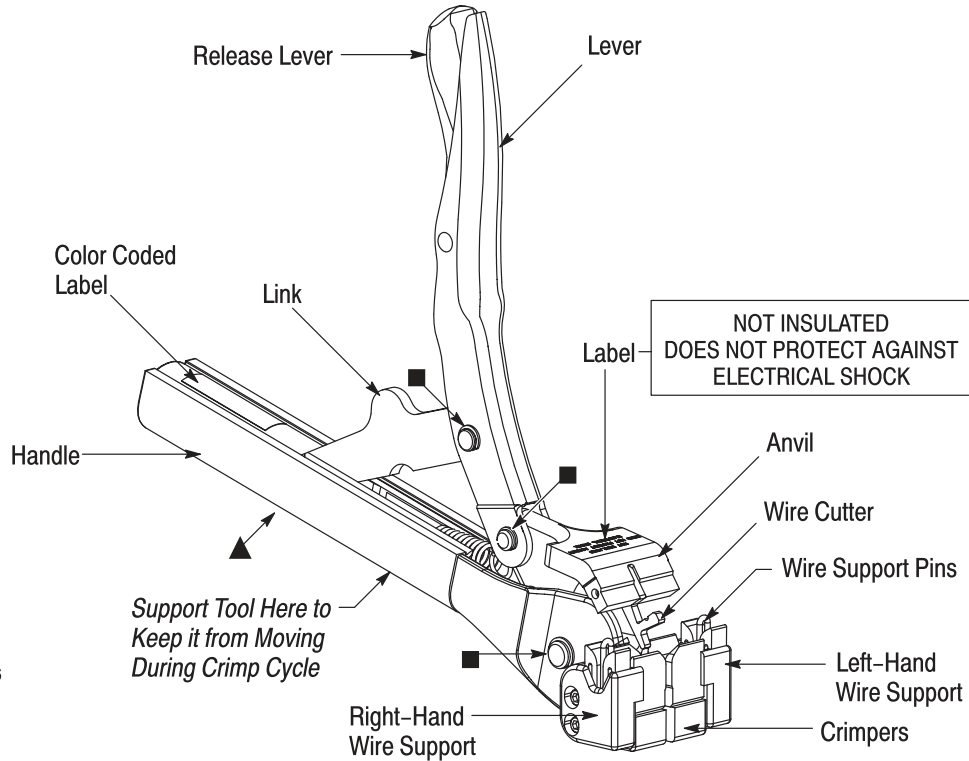


PROPER USE GUIDELINES

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.



Lubrication Points

- Use Lubricant
- ▲ Use Grease



Handle coverings are for COMFORT ONLY. This tool DOES NOT provide protection against electric shock. It is recommended that this tool only be used on de-energized lines. Proper safety precautions must be taken when crimping energized lines.

WIRE SIZE RANGE (AWG)	PICABOND* CONNECTOR		NOTE
	PART NUMBER	COLOR	
28-24	61899-1	Orange	Use any 1 or 2 wire size combination.
26-22	60945-4	Green	
	61226-2	Purple	
24-19	60947-3	Red	Use only 1 wire size 19 per connector end. This can be in combination with any other wire size up to 24 AWG.
	61292-2	Yellow	

Figure 1

1. INTRODUCTION

MR-1 Comfort Grip Hand Tool 2031690-1 is used to crimp the connectors listed in Figure 1 onto wire sizes 28 through 19 AWG having copper conductors insulated with plastic, paper, or pulp material for splicing applications.



Dimensions in this instruction sheet are in millimeters [with inches in brackets]. Figures are not drawn to scale.

Reasons for reissue of this instruction sheet are provided in Section 4, REVISION SUMMARY.

2. DESCRIPTION

The hand tool consists of a set of dies (an anvil and two crimpers), handle, lever, pivot link, and release lever, two wire supports and pins, and a wire cutter. Also included is a carrying case and crimp height gage assembly.

In use, the wire supports hold and position the wires in the crimpers. As the tool is cycled, the wire cutter cuts off excess wire and the dies crimp the connector to the wires. Continuous pressure applied to the lever forces the link to snap the handle closed, thus completing the crimp cycle. After the cycle is completed, the release lever is used to open the handle.

3. USING THE TOOL

The essential difference of the various connections is the placement of the wires in the wire supports of the tool. Determine the type of connection to be made, then refer to the applicable paragraph.

IMPORTANT: To avoid splice build-up, groups of finished connections should be arranged along the splice opening in order to build a uniform, compact splice. Move the tool along the splice opening about 31.75 [1.25] after crimping every 25 to 50 wire pairs. Alternate the direction in which the tool is moved — first to one side of the center, then to the other side.

3.1. Through Splice (See Figure 2)

NOTE



Always start with the cable units to the REAR of the cable opening.

1. Take a pair of conductors from one side of the cable opening. Separate them far enough that one wire can be inserted into the wire support.
2. Holding the tool in one hand, lace the wire into the wire support and out between the crimpers. make sure the wire has sufficient slack, then bottom it in the wire support.
3. Repeat Steps 1 and 2 using a pair of conductors from the other side of the cable opening. Make sure to use matching wires—tip to tip and ring to ring.
4. Insert a connector into the tool. Make sure there is sufficient slack in the wires; otherwise, they could pull out of the connector during the crimp cycle.
5. Place the tool in one hand so that you are supporting the center portion of the handle as indicated in Figure 1.

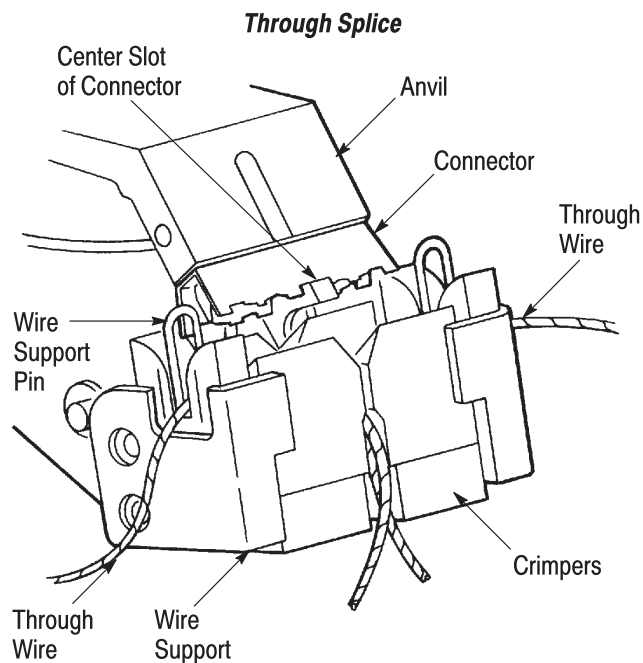


Figure 2

6. Squeeze the handle and lever until they fully close.
7. Depress the release lever and allow the handle to open, then remove the crimped connector.
8. Join the other conductors of the same pair in the same manner.

3.2. Tap Splice (See Figure 3)

1. Lace tap wire into wire support *below* the wire support pin.
2. Take a pair of through wires from the cable unit and separate them enough to insert individual wires into the tool.
3. Place one wire into a connector and then insert the connector into the tool. Make sure the wire cutter enters the slots in the center of the connector and that the notch in the wire cutter DOES NOT interfere with the connector. Make sure there is sufficient slack in the wires; otherwise, they could pull out of the connector during the crimp cycle.
4. Position the through wire in the notch of the wire cutter, then lace it into the wire supports *above* the wire support pin.
5. Place the tool in one hand so that you are supporting the center portion of the handle as indicated in Figure 1.
6. Squeeze the handle and lever until they fully close.
7. Depress the release lever and allow the handle to open, then remove the crimped connector.

Single Half Tap and Double Half Tap Splices

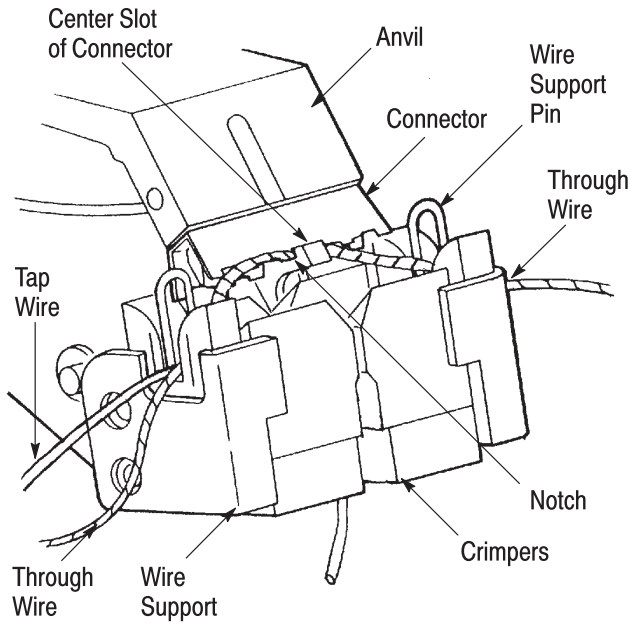


Figure 3

Single Bridge, Double Bridge, and Butt Splices

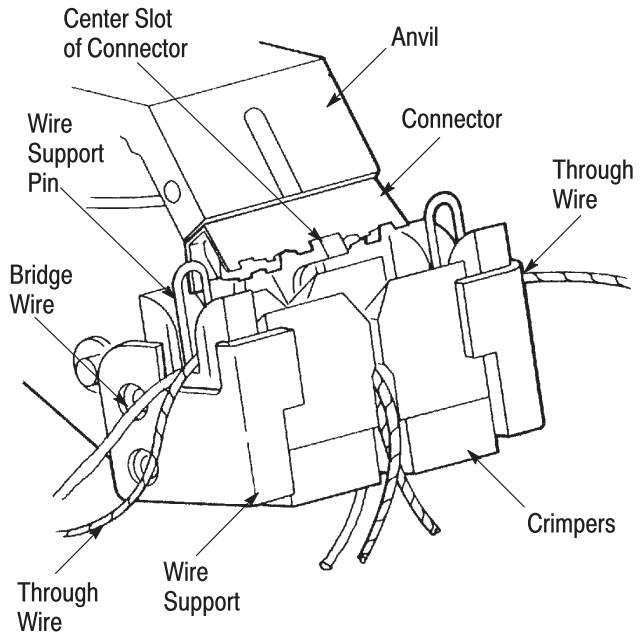


Figure 4

3.3. Bridge Splice (See Figure 4)

1. Take a pair of through conductors from one side of the cable opening and separate them enough to insert individual wires into the tool.
2. Lace the bridge wire(s) into the wire support(s) *below* the wire support pin(s).



When crimping a butt splice, insert one wire above the wire support pin and one wire below the wire support pin on the same side of the tool.

3. Lace the through wires into the wire support *above* the wire support pin. Make sure to use matching wires—tip to tip and ring to ring.
4. Insert a connector into the tool. Make sure the wire cutter enters the slots in the center of the connector. Make sure there is sufficient slack in the wires; otherwise, they could pull out of the connector during the crimp cycle.
5. Place the tool in one hand so that you are supporting the center portion of the handle as indicated in Figure 1.



The tool must be held steady during the crimping procedure. If it moves before the crimp is completed, the wires may pull out of the connector.

6. Squeeze the handle and lever until they fully close.

7. Depress the release lever and allow the handle to open, then remove the crimped connector.

4. CRIMP INSPECTION

Make the following inspections on the first and last connector crimped during a shift. Replace any improperly crimped or defective connections.

4.1. Crimp Height (See Figure 5)

Using the crimp height gage assembly, check the crimp height within a short time of crimping the connector according to the following.

1. Select the proper end of the crimp height gage — the color dots on the end of the gage must match the color of the connector.
2. Place the connector in the crimp height gage so the seam of the connector aligns with the double rib on the gage and the connector is flush with the side of the gage.
3. Hold the free end of the connector and slide the crimp height gage off using only very slight force. *The gage must slide off easily.* If it does, repeat the gage for the other end of the connector. If either end of the connector sticks in the gage, the connector is improperly crimped. Make a few sample crimps and gage them. If they gage properly, continue using the tool. If they do not gage properly, return the tool for repair. In either case, replace any improperly crimped connectors.

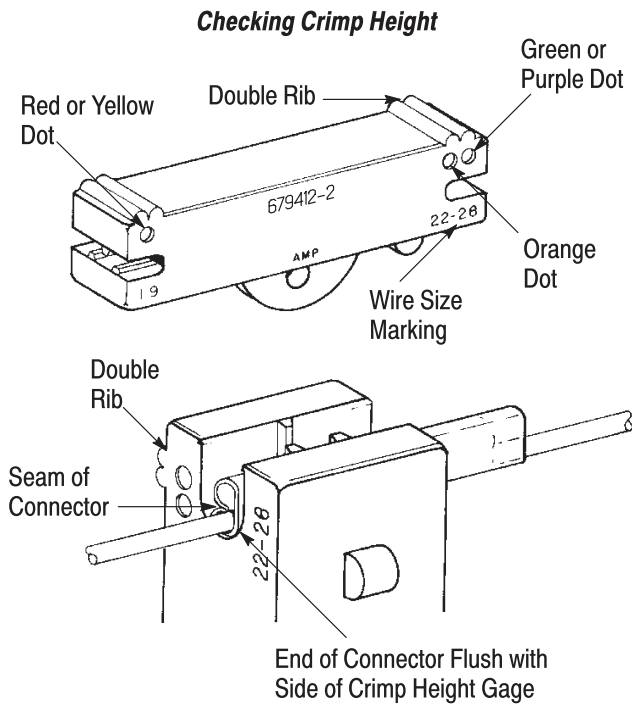


Figure 5

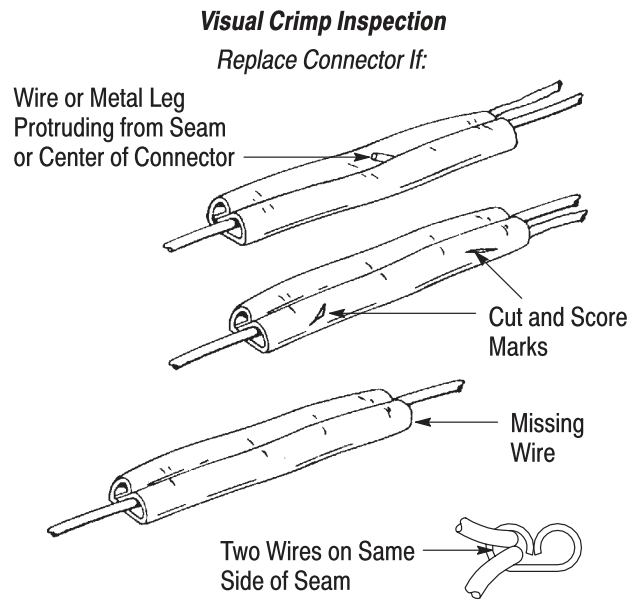


Figure 6

4.2. Visual Inspection (See Figure 6)

1. Check the connector for wire protruding from the seam of the connector. If there are any, replace the connector. If this occurs frequently, return the tool for adjustment.
2. Make sure that there are no cut or score marks on the connector. If there are any, replace the connector.
3. Check for a metal leg protruding from the center of the connector. This is caused by improper location of the connector in the tool. If there are any, replace the connector. Be especially careful to insert the connector in the tool so that the slot in the connector engages the wire cutter, and that the notch in the wire cutter DOES NOT interfere with the connector.
4. Make sure that there are no wires missing from the connector. If there are, the tool probably moved during crimping and the connector must be replaced.
5. For tap or bridge splices, make sure the end of the connector with two conductors contains one conductor on each side of the seam. If both conductors are on the same side, replace the connector. Be very careful to place the conductors in the wire support correctly. If the condition persists, return the tool for evaluation and repair.

5. TOOL INSPECTION

Check the plastic wire support brackets. If they are damaged or if the pins in the wire supports are bent or have a rough surface, replace the wire supports. Use Wire Support Replacement Kit 229188-1 according to 408-7474 included with the kit.

6. MAINTENANCE AND CLEANING

It is recommended using Cleaning Kit 229333-1 according to 408-7534 included with the kit for cleaning this tool. The kit consists of a bristle brush for general purpose cleaning, tube cleaner for cleaning the crimping dies, tube brush for cleaning inside the tool, extractor for removing scrap wire and plastic particles from inside the crimping dies.

1. Remove all loose dirt with a clean bristle brush.
2. Liberally spray the tool with solvent or cleaner and allow it to dry. Remove any particles that loosened.



It is recommended using Solvent/Cleaner 590, which can be purchased from Orb Industries, Inc. (215-874-2537), for removing accumulated film.

3. Lubricate the tool with a penetrating lubricant spray and an all-purpose grease. Refer to Figure 1 for lubrication points.

7. REPLACEMENT AND REPAIR

Order replacement parts through your representative, or call 1-800-526-5142, or send a facsimile of your purchase order to 717-986-7605, or write to:

CUSTOMER SERVICE (038-035)
TYCO ELECTRONICS CORPORATION
PO BOX 3608
HARRISBURG PA 17105-3608

For customer repair service, call 1-800-526-5136.
For customer repair service in Canada, send the tool to:

AMP OF CANADA LTD
20 ESNA PARK DRIVE
MARKHAM, ONTARIO
CANADA, L3R 1E1
ATTENTION: TOOL REPAIR

8. REVISION SUMMARY

Revisions to this instruction sheet include:

- Added DANGER to Figure 1