

### 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.

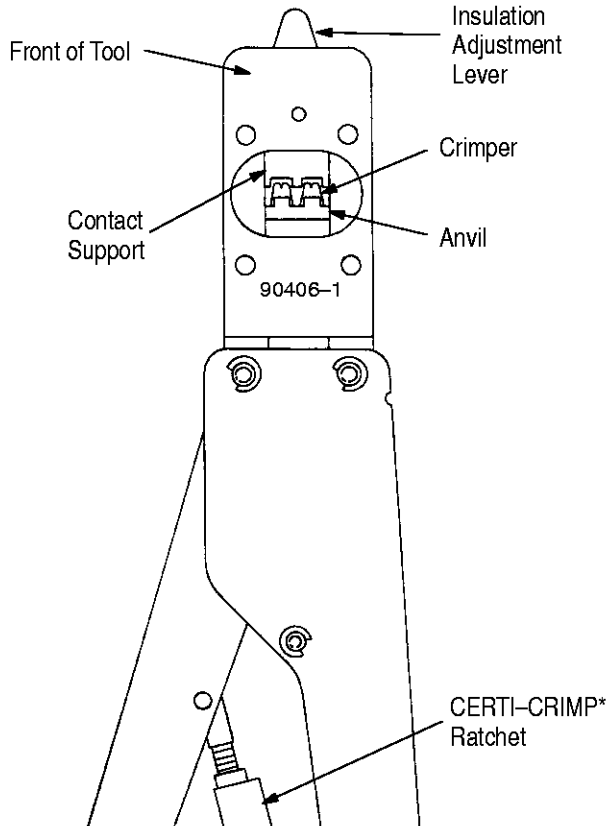


Figure 1

## 1. INTRODUCTION

This instruction sheet covers the use of AMP\* Hand Crimping Tool 90406-1 which is designed to crimp the AMPLIMITE\* contacts shown in Figure 2. Read these instructions thoroughly before using the tool.

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 features two fixed dies (crimpers), two movable dies (anvils), a contact support, a locator, a wire stop, an insulation crimp adjustment lever, and a CERTI-CRIMP ratchet. The FRONT OF TOOL (contact side), into which the contact is inserted, has the tool number marked on it (refer to Figure 1). The

BACK OF TOOL (wire side) has the wire size marked above each crimp section.

The insulation crimp adjustment lever is used to control the crimp height of the contact insulation barrel. Refer to Paragraph 4.6, Insulation Crimp Adjustment.

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

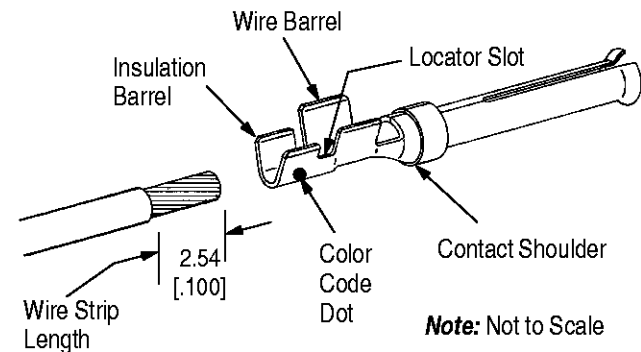
### CAUTION

*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.*

The locator and wire stop have two functions. First, they position the contact between the crimping dies, and second, they aid in locating the wire in the contact. See Figures 2 and 3.

The contact support prevents the contact from bending during the crimping procedure.

The two color code dots on the BACK of the tool indicate the applicable contacts for the tool. The contacts have a corresponding color code dot on the bottom side of the wire barrel. Refer to Figure 2 and Figure 3.



WIRE		LOOSE PIECE CONTACT●	COLOR CODE
SIZE (AWG)	INSUL DIA (Max.)		
26 to 22	1.27 [.050]	AMPLIMITE 20 DF	Yellow

● For applicable contact part numbers, refer to AMP Catalogs 82021, 82068 and 82069.

Figure 2

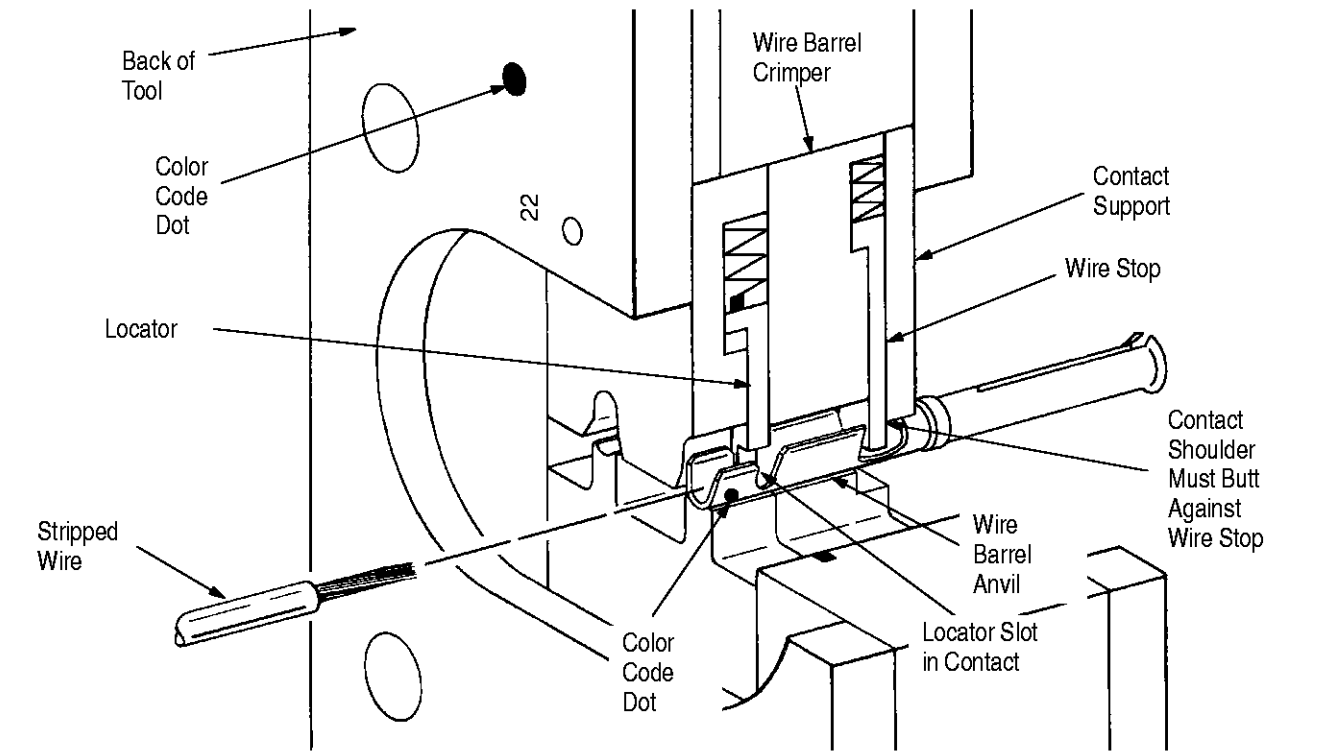


Figure 3

### 3. CRIMPING PROCEDURE

Refer to Figure 2 and select wire of specified size and insulation diameter. Strip the wire to the length indicated. Do NOT cut or nick the wire strands.

On the BACK of the tool, identify the appropriate crimp section (according to the wire size markings). The color dot on the contact must match the color code dots on the appropriate crimp section of the tool.

Refer to Figure 3 and proceed as follows:

1. Hold tool so BACK (wire side) is facing you.
2. Make sure ratchet is released by squeezing the tool handles and allowing them to open FULLY.
3. Insert contact (insulation barrel first) into FRONT of appropriate crimp section. Position the contact in crimp section so that locator enters locator slot in contact.
4. Hold contact in this position and squeeze tool handles together until insulation anvil starts entry into insulation crimper. Do NOT deform insulation barrel or wire barrel.
5. From BACK of tool (wire side), insert a properly stripped wire through wire slot in locator and into wire barrel of contact until it stops.
6. Holding wire in place, squeeze tool handles until ratchet releases.

7. Allow tool handles to open FULLY and remove crimped contact from tool.

### 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:

- The care, amount of use, and handling of the hand tool,
- The presence of abnormal amounts of dust and dirt,
- The degree of operator skill, and
- 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 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 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.

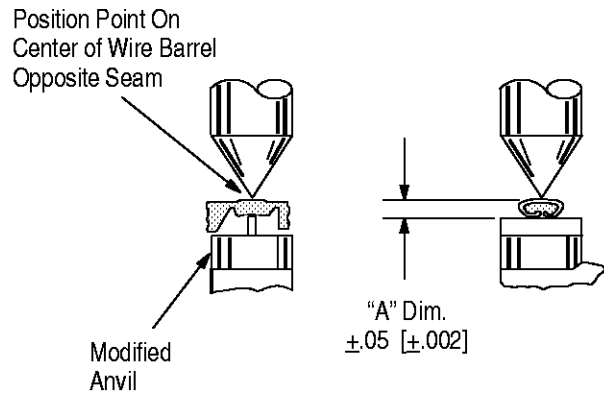
**4.4. Crimp Height Inspection**

This inspection requires the use of micrometer with a modified anvil as shown in Figure 4. AMP recommends use of Crimp Height Comparator RS-1019-5LP which can be purchased from:

Shearer Industrial Supply Co.      VALCO  
 20 North Penn Street      or      1410 Stonewood Drive  
 York, PA 17401-1014      Bethlehem, PA 18017-3527

Proceed as follows:

1. Refer to the chart in Figure 4 and select a contact and a wire (maximum size) for each crimp section listed in the chart.
2. Refer to Section 3, CRIMPING PROCEDURE, and crimp the contact(s) accordingly.



CONTACT	WIRE SIZE AWG (Max)	CRIMP SECT (Wire Size Marking)	CRIMP HGT DIM. "A"
AMPLIMITE 20 DF	22	22	.86 [.034]
	24	26 - 24	.76 [.030]

Figure 4

3. Using a crimp height comparator, measure wire barrel crimp height as shown in Figure 4. If the crimp height conforms to that shown in Figure 4, the tool is considered dimensionally correct. If the crimp height does *not* conform to the dimension above, return the tool to AMP for evaluation and repair (refer to Section 5, REPLACEMENT AND REPAIR).

For additional information concerning the use of the crimp height comparator, 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 wire and strip it according to dimensions listed in Figure 2.
2. Select contact and crimp section corresponding to the selected wire size (refer to Figure 2).
3. Position the contact and wire between the crimping dies, as described in Section 3, CRIMPING PROCEDURE.
4. Hold the wire 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.
5. 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.

**4.6. Insulation Crimp Adjustment**

The insulation barrel crimp height is controlled by the insulation adjustment lever. To determine the proper setting, test crimp a contact using the setting which approximates the insulation size (1-small, 2-medium, 3-large). If the crimped insulation barrel is too tight or too loose, change the setting accordingly. The crimp should hold the insulation firmly without cutting into it.

**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

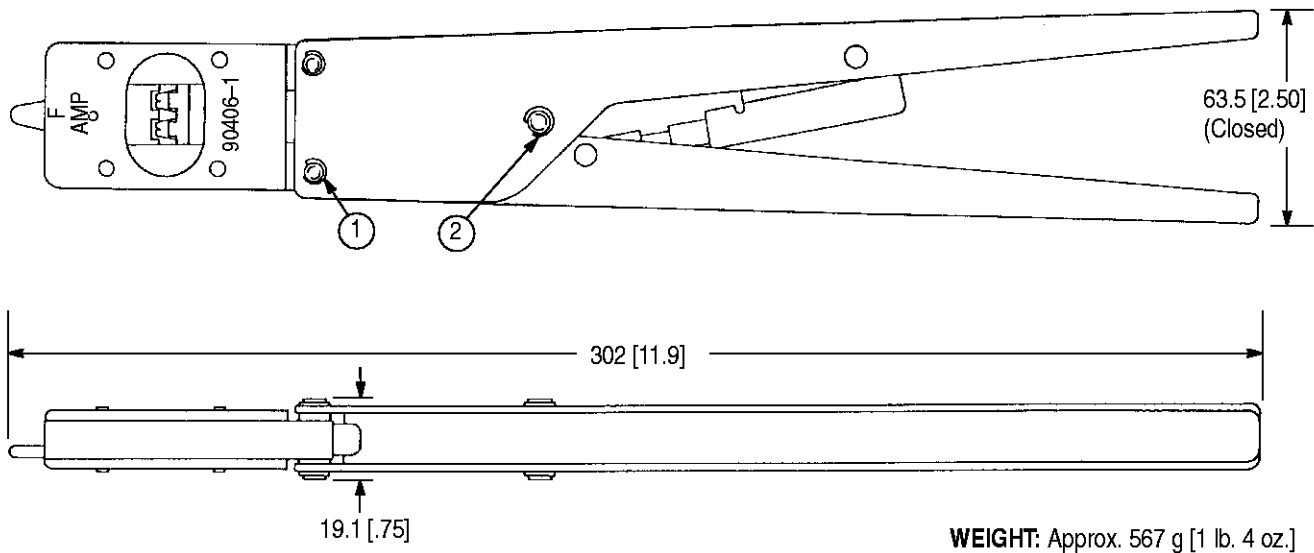
Tools may also be returned to AMP for evaluation and repair. For tool repair service, contact an AMP representative at: 1-800-526-5136.

**6. REVISION SUMMARY**

The following changes were made since the previous release of this sheet:

Per EC 0990-0725-99

- Changed tool repair service information in Section 5, REPLACEMENT AND REPAIR
- Updated document format



**WEIGHT:** Approx. 567 g [1 lb. 4 oz.]

ITEM	PART NUMBER	DESCRIPTION	QTY PER ASSY
1	21045-3	RING, Retaining	4
2	21045-9	RING, Retaining	2

Figure 5