

CUSTOMER HOTLINE 1 800 722-1111

1. INTRODUCTION

This instruction sheet is intended to provide you with "Instructions" on product application and a "Maintenance and Inspection Procedure" for:

AMP* COPALUM* HAND TOOLS

68040 68041 68042 MOD. B

These crimping tools are used to crimp COPALUM terminals and splices on stranded or solid, aluminum or copper* wire sizes 20 thru 10.

Basic instructions on the use of these tools, wire preparation, etc. are provided in Section 2, "Instructions."

Section 3 contains a "Maintenance and Inspection Procedure" which will enable you to establish and maintain a tool certification program.

2. INSTRUCTIONS

Tools are coated with oil to prevent rust and corrosion. Wipe this oil from tool, particularly from crimping area.

2.1 WIRE STRIPPING AND CRIMPING PROCEDURES

2.1.1 Wire Stripping

- Determine correct splice wire loading by referring to CMA range listed in Figure 2. Total CMA of wires crimped in parallel splices must be within CMA range of splice.
- Strip wire to dimensions listed in Figure 2.

NOTE: For aluminum-to-aluminum applications, butt splices will accept the same wire size at either end. For aluminum-to-copper applications, however, the size of the copper wire must be "stepped down" one smaller wire size to compensate for differences in the physical properties of copper and aluminum. See Figure 2.

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.

2.1.2 Crimping Procedure

- Ensure that the wire size stamped on the terminal corresponds with the wire size stamped on the tool.
- Open crimping dies by closing handles until CERTI-CRIMP* ratchet releases. See Figure 1. Note that once ratchet is engaged, handles cannot be opened until they are fully closed.
- Place terminal or splice in crimping dies as shown in Figures 3, 4, or 5. For best results, position the butt splice so that the window of splice faces top of tool. See Figure 4.
- Close handles until terminal or splice is held firmly in place. Do not deform terminal or splice wire barrel.
- Insert stripped wire into terminal or splice wire barrel.
- To complete crimp, close handles until CERTI-CRIMP ratchet releases. Handles can now be opened and crimped item may be removed.
- To crimp other half of splice, remove it and reposition uncrimped half in tool and follow same procedure used to crimp first half of splice. If splice cannot be turned, turn tool around.

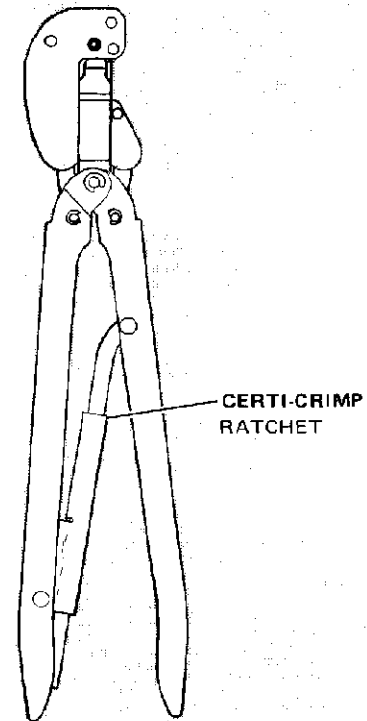


Figure 1

- Crimped terminals and splices should appear as shown in Figure 2.

3. MAINTENANCE/INSPECTION PROCEDURE

AMP recommends that a maintenance-inspection program be performed periodically. This is necessary to assure that continued use of the tools will result in the same dependable and uniform terminations for which the tools were designed.

We recommend an initial frequency of inspection of once a month. This frequency may be adjusted to suit your requirements through experience. The frequency of the inspection is dependent upon:

- The care, amount of use, and handling of the tool.
- 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.

With proper maintenance and inspection, these tools will give years of satisfactory service.

All AMP tools are inspected and calibrated before being shipped from the factory, however, since there is a possibility of tool damage in shipment, AMP recommends that new tools be inspected in accordance with Section 3 when received in your plant. Due to the precision design, it is important that no parts of these tools be interchanged except those replacement parts listed in Figure 10.

* Butt or parallel splices only. See paragraph 2.1.

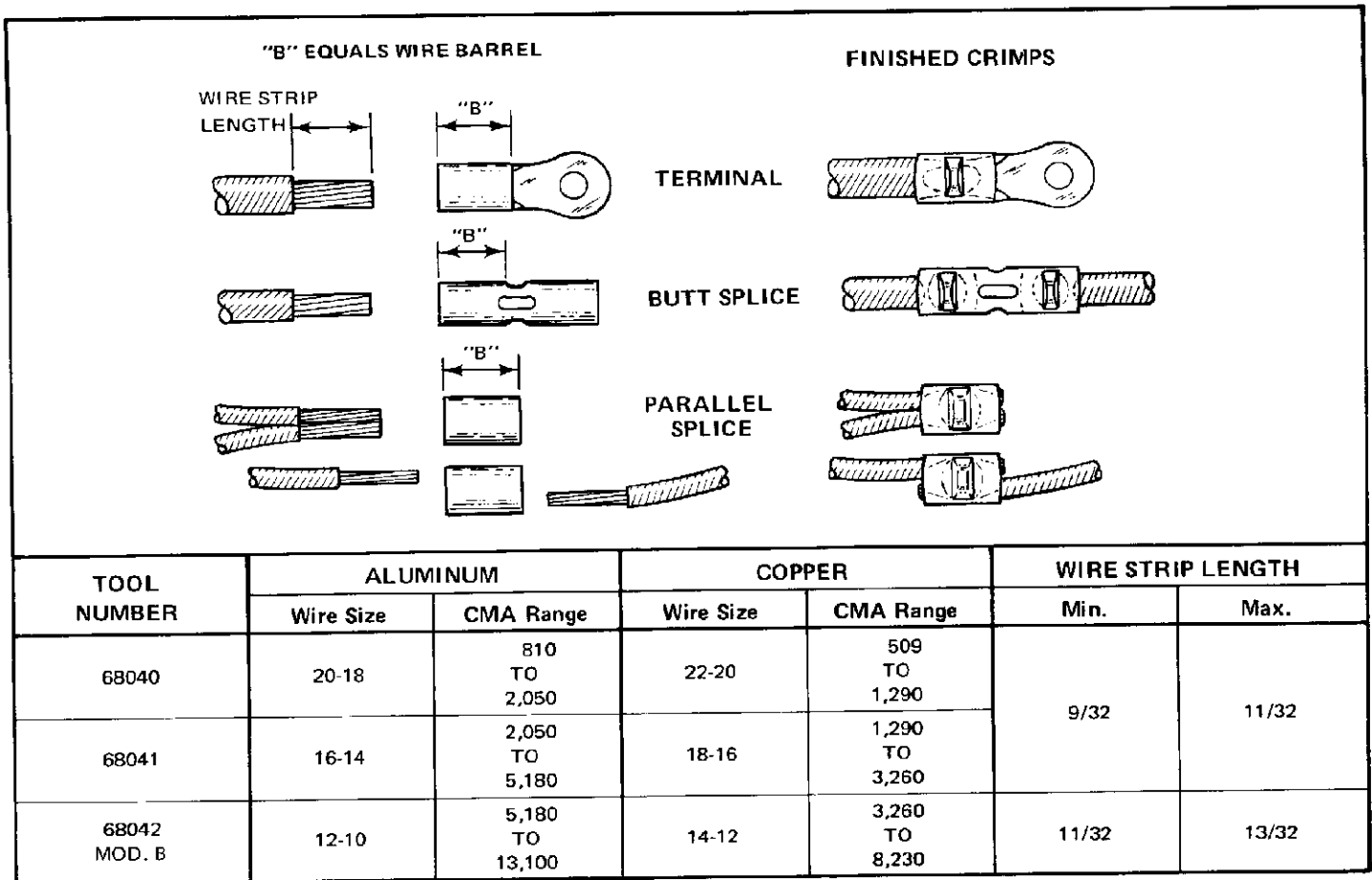


Figure 2

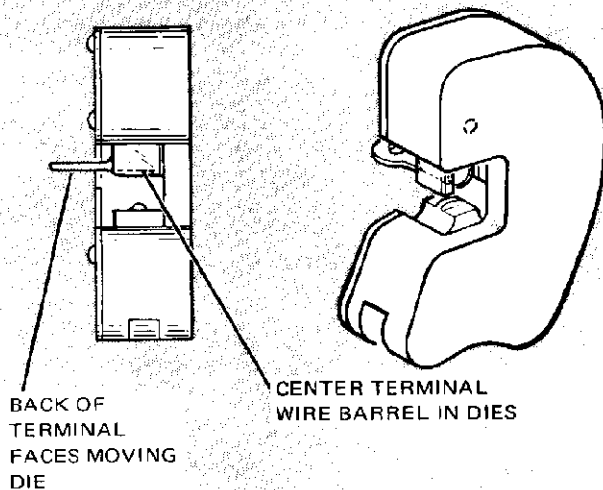
TERMINALS

Figure 3

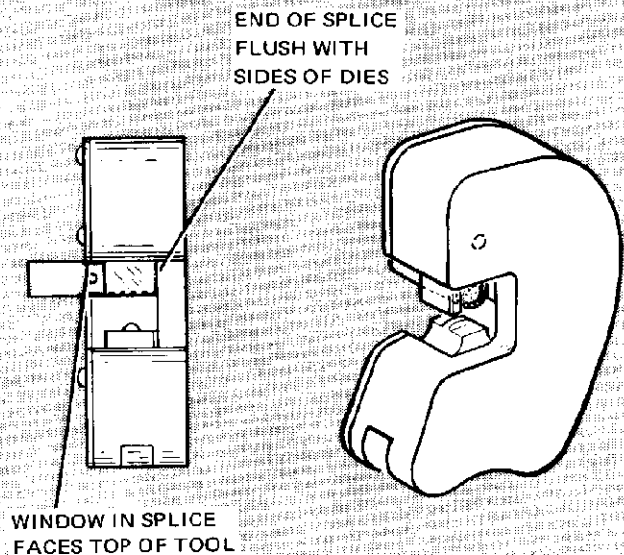
BUTT SPLICES

Figure 4

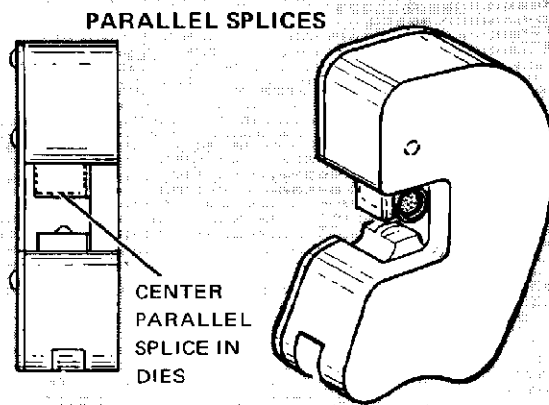


Figure 5

3.1. CLEANING

The tool should be immersed (handles partially closed) 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, tool may be wiped clean with a lint free cloth. Relubricate tool, as instructed in paragraph 3.2., before placing it back in service.

3.2. LUBRICATION

Lubricate all pins, pivot points and bearing surfaces with a good grade S.A.E. no 20 motor oil as follows:

Tools used in daily production—Lubricate daily.

Tools used daily (occasional)—Lubricate weekly.

Tools 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.

3.3. VISUAL INSPECTION

- Visually inspect the tool for missing pins or retaining rings. If parts are missing or defective, refer to Figure 10 for customer replaceable parts.
- Visually inspect the die closure surfaces for flattened, broken or chipped conditions. Although dies may gage within permissible limits, 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 6.

3.4. DIE CLOSURE INSPECTION

Every AMP hand tool is inspected and tested for proper die closure before being shipped from the factory. An inspection should, however, be performed periodically to measure the tool die closure.

The die closure inspection is accomplished using GO NO-GO plug gages. AMP neither manufactures nor sells plug gages, however, suggested designs and GO NO-GO dimensions for the plug gage members are listed in Figures 7 and 8. The following procedure is recommended for measuring the die closures.

- Remove traces of oil or dirt from the die closures and plug gage members.
- Close handles of tool until crimping dies are bottomed. Do not apply additional pressure to tool handles.
- With crimping dies 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, and then the NO-GO member. See Figure 9 Detail A. The

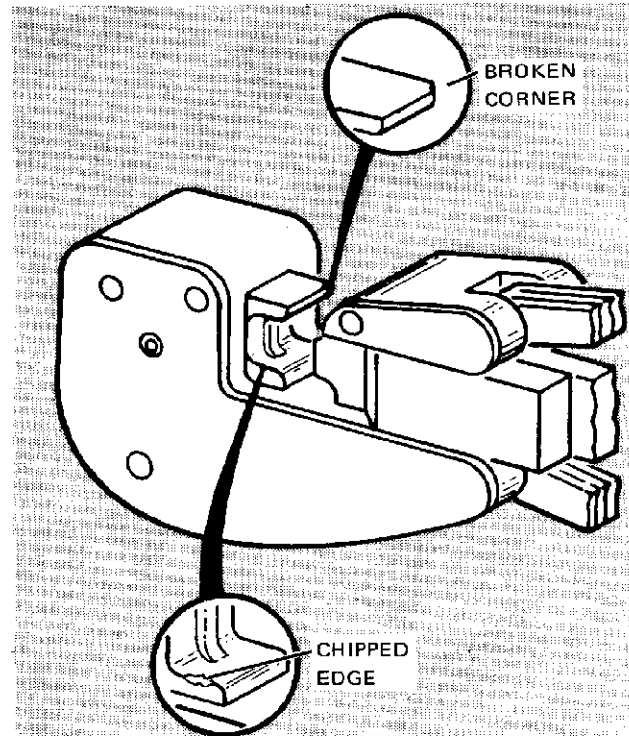


Figure 6

GO member must pass completely through the bar crimp closure.

- The NO GO member may enter partially, but must not pass completely through the bar crimp closure.
- 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 9 detail B.
- If both the bar crimp and the rectangular crimp closures meet the GO NO-GO gage conditions, the dies may be considered dimensionally correct. If you find that the die closures do not conform with the GO NO-GO gage conditions, contact your local AMP field representative.

3.5. CERTI-CRIMP RATCHET INSPECTION

The CERTI-CRIMP ratchet feature on AMP hand tools should be checked to make certain that the ratchet does not release prematurely allowing dies to open before they have fully bottomed.

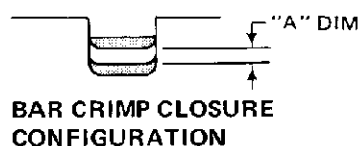
To check ratchet feature:

- Thoroughly clean the bottoming surfaces of the dies.
- Make a test crimp using the maximum wire load, i.e., a No. 10 AWG wire in a 12-10 terminal. When this crimp is made, squeeze handles until the ratchet is free, however, **DO NOT RELAX PRESSURE ON TOOL HANDLES.**
- If a .001 or smaller shim can be inserted between the bottoming surfaces of the dies, or if there is no opening whatever, the CERTI-CRIMP ratchet is satisfactory.
- If the clearance between the bottoming surfaces of the dies is greater than .001, the dies are considered as not bottoming. Contact your local AMP Field Representative.

3.6. REPLACEMENT PARTS

It may be advantageous to stock certain replaceable parts to prevent loss of production time. Figure 10 lists the customer replaceable parts that can be purchased from AMP Incorporated, Harrisburg, Pa., or a wholly owned subsidiary of AMP Incorporated.

SUGGESTED PLUG GAGE DESIGN -- BAR CRIMP



GO DIM.

"B" DIA.

NO GO DIM.

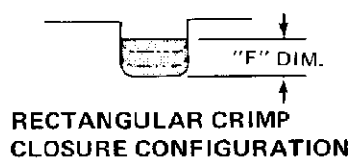
"B" DIA.

2" MIN.
TYP.

TOOL NUMBER	DIE CLOS. DIM'S. "A" †		GAGE MEMBER†† DIM'S. "B" DIA.	
	GO	NO-GO	GO	NO-GO
68040	.0360	.0460	.0360-.0363	.0459-.0460
68041	.0420	.0520	.0420-.0423	.0519-.0520
68042 Mod. B	.0580	.0680	.0580-.0583	.0679-.0680

Figure 7

SUGGESTED PLUG GAGE DESIGN -- RIGHT AND LEFT RECTANGULAR CRIMP



"G" DIA.

GO DIM

"G" DIA.

NO GO DIM

2" MIN.
TYP.

TOOL NUMBERS	DIE CLOS. DIM'S. "F" †		GAGE MEMBER†† DIM'S. "G" DIA.	
	GO	NO-GO	GO	NO-GO
68040	.0980	.1120	.0980-.0983	.1119-.1120
68041	.1100	.1240	.1100-.1103	.1239-.1240
68042 Mod. B	.1540	.1680	.1540-.1543	.1679-.1680

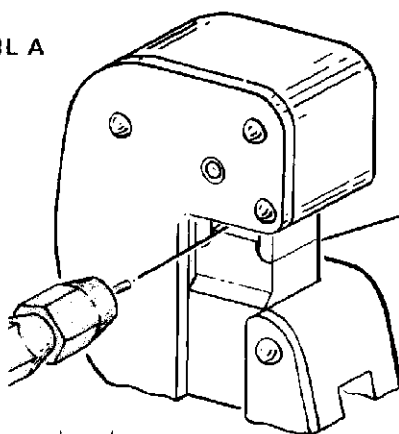
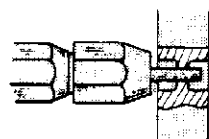
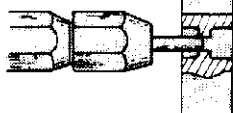
† Die closure dimensions apply when dies are bottomed, but not under pressure

†† Material Tool Steel

Figure 8

INSPECTION OF BAR CRIMP CLOSURE

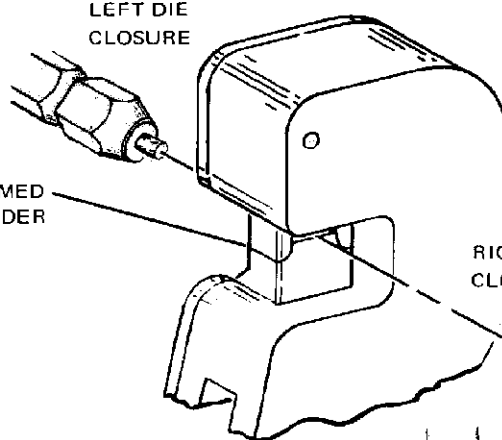
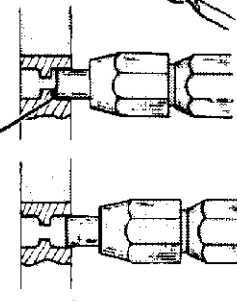
DETAIL A

DIES BOTTOMED
BUT NOT UNDER
PRESSURE"GO" gage must pass completely
through the die closure."NO-GO" gage may enter partially, but must
not pass completely through the die closure.

INSPECTION OF RECTANGULAR CRIMP CLOSURE

LEFT DIE
CLOSURE

DETAIL B

RIGHT DIE
CLOSURE"GO" gage must enter
to radius of bar crimp.RADIUS
OF BAR
CRIMP"NO-GO" gage may enter partially, but must
not enter to radius of bar crimp.

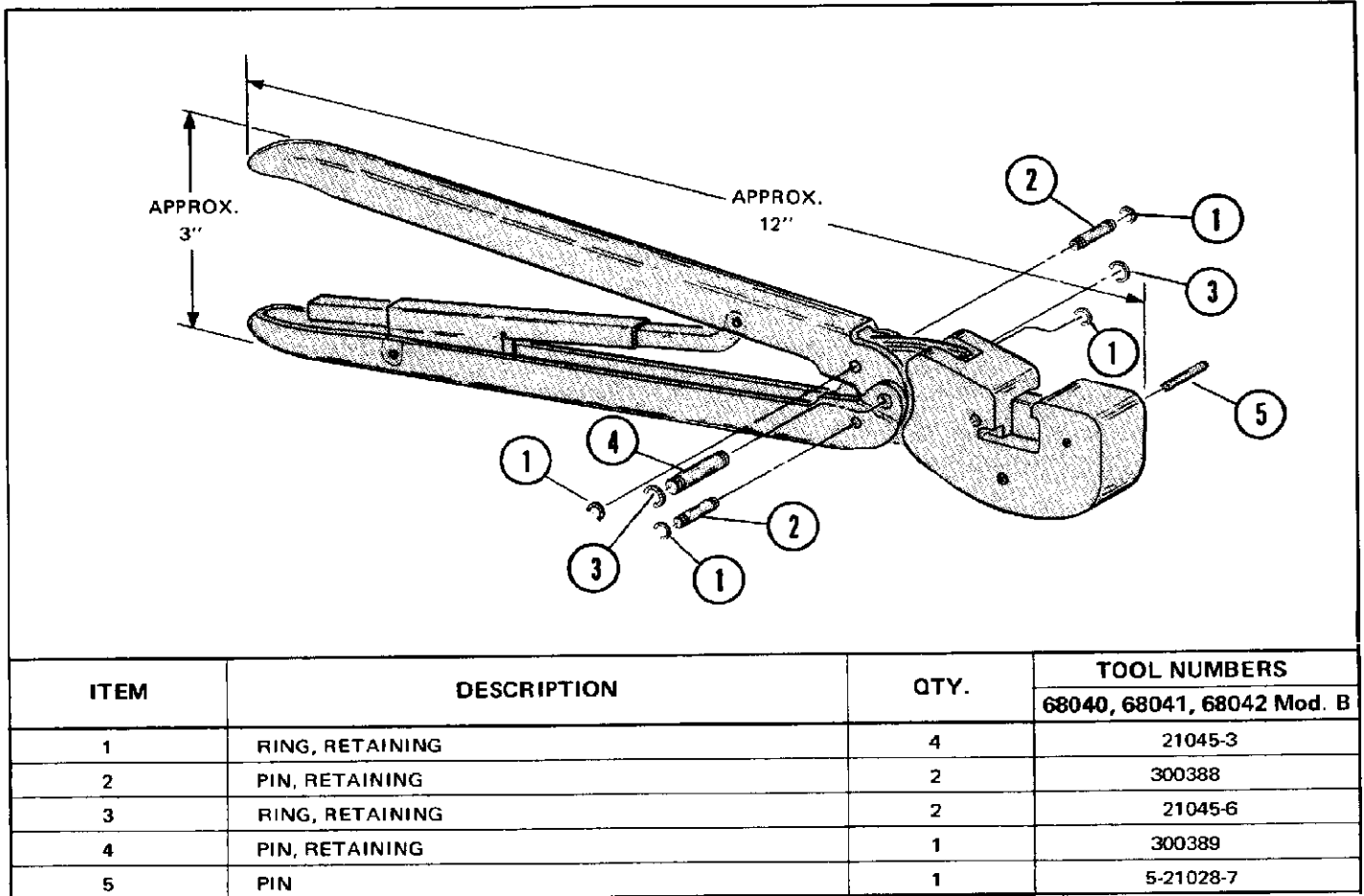


Figure 10