

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.

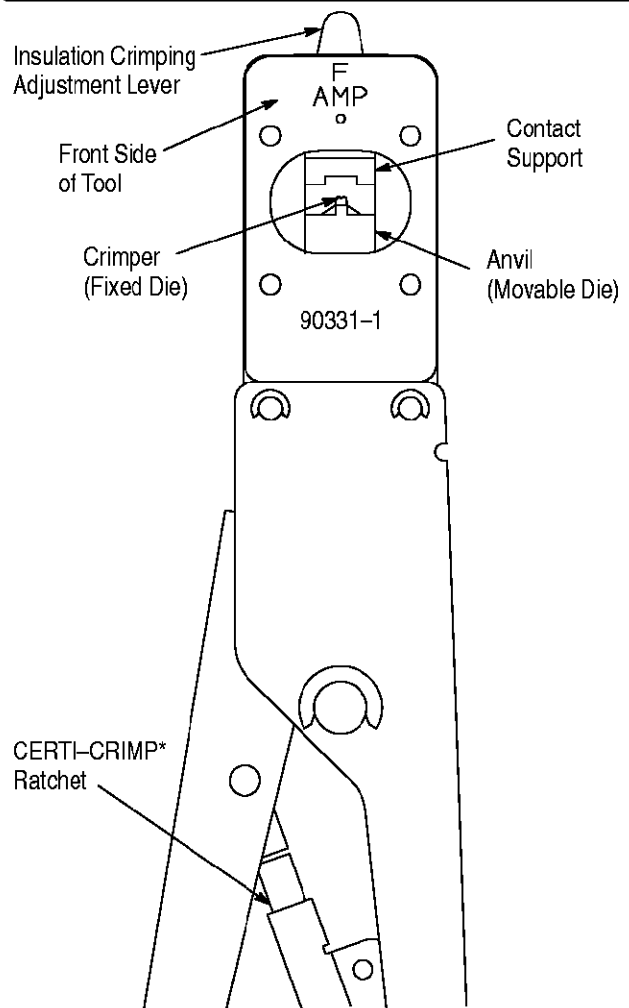


Figure 1

1. INTRODUCTION

AMP Straight Action Hand Tool 90331-1 is designed to crimp the Type III(+) loose piece (LP) pin and socket contacts listed in Figure 2. Read these instructions thoroughly before using the hand tool.

NOTE Dimensions on this sheet are in metric units [with U.S. customary equivalents in brackets].

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

2. DESCRIPTION (Figure 1)

The hand tool features a crimper (fixed die), an anvil (movable die), an insulation crimping adjustment

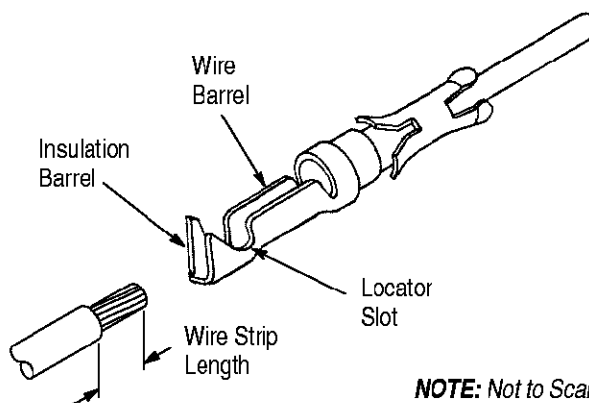
lever, a locator/insulation stop, a contact support, an ejector, and a CERTI-CRIMP ratchet. The front side of the tool, into which the contact is inserted, has the tool number marked on it. The wire is inserted from the back side of the tool which is marked above each crimping chamber.

The insulation crimping adjustment lever is used to regulate the crimp height of the contact insulation barrel. The contact support prevents the contact from bending during the crimping procedure.

The locator/insulation stop positions the contact between the dies and aids in locating the wire in the contact. In use, it rests in the contact locator slot. The ejector pulls the locator down and ejects the crimped contact when the tool handles are fully opened.

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

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



WIRE SIZE (AWG)	INSUL DIA [.060-.135]	CONTACT			WIRE STRIP LENGTH
		TYPE	LP	STRIP	
24 - 20	1.52-3.43 [.060-.135]	Socket	66565-[-]	66563-[-]	3.96±0.38 [.156±.015]
		Pin	66566-[-] 213605-[-]	66564-[-] 213605-[-]	

Figure 2

3. CRIMPING PROCEDURE

Select the appropriate wire size and loose piece contact for the hand tool. The wire size and insulation diameter must be within the specified range for the contact. Strip the wire to the length indicated in Figure 2. Do NOT nick or cut the wire strands.

1. Hold tool so that the back side is facing you.
2. Open the dies by squeezing the tool handles together until the CERTI-CRIMP ratchet releases.
3. Insert the contact insulation barrel from the front side of the tool into the crimping chamber. Position the contact on the anvil so that the locator/insulation stop enters the contact locator slot. Push contact in until wire barrel butts against locator/insulation stop. See Figure 3.
4. Holding the contact in place, squeeze the tool handles together just enough to hold the contact in the crimping chamber.

NOTE Do NOT deform the contact insulation barrel or wire barrel.

5. Insert stripped wire through the locator and into the contact wire barrel. The wire should extend slightly beyond the end of the wire barrel and the wire insulation should butt against the locator/insulation stop.
6. Holding the wire in place, squeeze tool handles together until CERTI-CRIMP ratchet releases.

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

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 determine the proper insulation crimp setting, proceed as follows:

1. Slide the insulation crimping adjustment lever to Position 3 (marked on the back side of the tool).
2. Position contact into crimping chamber as described in Section 3, CRIMPING PROCEDURE.
3. Insert an UNSTRIPPED wire into just the insulation barrel. Crimp contact and remove from crimping chamber.
4. Check the insulation support by bending the wire back and forth once. The insulation barrel should retain grip on the wire insulation. If the wire pulls out, move the insulation crimping adjustment lever to the next tighter position and perform another test crimp. If the wire does not pull out, the lever is properly adjusted and the hand tool is ready for crimping.

NOTE Adjust the lever as necessary until the desired insulation grip is obtained. Crimp should hold wire insulation firmly without cutting into it. Do NOT use a tighter grip than necessary.

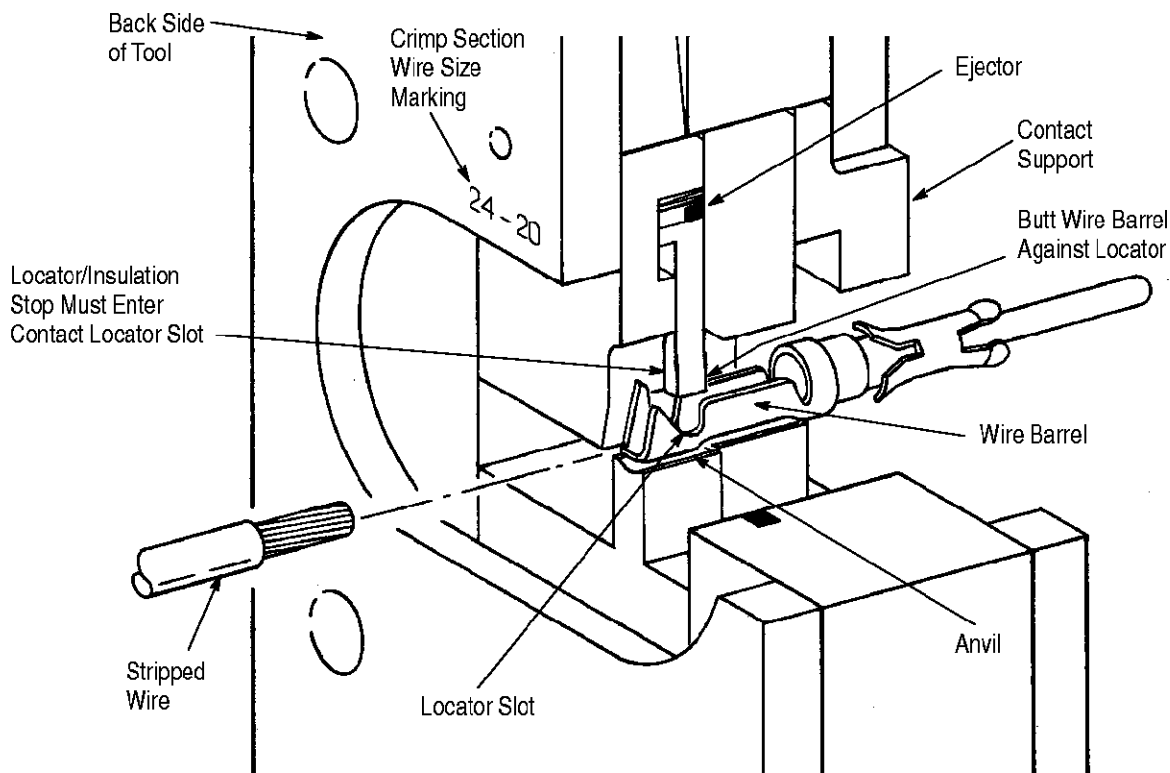


Figure 3

5. MAINTENANCE AND INSPECTION

Tyco Electronics 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, Tyco Electronics recommends that the tool be inspected immediately upon arrival to ensure that the tool has not been damaged during shipment.

5.1. 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.

CAUTION Do NOT remove retaining pins as permanent damage to the tool may result. See Section 6, REPLACEMENT AND REPAIR.

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.

5.2. Periodic Inspection

A. Lubrication

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

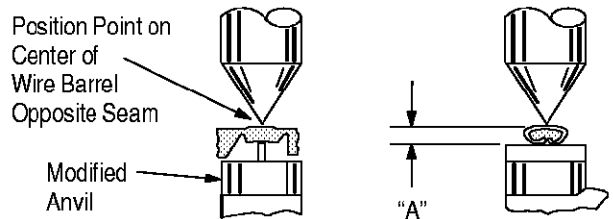
- Tool used in daily production – lubricate daily
- Tool used daily (occasional) – lubricate weekly
- Tool used weekly – lubricate monthly

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 6, REPLACEMENT AND REPAIR.

2. Inspect the head for worn, cracked, or broken areas. If damage is evident, return the tool to Tyco Electronics for evaluation and repair. See Section 6, REPLACEMENT AND REPAIR.



CONTACT NUMBER (LP)	WIRE SIZE AWG (Max.)	CRIMP SECT WIRE SIZE MARKING	CRIMP HEIGHT DIM. "A"
66565-[]	20	(2) 24	1.07-0.86 [.042-.034]
66566-[]		24	0.97-0.76 [.038-.030]
213605-[]		22	1.02-0.81 [.040-.032]
		20	1.12-0.91 [.044-.036]

Figure 4

C. Crimp Height Inspection

This inspection requires the use of a modified micrometer with a modified anvil, as shown in Figure 4. Tyco Electronics recommends the 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. Select a contact and **maximum** size wire for the crimping chamber.
2. Refer to Section 3, CRIMPING PROCEDURE, and crimp contact accordingly.
3. Using a crimp height comparator, measure the wire barrel crimp height as shown in Figure 4. If the crimp height conforms to that height, the tool is considered dimensionally correct. If not, the tool must be returned for evaluation and repair. See Section 6, REPLACEMENT AND REPAIR.

For additional information concerning the use of the crimp height comparator, refer to Instruction Sheet 408-7424.

D. CERTI-CRIMP Ratchet Inspection

The CERTI-CRIMP ratchet feature on hand tools should be checked to ensure that the ratchet does not release prematurely, allowing the dies 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 dies and proceed as follows:

1. Select a contact and **maximum** size wire for the hand tool.
2. Position the contact and wire between the crimping dies, as described in Section 3, CRIMPING PROCEDURE.
3. Holding the wire in place, 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 [.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 6, REPLACEMENT AND REPAIR.

6. REPLACEMENT AND REPAIR

The parts listed in Figure 5 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 Tyco Electronics 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)
TYCO ELECTRONICS CORPORATION
P.O. BOX 3608
HARRISBURG, PA 17105-3608

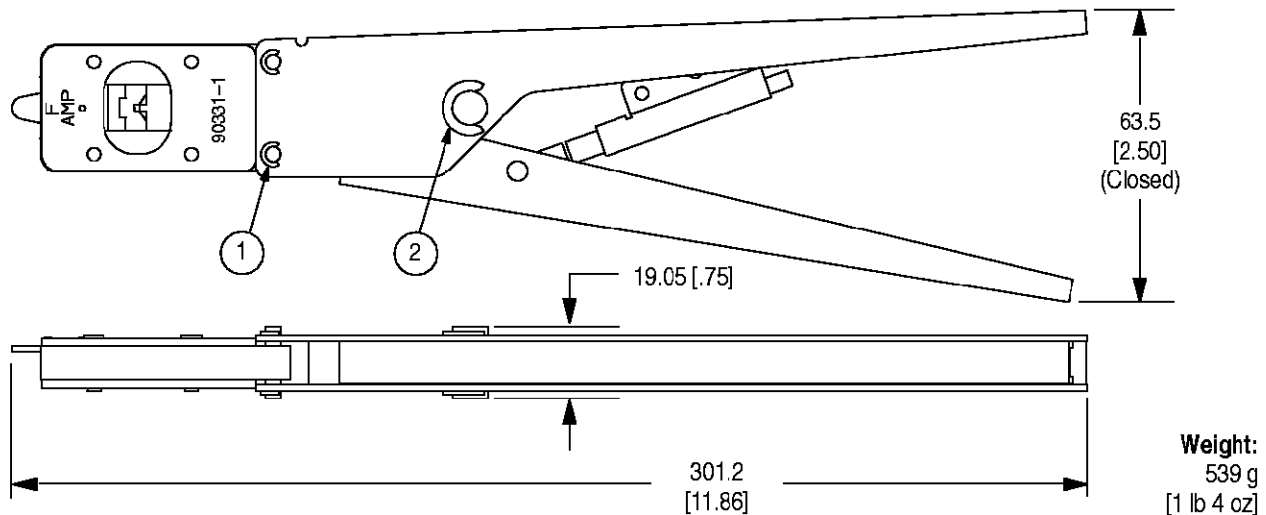
Parts other than those specified in Figure 5 must be replaced by Tyco Electronics to ensure reliability of the tool. Tools may be returned to Tyco Electronics for evaluation and repair. For tool repair service, contact a Tyco Electronics Representative at 1-800-526-5136

7. REVISION SUMMARY

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

Per EC 0990-0717-01

- Updated document to corporate requirements
- Changed PN 21045-6 to 21045-9 in Figure 5



REPLACEMENT PARTS

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

Figure 5