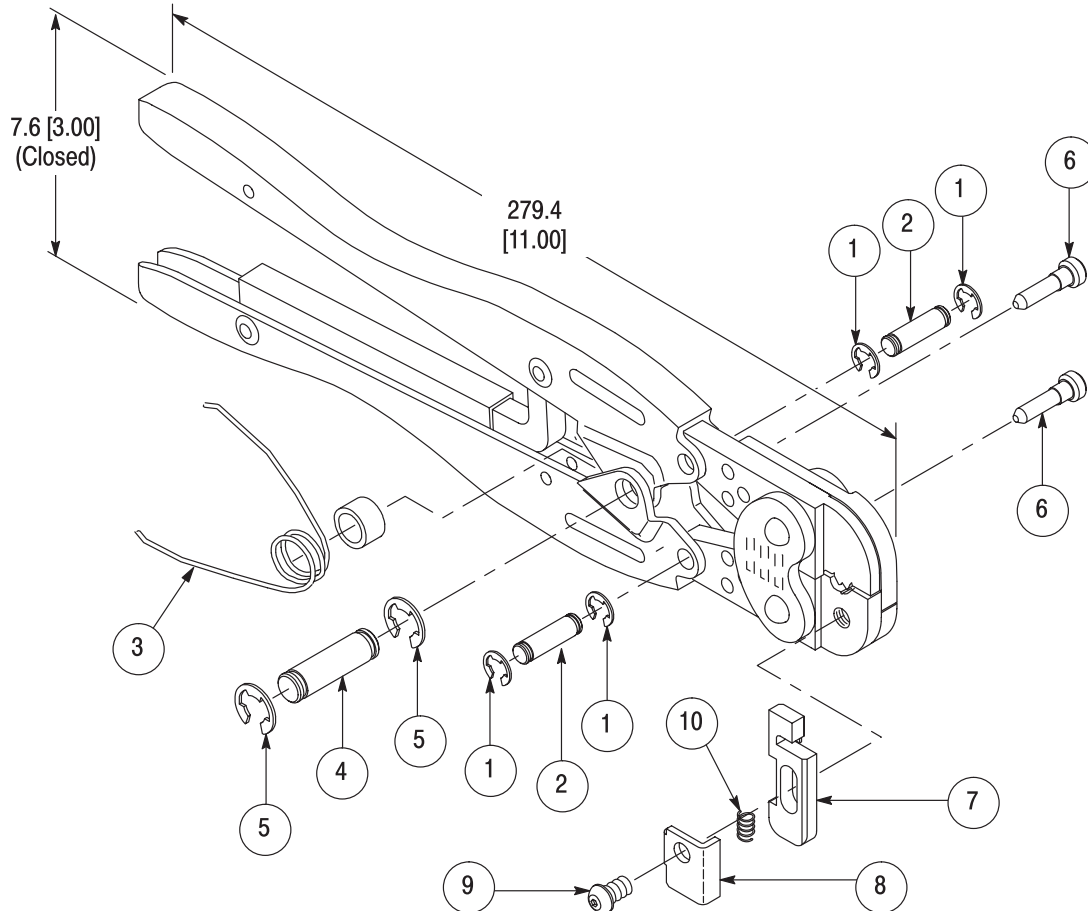
CUSTOMER SERVICE (38-35)  
TYCO ELECTRONICS CORPORATION  
P.O. BOX 3608  
HARRISBURG, PA 17105-3608

Tools may also be returned for evaluation and repair. For tool repair service, please contact a Tyco Electronics Representative at 1-800-526-5136.

**7. REVISION SUMMARY**

Since the previous release of this sheet, the following changes were made:

- Updated document to corporate requirements
- Changed dimension in Figure 7



**REPLACEMENT PARTS**

ITEM	PART NUMBER	DESCRIPTION	QTY PER TOOL
1	21045-3	RING, Retaining	4
2	1-23619-6	PIN, Retaining	2
3	39364	SPRING	1
4	2-23620-9	PIN, Retaining	1
5	21045-6	RING, Retaining	2
6	39207	PIN, Insulation Crimping Adjustment	2
7	305363	LOCATOR	1
8	302994	HOUSING, Locator	1
9	9-305927-1	SCREW	1
10	301201	SPRING	1

Figure 9