

**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.

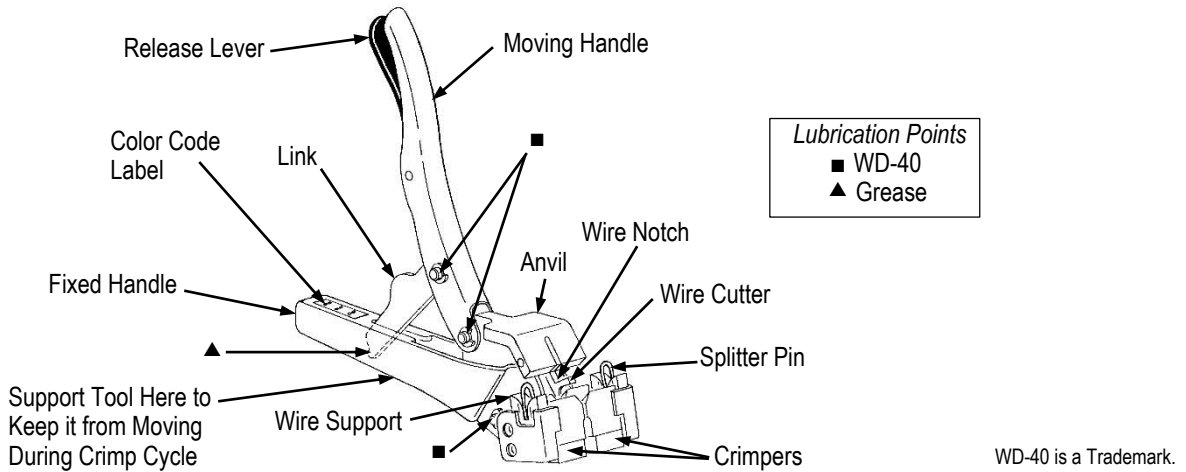


Figure 1

**1. INTRODUCTION**

Model MR-1 Hand Crimping Tool 251101-1 is designed to crimp PICABOND Connectors in through, tapping, and bridging operations. The tool can be hand-held or it can be used in Tool Holder 251852-1 with or without the Frame Adapter 229175-1. Read the instructions packaged with these accessories.

**i NOTE** All dimensions on this document are in metric units [with U.S. customary units in brackets]. Figures and illustrations are for reference only and are not drawn to scale.

Reasons for reissue of this sheet are provided in Section 11, REVISION SUMMARY.

**2. DESCRIPTION** (Figure 1)

The tool features two wire supports, a set of dies (anvils and crimpers), a wire cutter, and a handle 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, then the crimping dies crimp the connector to the wires. Continuous pressure applied to the moving handle forces the link to snap the tool handles closed, thus completing the crimp cycle. After the cycle is completed, depress the release lever to open the handles and remove the crimped connector.

**3. CONNECTOR SELECTION**

Determine the wire gage and combination of conductors to be joined. Then refer to Figure 2 for the correct connector. Note the PICABOND connectors can be used for 28 through 19 AWG copper conductors that are insulated with plastic, paper, or pulp materials.

WIRE RANGE (AWG)	CONNECTOR DESCRIPTION	
	NUMBER	COLOR
28-24	61899-1*	Orange
26-22	60945-4*	Green
	61226-2*	Purple
24-19	60947-3†	Red
	61292-2†	Yellow

\*Use any 1 or 2 wire combination. †Only one (1) 19 AWG can be used per connector end. This can be in combination with any other wire size up to 24 AWG.

Figure 2

## 4. PREPARING CABLE

Open and prepare the cable in the usual manner. There is no special procedure required when using the Model MR-1 tool.

## 5. WIRE PLACEMENT

**i** **NOTE**  
*The essential difference of the various connections is the placement of the wires in the wire supports.*

Determine the type of connection to be made, then refer to the applicable Paragraph (5.1, 5.2, or 5.3) and insert the wire accordingly.

### 5.1. Through Connections (See Figure 3)

**i** **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. *Be sure to match tip to tip and ring to ring.*
4. Insert a connector and crimp it according to Section 6, CRIMPING PROCEDURES. Join the other conductors of the same pair in the same manner.

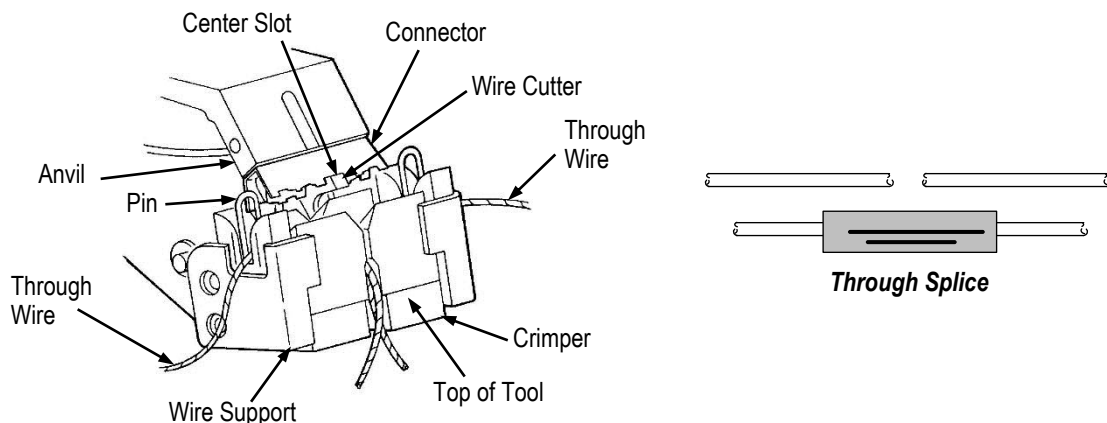


Figure 3

### 5.2. Tap Connections (See Figure 4)

The following method is accomplished without cutting and interrupting service of a through conductor. It is especially helpful when tapping into taut wires.

1. Lace tap wire into wire support below the pin.
2. Take a pair of through conductors 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 as shown in Figure 4. 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.
4. Position the through wire in the notch of the wire cutter, then lace it into the wire supports above the pin.
5. Crimp the connector according to Section 6, CRIMPING PROCEDURES.

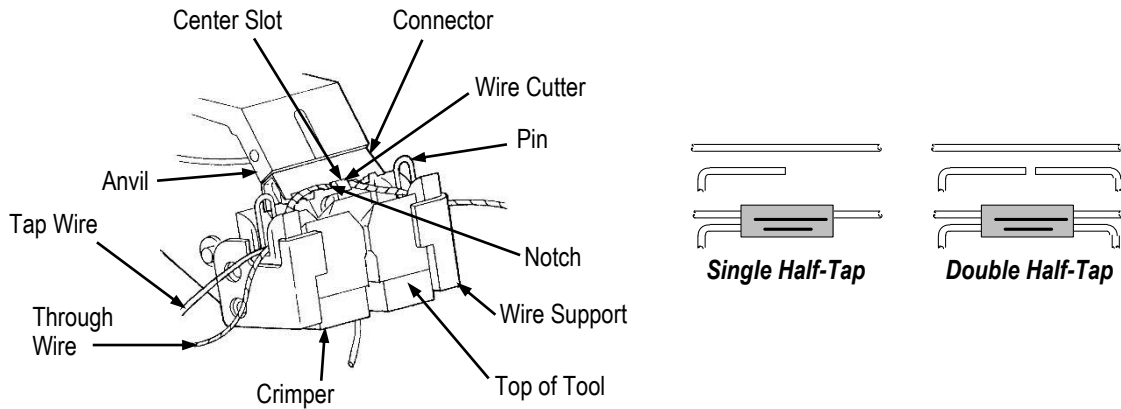


Figure 4

**5.3. Bridging Connectors** (See Figure 5)

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 pin(s).
3. Lace the through wires into the wire support above the pin. Make sure you use matching wires - tip to tip and ring to ring.
4. Insert a connector into the tool as shown in Figure 5. Make sure the wire cutter enters the slots in the center of the connector.



**NOTE**

When butt splicing, insert one wire above the pin and one wire below the pin on the same side of the tool.

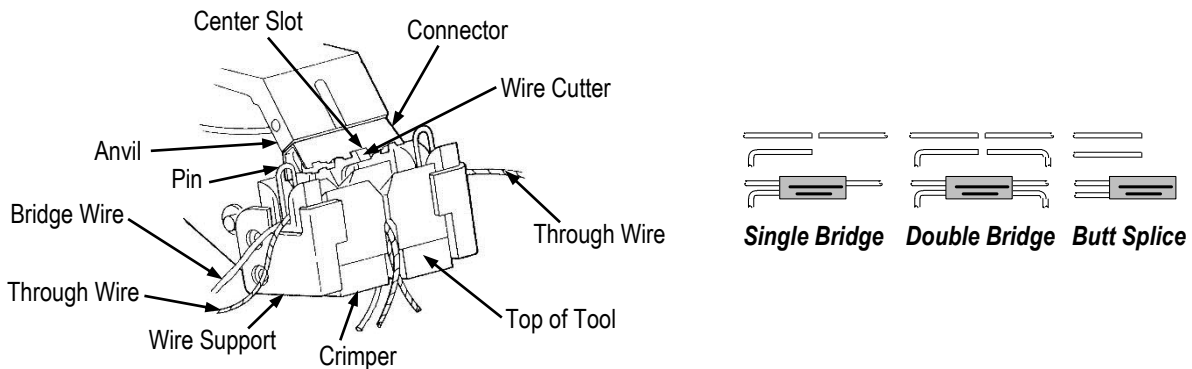


Figure 5

**6. CRIMPING PROCEDURES**



**CAUTION**

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. See Figure 1.

After placing the wire(s) and connector in the tool in accordance with Section 5, WIRE PLACEMENT, proceed as follows:

1. Make sure there is sufficient slack in the wires, otherwise, they could pull out of the connector during the crimp cycle.
2. Place the tool in one hand so that you are supporting the center portion of the fixed handle as indicated in Figure 1.
3. Crimp the connector by squeezing the tool handles until they snap over center.
4. Open the tool handles by depressing the release lever, and then remove the crimped connector.

## 7. SPLICE BUILD-UP

During the splicing, you should arrange groups of finished connections along the splice opening in order to build a uniform, compact splice. To do this, move the tool along the splice opening about 31.75 mm [1.25 in.] after crimping every 25 to 50 pairs. Alternate the direction in which you move the tool, first to one side of center, then to the other.

## 8. INSPECTIONS

Make the following inspections on the first and last connection made during a shift. If you find any improperly crimped or defective connections, return the tool to your supervisor, unless otherwise instructed. In addition, replace any defective connections.

### 8.1. Gaging Crimped Connectors

Use the crimp gage within a short time of crimping the connection, and check the connector as follows:

1. Select the proper gage end. The color dots on the end of the gage must match the color of the connector you are gaging. See Figure 6.
2. Place the connector in the gage so the seam in the connector aligns with the double rib on the gage. Position the connector so it is flush with the side of the gage. See Figure 6.

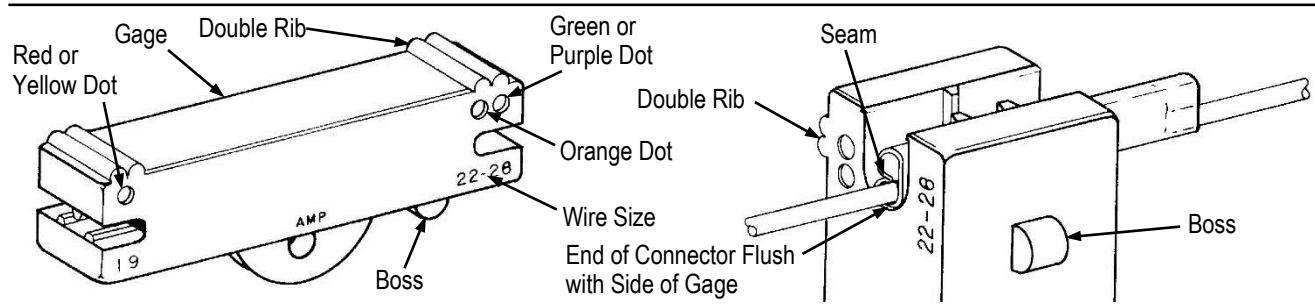


Figure 6

3. Hold the free end of the connector and slide the gage off using only very slight force. *The gage must slide off easily.* If it does, repeat the test for the other end of the connector.
4. If either end of the connector sticks in the gage, the connection 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, go back and re-crimp any improperly crimped connections.

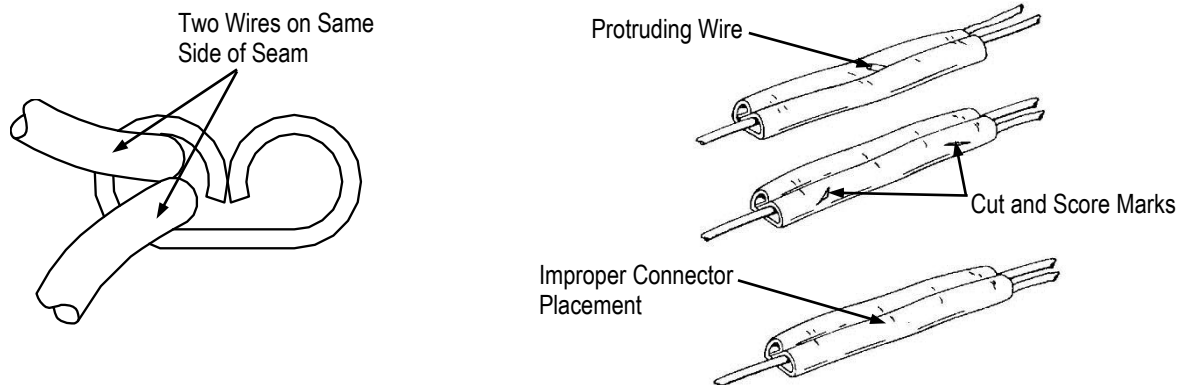


Figure 7

### 8.2. Visual Inspection (See Figure 7)

1. Check for wire protruding from the center of the connector. If you find any, replace the connection. If this problem occurs frequently, return the tool for adjustment.

2. Make certain there are no wires missing from the connector. If there is, the tool probably moved during crimping and the connector must be replaced.
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 you find any, replace the connections. 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. See Figures 3, 4, and 5.
4. If you are tapping or bridging, 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 connection. Be very careful to place the conductors in the wire support correctly. If the condition persists, return the tool to your supervisor.
5. Check the plastic wire support brackets. If they are damaged, or if the pins in the supports are bent or have a rough surface, replace the supports. Use Repair Kit 229188-1 and follow the instructions in the kit.

## 9. MAINTENANCE AND CLEANING

TE Connectivity recommends Cleaning Kit 229333-1 for cleaning this tool. This kit consists of: (1) a bristle brush for general purpose cleaning, (2) a tube cleaner for cleaning the crimping dies, (3) a tube brush for cleaning inside the tool, (4) an extractor for removing scrap wire and plastic particles from inside the crimping dies, and (5) extractor case. If you do not have this kit, it can be purchased from TE.



### NOTE

*A lubricant, WD-40, which can be purchased locally, is recommended for loosening dirt and lubricating the tooling.*



### NOTE

*A spray solvent/cleaner, which can be purchased from Orb Industries, Upland, PA (215-874-2537), under part number 590, is recommended for removing accumulated film.*

Remove all loose dirt with a clean bristle brush. Then liberally spray the tool with solvent/cleaner and allow it to dry. Remove any particles that you have loosened. Lubricate the tool with WD-40 lubricant and all-purpose grease. See Figure 1 for lubrication points.

As the operator of the tool, you should: (1) clean and lubricate the tool regularly, (2) inspect the crimped connectors, and (3) use the tool in accordance with these instructions. If you find a defect in the tool's operation, return it to your supervisor.

## 10. ORDERING INFORMATION AND REPAIR

Order additional tools through your TE 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 (038-035)  
TYCO ELECTRONICS CORPORATION  
PO BOX 3608  
HARRISBURG PA 17105-3608

Tools may be returned to TE for evaluation and repair. For tool repair service, please contact a TE Representative at: 1-800-526-5136.

In Canada, send the tool to:

TE CONNECTIVITY OF CANADA (BLDG. 1)  
20 ESNA PARK DRIVE  
MARKHAM, ONTARIO  
CANADA, L3R 1E1  
ATTENTION: PICABOND TOOL REPAIR

## 11. REVISION SUMMARY

- Updated document to corporate requirements
- New logo