

### PROPER USE GUIDELINES

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

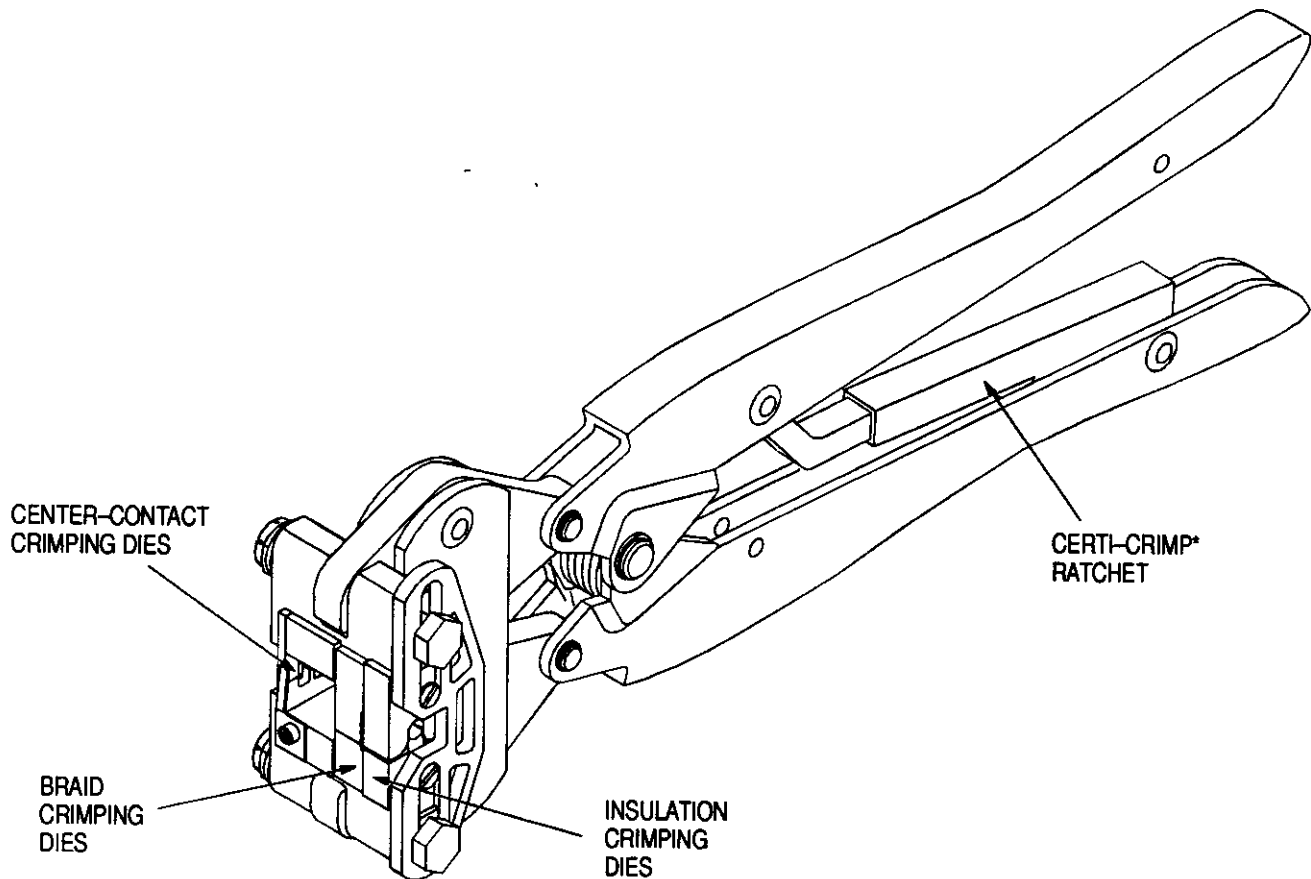


Figure 1

## 1. INTRODUCTION

This instruction sheet covers the use of AMP Hand Crimping Tools 220215-1 and 220215-2 (see Figure 1), which are designed to crimp AMP RF Series Microminiature Connectors to coaxial cable. Both the connectors and cables are listed in Figure 2. Read these instructions thoroughly before using the tools.

Reasons for reissue are provided in Section 6, REVISION SUMMARY.

#### NOTE

*Dimensions on this sheet are in millimeters [with inches in brackets].*

## 2. DESCRIPTION

The tool (shown in Figure 1) features three sets of crimping dies and a CERTI-CRIMP ratchet.

One die set crimps the center-contact wire barrel to the center conductor of the cable; the other die sets crimp the ferrule to both the braid and to the insulation.

The CERTI-CRIMP ratchet assures full crimping of the connector. Once engaged, the ratchet will not release until the handles have FULLY closed.

#### CAUTION

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

## 3. CRIMPING PROCEDURE

#### NOTE

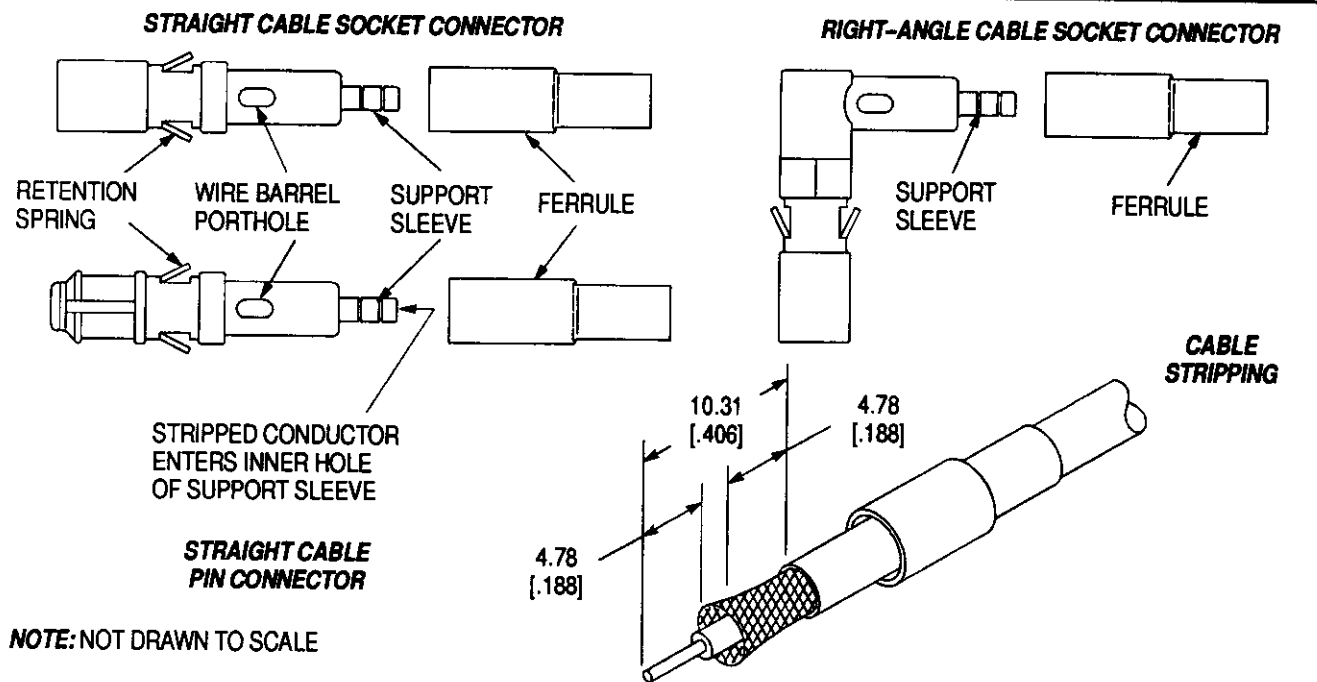
*Each hand tool is coated with a preservative to prevent rust or corrosion. Wipe this preservative from the tool, particularly from the crimping jaws, before using the tool.*

The crimping procedure requires three separate operations. First, the coaxial cable must be prepared for crimping; then the center-contact wire barrel is crimped to the center conductor of the cable; and then the ferrule is crimped to both the braid and insulation of the cable.

### 3.1. Cable Preparation

Make certain that the contact to be crimped is compatible with the coaxial cable (refer to Figure 2). Then proceed as follows:

1. Slide ferrule (small end first) on cable.
2. Strip cable to the dimensions shown in Figure 2.
3. Flare the braid so that it will easily slide over the support sleeve of the connector.
4. Align stripped center conductor with hole in support sleeve of connector; then carefully insert conductor into hole as far as it will go. Make certain that all braid strands pass over and around support sleeve when conductor bottoms in connector. Assembly is now ready for center-contact crimping.



CABLE TYPE	PART NUMBER			
	STRAIGHT PIN	STRAIGHT SOCKET	RIGHT-ANGLE SOCKET	HAND TOOL
RG-178/U Double Braid	227604-1 227604-6	227605-1 227605-6	227606-1 —	220215-1
RG-196/U				
Tensolite● 30850/81T-1				
Malco■ 250-3908-0000	227604-3 227604-7	227605-3 227605-7	227606-4 —	220215-2
RG-174/U, RG-188/U, & RG-316/U				
Beldent† 9221				
RG-179/U, RG-187/U, & Gore CXN-1644				
Gore CXN 1331	227604-4	227605-4	227606-5	220215-2
RG-316/U Double Braid	227604-5	227605-5	—	
	—	—	227606-6	

● Trademark of Tensolite Co.  
 ■ Trademark of Microdot Inc.  
 † Trademark of Cooper Industries

Figure 2

### 3.2. Crimping the Center Contact

To crimp the center contact of the connector, refer to Figure 3, Detail A, and proceed as follows:

1. Open the tool's crimping dies by squeezing the handles until the ratchet releases and then allow the handles to open FULLY.
2. Position the connector assembly in the tool so that the lower center-contact crimping die enters the lower wire barrel porthole. Once located, push the connector down so that the center contact wire barrel (within the wire barrel porthole) bottoms on the lower crimping die.
3. Visually align the upper wire barrel porthole of the connector with the upper center-contact crimping die. The center-contact crimping dies crimp the internal center-contact wire barrel of the connector through the wire barrel portholes.
4. While making certain that the connector and cable assembly remain in place, slowly squeeze tool handles and ensure that the upper center-contact crimping die enters the upper wire barrel porthole without damaging the porthole.
5. To complete crimp, continue to close tool handles until ratchet releases. Allow the handles to open fully and remove the crimped connector assembly.
6. Slide ferrule forward and over braid until ferrule bottoms against shoulder on connector. Assembly is now ready for ferrule crimping.

### 3.3. Crimping the Ferrule

To crimp the ferrule onto the connector, refer to Figure 3, Detail B, and proceed as follows:

1. Open the tool's crimping dies by squeezing the handles until the ratchet releases and then allow the handles to open FULLY.
2. Ensure that the ferrule is against the shoulder of the connector. Position the connector assembly so that the ferrule seats in both the braid and insulation crimping dies.
3. To complete crimp, close tool handles until ratchet releases. Allow handles to open fully and remove crimped connector assembly.

## 4. MAINTENANCE AND INSPECTION PROCEDURE

AMP recommends that a maintenance and inspection program be performed periodically to ensure dependable and uniform terminations. Frequency of inspection 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 before being shipped; however, AMP recommends that the tool be inspected immediately upon its arrival at your facility to ensure that the tool has not been damaged during shipment. Due to the precision design, it is important that no parts of these tools be interchanged except those replacement parts listed in Figure 5.

### 4.1. Daily Maintenance

1. Remove dust, moisture, and other contaminants with a clean brush, or a soft, lint-free cloth. Do NOT use 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 No. 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 dies. Store the tool in a clean, dry area.

### 4.2. Lubrication

Lubricate all pins, pivot points, and bearing surfaces with SAE No. 20 motor oil as follows:

- Tools used in daily production – lubricate daily
- Tools used daily (occasional) – lubricate weekly
- Tools 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.

### 4.3. Periodic Inspection

1. Hand tool should be immersed (handles partially closed) in a reliable commercial degreasing compound to remove accumulated dirt, grease, and foreign matter.
2. 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 5, REPLACEMENT AND REPAIR.
3. Inspect head assembly for worn, cracked, or broken dies. If damage is evident, return the tool to AMP for evaluation and repair. See Section 5, REPLACEMENT AND REPAIR.

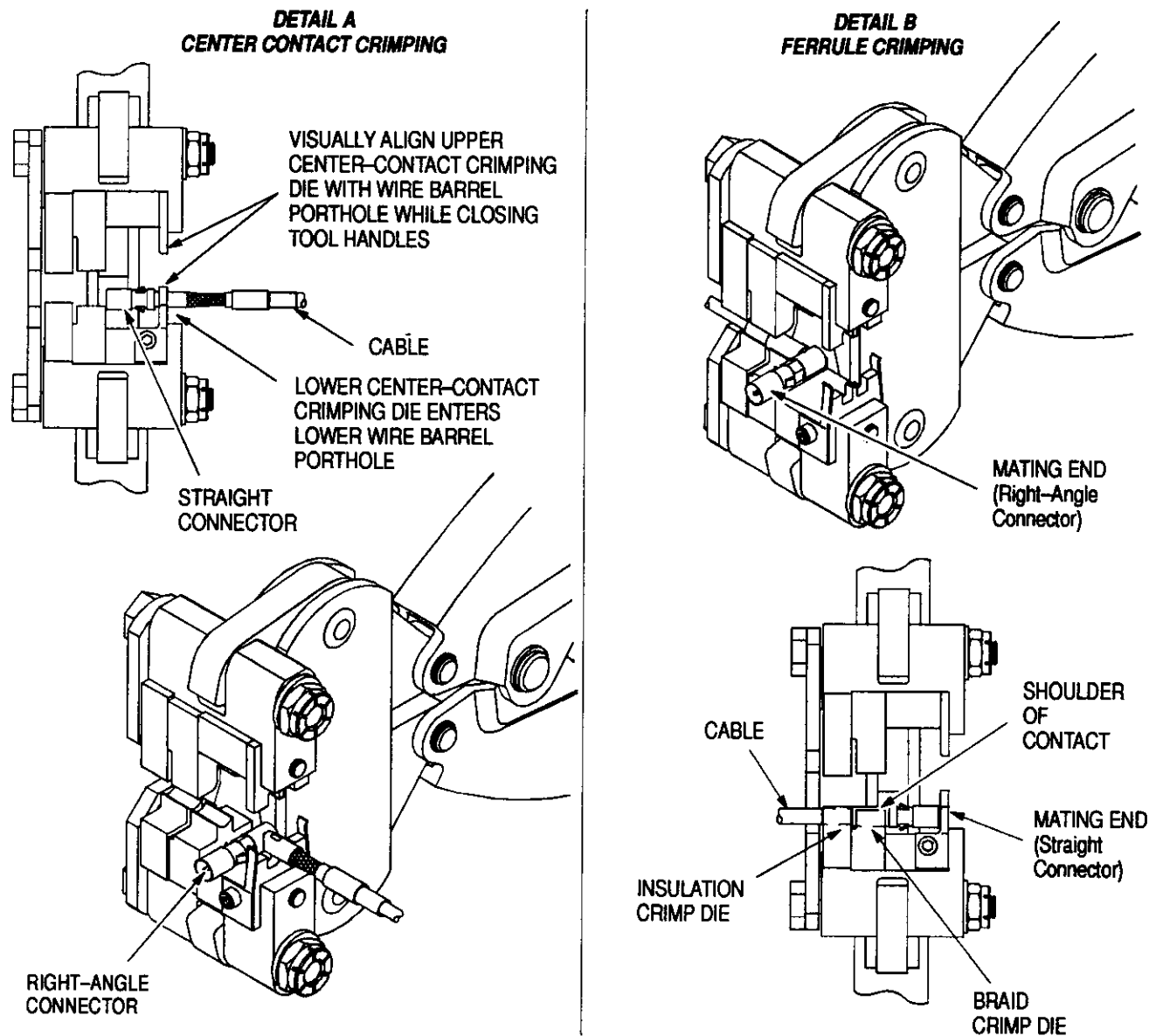


Figure 3

#### 4.4. Crimping Die Closure Inspection

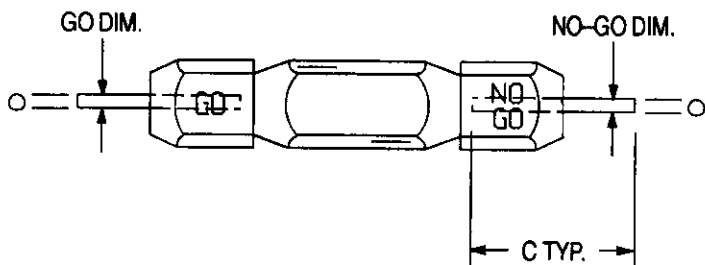
This inspection requires the use of three plug gages conforming to the dimensions shown in Figure 4. AMP does not manufacture or market these gages.

To gage die closure, proceed as follows:

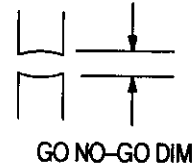
1. Remove traces of oil or dirt from the crimping chamber and plug gage.
2. Close the tool handles until it is evident that the dies have bottomed; then hold in this position. Do NOT force the dies beyond initial contact.
3. Align the center contact gage GO element with the center contact crimping chamber. Push element straight into the crimping chamber without using force. The GO element must pass completely through the crimping chamber.
4. Check the center contact crimping chamber with the NO-GO element in the same manner as step 3. The NO-GO element may start entry, but must not pass completely through the crimping chamber.
5. Check the GO and NO-GO conditions of the insulation crimping chamber in the same manner as Steps 3 and 4 using the insulation crimp plug gage.
6. Open the tool's crimping dies by squeezing the handles until the ratchet releases and then allow the handles to open fully.
7. Carefully insert the braid crimp gage GO element between the center contact and braid crimping chambers. Slowly close the tool handles until the dies bottom while making certain that the GO element does not become lodged in the crimping dies.

**PLUG GAGE DESIGN: CENTER CONTACT CRIMP**

**NOTE:** GAGE ELEMENT DIMENSIONS FOR CENTER CONTACT CRIMP ARE THE SAME FOR BOTH TOOLS.



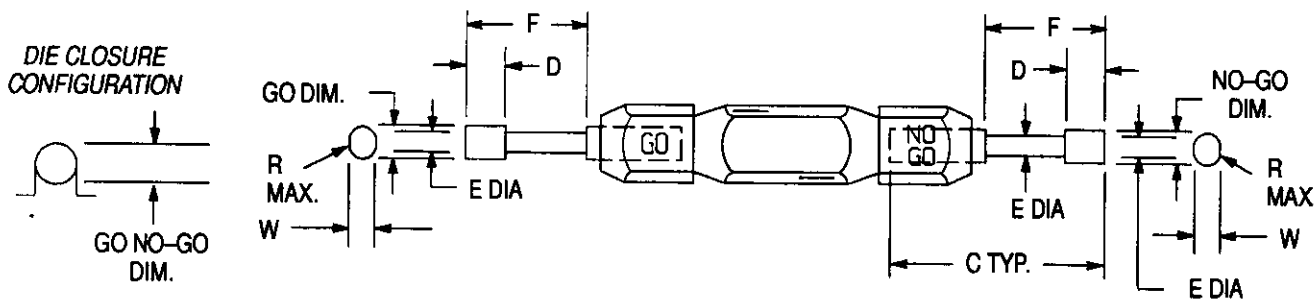
DIE CLOSURE CONFIGURATION



GAGE ELEMENT DIMENSIONS		
GO	NO-GO	C
.5969 - .6045 [.0235 - .0238]	.6076 - .6731 [.0264 - .0265]	25.4 [1.000]

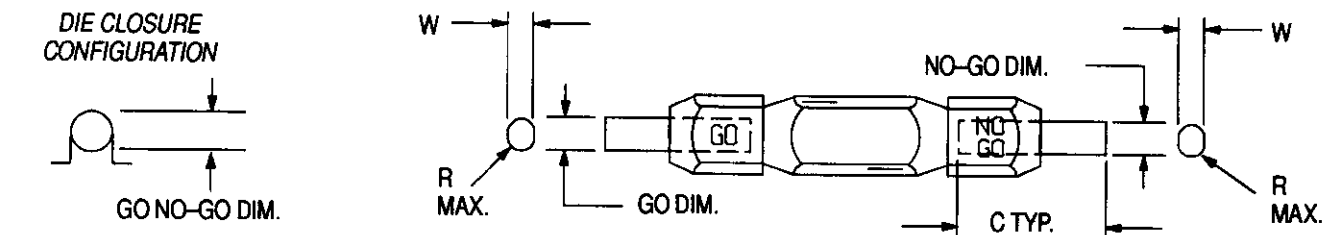
**PLUG GAGE DESIGN: FERRULE-TO-BRAID CRIMP**

**NOTE:** GAGE ELEMENT DIMENSIONS FOR BRAID CRIMP ARE THE SAME FOR BOTH TOOLS.



GAGE ELEMENT DIMENSIONS (SEE NOTE ABOVE)							
F	D	GO	NO-GO	E DIA.	W (MAX)	C	R (MAX)
23.368 [.920]	4.572 [.180]	3.5306-3.5382 [.1390-.1393]	3.6805-3.6830 [.1449-.1450]	1.930 [.076]	2.083 [.082]	38.1 [1.500]	1.04 [.041]

**PLUG GAGE DESIGN: FERRULE-TO-INSULATION CRIMP**



TOOL NUMBER	GAGE ELEMENT DIMENSIONS				
	GO	NO-GO	W (MAX)	C	R (MAX)
220215-1	2.3114-2.3190 [.0910-.0913]	2.4613-2.4638 [.0969-.0970]	2.083 [.082]	25.4 [1.00]	1.04 [.041]
220215-2	2.8448-2.8524 [.1120-.1123]	2.9946-2.9972 [.1179-.1180]	2.69 [.106]	25.4 [1.00]	1.346 [.053]

Figure 4

8. Align the GO element with the braid crimping chamber and pull element straight into the chamber without using force. The GO element must pass completely through the chamber.

9. Check the NO-GO conditions of the braid crimping chamber by repeating Steps 6, 7, and 8 using the braid crimp gage NO-GO element.

If die closures conforms to the gage inspections, the crimping chambers are considered dimensionally correct. If correct, the tool should be lubricated with a thin coat of any good SAE No. 20 motor oil and returned to service. If not correct, the tool must be returned to AMP for further evaluation and repair. Refer to Section 5, REPLACEMENT AND REPAIR. For additional information regarding the use of a plug gage, refer to AMP instruction sheet 408-7424.

#### 4.5. CERTI-CRIMP Ratchet Inspection

The CERTI-CRIMP ratchet feature on AMP hand tools should be checked to ensure that the ratchet does not release prematurely, allowing the crimping dies to open before they have fully bottomed. Obtain a 0.025-mm [.001-in.] shim that is suitable for checking the clearance between the bottoming surfaces of the crimping dies. Proceed as follows:

1. Select the maximum size cable and corresponding connector from the chart in Figure 2. Then prepare the cable in accordance with Paragraph 3.1, Cable Preparation.
2. Position the connector and cable between the crimping dies, as described in Paragraph 3.2, Crimping the Center Contact.
3. Hold the connector and cable in place and squeeze the handles until the CERTI-CRIMP ratchet releases. Hold the handles in this position, maintaining just enough tension to keep the dies closed.
4. Check the clearance between the bottoming surfaces of the crimping dies. If the clearance is 0.025 mm [.001 in.] or less, the ratchet is satisfactory. If clearance exceeds 0.025 mm [.001 in.], the ratchet is out of adjustment and must be repaired. See Section 5, REPLACEMENT AND REPAIR.

#### 5. REPLACEMENT AND REPAIR

Replacement parts are listed in Figure 5. Parts other than those listed in Figure 5 should be replaced by AMP to ensure quality and reliability of the tool. Order replacement parts through your AMP 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)  
AMP INCORPORATED  
P.O. BOX 3608  
HARRISBURG, PA 17105-3608

For tool repair service or CERTI-CRIMP ratchet adjustment, return the tool, with a written description of the problem, to:

CUSTOMER REPAIR (01-12)  
AMP INCORPORATED  
1523 NORTH 4TH STREET  
HARRISBURG, PA 17102-1604

#### 6. REVISION SUMMARY

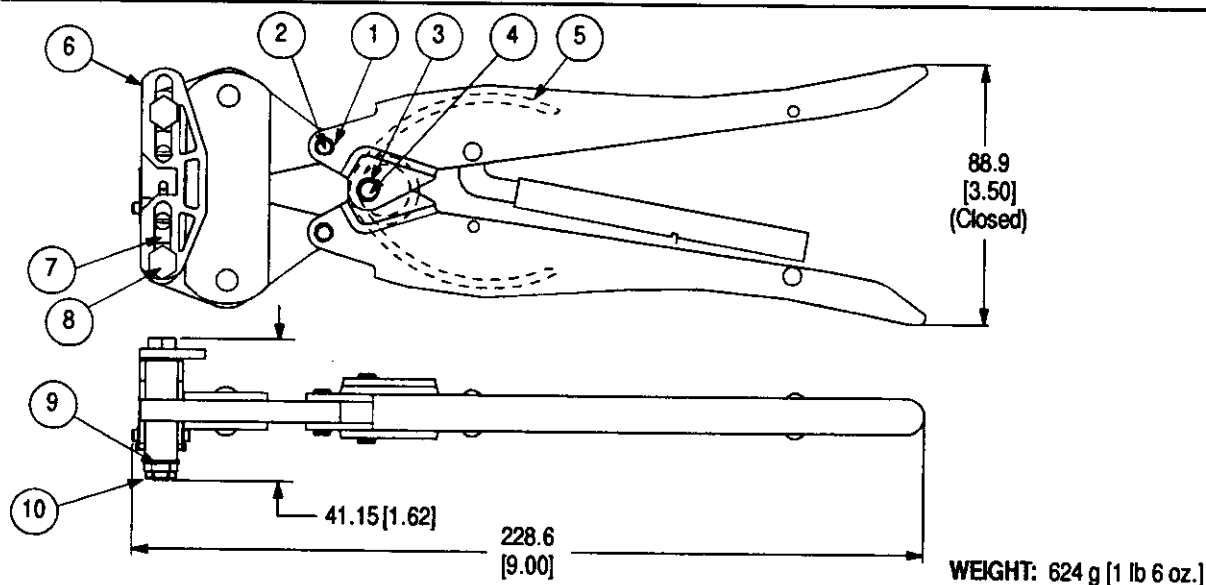
Since the previous release, the following changes and additions were made to this document:

Per EC 381992 and EC 0150-4794-93:

- Changed part numbers of items 2, 4, and 9 in Figure 5

Per EC 0990-0252-93:

- Updated format



#### REPLACEMENT PARTS

ITEM	PART NUMBER	DESCRIPTION	QTY	ITEM	PART NUMBER	DESCRIPTION	QTY
1	21045-3	RING, Retaining	1	6	307089-1	LOCATOR	1
2	1-23619-6	PIN, Retaining	1	7	307339-1	SPACER	1
3	21045-6	RING, Retaining	1	8	1-307087-0	SCREW	1
4	2-23620-9	PIN, Retaining	1	9	23911-7	DISC SPRING	1
5	4-304668-1	SPRING	1	10	21022-2	NUT, Self-Locking	1

Figure 5