

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.

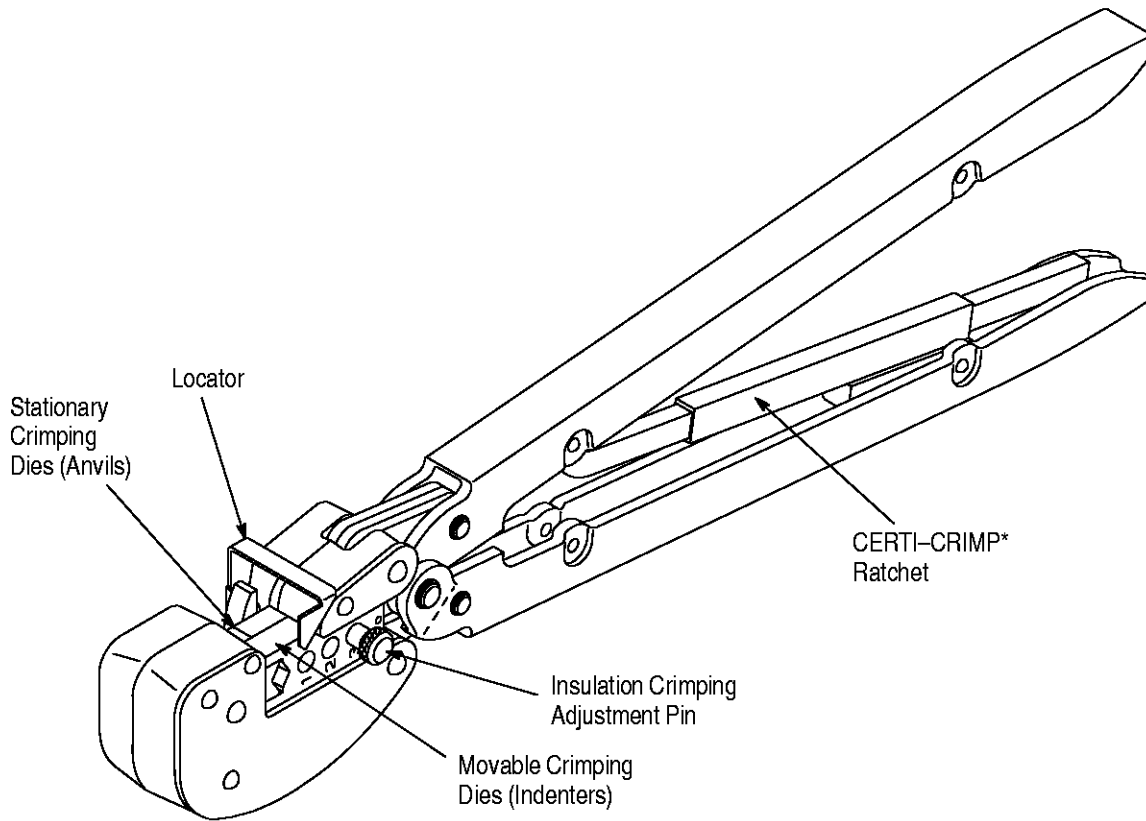


Figure 1

1. INTRODUCTION

This instruction sheet covers AMP* Hand Crimping Tools 59118, 59239-4, and 59287-2, which are used to crimp the terminal types listed in Figure 2.

NOTE For other tools accompanied by this instruction sheet, follow instructions as that for tools used to crimp the same wire size.

NOTE Dimensions on this instruction sheet are in millimeters [followed by inches in brackets].

Reasons for reissue of this instruction sheet are provided in Section 8, REVISION SUMMARY.

2. DESCRIPTION (Figure 1)

Each tool features a head containing two stationary crimping dies (anvils) and two movable crimping dies (indenters), a locator, an insulation crimping adjustment pin, and a CERTI-CRIMP ratchet.

When closed, the crimping dies form one crimping chamber with two sections: an insulation barrel section and a wire barrel section. The insulation barrel section crimps the terminal or splice onto the wire insulation and, simultaneously, the wire barrel section crimps the terminal or splice wire barrel onto the stripped wire. The locator positions the terminal or splice in the crimping chamber. The insulation crimping adjustment pin is used to regulate the height of the insulation crimp.

The CERTI-CRIMP ratchet ensures full crimping of the terminal. 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 design feature ensures maximum electrical and tensile performance of the crimp. Do NOT re-adjust the ratchet.

CONNECTOR TYPE	WIRE TYPE	WIRE SIZE (AWG)
PIDG* Terminals and Splices	Solid or Stranded Copper	12 through 10 and 16 through 14 HD
PIDG Insulation Restricting Nylon Terminals	Stranded Copper	12 through 10
PIDG Radiation Resistant Terminals and Splices	Stranded Copper	12 through 10
PLASTI-GRIP* Terminals	Solid or Stranded Copper	12 through 10 and 16 through 14 HD
Spare Wire Caps	Stranded Copper	12 through 10

Figure 2

3. CRIMPING PROCEDURE

NOTE

Refer to Section 5 for information on the insulation crimp adjustment.

3.1. Terminals (Figure 4)

1. Strip the wire to the dimension provided in Figure 3, being careful to avoid nicking or damaging the conductor(s).

NOTE

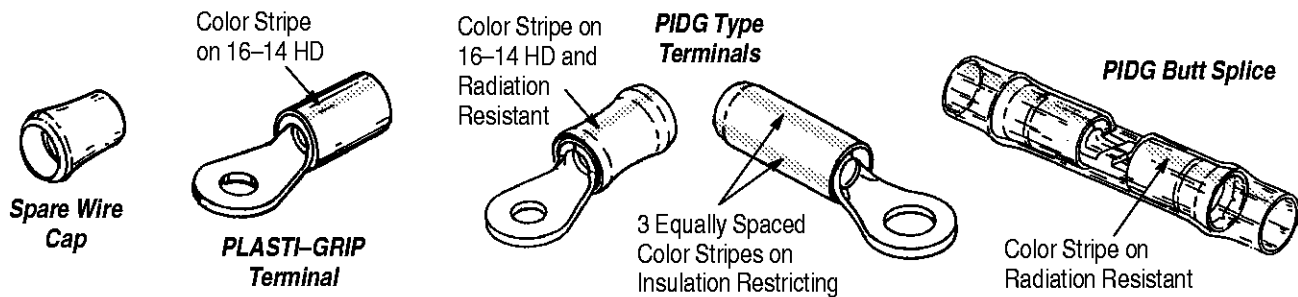
Do NOT use wire with nicked or missing conductors.

NOTE

Make sure terminal insulation color code matches tool handle color.

2. Open the tool jaws by closing the tool handles until the ratchet releases, then allow the handles to open fully.

3. Place the terminals in the dies so that the wire barrel butts against the locator.



TOOL NUMBER	WIRE SIZE RANGE (AWG)	TOOL HANDLE COLOR AND DOT CODE	PRODUCT	INSULATION DIAMETER RANGE mm [In.]	INSULATION COLOR CODE	WIRE STRIP LENGTH mm [In.]			
						TERMINALS		SPICES	
						Min.	Max.	Min.	Max.
59118 59239-4 59287-2	12 - 10 16 - 14 HD	Yellow One Dot	PLASTI-GRIP Terminals	5.84 - 6.35 [.230 - .250]	12 - 10 Yellow	7.9 [.31]	8.7 [.34]	8.7 [.34]	9.5 [.38]
			PIDG Vinyl and Nylon Terminal or Splice	6.99 - 7.62 [.275 - .300]	16 - 14 HD Yellow w/Black Stripe				
59118 59239-4	12	Yellow One Dot	PIDG Insulation Restricting Nylon Terminals	2.41 - 5.08 [.095 - .200]	Yellow Insulation w/3 Yellow Stripes	9.5 [.38]	10.3 [.41]	—	
	10			3.02 - 5.08 [.119 - .200]	Yellow Insulation w/3 Brown Stripes				
59118 59239-4	12 - 10	Yellow One Dot	PIDG Radiation Resistant Terminals and Splices	6.60 [.260] Max.	Natural Color w/Yellow Stripe	7.9 [.31]	8.7 [.34]	8.7 [.34]	9.5 [.38]
	16 - 14 HD				Natural Color w/Black Stripe			—	

TOOL NUMBER	WIRE SIZE RANGE (AWG)	TOOL HANDLE COLOR AND DOT CODE	PRODUCT	MAXIMUM INSULATION DIAMETER mm [In.]	INSULATION COLOR CODE	WIRE STRIP LENGTH mm [In.]	
						Min.	Max.
59118 59239-4	12 - 10	Yellow One Dot	Spare Wire Cap 328309	5.33 [.21]	Yellow	8.7 [.34]	9.5 [.38]

Figure 3

PIDG and PLASTI-GRIP Terminals

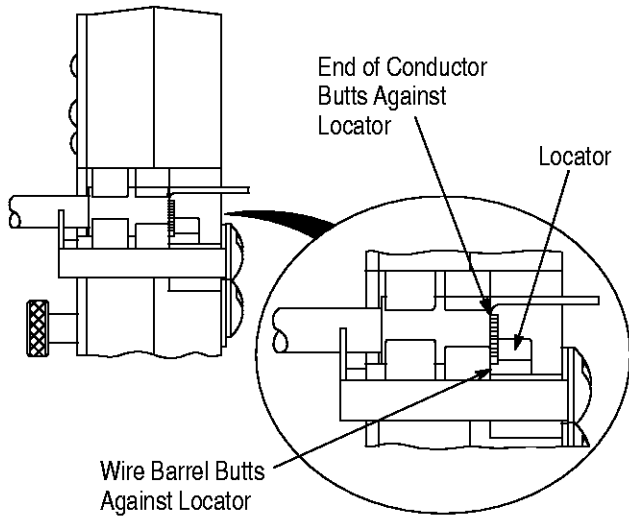
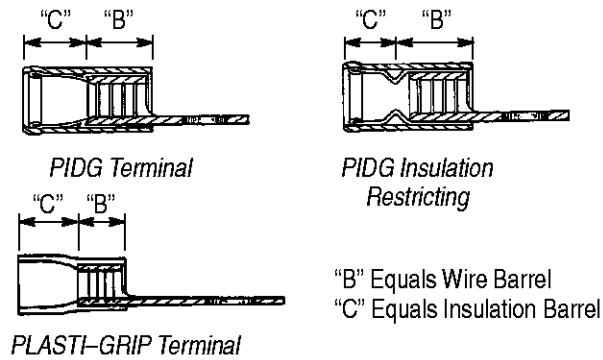


Figure 4

4. Close the tool handles until the terminal is held firmly in place. Do NOT deform the terminal.

5. Insert properly stripped wire into the terminal until the end of the conductor butts against the locator.

NOTE Do NOT allow wire insulation to enter the terminal wire barrel.

6. Complete the crimp by closing the tool handles until the ratchet releases.

7. Release the tool handles, allow the handles to open fully, and remove the crimped terminal.

8. Observe the dot code on the finished crimp to ensure that the correct terminal and tool combination was used. See Figure 3.

9. Refer to Section 4 and Figures 7 or 8 for terminal crimp inspection procedure.

3.2. Butt Splices (Figure 5)

1. Strip the wire to the dimension provided in Figure 3, being careful to avoid nicking or damaging the conductor(s).

NOTE Do NOT use wire with nicked or missing conductors.

NOTE Make sure splice insulation color code matches tool handle color.

2. Open the tool jaws by closing the tool handles until the ratchet releases, then allow the handles to open fully.

3. Depress the locator. Position the splice in the dies so that the locator seats in the window indent of the splice.

4. Close the tool handles until the splice is held firmly in place. Do NOT deform the splice.

5. Insert properly stripped wire into the splice until the end of the conductor butts against the splice wire stop.

NOTE Do NOT allow wire insulation to enter the splice wire barrel.

6. Complete the crimp by closing the tool handles until the ratchet releases.

7. Release the tool handles, allow the handles to open fully, and remove the crimped splice.

8. To crimp the other half of the splice, turn the splice or tool around. Position the uncrimped half of the splice in the dies and follow the same procedure used to crimp the first half of the splice.

9. Observe the dot code on the finished crimp to ensure that the correct splice and tool combination was used. See Figure 3.

10. Refer to Section 4 and Figures 7 or 8 for splice crimp inspection procedure.

PIDG Butt Splice

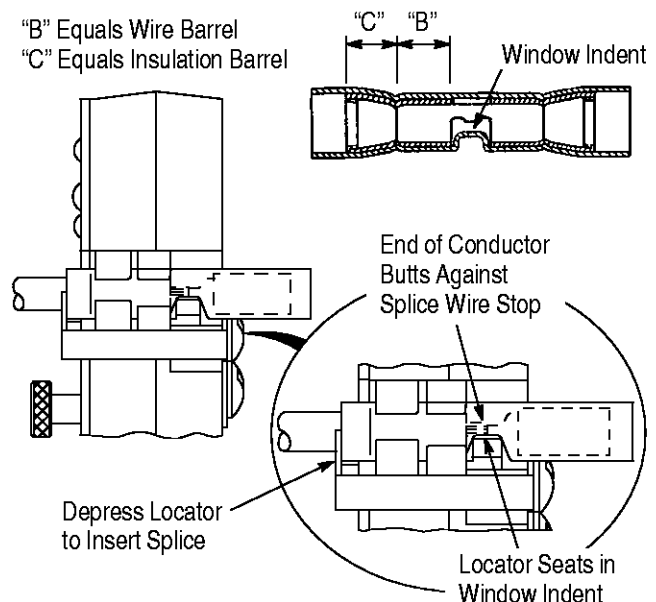


Figure 5

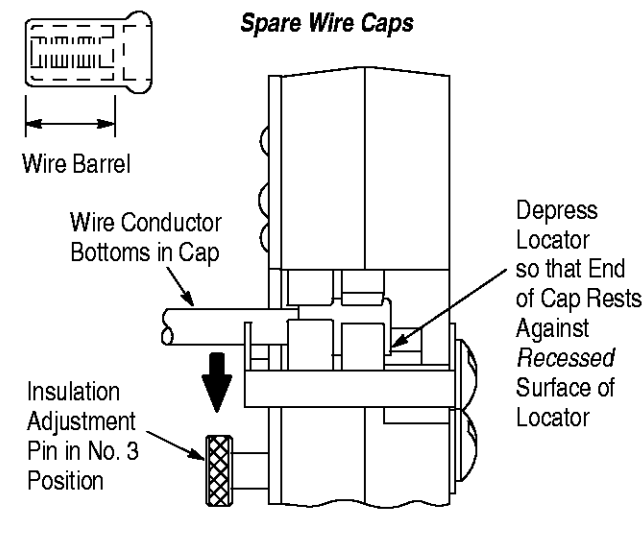


Figure 6

3.3. Spare Wire Caps (Figure 6)

1. Strip the wire to the dimensions provided in Figure 3.

NOTE Do NOT use wire with nicked or missing conductor strands.

2. Place the crimping tool's insulation adjustment pins in the No. 3 position.
3. Close the tool handles until the crimping jaws partially close, but leave enough space for the cap to be inserted between the dies.
4. Depress the locator so that the end of the cap rests against the recessed surface of the locator, as shown in Figure 6.
5. Close the tool handles until the cap is held firmly in place. Do NOT deform the cap wire barrel.
6. Insert the properly stripped wire into the cap until the conductor bottoms.
7. Hold the wire in position and complete the crimp by closing the tool handles until the ratchet releases.
8. Release the tool handles, allow the handles to open fully, and remove the crimped spare wire cap.
9. Refer to Section 4 and Figure 8 for spare wire cap crimp inspection procedure.

4. CRIMP INSPECTION

Inspect crimped terminals, splices, and spare wire caps by checking the features described in Figures 7 and 8. Terminals, splices, and spare wire caps not meeting the described conditions should NOT be used.

5. INSULATION CRIMP ADJUSTMENTS

5.1. PIDG Terminals and Splices

NOTE PIDG terminals and splices feature a wire insulation grip.

The insulation crimping section of the hand tool has three positions: 1 (tight), 2 (medium), and 3 (loose). To adjust the section:

1. Insert the insulation crimp adjustment pins into the No. 3 position. Refer to Figure 1.

2. Place the terminal or splice into the crimping jaws as shown in Figure 4 or Figure 5.

3. Insert the UNSTRIPPED wire into ONLY the insulation barrel (refer to Figure 4 or Figure 5) portion of the terminal or splice.

4. Close the tool handles to complete the crimp.

5. Remove the crimped terminal or splice and check the insulation crimp by bending the wire back and forth once. The terminal or splice should retain its grip on the wire insulation. If the wire pulls out, set the insulation crimp adjustment pins to the next higher position (No. 2).

6. Perform another crimp and repeat the adjustment as necessary until the correct insulation grip is attained. Do not use a tighter setting than required.

CAUTION Make sure that both insulation crimp adjustment pins are in the same position.

5.2. PLASTI-GRIP Terminals

NOTE PLASTI-GRIP terminals feature a wire insulation support only. The terminal insulation should be in contact with the wire insulation.

1. Set adjustment pin in position No. 3 for wire having a large insulation diameter.

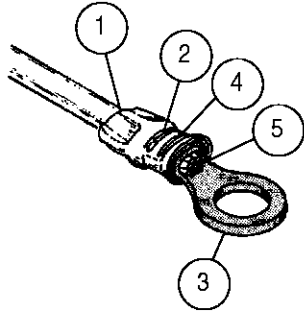
2. Set adjustment pin in position No. 2 for wire having a medium insulation diameter.

3. Set adjustment pin in position No. 1 for wire having a small insulation diameter.

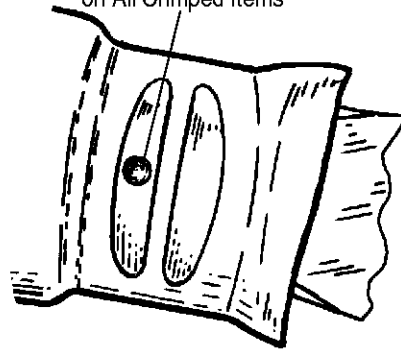
ACCEPT

A Dot Code (1 or 2 Dots) Must Appear on All Crimped Items

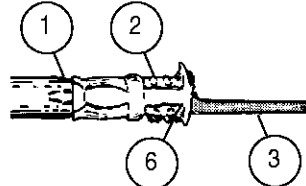
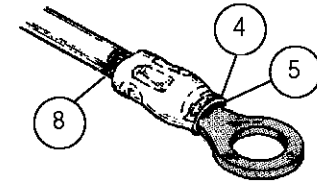
REJECT



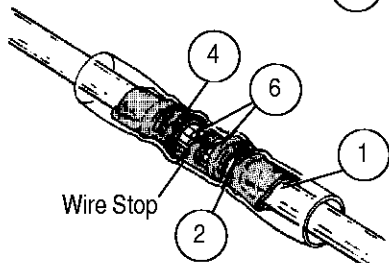
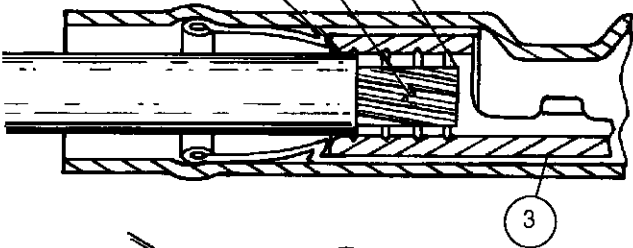
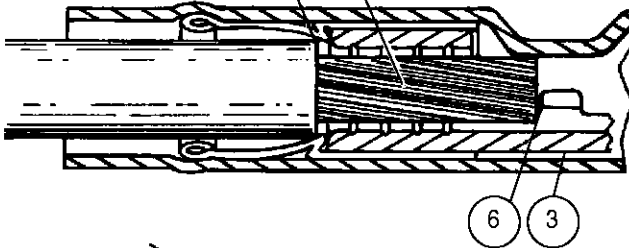
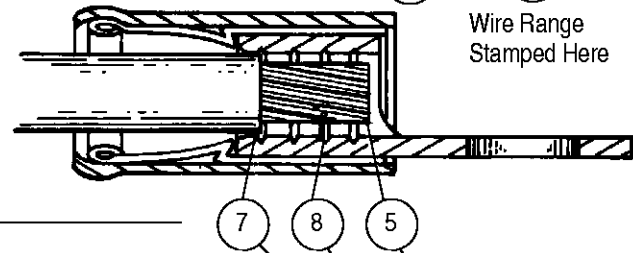
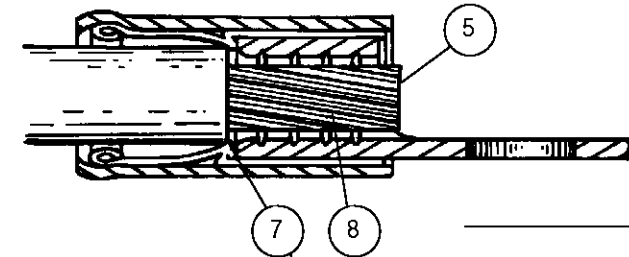
Wire Range Stamped Here



**PIDG and PLASTI-GRIP
Terminals**

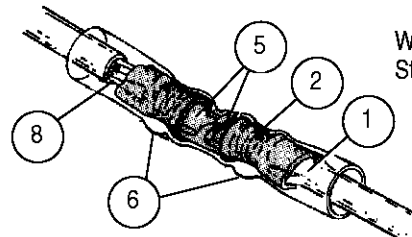


Wire Range Stamped Here



Wire Stop

**PIDG
Butt Splice**



Wire Range Stamped Here

- 1 Insulation barrel is in firm contact with wire insulation.
- 2 Correct color code, dot code, and tool combination.
- 3 Wire size is within wire range stamped under terminal tongue or on center of splice.
- 4 Crimp centered on wire barrel.
- 5 End of conductor is flush with, or extends beyond end of terminal wire barrel.
- 6 End of conductor against wire stop of splice, or at least flush with, or extended slightly beyond wire barrel.
- 7 Wire insulation does not enter wire barrel.
- 8 No nicked or missing conductor strands.

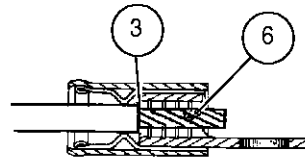
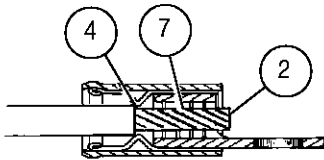
- 1 Wire insulation extruded. (Insulation crimp too tight on PIDG terminals and splices.) See Paragraph 5.1.
- 2 Wrong dot code and color code combination. See Figure 3.
- 3 Wire size is not within wire range stamped on terminal tongue or splice.
- 4 Crimp not centered on wire barrel. (Terminal was not butted against locator. See Figure 4.)
- 5 End of conductor is not flush with or extending beyond end of wire barrel. (Check for correct strip length.)
- 6 Excessive flash or extruded insulation, (wrong tool, terminal, or splice combination, or damaged dies.)
- 7 Wire insulation entered wire barrel.
- 8 Nicked or missing conductor strands.

Figure 7

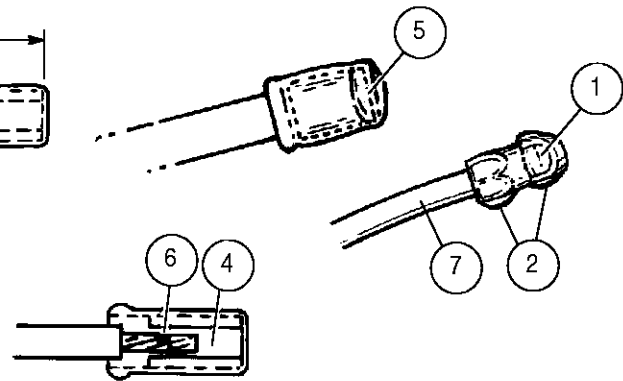
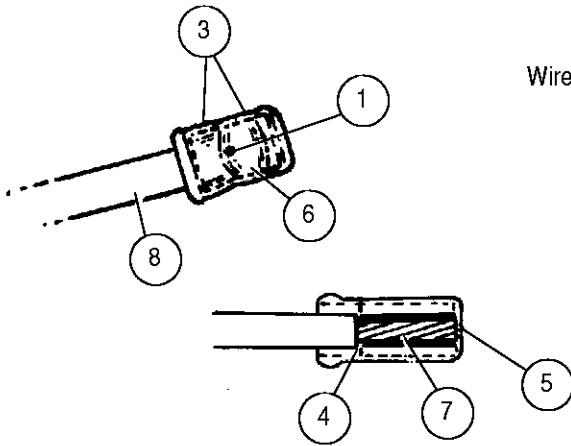
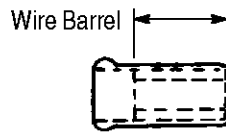
ACCEPT

REJECT

**PIDG
Insulation
Restricting
Terminals**



Spare Wire Caps



- ① Correct color code, dot code, and tool combination.
- ② Conductors may extend slightly beyond wire barrels on terminals.
- ③ No flash or extruded insulation.
- ④ Wire insulation does not enter wire barrel of terminal or cap.
- ⑤ End of conductor bottomed in cap.
- ⑥ Full width of crimp is over wire barrel of cap.
- ⑦ No nicked or missing conductor strands.
- ⑧ Correct wire size used.

- ① Wrong dot code and color code combination. See Figure 3.
- ② Excessive flash or extruded insulation. (Crimped in wrong tool or damaged dies.)
- ③ Wire insulation entered wire barrel of terminal or cap.
- ④ End of conductor not bottomed in cap.
- ⑤ Part of crimp off end of wire barrel of cap. (Cap was not bottomed in recess of locator.) See Figure 6.
- ⑥ Nicked or missing conductor strands.
- ⑦ Incorrect wire sizes used.

Figure 8

6. 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.

6.1. 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.

6.2. 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 7, 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 7, REPLACEMENT AND REPAIR.

C. Crimping Die Closure Inspections

Each tool is inspected for proper die closure before shipment. However, inspection of die closure for excessive wear is required periodically.

NOTE

The following plug gaging information for insulation crimp die closures is provided for customers specifically requiring this information. If plug gaging is not required, inspect the die closure using an alternate procedure, i.e., performing the "Insulation Crimp Adjustment" (see Section 5) and "Visual Inspection" (see Paragraph 6.2.B.)

This inspection requires the use of plug gages conforming to the dimension shown in Figure 9. AMP does not manufacture or market these gages.

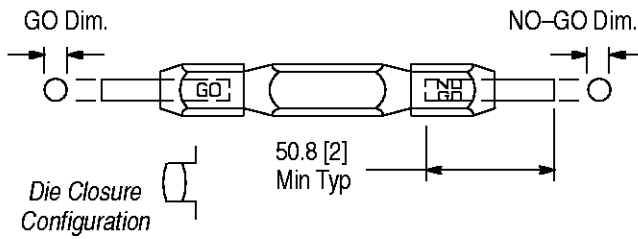
To gage die closure, refer to Figure 10 and proceed as follows:

1. Remove traces of oil or dirt from the crimping chamber and plug gage.
2. Close the tool handles until the wire barrel dies are bottomed. Do not apply additional pressure to the tool handles.
3. With wire barrel dies bottomed, inspect the wire barrel crimp die closure using the proper plug gage. Press the spring-loaded locator down and hold gage in alignment with the die closure.
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 10.
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 10.
6. Insert tool insulation crimping adjustment pin into Position 1.
7. With crimping dies bottomed, check the insulation barrel section of the crimping chamber as described in Steps 4 and 5.

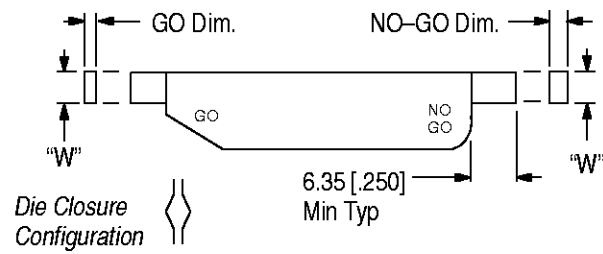
If the crimping chamber conforms to the gage inspection, the tool is considered dimensionally correct, and should be lubricated with a THIN coat of any good SAE 20 motor oil. If not, the tool must be returned to AMP for further evaluation and repair. Refer to Section 7, REPLACEMENT AND REPAIR.

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

Suggested Plug Gage Design for Wire Barrel Section of Crimping Chamber



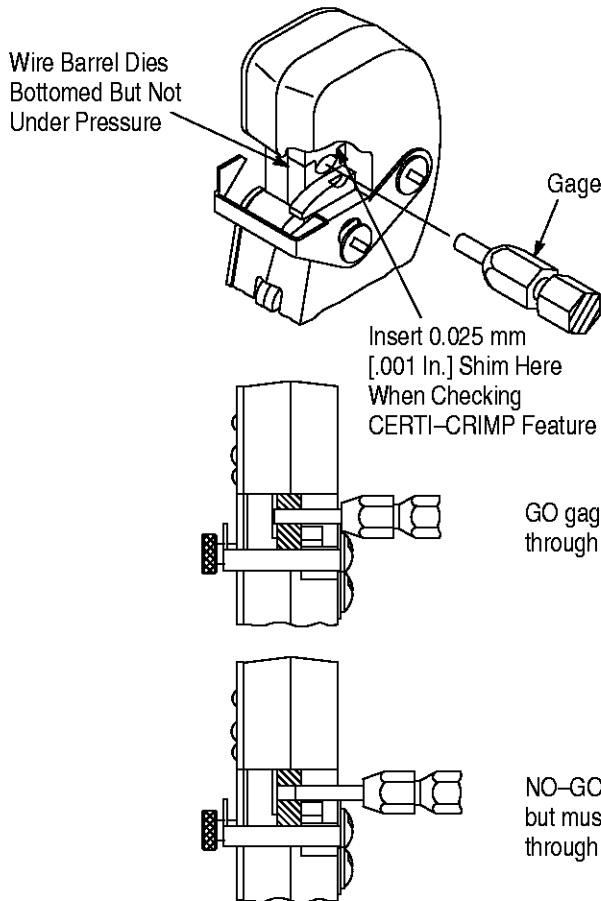
Suggested Plug Gage Design for Insulation Barrel Section of Crimping Chamber



HAND TOOL	GAGE ELEMENT DIMENSIONS		HAND TOOL	GAGE ELEMENT DIMENSIONS		
	GO	NO-GO		GO	NO-GO	W (Width) (Max)
59118 59239-4 59287-2	4.293-4.300 [.1690-.1693]	4.442-4.445 [.1749-.1750]	59118 59239-4 59287-2	1.626-1.633 [.0640-.0643]	2.131-2.134 [.0839-.0840]	4.34 [.171]

Figure 9

**Detail A
Inspection of Wire Barrel
Crimping Dies**



GO gage must pass completely through the die closure.

NO-GO gage may enter partially, but must not pass completely through the die closure.

**Detail B
Inspection of Insulation
Crimping Dies**

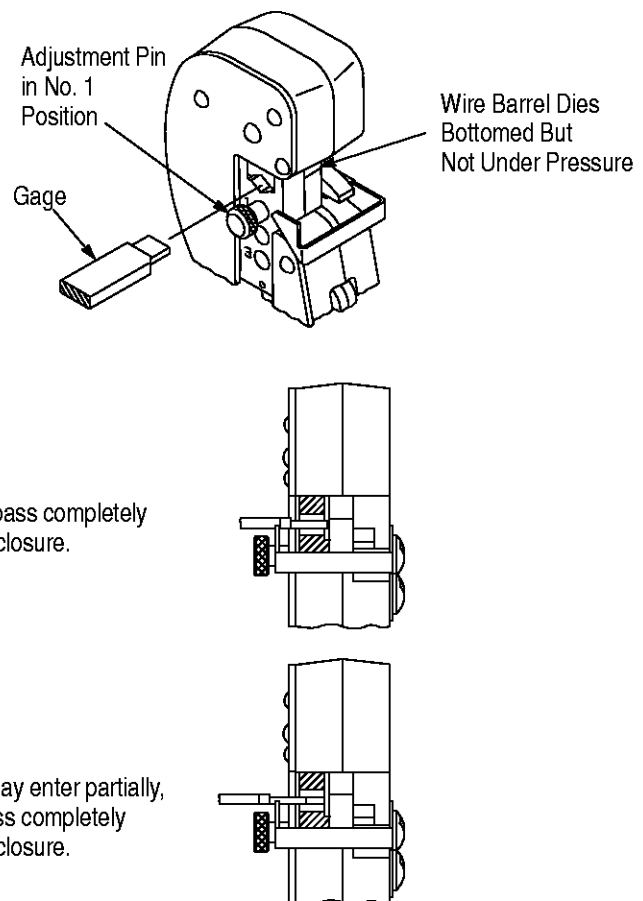


Figure 10

D. 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 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. 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 dies 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 dies closed.
4. Check the clearance between the bottoming surfaces of the crimping dies with the 0.025 [.001] shim. If the clearance is 0.025 [.001] or less, the ratchet is considered satisfactory. If the clearance exceeds 0.025 [.001], the ratchet is out of adjustment and must be repaired.

7. REPLACEMENT AND REPAIR

Replaceable parts are listed in Figure 11. Parts other than those listed in Figure 11 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

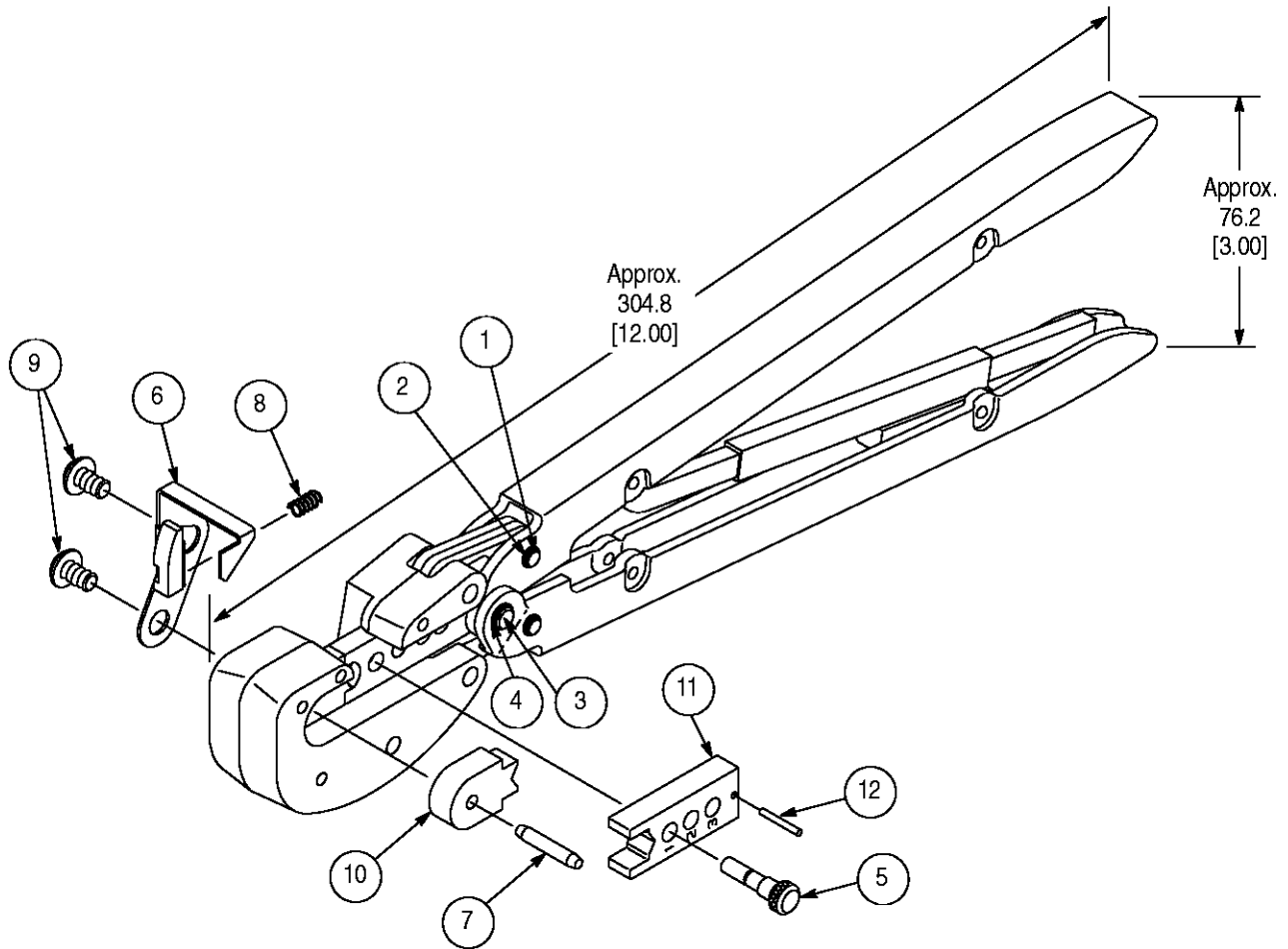
For tool repair service, please contact an AMP representative at 1-800-526-5136.

8. REVISION SUMMARY

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

Per EC 0990-0755-99:

- Updated document to corporate requirements
- Changed tool repair service information in Section 7, REPLACEMENT AND REPAIR



REPLACEMENT PARTS

ITEM	TOOL NUMBERS AND COMPONENT PART NUMBERS		DESCRIPTION	QTY PER ASSY
	59118 and 59239-4	59287-2		
1	300388	300388	PIN, Retaining	2
2	21045-3	21045-3	RING, Retaining	4
3	300389	300389	PIN, Retaining	1
4	21045-6	21045-6	RING, Retaining	2
5	303848-2	303848-2	PIN ASSEMBLY, Adjustment	1
6	306110-9	306110-4	LOCATOR, Stop	1
7	5-21028-7	5-21028-7	PIN	1
8	7-59683-6	7-59683-6	SPRING	1
9	6-306131-4	6-306131-4	SCREW	2
10	306106-2	45891-8	STATIONARY DIE, Insulation	1
11	306107-2	45888-7	MOVING DIE, Insulation	1
12	21028-4	21028-5	PIN	1

Figure 11