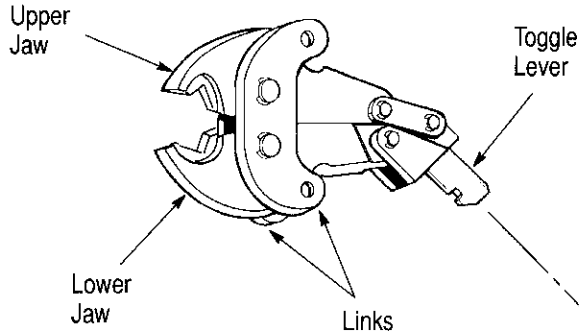
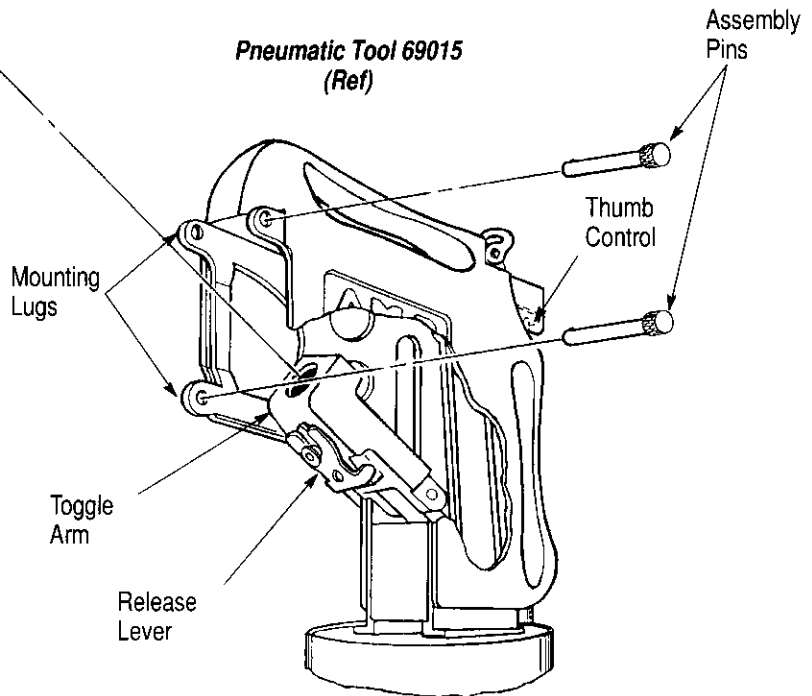


Typical Crimping Head



**Pneumatic Tool 69015
(Ref)**



CRIMPING HEADS

600371	600375
600372	600377-1
600373	600649-1
600374	

Figure 1

1. INTRODUCTION

AMP* crimping heads listed in Figure 1 are designed to crimp SOLISTRAND terminals, butt splices, parallel splices, and CABLE MAKER battery terminals (on stranded copper wire sizes 6 through 4/0 AWG). The crimping heads are used with Pneumatic Tool 69015 (also shown in Figure 1). For information concerning the pneumatic tool, refer to instruction sheet 408-1310.

This instruction sheet provides recommended procedures for wire preparation, crimp head installation, crimping, and maintenance and inspection. Read these instructions thoroughly before proceeding.

Reasons for reissue are provided in Section 9, REVISION SUMMARY.

NOTE Measurements are in metric units [followed by U.S. customary units in brackets].

2. DESCRIPTION

The crimping heads are designed with integral jaws which close in an arc-like motion. After an operator locates the terminal or splice between the crimping jaws and inserts the stripped wire, the tool is activated to crimp the product to the wire.

3. HEAD INSTALLATION AND REMOVAL

NOTE Crimping heads are coated with a preservative to prevent rust and corrosion. Wipe this preservative from the head, particularly from the crimping surface.

3.1. Installation

DANGER To avoid personal injury, ALWAYS disconnect pneumatic tool from air supply before installing or removing the crimping head.

DANGER *DO NOT operate pneumatic tool without the proper crimping head installed. After crimping head is installed, make sure that the assembly pins are fully inserted to avoid personal injury and damage to the tool.*

1. Disconnect tool from air supply.
2. Remove assembly pins from mounting lugs as shown in Figure 1.
3. Pull toggle arm forward and insert toggle lever of crimping head all the way into hole in toggle arm until toggle lever snaps in place.
4. Align holes in crimping head links with holes in mounting lugs.
5. Insert assembly pins.

DANGER *Be sure assembly pins are fully inserted to prevent personal injury and damage to the tool.*

6. Connect pneumatic tool to an adequate air supply between 620–690 kPa [90–100 psi]. For specific information on air line requirements and air hose installation, refer to the instructions packaged with the pneumatic tool.

3.2. Removal

DANGER *To avoid personal injury, ALWAYS disconnect tool from air supply before removing crimping head.*

1. Disconnect tool from air supply.
2. Remove assembly pins.
3. Lower head away from mounting lugs, twist head 90°, and remove head from toggle arm.
4. Re-install assembly pins.

4. CRIMPING PROCEDURE (for SOLISTRAND Terminals and Splices)

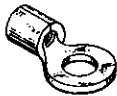
DANGER *To avoid personal injury, ALWAYS keep fingers clear of crimping jaws when operating the tool. Never place anything within the crimping jaws except AMP terminals and splices.*

4.1. Wire Preparation and Loading

1. Strip wires to dimensions shown in Figure 2. DO NOT nick wire strands or use wires with nicked or missing conductor strands.
2. Select the proper size terminal or splice for the wire size being used. Wire sizes are stamped on terminals and splices.
3. Determine correct terminal or splice wire loading by referring to CMA range listed in Figure 2. Total CMA of wires being used must be within CMA range of terminal or splice.

SOLISTRAND Terminals and Splices

Ring Type Terminal



Butt Splice



Parallel Splice



CRIMPING HEAD AND WIRE SIZE	TERMINAL OR SPLICE CMA RANGE	WIRE STRIP LENGTH					
		TERMINALS		BUTT SPLICES		PARALLEL SPLICES	
		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
600377-1 (6)	20,800 – 33,100	9.9 mm [.39 in.]	10.7 mm [.42 in.]	11.9 mm [.47 in.]	12.7 mm [.50 in.]	11.1 mm [.44 in.]	11.9 mm [.47 in.]
600371 (4)	33,100 – 52,600	11.5 mm [.45 in.]	12.3 mm [.48 in.]	13.5 mm [.53 in.]	14.3 mm [.56 in.]	13.5 mm [.53 in.]	14.3 mm [.56 in.]
600374 (2)	52,600 – 83,700	13.1 mm [.52 in.]	13.9 mm [.55 in.]	15.1 mm [.59 in.]	15.9 mm [.63 in.]	15.1 mm [.59 in.]	15.9 mm [.63 in.]
600372 (1/0)	83,700 – 119,500	18.7 mm [.73 in.]	20.2 mm [.80 in.]	15.9 mm [.63 in.]	17.5 mm [.69 in.]	17.5 mm [.69 in.]	19.1 mm [.75 in.]
600373 (2/0)	119,500 – 150,500	18.7 mm [.73 in.]	20.2 mm [.80 in.]	15.9 mm [.63 in.]	17.5 mm [.69 in.]	17.5 mm [.69 in.]	19.1 mm [.75 in.]
600375 (3/0)	150,500 – 190,000	19.1 mm [.75 in.]	20.6 mm [.81 in.]	17.5 mm [.69 in.]	19.1 mm [.75 in.]	17.5 mm [.69 in.]	19.1 mm [.75 in.]
600649-1 (4/0)	190,000 – 231,000	19.5 mm [.77 in.]	20.6 mm [.81 in.]	17.5 mm [.69 in.]	19.1 mm [.75 in.]	19.1 mm [.75 in.]	20.6 mm [.81 in.]

Figure 2

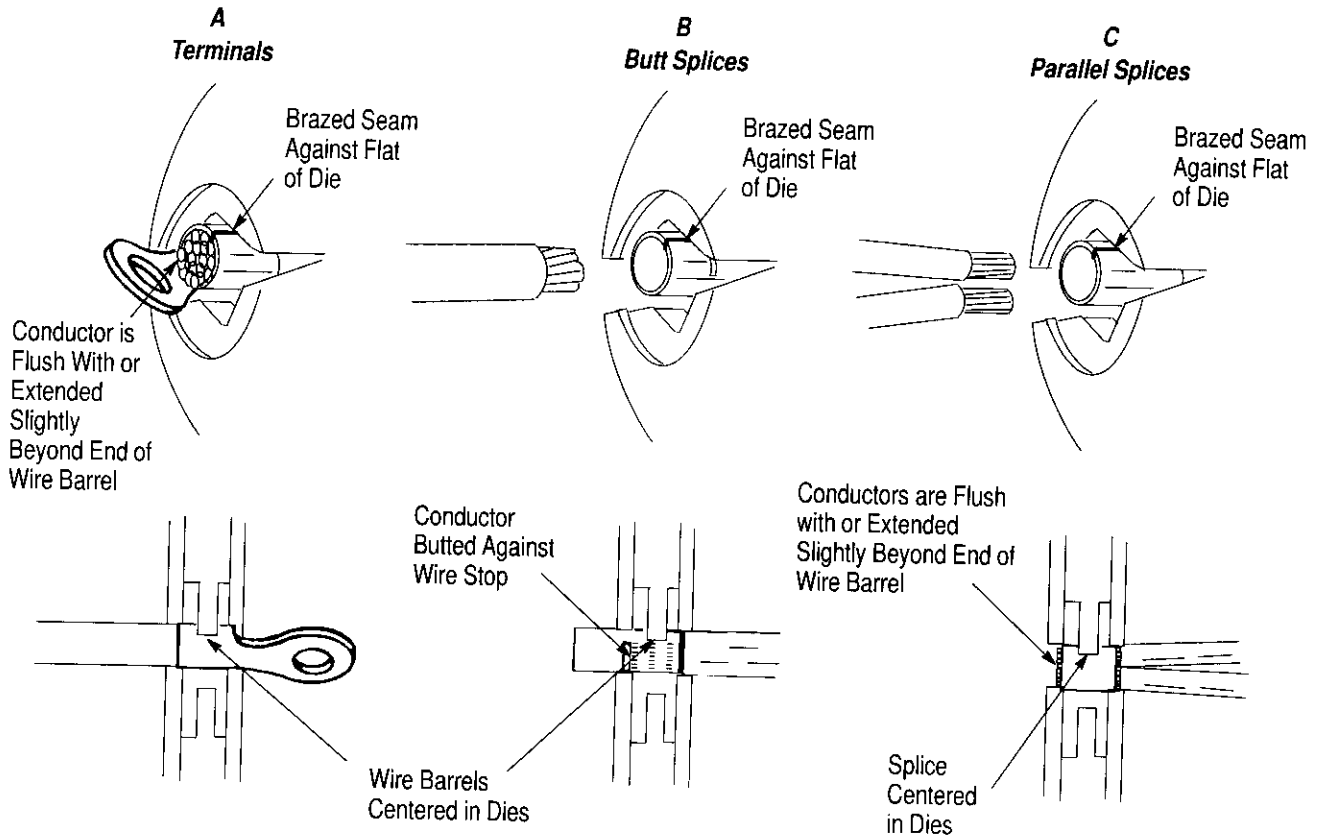


Figure 3

4.2. Crimping Procedure for Single Crimp (on Wire Sizes 6 and 4)

NOTE

For best results, position brazed seam of terminals and splices against one of the FLATS of dies shown in Figure 3. Be sure wire size stamped on the crimping head corresponds with wire size stamped on terminal or splice.

1. Insert stripped wire into terminal or parallel splice until wire conductor is at least flush with or extended slightly beyond end of wire barrel, as shown in Figure 3A and 3C. Insert stripped wire into butt splice until end of conductor bottoms against splice wire stop as shown in Figure 3B.
2. Center wire barrel of terminal or splice in dies as shown in Figure 3.
3. Hold terminal or splice in place and actuate tool to complete the crimp.
4. To crimp other half of butt splice, remove it and reposition uncrimped half in crimping dies. Follow same procedure used to crimp first half of splice.
5. Refer to Section 6 and Figure 7 for terminal or splice crimp inspections.

4.3. Crimping Procedure for Dual Crimp (on Wire Sizes 2 through 4/0)

NOTE

For best results, position brazed seam of terminals and splices against one of the FLATS of dies shown in Figure 4. Be sure crimps do not overlap or go off either end of wire barrel. Be sure wire size stamped on the crimping head corresponds with wire size stamped on terminal or splice.

NOTE

Air pressure **MUST** be adjusted to 655 kPa [95 psij] minimum when crimping 1/0 and larger size terminals and splices.

A. Terminals (Figure 4A)

• 1st Crimp

1. Insert stripped wire into terminal wire barrel until end of conductor is flush with or extended slightly beyond end of wire barrel.
2. Position end of terminal wire barrel in dies as shown in Figure 4A.
3. Actuate tool to complete the crimp.

- **2nd Crimp**

4. Move terminal into position for 2nd crimp, then actuate tool to complete the crimp. DO NOT overlap crimps.

5. Refer to Section 6 and Figure 8 for crimp inspections.

B. Butt Splices (Figure 4B)

- **1st Crimp**

1. Insert stripped wire until it bottoms against splice wire stop.

2. Position end of splice wire barrel in dies as shown in Figure 4B(a).

3. Actuate the tool to complete the crimp.

- **2nd Crimp**

4. Move splice into position for 2nd crimp as shown in Figure 4B(b). Actuate tool to complete the crimp. DO NOT overlap crimps.

- **3rd Crimp**

5. Move splice into position for 3rd crimp as shown in Figure 4B(c).

6. Insert stripped wire until it bottoms against splice wire stop.

7. Actuate tool to complete the crimp.

- **4th Crimp**

8. Move splice into position for 4th crimp as shown in Figure 4B(d). Actuate tool to complete the crimp. DO NOT overlap crimps.

9. Refer to Section 6 and Figure 8 for crimp inspections.

C. Parallel Splices (Figure 4C)

- **1st Crimp**

1. Insert stripped wires into wire barrel until ends of conductors are flush with or extended slightly beyond end of wire barrel.

2. Position end of splice wire barrel in dies as shown in Figure 4C.

3. Actuate tool to complete the crimp.

- **2nd Crimp**

4. Move splice into position for 2nd crimp and actuate tool to complete the crimp. DO NOT overlap crimps.

5. Refer to Section 6 and Figure 8 for crimp inspections.

5. CRIMPING PROCEDURE (for CABLE MAKER Battery Terminals)

DANGER

To avoid personal injury, ALWAYS keep fingers clear of crimping jaws when operating the tool. Never place anything within the crimping jaws except AMP terminals.

5.1. Wire Preparation, Loading, and Crimping Head Selection

1. Strip wires to dimensions shown in Figure 5. DO NOT nick wire strands or use wires with nicked or missing conductor strands.

2. Select the proper terminal number of the wire diameter being used. Diameter of stripped wire must fall within wire diameter range of terminal being used. Refer to Figure 5.

3. Select the proper crimping head for the terminal number being used. Refer to Figure 5.

5.2. Crimping Procedure for Straight Terminals

- **1st Crimp**

1. Insert stripped wire into wire barrel until it bottoms.

2. Position end of terminal wire barrel in dies as shown in Figure 6A.

3. Actuate tool to complete the crimp.

- **2nd Crimp**

4. Move terminal into position for 2nd crimp, then actuate tool to complete the crimp. Refer to Figure 6B. DO NOT overlap crimps.

5. Refer to Section 6 and Figure 9 for crimp inspections.

5.3. Crimping Procedure for Flag Terminals (Standard Barrel)

- **1st Crimp**

1. Insert stripped wire until end of conductor is flush with or extended slightly beyond end of terminal wire barrel, as shown in Figure 6C.

2. Position terminal in dies as shown in Figure 6C.

3. Actuate tool to complete the crimp.

- **2nd Crimp**

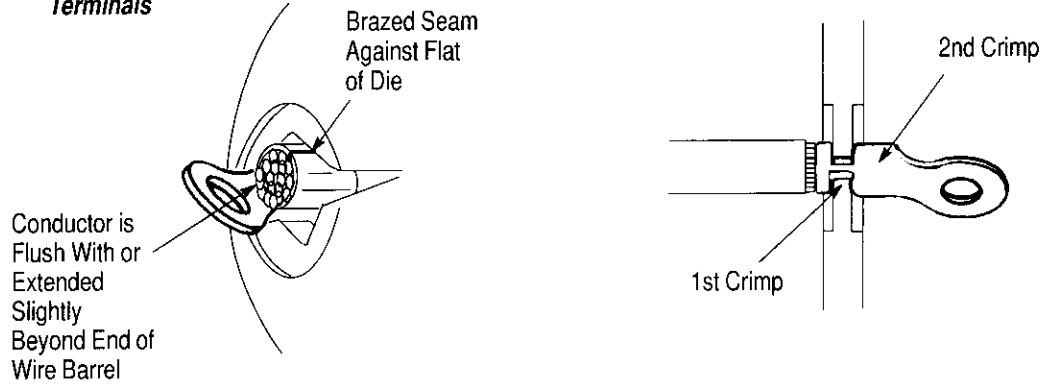
4. Move terminal into position for 2nd crimp as shown in Figure 6D. DO NOT overlap crimps. Actuate tool to complete the crimp.

NOTE

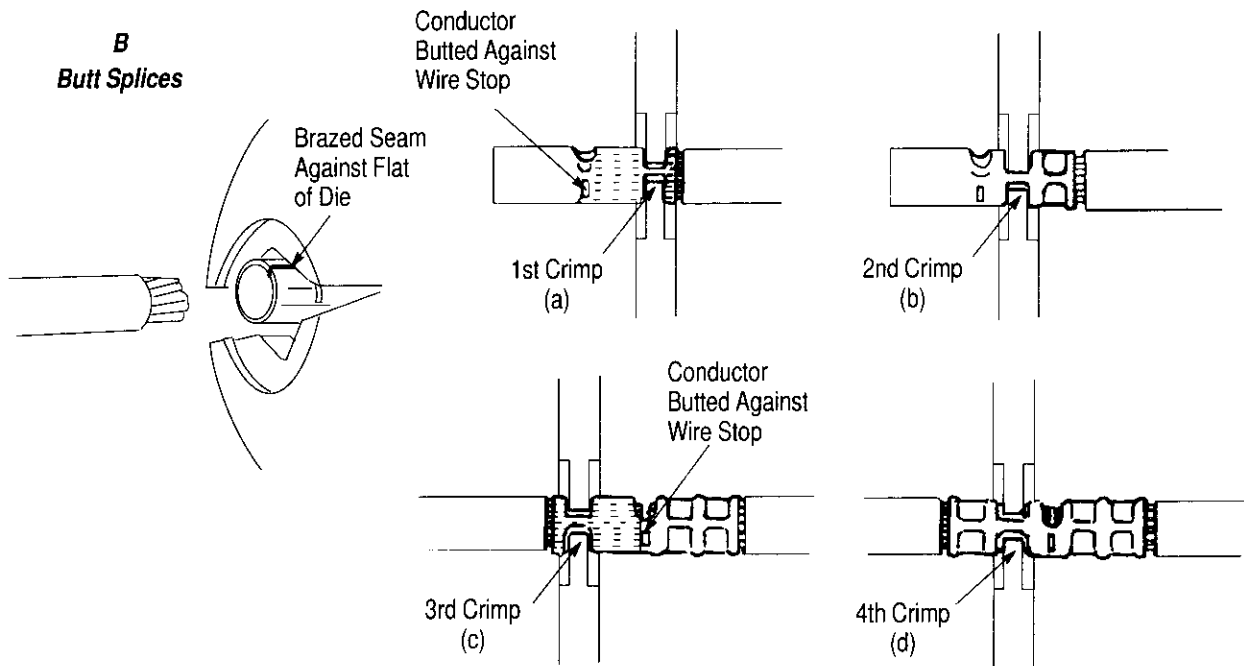
Make sure crimps do not go off end of wire barrel.

5. Refer to Section 6 and Figure 9 for crimp inspections.

A
Terminals



B
Butt Splices



C
Parallel Splices

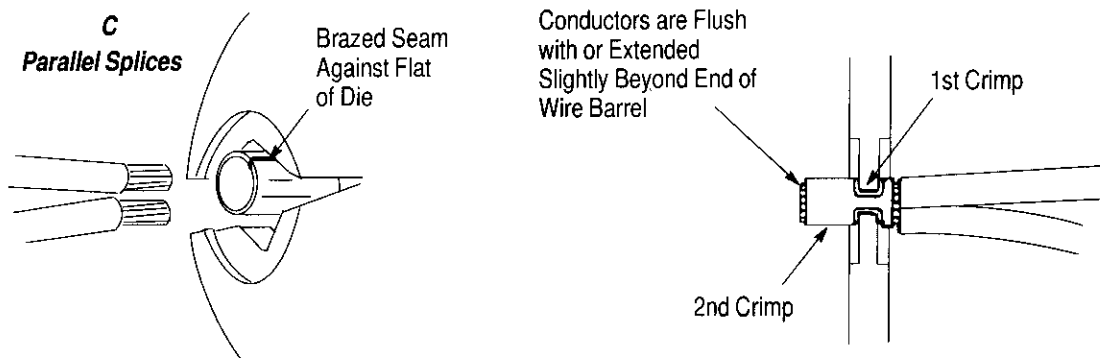
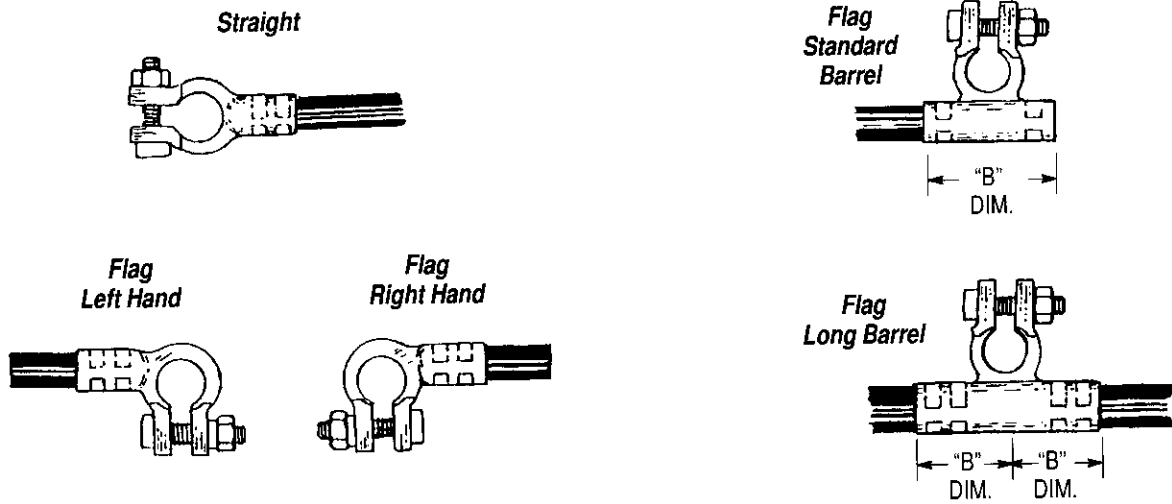


Figure 4

CABLE MAKER Battery Terminals



TERMINAL TYPE AND PART NUMBER					WIRE DIAMETER RANGE	CRIMPING HEAD NO. AND MARKING	WIRE STRIP LENGTH		
FLAG STANDARD BARREL	STRAIGHT	FLAG LONG BARREL	FLAG LEFT HAND	FLAG RIGHT HAND			MIN.	MAX.	FLAG (Standard and Long Barrel)
-	29251	-	-	-	5.6 – 6.9 mm [.219 – .272 in.]	600371 NO. 4	STRAIGHT TERMINALS		"B" DIM. + .8 mm + [.03 in.]
-	29245-3 29245-5	29717-1 29717-2	601305-1 601305-3	601305-2 601305-4	9.8 – 10.9 mm [.385 – .432 in.]	600372 NO. 1/0	21 mm [.81 in.]	21.4 mm [.84 in.]	
-	29253	-	-	-	4.8 – 5.5 mm [.187 – .218 in.]	600377-1 NO. 6	L & R HAND FLAG TERMINALS		
-	29249 29249-3 29249-5	-	-	-	6.9 – 8.8 mm [.273 – .345 in.]	600374 NO. 2	18.3 mm 19.1 mm [.72 in.] [.75 in.]		
29705 29706	29243 29711 29712	29716-1 29716-2	601306-1 601306-3	601306-2 601306-4	11.0 – 12.1 mm [.433 – .477 in.]	600373 NO. 2/0			
-	29702 29713	29718-1 29718-2	-	-	12.1 – 13.6 mm [.478 – .536 in.]	600375 NO. 3/0			
-	29714 29715	29709 29710	-	608792-4 608794-4	13.6 – 16.4 mm [.537 – .645 in.]	600649-1 NO. 4/0			

Figure 5

5.4. Crimping Procedure for Flag Terminals (Long Barrel)

● **1st Crimp**

1. Insert stripped wire into wire barrel.
2. Position end of terminal wire barrel in dies as shown in Figure 6E.
3. Actuate tool to complete the crimp.

● **2nd Crimp**

4. Move terminal into position for 2nd crimp, then actuate tool to complete the crimp. **DO NOT** overlap crimps. Refer to Figure 6F.

● **3rd Crimp**

5. Insert stripped wire into opposite wire barrel.
6. Position end of terminal wire barrel in dies as shown in Figure 6G.
7. Actuate tool to complete the crimp.

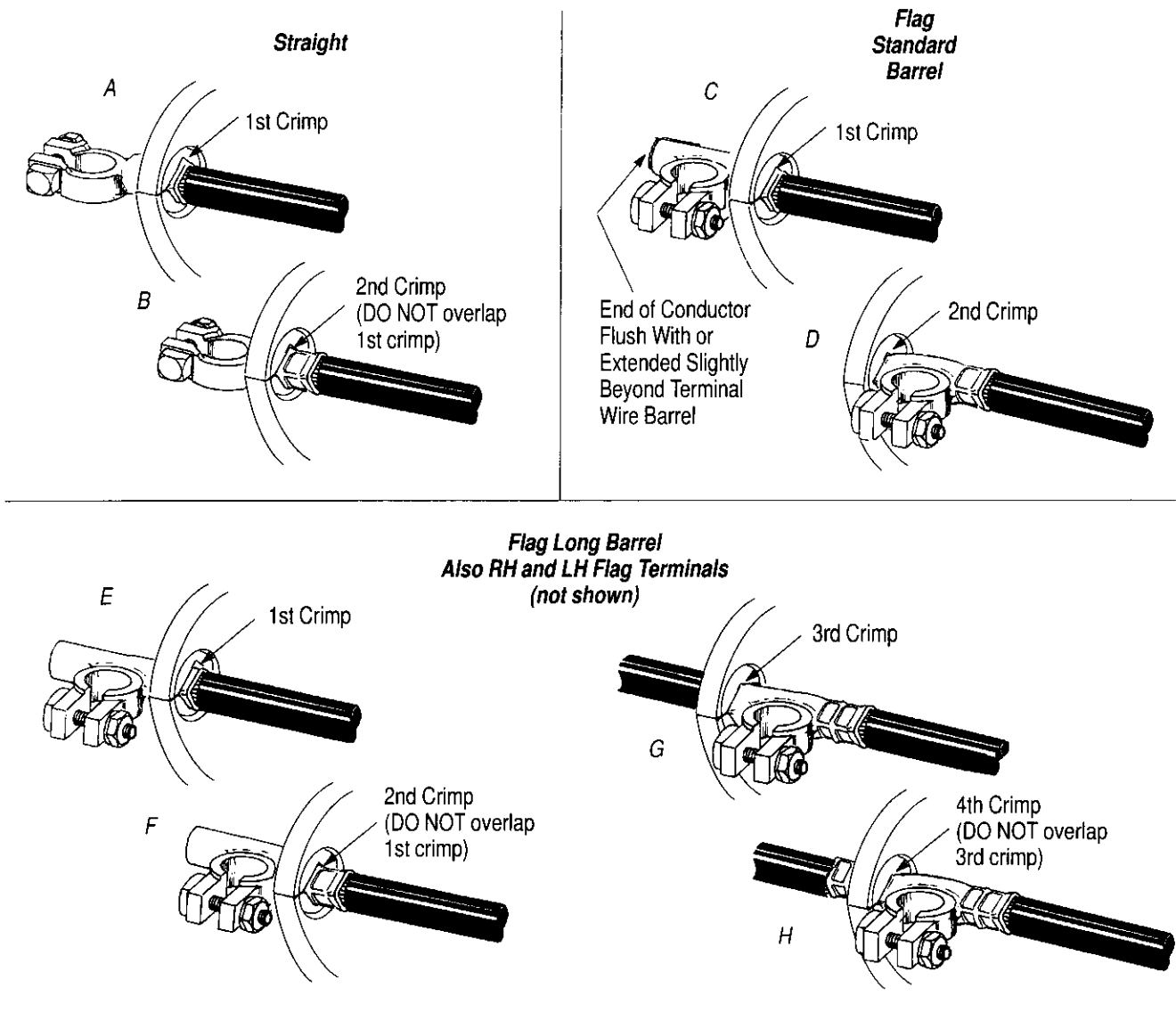


Figure 6

- **4th Crimp**

8. Move terminal into position for 4th crimp. DO NOT overlap crimps. Actuate tool to complete the crimp. Refer to Figure 6H.

NOTE

Make sure crimps do not go off end of wire barrel.

9. Refer to Section 6 and Figure 9 for crimp inspections.

5.5. Crimping Procedure for Right Hand and Left Hand Terminals

These terminals are positioned and crimped similar to either end of long barrel terminals. Refer to Figure 6, E through H.

NOTE

Be sure crimps do not overlap or go off end of wire barrel.

- **Right Hand Terminals**

1. Insert stripped wire.
2. Position terminal wire barrel in dies, and crimp using same procedure shown in Figure 6E and F.
3. Refer to Section 6 and Figure 9 for crimp inspections.

- **Left Hand Terminals**

1. Insert stripped wire.
2. Position terminal wire barrel in dies, and crimp using same procedure shown in Figure 6G and H.

Refer to Section 6 and Figure 9 for crimp inspections.

6. CRIMP INSPECTION

Inspect crimped SOLISTRAND terminals and splices by checking the features described in Figures 7 and 8. Inspect crimped CABLE MAKER battery terminals by checking the features described in Figure 9. Use

only the terminals and splices that meet the conditions shown in the "ACCEPT" column.

"REJECT" terminals and splices can be avoided through careful use of instruction in Sections 4 and 5, and by performing regular tool maintenance as instructed in Section 7.

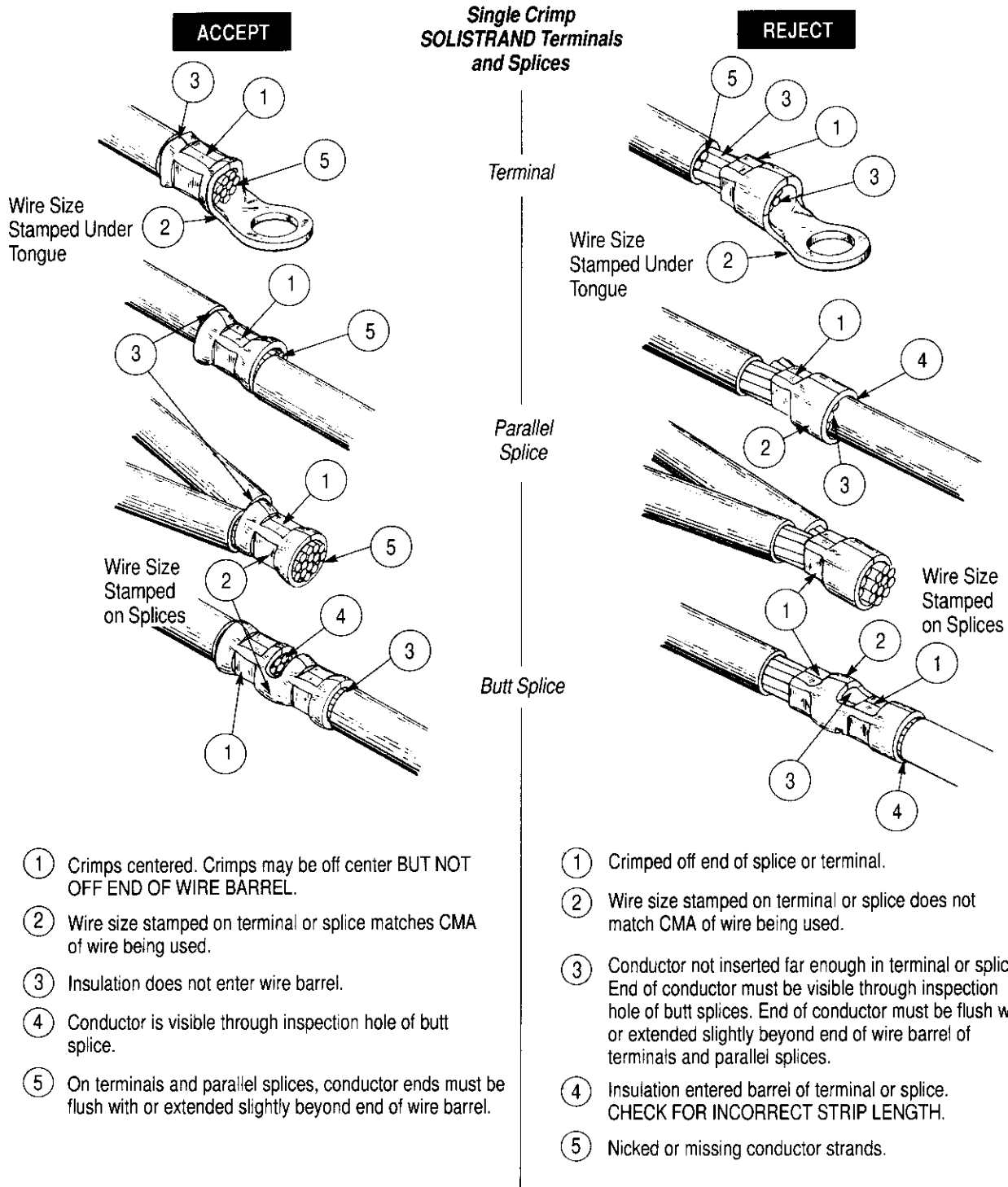


Figure 7

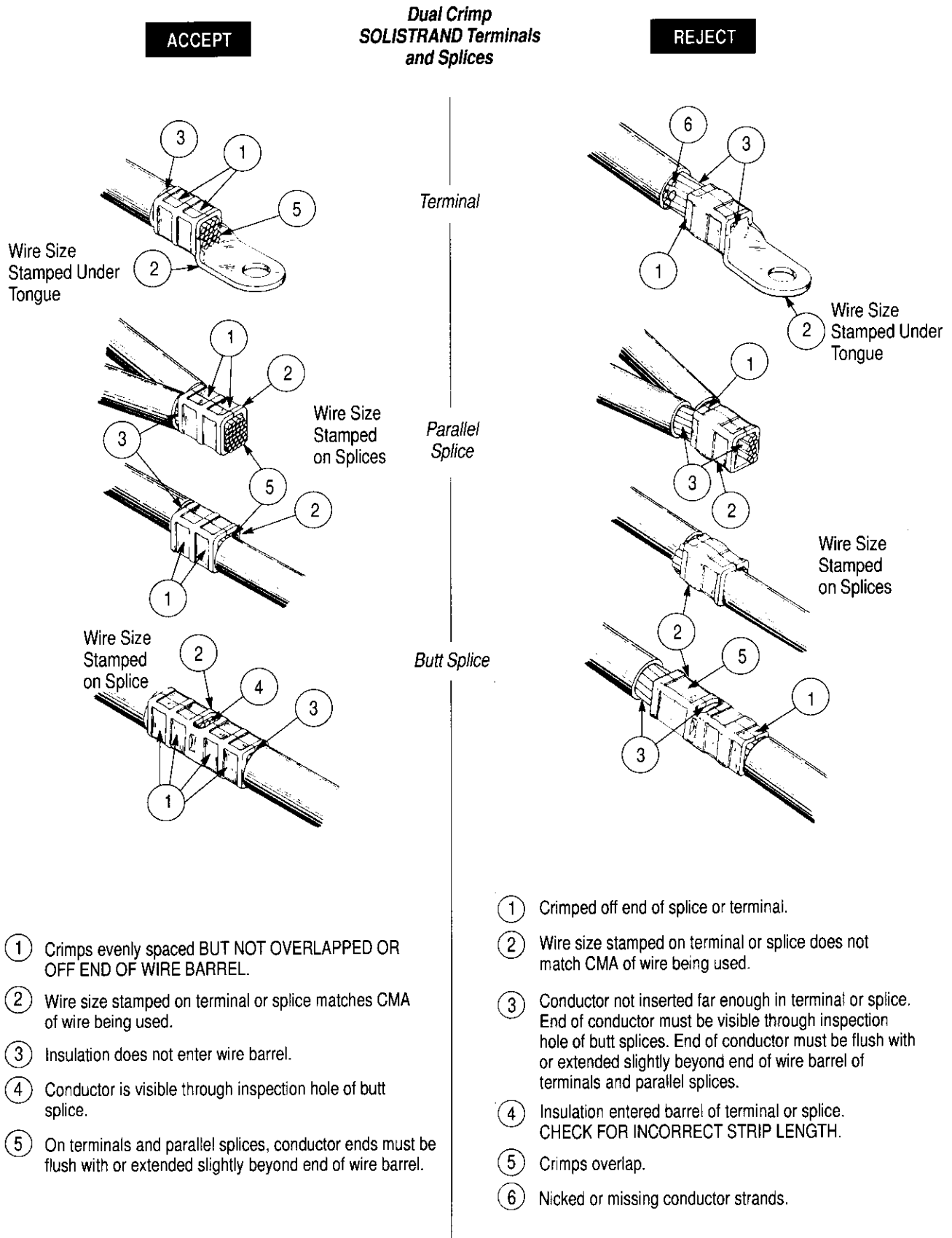
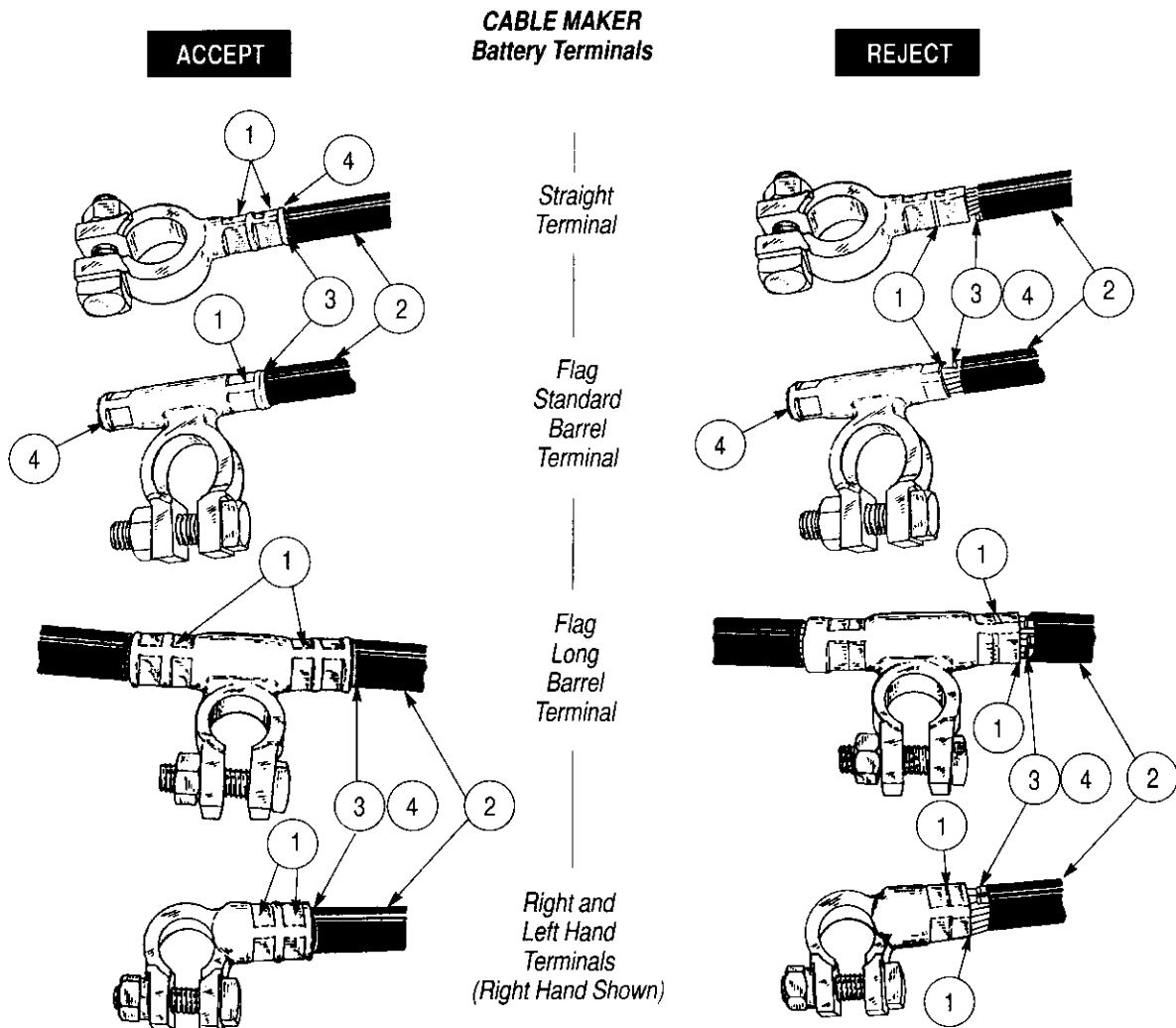


Figure 8



Straight, Long Barrel, Left and Right Hand Flag Terminals

- ① Crimps evenly spaced BUT NOT OVERLAPPED OR OFF END OF WIRE BARREL.
- ② Diameter of stripped wire is within wire diameter range of terminal.
- ③ No nicked or missing conductor strands.
- ④ Wire fully inserted.

Flag Standard Barrel Terminal

- ① Crimps properly located. Crimps must not be off end of wire barrel.
- ② Diameter of stripped wire is within wire diameter range of terminal.
- ③ No nicked or missing conductor strands.
- ④ End of conductor is flush or extended slightly beyond end of terminal wire barrel.

Straight, Long Barrel, Left and Right Hand Flag Terminals

- ① Crimps overlap or off end of terminal wire barrel.
- ② Diameter of stripped wire is not within wire diameter range of terminal.
- ③ Nicked or missing conductor strands.
- ④ Wire not fully inserted in terminal.

Flag Standard Barrel Terminal

- ① Crimped off end of terminal wire barrel.
- ② Diameter of stripped wire is not within wire diameter range of terminal.
- ③ Nicked or missing conductor strands.
- ④ End of conductor is not flush or extended beyond end of terminal wire barrel.

Figure 9

7. MAINTENANCE/INSPECTION

AMP recommends that a maintenance/inspection program be performed periodically to ensure dependable and uniform terminations. Inspect crimping heads at least once a month. Frequency of inspection may be adjusted to suit your requirements through experience. Frequency of inspection depends on:

- The care, amount of use, and handling of the head.
- The type and size of the products crimped.
- The degree of operator skill.
- The presence of abnormal amounts of dust and dirt.
- Your own established standards.

All crimping heads are thoroughly inspected before packaging. Since there is a possibility of damage in shipment, inspect new heads in accordance with the following instructions when received in your plant.

7.1. Cleaning

Do not allow deposits of dirt, grease and foreign matter to accumulate on the die closure surfaces and jaw bottoming surfaces. These deposits may cause excessive wear or prevent the jaws from bottoming fully, thereby affecting the quality of the crimp. Immerse the head in a reliable commercial degreasing compound to remove accumulated dirt, grease and foreign matter. Remove remaining degreasing compound with a lint free cloth. When degreasing compounds are not available, head may

be wiped clean with a lint free cloth. Relubricate head as instructed in Paragraph 7.3, before placing it back in service.

7.2. Visual Inspection

1. Visually inspect the crimping head for missing pins or retaining rings. If parts are missing or defective, refer to Figure 13 for customer-replaceable parts.
2. Inspect the die closure surfaces of the head for pitted or chipped conditions. Although dies may gage within permissible limits, worn or damaged die closure surfaces are objectionable and can affect the quality of the crimp. Examples of possible damaged die closure surfaces are shown in Figure 10.

7.3. Lubrication

Lubricate all pins, pivot points, and bearing surfaces with a high quality grease. AMP recommends the use of Molykote[‡] paste, which is a commercially available lubricant. Lubricate according to the following schedule:

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

Wipe excess grease from head, particularly from crimping area. Grease transferred from the crimping area onto certain terminations may affect the electrical characteristics of an application.

Inspection of Die Closure Surfaces

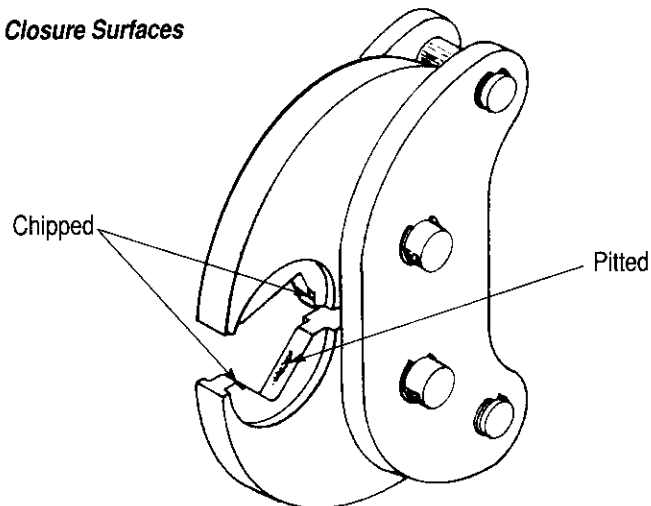
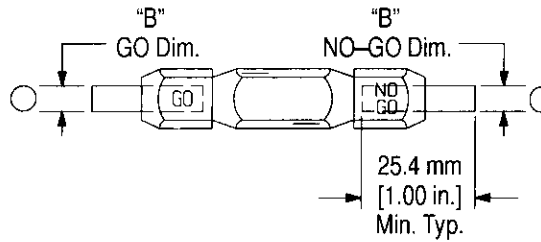
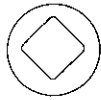


Figure 10

[‡] Trademark of Dow Corning Corporation

Suggested Plug Gage Design – Wire Barrel Crimp

Die Closure Configuration



HEAD NUMBER	GAGE ELEMENT DIM'S. "B"	
	GO	NO-GO
600371	7.87 – 7.88 mm [.3100 – .3103 in.]	8.37 – 8.38 mm [.3299 – .3300 in.]
600372	11.00 – 11.01 mm [.4330 – .4333 in.]	11.50 – 11.51 mm [.4529 – .4530 in.]
600373	12.27 – 12.28 mm [.4830 – .4833 in.]	12.77 – 12.78 mm [.5029 – .5030 in.]
600374	9.40 – 9.41 mm [.3700 – .3703 in.]	9.90 – 9.91 mm [.3899 – .3900 in.]
600375	13.72 – 13.73 mm [.5400 – .5403 in.]	14.21 – 14.22 mm [.5599 – .5600 in.]
600377-1	6.48 – 6.49 mm [.2550 – .2553 in.]	6.98 – 6.99 mm [.2749 – .2750 in.]
600649-1	15.60 – 15.61 mm [.6140 – .6143 in.]	16.10 – 16.11 mm [.6339 – .6340 in.]

Figure 11

7.4. Die Closure Inspection

Every crimping head is inspected for proper die closure before packaging. Periodically inspect the die closure for excessive wear. The die closure inspection can be accomplished using a plug gage. AMP neither manufactures nor sells plug gages. A suggested plug gage design and the GO and NO-GO dimensions of the plug gage elements are listed in Figure 11. The following procedure is recommended for inspecting the die closure with plug gages.

1. Disconnect tool from air supply and remove crimping head from tool.
2. Clean oil or dirt from die closure surfaces, bottoming surfaces, and plug gage elements.

3. Close the jaws until they are bottomed but not under pressure.

4. Select the correct plug gage. Hold the GO element of the gage in straight alignment with the die closure and carefully try to insert, without forcing. See Figure 12. The GO element must pass completely through the die closure.

5. Try to insert the NO-GO element. The NO-GO element may enter partially but must not pass completely through the die closure. See Figure 12.

6. If the die closure meets the plug gage conditions, the die closure may be considered dimensionally correct. If the die closure does not conform with the plug gage conditions, contact your local AMP field representative.

Inspection of Wire Barrel Crimping Dies

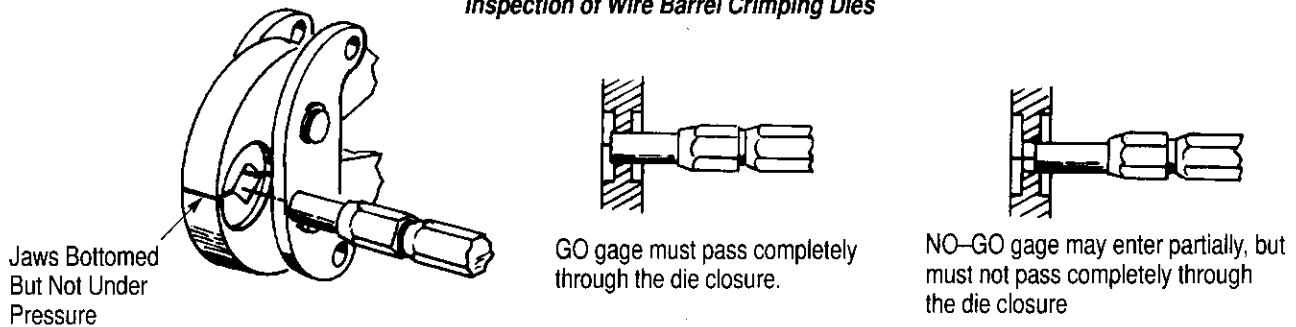


Figure 12

8. REPLACEMENT PARTS

Replacement parts and recommended spares are listed in Figure 13. The recommended spares should be stocked for immediate replacement.

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 further repair and replacement information, call the AMP Tooling Assistance Center: 1-800-722-1111

When repair is necessary, return crimping head (along with a written description of the problem) to:

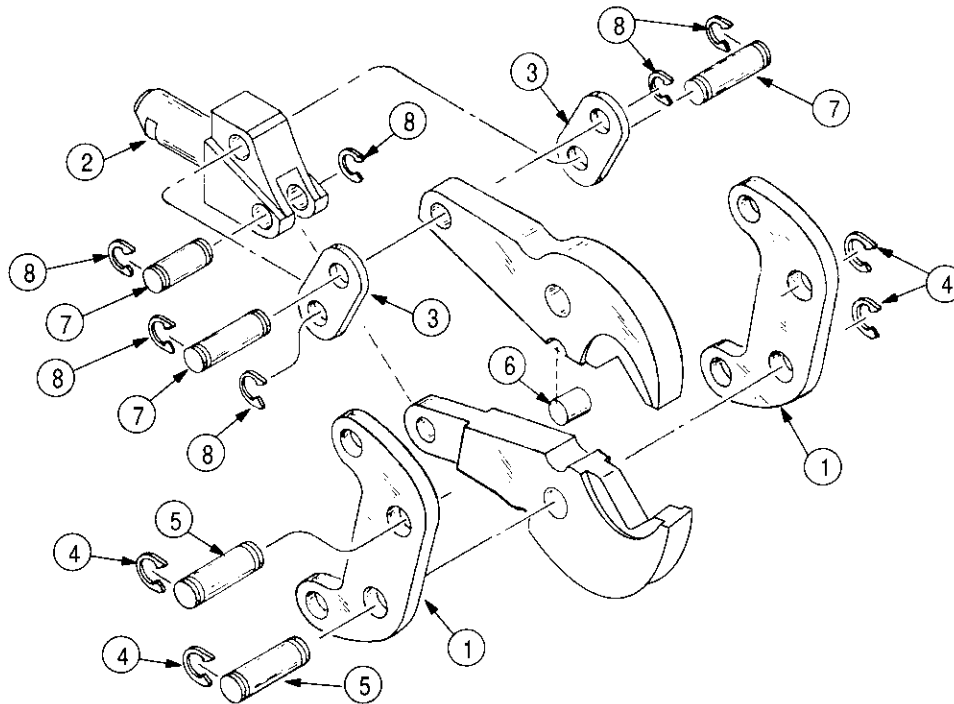
CUSTOMER REPAIR (01-12)
AMP INCORPORATED
1523 NORTH 4TH STREET
HARRISBURG, PA 17102-1604

9. REVISION SUMMARY

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

Per EC 0150-3428-96:

- Deleted obsolete terminals and added new terminals in Figure 5
- Updated format and added metric units



ITEM	PART NUMBER	DESCRIPTION	QTY PER ASSY
1	300114	LINK, Tie	2
2	302561	LEVER, Toggle	1
3	302562	LINK, Toggle	2
4*	1-21045-1	RING, Retaining	4
5	300042	PIN, Retaining	2
6	300115	PIN, Pivot	1
7	302563	PIN, Retaining	3
8*	300102	RING, Retaining	6

* Recommended Spares

Figure 13