

## 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.

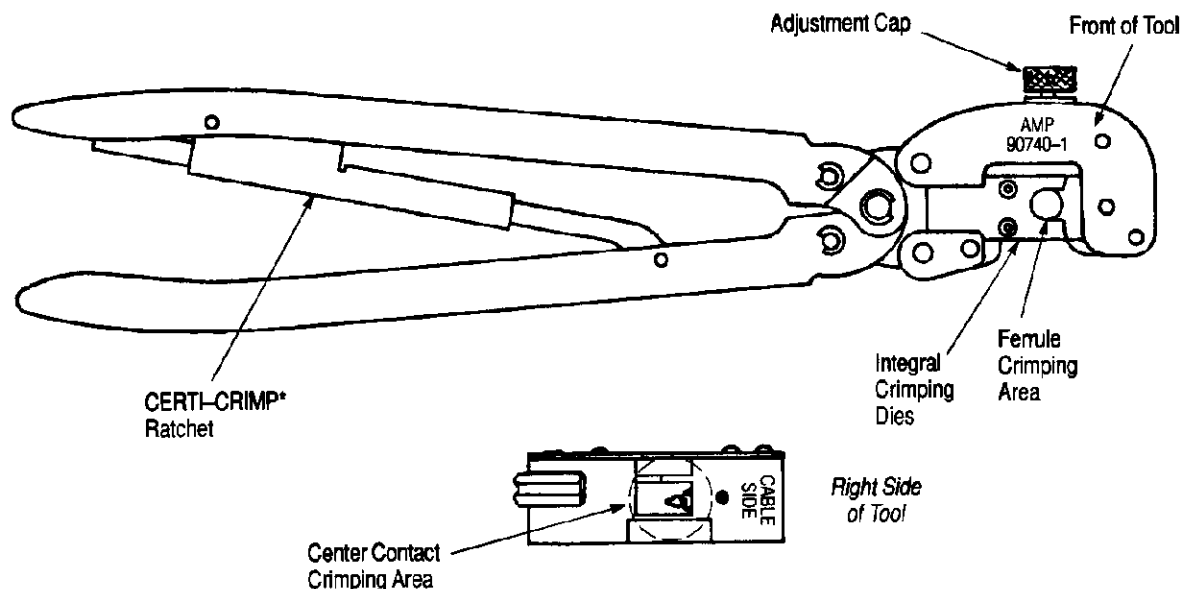


Figure 1

## 1. INTRODUCTION

This instruction sheet covers application and maintenance procedures for AMP\* Heavy Head Hand Crimping Tool 90740-1. Refer to Figure 1. The tool is used to crimp N Series and HN Series connectors to Raychem® 5012H3012 cable. Information pertaining to the connectors (cable stripping dimensions and assembly of component parts) is included in instructions packaged with the connectors. Read all instructions thoroughly before proceeding.

### NOTE

*Dimensions on this sheet are in metric units [followed by U.S. customary units in brackets]. Figures and illustrations are for identification only and are not drawn to scale.*

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

## 2. DESCRIPTION

The tool features integral dies that have two crimping areas (one to crimp the center contact, and one to crimp the ferrule), an adjustment cap that rotates the locator-stop (as required), and a CERTI-CRIMP ratchet which ensures full crimping. Once engaged,

the ratchet will not release until the tool handles have been FULLY closed.

The FRONT of the tool is marked with the AMP part number. The center contact enters the crimping area from the RIGHT side of the tool. The contact/cable assembly is inserted through the BACK of the tool for ferrule crimping.

## 3. ASSEMBLY AND CRIMPING PROCEDURES

Select the appropriate cable and connector for the tool. Slip ferrule over cable; then strip cable to the proper length, according to instructions packaged with the connector.

### 3.1. Crimping Center Contact

Refer to Figure 2 and proceed as follows:

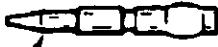
1. Determine contact type (long or short) from the dimensions provided in Figure 2. Rotate locator/stop by turning adjustment cap to OPEN position for *long-type* contacts, or CLOSED position for *short-type* contacts.
2. Insert conductor into contact wire barrel until contact butts against cable dielectric, and place contact in tool head as shown in Figure 2.

**Crimping Center Contact  
(Male or Female)**

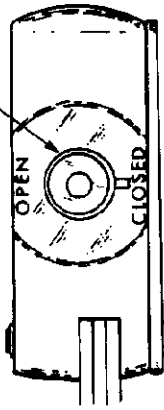
Typical Short Contact



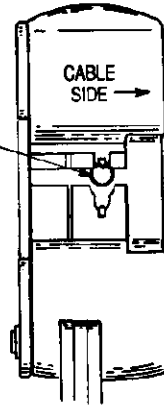
Typical Long Contact



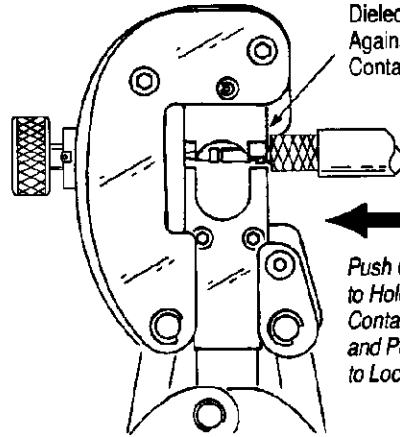
Rotate Locator -  
Stop as Required



End of Contact  
Must be Located in  
Locator-Stop Recess

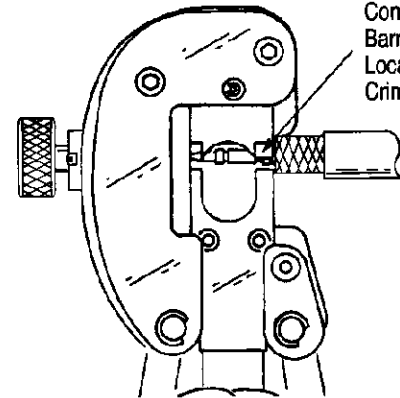


Dielectric Butts  
Against Center  
Contact



Push Cable **IN**  
to Hold Center  
Contact Against  
and Perpendicular  
to Locator-Stop

Raised Area on  
Contact Wire  
Barrel Must be  
Located on  
Crimping Die



TOOL NUMBER	CONTACT TYPE	
	LONG (Min.)	SHORT (Max.)
90740-1	22.02 [.867]	17.45 [.687]

Figure 2

3. Push cable **IN** to hold center contact against and perpendicular to locator/stop. **MAKE SURE** that the *raised area* on the contact wire barrel is located **ON** the crimping die for proper termination.

4. Close tool handles **FULLY** until ratchet releases to complete crimp. Note that once the ratchet is engaged, handles cannot be opened until they have been fully closed.

**3.2. Crimping Ferrule**

Assemble the connector body over the crimped contact as described in connector instructions and proceed as follows:

1. Place connector assembly in tool as shown in Figure 3. **MAKE SURE** that the ferrule assembled on the cable is on the upper crimping die, and that the shoulder on the connector rests against the die as shown.

2. Close handles until **CERTI-CRIMP** ratchet releases to complete crimp.

**Crimping Ferrule**

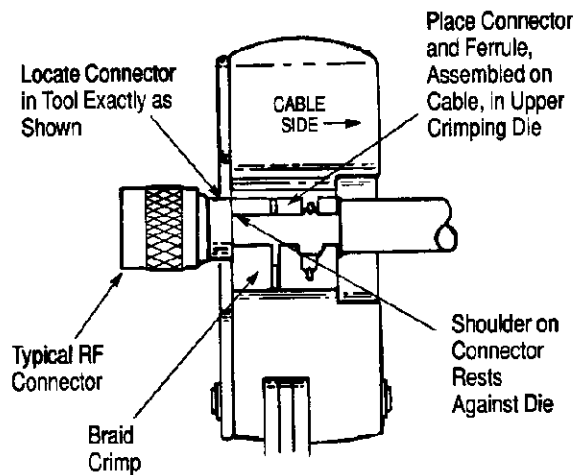


Figure 3

## 4. MAINTENANCE AND INSPECTION PROCEDURE

AMP recommends that a maintenance and inspection program be performed periodically to ensure dependable and uniform terminations. Though recommendations call for at least one inspection a month, 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 arrival to ensure that the tool has not been damaged during shipment.

### 4.1. Daily Maintenance

1. 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.

### 4.2. Periodic Inspection

#### A. 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.

#### B. 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 5, REPLACEMENT AND REPAIR.

2. Inspect head assembly for worn, cracked, or broken jaws. If damage is evident, return the tool to AMP for evaluation and repair. See Section 5, REPLACEMENT AND REPAIR.

### 4.3. Gaging the Crimping Chambers

This inspection requires the use of plug gages conforming to the dimensions provided in Figures 4 and 5. Although AMP does not manufacture or market these gages, the following procedures are recommended for measuring tool die closures.

#### A. Inspecting Center Contact Dies

Plug gaging of the center contact crimping dies requires the use of two separate gages, which can be used in AMP Hand Crimping Tool 90740-1. One gage is used inside the radius of the die closure; the other is used between the indent forming sections. Refer to Figure 4 and proceed as follows:

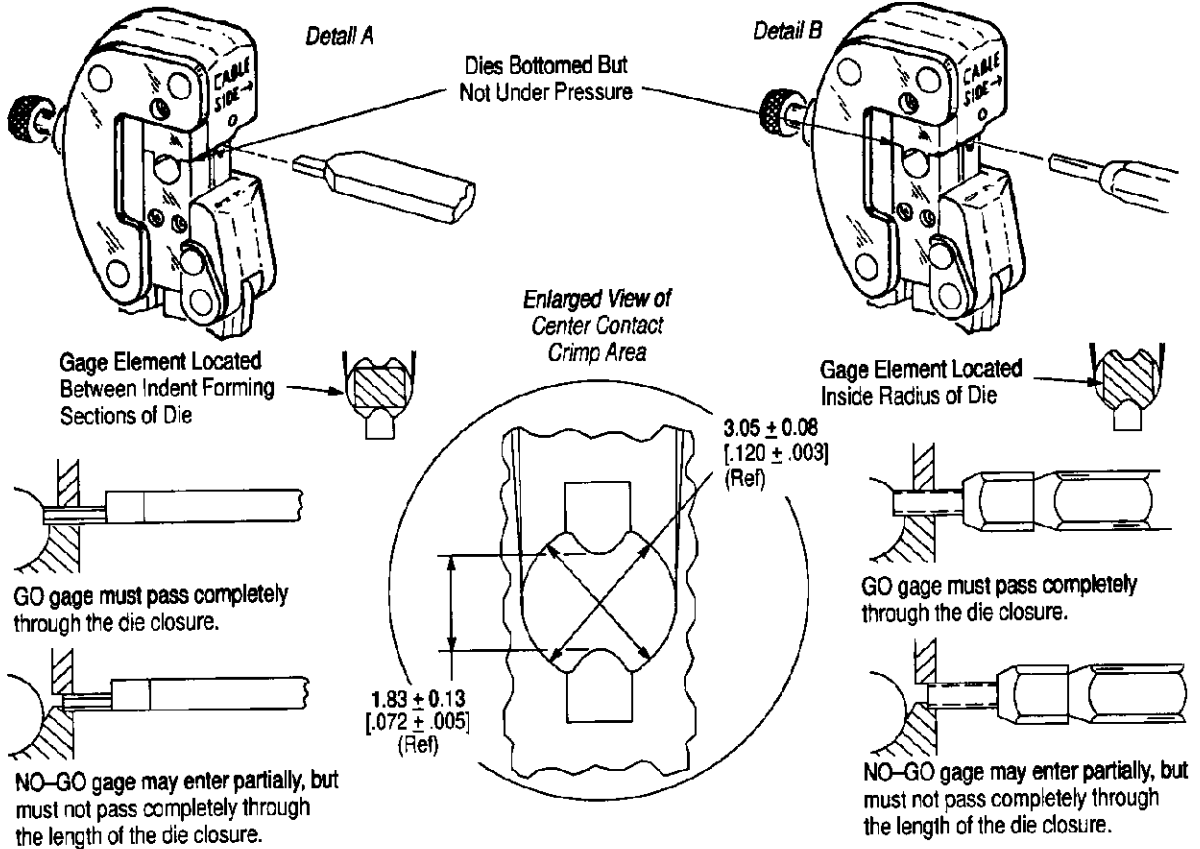
1. Close the tool handles until crimping dies are bottomed. Do NOT apply additional pressure, or ratchet will release.
2. With dies bottomed, check the indent-forming closure by using the box-type plug gage shown in Figure 4, Detail A. Align the GO element with the contact crimping chamber and insert the element without using force. The GO element must pass completely through the die closure.
3. Now align the NO-GO element and try to insert it straight into the same crimping chamber. The NO-GO element may start entry but must NOT pass completely through as shown in Figure 4.
4. Continue to hold the dies bottomed and insert the second (grooved) gage to inspect the radius of the dies, as shown in Figure 4, Detail B. Use the same method described in Steps 2 and 3.
5. If the die closure meets both plug gage conditions, the dies may be considered dimensionally correct.

#### B. Inspecting Braid Crimping Dies

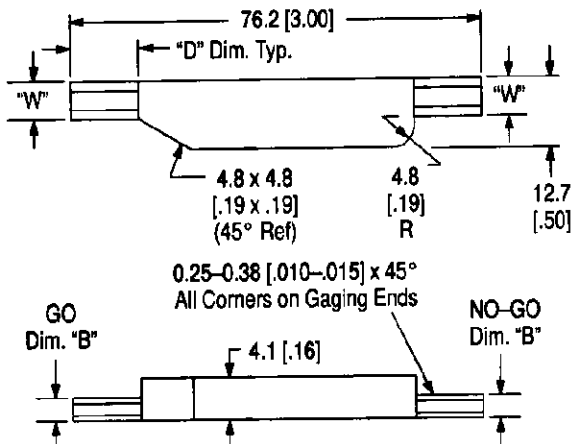
Figure 5 provides proper plug gage dimensions for the braid crimping area. Figure 5 shows the location of the crimping area for inspection. Proceed as follows:

1. Remove all traces of oil and dirt from tool crimping areas and gages.
2. Close tool handles until dies are bottomed, but not under pressure.

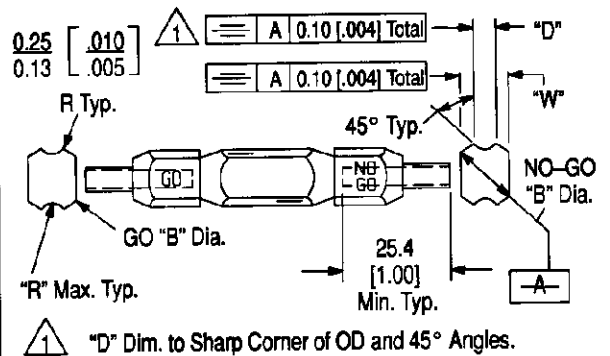
**Inspection of Center Contact Crimping Dies with Plug Gages**



**Suggested Plug Gage Design for Indent-Forming Section**



**Suggested Plug Gage Design for the Inside Radius**



**GAGE ELEMENT DIMENSIONS**

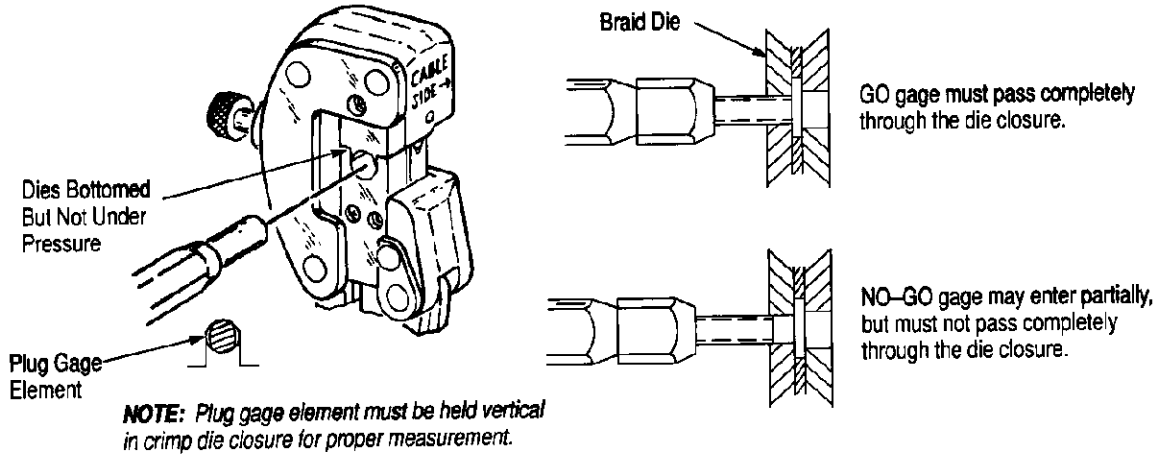
DIM. "B"		"W"	DIM. "D" Typ.
GO	NO-GO		
1.702-1.709 [.0670-.0673]	1.953-1.956 [.0769-.0770]	2.29-2.41 [.090-.095]	9.65 [.380]

**GAGE ELEMENT DIMENSIONS**

DIM. "B" (Dia.)		DIM. "W"	DIM. "D"	RADIUS "R" (Max.)
GO	NO-GO			
2.972-2.979 [.1170-.1173]	3.122-3.124 [.1229-.1230]	2.62 [.103]	1.57-1.73 [.062-.068]	0.64 [.025]

Figure 4

**Inspection of Braid Crimping Dies with Plug Gages**



**Suggested Plug Gage Design**

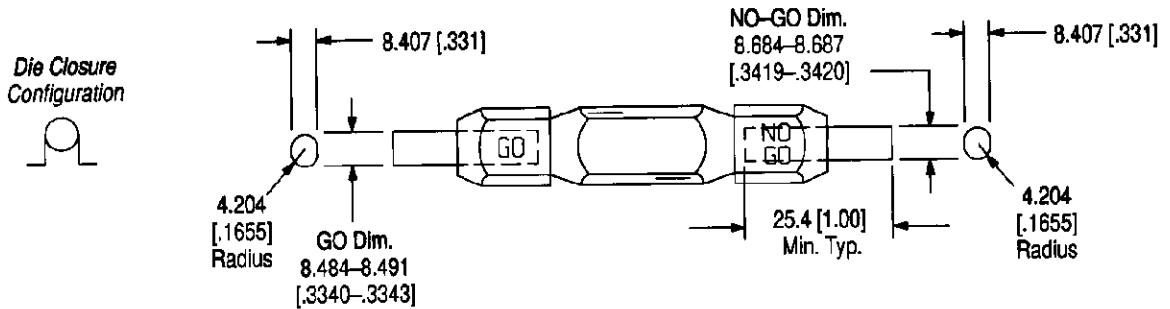


Figure 5

3. Using the proper plug gage, check the braid closure with dies bottomed. Hold gage in straight alignment with the dies and carefully try to insert, without forcing, first the GO element, and then the NO-GO element. The GO element must pass completely through the crimp die closure.

4. The NO-GO gage may enter partially, but must NOT pass completely through the crimp die closure.

If the crimping chambers conform 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 to AMP for further evaluation and repair. Refer to Section 5, REPLACEMENT AND REPAIR.

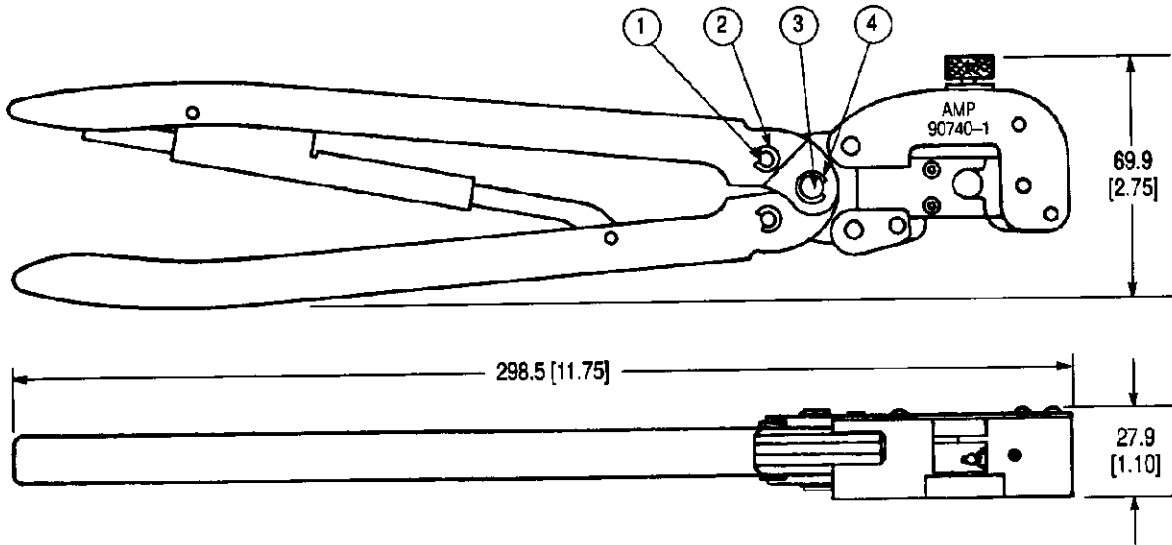
For additional information regarding the use of a plug gage, refer to instruction sheet 408-7424.

**C. 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 jaws to open before they have fully bottomed. Obtain a 0.025 [.001] shim that is suitable for checking the clearance between the bottoming surfaces of the crimping jaws. Proceed as follows:

1. Select a connector and maximum size wire for the tool.
2. Position the connector and wire between the crimping jaws, as described in Section 3, ASSEMBLY AND CRIMPING PROCEDURES.
3. 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 jaws closed.
4. Check the clearance between the bottoming surfaces of the crimping jaws. If the clearance is 0.025 [.001] or less, the ratchet is satisfactory. If clearance exceeds 0.025 [.001], the ratchet is out of adjustment and must be repaired. See Section 5, REPLACEMENT AND REPAIR.



Weight: Approx. 736 g [2 lb. 2 oz.]

**REPLACEMENT PARTS**

ITEM	PART NUMBER	DESCRIPTION	QTY PER ASSY
1	300388	PIN, Retaining	2
2	21045-3	RING, Retaining	4
3	300389	PIN, Retaining	1
4	21045-6	RING, Retaining	2

Figure 6

**5. REPLACEMENT AND REPAIR**

The parts listed in Figure 6 are customer-replaceable. A complete inventory can be stocked and controlled to prevent lost time when replacement of parts is necessary. Order replacement parts through your AMP representative, or call 1-800-526-5142, or send a facsimile of your purchase order to 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 repairs, send 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 of this sheet, the following changes were made:

Per EC 0990-0991-96

- Changed plug gage dimensions in Figure 5.