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Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

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Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China





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1. INTRODUCTION

This instruction sheet provides "Instructions" on product application and a "Maintenance and Inspection Procedure" for:

COPALUM ★ TERMINAL AND SPlice CRIMPING JAWS
 (Used in Pneumatic Tool No. 68068-□)
 68104 68105 68106

These crimping jaws are used to crimp:
 • COPALUM terminals and splices on stranded or solid aluminum or copper† wire sizes 16 thru 6. See Figure 1.

Basic instructions on the use of these jaws, wire preparation, etc. are provided in Section 2, "Instructions". Section 3 features a terminal or splice "Crimp Inspection" procedure. Section 4 contains a "Maintenance and Inspection Procedure" which will enable you to establish and maintain a *tool certification program*.

Crimping jaws are coated with preservative to prevent rust and corrosion. Wipe this preservative from jaws, particularly from crimping surfaces.

For further instructions relative to the 68068-□ tools, refer to instructions packaged with the tools.

2. INSTRUCTIONS

WARNING: AVOID PERSONAL INJURY. KEEP FINGERS CLEAR OF CRIMPING JAWS WHEN ACTIVATING TOOL.

2.1 INSTALL CRIMPING JAWS

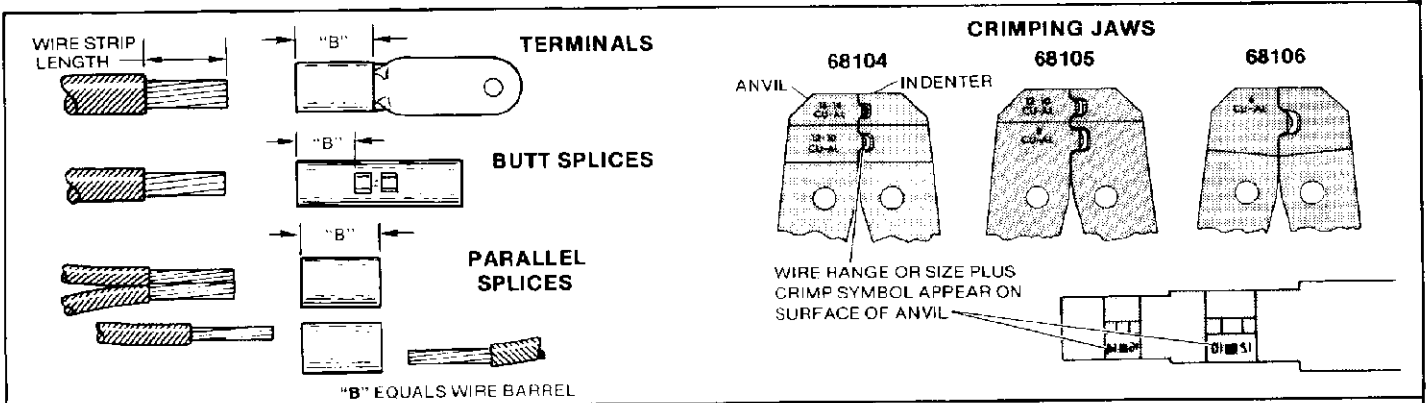
- (a) Select the correct jaw set for the wire size being used. Wire range or size and the bar crimp symbol (■) appear on surface of anvil as shown in Figure 1.
- (b) Inspect the die closure surfaces, bottoming surfaces and cam rollers for deposits of dirt or other foreign particles and wipe with a clean cloth. See Figure 2. Relubricate cam rollers as instructed in paragraph 4.3. NOTE: *Be sure cam rollers are not binding.*
- (c) DISCONNECT TOOL FROM AIR SUPPLY.
- (d) Pull one cowling pin and remove retaining pin from lower housing cover. Cover will swing open. See Figure 2.
- (e) Remove pivot pins as shown in Figure 2.
- (f) Orient jaws so that indenter is on bottom and anvil is on top as shown in Figure 2.
- (g) Position crimping jaws in tool housing ensuring that cam rollers are properly mated with cam, and pivot pin holes of jaws and tool housing are aligned.
- (h) Insert pivot pins.
- (i) Pivot lower housing cover into closed position and replace retaining pin and cowling pin.
- (j) Connect air supply (80 to 100 PSI) and tool is ready for use.

2.2 REMOVE CRIMPING JAWS

- (a) DISCONNECT TOOL FROM AIR SUPPLY.
- (b) Pull cowling pin and remove retaining pin from lower housing cover. Cover will swing open.
- (c) Remove pivot pins and remove crimping jaws.

All illustrations and information contained in this instruction sheet are based on the latest product information available at the time of publication.

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JAW ASS'Y. NUMBER	WIRE RANGE				WIRE STRIP LENGTH					
	ALUMINUM	CMA RANGE	COPPER	CMA RANGE	TERMINALS		BUTT SPLICES		PARALLEL SPLICES	
					Min.	Max.	Min.	Max.	Min.	Max.
68104	16-14	2,050 TO 5,180	18-16	1,290 TO 3,260	9/32	11/32	9/32	11/32	9/32	11/32
	12-10	5,180 TO 13,100			11/32	13/32	11/32	13/32	11/32	13/32
68105	12-10	5,180 TO 13,100	14-12	3,260 TO 8,230	13/32	15/32	15/32	19/32	13/32	15/32
	8	13,100 TO 20,800								
68106	6	20,800 TO 33,100	8	13,100 TO 20,800						

† See paragraph 2.3

Figure 1

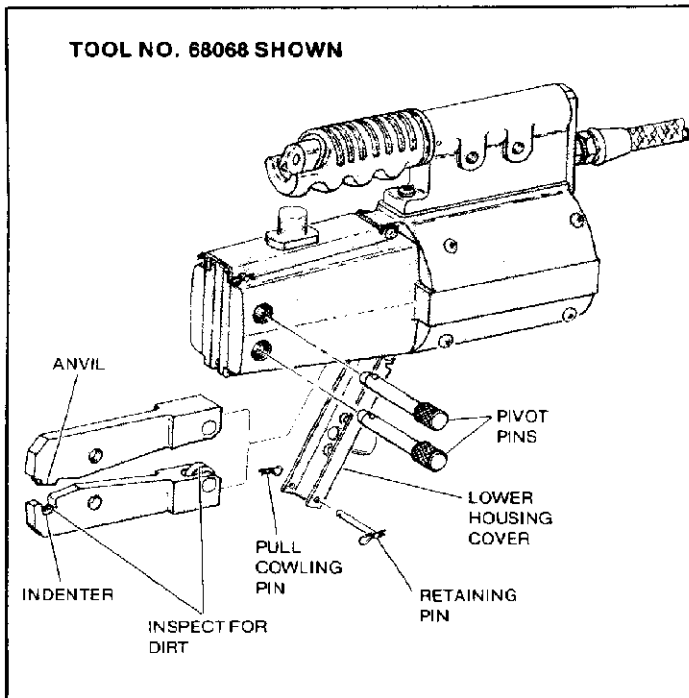


Figure 2

2.3 WIRE STRIPPING AND CRIMPING PROCEDURES

Strip wire to dimension indicated in Figure 1.

NOTE: Do not nick or cut conductor strands.

For all aluminum wire applications, terminals and butt splices will accept the largest wire size that is stamped on the terminal or splice. For splices on aluminum-to-copper wire applications, or terminals on copper wire applications, the size of the copper wire must be "stepped down" one smaller wire size (see stamping on terminal or splice) to compensate for differences in the physical properties of copper and aluminum. Be sure you are using the correct COPALUM connectors for the sizes of aluminum wire, copper wire, or aluminum and copper wire combinations that you are going to crimp. Do not alter COPALUM connectors by removing the internal perforated sleeves. If you have any questions concerning proper application, contact your local AMP field representative.

After crimping, refer to paragraph 3 and Figure 4 for terminal and splice crimp inspection procedures.

2.3.1 Terminal Crimping Procedure

- (a) Ensure that the wire size or range stamped on the terminal corresponds with the wire size or range stamped on the crimping jaws. See Figure 1.

IF TOOL HAS "HOLD" FEATURE:

- (b) Position terminal wire barrel in lower jaw die as shown in Figure 3A. Terminals may be crimped with top or bottom of tongue facing the anvil of upper jaw.

AMP recommends the terminal position shown in Figure 3A. (Bottom of tongue faces anvil of upper jaw.)

NOTE: Depending on conductor hardness, and if near maximum conductor CMA limit is reached, some cracking may occur in crimp area when terminal is crimped with bottom of tongue facing indenter of lower jaw.

- (c) Activate tool to move the jaws into "hold" position.
 - (d) Insert wire into wire barrel of terminal until end of wire is flush with or extended slightly beyond end of wire barrel.
 - (e) Activate tool to complete the crimp.
- IF TOOL DOES NOT HAVE "HOLD" FEATURE:
- (f) Insert stripped wire into wire barrel of terminal until end of wire is flush with or extended slightly beyond end of wire barrel.
 - (g) Position wire loaded terminal in lower jaw die. Refer to step (b) for proper positioning. Also see NOTE in step (b).
 - (h) Activate tool to complete the crimp.

2.3.2 Butt Splice Crimping Procedure

- (a) Ensure that the wire size or range stamped on the butt splice corresponds with the wire size or range stamped on the crimping jaws. See Figure 1.

IF TOOL HAS "HOLD" FEATURE:

- (b) Place splice in crimping jaws as shown in Figure 3B. Position the butt splice so that the window of splice faces upper jaw.
- (c) Activate tool to move the jaws into "hold" position.
- (d) Insert wire into wire barrel of butt splice until it bottoms against splice wire stop. See Figure 3B.
- (e) Activate tool to complete the crimp.
- (f) To crimp other half of butt splice, remove it and reposition uncrimped half in crimping jaws and follow same procedure used to crimp first half of splice.

IF TOOL DOES NOT HAVE "HOLD" FEATURE:

- (g) Insert wire into wire barrel of butt splice until it bottoms against splice wire stop. See Figure 3B.
- (h) Place wire loaded splice in crimping jaws as shown in Figure 3B. Position the butt splice so that the window of splice faces upper jaw. See Figure 3B.
- (i) Activate tool to complete the crimp.

2.3.3 Parallel Splice Crimping Procedure

- (a) Ensure that the wire size or range stamped on the splice corresponds with the wire size or range stamped on the crimping jaws. See Figure 1.

IF TOOL HAS "HOLD" FEATURE:

- (b) Center splice in lower jaw die as shown in Figure 3C.
- (c) Activate tool to move jaws into "hold" position.
- (d) Insert stripped wires into splice wire barrel until ends of wires are flush with or extended slightly beyond ends of wire barrel.
- (e) Activate tool to complete the crimp.

IF TOOL DOES NOT HAVE "HOLD" FEATURE:

- (f) Insert stripped wires into wire barrel of splice until ends of wires are flush with or extended slightly beyond ends of wire barrel.

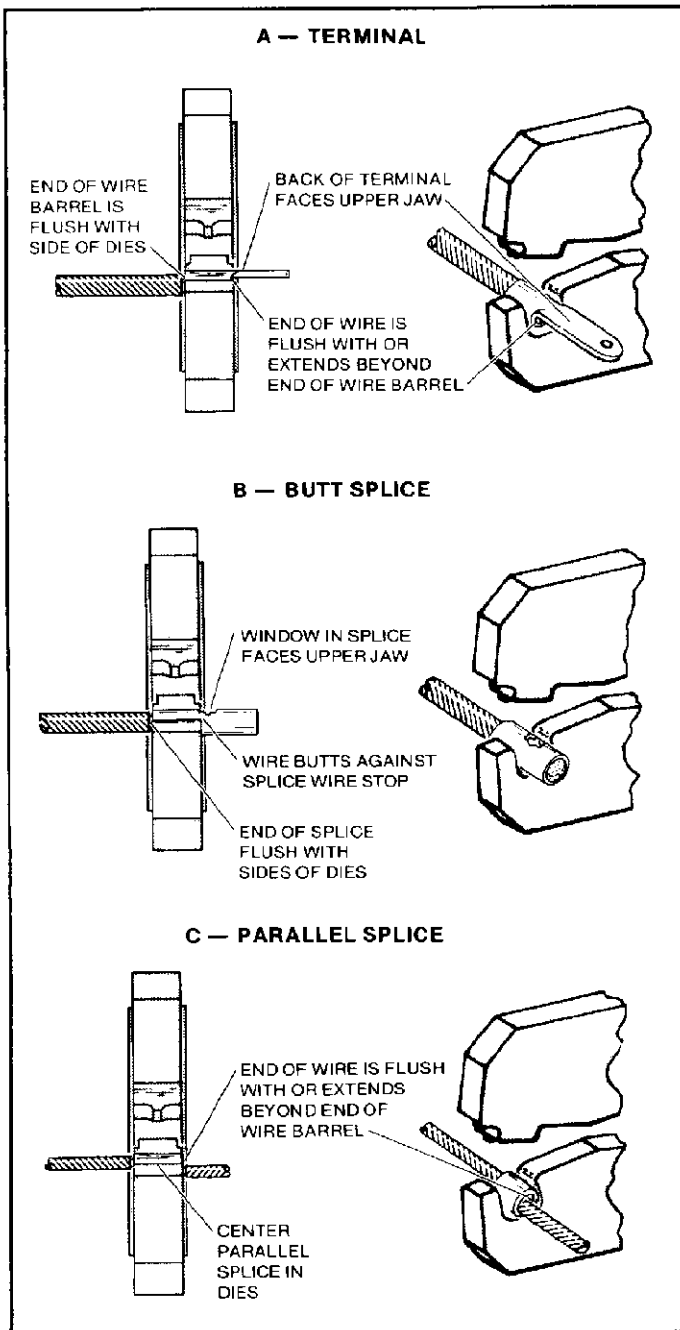


Figure 3

- (g) Place wire loaded splice in crimping jaws as shown in Figure 3C.
 (h) Activate tool to complete the crimp.

3. CRIMP INSPECTION

Inspect crimped terminals and splices by checking the features described in Figure 4.

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 instructions in Section 2, and by performing regular crimping jaw maintenance as instructed in Section 4.

4. MAINTENANCE/INSPECTION PROCEDURE

AMP recommends that a maintenance/inspection program be performed periodically to ensure dependable and uniform terminations. Crimping jaws should be inspected at least once a month. Frequency of inspection may be adjusted to suit your requirements through experience. Frequency of inspection is dependent upon:

1. The care, amount of use, and handling of the jaws.
2. The type and size of the products crimped.
3. The degree of operator skill.
4. The presence of abnormal amounts of dust and dirt.
5. Your own established standards.

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

4.1 CLEANING

Do not allow deposits of dirt, grease and foreign matter to accumulate on the jaw bottoming surfaces and die closure surfaces. These deposits may cause excessive wear, thereby affecting the quality of the crimp.

The crimping jaws should be immersed in a reliable commercial de-greasing compound to remove accumulated dirt, grease and foreign matter. Remove remaining de-greasing compound with a lint free cloth. When de-greasing compounds are not available, jaws may be wiped clean with a lint free cloth. Relubricate jaws as instructed in paragraph 4.3, before placing them back in service.

4.2 VISUAL INSPECTION

- (a) Inspect the cam rollers for binding and worn or pitted conditions.
- (b) Inspect the pivot pin holes for excessive wear.
- (c) Inspect the die closure surfaces of the jaws for worn, 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.
- (d) Examples of possible worn or damaged jaw or cam roller surfaces are shown in Figure 5. If jaws are defective, refer to Figure 9 for customer replacement part numbers.

4.3 LUBRICATION

Lubricate cam rollers, pivot pins and pivot pin holes with Anti-Scouring Extreme Pressure Lubricant No. 3 or equivalent.

Suggested
Mfg.

Chicago Mfg. & Distributing
1928 West 46th Street
Chicago, Illinois 60609

Lubricate cam roller pins with SAE #20 nondetergent motor oil.

Lubricate as follows:

- Jaws used in daily production — Lubricate daily
- Jaws used daily (occasional) — Lubricate weekly
- Jaws used weekly — Lubricate monthly

Wipe excess lubricant from jaws, particularly from crimping surfaces. Lubricant transferred from the crimping surfaces onto certain terminations may affect the electrical characteristics of an application.

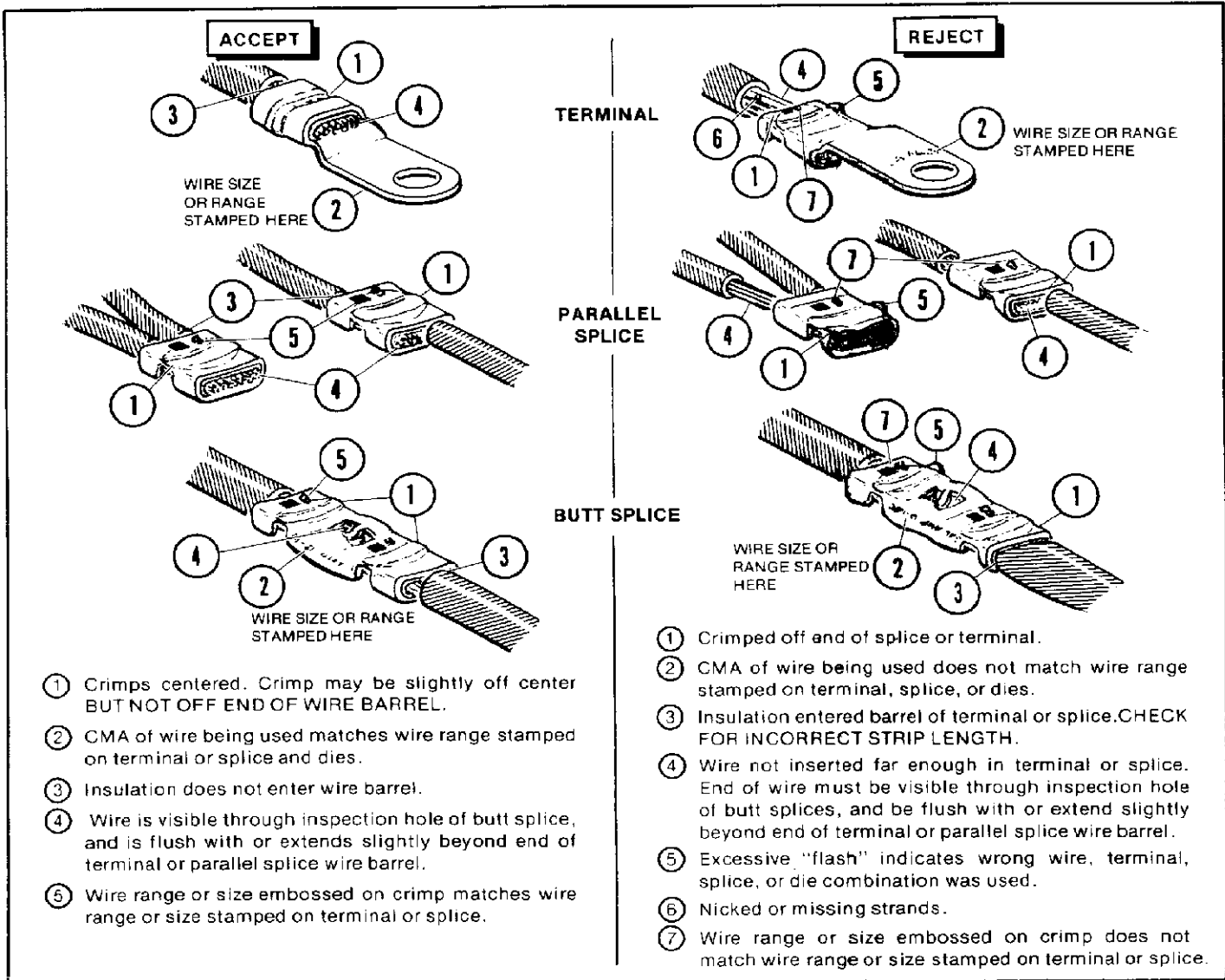


Figure 4

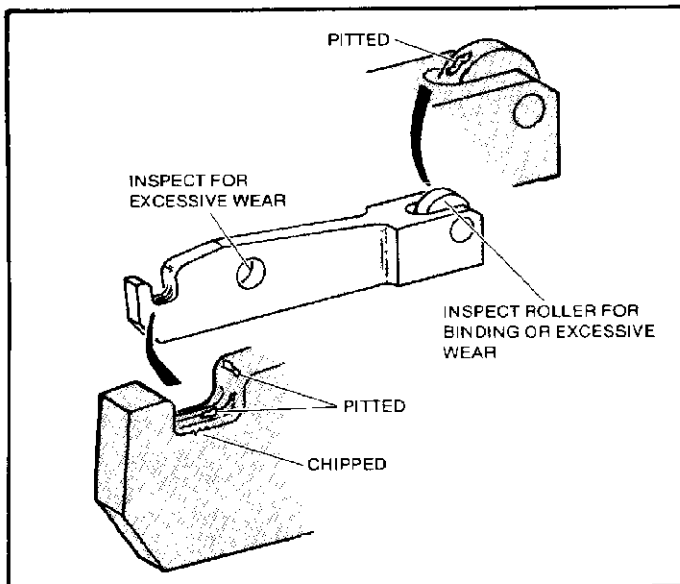


Figure 5

4.4 DIE CLOSURE INSPECTION

All crimping jaws are inspected for proper die closure before packaging. An inspection should be performed periodically to check the die closure for excessive wear. The die closure inspection is accomplished using the GO NO-GO plug gages. AMP neither manufactures nor sells plug gages. A suggested plug gage design and the GO NO-GO dimensions of the plug gage members are listed in Figures 6 and 7. The following procedure is recommended for inspecting the die closures.

- Clean oil or dirt from die closure surfaces, bottoming surfaces, and plug gage members.
- Mate the crimping jaws so that they are bottomed but not under pressure.
- With crimping jaws bottomed, check the bar crimp closure using the proper plug gage. Hold gage in straight alignment with the die closure and carefully try to insert, without forcing, the GO member. See Figure 8, detail A. The GO member must pass completely through the bar crimp closure.

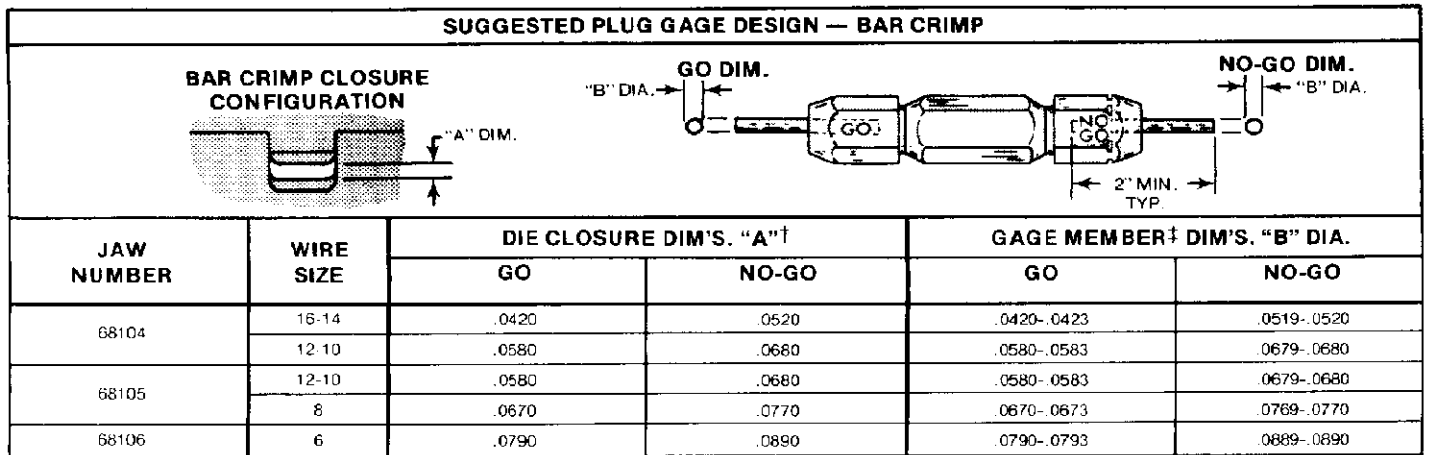


Figure 6

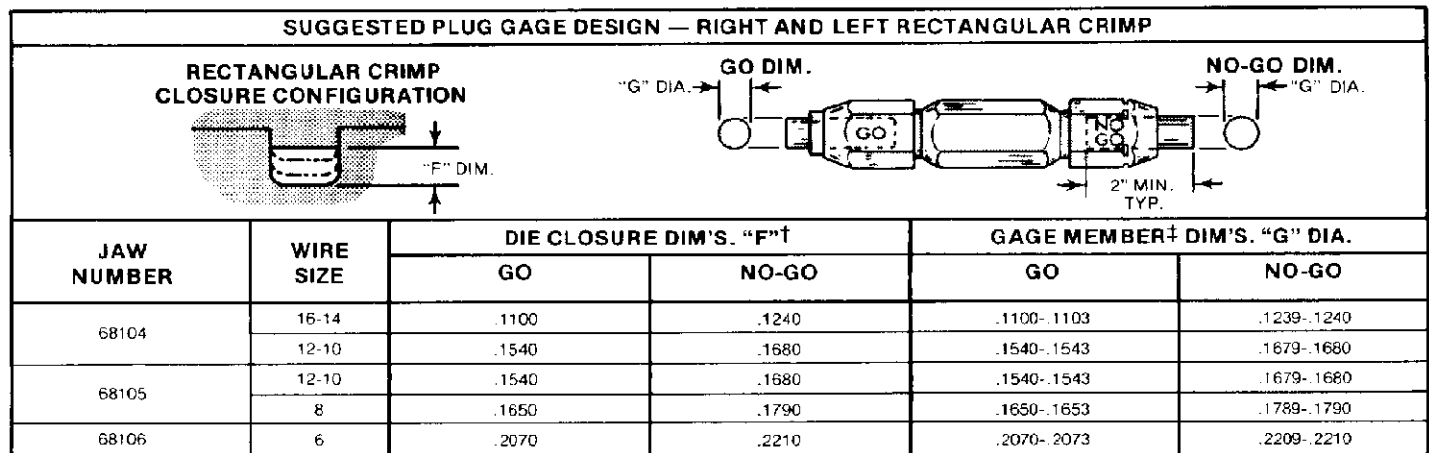


Figure 7

†Die closure dimensions apply when jaws are bottomed but not under pressure.
‡Material — Tool Steel

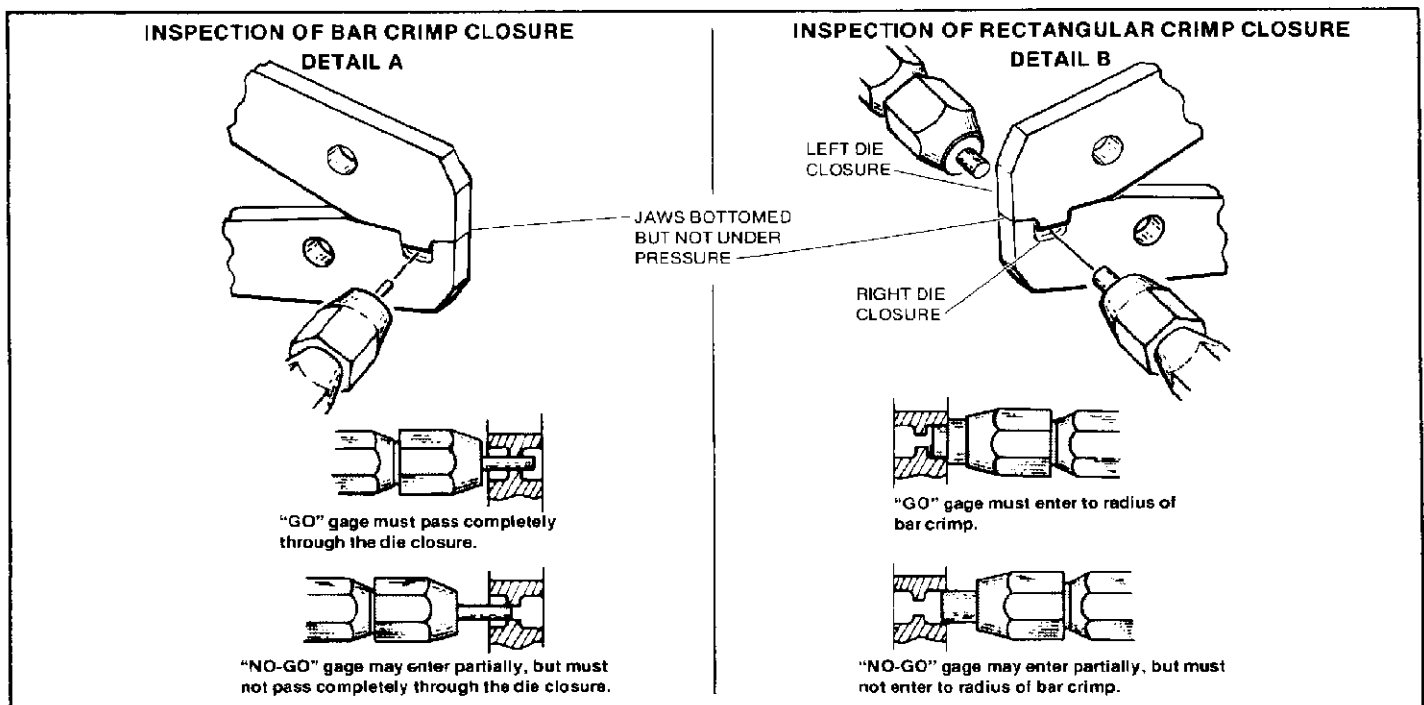


Figure 8

- (d) Try to insert the NO-GO member. The NO-GO member may enter partially, but must not pass completely through the bar crimp closure.
- (e) With dies bottomed, check the right and left rectangular crimp closures using the proper plug gage in the same manner as steps (c) and (d). See Figure 8, detail B.
- (f) If both the bar crimp and the rectangular crimp closures meet the GO NO-GO gage conditions, the die closures may be considered dimensionally cor-

rect. If you find that the die closures do not conform with the GO NO-GO gage conditions, contact your local AMP field representative.

4.5 REPLACEMENT PARTS

Refer to Figure 9 for crimping jaw replacement part numbers. Replacement crimping jaws can be purchased from AMP Incorporated, Harrisburg, Pa., 17105 or a wholly owned subsidiary of AMP Incorporated.

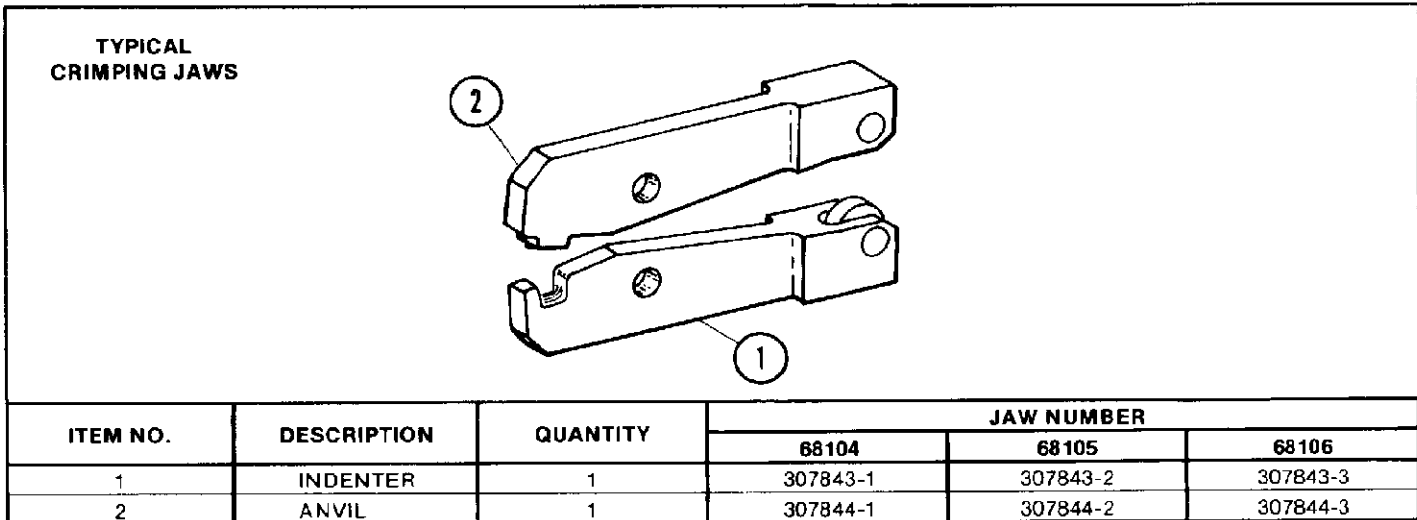


Figure 9